World Energy
Absorption Chiller Heat Pump

World Energy

CONTENT

Welcome to World Energy

World Energy Co., Ltd. was founded for the purpose of developing and providing various types of waste-heat recovered and energy saving Absorption Machines such as Single Effect Double Lift Hot Water Driven Absorption Chiller, Single-Effect Hot Water Driven Absorption Machine, Double-Effect Exhaust Gas Driven Absorption Machine and Absorption Heat Pump. Thanks to an accumulated and international grade technologies of R&D and manufacturing, a highly-qualified engineers and also a cooperation with well-known world-class partners, the company is introducing high efficient chillers to the world market.

World Energy Co., Ltd. is playing a key role in Korean District Cooling and Heating industry. In cooperation with KDHC(Korea District Heating Corporation) and KARSE(Korean Association of Air Conditioning, Refrigerating and Sanitary Engineers), the company introduced a new technology in Absorption Chiller and developed Certification Program for Absorption Chiller.

World Energy Co., Ltd. makes every effort to satisfy worldwide customers with high performing, reliable and international standard products.

World Energy Co., Ltd. will continue to improve customers' business interests by offering energy-saving products in the age of high energy cost, and furthermore, to contribute to environmental protection.

Thank you.


• Quality Management System Certificate


• Environmental Management System Certificate


• Declaration of Conformity


• R&D Center Certificate


• Underwriters Laboratories

World Energy Milestone

02. 2004. Cooperate company starts
05. 2006. 1st commercial operation of Single Effect 2-Lift Hot Water Driven Absorption Chiller (300RT, KDHC office, Korea)
09. 2006. 1st Shipment to USA market (130RT, USA market)
12. 2006. Complete Development of 1st Generation Single Effect 2-Lift Hot Water Driven Absorption Chiller (75~1125RT)
02. 2007. 1st Development of Exhaust Gas Driven Simultaneous Absorption Chiller/Heater (UTC Power, USA)
03. 2007. UL Listed
08. 2007. Ethylene Glycol Chemical Plant application chillers delivered (HWAR-L 1000RT*3Units S Model*5 Units)
12. 2007. Development of Heating Cycle with 2-Lift Absorption Chiller
06. 2008. Shipment of Exhaust Heat of Methylene-Chloride Driven Absorption Chiller to Chemical Plant (Korea)
09. 2008. Shipment of Large capacity (4708kW) Hot Water Driven Chiller to Chemical Plant(Korea)
10. 2008. 1st Shipment to EU market (Italy, 2Units/Hot Water Chiller)
08. 2009. 1st Shipment of 2-Lift Hot Water Chiller to EU market (Germany)
09. 2009. 1st Shipment of Waste Heat Recovery Absorption Chiller (2AA240, ZINC Factory, Korea)
09. 2009. Complete Development of 2nd Generation Single Effect 2-Lift Hot Water Driven Absorption Chiller (75~1300RT)
05. 2010. 1st Shipment of Single Effect 2 Lift Hot Water Chiller to Taiwan (2AB825, Nanya Plastic))
06. 2010. 1st Shipment of Exhaust Gas Driven Chiller to EU market (IBM R&D Center, Germany)
06. 2010. Shipment of 3,883kW MVR(Evaporating Condenser for Mechanical Vapor Compression System) to Chemical Plant (Korea)
07. 2010. Shipment of Heat Exchanger for Fuel Cell to UTC Power, USA
09. 2010. Shipment of the largest capacity(1025RT) Hot Water Driven Chillers to Commercial/ Residential complex district cooling application (Korea)

Absorption Machines

Provide the best solution for CHP and CCHP application by utilizing waste heat more efficiently through various Absorption Machine technology.

- No CFC's and Environmentally safe
- Cost-Effective Direct Cooling & Heating
- Low Noise & Low Vibration operation
- Precise & Optimized Control by Microprocessor-based Controller
- Saving of Initial Investment
- High Reliability

Exhaust-Energy Recovery

Exhaust Gas Driven Absorption Machine produces both of cooling & heating directly from exhaust gas from reciprocating engine or gas turbine without additional heat recovery systems. And Hot water Driven type Machine produces cooling from engine jacket water or the other hot water. Specially, in Double-lift type Machine, hot water energy can be utilized by 55°C.

Excellent Part Load Performance

Microprocessor-based control system allows stable, part load operation at cooling water temperatures as low as 18℃ [64℉] without a cooling water bypass. For maximum efficiency, a variable frequency drive pump automatically maintains optimum solution flow to Low-Temp. Generator and also High-Temp Generator during whole operation.

Low Noise and Low Vibration

The overall sound level of The Worldenergy machine is typically 65dbA. This allows the machines to be installed near occupies spaces or in area with strict sound requirements. Low vibration levels also make it possible to install the chiller on upper floors without special consideration for vibration dampening systems.

Precise & Optimized Operation

Factory mounted, wired and tested microprocessor-based controller monitor's and controls the machine operation continuously and automatically. A touch screen display identifies operational status and fault indication. All components meet internally acceptable codes like UL or CE or KS or equivalents. During the start-up sequence, the controller initiates a self-diagnostic system check to verify that all sensors are in range. Remote start/stop switch and a key-locked control panel door protect against unauthorized access.

Reliability & Easy Maintenance

Hermetically-designed refrigerant and solution pumps which are only moving parts provide reliability and they are field serviceable through pump isolation valves. Also marine-type water box cover on both of the absorber and condenser allows easy tube-cleaning and water-box inspection. And factory performance test, which is provided as an optional basis, ensure the performance and function of chiller before shipment.

Reliable Purge System

Non-condensable gases are periodically exhausted from the storage tank by a simple procedure performed while the machine is running. Evacuation is performed by a unit mounted vacuum pump that is connected to the purge evacuation valve.

Control System

Microprocessor-based Unit Controller is factory mounted, wired and tested to ensure a protection of the Machine and efficient capacity control. The program logic provides proper Start/Stop of the Machine and also enables a communication interface with others.

- **Component Test and Diagnostic Check**
- **Touch Screen Interface for Status Display, Set-point Control, and System Configuration**
- **Primary and Secondary Status Messages**
- **Individual Start/Stop Schedules for Local Mode**
- **Recall of Up to 999 Alarm and Alert Messages with Diagnostic Help**
- **Extensive Diagnostic and Service Capabilities**
- **Advanced Crystallization Protection**

Safety Cutouts
- Solution Pump Motor Overload/High Temperature
- Refrigerant Pump Motor Overload/High Temperature
- Low Chilled Water Temperature Cutout
- Low Refrigerant Temperature Cutout
- Low Cooling Temperature Cutout
- Low Chilled Water Flow Cutout
- Low Cooling Water Flow Cutout (Option)
- Generator High Temperature Cutout
- Hot Water High Temperature Cutout (Low Temp. Hot Water Driven type only)
- High Temperature Generator High Pressure Cutout (Exhaust Gas Driven type only)
- High Temperature Generator Low Level Cutout (Exhaust Gas Driven type only)

Protective Limits
- Strong Solution Leaving High Temperature Generator Alarm
- Hot Water High Temperature Alarm (Low Temp. Hot Water Driven type only)
- Refrigerant Pump Overload/High Temperature Alarm
- Solution Pump Motor Overload/High Temperature Alarm
- Low Refrigerant Temperature Alarm
- Low Chilled Water Temperature Alarm
- Low Cooling Water Temperature Alarm
- Low Chilled Water Flow Alarm

Overrides
- Hot Water High Temperature (Low Temp. Hot Water Driven type only)
- Generator Solution High Temperature
- High Concentration

Temperature Sensor Faults
- Leaving Chilled Water Temperature
- Cooling Water Temperature Entering Absorber
- Refrigerant Condensate Temperature from Condenser
- Refrigerant Evaporating Temperature
- Strong Solution Temperature Leaving Generator
- Entering Hot Water Temperature (Low Temp. Hot Water Driven type only)
- Exhaust Gas Temperature Cutout (Exhaust Gas Driven type only)

Capacity Control
- Leaving Chilled Water Control
- Running Travel Limit (Control Valve Opening Limit)

Indications
- Chiller Operating Status Message
- Absorption Cycle State Points
- Dilution Cycle
- Power-On
- Alarm
- Safety Shutdown Message
- Run Hours
- Control Valve Position

Microprocessor

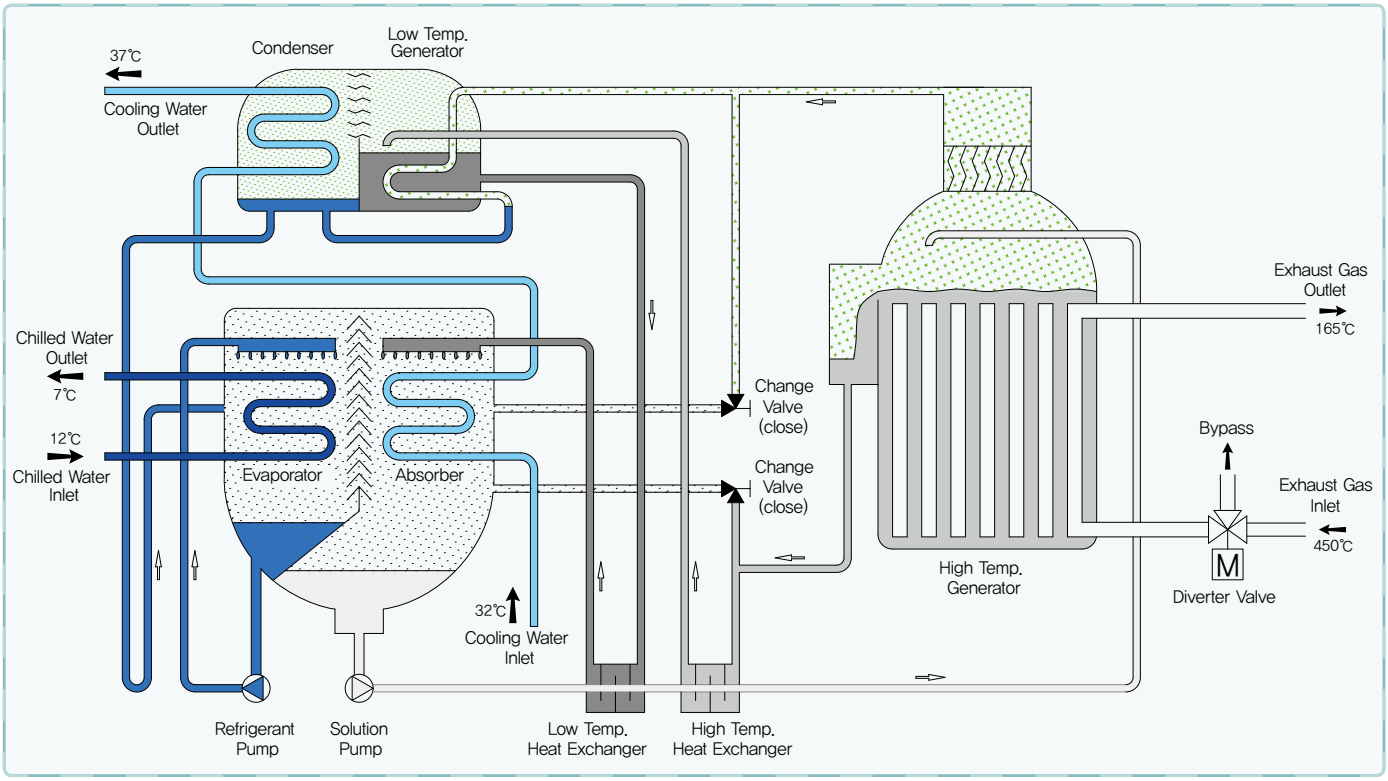
Touch Screen

Control Panel

Absorption Cycle

1 Double Effect Exhaust Gas Driven Absorption Machine _ CHP series

• Cooling Cycle [Cooling Mode]



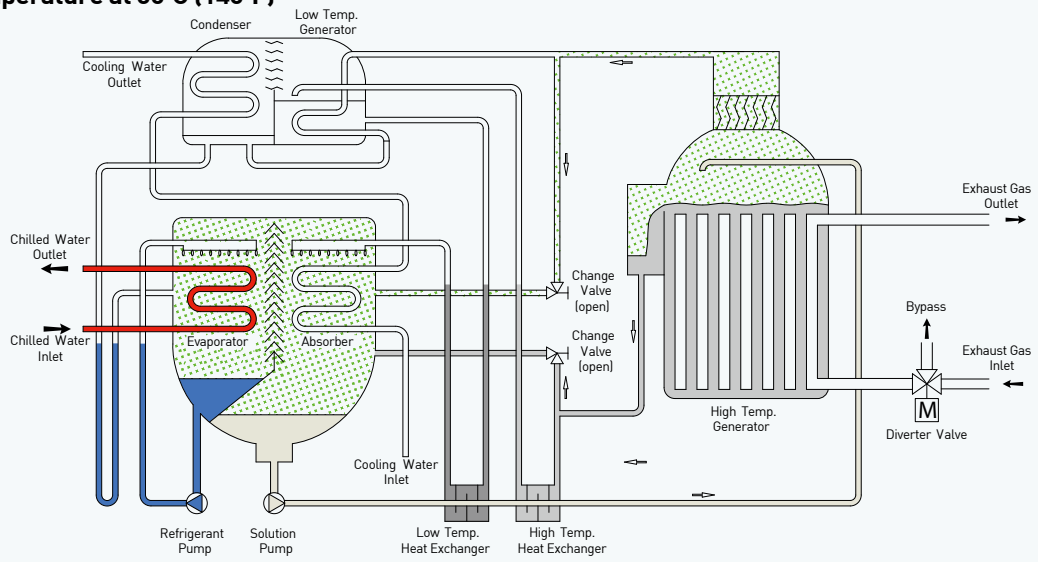
The double-effect, exhaust-gas driven absorption machine consists of an evaporator, absorber, condenser, high-temperature and low-temperature generators, solution heat exchangers, refrigerant and solution pumps , purge system, controls and accessories. During the cooling mode, the machine operates at the condition that under vacuum, water boils at a low temperature. Under typical operating conditions, this occurs at approximately 4.4°C (40°F), thereby cooling the chilled water that circulates through the evaporator tubes. A refrigerant pump is used to spray the refrigerant(water) over the evaporator tubes to improve heat transfer.

To make the cooling process continuous, the refrigerant (water) vapor must be removed as it is produced. To accomplish this, a lithium bromide solution (which has a high affinity for water) is used to absorb the water vapor. As this process continues, the lithium bromide becomes diluted, reducing its absorption capacity. A solution pump then transfers this diluted solution to the generators where it is re-concentrated in two stages (double-effect) to boil off the previously absorbed water. A variable frequency drive on the solution pump automatically maintains optimum solution flow to the generators at all operating conditions for maximum efficiency. The diluted solution is pumped to the high-temperature generator where it is heated and re-concentrated to a medium concentration solution by the exhaust heat from the gas turbine or reciprocating engine exhaust gas. The medium concentration solution from the high-temperature generator flows to the low-temperature generator where it is heated and re-concentrated to a strong solution by the high temperature water vapor released from the solution in the high-temperature generator. Since the low-stage generator acts as the condenser for the high-stage generator, the heat energy first applied in the high-stage generator is used again in the low-stage generator, thus reducing the heat input by approximately 45% as compared to an absorption chiller with a single-stage of re-concentration. The water vapor released in the shell side of the low-stage generator, in addition to the now condensed water vapor from the tube side of the low-stage generator, enters the condenser to be cooled and returned to a liquid state. The refrigerant water then returns to the evaporator to begin a new cycle.

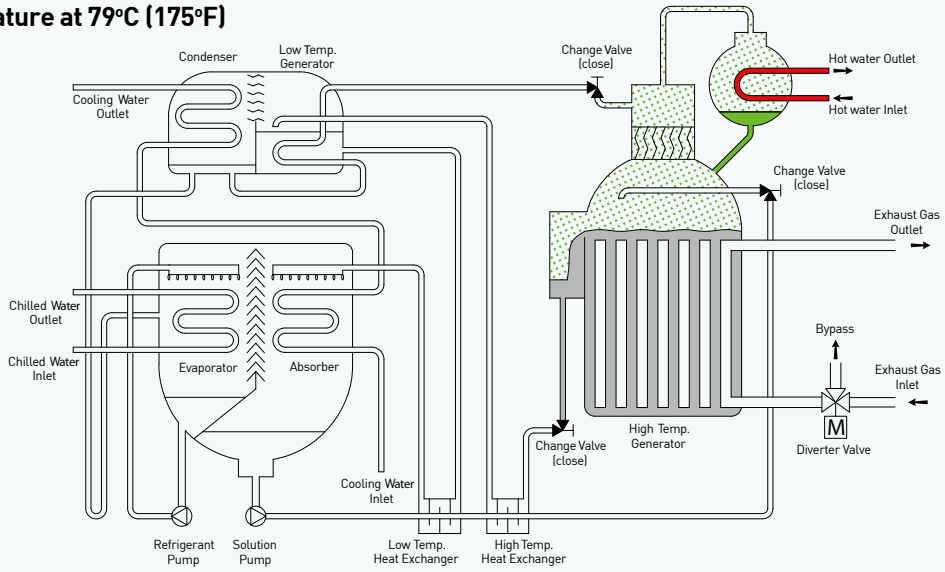
To remove heat from the machine, cooling water from a cooling tower is first circulated through the tubes of the absorber to remove the heat of vaporization. The water is then circulated through the tubes of the condenser. The re-concentrated (strong) solution from the low-stage generator flows back to the absorber to begin a new cycle.
For efficiency purposes, the medium concentration solution from the high-stage generator is passed through the high-temperature solution heat exchanger to pre-heat the diluted (weak) solution, while pre-cooling the medium concentration solution. The re-concentrated (strong) solution from the low-stage generator is passed through the low-temperature solution heat exchanger to pre-heat/pre-cool the solution before being returned to the absorber.

• Heating Cycle [Heating Mode]

Hot water temperature at 60°C (140°F)



Hot water temperature at 79°C (175°F)



During the heating mode, the cycle follows a different vapor flow path than that undertaken for cooling and does not use the typical absorption process. In addition, the absorber-condenser cooling water circuit is drained and thus not operated, since all heat rejection from the machine is designed to take place through the evaporator (now the heating bundle) in a classic two-pipe system that utilizes only the evaporator nozzles.

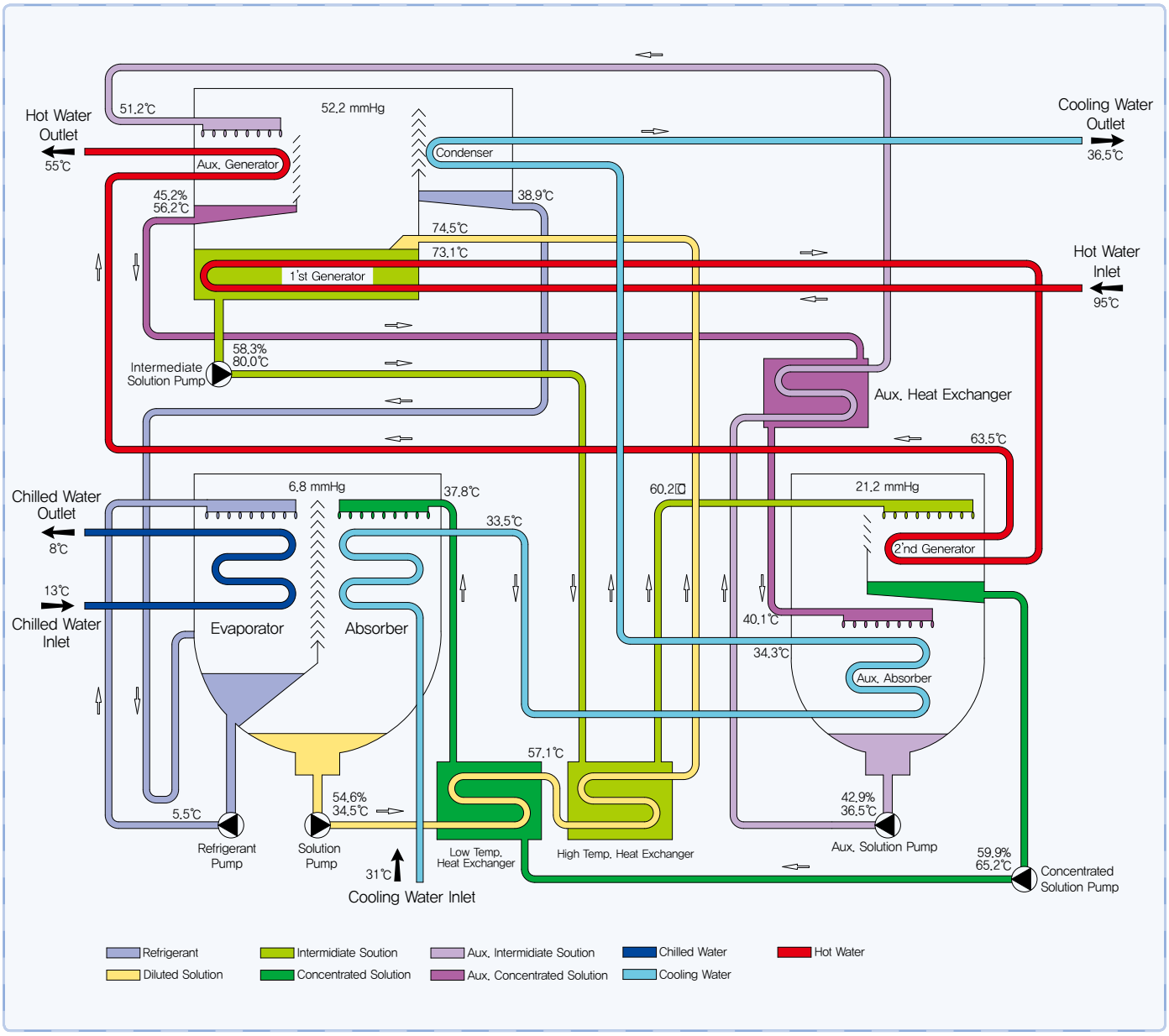
High temperature water vapor produced in the high-temperature generator section is passed directly to the evaporator via the absorber where it condenses and transfers its heat to the water circulating through the evaporator tubes.

This condensed water then flows to the absorber section where it mixes with the concentrated solution returning from the high-temperature generator. The diluted solution is then pumped back to the high-temperature generator to repeat the vapor generation phase for the heating function. Quick changeover from cooling to heating is accomplished by switching the positions of two hand valves, draining the absorber-condenser water circuit and putting the machine into heating mode by changing the position of a switch in the control panel.

The hot water temperatures is 60oC (140oF) as a standard without additional components and 79oC (175oF) as an option with the additional heat exchanger.

Absorption Cycle

2 Single Effect Double Lift Hot Water Driven Absorption Machine _ 2AB series



Double Lift Hot water driven absorption chiller has main cycle and aux. cycle

The chilled water is cooled down in evaporator and the vaporized refrigerant is absorbed into concentrated solution which is coming from 2nd generator. The concentrated solution becomes diluted solution and the heat is absorbed into cooling water.

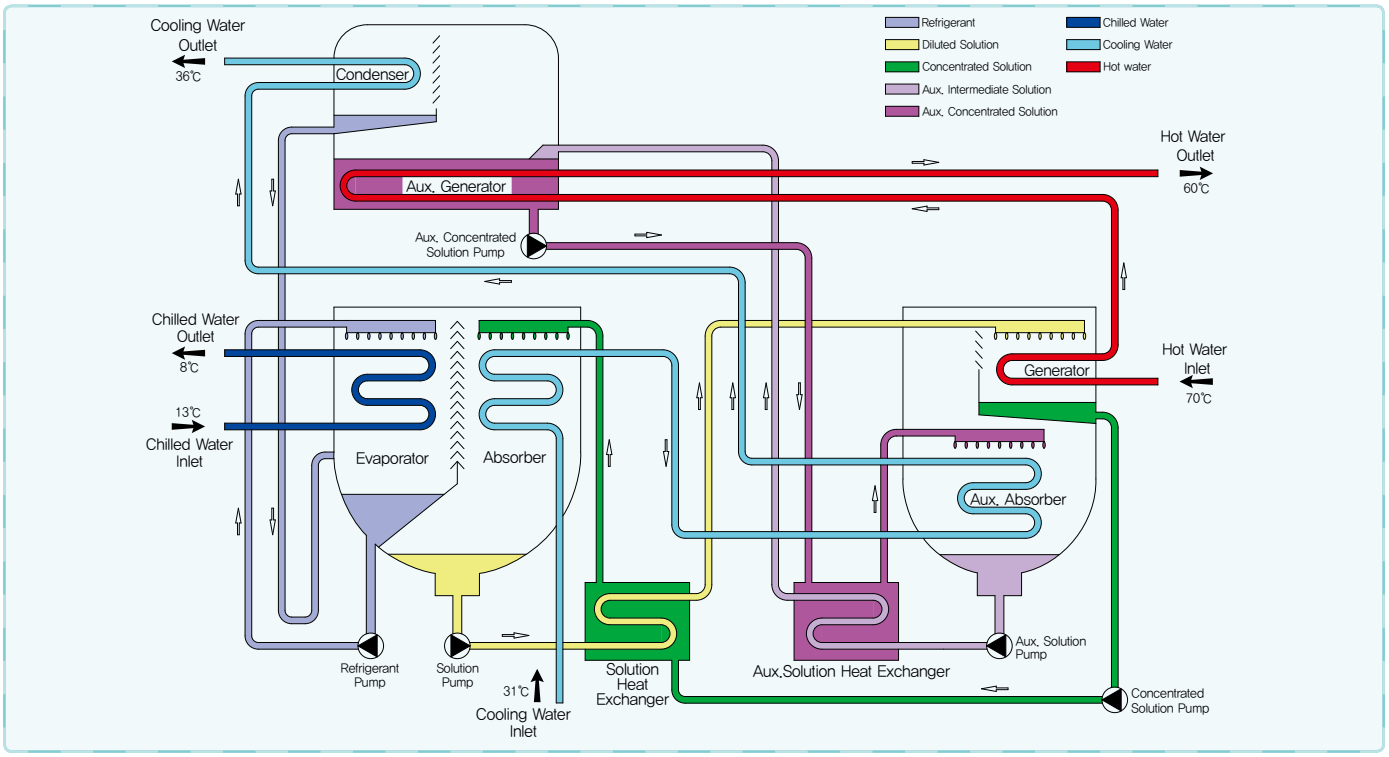
The diluted solution in absorber flows to 1st generator through low temp. heat exchanger and high temp. heat exchanger, and 95°C of driving hot water heats up the diluted solution and refrigerant vapor is generated. The absorbent solution in 1st generator becomes intermediate solution and it flows to 2nd generator through high temp. heat exchanger.

The intermediated solution in 2nd generator is heated up by driving hot water and the refrigerant vapor is generated. The vaporized refrigerant from 2nd generator is absorbed into absorbent solution in aux. absorber and it becomes aux. diluted solution.

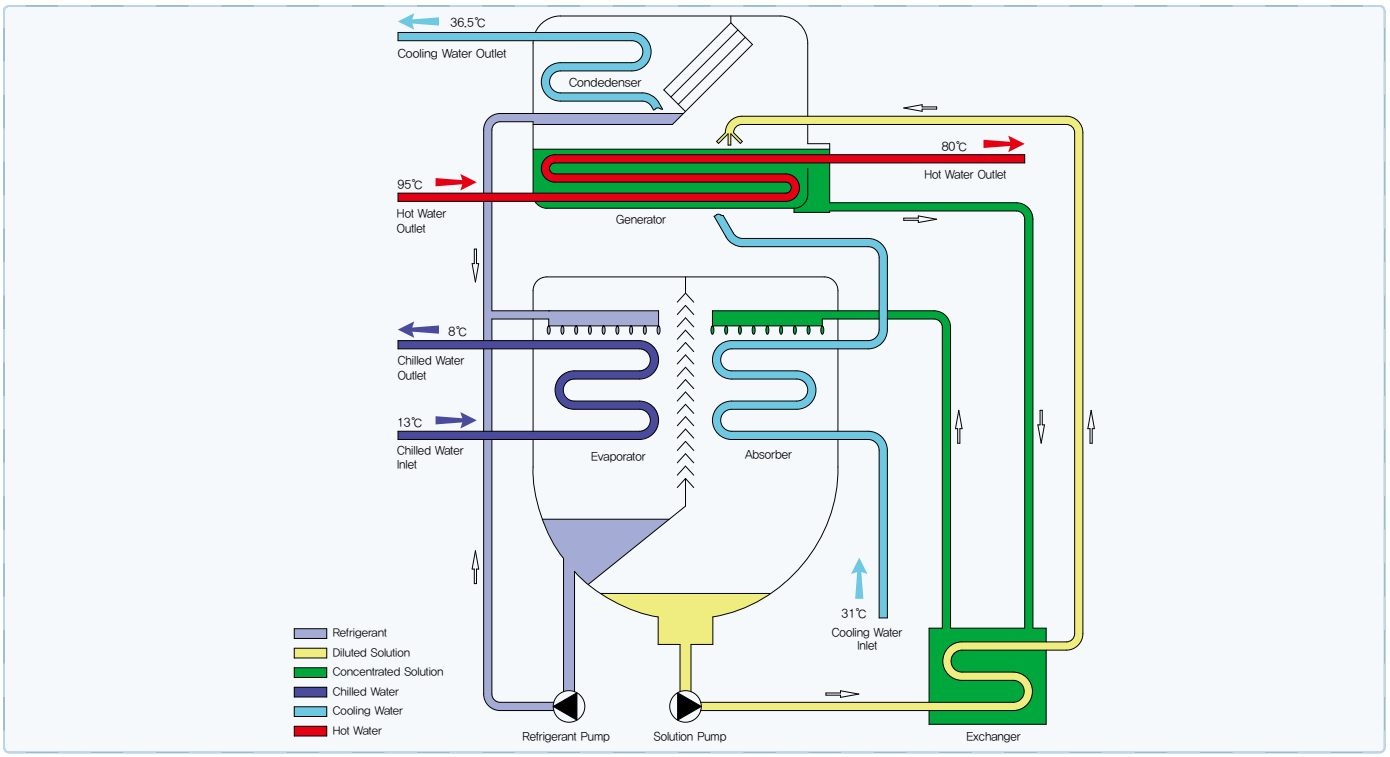
The aux. diluted solution is delivered to aux. generator through aux. heat exchanger, and the solution is heated up by driving hot water return from 2nd generator and becomes aux. concentrated solution. The aux. concentrated solution is delivered to aux. absorber through aux. heat exchanger.

The refrigerant vapors which are generated 1st generator and aux. generator are condensed in condenser and then flow into evaporator, and the heat in condenser is absorbed by cooling water.

3 Waste Heat Recovery Absorption Machine _ 2AA series



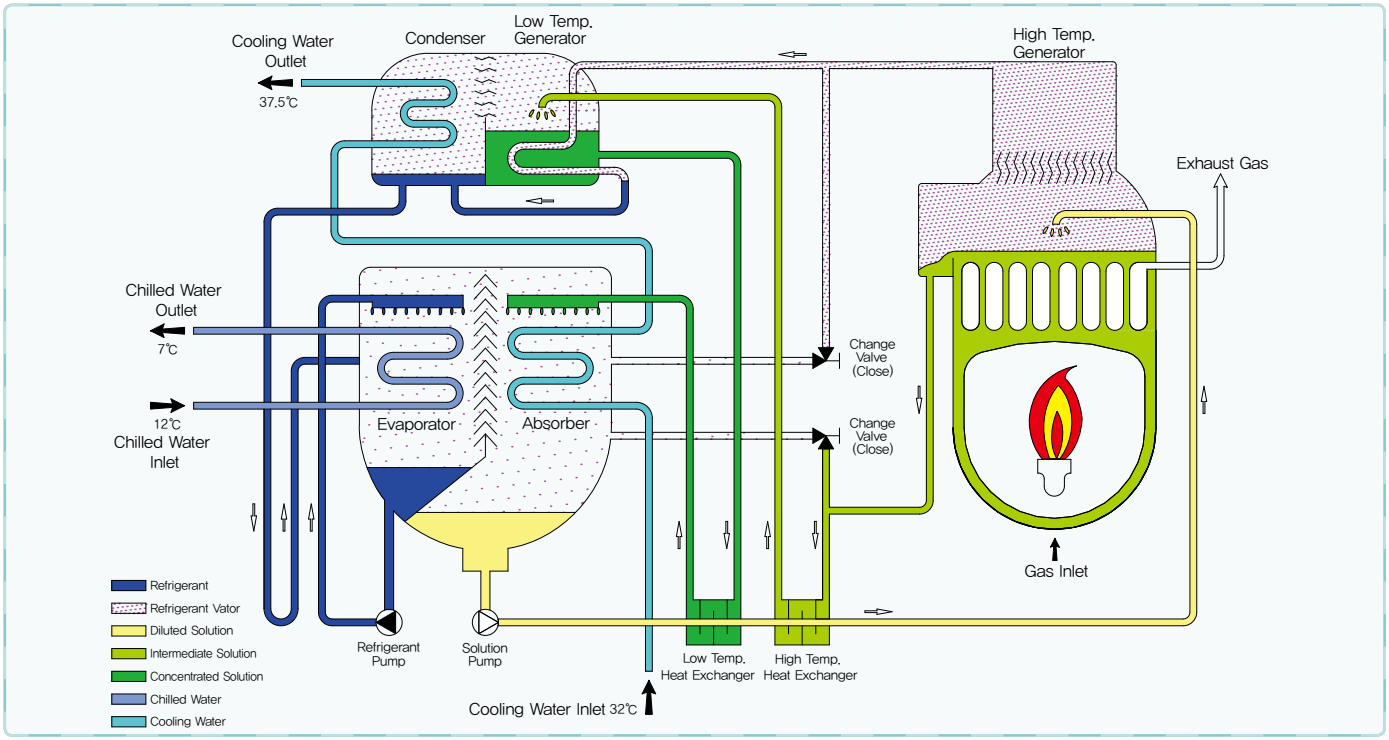
4 Single Effect Hot Water Driven Absorption Machine _ HWAR - L series



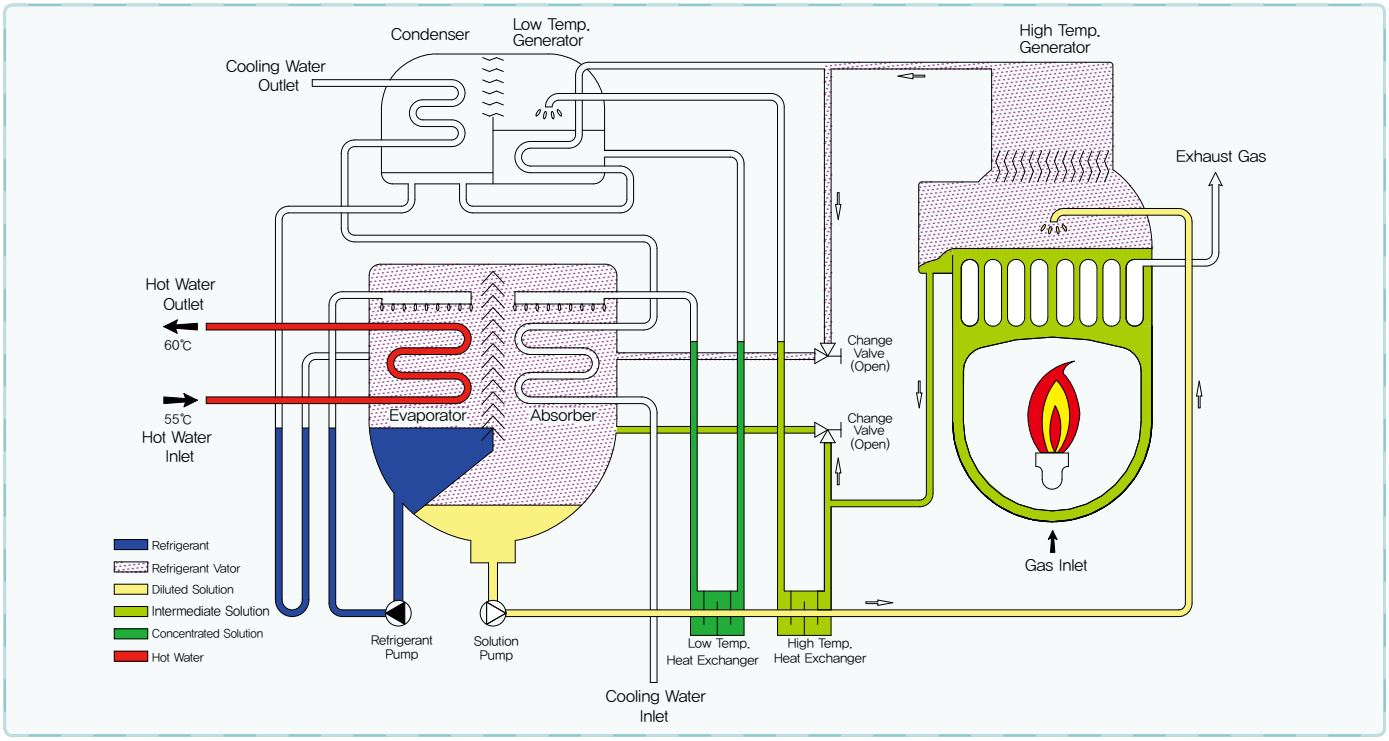
Absorption Cycle

5 Double Effect Direct Fired Absorption Chiller & Heater _ DW series

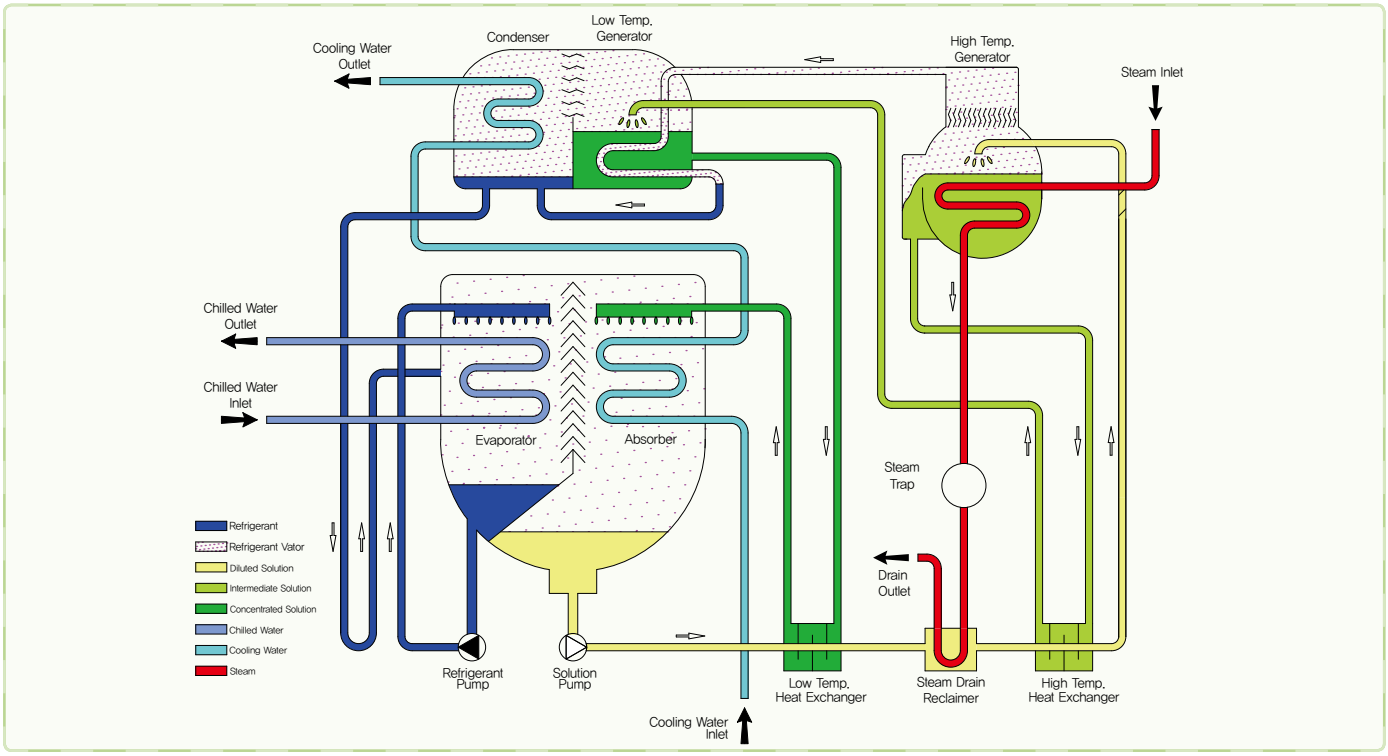
- **Cooling Cycle [Cooling Mode]**



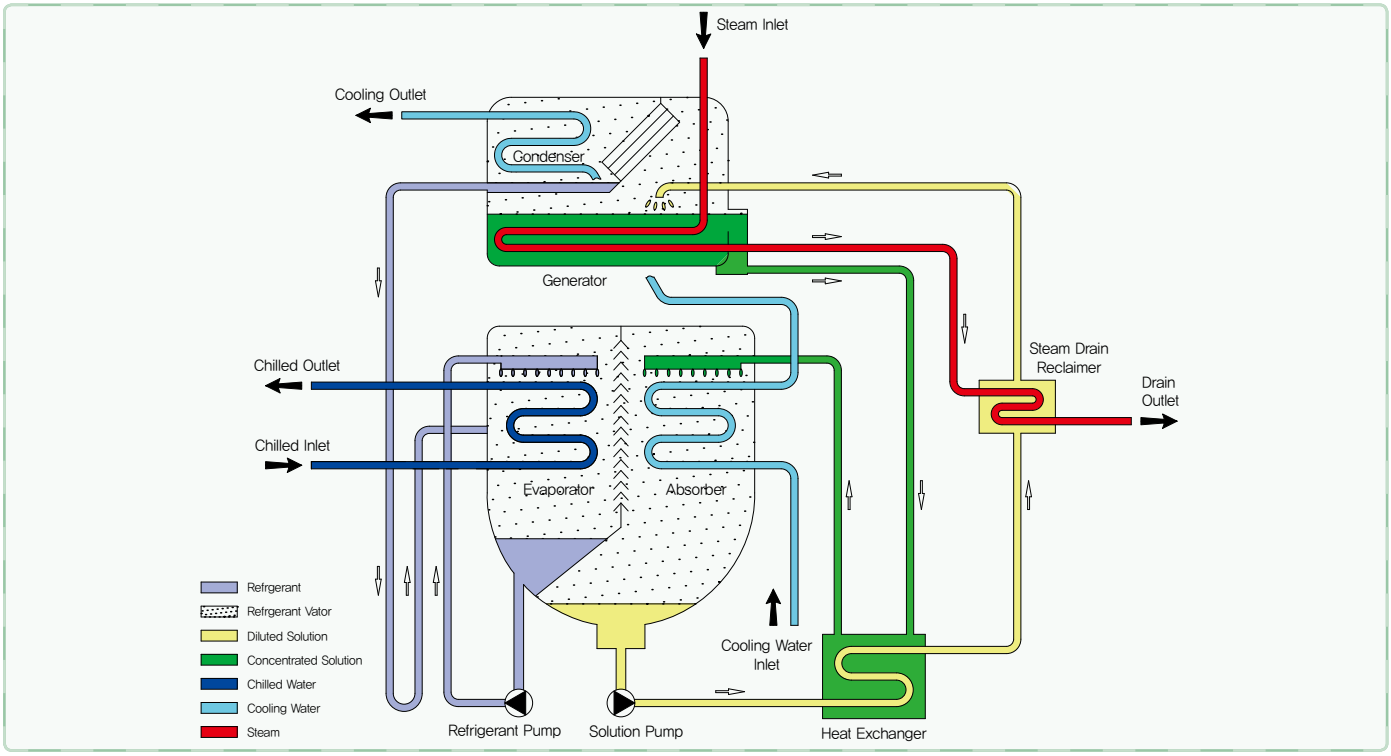
- **Heating Cycle [Heating Mode]**



6 Double Effect Steam Fired Absorption Chiller _ SW Series



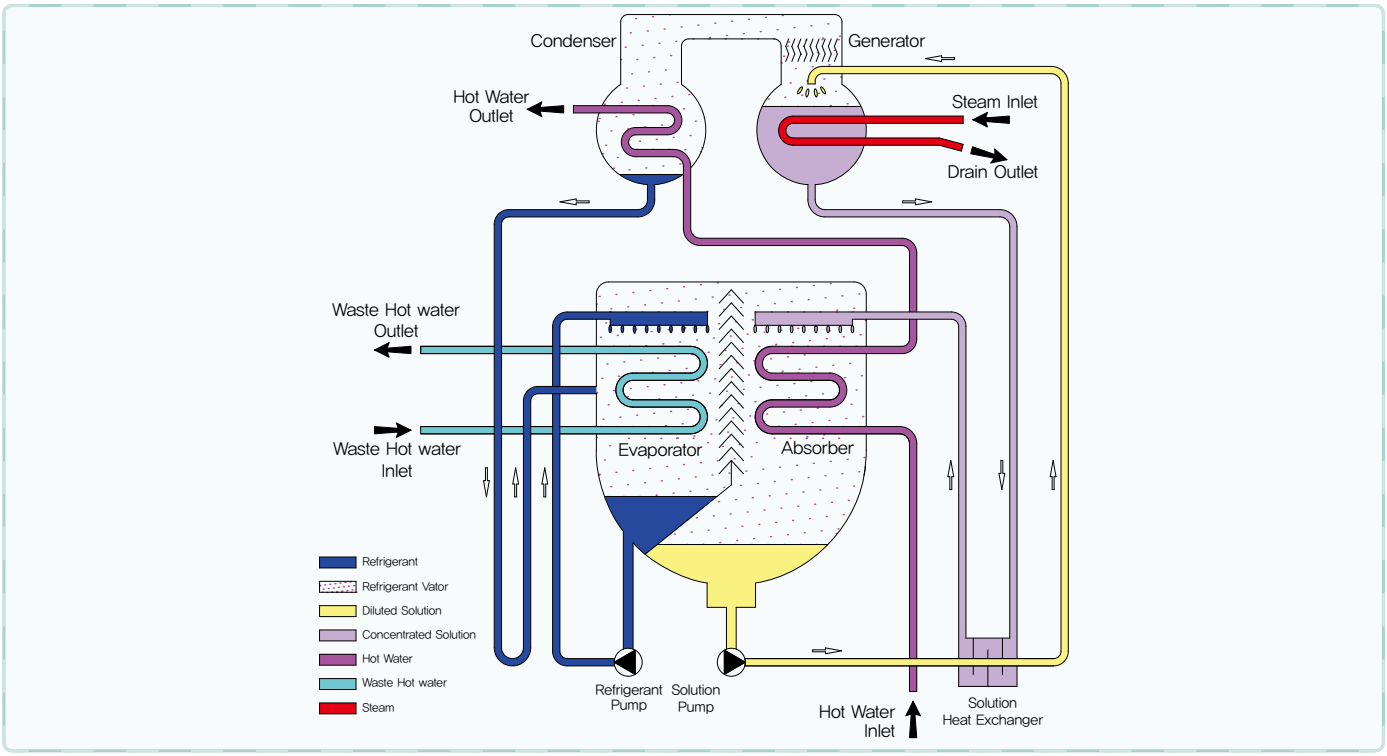
7 Single Effect Steam Fired Absorption Chiller _ S Series



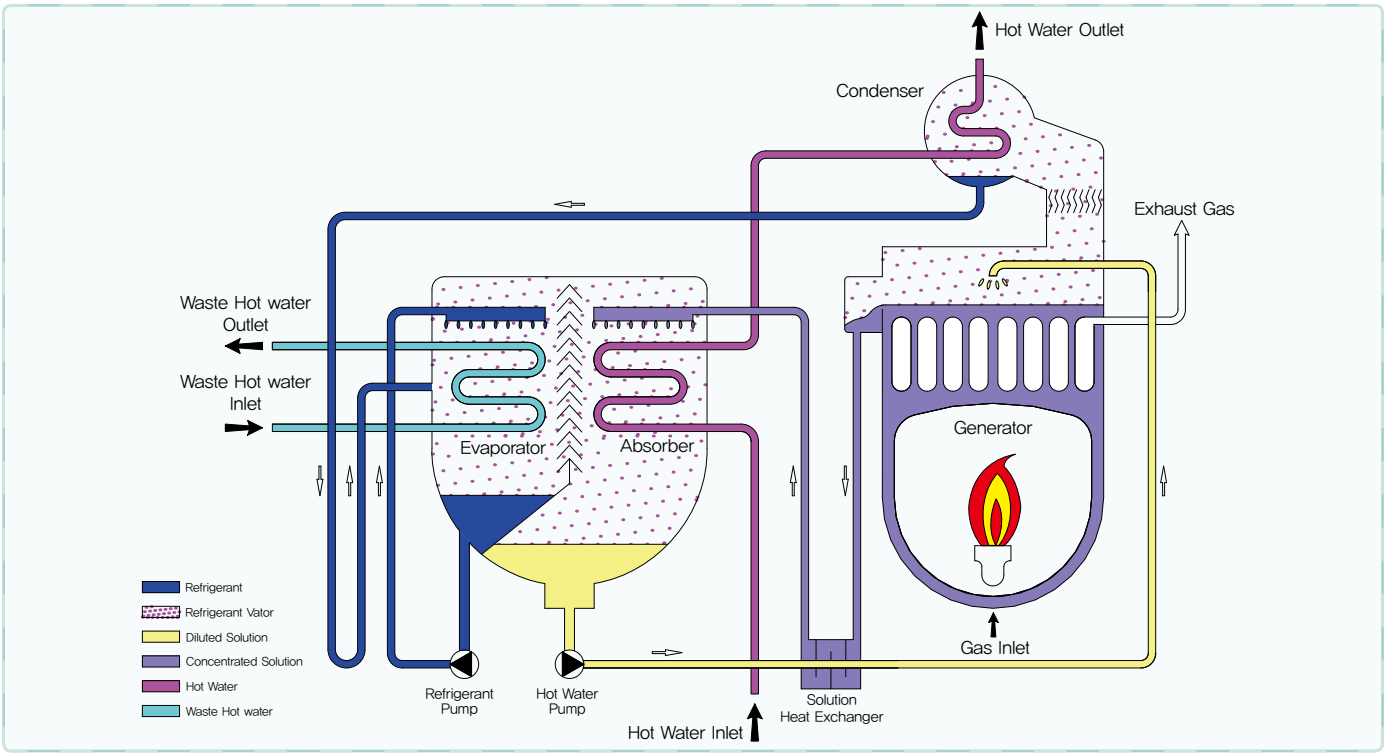
Absorption Cycle

8 Absorption Heat Pump Cycle

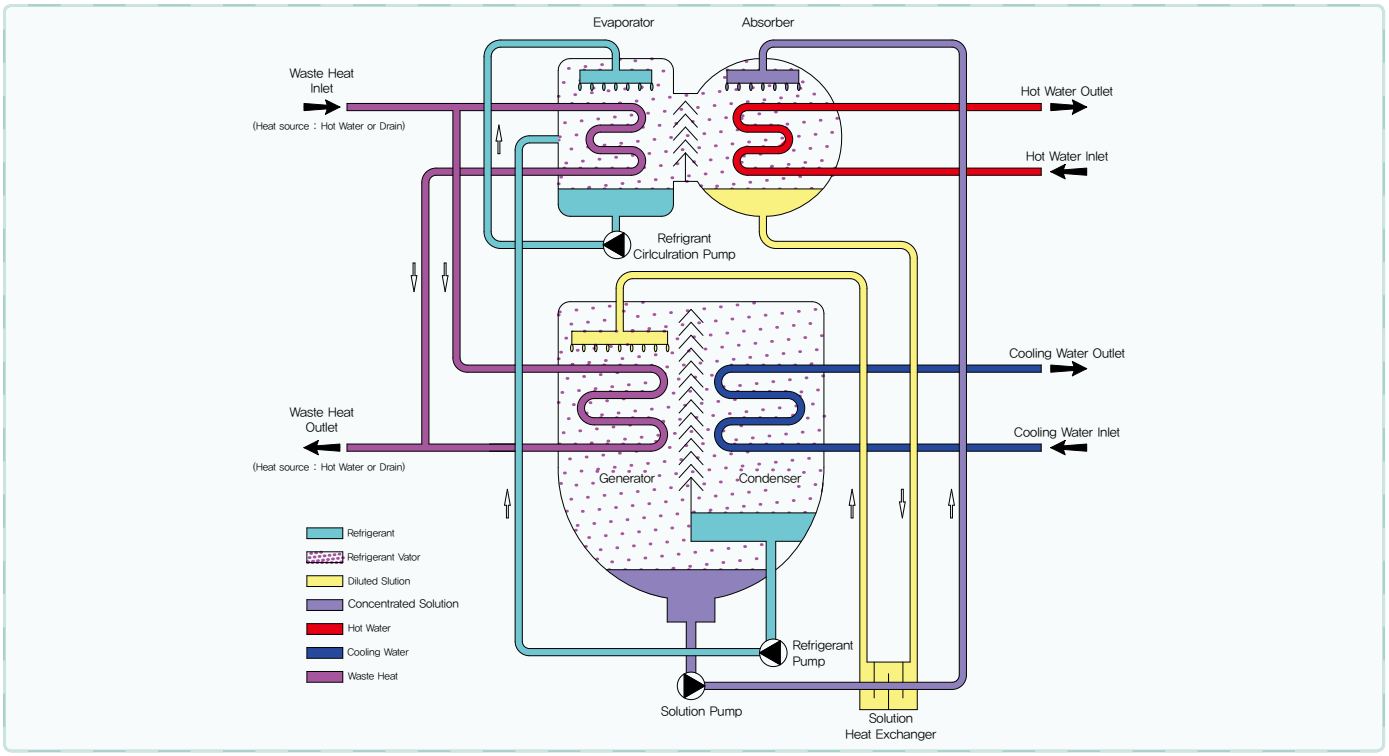
• Steam Fired Type _ HPS series



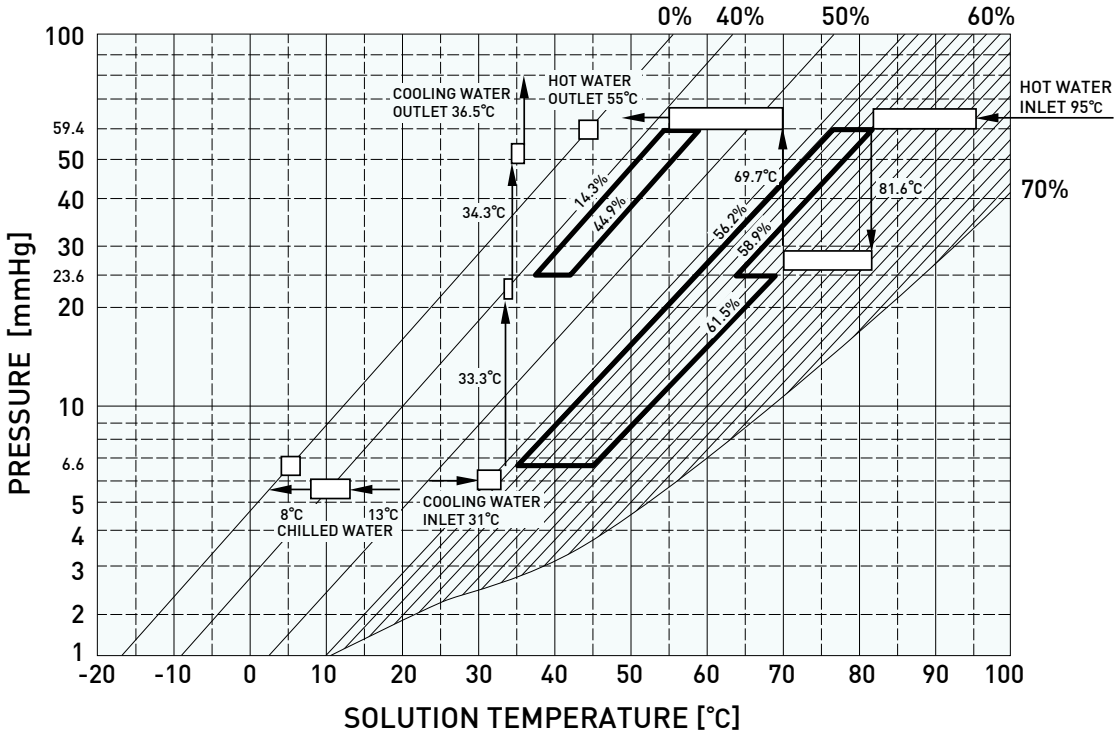
• Direct Fired Type _ HPD series



• Steam Generation Type _ AHT series



• Dühring Diagram _ 2AB Series



Double Effect Exhaust Gas Driven Absorption Machine

Performance Data

Double Effect Exhaust Gas Driven Type (50~400RT) ⟶

Model			Unit	CHP005	CHP006	CHP007	CHP008	CHP010	CHP012	CHP015	CHP018	CHP021	CHP024	CHP028	CHP032	CHP036	CHP040
Cooling Capacity			usRT	50	60	70	80	100	120	150	180	210	240	280	320	360	400
			kW	176	211	246	281	351	422	527	633	738	844	984	1125	1265	1406
Chilled Water	Inlet Temp./Outlet Temp.		℃	12 / 7													
	Flow rate		m^3/h	30.2	36.3	42.3	48.4	60.5	72.6	90.7	109	127	145	169	194	218	242
	P. Drop		mAq	4.0	3.7	6.2	5.6	4.8	5.1	6.6	7.0	6.4	6.3	4.6	4.5	5.0	5.1
	Connection		mm	80				100				125		150			
Cooling Water	Inlet Temp./Outlet Temp.		℃	32 / 37.5													
	Flow rate		m^3/h	50	60	70	80	100	120	150	180	210	240	280	320	360	400
	P. Drop		mAq	7.0	6.1	10.2	9.6	11.1	11.3	11.5	11.8	11.8	12.1	11.2	10.7	11.1	10.8
	Connection		mm	100				125		150				200			
Heating Capacity			Mcal/h	142	170	198	227	283	340	425	510	595	680	793	906	1019	1133
			kW	165	197	230	263	329	395	494	592	691	790	922	1053	1185	1317
Hot Water	Inlet Temp./Outlet Temp.		℃	55.3 / 60													
	Flow rate		ton/h	30	36	42	48	60.5	72.6	90.7	109	127	145	169	194	218	242
	P. Drop		mAq	4.0	3.7	6.2	5.6	4.8	5.1	6.6	7.0	6.4	6.3	4.6	4.5	5.0	5.1
	Connection		mm	80				100				125		150			
Exhaust Gas	Flow rate		kg/sec	0.439	0.527	0.615	0.703	0.88	1.05	1.32	1.58	1.84	2.11	2.46	2.81	3.16	3.51
	Temp.	Cooling	℃	450 / 165													
		Heating	℃	450 / 125													
	Pressure Drop		mmAq	58	58	74	71	77	82	79	92	97	113	129	131	123	131
	Inlet Conn.		mm·mm	782*291	782*330	782*369	782*408	922*408	922*486	922*603	922*642	922*681	922*681	922*798	922*876	1376*720	1376*759
	Outlet Conn		mm	300				400				500				600	
	Diverter Valve		mm	300				400				500				600	
Electric	Power source		kW	3ø, 400V, 50Hz													
	Abs. Pump		kW [A]	1.5 (5.5)				2.0 (6.4)				2.4 (6.9)				3.2 (9.0)	
	Ref. Pump		kW [A]	0.2 (1.0)				0.3 (1.2)				0.4 (1.4)					
	Purge Pump		kW [A]	0.4 (1.4)													
	Sealing Blower		kW [A]	0.4 (2.5)													
	Control Panel		kW [A]	0.2 (0.5)													
	Amp.(400Vac)		A	10.8				11.9				12.6				14.7	
Size	Lenght (L)		mm	2100		2600		2,638		3,680		3,717		4,742		4,872	
	Width (W)		mm	1,683	1,722	1,761	1,800	1,857	1,935	2,052	2,091	2,194	2,194	2,310	2,349	2,349	2,349
	Height (H)		mm	1800				2,090				2,147				2,399	
Weight	Rigging		ton	3.0	3.2	3.7	3.9	5.0	5.3	6.4	6.8	7.9	8.5	9.8	10.3	12.8	13.2
	Operation		ton	3.2	3.5	4.0	4.3	5.4	5.8	7.0	7.4	8.6	9.3	10.7	11.3	14.0	14.6

Note

1. Working pressure of each water side is based on 1.0MPa (150psig).
2. Lowest outlet temperature of chilled water is 5°C and 18°C for cooling water.
3. Controllable cooling capacity range shall be 25~100% as a standard condition and 0~100% as an option.
4. Each water flow can be adjusted within 50~120%.
5. Fouling factor 0.0001m^2.h.°C/kcal for Absorber and Condenser, 0.0001m^2.h.°C/kcal for Evaporator and Generator.
6. 79°C of hot-water temperature is possible as an option.

CHP Series

Double Effect Exhaust Gas Driven Absorption Machine

Performance Data

Double Effect Exhaust Gas Driven Type (450~1500RT)

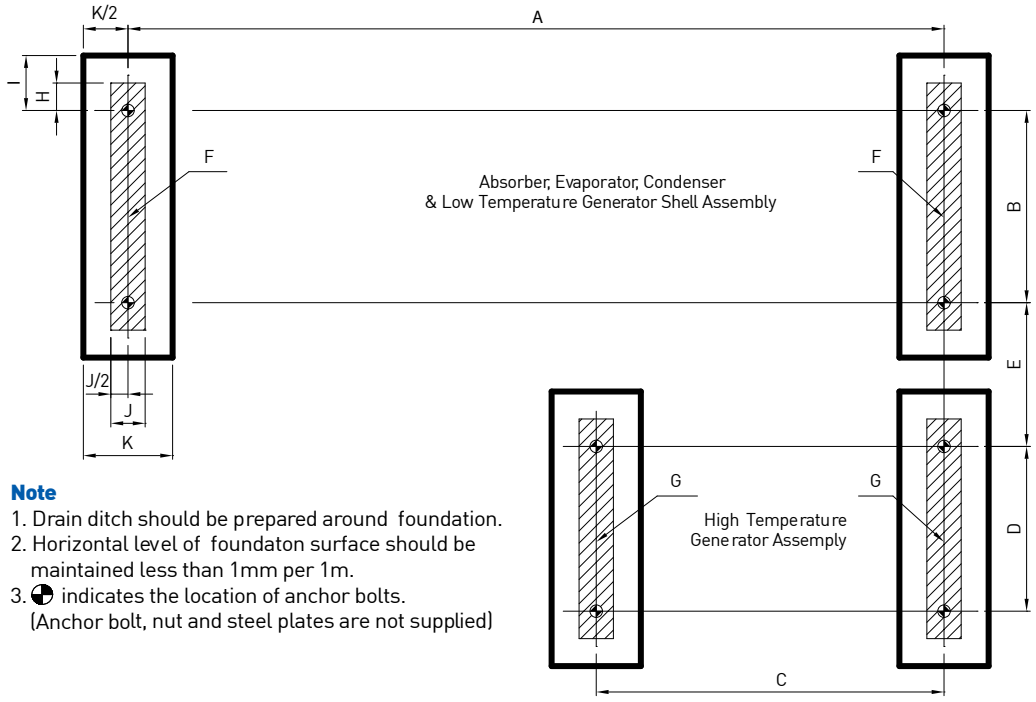
Model			Unit	CHP045	CHP050	CHP056	CHP063	CHP070	CHP080	CHP090	CHP100	CHP110	CHP120	CHP130	CHP140	CHP150
Cooling Capacity			usRT	450	500	560	630	700	800	900	1000	1100	1200	1300	1400	1500
			kW	1582	1757	1968	2214	2460	2812	3163	3515	3866	4218	4569	4921	5272
Chilled Water	Inlet Temp./Outlet Temp.		℃	12 / 7												
	Flow rate		m^3/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	P. Drop		mAq	4.4	3.9	3.6	5.0	6.6	4.7	6.4	8.5	7.2	9.2	11.5	8.3	10.2
	Connection		mm	200					250			300			350	
Cooling Water	Inlet Temp./Outlet Temp.		℃	32 / 37.5												
	Flow rate		m^3/h	450	500	560	630	700	800	900	1000	1100	1200	1300	1400	1500
	P. Drop		mAq	10.7	10.8	7.7	10.6	14.0	8.7	11.8	15.6	3.0	3.8	4.8	4.0	4.8
	Connection		mm	250		300			350			400				
Heating Capacity			Mcal/h	1274	1416	1586	1784	1982	2266	2549	2832	3115	3398	3682	3965	4248
			kW	1481	1646	1843	2074	2304	2633	2962	3291	3621	3950	4279	4608	4937
Hot Water	Inlet Temp./Outlet Temp.		℃	55.3 / 60												
	Flow rate		ton/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	P. Drop		mAq	4.4	3.9	3.6	5.0	6.6	4.7	6.4	8.5	7.2	9.2	11.5	8.3	10.2
	Connection		mm	200					250			300			350	
Exhaust Gas	Flow rate		kg/sec	3.95	4.39	4.92	5.53	6.15	7.03	7.91	8.78	9.66	10.54	11.42	12.30	13.18
	Temp.	Cooling	℃	450 / 165												
		Heating	℃	450 / 125												
	Pressure Drop		mmAq	133	134	143	133	146	155	153	176	213	221	212	206	184
	Inlet Conn.		mm·mm	1376*837	1376*915	1376*1008	1376*1143	1376*1233	1376*1218	1376*1368	1376*1418	1376*1418	1376*1518	1376*1668	1376*1818	1376*2068
	Outlet Conn		mm	600		750						1000				
	Diverter Valve		mm	600		750						1000				
Electric	Power source		kW	3ø, 400V, 50Hz												
	Abs. Pump		kW [A]	3.2 (9.0)		5.5 (15.0)						7.5 (24.0)				
	Ref. Pump		kW [A]	0.3 (1.2)					1.5 (4.0)							
	Purge Pump		kW [A]	0.4 (1.4)								0.75 (2.2)				
	Sealing Blower		kW [A]	0.4 (2.5)												
	Control Panel		kW [A]	0.2 (0.5)												
	Amp.(400Vac)		A	14.7		20.7			23.3			33.1				
Size	Lenght (L)		mm	4,954		4,998	5,540	6,038	5,644	6,142	6,667	6,293	6,818	7,318	6,974	7,475
	Width (W)		mm	2,491	2,569	2,934	3,069	3,159	3,330	3,480	3,530	4,348	4,448	4,598	4,932	5,182
	Height (H)		mm	2,633		2,962			3,380			3,500			3,700	
Weight	Rigging		ton	15.7	16.5	21.2	23.1	24.6	31.0	33.6	35.6	41.1	43.4	46.4	50.2	54.1
	Operation		ton	17.2	18.1	23.7	25.8	27.5	34.8	37.6	39.9	46.2	48.8	52.1	56.5	60.8

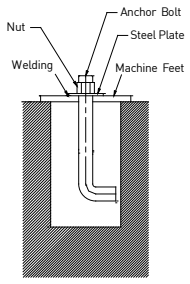
Note

1. Working pressure of each water side is based on 1.0MPa (150psig).
2. Lowest outlet temperature of chilled water is 5℃ and 18℃ for cooling water.
3. Controllable cooling capacity range shall be 25~100% as a standard condition and 0~100% as an option.
4. Each water flow can be adjusted within 50~120%.
5. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator and Generator.
6. 79℃ of hot-water temperature is possible as an option.

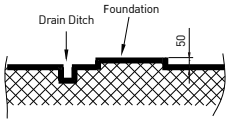
Double Effect Exhaust Gas Driven Absorption Machine

Foundation





Example of Anchoring

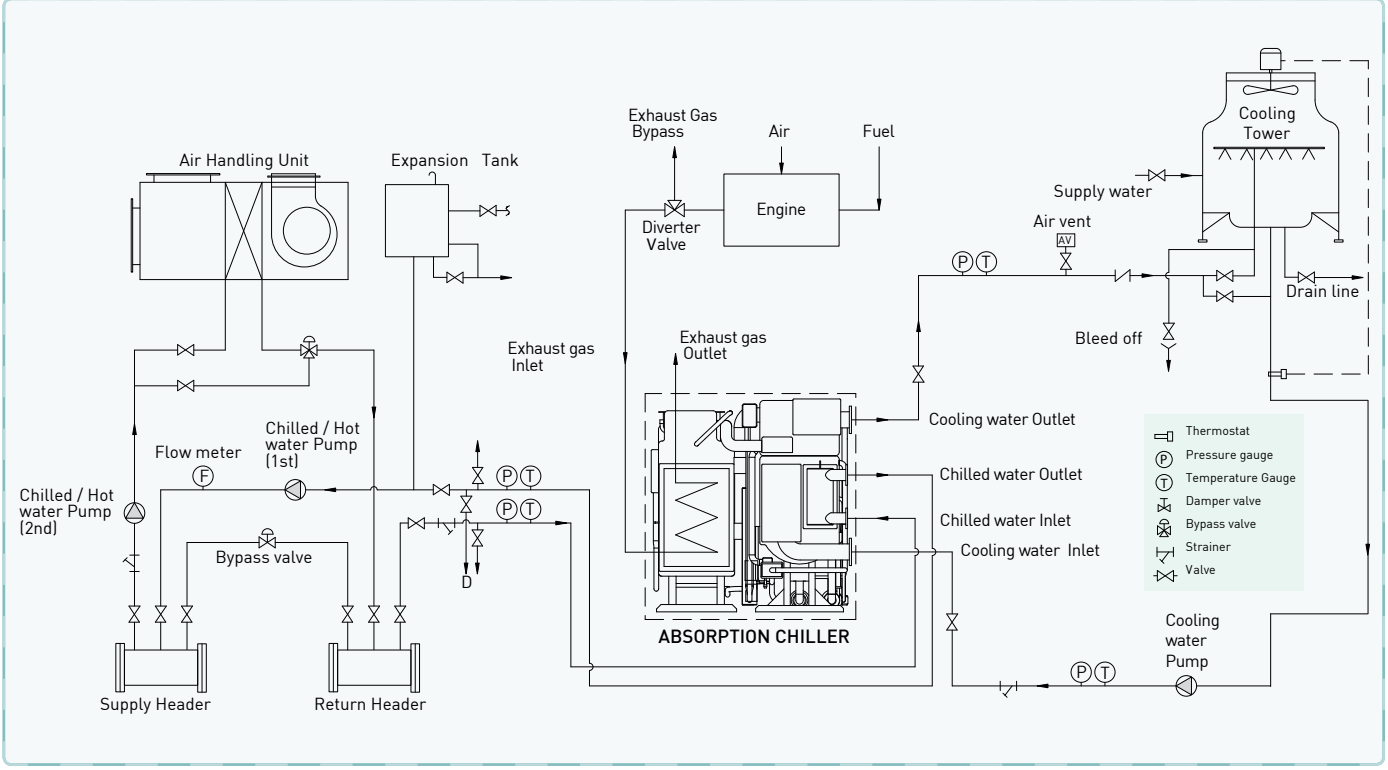


Note

1. Drain ditch should be prepared around foundation.
2. Horizontal level of foundaton surface should be maintained less than 1mm per 1m.
3. ⊕ indicates the location of anchor bolts. (Anchor bolt, nut and steel plates are not supplied)

Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	H (mm)	I (mm)	J (mm)	K (mm)	F (ton)	G (ton)
CHP005	1,421	800	973	322	236	100	200	125	325	1.0	0.5
CHP006				322	236					1.1	0.6
CHP007	1,921		1,033	400	236					1.2	0.7
CHP008				400	236	50	150			1.3	0.8
CHP010	1,941	700	1,194	400	382	100	200	125	325	2.0	0.7
CHP012				500	371					2.1	0.8
CHP015	2,961			600	292					2.5	1.0
CHP018				600	292					2.6	1.1
CHP021	2,936	1,010	1,307	641	289	115	215	150	350	3.1	1.2
CHP024			1,453	641	289					3.4	1.3
CHP028	3,956		1,386	800	267					3.9	1.4
CHP032				800	287					4.1	1.5
CHP036	3,906	900	1,404	816	342	105	205	200	400	5.1	1.9
CHP040			1,567	816	342					5.3	2.0
CHP045		990	1,370	800	352					6.2	2.4
CHP050				900	341					6.4	2.6
CHP056	3,856	1,150	1,600	1,000	445	105	205	300	500	8.8	3.0
CHP063	4,398			1,100	463					9.6	3.3
CHP070	4,896			1,200	458					10.3	3.5
CHP080	4,348	1,210	2,400	1,200	486					12.4	4.9
CHP090	4,846			1,400	461					13.4	5.4
CHP100	5,371			1,400	486					14.4	5.6
CHP110	4,896	1,290	2,500	1,400	1,171					17.3	5.8
CHP120	5,421			1,500	1,171					18.3	6.1
CHP130	5,921			1,700	1,146					19.4	6.6
CHP140	5,371	1,500		1,800	1,131					21.1	7.1
CHP150	5,871			2,100	1,106					22.4	8.0

System Pipings

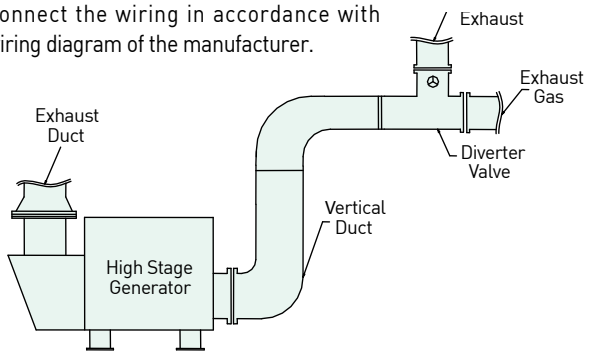


1) All external equipment out of dotted line is scope of customer's.
2) Refer to outline drawing and specification data sheet for the external dimensions of the machine, the location & the diameter of water pipe connection and the dimensions & the size of Exhaust gas line connections.
3) The locations of chilled water pumps, cooling water pumps and expansion tanks shall be determined in consideration of the hydrostatic head of pumps and the height of building. And the Machine shall not be subject to a pressure higher than the designed pressure at any water header.
4) For cooling water quality control, it is recommended to install cooling water bleed-off device on the inlet pipe line of cooling towers.
5) Around 10 meshes of strainers are recommended to be installed in the cooling water line.
6) For the maintenance and the inspection of the Machine, the following equipment shall be installed on each chilled water and cooling water inlet/outlet lines as well as stop valve.
   - Thermometers and pressure gauges shall be installed at chilled and cooling water inlet/outlet.
   - Air relief valves shall be installed on each chilled and cooling water lines at higher points than each water headers.
   - Drain valves shall be installed at the lowest position between the stop valves of chilled and cooling water and the Machine and the drain valve shall be piped to the drain ditch.
7) There shall be a sufficient clearance for access to the absorber, evaporator, condenser, and generator to facilitate inspection and cleaning work.

Diverter Valve & Exhaust Gas Duct

For Diverter Valve;

1) Install the diverter valve at the exhaust gas duct end of gas turbine or reciprocating engine and level the diverter valve horizontally by using the level gauge.
2) Install the transient duct between high-stage generator and diverter valve.
3) Connect the wiring in accordance with wiring diagram of the manufacturer.



For Exhaust Gas Duct;

1) Sharp bend and restrictions should be avoided to allow smooth gas flow.
2) The exhaust gas duct outlet should be arranged to prevent the rain water from entering into the machine and the drain connection should be provided to remove the condensate from the exhaust gas outlet side.

Double Effect Exhaust Gas Driven Absorption Machine

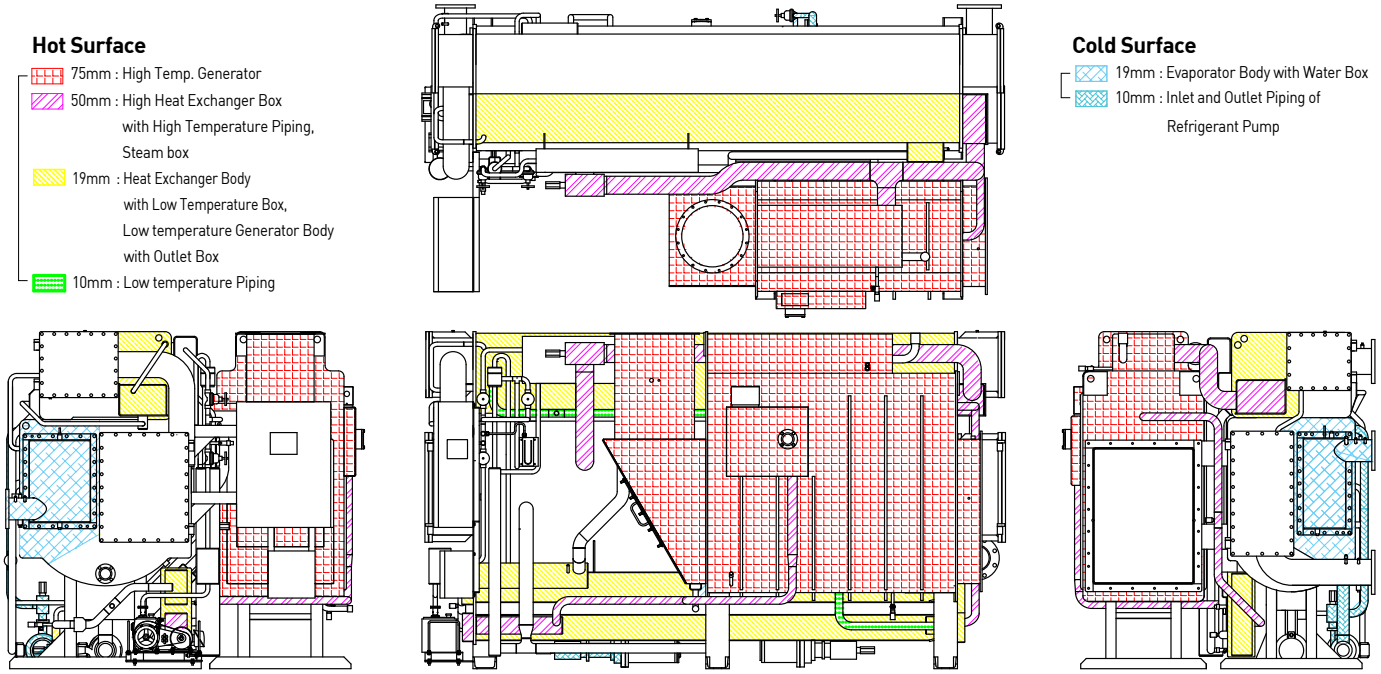
Thermal Insulation

Hot Surface

- 75mm : High Temp. Generator
- 50mm : High Heat Exchanger Box with High Temperature Piping, Steam box
- 19mm : Heat Exchanger Body with Low Temperature Box, Low temperature Generator Body with Outlet Box
- 10mm : Low temperature Piping

Cold Surface

- 19mm : Evaporator Body with Water Box
- 10mm : Inlet and Outlet Piping of Refrigerant Pump



Note

1. Use only Non-inflammable or Incombustible insulation materials.
2. Do not insulate motor of refrigerant pump.
3. Total insulation area includes piping.
4. Do not cover components such as service valves, dampers, diaphragm valves, sight glass, control valves or thermometers or sensor wells.
5. The standard Material and Thickness as the recommendation :

HOT Surface insulation

- Material of insulation : Glass wool, Thermal Conductivity 0.04kcal/m·h·℃
- Thickness of insulation : 50mm (2 inch), 75mm (3 inch)
- Material of insulation : Closed cell type Non-inflammable polymer sponge
- Thickness of insulation : 10mm (3/8inch), 19mm (3/4inch)

COLD Surface insulation

- Material of insulation : Closed cell type Non-inflammable polymer sponge
- Thickness of insulation : 10mm (3/8 inch), 19mm (3/4 inch)

Wrapping Material when Glass wool is used.

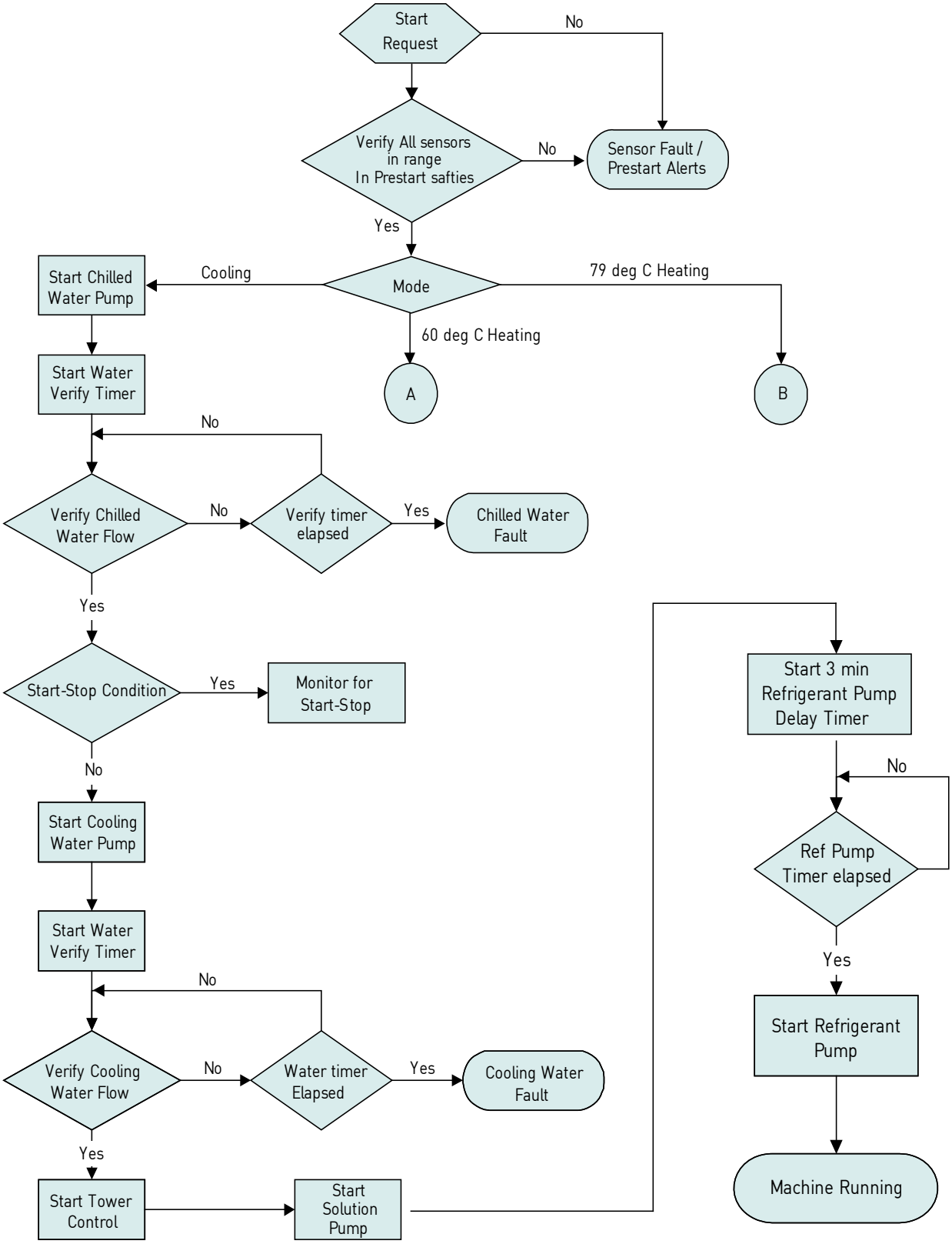
- Insulated parts on body : Colored galvanized steel with 0.45mm thickness or over
- Insulated parts on pipes : Colored galvanized steel with 0.30mm thickness or over

6. For insulation area for each model, please refer to the picture below.
7. The water box sections should be worked to be disassembled for the repair.
8. If necessary, please perform the finish painting in the field after completing the insulation work.

Model (mm)	Hot Surface (m²)				Cold Surface (m²)	
	75mm	50mm	19mm	10mm	19mm	10mm
CHP005	8.2	0.9	3.9	0.4	2.6	0.3
CHP006	8.2	0.9	3.9	0.4	2.6	0.3
CHP007	8.2	0.9	3.9	0.4	2.6	0.3
CHP008	8.2	1.1	4.2	0.3	2.6	0.3
CHP010	9.5	1.8	5.1	0.7	3.6	0.3
CHP012	10.4	1.8	5.2	0.7	3.6	0.3
CHP015	11.2	2.2	7.5	0.7	4.8	0.3
CHP018	11.4	2.2	7.5	0.7	4.8	0.3
CHP021	12.8	2.2	8.5	0.7	5.8	0.3
CHP024	13.6	22.2	8.5	0.9	5.8	0.4
CHP028	14.1	2.5	10.2	1.1	7.1	0.4
CHP032	18.2	2.5	10.2	1.1	7.1	0.4
CHP036	18.4	3.0	11.3	1.2	7.9	0.4
CHP040	18.4	3.0	11.3	1.2	7.9	0.4

Model (mm)	Hot Surface (m²)				Cold Surface (m²)	
	75mm	50mm	19mm	10mm	19mm	10mm
CHP045	20.6	3.1	12.4	1.2	7.9	0.4
CHP050	21.3	3.1	12.4	1.2	11	0.4
CHP056	23.4	7.5	9.5	1.4	13.5	0.6
CHP063	24.7	8.3	9.5	1.4	15	0.7
CHP070	25.3	9.2	9.5	1.5	16	0.7
CHP080	32.1	10.5	11.0	1.6	17	1.1
CHP090	33.7	11.5	11.4	1.6	18.5	1.2
CHP100	34.2	13.0	11.8	1.7	20	1.2
CHP110	36.5	15.5	13.7	1.7	22.5	1.4
CHP120	37.6	16.8	14.0	1.7	22.2	1.4
CHP130	39.3	18.2	14.3	1.8	23.4	1.4
CHP140	41.1	18.1	14.6	1.8	26.6	1.5
CHP150	43.9	19.6	15.1	1.8	27.6	1.5

Start-up Sequence



Single Effect Double Lift Hot Water Driven Absorption Machine

Performance Data

Single Effect Double Lift Hot water Driven Type (75~375RT) ⟶

Model			Unit	2AB075	2AB090	2AB110	2AB135	2AB155	2AB180	2AB210	2AB240	2AB270	2AB300	2AB340	2AB375
Cooling Capacity			kW	264	316	387	475	545	633	738	844	949	1,055	1,196	1,319
			usRT	75	90	110	135	155	180	210	240	270	300	340	375
Chilled Water	Inlet Temp./Outlet Temp.		℃	12 / 7											
	Flow rate		m^3/h	45.4	54.4	66.5	81.6	93.7	109	127	145	163	181	206	227
	P. Drop		mH_2O	3.7	3.8	4.6	4.8	4.1	4.6	3.2	3.4	3.4	3.5	3.1	3.2
	Connection		mm	80		100		125				150		200	
Cooling Water	Inlet Temp./Outlet Temp.		℃	31 / 36.5											
	Flow rate		m^3/h	107	129	157	193	222	257	300	343	386	429	486	536
	P. Drop		mH_2O	10.3	10.8	5.2	5.8	5.9	6.3	11.4	11.3	10.8	10.6	11.0	11.3
	Connection		mm	125		150				200		250			
Hot Water	Inlet Temp./Outlet Temp.		℃	95 / 55											
	Flow rate		ton/h	9.0	10.8	13.2	16.2	18.6	21.6	25.2	28.8	32.4	36.0	40.8	45.0
			m^3/h	9.4	11.2	13.7	16.8	19.3	22.4	26.2	29.9	33.7	37.4	42.4	46.8
	Pressure Drop	Shell	mH_2O	3.1	3.3	2.9	3.5	3.1	3.3	6.7	6.9	6.3	6.3	6.2	6.2
		Control Valve	mH_2O	2.2	3.2	4.7	3.0	3.9	5.2	2.9	3.7	4.7	2.3	3.0	3.6
	Connection		mm	65				80				100			
	Control Valve		mm	40			50			65			80		
Electric	Power source		-	3ø, 400V, 50Hz											
	Abs. Pumps		kW (A)	2.3 (8.8)				2.6 (9.8)				3.2 (10.8)			
	Ref. Pump		kW (A)	0.2 (1.1)		0.3 (1.5)				0.4 (1.5)					
	Purge Pump		kW (A)	0.4 (1.5)											
	Control Panel		kW (A)	0.2 (0.5)											
	Total kW		kW	3.1		3.2		3.5		3.6		4.2			
	Total Ampere		A	11.9		12.3		13.3				14.3			
Size	Lenght (L)		mm	2,658		3,678		3,720		4,740		4,872		4,882	
	Width (W)		mm	1,834				2,109				2,248		2,430	
	Height (H)		mm	2,084				2,257				2,519		2,787	
Weight	Rigging		ton	4.4	4.6	5.7	6.0	7.2	7.5	8.8	9.2	11.3	11.8	13.5	14.0
	Operation		ton	5.1	5.3	6.6	7.0	8.4	8.9	10.4	10.9	13.4	14.1	16.2	16.9
Space for Tube Replacement			mm	2,400		3,400				4,500					
Water Volume of Machine	Chilled Water Side		ℓ	116	130	152	174	234	252	286	310	356	381	509	536
	Cooling Water Side		ℓ	425	466	548	610	779	852	910	1,008	1,353	1,460	1,729	1,827
	Hot Water Side		ℓ	241	263	316	350	423	466	519	576	695	758	895	968

Note

1. Working pressure of chilled/cooling water circuits are based on 1.0Mpa (150psig) and 1.6MPa (230psig) for driving hot water circuit.
2. Standard flow rate of chilled water per usRT is 0.6048m^3/h, 1.42m^3/h for cooling water and 0.1187ton/h for hot water.
3. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator and Generator.

• 2AB180 (Korea)

2AB Series

Single Effect Double Lift Hot Water Driven Absorption Machine

Performance Data

Single Effect Double Lift Hot water Driven Type (420~1,300RT)

Model			Unit	2AB420	2AB470	2AB525	2AB600	2AB675	2AB750	2AB825	2AB900	2AB975	2AB1050	2AB1125	2AB1300
Cooling Capacity			kW	1,477	1,653	1,846	2,110	2,373	2,637	2,901	3,165	3,428	3,692	3,956	4,571
			usRT	420	470	525	600	675	750	825	900	975	1,050	1,125	1,300
Chilled Water	Inlet Temp./Outlet Temp.		℃	12 / 7											
	Flow rate		m^3/h	254	284	318	363	408	454	499	544	590	635	680	786
	P. Drop		mH_2O	3.1	4.3	5.7	4.1	5.5	7.2	4.0	5.1	6.3	5.2	6.3	8.8
	Connection		mm	200			250			300					
Cooling Water	Inlet Temp./Outlet Temp.		℃	31 / 36.5											
	Flow rate		m^3/h	601	672	751	858	965	1,073	1,180	1,287	1,394	1,502	1,609	1,859
	P. Drop		mH_2O	9.9	13.5	12.7	9.5	12.9	16.9	10.1	12.9	16.1	12.5	15.3	14.5
	Connection		mm	300			350			400			450		
Hot Water	Inlet Temp./Outlet Temp.		℃	95 / 55											
	Flow rate		ton/h	50.4	56.4	63.0	72.0	81.0	90.0	99.0	108	117	126	135	156
			m^3/h	52.4	58.6	65.5	74.8	84.2	93.5	103	112	122	131	140	162
	Pressure Drop	Shell	mH_2O	5.6	7.6	8.0	5.3	3.4	4.4	3.7	4.6	5.6	4	4.8	7
		Control Valve	mH_2O	1.8	2.2	2.8	3.6	4.6	2.2	2.6	3.2	3.7	4.3	2.2	2.9
	Connection		mm	100			125						150		
	Control Valve		mm	100					125					150	
Electric	Power source		-	3ø, 400V, 50Hz											
	Abs. Pumps		kW (A)	5.6 (18.6)			7.7 (25.0)			9.4 (31.5)			12.7 (45.0)		
	Ref. Pump		kW (A)	0.4 (1.6)			1.5 (4.0A)								
	Purge Pump		kW (A)	0.4 (1.5)						0.75 (2.3)					
	Control Panel		kW (A)	0.2 (0.5)											
	Total kW		kW	6.6			9.8			11.9			15.2		
	Total Ampere		A	22.1			31.0			38.3			51.8		
Size	Lenght (L)		mm	4,998	5,540	6,038	5,654	6,152	6,677	6,258	6,783	7,283	7,010	7,510	8,510
	Width (W)		mm	2,788			3,140			3,531			4,430		
	Height (H)		mm	3,036			3,471			3,837			4,000		
Weight	Rigging		ton	19.0	20.7	22.2	26.7	28.7	30.7	36.4	38.4	40.8	43.4	46.1	53.1
	Operation		ton	23.0	25.0	26.9	31.6	34.0	36.3	43.1	45.5	48.3	52.5	55.7	64.1
Space for Tube Replacement			mm	4,500	5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	7,200	7,700	8,200
Water Volume of Machine	Chilled Water Side		ℓ	619	674	724	970	1,037	1,106	1,373	1,459	1,541	1,970	2,083	2,309
	Cooling Water Side		ℓ	2,448	2,625	2,788	3,567	3,776	3,996	4,938	5,206	5,461	7,867	8,193	8,844
	Hot Water Side		ℓ	1,050	1,153	1,247	1,561	1,684	1,813	2,040	2,201	2,354	2,810	2,994	3,363

Options

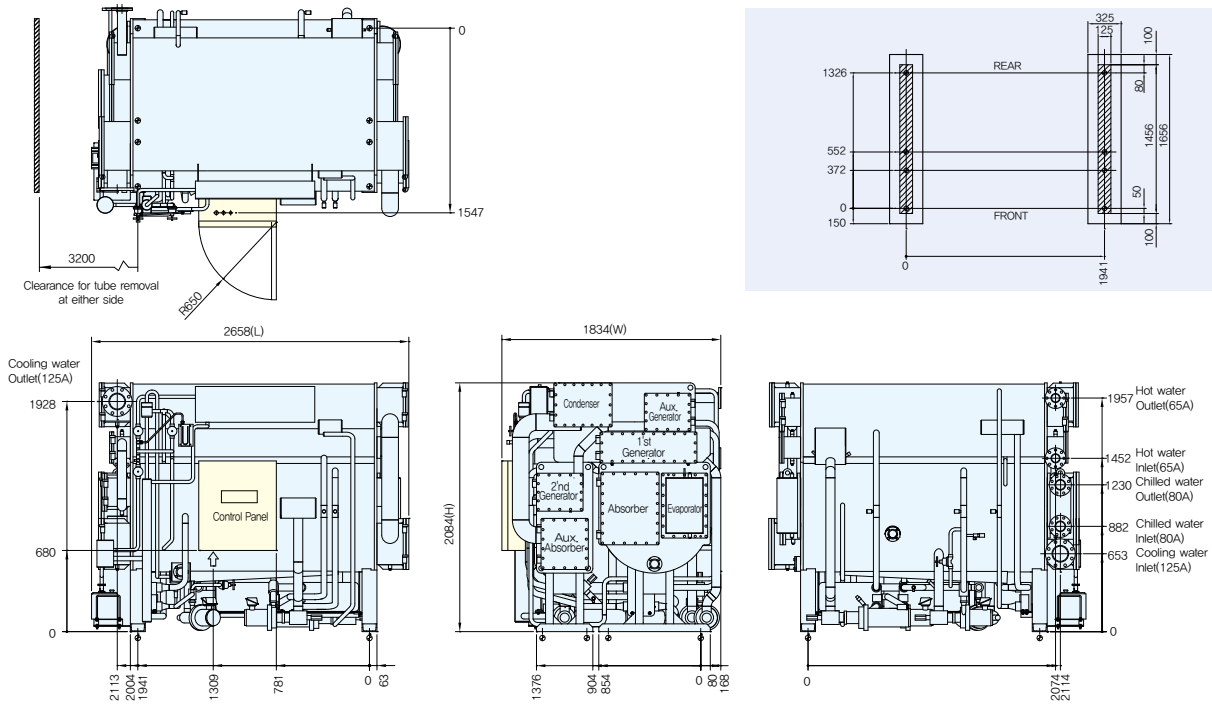
1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Single Effect Double Lift Hot Water Driven Absorption Machine

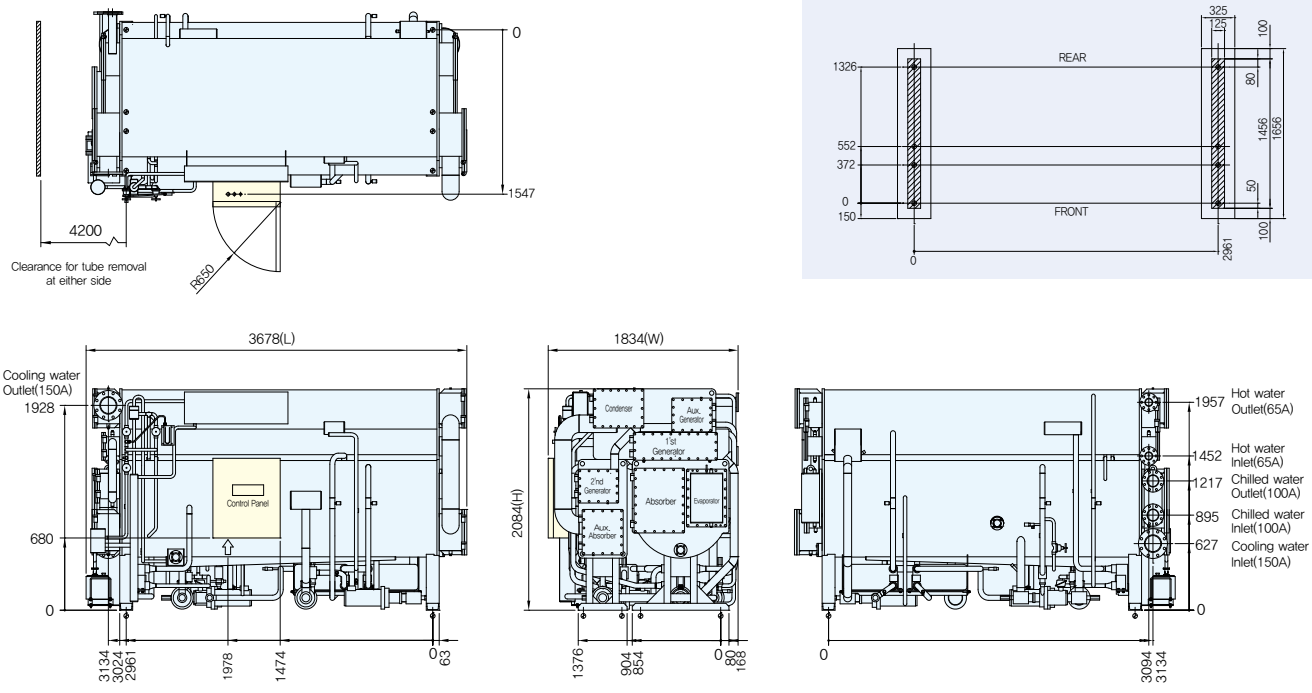
Outline_Foudation

1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

2AB 075 / 090



2AB 110 / 135



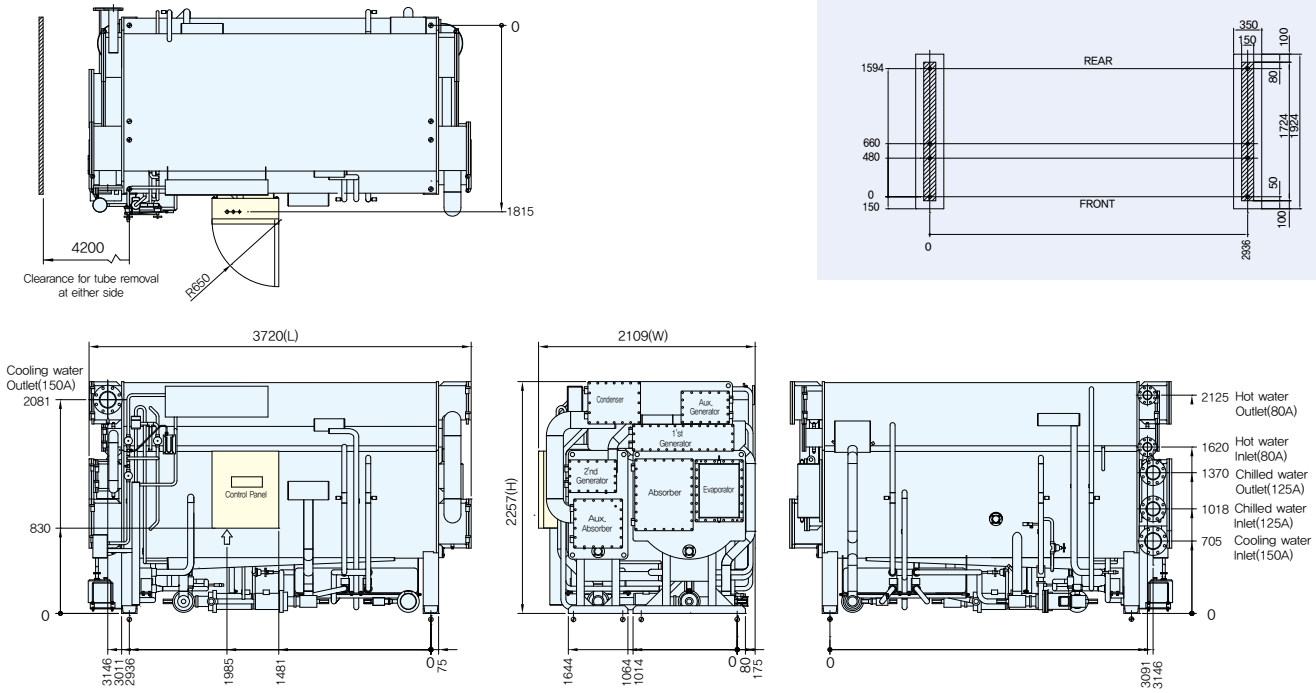
2AB Series

Single Effect Double Lift Hot Water Driven Absorption Machine

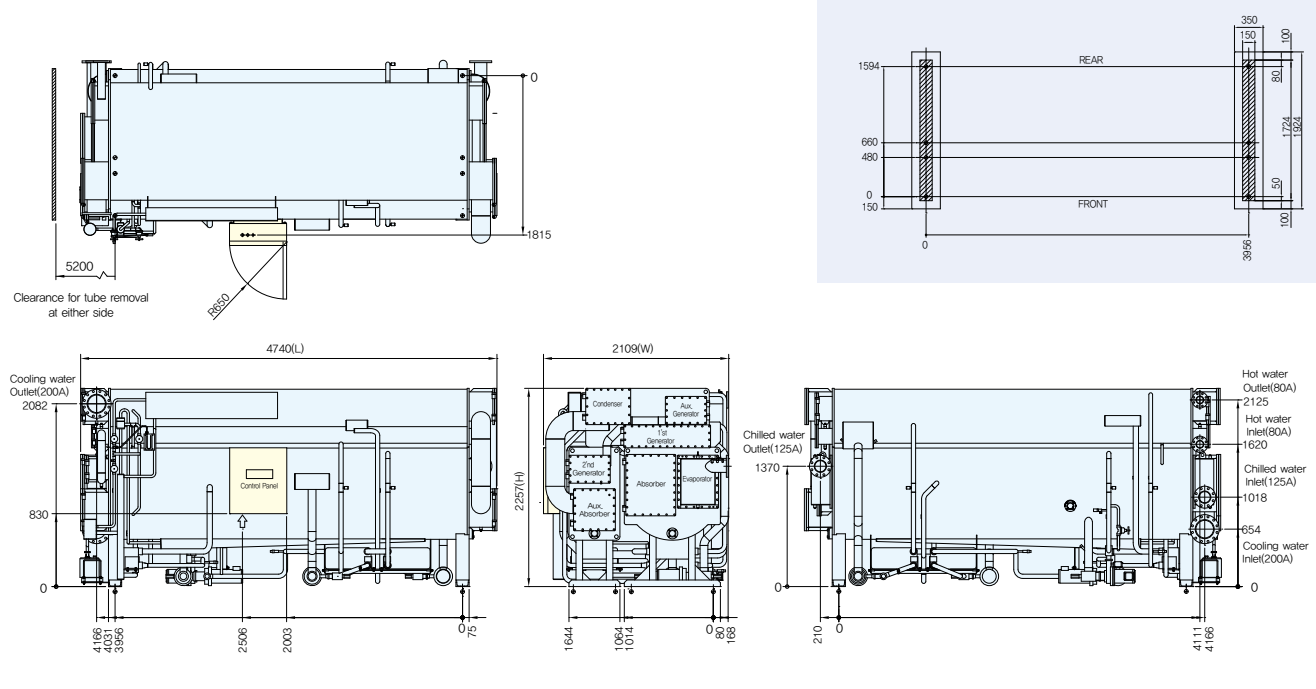
Outline_Foudation

1. ⊕ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

2AB 155 / 180



2AB 210 / 240

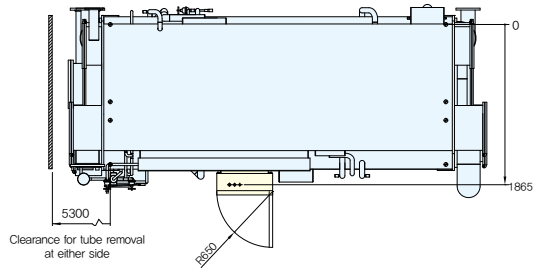


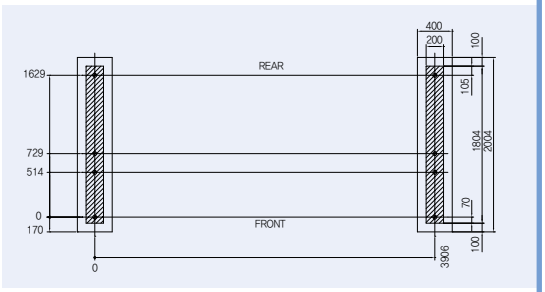
Single Effect Double Lift Hot Water Driven Absorption Machine

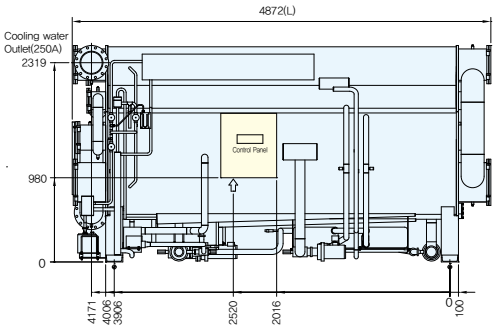
Outline_Foudation

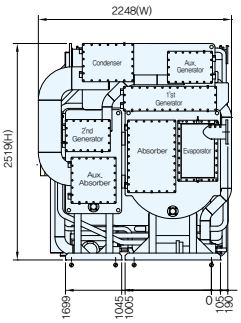
1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

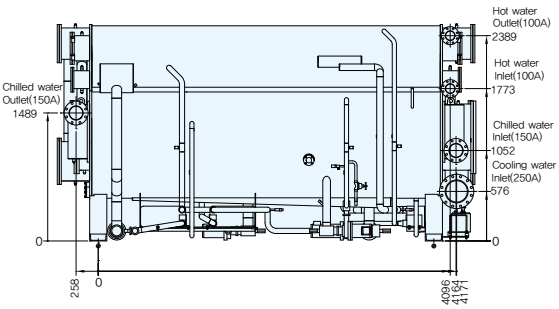
2AB 270 / 300



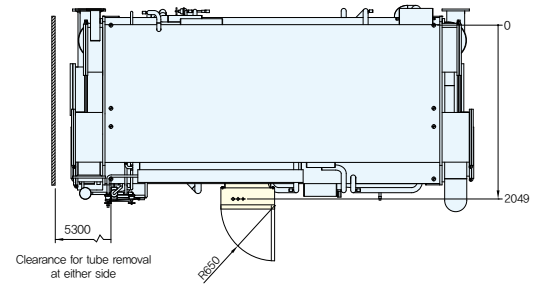


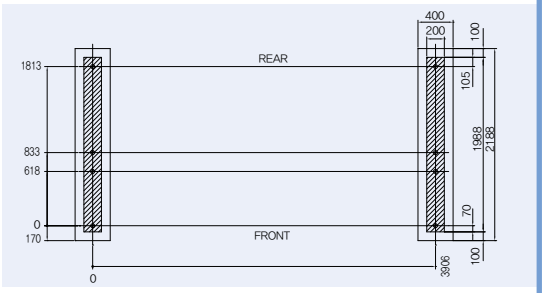


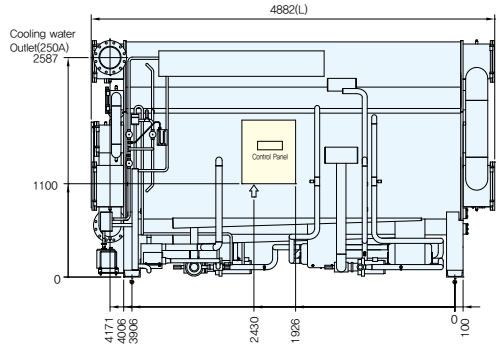


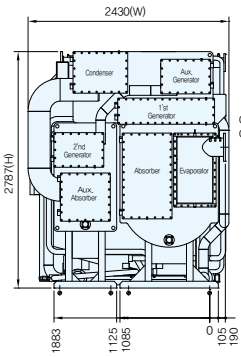


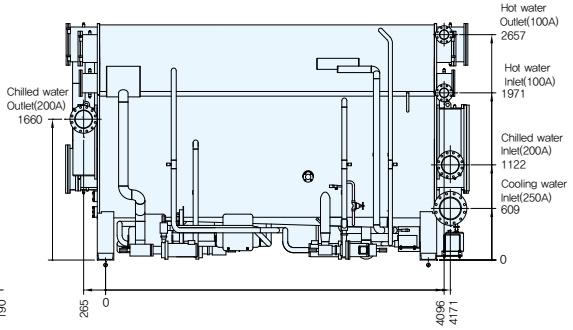
2AB 340 / 375











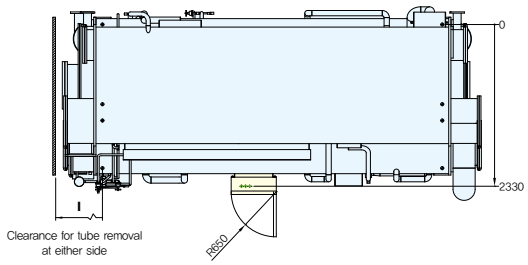
2AB Series

Single Effect Double Lift Hot Water Driven Absorption Machine

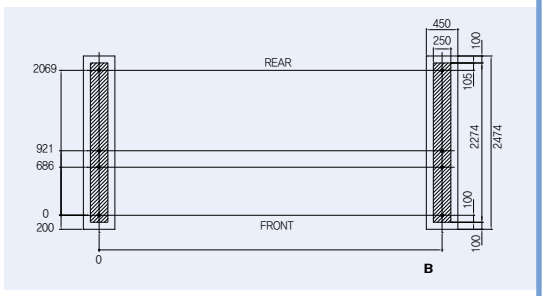
Outline_Foudation

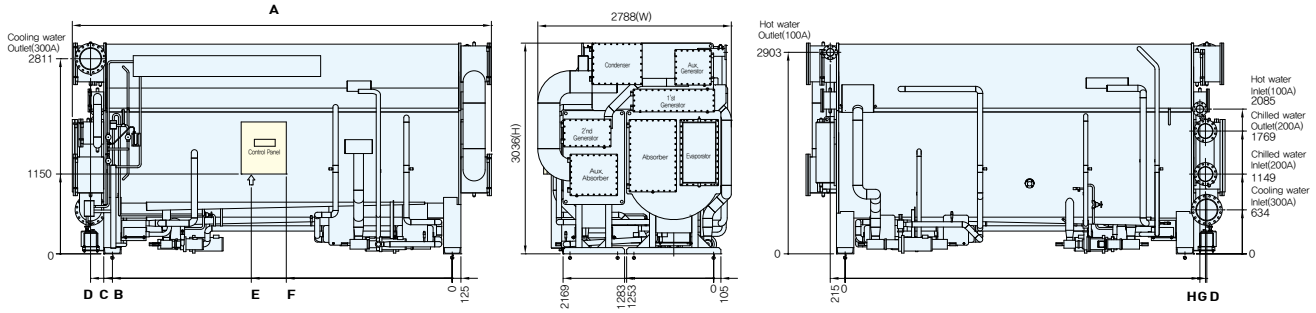
1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

2AB 420 / 470 / 525

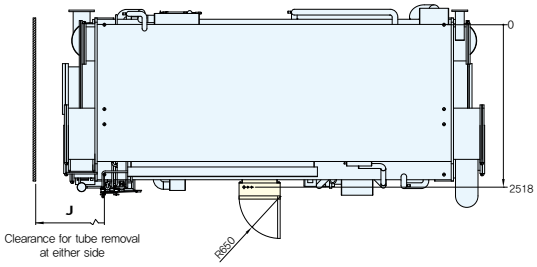


	2AB420	2AB470	2AB525
A	4998	5540	6038
B	3856	4398	4896
C	3981	4523	5021
D	4171	4713	5211
E	2405	2647	2895
F	1901	2143	2391
G	4151	4693	5191
H	4071	4613	5111
I	4500	5200	5800

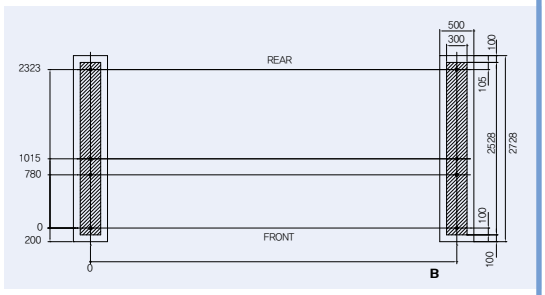


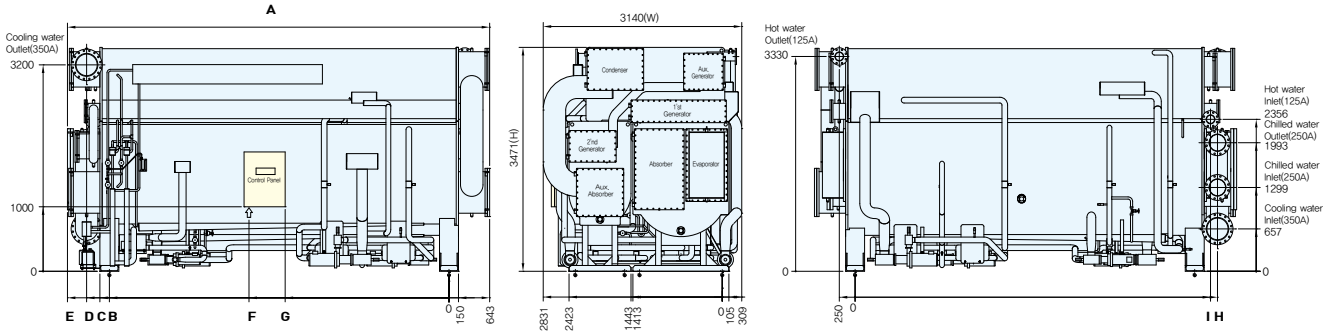


2AB 600 / 675 / 750



	2AB600	2AB675	2AB750
A	5654	6152	6677
B	4348	4846	5371
C	4498	4996	5521
D	4708	5206	5731
E	5011	5509	6034
F	2755	2938	3163
G	2183	2366	2591
H	4708	5206	5731
I	4598	5096	5621
J	5200	5700	6200



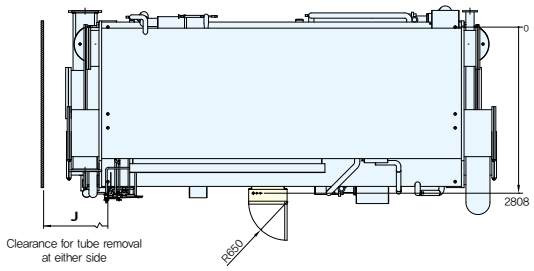


Single Effect Double Lift Hot Water Driven Absorption Machine

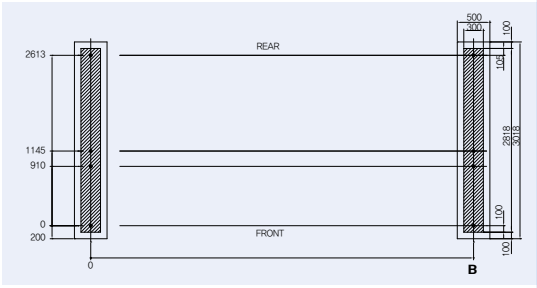
Outline_Foudation

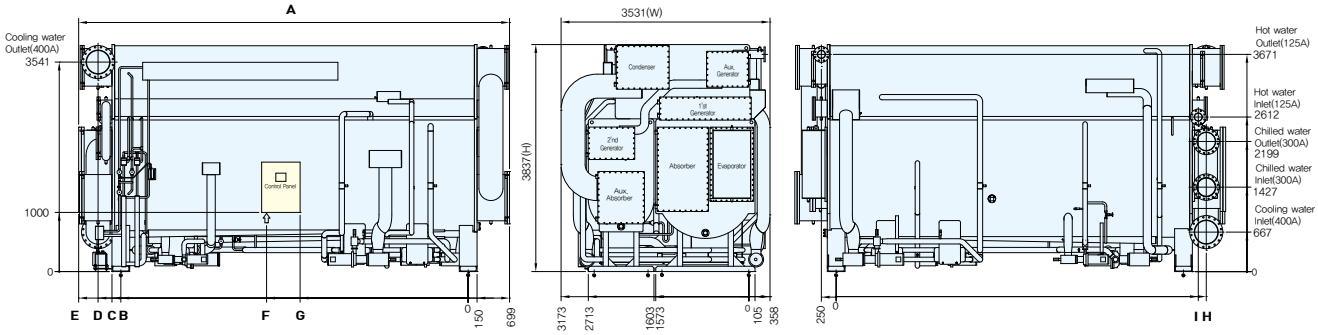
1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

2AB 825 / 900 / 975

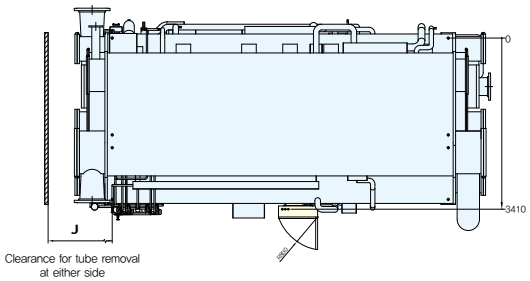


	2AB825	2AB900	2AB975
A	6258	6783	7283
B	4846	5371	5871
C	4996	5521	6021
D	5231	5756	6256
E	5559	6084	6584
F	2918	3158	3408
G	2351	2591	2841
H	5231	5756	6256
I	5096	5621	6121
J	5700	6200	6700

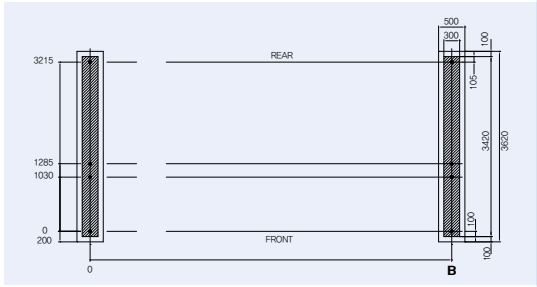


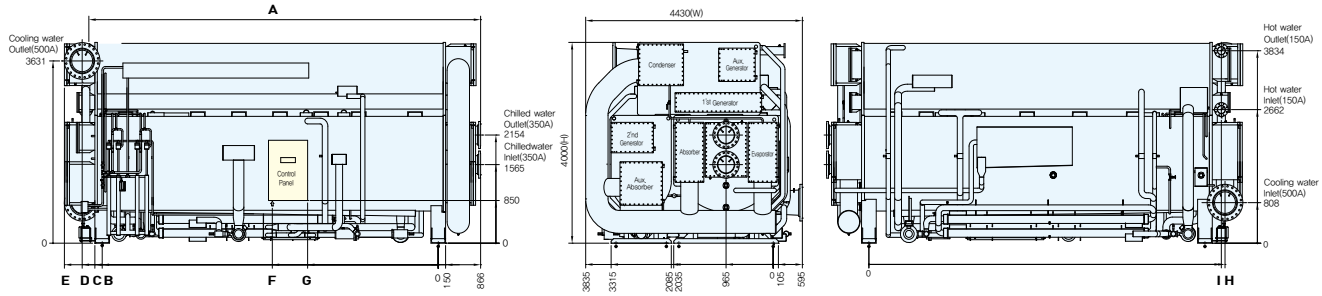


2AB 1050 / 1125 / 1300



	2AB1050	2AB1125	2AB1300
A	7010	7510	8475
B	5371	5871	6871
C	5521	6021	7021
D	5781	6281	7281
E	6144	6644	7644
F	2643	2893	3393
G	1921	2171	2671
H	5881	6281	7282
I	5706	6206	7206
J	7200	7700	8200





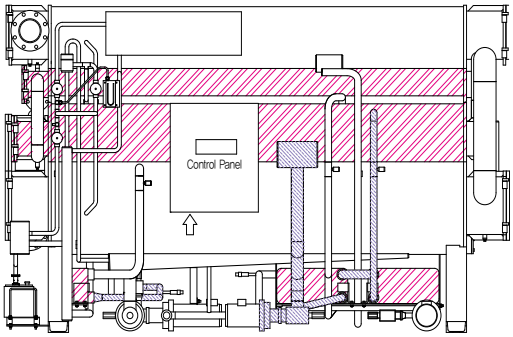
2AB Series

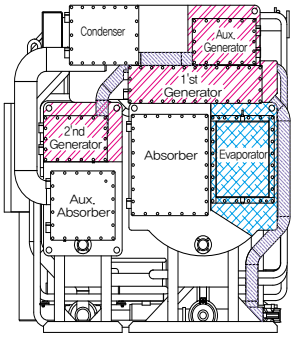
Single Effect Double Lift Hot Water Driven Absorption Machine

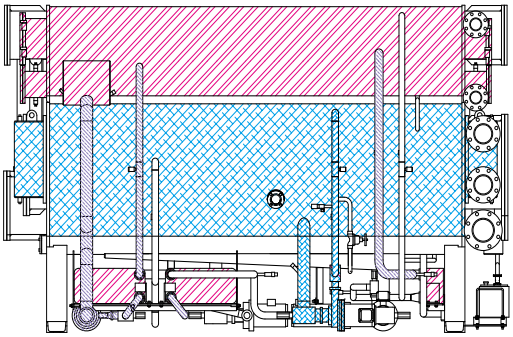
Thermal Insulation

Hot Surface
- 19mm : 1st Generator with water box, 2nd Generator with water box, Aux. Generator with water box, Heat Exchanger body
- 10mm : Pipes of High temperature's parts

Cold Surface
- 19mm : Evaporator with water box
- 10mm : Inlet and outlet pipes of refrigerant pump







Note

1. Use only Non-inflammable or Incombustible insulation materials.
2. Do not insulate motor of refrigerant pump.
3. Total insulation area includes piping.
4. Do not cover components such as service valves, dampers, diaphragm valves, sight glass, control valves or thermometers or sensor wells.
5. The standard Material and Thickness as the recommendation :

HOT Surface insulation
- Material of insulation : Non-inflammable polymer sponge usable at 120°C
- Thickness of insulation : 19mm (3/4 inch), 10mm (3/8 inch) when polymer sponge is used

COLD Surface insulation
- Material of insulation : Closed cell type Non-inflammable polymer sponge
- Thickness of insulation : 10mm (3/8 inch), 19mm (3/4 inch)

6. For insulation area for each model, please refer to the table below.
7. The water box sections should be worked to be disassembled for the repair.
8. If necessary, please perform the finish painting in the field after completing the insulation work.

Model (mm)	Hot Surface(m^2)		Cold Surface(m^2)	
	19mm	10mm	19mm	10mm
2AB**075**	7.3	2.2	4.0	0.4
2AB**090**	7.3	2.2	4.0	0.4
2AB**110**	9.8	2.2	5.4	0.4
2AB**135**	9.8	2.2	5.4	0.4
2AB**155**	11.4	2.5	6.1	0.5
2AB**180**	11.4	2.5	6.1	0.5
2AB**210**	14.3	2.5	7.4	0.6
2AB**240**	14.3	2.5	7.6	0.6
2AB**270**	16.0	3.3	8.2	0.6
2AB**300**	16.0	3.3	8.2	0.6
2AB**340**	18.7	3.9	9.8	0.6
2AB**375**	18.7	3.9	9.8	0.6

Model (mm)	Hot Surface(m^2)		Cold Surface(m^2)	
	19mm	10mm	19mm	10mm
2AB**420**	21.7	4.6	13.5	0.7
2AB**470**	23.6	4.6	15.0	0.8
2AB**525**	25.4	4.6	16.0	0.8
2AB**600**	28.4	5.4	16.3	1.3
2AB**675**	30.3	5.4	17.8	1.3
2AB**750**	32.1	5.4	19.4	1.3
2AB**825**	35.1	5.9	19.5	1.4
2AB**900**	37.0	5.9	21.2	1.4
2AB**975**	38.3	5.9	25.7	1.4
2AB**1050**	40.7	6.2	27.0	1.5
2AB**1125**	42.8	6.2	28.4	1.5
2AB**1300**	44.9	6.2	29.8	1.5

Waste Heat Recovery Absorption Machine

Performance Data

Waste Heat Recovery (Single Effect Hot Water) Driven Type (75~375RT) ⟶

Model			Unit	2AA075	2AA090	2AA110	2AA135	2AA155	2AA180	2AA210	2AA240	2AA270	2AA300	2AA340	2AA375
Cooling Capacity			kW	264	316	387	475	545	633	738	844	949	1,055	1,196	1,319
			usRT	75	90	110	135	155	180	210	240	270	300	340	375
Chillrd Water	Inlet Temp./Outlet Temp.		℃	13 / 8											
	Flow rate		m^3/h	45.4	54.4	66.5	81.6	93.7	109	127	145	163	181	206	227
	Pressure Drop		mH_20	3.7	3.8	4.6	4.8	4.3	4.6	3.2	3.4	3.4	3.5	3.1	3.2
	Connection		mm	80		100		125				150		200	
Cooling Water	Inlet Temp./Outlet Temp.		℃	31 / 36											
	Flow rate		m^3/h	156	188	229	281	323	375	438	500	563	625	709	782
	Pressure Drop		mH_20	4.7	5.0	12.0	13.0	13.0	13.4	7.1	7.1	7.3	7.2	7.1	7.2
	Connection		mm	150		200				250				300	
Hot Water	Inlet Temp./Outlet Temp.		℃	70 /60											
	Flow rate		ton/h	55.1	66.1	80.7	99.1	113.8	132.1	154.1	176.2	198.2	220.2	249.6	275.3
			m^3/h	56.3	67.6	82.6	101.4	116.4	135.2	157.7	180.2	202.8	225.3	255.3	281.6
	Pressure Drop	Shell	mH_20	5.8	6.5	5.3	6.1	6.7	7.1	5.9	6.2	5.6	5.7	5.5	5.7
		Control Valve	mH_20	1.9	2.7	4.0	2.9	3.8	5.2	3.1	4.1	5.1	1.4	1.8	2.2
	Connection		mm	100		125				150		200			
	Control Valve		mm	100			125			150			200		
Electric	Power source		-	3ø, 400V, 50Hz											
	Ref. Pump		kW (A)	3.0 (11.0)				3.8 (12.6)				4.8 (15.2)			
	Abs. Pump		kW (A)	0.2 (1.1)		0.3 (1.5)		0.4 (1.6)							
	Purge Pump		kW (A)	0.4 (1.5)											
	Control Panel		kW (A)	0.2 (0.5)											
	Total kW		kW	3.8	3.8	3.9	3.9	4.8	4.8	4.8	4.8	5.8	5.8	5.8	5.8
	Total Ampere		A	14.1	14.1	14.5	14.5	16.2	16.2	16.2	16.2	18.8	18.8	18.8	18.8
Size	Length (L)		mm	2,658		3,678		3,720		4,740		4,776		4,880	
	Width (W)		mm	2,281				2,623				2,795		3,022	
	Height (H)		mm	2,084				2,257				2,540		2,838	
Weight	Rigging		ton	4.8	5.1	6.3	6.6	7.9	8.3	9.7	10.1	12.4	13.0	14.9	15.4
	Operation		ton	5.6	5.8	7.3	7.7	9.2	9.8	11.4	12.0	14.7	15.5	17.8	18.6
Space for Tube Replacement			mm	2,400		3,400				4,500					

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

• 2AA240
(Zinc Factory, Korea)

2AA Series

Waste Heat Recovery Absorption Machine

Performance Data

Waste Heat Recovery (Single Effect Hot Water) Driven Type (420~1300RT)

Model			Unit	2AA420	2AA470	2AA525	2AA600	2AA675	2AA750	2AA825	2AA900	2AA975	2AA1050	2AA1125	2AA1300
Cooling Capacity			kW	1,477	1,653	1,846	2,110	2,373	2,637	2,901	3,165	3,428	3,692	3,956	4,571
			usRT	420	470	525	600	675	750	825	900	975	1,050	1,125	1,300
Chillrd Water	Inlet Temp./Outlet Temp.		℃	13 / 8											
	Flow rate		m^3/h	254	284	318	363	408	454	499	544	590	635	680	786
	Pressure Drop		mH_2O	3.1	4.3	5.7	4.1	5.5	7.2	5.4	6.9	8.6	5.2	6.3	9.4
	Connection		mm	200			250			300					
Cooling Water	Inlet Temp./Outlet Temp.		℃	31 / 36											
	Flow rate		m^3/h	875	979	1,094	1,250	1,407	1,563	1,719	1,876	2,032	2,188	2,345	2,709
	Pressure Drop		mH_2O	5.6	7.6	6.8	5.1	6.9	9.0	6.7	8.6	10.7	6.6	8.1	10.8
	Connection		mm	350			400			450			500		
Hot Water	Inlet Temp./Outlet Temp.		℃	70 / 60											
	Flow rate		ton/h	308.3	345.0	385.4	440.4	495.5	550.5	606	661	716	771	826	954
			m^3/h	315.4	353.0	394.3	450.6	5.609	563.3	620	676	732	789	845	976
	Pressure Drop	Shell	mH_2O	6.3	7.6	4.1	3.3	4.4	5.8	4.0	5.1	6.3	4.8	5.8	8.5
		Control Valve	mH_2O	2.8	3.5	4.4	2.5	3.1	3.9	4.7	1.8	2.1	2.4	2.8	3.7
	Connection		mm	250						300			400		
	Control Valve		mm	200			250				300				
Electric	Power source		-	3ø, 400V, 50Hz											
	Ref. Pump		kW (A)	9.2 (27.0)						10.4 (35.0)			18.0 (64.0)		
	Abs. Pump		kW (A)	0.4 (1.6)			1.5 (4.0)								
	Purge Pump		kW (A)	0.4 (1.5)						0.75 (2.3)					
	Control Panel		kW (A)	0.2 (0.5)											
	Total kW		kW	10.2	10.2	10.2	11.3	11.3	11.3	12.9	12.9	12.9	20.5	20.5	20.5
	Total Ampere		A	30.6	30.6	30.6	33.0	33.0	33.0	41.8	41.8	41.8	70.8	70.8	70.8
Size	Length (L)		mm	4,998	5,540	6,038	5,654	6,158	6,683	6,293	6,818	7,318	7,008	7,508	8,475
	Width (W)		mm	3,467			3,905			4,477			5,202		
	Height (H)		mm	3,222			3,600			3,850			4,000		
Weight	Rigging		ton	20.9	22.8	24.4	29.4	31.6	33.8	40.0	42.2	44.9	47.4	50.7	58.4
	Operation		ton	25.3	27.5	29.6	34.8	37.4	39.9	47.4	50.1	53.1	57.7	61.7	70.5
Space for Tube Replacement			mm	4,500	5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	7,200	7,700	8,200

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

Single Effect Hot Water Driven Absorption Machine

Performance Data

Single Effect Hot Water Driven Type (30~300RT) ⟶→

Model			Unit	L030	L040	L050	L060	L075	L090	L110	L135	L155	L180	L210	L240	L270	L300
Cooling Capacity			kW	105	141	176	211	264	316	387	475	545	633	738	844	949	1,055
			usRT	30	40	50	60	75	90	110	135	155	180	210	240	270	300
Chilled Water	Inlet Temp./Outlet Temp.		℃	13 / 8													
	Flow rate		m^3/h	18.1	24.2	30.2	36.3	45.4	54.4	66.5	81.6	93.7	109	127	145	163	181
	P. Drop		mH_20	4.9	5.1	9.7	10.6	10.4	11.0	9.6	10.6	9.6	9.7	9.8	9.6	10.3	10.6
	Connection		mm	65				80		100		125				150	
Cooling Water	Inlet Temp./Outlet Temp.		℃	31 / 36.5													
	Flow rate		m^3/h	39.6	52.8	66.1	79.3	99.1	119	145	178	205	238	277	317	357	396
	P. Drop		mH_20	6.3	6.6	12.6	14.0	10.9	7.2	10.8	11.6	11.3	11.9	11.0	10.5	10.9	10.6
	Connection		mm	100				125		150				200			
Hot Water	Inlet Temp./Outlet Temp.		℃	95 / 80													
	Flow rate		ton/h	8.4	11.2	14	16.8	21	25.2	30.8	37.8	43.4	50.4	58.8	67.2	75.6	84
	Pressure Drop	Shell	mH_20	0.8	1.1	1.9	2.2	1.5	1.6	0.7	0.8	0.9	1.0	1.6	1.6	1.6	1.6
		Control Valve	mH_20	2.1	3.8	2.2	3.2	5.0	7.1	4.3	2.5	3.3	4.5	2.4	3.2	4.0	5.0
	Connection		mm	50				65		80				100			
	Control Valve		mm	40		50		65		80				100			
Electric	Power source		-	3ø, 380V, 50Hz													
	Abs. Pumps		kW (A)	1.2 (4.0)				1.5 (4.0)				2.0 (6.0)		2.4 (7.0)			
	Ref. Pump		kW (A)	0.2 (1.1)				0.3 (1.5)				0.4 (1.6)					
	Purge Pump		kW (A)	0.4 (1.5)													
	Control Panel		kW (A)	0.2 (0.5)													
	Total Ampere		A	7.1				7.5				9.6		10.6			
Size	Lenght (L)		mm	2,095		2,598		2,597		3,680		3,708		4,734		4,776	
	Width (W)		mm	1,077		1,095		1,244				1,472				1,495	
	Height (H)		mm	1,880				2,255				2,257				2,540	
Weight	Rigging		ton	2.1	2.2	2.6	2.7	3.6	3.7	4.6	4.8	5.5	5.8	6.8	7.1	8.8	9.2
	Operation		ton	2.3	2.5	2.9	3.1	4.1	4.2	5.2	5.5	6.4	6.8	7.9	8.4	10.4	10.9
Space for Tube Replacement			mm	1,900		2,400		2,400		3,400				4,500			
Water Volume of Machine	Chilled Water Side		ℓ	54	61	73	77	117	129	155	173	234	252	286	310	356	381
	Cooling Water Side		ℓ	140	161	187	198	312	344	432	480	644	698	715	786		993
	Hot Water Side		ℓ	57	69	80	90	112	124	148	166	198	221	252	283	327	359

Note

1. Working pressure of chilled/cooling water circuits are based on 1.0MPa (150psig) and 1.6MPa (230psig) for driving hot water circuit.
2. Standard flow rate of chilled water per usRT is $0.6048m^3/h$, $1.321m^3/h$ for cooling water and 0.280ton/h for hot water.
3. Fouling factor $0.0001m^2.h.°C/kcal$ for Absorber and Condenser, $0.0001m^2.h.°C/kcal$ for Evaporator and Generator.
4. High temperature (100 ~ 150 degree C) Hot Water Driving type is available as additional model.
   Followings are the standard capacity range and the standard operational condition for the model selection;
   - Cooling capacity range as Standard model : 100 ~ 1300RT
   - Hot water Inlet / Outlet temperature : 138 / 108 degree C
   - Chilled water Inlet / Outlet temperature : 12 / 7 degree C
   - Cooling water Inlet / Outlet temperature : 32 / 39 degree C

HWAR - L Series

Single Effect Hot Water Driven Absorption Machine

Performance Data

Single Effect Hot Water Driven Type (340~1300RT)

Model			Unit	L340	L375	L420	L470	L525	L600	L675	L750	L825	L900	L975	L1050	L1125	L1300
Cooling Capacity			kW	1,196	1,319	1,477	1,653	1,846	2,110	2,373	2,637	2,901	3,165	3,428	3,692	3,956	4,571
			usRT	340	375	420	470	525	600	675	750	825	900	975	1,050	1,125	1,300
Chilled Water	Inlet Temp./Outlet Temp.		℃	13 / 8													
	Flow rate		m^3/h	206	227	254	284	318	363	408	454	499	544	590	635	680	786
	P. Drop		mH_2O	9.4	9.8	7.5	10.3	4.6	3.4	4.6	6.1	4.0	5.2	6.4	5.2	6.4	9.5
	Connection		mm	200					250			300			350		
Cooling Water	Inlet Temp./Outlet Temp.		℃	31 / 36.5													
	Flow rate		m^3/h	449	495	555	621	694	793	892	991	1,090	1,189	1,288	1,387	1,486	1,717
	P. Drop		mH_2O	10.7	10.7	6.2	8.5	11.4	7.2	9.7	12.7	10.9	13.9	17.3	13.8	14.0	14.4
	Connection		m	250		300			350			400					
Hot Water	Inlet Temp./Outlet Temp.		℃	95 / 80													
	Flow rate		ton/h	95.2	105	118	132	147	168	189	210	231	252	273	294	315	364
	Pressure Drop	Shell	mH_2O	1.6	1.6	1.6	2.2	3.0	1.8	2.5	3.3	2.6	3.3	4.1	3.4	4.2	6.1
		Control Valve	mH_2O	2.4	3.0	3.7	4.7	2.6	3.4	4.3	5.3	1.9	2.3	2.7	3.1	3.6	2.0
	Connection		mm	125					150			200					250
	Control Valve		mm	125					150			200					250
Electric	Power source		-	3ø, 380V, 50Hz													
	Abs. Pumps		kW (A)	2.4 (7.0)		3.0 (11.0)						4.5 (16.0)					
	Ref. Pump		kW (A)	0.4 (1.6)					1.5 (4.0)								
	Purge Pump		kW (A)	0.4 (1.5)								0.75 (2.3)					
	Control Panel		kW (A)	0.2 (0.5)													
	Total Ampere		A	10.6		14.6			17.0			22.8					
Size	Lenght (L)		mm	4,880		4,998	5,540	6,038	5,644	6,142	6,667	6,293	6,818	7,318	6,860	7,360	7,860
	Width (W)		mm	1,575		1,830			2,206			2,329			2,929		
	Height (H)		mm	2,838		3,222			3,600			4,000					
Weight	Rigging		ton	10.5	10.9	14.7	16.0	17.2	19.3	21.6	23.9	26.2	28.5	30.8	33.1	35.4	37.7
	Operation		ton	12.5	13.1	17.8	19.4	20.8	23.3	26.1	29.0	31.8	34.6	37.5	40.3	43.2	46.0
Space for Tube Replacement			mm	4,500			5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	6,200	6,700	7,200
Water Volume of Machine	Chilled Water Side		ℓ	463	486	580	626	669	982	1,045	1,110	1,439	1,525	1,607	1,688	1,783	1,980
	Cooling Water Side		ℓ	1,296	1,405	1,865	2,001	2,125	2,963	3,132	3,311	4,001	4,223	4,435	5,426	5,675	6,172
	Hot Water Side		ℓ	347	388	423	463	504	672	725	791	905	970	1,045	1,146	1,217	1,360

Options

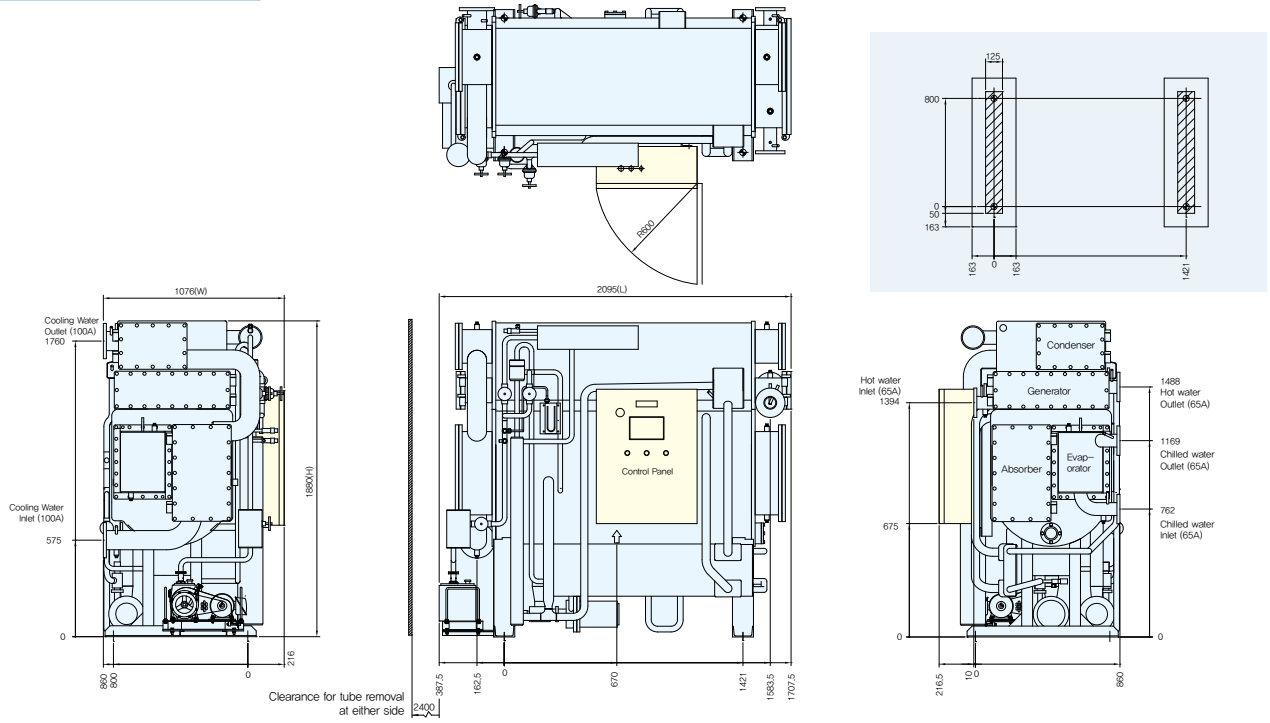
1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Single Effect Hot Water Driven Absorption Machine

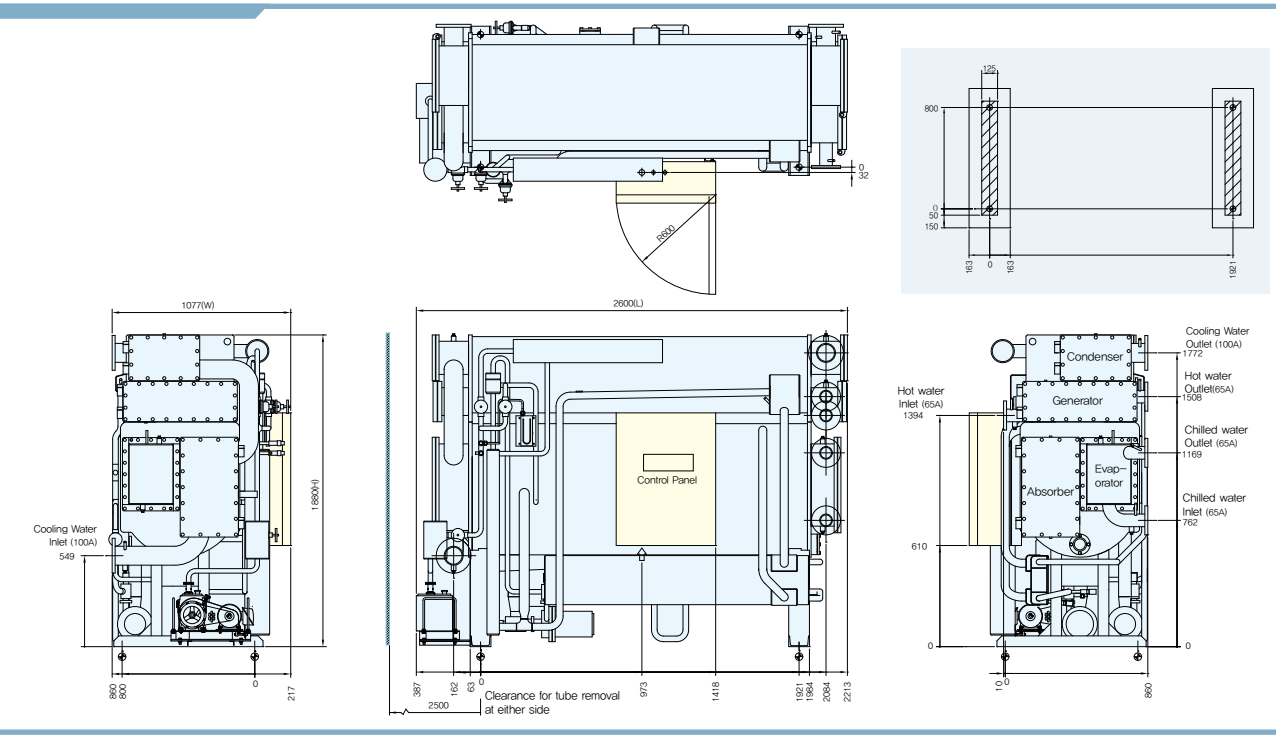
Outline_Foudation

1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

HWAR-L030 / 040



HWAR-L050 / 060



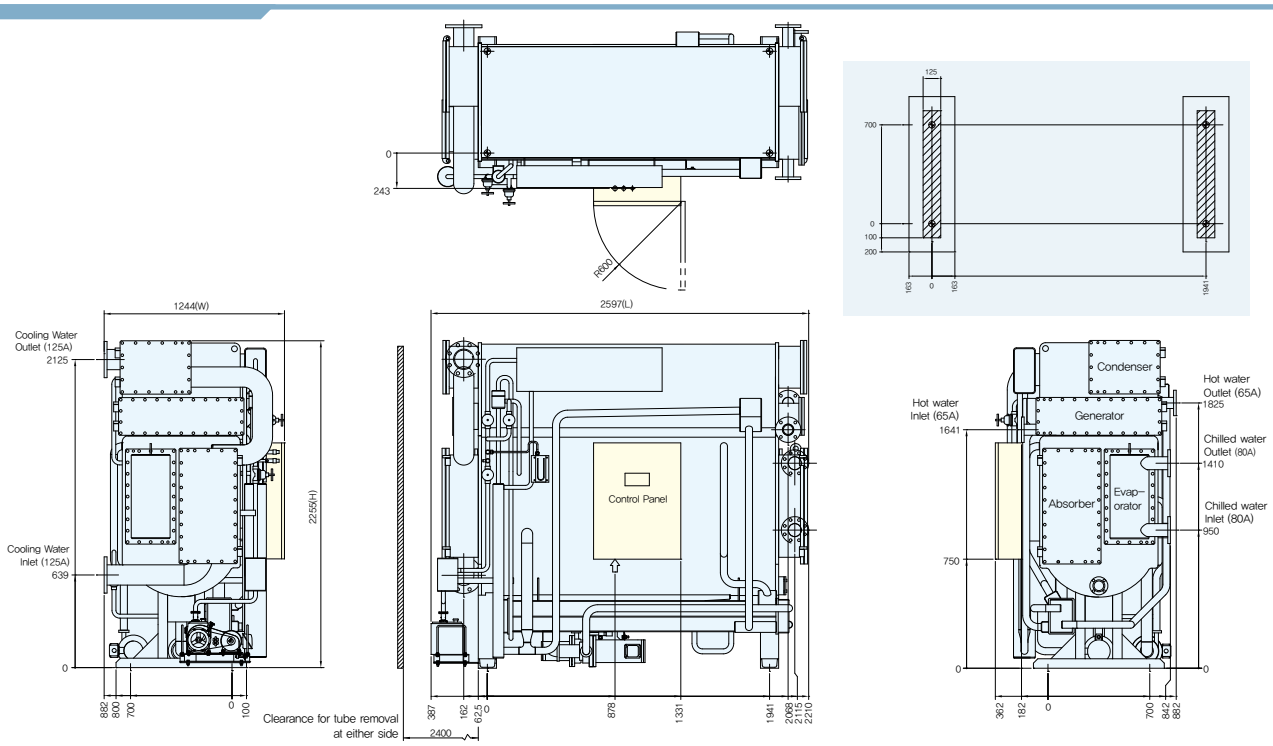
HWAR - L Series

Single Effect Hot Water Driven Absorption Machine

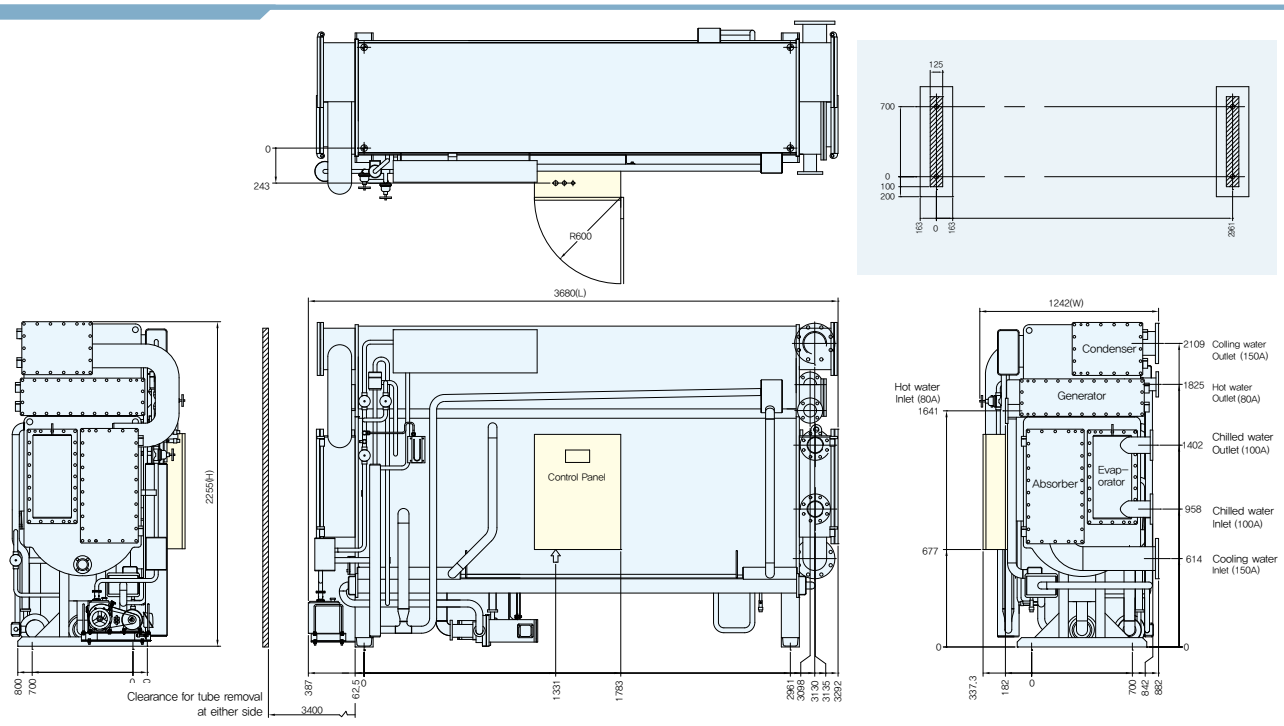
Outline_Foudation

1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

HWAR-L075 / 090



HWAR-L110 / 135

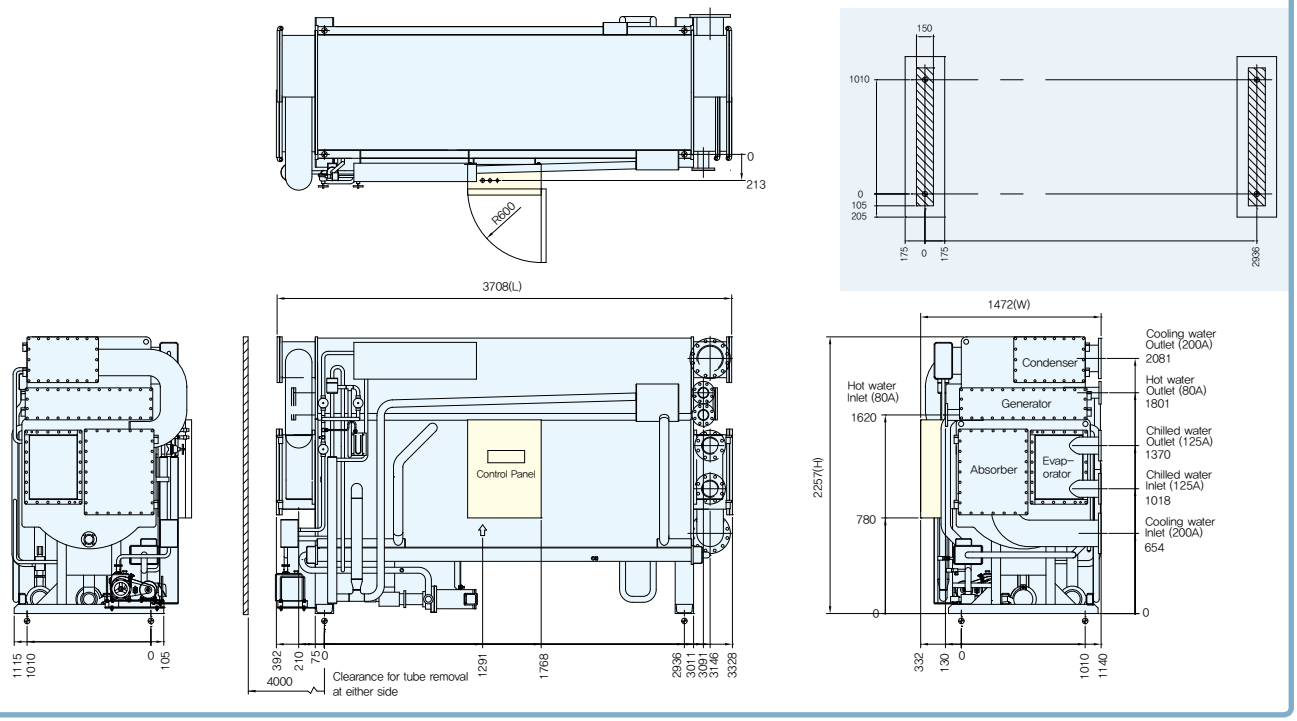


Single Effect Hot Water Driven Absorption Machine

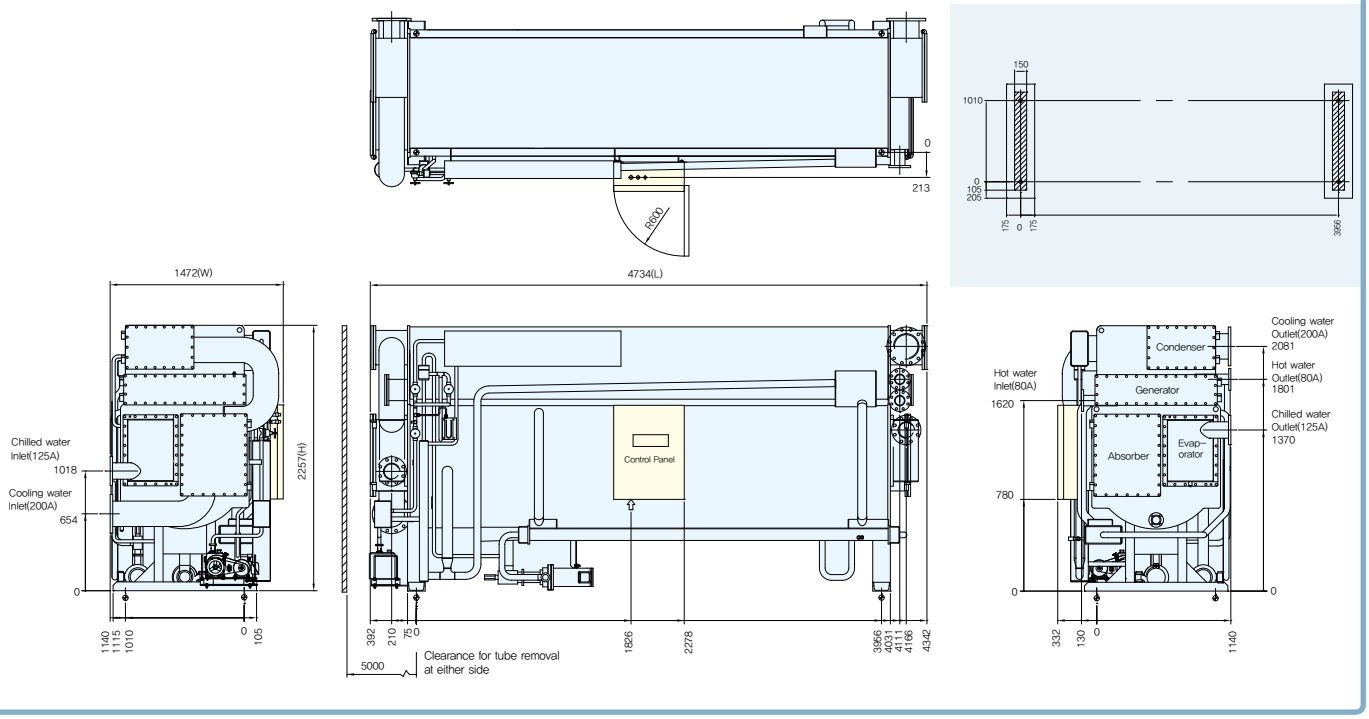
Outline_Foudation

1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

HWAR-L155 / 180



HWAR-L210 / 240



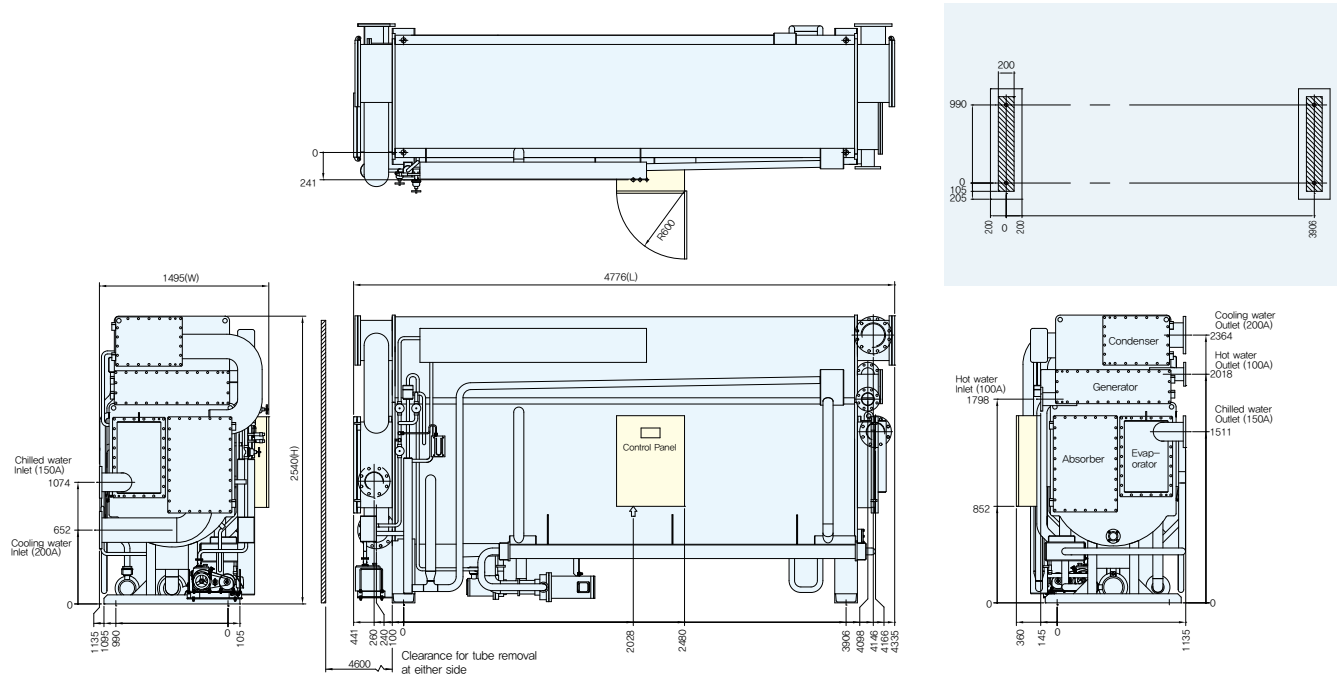
HWAR - L Series

Single Effect Hot Water Driven Absorption Machine

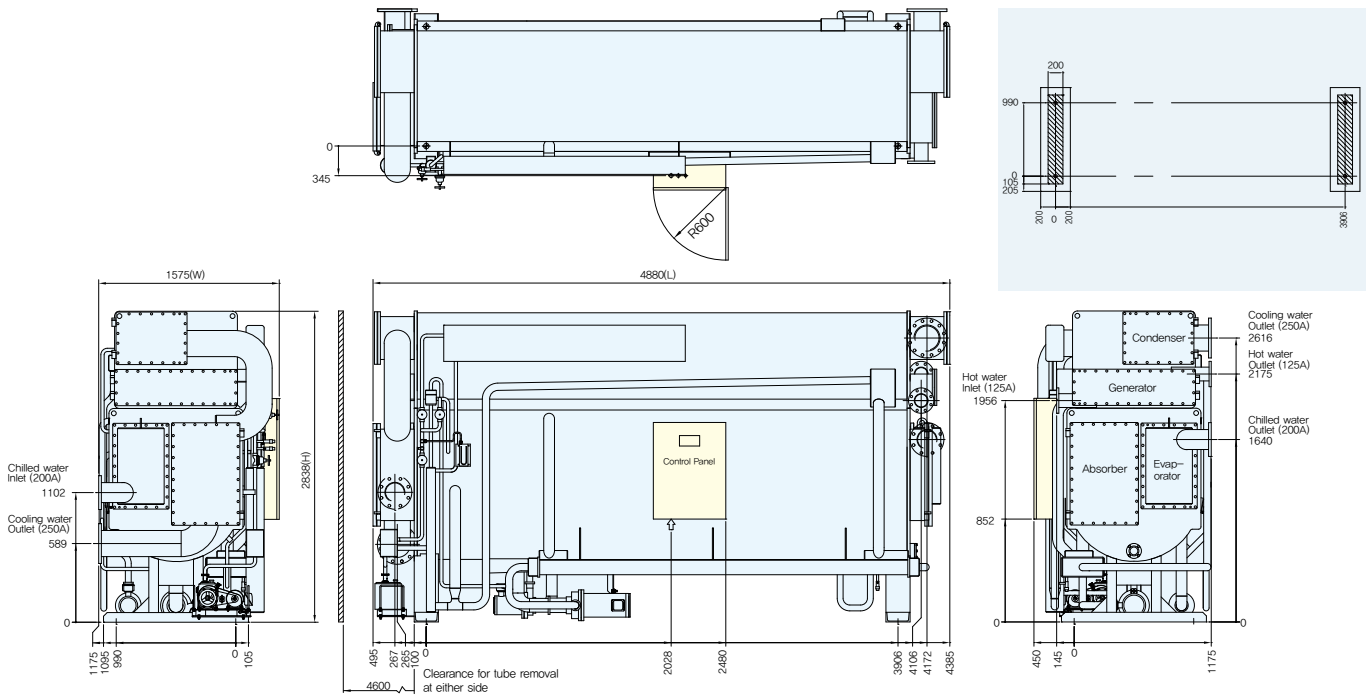
Outline_Foudation

1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

HWAR-L270 / 300



HWAR-L340 / 375



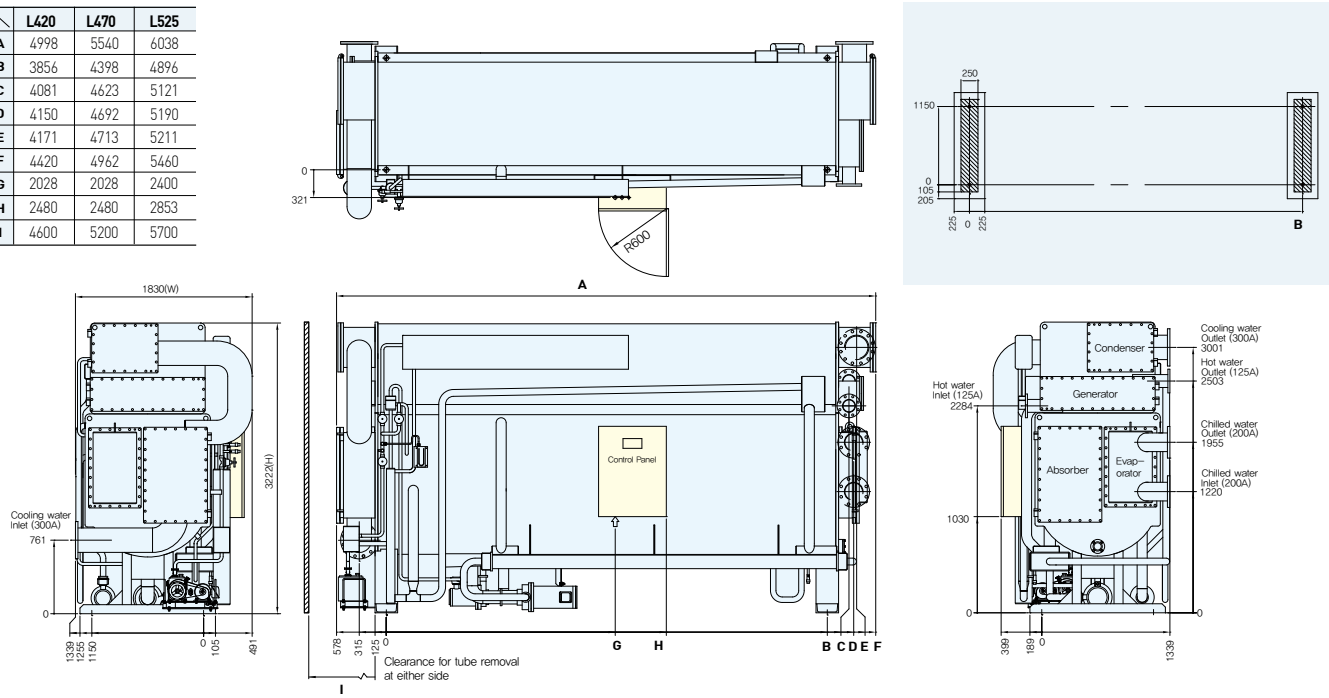
Single Effect Hot Water Driven Absorption Machine

Outline_Foudation

1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

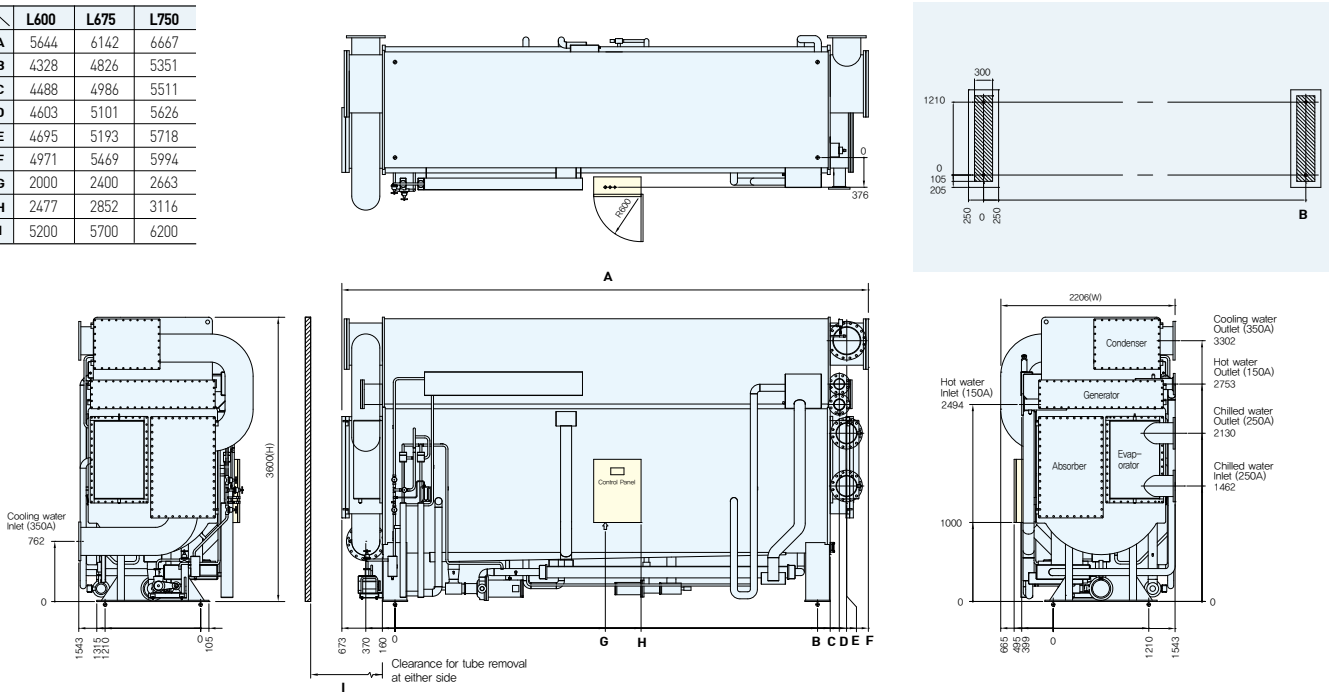
HWAR-L420 / 470 / 525

	L420	L470	L525
A	4998	5540	6038
B	3856	4398	4896
C	4081	4623	5121
D	4150	4692	5190
E	4171	4713	5211
F	4420	4962	5460
G	2028	2028	2400
H	2480	2480	2853
I	4600	5200	5700



HWAR-L600 / 675 / 750

	L600	L675	L750
A	5644	6142	6667
B	4328	4826	5351
C	4488	4986	5511
D	4603	5101	5626
E	4695	5193	5718
F	4971	5469	5994
G	2000	2400	2663
H	2477	2852	3116
I	5200	5700	6200



HWAR - L Series

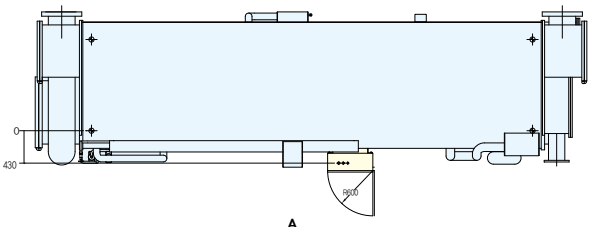
Single Effect Hot Water Driven Absorption Machine

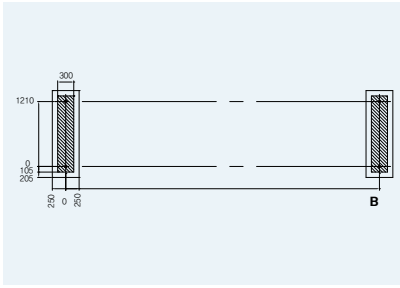
Outline_Foudation

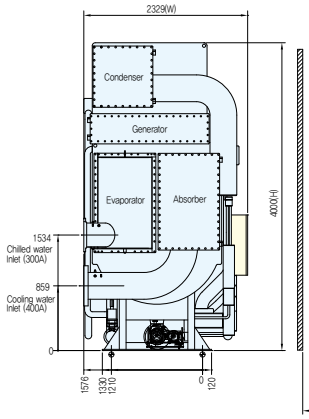
1. ⊗ Indicates the position of anchor bolt holes.
2. All external water piping are to be provided by the customer.
3. ⇧ Indicates the position of the power supply wiring connections to control panel.
4. Installation and service clearance :
   • Longitudinal Distance : 1m • Top : 0.2m • Control Panel : 1.2m • Others : 0.5m

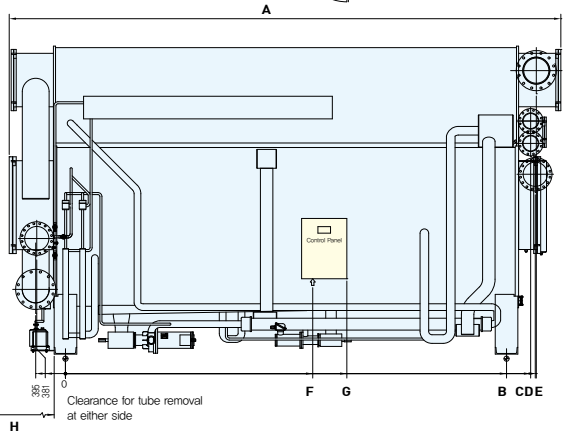
HWAR-L825 / 900 / 975

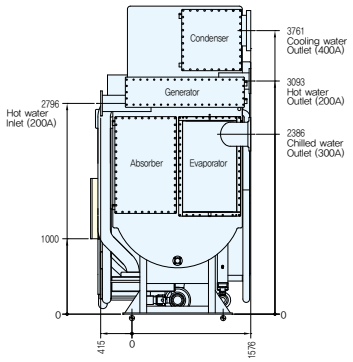
	L825	L900	L975
A	6293	6818	7318
B	4826	5351	5851
C	5146	5671	6171
D	5207	5732	6232
E	5221	5746	6246
F	2755	3280	3280
G	3208	3733	3733
H	5700	6200	6700





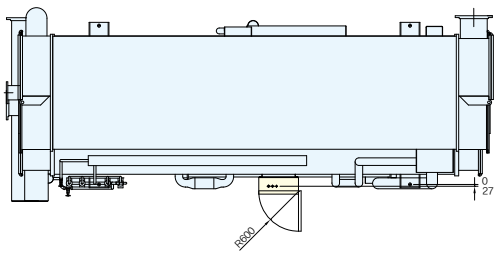


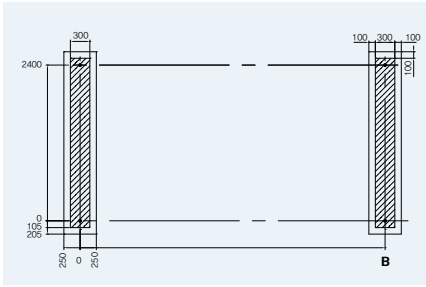


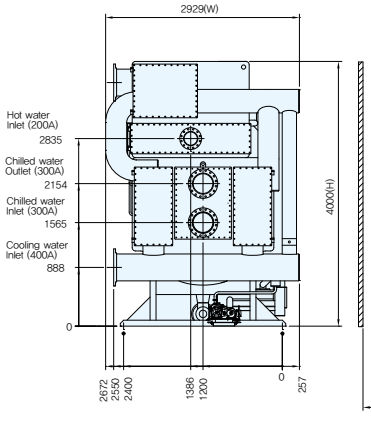


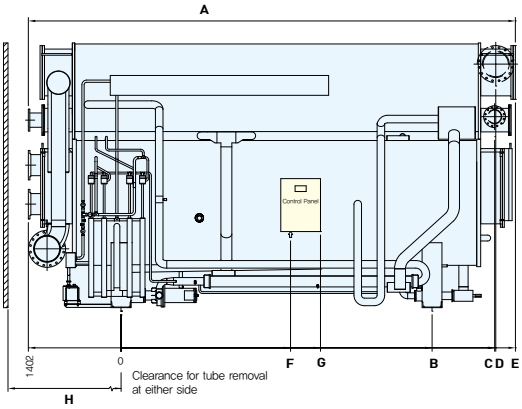
HWAR-L1050 / 1125 / 1300

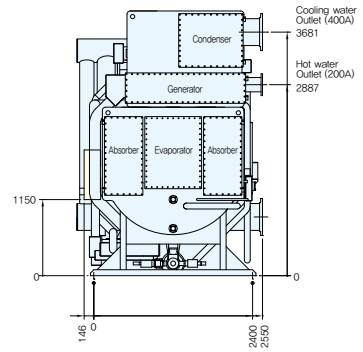
	L1025	L1125	L1300
A	6860	7360	8475
B	4200	4700	5725
C	5146	5646	6670
D	5163	5663	6688
E	5460	5960	6985
F	2361	2561	2561
G	2814	3014	3014
H	6800	7300	8000









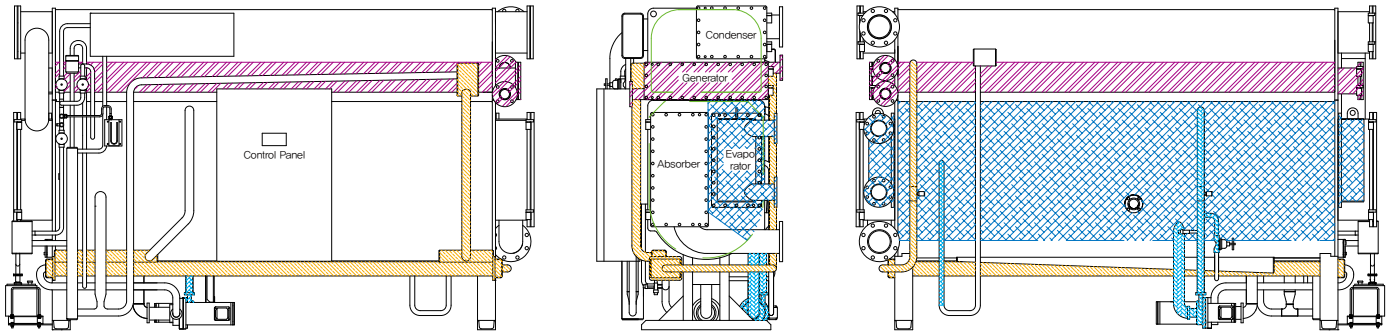


Single Effect Hot Water Driven Absorption Machine

Thermal Insulation

Hot Surfaces
- 19mm (3/4 in) : Generator with Water Box
- 10mm (3/8 in) : Heat Exchanger Body with Piping

Cold Surfaces
- 19mm (3/4 in) : Evaporator Body with Water Box
- 10mm (3/8 in) : Inlet and Outlet Piping of Refrigerant Pump



Note

1. Use only Non-inflammable or Incombustible insulation materials.
2. Do not insulate motor of refrigerant pump.
3. Total insulation area includes piping.
4. Do not cover components such as service valves, dampers, diaphragm valves, sight glass, control valves or thermometers or sensor wells.
5. The standard Material and Thickness as the recommendation :

HOT Surface insulation
- Material of insulation : Non-inflammable polymer sponge usable at 120°C
- Thickness of insulation : 19mm (3/4 inch), 10mm (3/8 inch) when polymer sponge is used

COLD Surface insulation
- Material of insulation : Closed cell type Non-inflammable polymer sponge
- Thickness of insulation : 10mm (3/8 inch), 19mm (3/4 inch)

6. For insulation area for each model, please refer to the picture below.
7. The water box sections should be worked to be disassembled for the repair.
8. If necessary, please perform the finish painting in the field after completing the insulation work.

Model (mm)	Hot Surface(m^2)		Cold Surface(m^2)	
	19mm	10mm	19mm	10mm
HWAR-**L030**	2.3	1.4	3.3	0.2
HWAR-**L040**	2.3	1.4	3.3	0.2
HWAR-**L050**	2.7	1.6	3.9	0.3
HWAR-**L060**	2.7	1.6	3.9	0.3
HWAR-**L075**	2.8	1.5	4.0	0.3
HWAR-**L090**	2.8	1.5	4.0	0.3
HWAR-**L110**	3.8	1.7	5.4	0.3
HWAR-**L135**	3.8	2.1	5.4	0.3
HWAR-**L155**	4.0	2.4	6.1	0.4
HWAR-**L180**	4.0	2.4	6.1	0.4
HWAR-**L210**	5.1	3.0	7.4	0.5
HWAR-**L240**	5.2	3.2	7.6	0.5
HWAR-**L270**	6.0	3.5	8.2	0.5
HWAR-**L300**	6.0	3.5	8.2	0.5

Model (mm)	Hot Surface(m^2)		Cold Surface(m^2)	
	19mm	10mm	19mm	10mm
HWAR-**L340**	6.7	3.6	9.8	0.5
HWAR-**L375**	6.7	3.7	9.8	0.5
HWAR-**L420**	7.5	4.6	13.5	0.6
HWAR-**L470**	8.3	5.0	15.0	0.7
HWAR-**L525**	9.2	5.3	16.0	0.7
HWAR-**L600**	12.5	5.5	16.3	1.2
HWAR-**L675**	13.5	5.7	17.8	1.2
HWAR-**L750**	14.6	6.0	19.4	1.2
HWAR-**L825**	14.9	6.6	19.5	1.3
HWAR-**L900**	16.0	7.0	21.2	1.3
HWAR-**L975**	17.0	7.4	25.7	1.3
HWAR-**L1050**	22.0	7.5	11.5	1.4
HWAR-**L1125**	23.1	7.6	12.1	1.4

Absorption Machines

Supply Scope (Standard)

Item	Description	Scope
Chiller Assembly	1) Evaporator, Absorber, Condenser, Generators 2) Solution Heat Exchanger 3) Pumps - Solution pumps with isolation valves - Refrigerant pump with isolation valves - Purge pump 4) Control panel - Panel unit, circuit Breakers - Switches (Operation, emergency, man/auto selector) - Relays, controller, touch screen 5) Locally mounted control instruments - Chilled water flow switch - temperature sensors 6) Purge device - Purge storage tank, Eductor, Liquid trap, Manometer, piping and manual valves 7) Interconnecting piping and wiring - Refrigerant and absorbent piping for internal mechanical components - Control & Power wiring for Internal electrical components	Vendor
Initial charge	Absorbent (Lithium bromide) with inhibitor Refrigerant	Vendor
Painting	Painting for chiller assembly and control panel	Vendor
Insulation	Insulation of hot surface and cold surface for Absorption chiller	Option
Test & Inspection	1) Check of external dimensions 2) Hydraulic Pressure test for water Boxes 3) Leak Test (Vacuum side) 4) Function test for electric circuit and safety device	Vendor
Performance Test	Factory test or start-up at site	Option
Out of supply and work scope for Vendor		
Installation & wiring work	1. Foundation of chiller 2. Installation of chiller 3. Piping and wiring connections out of Chillers 4. Interlock wiring of chilled water pump and cooling water pump. 5. Installation and wiring of control valve.	Buyer

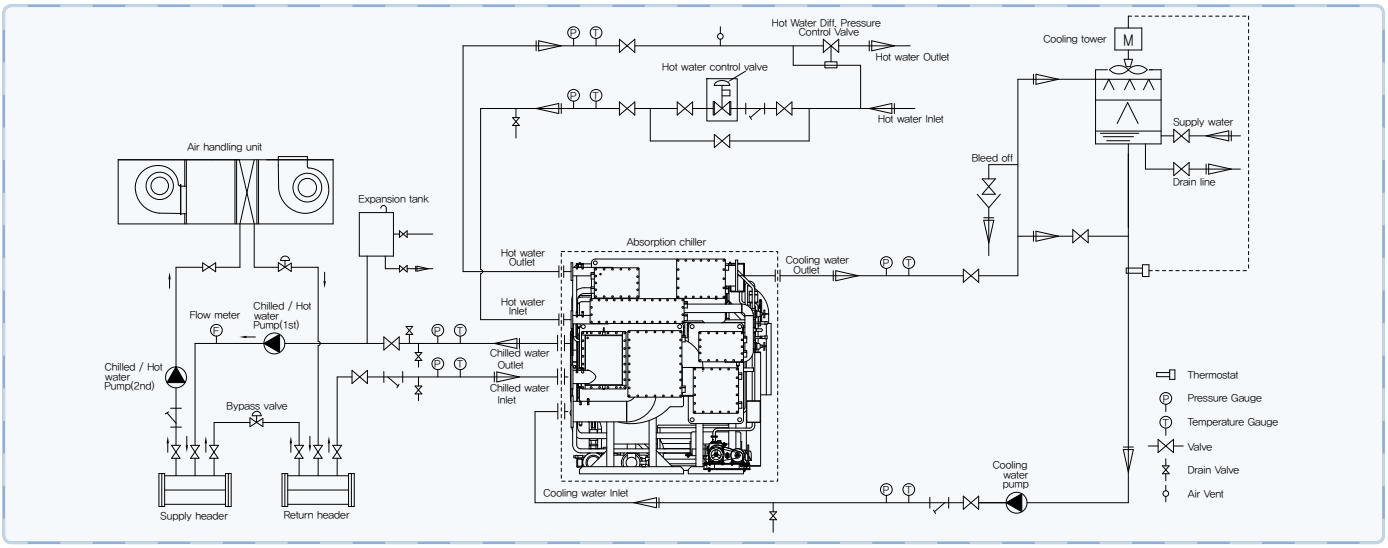
Painting

- Painting type : Epoxy Prime and Epoxy Finish painting
- Color : Chiller body - Blue (Munsell No. 4.0 PB3.4/6.7)
  Control Panel - Grey (Munsell No.5Y 7/1)

· 2AB1125 Installation (Korea)

Single Effect Double Lift Hot Water Driven Absorption Machine

System Piping



1) All external equipment out of dotted line is scope of customer's.
2) Refer to outline drawing and specification data sheet for the external dimensions of the machine, the location & the diameter of water pipe connection and etc.
3) Driving hot water must be maintained as design temperature.
4) It is strongly recommended to install stop valves at hot water inlet and outlet pipe.
5) The locations of chilled water pumps, cooling water pumps and expansion tanks shall be determined in consideration of the hydrostatic head of pumps and the height of building. And the Machine shall not be subject to a pressure higher than the designed pressure at any water header.
6) For cooling water quality control, it is recommended to install cooling water bleed-off device on the inlet pipe line of cooling towers.
7) Around 10 meshes of strainers are recommended to be installed in the cooling water line.
8) For the maintenance and the inspection of the Machine, the following equipment shall be installed on each chilled water and cooling water inlet/outlet lines as well as stop valve.
   - Thermometers and pressure gauges shall be installed at chilled and cooling water inlet/outlet.
   - Air relief valves shall be installed on each chilled and cooling water lines at higher points than each water header.
   - Drain valves shall be installed at the lowest position between the stop valves of chilled and cooling water and the Machine and the drain valve shall be piped to the drain ditch.
9) There shall be a sufficient clearance for access to the absorber, evaporator, condenser, and generator to facilitate inspection and cleaning work.

Cooling Water Quality Control

The cooling water which is recycled by cooling tower is exposed into atmosphere and polluted as it is vaporized. If the cooling water gets polluted, it develops corrosion and also scale inside the tubes and Absorption Machine performance drops.

Therefore, it is recommended to control the water quality; the following table shows guideline for cooling water and make-up water. The tube cleaning method and interval depends on each water quality.

Items		Cooling Water	Make-up Water	Tendency	
				Corrosion	Scale
Standard	PH (25°C)	6.5 ~ 8.0	6.5 ~ 8.0	○	○
	Conductivity (25°C, s/cm)	Max. 800	Max. 200	○	○
	Chloride ion Cl (mg / cl / ℓ)	Max. 200	Max. 50	○	
	Sulfuric acid ion $SO_4$2-(mg $CaCo_3$ /ℓ)	Max. 200	Max. 50	○	
	Alkalinity pH4.8 (mg $CaCo_3$ /ℓ)	Max. 100	Max. 50		○
	Total hardness (mg $CaCO_3$ /ℓ)	Max. 200	Max. 50		○
Reference	Iron Fe (25°C)	Max. 1.0	Max. 0.3	○	
	Sulfides S^{2-} ion (ms S^{2-}/ℓ)	No trace	No trace	○	
	Ammonium ion NH_4+ (mg NH_4+/ℓ)	Max. 1.0	Max. 0.2	○	
	Silica SiO (mg SiO_2/ℓ)	Max. 50	Max. 30		○

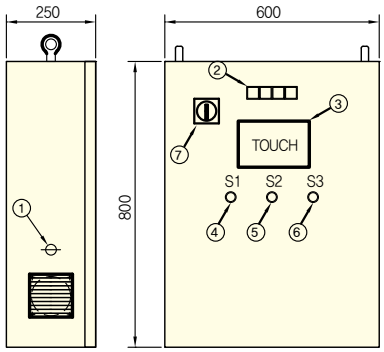
Double Effect Exhaust Gas Driven / Single Effect Double Lift Hot Water Absorption Machine

Control Panel

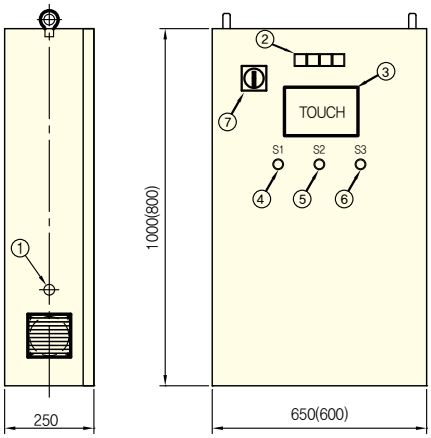
Outline

No.	Description
①	Buzzer
②	Lamps
③	Touch screen
④	Buzzer stop
⑤	Purge pump start/stop switch
⑥	Emergency stop switch
⑦	Power switch

CHP



2AB & HWAR-L

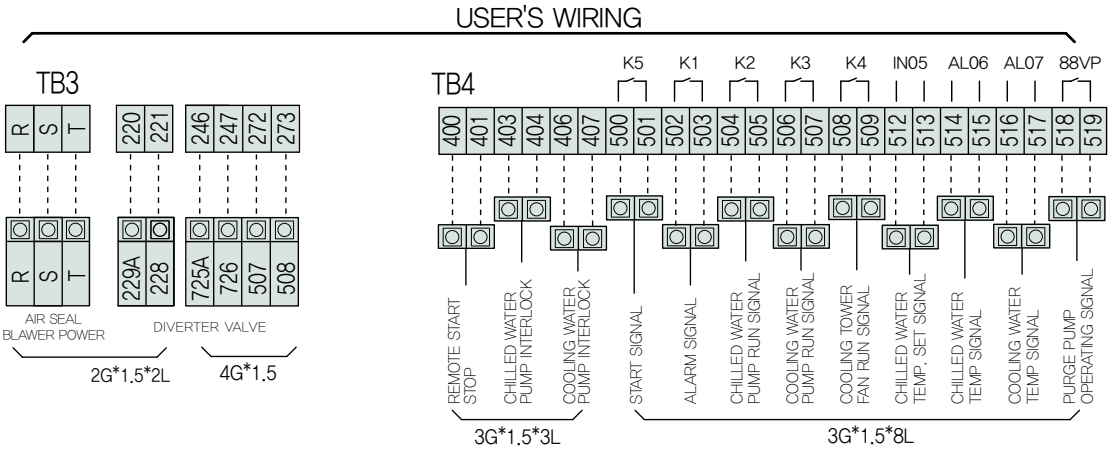


• ( )dimension for HWAR - L series

Wiring

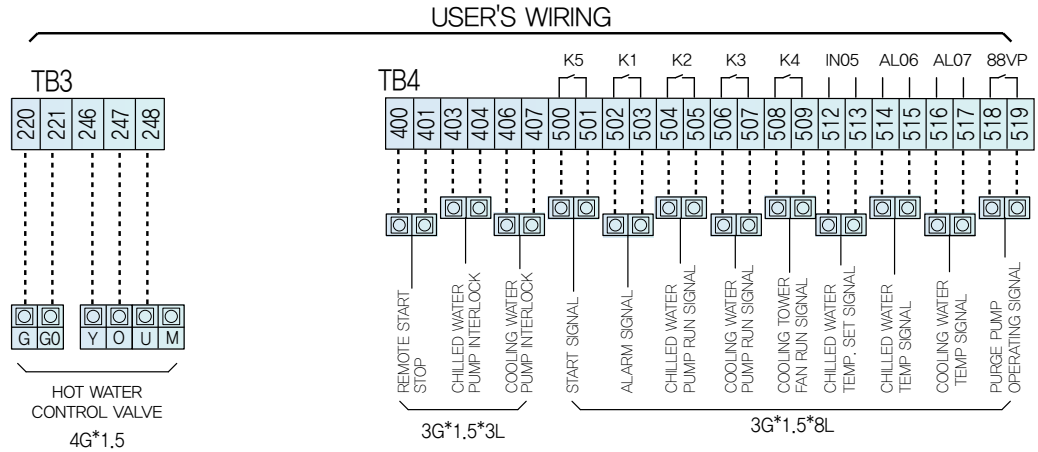
CHP

Note
– – – – is field wiring at the site after completion of chiller installation



2AB & HWAR-L

Note
– – – – is field wiring at the site after completion of chiller installation



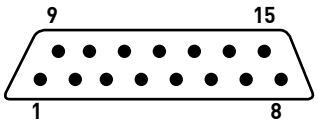
Absorption Machines

Communication Protocol

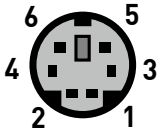
(1) RS-485 (2) RS-232
(3) MODBUS (4) PROFIBUS
(5) INTERNET

Wiring

1) RS-485

Type	Pin No.	Signal	Drection	Contents
15Pin Female  (COM2)	11	RDA(RD+)	input	data receive(+)
	12	RDB(RD-)	input	data receive(-)
	13	SDA(SD+)	output	data send(+)
	14	SDB(SD-)	output	data send(-)
	15	SG		signal ground
	1~9	Serial interface for RS232		

2) RS-232



Body side(6Pin Male)

1	
2	RD
3	SG
4	
5	
6	SD

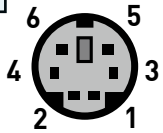
(9Pin Male)

1	
2	RD
3	SD
4	
5	SG
6	
7	
8	
9	

3) MODBUS

Body side(6Pin Male)

1	
2	RD
3	SG
4	
5	
6	SD



(MODBUS)

1	
2	RD
3	SD
4	
5	SG
6	
7	
8	
9	

RS-485 wiring(MODBUS ↔ Chiller side)

Outside(3Pin)

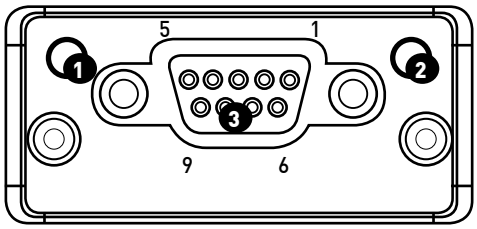
1	
2	RD
	SG

Chiller side(9Pin)

1	
2	RD
3	SD
4	
5	SG

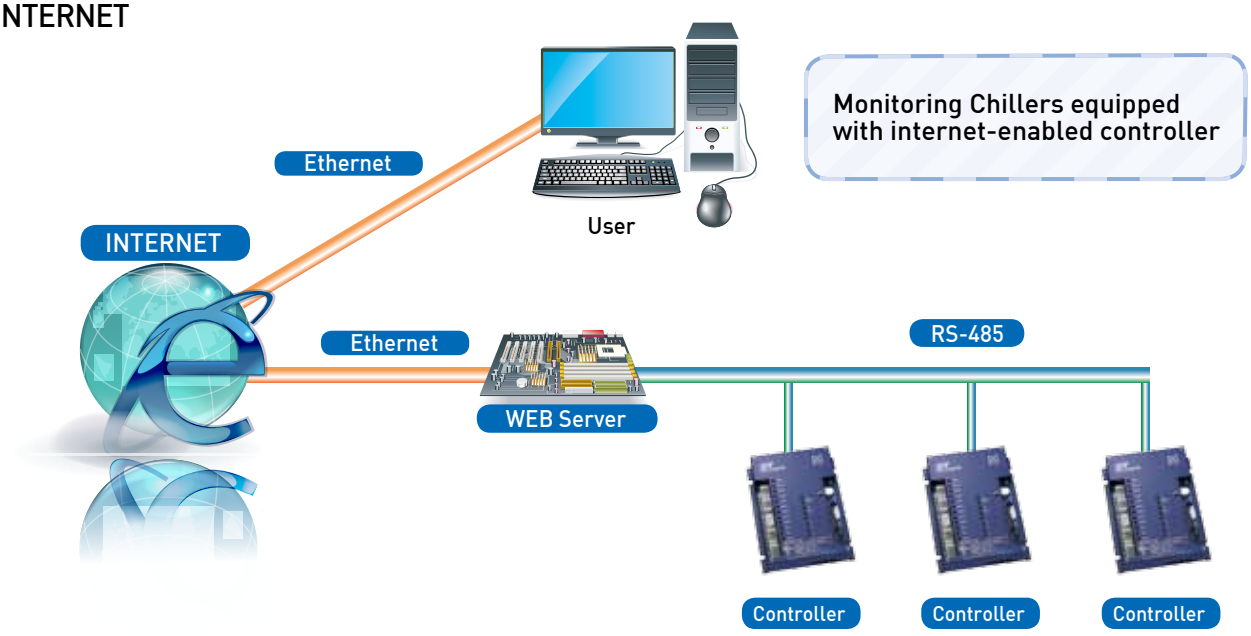
· connet No 1, 4, 5, 6, 9 for 9Pin type, No 11~15 for 15Pin type

4) PROFIBUS

No	Description	

Pin	Signal	Content
1	-	-
2	-	-
3	B line	+ RxD / TxD, RS485 level
4	RTS	Request to send
5	GND	Isolated ground
6	+5V Bus output	Isolated +5V
7	-	-
8	A line	- RxD / TxD, RS485 level
9	-	-

5) INTERNET



Double Effect Direct Fired Absorption Chiller & Heater

Performance Data

Double Effect Dierct Fierd Type (50~400RT) ⟶

Model		Unit	DW50	DW60	DW70	DW80	DW100	DW120	DW150	DW180	DW210	DW240	DW280	DW320	DW360	DW400
Cooling Capacity		kW	176	211	246	281	352	422	527	633	938	844	985	1,125	1,266	1,407
		usRT	50	60	70	80	100	120	150	180	210	240	280	320	360	400
Heating Capacity		kW	147	176	205	235	293	352	440	528	616	704	822	939	1,056	1,174
		kcal/h	126	151	177	202	252	303	378	454	530	606	706	807	908	1,009
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7													
	Flow rate	m^3/h	30	36	42	48	60	73	91	109	127	145	169	194	218	242
	Pressure Drop	mH_20	4.0	3.7	6.2	6.9	5.6	5.9	7.6	8.1	7.5	7.4	5.4	5.3	5.8	6.0
	Connection	mm	80				100				125		150			
Hot Water	Inlet Temp./Outlet Temp.	℃	55.8 / 60													
	Flow rate	m^3/h	30	36	42	48	60	73	91	109	127	145	169	194	218	242
	Pressure Drop	mH_20	4.0	3.7	6.2	6.9	5.6	5.9	7.6	8.1	7.5		5.4	5.3	5.8	6.0
	Connection	mm	80				100				125		150			
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.5													
	Flow rate	m^3/h	50	60	70	80	100	120	150	180	210	240	280	320	360	400
	Pressure Drop	mH_20	7.0	6.1	10.2	10.0	8.9	9.1	10.4	10.8	10.7	11.2	8.9	8.6	8.8	8.7
	Connection	m	100				125		150				200			
Gas	High Heating Value	$kcal/Nm^3$	10,550													
	Flow rate	Nm^3/h	14.4	17.2	20.1	23.0	28.7	34.4	43.1	51.7	60.3	68.9	80.4	91.8	103	115
	Inlet Pressure	mmAq	200				4,000									
	Connection	mm	50(200mmAq)				40(4,000mmAq)						50(4,000mmAq)			
	Exhaust gas	mm	190 X 110		270 X 150		280 X 210				310 X 310				360 X 310	
Electric	Power source	–	3PH, 400V, 50Hz													
	Ref. Pump	kW	0.2				0.3				0.4					
	Abs. Pump	kW	1.5				2.0				2.4				4.0	
	Purge Pump	kW	0.4													
	Burner	kW	0.4		0.7			1.1				2.2			3.2	
	Control Panel	kW	0.2													
	Total kW	kW	2.7		3.0		3.6	4.0			4.5	5.6			8.2	
	Total Amp.	A	8.8		10.1		11.8	14.1			15.2	16.6			22.4	
Size	Lenght (L)	mm	2,095		2,598		2,597		3,680		3,708		4,734		4,776	
	Width (W)	mm	1,477		1,615		1,810		1,920		2,100		2,200		2,290	
	Height (H)	mm	1760				2,090				2,122				2,385	
Weight	Rigging	ton	2.6	2.7	3.2	3.3	4.6	4.9	5.8	6..2	7.3	7.7	8.9	9.4	11.6	12.2
	Operation	ton	2.8	3.0	3.5	3.7	5.0	5.3	6.3	6.8	8.0	8.5	9.8	10.4	12.8	13.5
Space for Tube Replacement		mm	1,900		2,400				3,400				4,500			

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

DW Series

Double Effect Direct Fired Absorption Chiller & Heater

Performance Data

Double Effect Dierct Fierd Type (450~1500RT)

Model		Unit	DW450	DW500	DW560	DW630	DW700	DW800	DW900	DW1000	DW1100	DW1200	DW1300	DW1400	DW1500
Cooling Capacity		kW	1,582	1,758	1,969	2,215	2,461	2,813	3,165	3,516	3,868	4,220	4,571	4,923	5,274
		usRT	400	500	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
Heating Capacity		kW	1,320	1,467	1,643	1,848	2,054	2,347	2,641	2,934	3,227	3,521	3,814	4,108	4,401
		kcal/h	1,135	1,262	1,413	1,590	1,766	2,019	2,523	2,271	2,523	2,776	3,280	3,532	3,785
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7												
	Flow rate	m^3/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_20	5.1	5.4	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200					250			300			350	
Hot Water	Inlet Temp./Outlet Temp.	℃	56.3 / 60												
	Flow rate	m^3/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_20	5.1	5.4	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200					250			300			350	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.5												
	Flow rate	m^3/h	450	500	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
	Pressure Drop	mH_20	8.4	8.6	6.8	9.3	12.4	8.8	12.0	15.8	11.1	14.1	17.6	14.0	16.8
	Connection	m	250		300			350			400			450	
Gas	High Heating Value	$kcal/Nm^3$	10,550												
	Flow rate	Nm^3/h	129	144	161	181	201	230	258	287	316	344	373	402	431
	Inlet Pressure	mmAq	4,000												
	Connection	mm	50(4,000mmAq)								65(4,000mmAq)				
	Exhaust gas	mm	410 X 310		350 X 500			400 X 620			400 X 900				
Electric	Power source	–	3PH, 400V, 50Hz												
	Ref. Pump	kW	0.4					1.5							
	Abs. Pump	kW	3.2		5.5						7.5				
	Purge Pump	kW	0.4								0.75				
	Burner	kW	4.0			7.5				11.0				15.0	
	Control Panel	kW	0.2												
	Total kW	kW	8.2		10.5	14.0		15.1		18.6	21.0			25.0	
	Tatal Amp.	A	22.4		28.4	34.6		37.0		43.7	53.5			60.4	
Size	Lenght (L)	mm	4,880		4,998	5,540	6,038	5,644	6,142	6,667	6,293	6,818	7,318	6,860	7,360
	Width (W)	mm	2,490		3,055			3,330			3,738			4,460	
	Height (H)	mm	2,633		2,962			3,310			3,500			3,700	
Weight	Rigging	ton	14.2	14.9	19.5	21.1	22.7	27.9	30.4	32.8	40.0	43.0	45.8	49.7	52.3
	Operation	ton	15.8	16.6	22.2	24.0	25.7	32.0	34.4	37.1	45.1	48.5	51.5	26.1	59.1
Space for Tube Replacement		mm	4,500			5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	6,200	6,700

Options

1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Double Effect Direct Fired Absorption Chiller & Heater

Performance Data

High Efficiency Double Effect Direct Fired Type (50~400RT) →→

Model		Unit	DWH50	DWH60	DWH70	DWH80	DWH100	DWH120	DWH150	DWH180	DWH210	DWH240	DWH280	DWH320	DWH360	DWH400
Cooling Capacity		kW	176	211	246	281	352	422	527	633	738	844	985	1,125	1,266	1,407
		usRT	50	60	70	80	100	120	150	180	210	240	280	320	360	400
Heating Capacity		kW	121	145	170	194	242	291	363	436	509	581	678	775	872	969
		kcal/h	104	125	146	167	208	250	313	375	438	500	583	667	750	833
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7													
	Flow rate	m^3/h	30.2	36.3	42.3	48.4	60.5	72.6	90.7	109	127	145	169	194	218	242
	Pressure Drop	mH_20	4.0	3.7	6.2	6.9	5.6	5.9	7.6	8.1	7.5	7.4	5.4	5.3	5.8	6.0
	Connection	mm	80				100				125		150			
Hot Water	Inlet Temp./Outlet Temp.	℃	56.3 / 60													
	Flow rate	m^3/h	30.2	36.3	42.3	48.4	60.5	72.6	90.7	109	127	145	169	194	218	242
	Pressure Drop	mH_20	4.0	3.7	6.2	6.9	5.6	5.9	7.6	8.1	7.5	7.4	5.4	5.3	5.8	6.0
	Connection	mm	80				100				125		150			
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.2													
	Flow rate	m^3/h	50	60	70	80	100	120	150	180	210	240	280	320	360	400
	Pressure Drop	mH_20	7.0	6.1	10.2	10.0	8.9	9.1	10.4	10.8	10.7	11.2	8.9	8.6	8.8	8.7
	Connection	m	100				125		150				200			
Gas	High Heating Value	$kcal/Nm^3$	10,550													
	Flow rate	Nm^3/h	11.9	14.2	16.6	19.0	23.7	28.4	35.6	42.7	49.8	56.9	66.4	75.8	85.3	94.8
	Inlet Pressure	mmAq	200				4,000									
	Connection	mm	50(200mmAq)				40(4,000mmAq)						50(4,000mmAq)			
	Exhaust gas	mm	180 x 110		270 x 150		280 x 210				310 x 310				360 x 310	
Electric	Power source	–	3PH, 400V, 50Hz													
	Ref. Pump	kW	0.2				0.3				0.4					
	Abs. Pump1	kW	1.5				2.0				2.4				3.2	
	Abs. Pump2	kW	0.2				0.3				0.4					
	Purge Pump	kW	0.4													
	Burner	kW	0.4				0.7		1.1				2.2			4.0
	Control Panel	kW	0.2													
	Total kW	kW	2.9				3.9		4.3		4.9		6.0		6.8	8.6
	Tatal Amp.	A	9.9				13.4		15.7		16.8		18.2		20.2	24.0
Size	Lenght (L)	mm	2,095		2,598		2,597		3,680		3,708		4,734		4,776	
	Width (W)	mm	1,477		1,615		1,810		1,920		2,1		2,137		2,270	
	Height (H)	mm	1,760				2,090				2,122				2,385	
Weight	Rigging	ton	2.7	2.9	3.4	3.6	4.5	4.8	5.7	6.2	7.2	7.6	8.8	9.3	11.5	12.1
	Operation	ton	2.9	3.1	3.7	3.9	5.0	5.3	6.3	6.8	8.0	8.5	9.8	10.4	12.8	13.5
Space for Tube Replacement		mm	1,900		2,400				3,400				4,500			

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

DWH Series

Double Effect Direct Fired Absorption Chiller & Heater

Performance Data

High Efficiency Double Effect Direct Fired Type (450~1500RT)

Model		Unit	DWH450	DWH500	DWH560	DWH630	DWH700	DWH800	DWH900	DWH1000	DWH1100	DWH1200	DWH1300	DWH1400	DWH1500
Cooling Capacity		kW	1,582	1,758	1,969	2,215	2,461	2,813	3,165	3,516	3,868	4,220	4,571	4,923	5,274
		usRT	450	500	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
Heating Capacity		kW	1,090	1,211	1,357	1,526	1,696	1,938	2,181	2,423	2,665	2,907	3,510	3,392	3,634
		kcal/h	938	1,042	1,167	1,313	1,459	1,667	1,875	2,084	2,292	2,500	2,709	2,917	3,125
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7												
	Flow rate	m^3/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_2O	5.1	5.4	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200					250			300			350	
Hot Water	Inlet Temp./Outlet Temp.	℃	56.3 / 60												
	Flow rate	m^3/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_2O	5.1	5.4	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200					250			300			350	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.2												
	Flow rate	m^3/h	450	500	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
	Pressure Drop	mH_2O	8.4	8.6	6.8	9.3	12.4	8.8	12.0	15.8	11.1	14.1	17.6	14.0	16.8
	Connection	m	250		300			350			400			450	
Gas	High Heating Value	$kcal/Nm^3$	10,550												
	Flow rate	Nm^3/h	107	119	133	149	166	190	213	237	261	284	308	332	356
	Inlet Pressure	mmAq	4,000												
	Connection	mm	50 (4,000mmAq)								65 (4,000mmAq)				
	Exhaust gas	mm	410 x 310		350 x 500			400 x 620			400 x 900				
Electric	Power source	–	3PH, 400V, 50Hz												
	Ref. Pump	kW	0.4					1.5							
	Abs. Pump1	kW	3.2		5.5						7.5				
	Abs. Pump2	kW	0.4		2.2									4.5	
	Purge Pump	kW	0.4								0.75				
	Burner	kW	4.0				7.5					11.0			
	Control Panel	kW	0.2												
	Total kW	kW	8.6		12.7		16.2	17.3			19.7	23.2		25.5	
	Tatal Amp.	A	24.0		34.9		41.1	43.5			53.3	60.0		69.5	
Size	Lenght (L)	mm	4,880		4,998	5,540	6,038	5,644	6,142	6,667	6,293	6,818	7,318	6,860	7,360
	Width (W)	mm	2,469		2,935			3,330			3,929			4,460	
	Height (H)	mm	2,633		2,962			3,310			3,500			3,700	
Weight	Rigging	ton	14.1	14.8	19.6	21.2	22.7	28.7	30.6	32.9	40.4	43.4	46.0	50.1	52.7
	Operation	ton	15.8	16.6	22.2	24.0	25.7	32.0	34.4	37.1	45.1	48.5	51.5	56.1	59.1
Space for Tube Replacement		mm	4,500			5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	6,200	6,700

Options

1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Double Effect Exhaust Gas Driven Absorption Chiller and Heater

Double Effect Steam Fired Absorption chiller

Cooling Cycle (Cooling Mode) Performance Data

Double Effect Steam Fired Type (100~500RT) →→

Model		Unit	SW100	SW120	SW150	SW180	SW210	SW240	SW280	SW320	SW360	SW400	SW450	SW500
Cooling Capacity		kW	352	422	527	633	738	844	985	1,125	1,266	1,407	1,582	1,758
		usRT	100	120	150	180	210	240	280	320	360	400	450	500
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7											
	Flow rate	m^3/h	60	73	91	109	127	145	169	194	218	242	272	302
	Pressure Drop	mH_20	5.6	5.9	7.6	8.1	7.5	7.4	5.4	5.3	5.8	6.0	5.1	5.4
	Connection	mm	100				125		150				200	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.5											
	Flow rate	m^3/h	100	120	150	180	210	240	280	320	360	400	450	500
	Pressure Drop	mH_20	8.9	9.1	10.4	10.8	10.7	11.2	8.9	8.6	8.8	8.7	8.4	8.6
	Connection	mm	125		150				200				250	
Steam	Inlet Pressure	MPa	0.8											
	Flow rate	kg/h	440	528	660	792	924	1,056	1,232	1,408	1,584	1,760	1,980	2,200
	Inlet Connection	mm	50				65				80			
	Drain Connection	mm	25								40			
	Control Valve	mm	40			50					65			
Electric	Power source	–	3PH, 400V, 50Hz											
	Ref. Pump	kW	0.3				0.4							
	Abs. Pump	kW	2.0				2.4				3.2			
	Purge Pump	kW	0.4											
	Control Panel	kW	0.2											
	Total kW	kW	2.9				3.4				4.2			
	Total Amp.	A	9.5				10.6				12.6			
Size	Lenght (L)	mm	2,597		3,680		3,708		4,734		4,776		4,880	
	Width (W)	mm	1,389				1,652				1,735		1,954	
	Height (H)	mm	2,200				2,250				2,450		2,600	
Weight	Rigging	ton	3.8	3.9	4.9	5.2	5.9	6.4	7.4	7.8	9.6	10.1	11.6	12.0
	Operation	ton	4.2	4.4	5.5	5.8	6.7	7.2	8.4	8.9	10.9	11.5	13.3	13.8
Space for Tube Replacement		mm	2,400		3,400				4,500					

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

Single Effect Double Lift Low Temperature Hot Water Absorption Chiller

Exhaust-Energy Recovery_Available exhaust gas from reciprocating engine, gas turbine engine or processor of Factory without additional heat recovery systems.

Cost effective cooling and heating_ CHP Series is design to to double-effect cycle providing more efficient usage of the same energy input.

- Excellent part load performance_ a variable frequency drive pump automatically maintains optimum solution flow to low temp. generator and HTG during whole operation
- High Efficient heat transfer tubes_Newly designed high performance tube enable of heat transfer rate increase.
- Smaller installation space and saved operation cost

PRECISE & OPTIMIZED OPERATION

Factory mounted, wired and tested microprocessor-based controller monitor's and controls the machine operation continuously and automatically. A touch screen display identifies operational status and fault indication. All components meet internally acceptable codes like UL or CE or KS or equivalents. During the start-up sequence, the controller initiates a self-diagnostic system check to verify that all sensors are in range. Remote start/stop switch and a key-locked control panel door protect a against unauthorized access.

Low Noise and Low Vibration

Low sound and vibration levels are characteristic of absorption chillers, primarily due to the fact that the only rotating parts are the refrigerant and solution pumps. The overall sound level of The Worldenergy machine is typically 65dbA. This allows the machines to be installed near occupies spaces or in area with strict sound requirements. Low vibration levels also make it possible to install the chiller on upper floors without special consideration for vibration dampening systems.

RELIABILITY & EASY MAINTENANCE

Hermetically-designed refrigerant and solution pumps which are only moving parts provide reliability and they are field serviceable through pump isolation valves. Also marine-type water box cover on both of the absorber and condenser allows easy tube-cleaning and water-box inspection.
And factory performance test, which is provided as an optional basis, ensure the performance and function of chiller before shipment.

RELIABLE PURGE SYSTEM

Non-condensable gases are periodically exhausted from the storage tank by a simple procedure performed
while the machine is running. Evacuation is performed by a unit mounted vacuum pump that is connected to the purge evacuation valve.

LOW MAINTENANCE

Worldenergy absorption machines has numerous standard design features that provide for convenient and simple Maintenance. Hinged water box cover on the absorber, and condenser facilitate tube and water box inspection.
Epoxy coating of the waterboxes and covers, standard on all machines, protects against corrosion and extend machine life. All moving parts are easily accessible for inspection or replacement, as required.

SW Series

Double Effect Steam Fired Absorption chiller

Performance Data

Double Effect Steam Fired Type (560~1500RT)

Model		Unit	SW560	SW630	SW700	SW800	SW900	SW1000	SW1100	SW1200	SW1300	SW1400	SW1500
Cooling Capacity		kW	1,969	2,215	2,461	2,813	3,165	3,516	3,868	4,220	4,571	4,923	5,274
		usRT	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7										
	Flow rate	m^3/h	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_20	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200			250			300			350	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.5										
	Flow rate	m^3/h	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
	Pressure Drop	mH_20	6.8	9.3	12.4	8.8	12.0	15.8	11.1	14.1	17.6	14.0	16.8
	Connection	mm	300			350			400			450	
Steam	Inlet Pressure	MPa	0.8										
	Flow rate	kg/h	2,464	2,772	3,080	3,520	3,960	4,400	4,840	5,280	5,720	6,610	6,600
	Inlet Connection	mm	100			125			150				
	Drain Connection	mm	50			65			80				
	Control Valve	mm	80			100						125	
Electric	Power source	–	3PH, 400V, 50Hz										
	Ref. Pump	kW	0.4			1.5							
	Abs. Pump	kW	5.5						7.5				
	Purge Pump	kW	0.4						0.75				
	Control Panel	kW	0.2										
	Total kW	kW	6.5			7.6			10.0				
	Total Amp.	A	18.6			21.0			30.8				
Size	Lenght (L)	mm	4,998	5,540	6,038	5,644	6.142	6,667	6,293	6,818	7,318	6,860	7,360
	Width (W)	mm	2,180			2,606			2,829			3,250	
	Height (H)	mm	2,900			3,350			3,450			3,650	
Weight	Rigging	ton	16.1	17.5	18.9	21.1	23.7	26.2	28.7	31.3	33.8	36.4	38.9
	Operation	ton	18.7	20.3	21.8	24.5	27.4	30.4	33.4	36.4	39.4	42.3	45.3
Space for Tube Replacement		mm	4,500	5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	6,200	6,700

Options

1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Performance Data

High Efficiency Double Effect Steam Fired Type (100~500RT) ⟶→

Model		Unit	SWH100	SWH120	SWH150	SWH180	SWH210	SWH240	SWH280	SWH320	SWH360	SWH400	SWH450	SWH500
Cooling Capacity		kW	352	422	527	633	738	844	985	1,125	1,266	1,407	1,582	1,758
		usRT	100	120	150	180	210	240	280	320	360	400	450	500
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7											
	Flow rate	m^3/h	60	73	91	109	127	145	169	194	218	242	272	302
	Pressure Drop	mH_20	5.6	5.9	7.6	8.1	7.5	7.4	5.4	5.3	5.8	6.0	5.1	5.4
	Connection	mm	100				125		150				200	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.2											
	Flow rate	m^3/h	100	120	150	180	210	240	280	320	360	400	450	500
	Pressure Drop	mH_20	8.9	9.1	10.4	10.8	10.7	11.2	8.9	8.6	8.8	8.7	8.4	8.6
	Connection	mm	125		150				200				250	
Steam	Inlet Pressure	MPa	0.8											
	Flow rate	kg/h	390	468	585	702	819	936	1,092	1,248	1,404	1,560	1,755	1,950
	Inlet Connection	mm	50				65				80			
	Drain Connection	mm	25								40			
	Control Valve	mm	40					50				65		
Electric	Power source	–	3PH / 400V / 50Hz											
	Ref. Pump	kW	0.3				0.4							
	Abs. Pump1	kW	2.0				2.4				3.2			
	Abs. Pump2	kW	0.3				0.4							
	Purge Pump	kW	0.4											
	Control Panel	kW	0.2											
	Total kW	kW	3.2				3.8				4.6			
	Tatal Amp.	A	11.1				12.2				14.2			
Size	Lenght (L)	mm	2,597		3,680		3,708		4,734		4,776		4,880	
	Width (W)	mm	1,420				1,652				1,735		1,954	
	Height (H)	mm	2,200				2,250				2,450		2,600	
Weight	Rigging	ton	4.0	4.1	5.1	5.2	5.9	6.1	7.3	7.6	9.6	9.9	11.5	11.9
	Operation	ton	4.4	4.6	5.7	5.8	6.7	7.0	8.3	8.7	10.9	11.3	13.2	13.7
Space for Tube Replacement		mm	2,400		3,400				4,500					

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

SWH Series

Double Effect Steam Fired Absorption chiller

Performance Data

High Efficiency Double Effect Steam Fired Type (560~1500RT)

Model		Unit	SWH560	SWH630	SWH700	SWH800	SWH900	SWH1000	SWH1100	SWH1200	SWH1300	SWH1400	SWH1500
Cooling Capacity		kW	1,969	2,215	2,461	2,813	3,465	3,516	3,868	4,220	4,571	4,923	5,274
		usRT	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7										
	Flow rate	m^3/h	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_20	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200			250			300			350	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 37.2										
	Flow rate	m^3/h	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
	Pressure Drop	mH_20	6.8	9.3	12.4	8.8	12.0	15.8	11.1	14.1	17.6	14.0	16.8
	Connection	m	300			350			400			450	
Steam	Inlet Pressure	MPa	0.8										
	Flow rate	kg/h	2,184	2,457	2,730	3,120	3,510	3,900	4,290	4,680	5,070	5,460	5,850
	Inlet Connection	mm	100			125			150				
	Drain Connection	mm	50			65			80				
	Control Valve	mm	65	80				100					
Electric	Power source	–	3PH / 400V / 50Hz										
	Ref. Pump	kW	0.4			1.5							
	Abs. Pump1	kW	5.5						7.5				
	Abs. Pump2	kW	2.2									4.5	
	Purge Pump	kW	0.4						0.75				
	Control Panel	kW	0.2										
	Total kW	kW	8.7			9.8			12.2			14.5	
	Tatal Amp.	A	25.1			27.5			37.3			46.8	
Size	Lenght (L)	mm	4,998	5,540	6,038	5,644	6,142	6,667	6,293	6,818	7,318	6,860	7,360
	Width (W)	mm	2,180			2,606			3,000			3,250	
	Height (H)	mm	2,900			3,350			3,450			3,650	
Weight	Rigging	ton	16.1	17.5	18.9	21.1	23.7	26.2	28.7	31.3	33.8	36.4	38.9
	Operation	ton	18.7	20.3	21.8	24.5	27.4	30.4	33.4	36.4	39.4	42.3	45.3
Space for Tube Replacement		mm	4,500	5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	6,200	6,700

Options

1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Single Effect Steam Fired Absorption Chiller

Performance Data

Single Effect Steam Fired Type (50~400RT) ⟶

Model		Unit	S050	S060	S070	S080	S100	S120	S150	S180	S210	S240	S280	S320	S360	S400
Cooling Capacity		kW	176	211	246	281	352	422	527	633	738	844	985	1,125	1,265	1,407
		usRT	50	60	70	80	100	120	150	180	210	240	280	320	360	400
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7													
	Flow rate	m^3/h	30.2	36.3	42.3	48.4	60.5	72.6	90.7	109	127	145	169	194	218	242
	Pressure Drop	mH_20	4.0	3.7	6.2	5.6	5.6	5.9	7.6	8.1	7.5	7.4	5.4	5.3	5.8	6.0
	Connection	mm	80				100				125		150			
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 39.4													
	Flow rate	m^3/h	50	60	70	80	100	120	150	180	210	240	280	320	360	400
	Pressure Drop	mH_20	7.0	6.1	10.2	9.6	8.9	9.1	10.4	10.8	10.7	11.2	8.9	8.6	8.8	8.7
	Connection	mm	100				125		150				200			
Steam	Pressure	MPa	0.15													
	Flow rate	kg/h	390	468	546	624	780	936	1,170	1,404	1,638	1,872	2,184	2,496	2,808	3,120
	Inlet Connection	mm	100				125				150		200			
	Drain Connection	mm	25				40								50	
	Control Valve	mm	40			50			65		80		100			125
Electric	Power source	–	3PH / 400V / 50Hz													
	Ref. Pump	kW	0.2				0.3				0.4					
	Abs. Pump	kW	1.2				1.5				2.0		2.4			
	Purge Pump	kW	0.4													
	Control Panel	kW	0.2													
	Total kW	kW	2.0				2.4				3.0		3.4			
	Total Ampere	A	7.1				8.2				9.6		10.6			
Size	Length (L)	mm	2,095		2,598		2,597		3,680		3,708		4,734		4,776	
	Width (W)	mm	1,077		1,095		1,244				1,472				1,495	
	Height (H)	mm	1,880				2,236				2,238				2,521	
Weight	Rigging	ton	2.1	2.2	2.6	2.7	3.6	3.7	4.6	4.8	5.5	5.8	6.8	7.1	8.6	9.2
	Operation	ton	2.3	2.5	2.9	3.1	4.1	4.2	5.2	5.5	6.4	6.8	7.9	8.4	10.4	10.9
Space for Tube Replacement		mm	1,800		2,400				3,400				4,500			

Note

1. Working pressure of chilled water/cooling water circuit are based on 1.0Mpa [150psig].
2. Fouling factor 0.0001m^2.h.℃/kcal for Absorber and Condenser, 0.0001m^2.h.℃/kcal for Evaporator.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Catalogue specifications are subject to change without prior notice.

Performance Data

Single Effect Steam Fired Type (450~1500RT)

Model		Unit	S450	S500	S560	S630	S700	S800	S900	S1000	S1100	S1200	S1300	S1400	S1500
Cooling Capacity		kW	1,582	1,758	1,969	2,215	2,461	2,813	3,165	3,516	3,868	4,220	4,571	4,923	5,274
		usRT	450	500	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
Chilled Water	Inlet Temp./Outlet Temp.	℃	12 / 7												
	Flow rate	m^3/h	272	302	339	381	423	484	544	605	665	726	786	847	907
	Pressure Drop	mH_20	5.1	5.4	4.2	5.8	7.7	5.7	7.7	10.1	6.7	8.6	10.7	8.7	10.6
	Connection	mm	200					250			300			350	
Cooling Water	Inlet Temp./Outlet Temp.	℃	32 / 39.4												
	Flow rate	m^3/h	450	500	560	630	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
	Pressure Drop	mH_20	8.4	8.6	6.8	9.3	12.4	8.8	12.0	15.8	11.1	14.1	17.6	14.0	16.8
	Connection	m	250		300			350			400			450	
Steam	Pressure	MPa	0.15												
	Flow rate	kg/h	3,510	3,900	4,368	4,914	5,460	6,240	7,020	7,800	8,580	9,360	10,140	10,920	11,700
	Inlet Connection	mm	200		250			300			350			400	
	Drain Connection	mm	65					80			100				
	Control Valve	mm	125			150		200							
Electric	Power source	–	3PH / 400V / 50Hz												
	Ref. Pump	kW	0.4					1.5							
	Abs. Pump	kW	2.4		3.0						4.5				
	Purge Pump	kW	0.4								0.75				
	Control Panel	kW	0.2												
	Total kW	kW	3.4		4.0			5.1			7.0				
	Total Ampere	A	10.6		14.6			17.0			22.8				
Size	Length (L)	mm	4,880		4,998	5,540	6,038	5,644	6,142	6,667	6,293	6,818	7,318	6,860	7,360
	Width (W)	mm	1,594		1,830			2,206			2,329			2,929	
	Height (H)	mm	2,799		3,244			3,522			3,900			3,950	
Weight	Rigging	ton	10.5	10.9	14.7	16.0	17.2	19.3	21.6	23.9	26.2	28.5	30.8	33.1	35.4
	Operation	ton	12.5	13.1	17.8	19.4	20.8	23.3	26.1	29.0	31.8	34.6	37.5	40.3	43.2
Space for Tube Replacement		mm	4,500			5,200	5,700	5,200	5,700	6,200	5,700	6,200	6,700	6,200	6,700

Options

1. High Pressure water Boxes
   Water boxes rated for 250psig or 300psig working pressure shall be furnished when specified on the equipment specification data.
2. Special Tubes
   Tubes of non-standard materials and/or wall thickness shall be provided when specified on the equipment specification data.
3. Special operation temperature conditions
   Special operation temperature shall be provided when specified on the equipment specification data.

Absorption Heat Pump

Performance Data

• HPS Series

Steam Fired Type Absorption Heat Pump (670 ~ 4686kW)

Model		Unit	HPS010	HPS012	HPS015	HPS018	HPS021	HPS024	HPS028	HPS032	HPS036	HPS040	HPS045	HPS050	HPS056	HPS063	HPS070
Heating capacity		Mcal/h	576	691	864	1036	1209	1382	1612	1842	2073	2303	2591	2879	3224	3627	4030
Hot Water	Inlet Temp./Outlet Temp.	℃	20 / 80														
	Flow rate	ton/h	9.6	11.5	14.4	17.3	20.2	23.0	26.9	30.7	34.5	38.4	43.2	48.0	53.7	60.5	67.2
	P. Drop	mAq	3.6	3.7	9.8	10.0	9.4	9.9	8.9	9.4	9.4	9.0	9.4	9.3	3.0	4.1	5.4
	Connection	mm	65A						80A				100A				
Recovery Heat Capacity		Mcal/h	227	272	340	408	476	544	635	726	816	907	1,021	1,134	1,270	1,429	1,588
Waste Hot Water	Inlet Temp./Outlet Temp.	℃	30 / 20														
	Flow rate	m^3/h	22.7	27.2	34.0	40.8	47.6	54.4	63.5	72.6	81.6	90.7	102.1	113.4	127.0	142.9	158.8
	P. Drop	mAq	10.7	10.8	10.7	11.3	9.9	10.6	10.5	11.0	11.1	12.0	10.6	11.0	10.3	13.9	14.8
	Connection	A	80A				100A				125A				150A		
Steam side	Flow rate	kg/h	622.5	747.0	933.8	1120.5	1307.3	1494.0	1743.0	1992.0	2241.0	2490.0	2801.3	3112.5	3486.0	3921.8	4357.5
	Inlet Connection	mm	80				100				125		150				
	Drain Connection	mm	25				40				50				65		
	Valve Connection	mm	40		40		50				65		80				100
Electric	Power source	–	3ø, 400V, 50Hz														
	Absb. Pump	kW (A)	1.5 (5.4)		3.0 (7.5)				3.4 (10.2)						5.5 (15.0)		
	Ref. Pump	kW (A)	0.3 (1.5)						0.4 (1.6)						1.5 (4)		
	Purge Pump	kW (A)	0.4 (1.0)														
	Control Panel	kW (A)	0.3 (0.5)														
	Total Ampare	A	8.4		10.5				13.3						20.5		
Size	Lenght (L)	mm	2,436		3,456		3,506		4,526		4,606				4,666	5,208	5,706
	Width (W)	mm	1,335				1,495				1,558		1,689		1,861		
	Height (H)	mm	1,980				2,370				2,700				3,100		
Weight	Rigging	ton	3.3	3.4	4.1	4.3	5.2	5.5	6.2	6.6	7.9	8.5	10.0	10.4	14.4	15.6	16.4
	Operation	ton	4.5	4.8	5.8	6.2	7.5	8.0	9.0	9.7	11.5	12.3	14.5	15.2	20.0	21.8	23.1
	Max. Shipping	ton	3.3	3.4	4.1	4.3	5.2	5.5	6.2	6.6	7.9	8.5	10.0	10.4	12.4	13.4	14.0
	Shipment Type		One Body												Two Body		
Space for Tube Replacement		mm	2,400		3,400				4,500							5,200	5,700

• HPD Series

Direct Fired Type Absorption Heat Pump (670 ~ 4686kW)

Model		Unit	HPD010	HPD012	HPD015	HPD018	HPD021	HPD024	HPD028	HPD032	HPD036	HPD040	HPD045	HPD050	HPD056	HPD063	HPD070
Hot Water Outlet capacity		Mcal/h	576	691	864	1036	1209	1382	1612	1842	2073	2303	2591	2879	3224	3627	4030
Hot Water	Inlet Temp./Outlet Temp.	℃	20 / 80														
	Flow rate	ton/h	9.6	11.5	14.4	17.3	20.2	23.0	26.9	30.7	34.5	38.4	43.2	48.0	53.7	60.5	67.2
	P. Drop	mAq	3.6	3.7	9.8	10.0	9.4	9.9	8.9	9.4	9.4	9.0	9.4	9.3	3.0	4.1	5.4
	Connection	mm	65A						80A				100A				
Waste Heat Capacity		Mcal/h	227	272	340	408	476	544	635	726	816	907	1,021	1,134	1,270	1,429	1,588
Waste Water	Inlet Temp./Outlet Temp.	℃	30 / 20														
	Flow rate	m^3/h	22.7	27.2	34.0	40.8	47.6	54.4	63.5	72.6	81.6	90.7	102.1	113.4	127.0	142.9	158.8
	P. Drop	mAq	10.7	10.8	10.7	11.3	9.9	10.6	10.5	11.0	11.1	12.0	10.6	11.0	10.3	13.9	14.8
	Connection	mm	80A				100A				125A				150A		
fuel consumption	LNG(10,500kcal/Nm^3)	Nm^3/h	40.0	48.0	60.1	72.1	84.1	96.1	112.1	128.1	144.1	160.1	180.2	200.2	224.2	252.2	280.3
	LPG(12,000kcal/kg)	kg/h	35.0	42.0	52.5	63.1	73.6	84.1	96.1	112.1	126.1	140.1	157.6	175.2	196.2	220.7	245.2
	Supply pressure	mmAq	4,000														
	Gas connection	A	40A			50A											
	Kerosene(10,960kcal/l)	ℓ/h	39.3	47.2	59.0	70.7	82.5	94.3	110.1	125.8	141.5	157.2	176.9	196.5	220.1	247.6	275.1
	Diesel(11,100kcal/l)	ℓ/h	38.8	46.6	58.2	69.9	81.5	93.1	106.7	124.2	139.7	155.2	174.6	194.0	217.3	244.5	271.7
	Oil Connection	A	15A x 2									20A x 2					
Electric	Power source	–	3ø, 400V, 50HZ														
	Absb. Pump	kW (A)	1.5 (5.4)		3.0 (7.5)				3.4 (10.2)						5.5 (15.0)		
	Ref. Pump	kW (A)	0.3 (1.5)						0.4 (1.6)						1.5 (4)		
	Gas Burner	kW (A)	1.5 (3.5)			2.2 (5.0)			3.7 (8.1)			4.0 (10.5)		7.5 (18.6)			
	Oil Burner	kW (A)	1.5 (3.5)	2.2 (5.0)		3.7 (8.1)		6.3 (13.1)						8.6 (21.9)			
	Purge Pump	kW (A)	0.4 (1.0)														
	Control Panel	KVA	0.3 (0.5)														
	Total Ampare	A	11.9/11.9	11.9/13.4	14.0/15.5	15.5/23.1		15.5/23.1	21.4/26.4			23.8/26.4		31.9/35.2	39.1/42.4		
Size	Lenght (L)	mm	2,643	2,843	3,456		3,645		4,526		4,606				4,666	5,206	5,706
	Width (W)	mm	1,980		2,370		2,315	2,461	0	2,557	2,590	2,819	2,965		3,263		
	Height (H)	mm	1,930				2,370				2,700				3,100		
Weight	Rigging	ton	4.0	4.1	4.9	5.3	6.5	6.9	7.9	8.6	10.3	10.8	12.6	13.3	19.0	20.6	21.8
	Operation	ton	5.2	5.5	6.6	7.3	8.7	9.3	10.7	11.7	13.9	14.6	17.1	18.1	24.6	26.8	28.5
	Max. Shipping	ton	4.0	4.1	4.9	5.3	6.5	6.9	7.9	8.6	10.3	10.8	12.6	13.3	12.4	13.4	14.0
	Shipment Type	–	One Body												Two Body		
Exhaust Duct		mm	280*210		310*310			360*310		410*310		350*350			400*620		
Space for Tube Replacement		mm	2,400		3,400				4,500							5,200	5,700

Performance Data

• **AHT Series**

Steam Generation Absorption Heat Pump

Model		Unit	AHT-560	AHT-1100	AHT-1650	AHT-2200	AHT-2250	AHT-3300	AHT-3800
Hot Water	Heating Capacity	kcal/h	300,000	600,000	900,000	1,200,000	1,500,000	1,800,000	2,100,000
	flow rate	ton	50	100	150	200	250	300	350
	Inlet Temp.	℃	127	127	127	127	127	127	127
	Outlet Temp.	℃	133	133	133	133	133	133	133
	Pre. Drop	mAq	5	5	5	5	5	5	5
	Connection	A	100	125	150	200	200	200	250
	Max. Working Pressure	kg/cm^{2}G	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Waste Steam	Waste Heat Capacity	kcal/h	625,000	1,250,000	1,875,000	2,500,000	3,125,000	3,750,000	4,375,000
	Temp.	℃	88	88	88	88	88	88	88
	Connection	A	150	200	200	250	250	300	300
	Drain Connection	A	50	80	100	125	125	125	150
	Max. Working Pre	kg/cm^{2}G	2	2	2	2	2	2	2
Cooling Water	Flow rate	ton/h	54	108	162	216	270	324	378
	Inlet Temp.	℃	26	26	26	26	26	26	26
	Outlet Temp.	℃	32	32	32	32	32	32	32
	Pre. Drop	mAq	7	7	7	7	7	7	7
	Connection	A	100	125	150	200	200	250	250
	Condition	–	Indurstrial Water						
	Max. Working	kg/cm^{2}G	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Electric	Power source	–	3ø, 400V, 50Hz						
	Abs. Pump	kW	1.5	2.2	3.7	3.7	5.5	5.5	5.5
	Ref. Pump-1	kW	0.75	0.75	0.75	0.75	0.75	0.75	0.75
	Ref. Pump-2	kW	0.75	0.75	0.75	0.75	0.75	1.5	1.5
	Purge Pump	kW	0.4	0.4	0.4	0.75	0.75	0.75	0.75
	Control Panel	VA	300	300	300	300	300	300	300
Size	Lenght (L)	mm	4,470	4,645	4,680	6,870	6,870	7,150	7,735
	Width (W)	mm	2,405	3,005	3,260	3,240	3,310	3,585	4,000
	Height (H)	mm	4,300	4,615	5,010	5,120	5,370	5,770	5,430
Operation		ton	16	27	36	48	52	59	63

Note

1. Available model will be selected as Temperature condition of Waste water and Hot water.
2. Waste water side tube material is 90/10 Cupro Nickel. Tube material may be changed as the waste water and hot water condition.
3. Standard power source is 3ph, 400V, 50Hz. Available 220, 380, 440V and 460V Power source.
4. Please consult with sale person in case of the other fuel condition. Do not available Buncker C oil.

· 10 ton/h Absorption Heat Pump Installation [Korea]

Installation Records

Single Effect Double Lift
Hot water Driven Type

2AB470, 2AB420, Total 2023 usRT
Location : Korea

Single Effect Double Lift
Hot water Driven Type

2AB470, Total 910 usRT
Location : Korea

Single Effect Double Lift
Hot water Driven Type

2AB135, Total 260 usRT
Location : Korea

Single Effect Double Lift
Hot water Driven Type

2AB75, 75 usRT
Location : Korea

Single Effect
Hot Water Driven Type

HWAR-L110, 110 usRT
Location : U.S.A.

Single Effect Double Lift
Hot water Driven Type

2AB155, 156 usRT
Location : Germany

Double Effect Exhaust Gas
Driven Type

CHP024, 240 usRT
Location : Germany

Heat Exchanger for Fuel Cell

HEX920, Capacity 400 kW
Location : U.S.A.

Single Effect Steam Fired Absorption Chiller

S1300, S560, L750, Total 7,800 usRT
(Explotion Protection)
Location : Korea

Evaporating Condenser for MVR
(Mecanical Vapor Recompression System)

Steam Generating Capacity 5 ton/h
Location : Korea

Single Effect Steam Fired Absorption Chiller

S500, 500 usRT
(Explotion Protection)
Location : Korea

Single Effect Double Lift
Hot water Driven Type

2AB, 240, 220 usRT
Location : Korea

Single Effect
Hot Water Driven Type

HWAR-L1125, 1422 usRT
(Explotion Protection)
Location : Korea

Single Effect Double Lift
Hot water Driven Type

2AB975, 2AB240, Total 1,036 usRT
Location : Taiwan

Single Effect Double Lift
Hot water Driven Type

2AB825, 2AB270, 1,001 usRT
Location : Taiwan

Single Effect Double Lift
Hot water Driven Type

2AB240, 240 usRT
Location : Korea

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