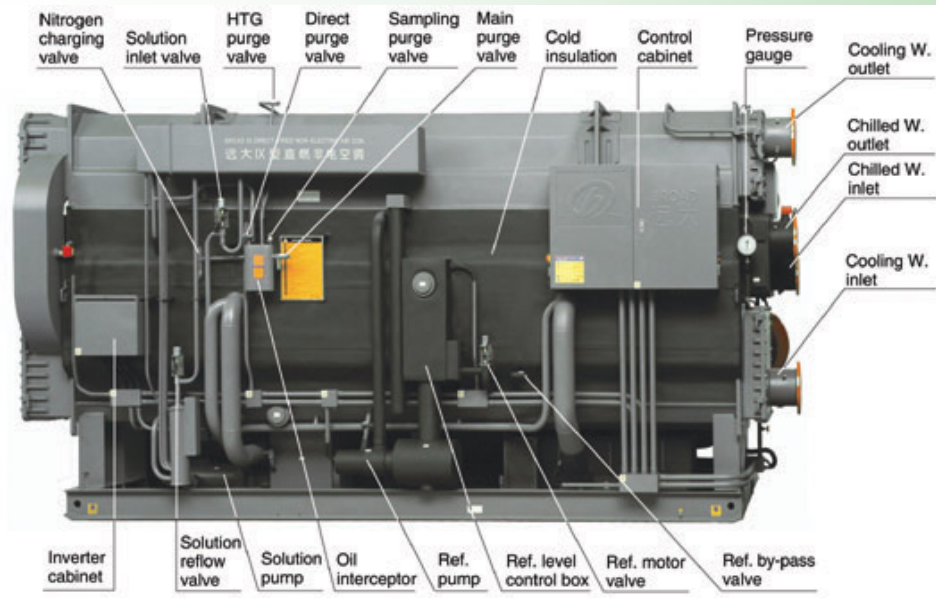




Direct-fired Chiller

1. Three functions in one chiller saves investment.

By providing three functions (cooling, heating and hot water) within one machine, a significant amount of investment is saved. Power distribution facilities, boilers and other equipment become unnecessary, and management and maintenance expenses are also lowered.



2. "Separate heating" technology doubles chiller life-span.

The main shell is separated from the HTG during the heating function. Since the main shell is not in operation, wear and tear on the system is significantly reduced. The system fault rate and the amount of heat loss both decrease, and the evaporator is better able to avoid contamination.

3. Automatic anti-crystallization and decrystallization technology enable chiller to avoid malfunctions related to LiBr solution crystallization.

For the past 60 years, solution crystallization has been a problem area in this industry. Most attempts to mitigate solution crystallization risk focused only on anti-crystallization techniques. Yet, the best anti-crystallization measures cannot prevent crystallization under abnormal circumstances such as power failure, sensor signal error, low cooling water temperature, low chilled water temperature, and drastic load change. Moreover, during low chilled water temperature situations, the refrigerant water will definitely freeze. Freezing will definitely result in crystallization. BROAD utilizes simple and reliable techniques such as temperature change detection devices to prevent crystallization and automatic jacket tube decrystallisation when crystallization occurs. Crystallization is detected promptly, and the decrystallization process can be completed within minutes, even in the event of extended power failure. BROAD has taken measures to largely eliminate the crystallation problem.





4. System nozzles spray LiBr solution upward instead of downward as in traditional systems, and the entire chiller water flow system is equipped with filters. These measures prevent cooling capacity decreases.

Over time, impurities accumulate in system pipes. If nozzles spray downward from the bottom of the pipes, impurities will flow down into the nozzles, leading to clogging and eventual cooling capacity decreases. BROAD nozzles spray LiBr solution upward to prevent clogging.

Moreover, all water pump inlets are equipped with automatic filters to keep the solution clean and protect the water pumps. Cooling water inlets and chilled/heating water inlets are equipped with stainless steel filters to ensure no clogging within the chiller and fan coils.

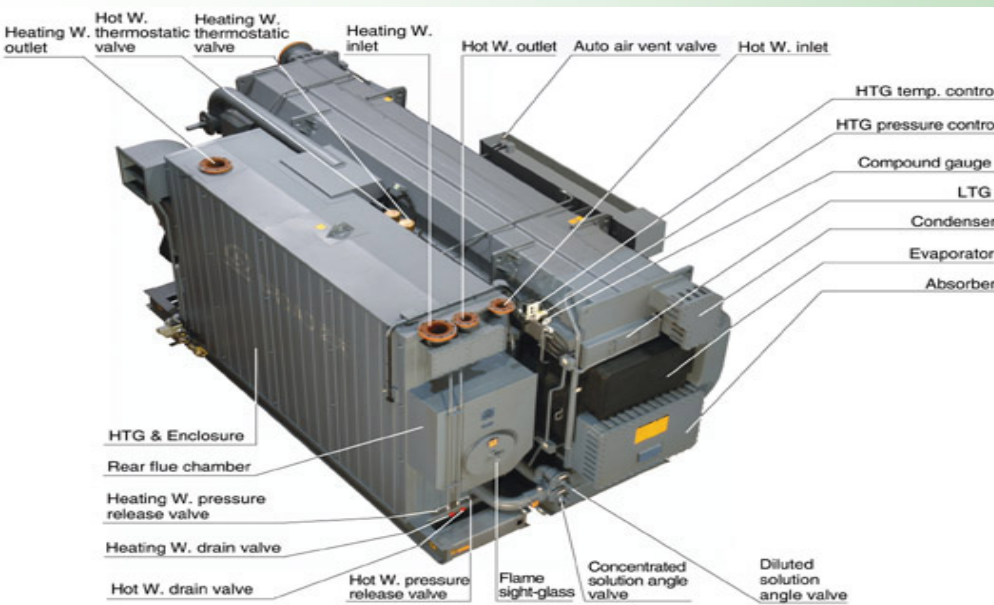
5. LiBr flow system includes an inline falling head automatic purge mechanism that eliminates potentially harmful gas particles, ensuring expected cooling capacity and preventing pipe corrosion.

The chiller system uses the height difference between a non-condensable inlet chamber and the absorber to purge non-condensable gases (H₂, O₂, S, etc.). This process removes gas particles from the LiBr solution. If LiBr solution retains gas particles as it enters the vacuum area, the absorption process will be negatively affected and pipes may eventually corrode. Moreover, the BROAD purging process capacity is stable, unlike traditional ejector-based auto-purge systems that lose or gain effectiveness as the LiBr flowrate changes.

6. 8-stage safety protection for HTG and automatic pressure release help prevent explosions.

The HTG is equipped with electronic temperature sensors, mechanical temperature sensors, pressure sensors, solution level sensors, exhaust temperature sensors, heating water temperature sensors, hot water temperature sensors and a rupture disc. This set of safety devices ensures that explosions will not occur due to excess pressure/high temperature, even after parts failure or a software virus.

An automatic pressure release is also installed with the HTG. It releases the pressure created during combustion by the burner.



7. 3-level flow switches in evaporator and 3-level temperature sensors prevent frozen tubes.

The problem of frozen tubes has plagued the central air conditioning industry for years. Frozen tubes within the evaporator can destroy chillers. Thus, BROAD installs multiple flow switches and temperature sensors, preventing the occurrence of frozen tubes. Detection of adverse conditions occurs on a timely basis. If chilled water

has stopped, is flowing slowly, or has a low temperature, cooling water can be stopped immediately.





8. Information Control System (ICS) ensures continuous operation.

BROAD's ICS system was designed based on international operating standards. The goal is continuous operation with no on-site operator. In addition to the standard automatic control functions, ICS is equipped with functions such as sensor fault signal analysis, latent fault detection, parts life-span calculation and malfunction correction. Moreover, communication faults with external systems can be resolved in a short time. Most importantly, the BROAD ICS system can detect and analyze all potential faults and virtually eliminate the risk of complete breakdown (only 7 fault types out of hundreds of possible malfunctions actually cause the chiller to cease operation). The ICS System helps reduce the fault stop rate by 95%. When faults or abnormalities are detected, information related to the fault and repair instructions are automatically sent to a BROAD monitoring center and service engineer through the internet. Problems are resolved before they become problems. Our aim is zero breakdowns within the chiller life-span.

9. Plate heat exchanger saves 15% more energy.

Crossed corrugated carbon steel sheets are used for solution heat exchanging. After the exchange between the high and low temperature solution, the temperature difference is only 3-6 oC. In traditional tube heat exchanger systems, the difference is 18-30oC. The application of the plate heat exchanger to the absorption chiller was a revolution in energy-saving technology.

10. Corrugated turbulators within HTG combustion tubes are an energy saver.

Corrugated turbulators are inserted within the HTG combustion tubes. The corrugation is a benefit when flue gas temperature becomes lower. This addition results in a small increase in flue gas resistance, but significantly greater heat exchange efficiency is obtained.

11. Refrigerant agent overflow detector prevents energy waste.

There are three refrigerant agent detectors within the chiller (two connected to the refrigerant pump on/off switch, one to prevent overflow). If combustion (heat input) is too high, cooling load decreases, chilled water temperature is too low or the vacuum condition is inadequate, the refrigerant water level will rise. When the detector senses overly high levels, the burner (or heat source valve) will shut down immediately. Without this device, refrigerant overflows become common and serve as a large source of energy waste. Since refrigerant agent overflow occurs internally and generally only at partial load, for decades this source of energy waste was undetected, which is one of the reasons that *why people regarded absorption technology as high energy consumptive.*

12. Enclosed piping and separated solution flow structure result in energy savings of 7%-12%.

Pipes carrying diluted solution from the absorber to HTG/LTG are enclosed within pipes carrying concentrated solution from HTG/LTG. Heat exchange occurs saving energy as the diluted solution reaches HTG/LTG.

Moreover, diluted solution flows to/from HTG and LTG separately. Consequently, the circulation volume from HTG is decreased by 50%, the required HTG temperature is lowered, and generator life span is extended.

13. Built-in inverter and lower cooling/chilled/heating water resistance save significant amounts of electricity.

BROAD chillers are equipped with inverters connected to the cooling water pump and cooling fan, dramatically reducing electricity consumed by the cooling water pump and cooling fan at partial load or low ambient temperature. The inverter also helps to regulate accurately the chilled water outlet temperature.





14. Complete fuel combustion without typical black smoke pollution.

Larger combustion chamber and added dry-back rear flue chamber allow for 100% fuel combustion. Yet, the system prevents the release of the black smoke by product that usually results from combustion.

15. Special energy-saving operating mode with online energy cost calculation and management.

Based on continuously monitored ambient temperature, the chilled water outlet temperature is automatically adjusted. The chiller can also be automatically turned on/off. These functions help avoid energy waste and user discomfort.

Chiller consumption of fuel, electricity, and water (amount and expected cost) is tracked on a daily basis, and information from yesterday, month-to-date, last month, year-to-date, last year can be retrieved at the user's convenience. Abnormal energy consumption levels can indicate chiller problems. Maintenance and/or repair can be performed before major problems present themselves.

16. Automatic purging system saves maintenance/repair costs and increases system reliability.

In addition to a control system that provides an automatic on/off function, timed on/off function and an ambient temperature controlled on/off function, solenoid valves for automatic purging and refrigerant purification are included within the system. No manual operation is needed. Periodic cooling capacity decreases and pipe corrosion can also be avoided.

17. Additional function of cooling water control ensures system stability.

- ①A 3-way motor valve adjusts the cooling water temperature to prevent solution crystallization under low temperature conditions. At lower load capacities, HTG temperature falls in order to maximize COP. The valve also will adjust cooling water temperature down in accordance with the HTG temperature.
- ②Based on cooling load, the control system calculates the cooling water rate of evaporation/condensation to determine the appropriate replacement/removal interval for the cooling water. Water is automatically supplemented after system draining to ensure water quality and to avoid water waste.
- ③A water quality stabilizer valve (or pump) control interface is provided to automatically input anti-dirt & antibacterial chemicals after cooling water replacement ensuring no contamination within the absorber, condenser or cooling tower.

The aforementioned features not only make a full-time operator unnecessary, but also avoid contamination, corrosion, and breakdowns caused by poor water quality and the high risk of copper tube corrosion due to the presence of too many chemicals.





18. Easy model selection, installation, maintenance and repair. Extremely high level of engineering sophistication.

Complete technical parameters, accurate performance curves, a broad range of potential energy sources and models suited to a wide variety of environments make model selection simple and convenient.

Moreover, several installation steps are performed at the factory. All control devices are installed/set up before our chillers leave our manufacturing base, reducing machine room design and installation costs. Design, installation and commissioning related breakdowns are avoided.

Lastly, if not prevented entirely, maintenance and repair are made simple through the use of advanced technology and adherence to superior quality standards. A water resistance detector is included with our units to measure the water flowrate. Accidents related to block filters are avoided. Factory-applied heat/cold insulation prevents damage to the chiller caused by adverse machine room temperature conditions. The HTG removable enclosure makes leakage inspection very convenient, and the design of the HTG fire tubes is ideal for cleaning, leakage inspection or repair. A marine water box is included with large-sized chillers and aids in tube cleaning and inspection. Valves and sight-glass areas within our systems are double sealed, ensuring appropriate vacuum conditions and greater convenience with regards to replacement of sealing elements. Frequently replaced parts and sealing materials are even provided at purchase, simplifying spare parts management. Welding seams are designed to make leakage checking and re-welding extremely convenient. The chiller can generally be repaired on jobsite if a breakdown/fault occurs.

Over the years, not one BROAD chiller has needed to be replaced. Given the technical competence and care exercised during BROAD chiller design, BROAD chillers will reach their expected 20 year life span.

19. Chillers designed to readily accept system changes and upgrades.

Potential future changes and upgrades are fully considered during chiller design. Given the chiller's long-term investment nature, users want a machine that can change as their situation changes. Users can conveniently add/subtract system functions, switch to an alternative energy source, adjust to take advantage of solar or waste heat availability, and implement more sophisticated control interfaces.



20. Long term relationships with world-class partners and suppliers ensure superior component materials.

Approximately 90% (by dollar value) of component materials/parts (including all electrical parts and copper tubes) are sourced from world-class suppliers in Europe, the US and Japan. These materials/parts are subsequently custom-made according to BROAD specifications and upgraded continuously as BROAD maintains its record of innovation.

21. Full assortment of international quality and safety certifications.

BROAD has obtained all safety certifications required in the US and Europe for our complete range of products (including EMC, LVD, ISO, gas directive & PED standards). These certifications were issued by the global authorities on quality and safety. To date, BROAD is the only absorption manufacturer in the world who has met this complete set of standards.





22. Standardized customer service and maintenance procedures. Zero breakdowns during 20 year life-span is virtually guaranteed.

A 6-step maintenance program and responsibility system brings service engineers all over the world into a standardized working procedure and transparent supervision system. Detailed technical files are kept for every chiller, and spare parts are stored at the main factory as well as local service offices. Our chillers receive periodic maintenance checkups (seasonal) and are monitored 24/365 through an internet-based system. Maintenance expenses are minimized, repair costs are kept close to zero and 20 plus years life-span can be realized.

23. Comprehensive system design eliminates the need for subsequent purchase additions later.

Compared to other units without the technological advancements, safety and maintenance features, and user-friendly interfaces, BROAD chillers may appear expensive. However, you generally get what you pay for. With BROAD you get far more than you pay for. Items such as: 1. an additional cooling water control function, 2. built-in inverter control function which allows for electricity energy savings, 3. 24/7 remote monitoring through the internet, 4. automatic decrystallization, 5. factory-installed heat/cold insulation, 6. solenoid valves for automatic purging and refrigerant purification, 7. a programmable terminal touch screen and many other features are included free of charge. The value of these items purchased separately would amount to around 20% of a chiller's price.

24. Real energy savings dramatically shorten payback period.

BROAD utilizes a series of patented energy saving technologies which result in operating expenses lower than the vast majority of other products on the market. The decision to replace your current more expensively operating cooling/heating system becomes easy as the energy savings from using BROAD absorption chillers amount to 10-20% of the chiller's price per year. The payback period is very short.





SPECIFICATIONS(ARI)

Model		BZ	15	20	25	30	40	50	65	75	85	100	125	150
cooling capacity	kW	174	233	291	349	465	582	756	872	989	1163	1454	1745	
cooling capacity	10 ⁴ kcal/h	15	20	25	30	40	50	65	75	85	100	125	150	
cooling capacity	Rt	50	66	83	99	132	165	215	248	281	331	413	496	
heating capacity	kW	135	179	224	269	358	449	583	672	762	897	1121	1349	
heating capacity	10 ⁴ Kcal/h	11.6	15.4	19.3	23.1	30.8	38.6	50.1	57.8	65.5	77.1	96.4	116	
chilled water 6.7°C/12.2°C high flow(A)														
flowrate	m ³ /h	27.1	36.1	45.1	54.1	72.2	90.2	117	135	153	180	226	271	
pressure drop	kPa	5	5	8	8	8	17	17	21	21	21	38	38	
chilled water 7°C/14°C low flow(B)														
flowrate	m ³ /h	21.4	28.6	35.7	42.9	57.1	71.4	92.9	107	121	143	179	214	
pressure drop	kPa	3	3	5	5	5	11	11	14	14	14	25	25	
cooling water 36°C/29°C low flow(a)														
flowrate	m ³ /h	35.4	47.2	59.0	70.9	94.5	118	154	177	201	236	295	354	
pressure drop	kPa	30	30	62	62	62	62	38	50	50	50	50	50	
cooling water 34.9°C/29.4°C high flow(b)														
flowrate	m ³ /h	45.1	60.1	75.2	90.2	120	150	195	225	256	301	376	451	
pressure drop	kPa	47	47	97	97	97	97	59	78	78	78	78	78	
heating water														
flowrate	m ³ /h	14.5	19.3	24.1	28.9	38.5	48.3	62.6	72.3	81.9	96.4	121	145	
pressure drop	kPa	40	40	50	50	50	50	50	70	70	70	70	70	
hot water														
flowrate	m ³ /h	7.2	9.6	12.1	14.4	19.3	24.1	31.3	36.1	40.9	48.2	60.3	72.5	
pressure drop	kPa	60	60	70	70	70	70	70	80	80	80	80	80	
max. fuel consumption														
oil(cooling)	kg/h	10.6	14.2	17.7	21.3	28.4	35.6	46.3	53.5	60.4	71.2	88.8	107	
gas(cooling)	10 ⁴ kcal/h	11.1	14.8	18.4	22.1	29.6	37.0	48.2	55.6	62.8	74.0	92.3	111	
oil(cooling)	kg/h	12.0	16.0	20.1	24.0	32.0	40.1	52.1	60.1	68.1	80.1	100	121	
gas(cooling)	10 ⁴ kcal/h	12.5	16.6	20.9	25.0	33.3	41.7	54.2	62.5	70.8	83.4	104	125	
power														
power	kW	1.6	1.6	2.7	2.7	3.2	3.8	5.4	5.4	6.8	6.8	9.0	10.4	
solution weight														
solution weight	t	0.8	1.0	1.1	1.4	1.7	2.0	2.2	2.7	3.2	3.7	4.3	5.2	
unit ship.wt. (with LiBr)														
unit ship.wt. (with LiBr)	t	3.9	4.7	5.5	6.5	7.8	8.8	9.8	11.6	13.2	15.4	19.1	22.0	
unit ship.wt. (without LiBr)														
unit ship.wt. (without LiBr)	t	/	/	/	2.7	3.6	4.0	4.6	5.0	6.2	7.1	9.0	10.2	
operation weight														
operation weight	t	4.1	5.0	5.8	6.9	8.3	9.4	10.6	12.3	14.3	16.7	20.9	24.2	





SPECIFICATIONS(ARI)

Model	BZ	175	200	250	300	400	500	600	800	1000	1200	1600	2000
cooling capacity	kW	2035	2326	2908	3489	4652	5815	6978	9304	11630	13956	18608	23260
cooling capacity	10 ⁴ kcal/h	175	200	250	300	400	500	600	800	1000	1200	1600	2000
cooling capacity	USRt	579	661	827	992	1323	1653	1984	2646	3307	3968	5291	6614
heating capacity	kW	1570	1791	2245	2687	3582	4489	5385	7176	8967	10760	14351	17933
heating capacity	10 ⁴ Kcal/h	135	154	193	231	308	386	463	617	771	925	1234	1542
chilled water 6.7°C/12.2°C high flow(A)													
flowrate	m ³ /h	361	361	451	541	722	902	1082	1443	1804	2164	2886	3608
pressure drop	kPa	38	38	64	64	64	38	38	38	75	38	38	75
chilled water 7°C/14°C low flow(B)													
flowrate	m ³ /h	250	286	357	429	571	714	857	1143	1429	1714	2286	2857
pressure drop	kPa	25	25	42	42	42	25	25	25	49	25	25	49
cooling water 36°C/29°C low flow(a)													
flowrate	m ³ /h	413	472	590	709	945	1181	1417	1889	2362	2834	3779	4724
pressure drop	kPa	50	50	62	62	62	70	70	70	90	70	70	90
cooling water 34.9°C/29.4°C high flow(b)													
flowrate	m ³ /h	526	601	752	902	1202	1503	1804	2405	3006	3608	4810	6012
pressure drop	kPa	78	78	97	97	97	110	110	110	140	110	110	140
heating water													
flowrate	m ³ /h	169	193	241	289	385	483	579	771	964	1156	1543	1928
pressure drop	kPa	70	70	70	70	70	70	70	70	70	70	70	70
hot water													
flowrate	m ³ /h	84.4	96.3	121	144	193	/	/	/	/	/	/	/
pressure drop	kPa	80	80	80	80	80	/	/	/	/	/	/	/
max. fuel consumption													
oil(cooling)	kg/h	125	142	178	214	285	356	428	570	712	855	1141	1425
gas(cooling)	10 ⁴ kcal/h	130	148	185	222	297	370	445	593	741	889	1186	1482
oil(heating)	kg/h	140	160	201	240	320	401	481	641	801	962	1283	1603
gas(heating)	10 ⁴ kcal/h	146	166	209	250	333	417	501	667	834	1000	1334	1667
power													
power	kW	12.9	14.8	15.3	17.8	23.8	31.4	35.4	47.4	62.6	71.0	94.8	125
solution weight													
solution weight	t	6.2	7.3	9.2	10.5	13.8	18.0	20.3	25.0	32.0	40.6	50.0	64.0
unit ship.wt. (without LiBr)													
unit ship.wt. (without LiBr)	t	24.8	29.6	34.0	/	/	/	/	/	/	/	/	/
unit ship.wt. (without LiBr)													
unit ship.wt. (without LiBr)	t	11.8	14.0	15.7	18.8	25.0	33.0	37.0	44.0	55.0	37.0	44.0	55.0
operation weight													
operation weight	t	27.4	33.0	37.7	43.1	56.0	72.0	84.0	101	127	169	203	255





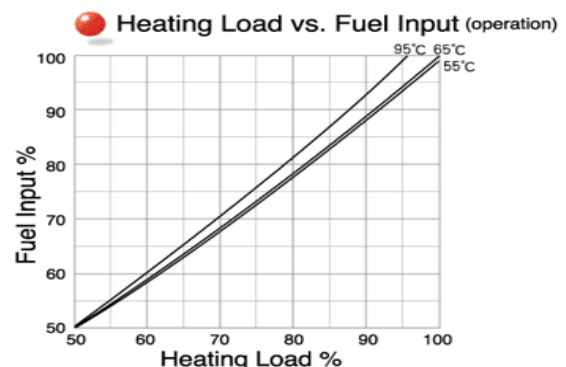
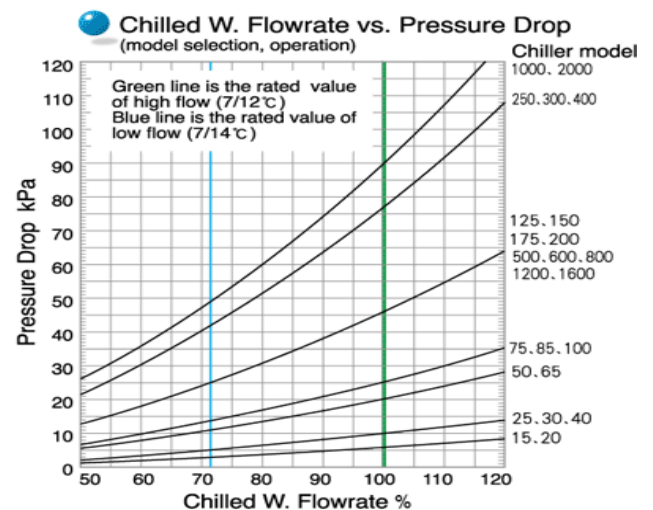
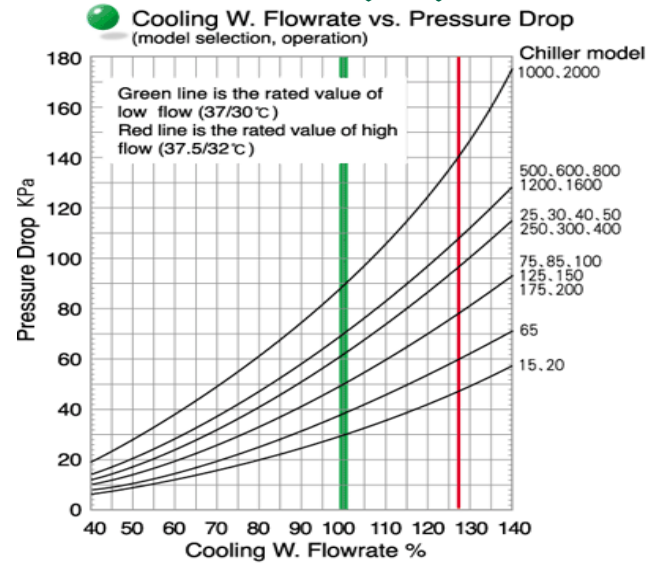
General Conditions:

1. Rated chilled W. outlet/inlet temp.: (A)6.7°C/12.2°C (B)7°C/14°C
2. Rated cooling W. outlet/inlet temp.: (a)36°C/29°C (b) 34.9°C/29.4°C
3. Rated heating W. outlet/inlet temp.: 60°C/52°C
4. Rated hot W. outlet/inlet temp.: 60°C/44°C
5. Lowest permitted outlet temperature for chilled water: 5°C (except special order)
6. Lowest permitted inlet temperature for cooling water: 10°C
Lowest inlet temperature for stable operation: 18°C (no limit if 3-way valve is equipped)
7. Highest permitted outlet temperature for heating/hot water: 95°C
8. Pressure limit for chilled W., cooling W., heating W., hot W. 0.8MPa (800kPa) (except special order)
9. Fouling factor for chilled W., heating W., hot W.: 0.000018m²·K/kW.
for cooling water: 0.000044m²·K/kW
10. Oil consumption is calculated by low heating value: 10,400kcal/kg
11. LiBr Solution concentration: 50%
12. Rated exhaust temp. for cooling: 170°C
Rated exhaust temp. for heating: 145°C
13. Machine room temperature: 5~43°C, humidity ≤ 85%
14. Adjustable chilled water flowrate: 50%~120% (according to flowrate A)
15. Adjustable cooling water flowrate: 30%~140% (according to flowrate a)
16. Adjustable heating/hot water flowrate: 65%~120%
17. Adjustable load: 5%~115%
18. Rated direct-fired cooling COP: 1.34 (including electricity consumption)
19. Rated direct-fired heating COP: 0.925

Note:

- ①(A)(a) is for recommendation. (B)(b) can be selected without affecting cooling capacity and performance
- ②Technical specification is based upon ARI 560 Standard "Absorption Water Chilling and Water Heating Packages".

Performance Curves (ARI)





BROAD AIR CONDITIONING

SPECIFICATIONS(JIS)

Model		BZ	15	20	25	30	40	50	65	75	85	100	125	150
cooling capacity	kW	174	233	291	349	465	582	756	872	989	1163	1454	1745	
cooling capacity	10 ⁴ kcal/h	15	20	25	30	40	50	65	75	85	100	125	150	
cooling capacity	Rt	50	66	83	99	132	165	215	248	281	331	413	496	
heating capacity	kW	135	179	224	269	358	449	583	672	762	897	1121	1349	
heating capacity	10 ⁴ Kcal/h	11.6	15.4	19.3	23.1	30.8	38.6	50.1	57.8	65.5	77.1	96.4	116	
chilled water 7°C/12°C high flow(A)														
flowrate	m ³ /h	30	40	50	60	80	100	130	150	170	200	250	300	
pressure drop	kPa	6	6	10	10	10	20	20	25	25	25	46	46	
chilled water 7°C/14°C low flow(B)														
flowrate	m ³ /h	21.4	28.6	35.7	42.9	57.1	71.4	92.9	107	121	143	179	214	
pressure drop	kPa	3	3	5	5	5	11	11	14	14	14	25	25	
cooling water 37°C/30°C low flow(a)														
flowrate	m ³ /h	36.0	48.1	60.0	72.0	96.2	120	156	181	204	241	300	361	
pressure drop	kPa	30	30	62	62	62	62	38	50	50	50	50	50	
cooling water 37.5°C/32°C high flow(b)														
flowrate	m ³ /h	45.8	61.2	76.4	91.7	122	153	199	230	260	306	382	459	
pressure drop	kPa	47	47	97	97	97	97	59	78	78	78	78	78	
heating water														
flowrate	m ³ /h	14.5	19.3	24.1	28.9	38.5	48.3	62.6	72.3	81.9	96.4	121	145	
pressure drop	kPa	40	40	50	50	50	50	50	70	70	70	70	70	
hot water														
flowrate	m ³ /h	7.2	9.6	12.1	14.4	19.3	24.1	31.3	36.1	40.9	48.2	60.3	72.5	
pressure drop	kPa	60	60	70	70	70	70	70	80	80	80	80	80	
max. fuel consumption														
oil(cooling)	kg/h	10.6	14.2	17.7	21.3	28.4	35.6	46.3	53.5	60.4	71.2	88.8	107	
gas(cooling)	10 ⁴ kcal/h	11.1	14.8	18.4	22.1	29.6	37.0	48.2	55.6	62.8	74.0	92.3	111	
oil(heating)	kg/h	12.0	16.0	20.1	24.0	32.0	40.1	52.1	60.1	68.1	80.1	100	121	
gas(heating)	10 ⁴ kcal/h	12.5	16.6	20.9	25.0	33.3	41.7	54.2	62.5	70.8	83.4	104	125	
power														
power	kW	1.6	1.6	2.7	2.7	3.2	3.8	5.4	5.4	6.8	6.8	9.0	10.4	
solution weight														
solution weight	t	0.8	1.0	1.1	1.4	1.7	2.0	2.2	2.7	3.2	3.7	4.3	5.2	
unit ship.wt. (with LiBr)														
unit ship.wt. (with LiBr)	t	3.9	4.7	5.5	6.5	7.8	8.8	9.8	11.6	13.2	15.4	19.1	22.0	
unit ship.wt. (without LiBr)														
unit ship.wt. (without LiBr)	t	/	/	/	2.7	3.6	4.0	4.6	5.0	6.2	7.1	9.0	10.2	
operation weight														
operation weight	t	4.1	5.0	5.8	6.9	8.3	9.4	10.6	12.3	14.3	16.7	20.9	24.2	





SPECIFICATIONS(JIS)

Model	BZ	175	200	250	300	400	500	600	800	1000	1200	1600	2000
cooling capacity	kW	2035	2326	2908	3489	4652	5815	6978	9304	11630	13956	18608	23260
cooling capacity	10 ⁴ kcal/h	175	200	250	300	400	500	600	800	1000	1200	1600	2000
cooling capacity	USRt	579	661	827	992	1323	1653	1984	2646	3307	3968	5291	6614
heating capacity	kW	1570	1791	2245	2687	3582	4489	5385	7176	8967	10760	14351	17933
heating capacity	10 ⁴ Kcal/h	135	154	193	231	308	386	463	617	771	925	1234	1542
chilled water 7°C/12°C high flow(A)													
flowrate	m ³ /h	350	400	500	600	800	1000	1200	1600	2000	2400	3200	4000
pressure drop	kPa	46	46	77	77	77	46	46	46	90	46	46	90
chilled water 7°C/14°C low flow(B)													
flowrate	m ³ /h	250	286	357	429	571	714	857	1143	1429	1714	2286	2857
pressure drop	kPa	25	25	42	42	42	25	25	25	49	25	25	49
cooling water 37°C/30°C low flow(a)													
flowrate	m ³ /h	421	481	602	722	963	1204	1444	1926	2407	2889	3853	4814
pressure drop	kPa	50	50	62	62	62	70	70	70	90	70	70	90
cooling water 37.5°C/32°C high flow(b)													
flowrate	m ³ /h	536	612	766	919	1226	1532	1838	2452	3064	3677	4903	6127
pressure drop	kPa	78	78	97	97	97	110	110	110	140	110	110	140
heating water													
flowrate	m ³ /h	169	193	241	289	385	483	579	771	964	1156	1543	1928
pressure drop	kPa	70	70	70	70	70	70	70	70	70	70	70	70
hot water													
flowrate	m ³ /h	84.4	96.3	121	144	193	/	/	/	/	/	/	/
pressure drop	kPa	80	80	80	80	80	/	/	/	/	/	/	/
max. fuel consumption													
oil(cooling)	kg/h	125	142	178	214	285	356	428	570	712	855	1141	1425
gas(cooling)	10 ⁴ kcal/h	130	148	185	222	297	370	445	593	741	889	1186	1482
oil(heating)	kg/h	140	160	201	240	320	401	481	641	801	962	1283	1603
gas(heating)	10 ⁴ kcal/h	146	166	209	250	333	417	501	667	834	1000	1334	1667
power	kW	12.9	14.8	15.3	17.8	23.8	31.4	35.4	47.4	62.6	71.0	94.8	125
solution weight	t	6.2	7.3	9.2	10.5	13.8	18.0	20.3	25.0	32.0	40.6	50.0	64.0
unit ship.wt. (without LiBr)	t	24.8	29.6	34.0	/	/	/	/	/	/	/	/	/
unit ship.wt. (with LiBr)	t	11.8	14.0	15.7	18.8	25.0	33.0	37.0	44.0	55.0	37.0	44.0	55.0
operation weight	t	27.4	33.0	37.7	43.1	56.0	72.0	84.0	101	127	169	203	255





General Conditions:

1. Rated chilled W. outlet/inlet temp.: (A)7°C/12°C (B)7°C/14°C
2. Rated cooling W. outlet/inlet temp.: (a)37°C/30°C (b)37.5°C/32°C
3. Rated heating W. outlet/inlet temp.: 65°C/57°C
4. Rated hot W. outlet/inlet temp.: 60°C/44°C
5. Lowest permitted outlet temperature for chilled water: 5°C
(except special order)
6. Lowest permitted inlet temperature for cooling water: 10°C
Lowest inlet temperature for stable operation: 18°C (no limit if 3-way valve is equipped)
7. Highest permitted outlet temperature for heating/hot water: 95°C
8. Pressure limit for chilled W., cooling W., heating W., hot W. 0.8MPa (800kPa) (except special order)
9. Fouling factor for chilled W., cooling W., heating W., hot W.: 0.086m²·K/kW
10. Oil consumption is calculated by low heating value:10,400kcal/kg
11. LiBr Solution concentration: 50%
12. Rated exhaust temp. for cooling: 170°C
Rated exhaust temp. for heating: 145°C
13. Machine room temperature: 5~43°C, humidity≤85%
14. Adjustable chilled water flowrate: 50%~120% (according to flowrate A)
15. Adjustable cooling water flowrate: 30%~140% (according to flowrate a)
16. Adjustable heating/hot water flowrate: 65%~120%
17. Adjustable load: 5%~115%
18. Rated direct-fired cooling COP: 1.34 (including electricity consumption)
19. Rated direct-fired heating COP: 0.925

Note:

- ① (A)(a) is for recommendation. (B)(b) can be selected without affecting cooling capacity and performance
- ② Technical specification is based upon Japanese Industry Standard JIS B 8622 "Absorption Chiller"





Supply List

	Item	Remarks
Main shell	Main shell body	includes low temperature generator, condenser, evaporator, absorber, water box, heat/cold insulation, etc.
	Low temperature heat exchanger	plate heat exchanger with factory-mounted insulation
	Canned pumps	includes refrigerant pump and solution pump
	Automatic purge system	includes inline falling head auto purge device, solenoid valve, vacuum pump
HTG	HTG shell	includes shell, front/rear flue chambers, HTG base, etc.
	High temperature heat exchanger	plate heat exchanger
	Water heater	produces heating water and hot water (not included with cooling-only model)
	Thermostatic valve	1 piece each for heating water and hot water constant temperature control. Not included with cooling-only or cooling/heating models.
	Enclosure	encloses HTG shell, high temperature heat exchanger and water heater
	Burner	includes a complete set of safety devices, filters, muffler, etc. Delivered in separate packages, installed by BROAD at jobsite.
Control System	Control cabinet	includes PLC, solution pump inverter, refrigerant pump inverter (≥ 200 model), low voltage parts and control software installed on the main shell body.
	Touch screen	for office control of DFA, includes enclosure, DC power and typical 30m cables (with an optional length up to 5 km). Delivered in separate packages.
	Back-up switch	for use during commissioning or maintenance and installed on the main shell body.
	Modem	for remote control through internet, mounted in the control cabinet.
	Terminals for exterior system	mounted in the control cabinet for control of chilled water pump, cooling water pump, cooling tower fan, cooling water by-pass valve and water quality stabilizer charge device, etc.
	Sensors installed at job-site	only one heating water temperature sensor, one hot water temperature sensor and one ambient temperature sensor. Others are factory-installed.
Accessories	Spare parts	include sealing elements and a complete set of easily worn-out parts
	Special tools	include tools for water box cover assembling/dismantling, cleaning and maintenance tools.
	Documents	include supply list, quality certificates, user manual, and auxiliary devices manuals
	Toolbox	spare parts, special tools and documents are placed in this stainless steel box pre shipment.

