COMMERCIAL AIR CONDITIONERS

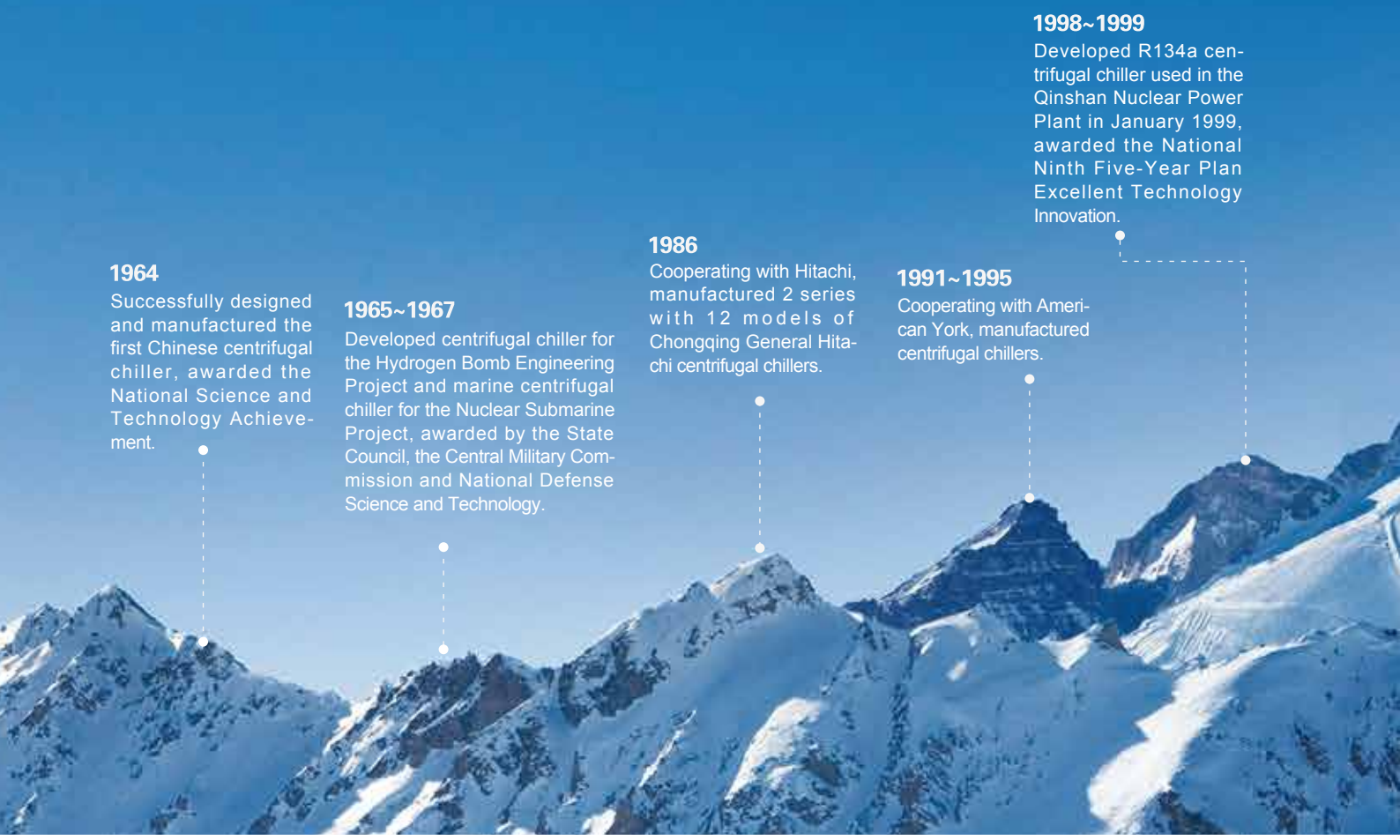
Water Cooled Screw Chiller

Flooded type 365 - 1500kW (R134a)

Direct expansion type 255 - 1490kW (R22)

Midea Central Air-conditioner

Entering into the 21st century, the energy has increasingly becomes as a global issue concerning the sustainable development of human-beings. In China, the construction power consumptions take 30% of the totals in the society. However, the power consumptions of air conditioners are 40%-50% of construction power consumptions. With progressive economy, various large-scale constructions are built up everywhere. Thus, building energy has become a common responsibility of the society and an obligation for every air-conditioner supplier



In the central air-conditioning industry, Midea Central Air-conditioner has been committed to the air-conditioning technology R & D and innovation. From the Chinese first centrifugal chiller to the first full falling-film dual stages centrifugal chiller, Midea has been trying for creating comfortable, energy-saving and environment friendly equipment to the world.

The ultra-efficient two-stage compression centrifugal chiller can be applied to a variety of energy-saving projects. It is the ideal choice for urban building and makes a significant contribution to the city building energy saving.

2001
The R134a (LC) series centrifugal chiller was named as the national key product.
2006
Launched the first Chinese VSD (Variable Speed Drive) centrifugal chiller unit.
2008
Developed the Smart Star new generation Semi-hermetic centrifugal chiller.
2010
Launched the centrifugal heat pump chiller units.
2013
Launched the first super efficient centrifugal chiller with dual stage compressor and full falling-film evaporator.

Water Cooled Screw Chiller R134a Flooded (365 to 1500kW)

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With half century experience in chiller industry, Midea Chongqing chiller manufacturing base is becoming one of the largest chiller companies in China. It covers an area of 800 Mu (137 acre), with a registered capital of 12.5 million US $ and a total investment of over 0.85 billion US$. There are 6 product series and over 100 model products including centrifugal chillers, screw water chillers, scroll water chillers, water-cooled packaged units, and central air-conditioning indoor terminal devices(AHU/FCU). Five chiller manufacture plants with 14 flexible production lines lead a manufacturing capacity of 500 units centrifugal chillers 1,000 units of air cooled screw 2,000 units of water cooled screw and 200,000 units of AHU products.

Strong R&D and manufacturing capacity make Midea Chongqing general become the fastest developing company in chiller industry. The chiller testing lab which is certified by China National Refrigeration Equipment Inspection Center has become one of the largest refrigeration testing capacity in the world. The engineer team with 100 top engineers and international chiller experts who have been working many years in structure, electricity, and performance testing and software aspect make Midea the headship in chiller industry. In the year of 2011 Midea CAC invested another 150 million RMB for testing lab as ARI testing stand, big capacity air cooled screw life span testing room, 1,500kW compressor motor testing lab etc.

Concentrating on energy-saving and environment protection, Midea Chongqing chiller factory commits itself to the reliable and high efficiency products for the world. The chiller products are widely used in different countries and obtain good public praise from the clients. The solutions for the Beijing capital international airport, Jakarta international airport, China rapid transit station win good feedback and commendation. Continuing with the past and opening up the future, Midea chiller brand will go further and create an illustrious future.

Centrifugal chiller factory
Manufacturing capacity:
500 units/Year

Water cooled screw chiller factory
Manufacturing capacity:
2000 units/Year

Air cooled screw chiller factory
Manufacturing capacity:
1000 units/Year

8800kW water cooled chiller performance testing stand

The 8800kW water cooled chiller testing stand is one of the most advanced testing facilities in the world. It is able to simulate all the chiller running conditions like Chinese National standard condition (7/12°C, 32/37°C). Chinese industry condition(7/12°C,32/37°C).AHRI testing condition (6.7/12.2°C, 29.4/35°C).
It provides all precise testing date for the IPLV and NPLV calculation. Witness testing service is optional for all the clients to ensure the product performance. Every chiller will be tested in the stand before shipping.

1500kW motor performance testing center

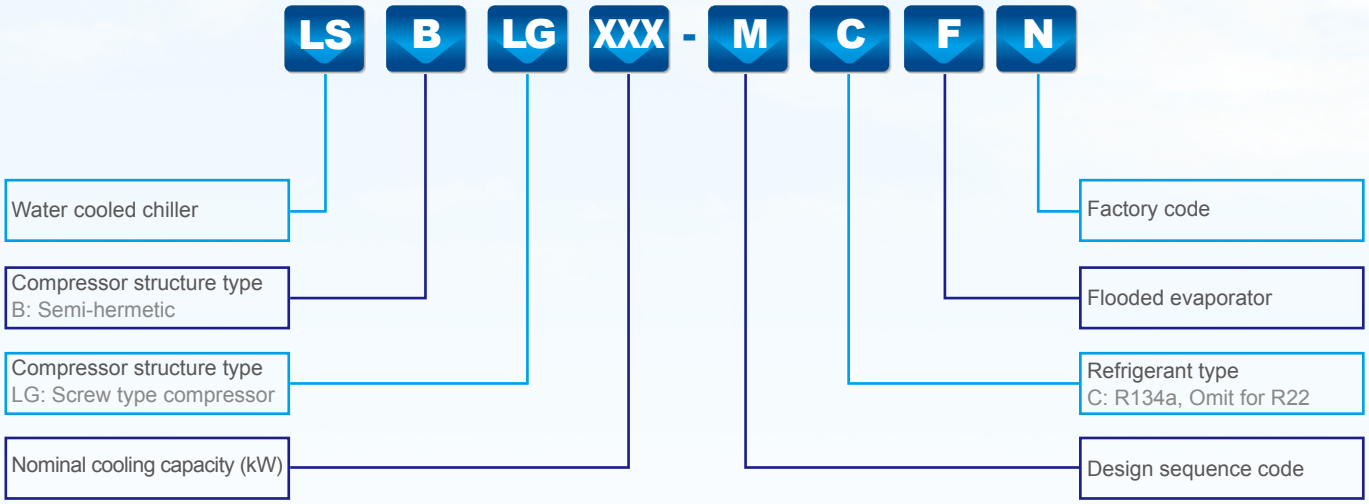
The 1500kW compressor motor testing lab used to simulate all the working condition for the actual situation. Provide the electrical correct factor for all the compresors. The cooling capacity ranges from 1200kW to 8800kW. Evaporating temperature ranges from -20 °C to 40 °C and condensing temperature ranges from 25 °C to 80 °C. It is one of the most advanced testing facility in China.

1200kW air cooled chiller performance testing lab

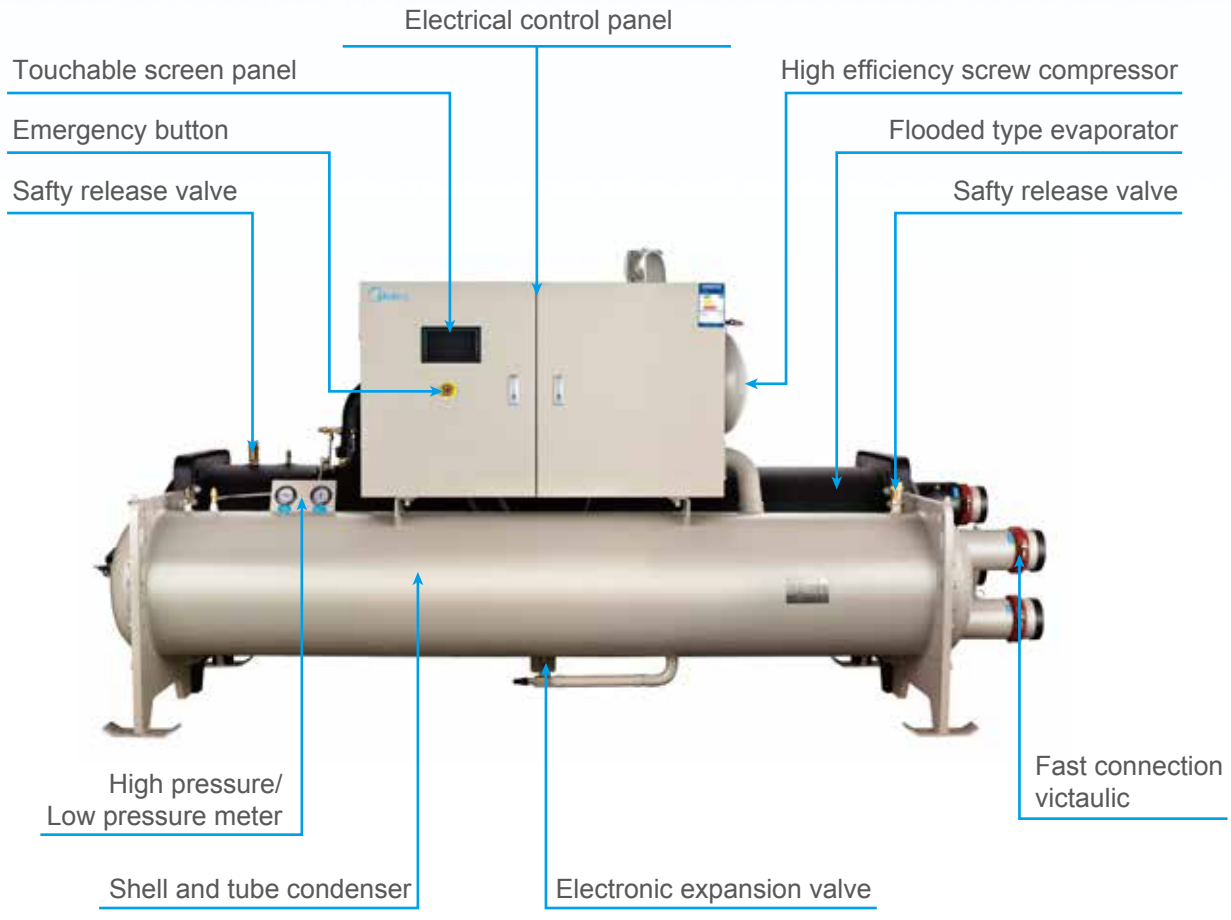
The 1200kW air cooled testing lab is one of the largest air cooled product testing labs. It can simulate all the actual ambient temperature range from -20 ° C to 56 °C. It ensures all the air cooled chiller products work reliably in all temperature condition. Witness testing service is optional for all the clients to ensure the product performance. The 1200kW air cooled testing lab was certified by AHRI.

AHRI CERTIFIED
www.ahridirectory.org

Midea water cooled screw chiller is the mature products which use flooded type evaporator and high efficiency compressor. Optimized system design and enhanced heat exchange efficiency make the unit working best under both full load and partial load. Every chiller is fully factory tested and gas charged in the factory before dispatch. It’ s good choice for hotel, shopping mall, hospital, factory, cinema and other civil architecture air conditioning system. Besides, it is widely used in plastic industry, electroplating industry, food processing, chemical industry and other technological process which needs plenty of chilled water.



Structure

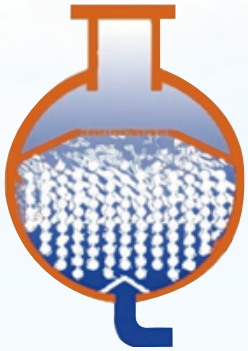


Features and benefits

In the 21st century, Energy Conservation & Environment Protection is one of the most important themes. With the fast development of technology in the world, more and more high-efficiency chillers go to peoples' field of vision. High efficiency and environment friendly air conditioners are needed and Midea provides most effective & reliable solutions to all valuable customers.

High efficiency （Flooded evaporator）

● High efficiency inner grooved copper pipe enhances the heat-exchange process, improves heat exchange efficiency and makes the evaporator more compact to save installation space.
● Significantly improve the evaporating temperature and reduce heat transferring temperature difference which directly improves heat-exchange efficiency, provide most cost effective & reliable solutions to all valuable customers.
● Supreme efficiency in partial load.



Green chiller

R134a environmental-friendly refrigerant
● Refrigerant of the Chlorine-free HFC with zero ODP (Ozone Depletion Potential).
● Very low GWP (Global Warming Potential).

High reliability and excellent serviceability

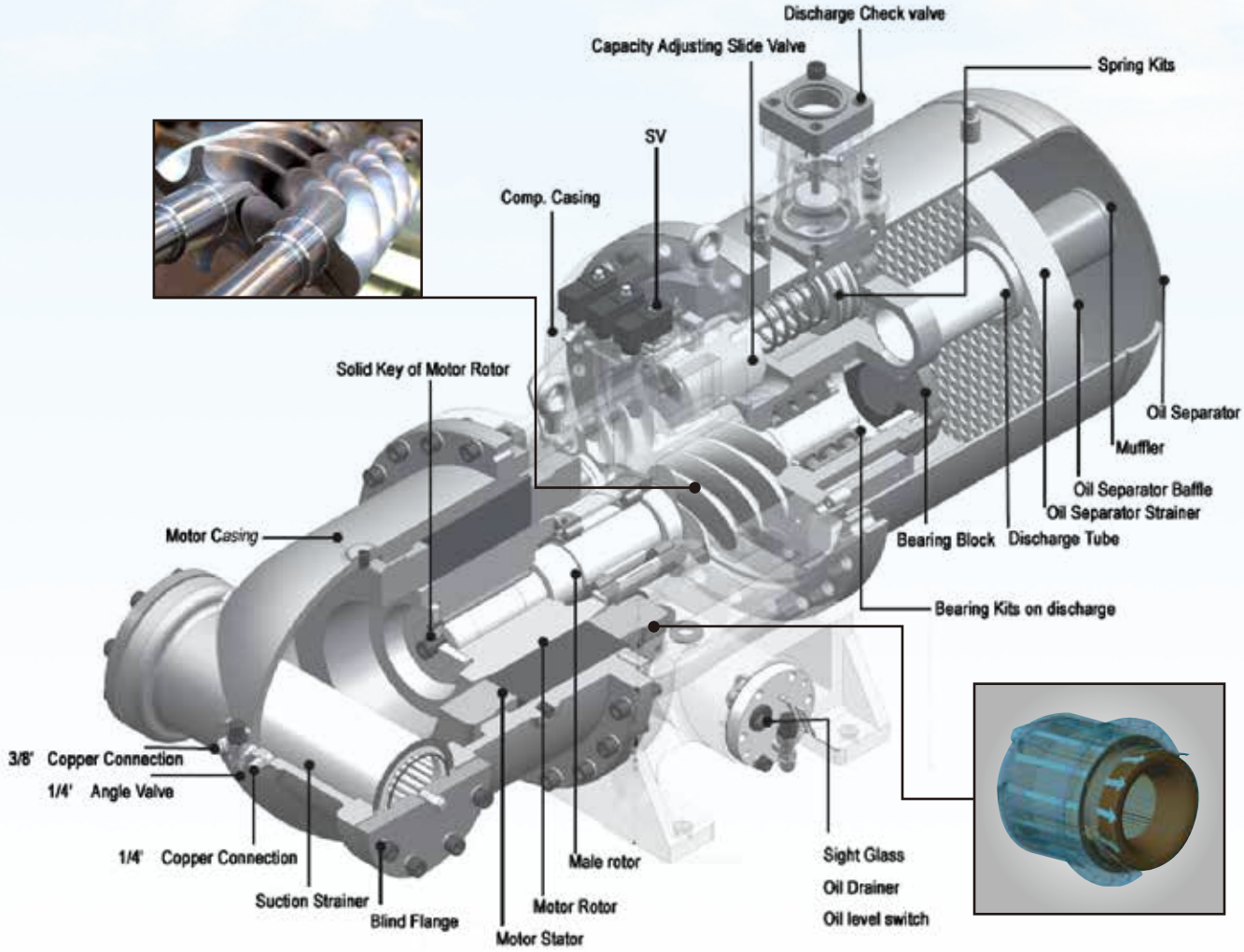
● Flooded evaporator makes cleaning inside of pipes possible, and guarantees high reliability.
● Discharge cut-off valve and liquid line angle valve for simplified maintenance.
● Simplified field wiring for easy installation.

Optimized & user-friendly operating Interface

● Midea chiller adopts Midea Microprocessor which provides advanced algorithm and reliable control.
● Graphical display of the operating state, operation scheduling, malfunction inquiry, help menu for easy trouble shooting and other user-oriented functions.

Advanced twin-rotor screw compressor

Midea® Screw Chiller equipped with the 3rd generation industrial Semi-hermetic Screw compressor that has the latest advanced 5-6 asymmetry dentiform rotors. The rotors are processed by high-precision CNC and each part is well-proportioned and none-gap matching, which minimize the friction resistance and clearance loss, guarantee quiet running and good duration.



● High-precision machining and measurement make rotor clearance reach μm-class, so it reduces the leakage between high and low pressure. Under continuous operation, the rotors still keep their best clearance and achieve highest efficiency.

● Semi-hermetic compressor with low running noise and well cooled down by refrigerant, low running temperature, no leakage potential compared with open compressor.

● Patented motor-cooling design in ducts of refrigerant flow encompassing stator provides best dissipation of heat and no requirement for computer room AC.

● To reach high operation efficiency, the casing is manufactured by precise machining centers and inspected by a coordinate measuring machine to make sure that the requested precision and quality can be retained in the compressor.

Compressor bearing

High-precision large-sized axial and radial bearings are selected to support the male and female rotors for long lasting life. With effective lubrication system, the bearing service life can be further extended. While the compressor is running, lubricant is injected into all bearings due to pressure difference.

SKF brand industry use bearing guarantees 60,000h continuous working

Three stages oil separation

● The built-in oil separator utilizes three-stage filter mechanism with high-density filter element to achieve optimal oil separation effect and its efficiency is higher than 99.7%.Two oil separators cooperate together make the best oil separating effect.
● Detachable demister for cleaning.
● Oil supplied by pressure difference and no need of oil pump.

Dual compressors (Min. 825 ~ Max.1500kW)

● Large cooling capacity chillers have two truly independent refrigerant circuits, compact outline and superior partial load efficiency. Besides, when one of the compressors breaks down, the other one can work independently. So the chiller can provide much higher reliability and minimize the loss of user.

Flooded-type evaporator

● Evaporator is flooded type designed for 1MPa working pressure on the chillled water side (Higher pressure vessels can be customized). Replaceable integral finned copper tubes are mechanically bonded to steel tube sheets. The evaporator has been tested under extreme conditions. The 20MM thickness insulation covers all low temperature surfaces, including the evaporator, water boxes, oil return lines, chilled water flow switch piping, etc.

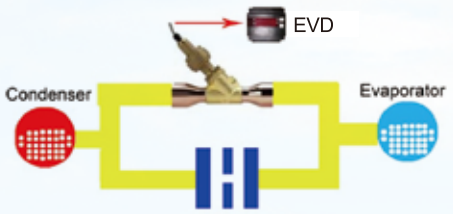
● Midea heat exchangers are designed by professional design software and pass rigorous tests. Double-grooved holes at tube support for tube expansion are designed to prevent leakage and increase the durability of heat exchanger.

Condenser

Midea condenser has a specially designed baffle, in the entrance of condenser, to prevent direct impingement of high-velocity refrigerant gas on tube surface and thus eliminate the related vibration and noise. It has been tested under extreme conditions. Water side working pressure is designed for 1.0Mpa (Higher pressure vessels can be customized).

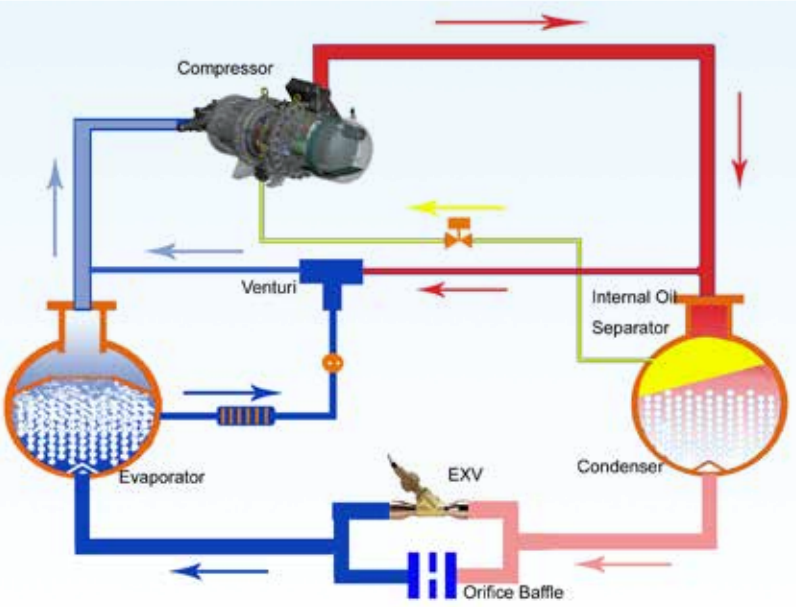
Throttling device

Orifice baffle without moving parts can guarantee high reliability and it cooperates with EXV（Danfoss）to throttle the high-pressure liquid refrigerant from condenser to evaporator. EXV which is controlled by EVD module provides high-precision adjustment and perfectly matches the compressor load，both full load and partial load.



Refrigeration cycle

As below schematic diagram shown, the low temperature and low pressure gas enters the compressor through suction port. Then refrigerant gas that entered the compressor is compressed to a high temperature and high pressure gas and enters the condenser to release heat to cooling water. The condensed liquid passes the throttling device, becomes the mixed state and enters the lower part of the evaporator. It is then spread into a wider surface by distributor. Finally the distributed refrigerant evaporates by taking the heat from the chilled water inside the evaporator tube and repeats the cycle.



Lubrication cycle

Three stages oil separation ensure the excellent compressor lubricant.One is integrated inside the compressor and the other is built-in oil separator located inside of the condenser. The refrigerant and oil mixture gets separated in the internal oil separator for the first time and then to the condenser oil separator of which the separating efficiency can reach 99%. Oil will return to compressor through the oil return pipe by pressure difference. Small amount of oil which remains in the evaporator will be sucked up by the Venturi tube and goes back to compressor after gas evaporating. This is the third stages oil seperation.These three oil return circuits can guarantee reliable oil return efficiency.

Electrical control

Microprocessor controller

Midea water cooled screw chiller adopts Microprocessor controller which enables the user to monitor and control the chiller with high-class accuracy. Microprocessor control system guarantees high precision and stability. The control system is module-designed, easy for installation and maintenance. The chiller which reserved with RS485 port can be interfaced with BAS (Building Automation system). The remote monitoring and control of the chiller is possible.

True color touchable screen

The display of control regulation and operating parameters, diagnostics, and error messages is a 7 inch, 65636 colors TFT displayer with 800×480 resolution. The screen can display error codes, settings of various set points, specified temperature and pressure values, and the status of operating parameters and options.

Power-down memory function

When power-down, the chiller will maintain preceding running mode and parameter set point.

Weekly operation scheduling

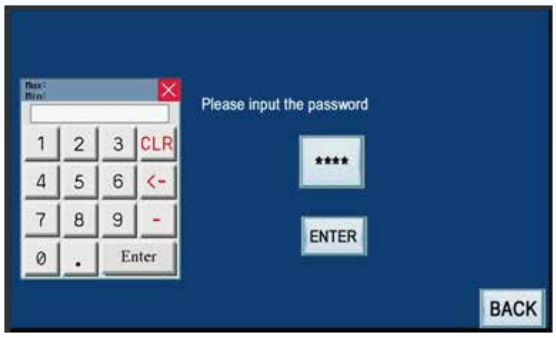
The user can set the chiller operation schedule in the weekly timetable to run and stop the chiller automatically. If sudden power down happens, the chiller will not restart unless manual reset.

Data acquisition & storing

Max. 256 records of latest alarms and 500 seconds chilled/cooling water temperature trend display.

3-class password

There're 3-class passwords for the user, Installation and commissioning technicians and factory. Unauthorized access to the control is protected with random-generated password.



Self-Diagnosis

Self-diagnosis is always performed before start-up to enable safe operation. Only all the requirements get satisfied, the chiller will start. If there's any malfunction, it will be displayed on the screen.

Multiple self-protecting functions guarantee the safety of unit and running perfectly

Items	Function
High/low pressure protection	Guarantee the Comp. running in the right range and its lifespan
Power open phase protection	Protect Comp. from damage under such situation of open phase and anti-phase
Anti-freeze protection under cooling mode	Protect the copper pipes of evaporator from damage due to water freeze
Frequent startup protection	Protect Comp. from getting burned by the overheated winding due to frequent startup
Overcurrent protection of Comp.	Protect Comp. from getting burned due to too heavy current
Overheat protection of compressor	Protect Comp. from damage due to lack of refrigerant or lubricant oil
Water flow protection	Protect Comp. from getting burned due to failure of heat-exchange
Reverse protection controller(APRS)	Guarantee the comp. motor running in the right direction

Specilfications

Single compressor

LSBLGWXXX/MCFN		365	465	560	750
Cooling capacity	kW	364	465	560	750
Power input	kW	62	78	95	126
EER	kW/kW	5.87	5.96	5.89	5.95
Semi-hermetic screw compressor					
Circuit A	Quantity	1	1	1	1
Circuit B	Quantity	--	--	--	--
Oil recharge	Type	HBR-B04			
Circuit A	L	35	39	39	41
Circuit B	L	--	--	--	--
Refrigerant	Type	R134a			
Circuit A	kg	210	240	240	250
Circuit B	kg	--	--	--	--
Control Type		EXV+Orifice			
Evaporator	Type	Shell and tube flooded			
Water content	L	194	206	300	334
Water flow	m³/h	63	80	96	129
Pressure drop	kPa	39	39	38	40
Max. pressure	MPa	1	1	1	1
Connection Type		Victauliccoupling			
Water inlet/outlet pipe dim.	mm	125	125	150	150
Condenser	Type	Shell and tube			
Water content	L	196	207	290	324
Water flow	m³/h	73	94	113	150
Pressure drop	kPa	51	52	51	55
Max. pressure	kPa	1000	1000	1000	1000
Connection Type		Victauliccoupling			
Water inlet/outlet pipe dim.	mm	125	125	150	150
Unit length	mm	3500	3500	3600	3600
Unit width	mm	1400	1400	1500	1500
Unit height	mm	1750	1750	2000	2000
Shipping weight	kg	3000	3120	3420	3930
Running weight	kg	3300	3520	3840	4380
Safety protection device		The following safety devices are equipped as standard. High pressure protection(High pressure switch & high pressure sensor) Low pressure protection(Low pressure switch & low pressure sensor) Compressor thermal protection High discharge temperature on the compressor Phase monitor;Star/Delta transition failed Low-pressure ratio;Low oil level protection Interrupter protection;Overload compressor protection Over-voltage & low- voltage protection Sensor malfunction protection Contactor malfunction protection Freeze protection			

Note:

Nominal cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 12/7°C(53.6F/44.6F);

Cooling water inlet/outlet temperature30/35°C(86F/96F).

The design fouling factor for both evaporator and condenser are 0.086m2/kW (0.0005ft2 F.hr/Btu).

Dual compressors

LSBLGWXXX/MCFN		825	925	1120	1230
Cooling capacity	kW	825	924	1120	1230
Power input	kW	148	156	190	210
EER	kW/kW	5.57	5.92	5.89	5.86
Semi-hermetic screw compressor					
Circuit A	Quantity	1	1	1	1
Circuit B	Quantity	1	1	1	1
Oil recharge	Type	HBR-B04			
Circuit A	L	39	39	39	39
Circuit B	L	39	39	39	39
Refrigerant	Type	R134a			
Circuit A	kg	180	190	200	210
Circuit B	kg	180	190	200	210
Control Type	EXV+Orifice				
Evaporator	Type	Shell and tube flooded			
Water content	L	332	337	467	485
Water flow	m^3/h	142	159	193	212
Pressure drop	kPa	73	77	71	71
Max. pressure	kPa	1000	1000	1000	1000
Connection Type	Victaulic coupling				
Water inlet/outlet pipe dim.	mm	150	150	200	200
Condenser	Type	Shell and tube			
Water content	L	329	338	472	492
Water flow	m^3/h	168	186	226	248
Pressure drop	kPa	88	90	85	85
Max. pressure	kPa	1000	1000	1000	1000
Connection Type	Victaulic coupling				
Water inlet/outlet pipe dim.	mm	150	150	200	200
Unit length	mm	4500	4500	4600	4600
Unit width	mm	1600	1600	1700	1700
Unit height	mm	1900	1900	2100	2100
Shipping weight	kg	5500	5700	6200	7000
Running weight	kg	6000	6210	6710	7680
Safety protection device	The following safety devices are equipped as standard. High pressure protection(High pressure switch & high pressure sensor) Low pressure protection(Low pressure switch & low pressure sensor) Compressor thermal protection; High discharge temperature on the compressor Phase monitor; Star/Delta transition failed;Low-pressure ratio Low oil level protection; Interrupter protection; Overload compressor protection Over-voltage & low- voltage protection; Sensor malfunction protection Contactor malfunction protection; Freeze protection				

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The design fouling factor for both evaporator and condenser are 0.086m2/kW (0.0005ft2 F.hr/Btu).

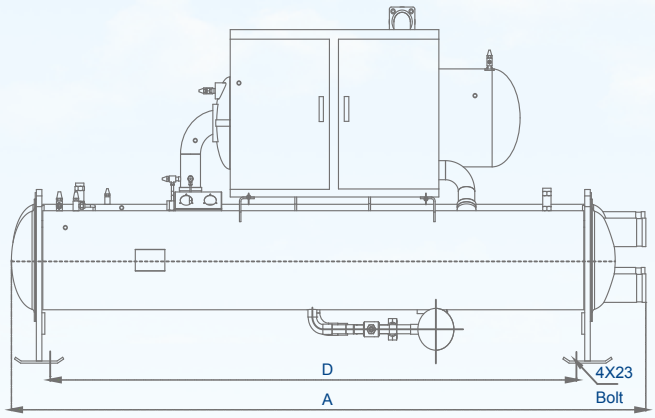
Capacity table

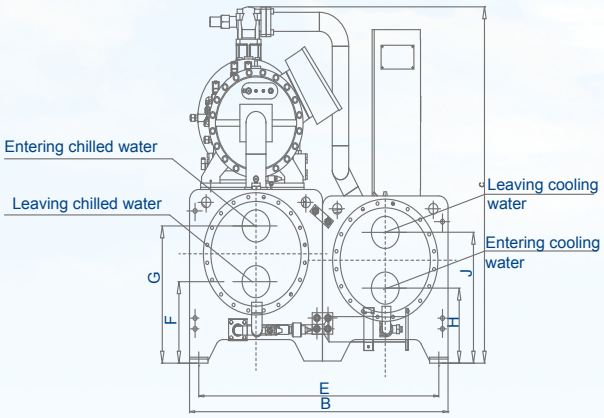
Model	Chilled Water Outlet (°C)	Cooling Water Inlet (°C)																					
		25		26		27		28		29		30		31		32		33		34		35	
		Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)
LSBLG/MCF	5	0.973	0.916	0.971	0.940	0.959	0.950	0.948	0.960	0.936	0.972	0.925	0.985	0.913	0.998	0.901	1.013	0.889	1.028	0.877	1.044	0.865	1.062
	6	1.005	0.924	1.010	0.948	0.998	0.957	0.986	0.968	0.974	0.980	0.962	0.993	0.949	1.005	0.937	1.020	0.925	1.036	0.912	1.052	0.899	1.071
	7	/	/	1.050	0.954	1.037	0.964	1.025	0.974	1.012	0.987	1.000	1.000	0.987	1.014	0.975	1.028	0.962	1.044	0.949	1.061	0.936	1.078
	8	/	/	1.091	0.960	1.078	0.970	1.066	0.982	1.053	0.994	1.040	1.006	1.026	1.020	1.013	1.036	1.000	1.051	0.987	1.068	0.973	1.087
	9	/	/	1.134	0.967	1.121	0.976	1.108	0.988	1.094	1.001	1.081	1.014	1.067	1.028	1.054	1.044	1.040	1.060	1.026	1.077	1.012	1.095
	10	/	/	1.179	0.972	1.165	0.983	1.151	0.995	1.137	1.007	1.123	1.021	1.109	1.035	1.095	1.051	1.081	1.067	1.067	1.084	1.052	1.103
	11	/	/	1.225	0.979	1.210	0.989	1.196	1.001	1.182	1.014	1.167	1.028	1.153	1.043	1.138	1.059	1.123	1.075	1.108	1.092	1.094	1.111
	12	/	/	1.272	0.985	1.257	0.996	1.243	1.007	1.228	1.021	1.213	1.035	1.198	1.050	1.183	1.065	1.167	1.082	1.152	1.100	1.137	1.119
	13	/	/	/	/	1.306	1.002	1.291	1.014	1.275	1.028	1.260	1.042	1.244	1.057	1.229	1.073	1.213	1.090	1.197	1.108	1.181	1.127
	14	/	/	/	/	1.357	1.007	1.341	1.020	1.325	1.034	1.309	1.048	1.292	1.064	1.276	1.080	1.260	1.097	1.244	1.115	1.227	1.135
	15	/	/	/	/	1.408	1.014	1.393	1.027	1.375	1.041	1.359	1.056	1.342	1.071	1.326	1.088	1.309	1.105	1.292	1.123	1.275	1.142

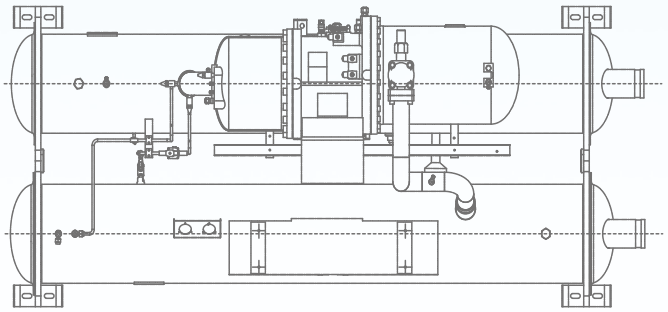
Note:
1.The above operating table is suitable for all flooded type screw chiller, the capacity table is the correction coefficient of different chilled water and cooling water temperature (Correction of the rated cooling capacity and power);
2. The above parameters are in accordance with the 7 degrees evaporator water outlet, 30 degrees condenser water inlet.;

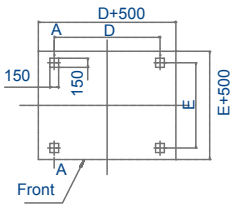
Physical dimensions

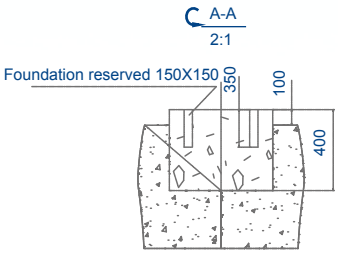
Single compressor





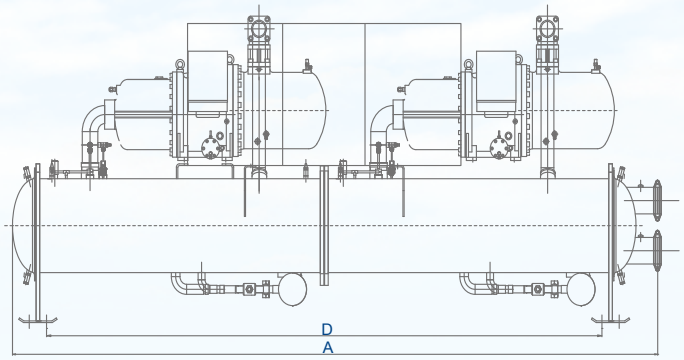


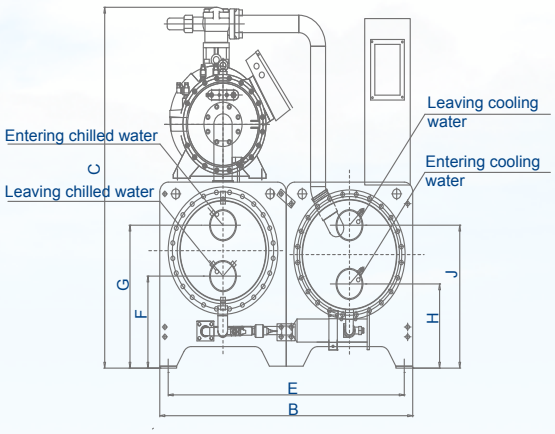


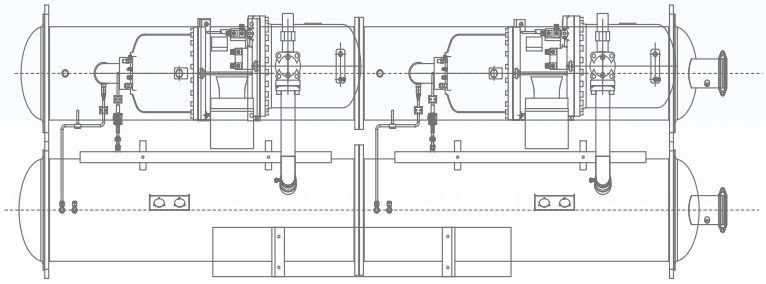


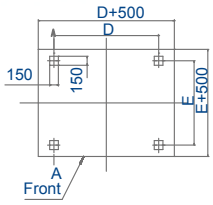
Model LSBLG	A	B	C	D	E	F	G	H	J	Cooled Water	Chilled Water
365/MCFN	3500	1400	1750	2855	1300	380	640	350	610	DN125	DN125
465/MCFN	3500	1400	1750	2855	1300	380	640	350	610	DN125	DN125
560/MCFN	3600	1500	2000	2855	1320	500	780	380	640	DN150	DN150
750/MCFN	3600	1500	2000	2855	1320	500	780	380	640	DN150	DN150

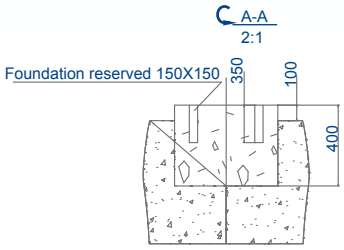
Dual compressors











Model LSBLG	A	B	C	D	E	F	G	H	J	Cooled Water	Chilled Water
825/MCFN	4500	1600	1900	3855	1400	470	730	430	730	DN150	DN150
925/MCFN	4500	1600	1900	3855	1400	470	730	430	730	DN150	DN150
1120/MCFN	4600	1700	2100	3855	1500	440	740	390	690	DN200	DN200
1230/MCFN	4600	1700	2100	3855	1500	440	740	390	690	DN200	DN200
1500/MCFN	4600	1700	2100	3855	1520	460	800	410	750	DN200	DN200

Electrical data

LSBLGWXXX/MCFN		365	465	560	750	825	925	1120	1230	1500
Standard voltage	V	380V 3Ph 50Hz								
Voltage range	V	340~420								
Max. running current	A	162	200	236	311	354	380	472	518	622
Max. power consumption	kW	93.5	116.8	141.9	182.9	205.8	222	283.8	215.8	365.8
Rated current	A	106	133	162	208	253	266	324	359	417
Compressor A										
Locked rotor Amps.	A	810	875	1340	1990	810	875	1340	1430	1990
Max. allowed current	A	219.6	274.3	333.2	429.5	241.6	260.7	333.2	369.6	429.5
Rated current	A	106	133	162	208	126.5	133	162	179.5	208.5
Rated power	kW	62	78	95	126	74	78	95	105	126
Compressor B										
Locked rotor Amps.	A	--	--	--	--	810	875	1340	1430	1990
Max. allowed current	A	--	--	--	--	241.6	260.7	333.2	369.6	429.5
Rated current	A	--	--	--	--	126.5	133	162	179.5	208.5
Rated power	kW	--	--	--	--	74	78	95	105	126
Crankcase heater										
Voltage	V	380	380	380	380	380	380	380	380	380
Total input	kW	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.6
Total Amps.	A	1.36	1.36	1.36	1.36	2.72	2.72	2.72	2.72	2.72

NOTE:

1.Customer to specify the exact nominal power supply available at site so that electrical components are selected accurately.

2.Main power must be supplied from a single field supplied and mounted fused circuit breaker.

3.The compressor crankcase heaters must be energized for hours before the unit is initially started or after a prolonged power disconnection.

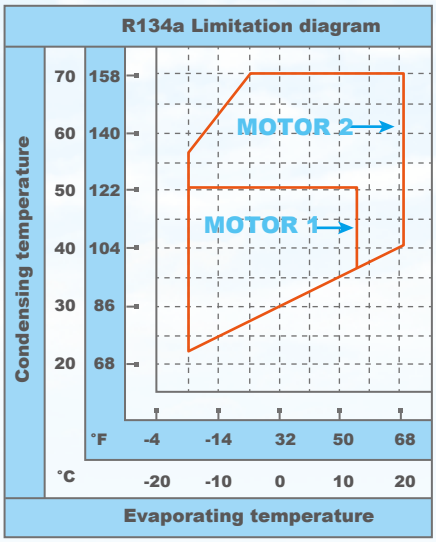
4.All field wining must be in accordance with local standards.

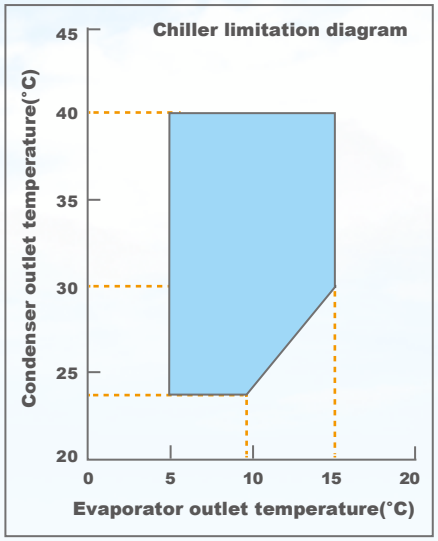
5.Neutral line required on 380V-3Ph-50Hz(5 wires) power supply.

6.Rated load Amps values are on nominal conditions.

7.The ±10% voltage variation from the nominal is allowed for a short time only,not permanent.

Working temperature range





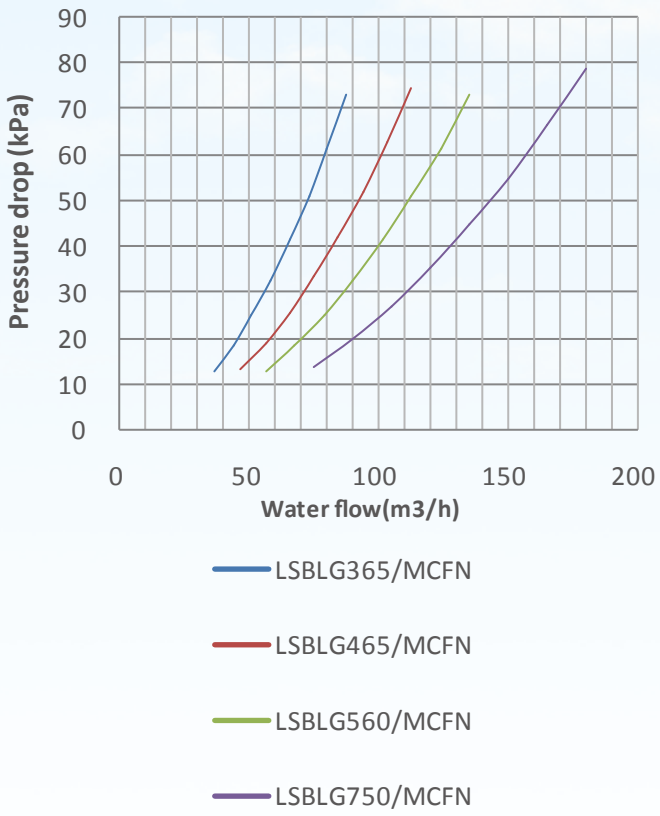
If the application range is out of the diagram please check from the factory for customizing.

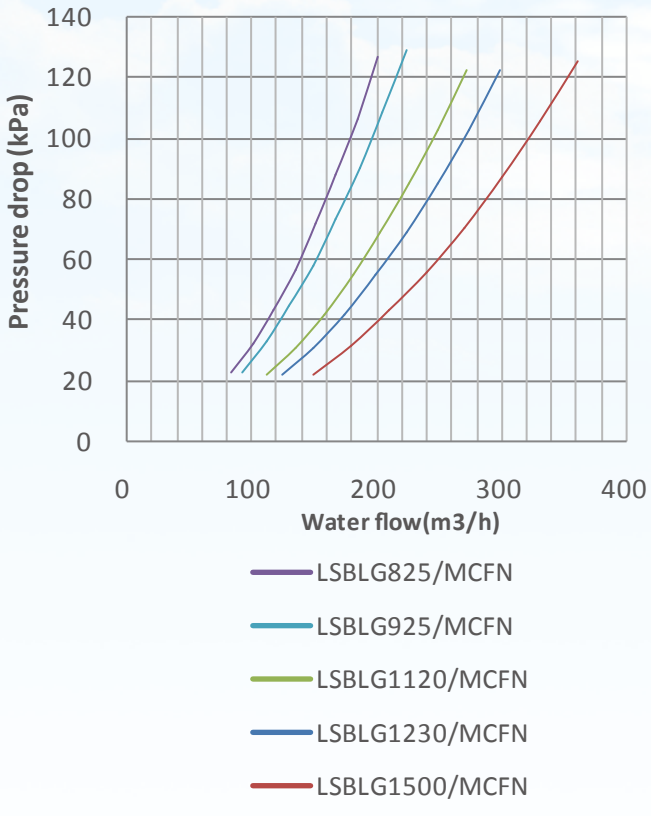
Application Range

Items	Application range
Condenser water entering temperature	25°C～35°C
Evaporator water leaving temperature	5°C～15°C
Water flow volume	Rating flow volume±20%
Temperature difference	4~8°C
Fouling factor (m^2.°C/kW)	0.086
Voltage tolerance	Rating Voltage±10%
Phase tolerance	±2%
Power supply frequency	Rating frequency±2%
Evaporator max working pressure on water side	1.0MPa
Compressor max. start count	4 times/h 8times/day
Environment quality	High corrosive environment and high humidity should be avoided.
Drainage system	The height of water drainage should not be higher than the base of the unit.
Storage and transport temperature	-25°C～55°C
RH(relative air humidity)	In + 40℃ does not exceed 50%, + 25°C no more than 90%
Applicable altitude range	No more than 1000m

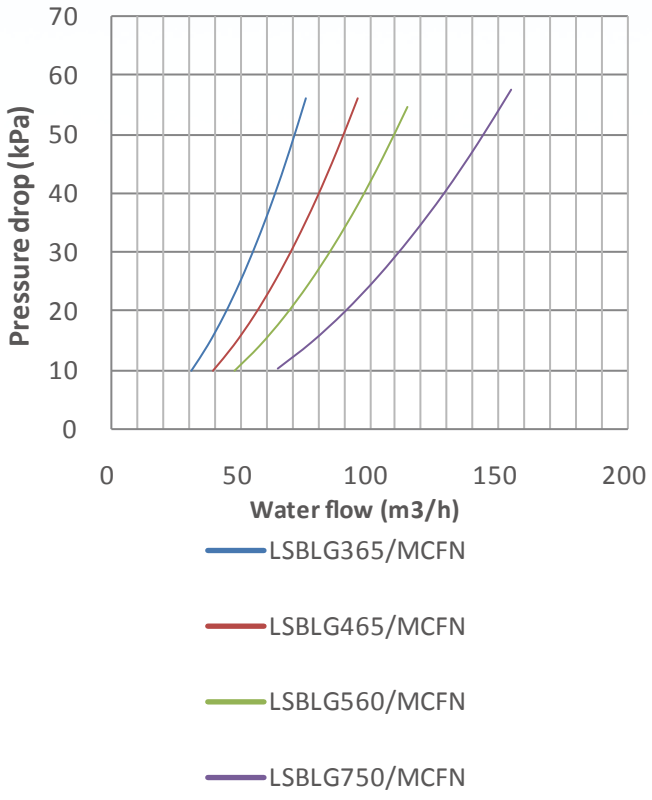
Pressure drop

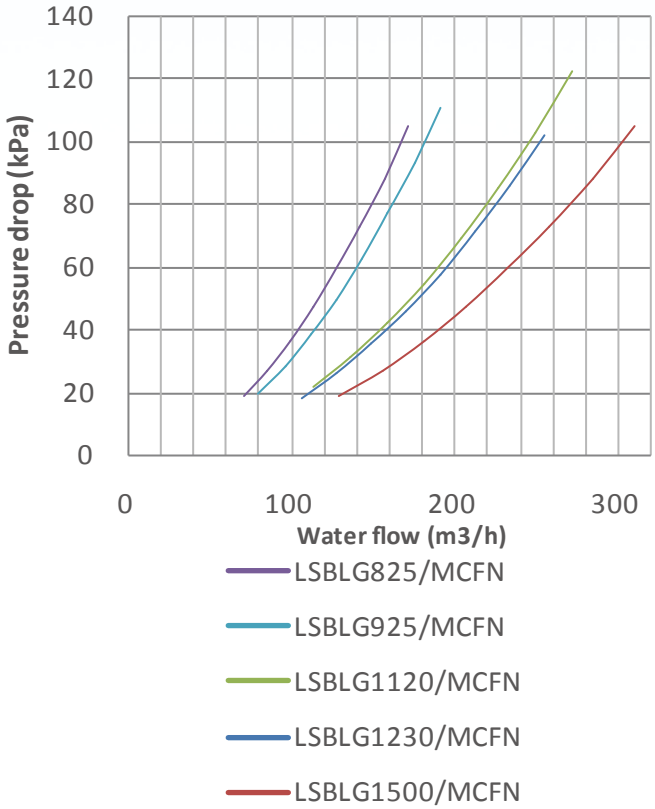
Flooded type (Evaporator)





Flooded type (Condenser)





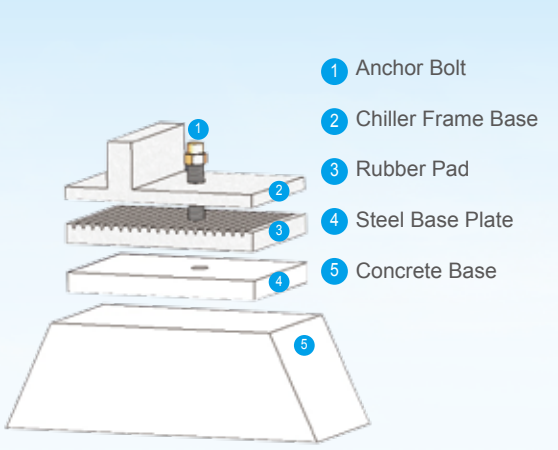
Application guide

Application guide

■ 1. Be sure to take the base preparation and structure into consideration seriously during installation,especially avoid the intensity and noise of floor when the machine is installed on the top stoery of buildings. It is recommended to discuss with the building designer before conducting installation.

■ 2. The surrounding of the base shall be equipped with drainage ditch and make sure it can dewatering freely.

■ 3. Anti-vibration pad shall be placed between the base frame and fundation in order to avoid transmitting vibration and noise during chiller runting, and make sure the unit is aclinic during installation.



Typical Isolation structure

Notes:

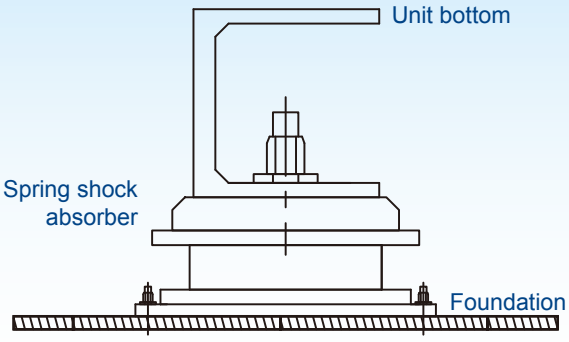
1. The maximum altitude difference (levelness) should be within 3mm for the chiller base.

2. The base should be 100mm higher than the surrounding.

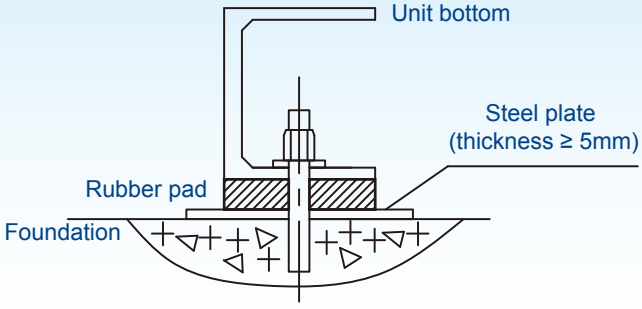
3. The installation base of the unit must be concrete or steely structure, which can bear the running weight of the machine. Besides, the top should be horizontal. It is better to prepare a drain ditch around installation base.

4. Put the steel plate and anti-vibration pad in the correct position. Finish the installation of the unit and the foundation bolt before secondary grouting. The foundation bolt should be 100mm exposed outside.

5. Spring isolators are specified on the sales order as an option.



Spring isolator

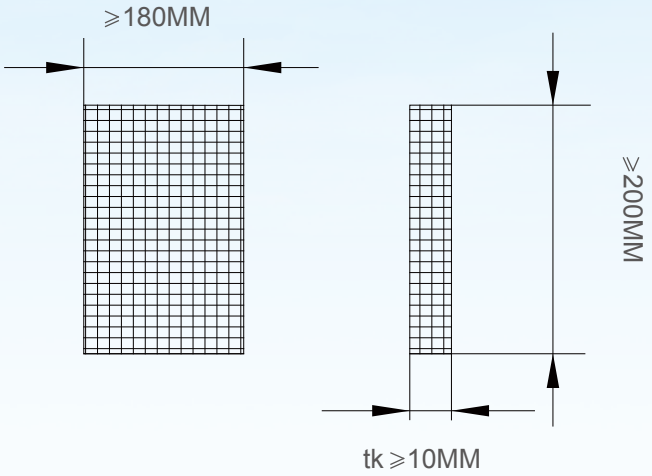


Rubber pad

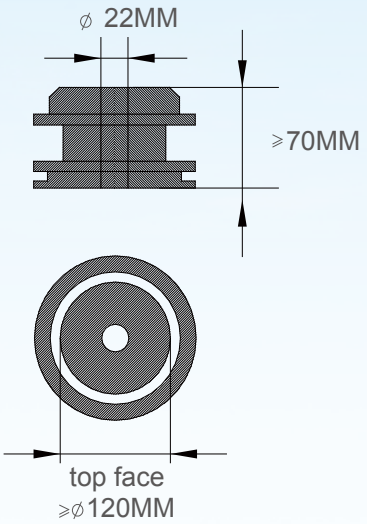
Isolator

Positioning the absorbers under unit saddles before final positioned the unit. The quantity of absorber used for each unit is always decided by the elasticity or durometer value of the absorber. Below please refer to the typical isolation pad and vibration isolator for selection.

Typical isolation rubber pad



Typical spring isolator



Load value for reference

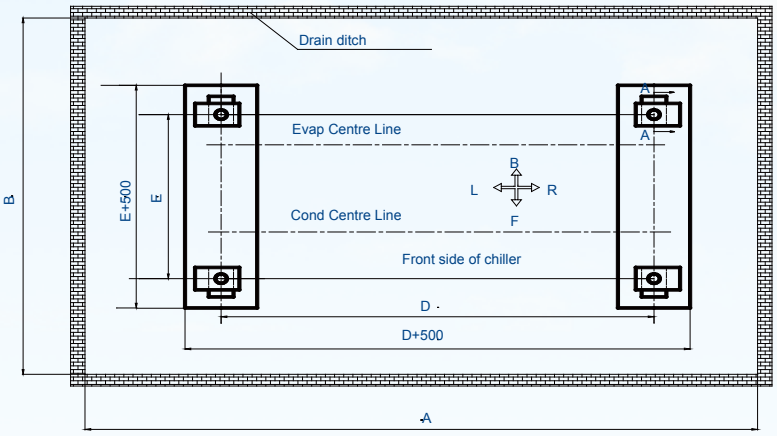
Model	Isolation pad		Vibration Isolator		Running weight (kg)
	Minimum load bearing (kg/EA)	Minimum quantity	Minimum load bearing (kg/EA)	Quantity	
LSBLG 365/MCFN	900	4	900	4	3300
LSBLG 465/MCFN	1000	4	1000	4	3600
LSBLG 560/MCFN	1200	4	1200	4	4200
LSBLG 750/MCFN	1400	4	1400	4	4500
LSBLG 825/MCFN	1800	4	1800	4	6000
LSBLG 925/MCFN	1800	4	1800	4	6500
LSBLG 1120/MCFN	2000	4	2000	4	7300
LSBLG1230/MCFN	2200	4	2200	4	7600
LSBLG 1500/MCFN	2200	4	2200	4	8000

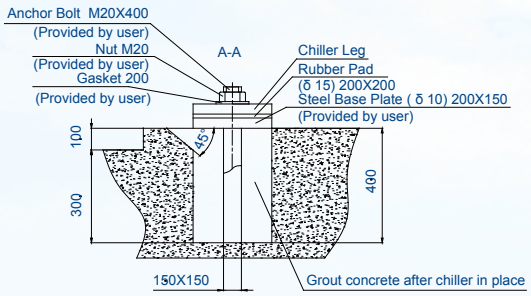
Note:

(1) Pads have to extend the full length of the saddle when isolation pad be used.

(2) Level the unit to within 5mm over through it's length and width after absorbers installed.

Foundation dimensions





Model	LSBLG***/MCFN R134a								
Dimension	365	465	560	750	825	925	1120	1230	1500
D (mm)	2855	2855	2855	2855	3855	3855	3855	3855	3855
E (mm)	1300	1300	1320	1320	1400	1400	1500	1500	1520

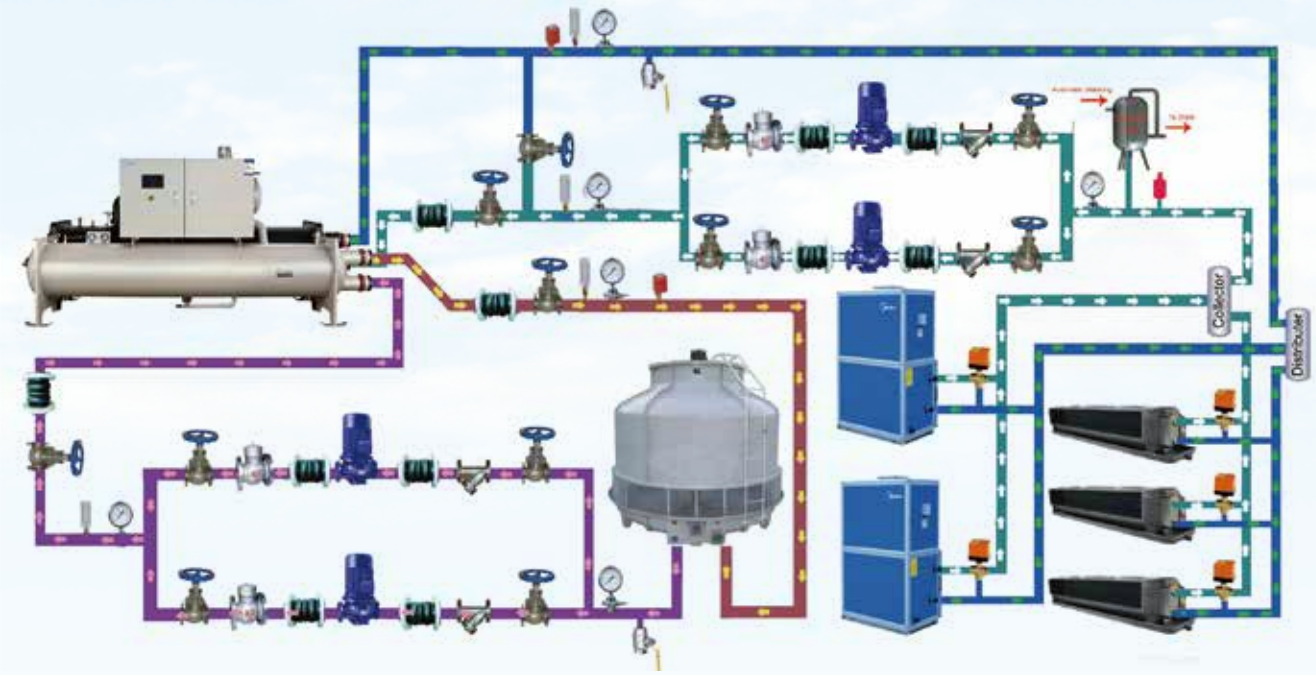
Typical piping system

● All piping should be installed independently in order to convey any stress and vibration to the chiller and have sufficient space for maintenance purpose.

● Water flow switch is strongly required and should be installed on the straight line (5 times the pipe diameter) of outlet of Chilled/Cooling water.

● It is recommended to install thermometer, pressure gauge to measure the unit operational condition.

● Notes: The diagram is the recommended schematic diagram of water system, make flexible changes according to the actual construction.



Suggestion for energy conservation:

1. Choose the right pressure head for chilled water pump and cooling water pump.

● Choose proper pipe diameter and water velocity in the pipe.

● Minimize the number of pipe joint, reducing pipe, manifold and valve to reduce unnecessary local resistance loss.

● Choose proper water strainer (structure/meshes) and do periodic cleaning.

2. Recommend using variable frequency water pump which can reduce energy consumption by 30%-45%.

3. Recommend using water distributor, valves between floors or terminal SV to prevent chilled water circulating in none-working terminals.

4. Do periodic cleaning for cooling tower and pipe system.

5. Choose the proper fresh air flow and layout for air-out and air return inlet to prevent short circuit of airflow.

6. Make appropriate modulation of chilled water inlet/outlet temperature and temperature difference according to the local climate.

Glycol freeze protection

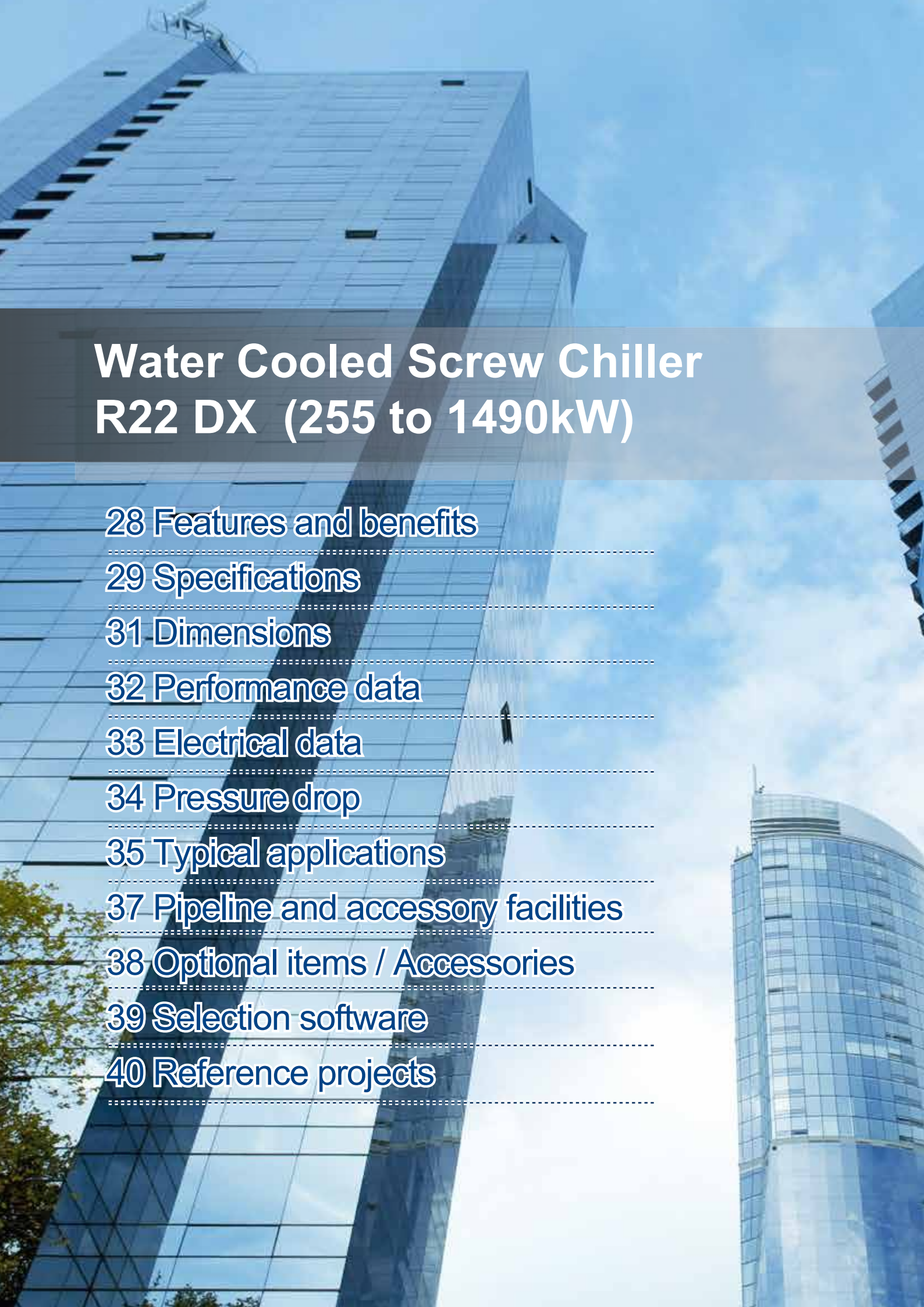
If the chiller of fluid piping may be exposed to temperatures below freezing,glycol protection is recommended if the water is not drained. The recommended protection is 15°F below the minimum ambient temperature in the equipment room and around piping. Use only glycol solutions approved for heat exchanger duty. DO NOT use automotive anti-freezing. If the equipment is being used for applications below 38°F, glycol should be used to prevent freeze damage. The freeze protection level should be 15°F lower than the leaving brine temperature. Table 1 and 2 are to be used to calculate performance and power input with the addition of glycol.

	Evaporator Side					
	Density %	Freeze Point °C	Capacity Factor	Power Input Factor	Flow Factor	Pressure Drop Factor
Ethylene Glycol	10	-3	0.995	0.997	1.013	1.050
	15	-5.3	0.989	0.996	1.025	1.073
	20	-8	0.983	0.992	1.036	1.113
	25	-10.8	0.978	0.99	1.055	1.172
	30	-14.1	0.975	0.987	1.074	1.215
	35	-17.8	0.973	0.985	1.098	1.267
	40	-23.3	0.97	0.984	1.121	1.325
	45	-27.5	0.965	0.980	1.150	1.389
	50	-33.8	0.956	0.976	1.178	1.458
	Condenser Side					
	10	-3	1.000	1.000	1.013	1.010
	15	-5.3	0.998	1.007	1.025	1.116
	20	-8	0.996	1.014	1.036	1.116
	25	-10.8	0.993	1.018	1.055	1.116
	30	-14.1	0.991	1.02	1.074	1.164
	35	-17.8	0.989	1.027	1.098	1.212
	40	-23.3	0.986	1.032	1.121	1.261
	45	-27.5	0.984	1.037	1.150	1.309
	50	-33.8	0.98	1.044	1.178	1.362

	Evaporator Side					
	Density %	Freeze Point °C	Capacity Factor	Power Input Factor	Flow Factor	Pressure Drop Factor
Propylene Glycol	10	-3	0.987	0.992	1.001	1.110
	15		0.983	0.990	1.003	1.134
	20	-7	0.975	0.985	1.004	1.176
	25		0.973	0.983	1.007	1.239
	30	-13	0.962	0.978	1.010	1.284
	35		0.957	0.975	1.028	1.339
	40	-21	0.946	0.971	1.050	1.400
	45		0.941	0.968	1.078	1.502
	50	-33	0.929	0.965	1.116	1.604
	Condenser Side					
	10	-3	0.990	1.001	1.001	1.090
	15		0.985	1.008	1.003	1.196
	20	-7	0.979	1.015	1.004	1.196
	25		0.974	1.019	1.007	1.196
	30	-13	0.969	1.023	1.010	1.227
	35		0.959	1.029	1.028	1.276
	40	-21	0.944	1.039	1.050	1.329
	45		0.923	1.054	1.078	1.388
	50	-33	0.896	1.078	1.116	1.453

Note:Capacity and Power Input should conside the condenser side and evaporator side together.

Field wiring



Water Cooled Screw Chiller R22 DX (255 to 1490kW)

28 Features and benefits

29 Specifications

31 Dimensions

32 Performance data

33 Electrical data

34 Pressure drop

35 Typical applications

37 Pipeline and accessory facilities

38 Optional items / Accessories

39 Selection software

40 Reference projects

Features and benefits

Leading technology of twin screw compressor

- Midea screw chiller is equipped with the 3rd generation industrial compressor that has the latest advanced 5-6 asymmetry dentiform Semi-hermetic Screw Rotors.
- The rotors are processed by high-precision CNC and each part is well-proportioned and none-gap matched, which minimizes the friction resistance and clearance lost and also guarantees quiet running and good duration

High efficiency, energy saving

- Extremely high full load and partial load energy efficiency.
- New twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that can adjust the capacity of 25%, 50%, 75% and 100% in 4 stages (Stepless control as an option) and permits exact matching of the cooling capacity to the actual load.
- A decrease in chiller energy costs, particularly at the part-load conditions at which the chiller operates most of the time.

Outstanding reliability

- Full factory testing of the unit with water hookup helps provides a trouble-free start-up.
- Extensive quality control checks during testing means that each equipment protection and operating control is properly adjusted and operates correctly before it leaves the factory.
- Transport simulation test in the laboratory on a vibrating table.
- Factory-installed options minimize field expenses and startup labor.

Easy and fast installation

- The unit has passed full factory test before being delivered to ensure the reliable working on the site. The unit can be placed in service only after being connected with power and water supply during field installation.
- The installation and adjustment are simple .Standard flange connection and wire mesh to the electrical panel. Refrigerant and lubrication oil are provided to the unit in the factory. Only piping connection and power supply connection are required on the site.

Intelligent control, easy operation

- Microprocessor control as standard on all the units. A display illustrates the machine's operation status and programmable parameters (set point) e.g. water temperature and refrigeration pressure and temperature, allowing the operator to determine the unit status and also allow changes to various set points. The control
system adopts PCB with predictive logic to select the most energy efficient combination of compressors.

Specifications

Single compressor

LSBLGXXX/MZ		255	320	400	485
Cooling capacity	kW	253	318	400	485
Power input	kW	53.6	67	85	100
EER	kW/kW	4.73	4.75	4.71	4.85
Semi-hermetic screw compressor					
Circuit A	Quantity	1	1	1	1
Circuit B	Quantity	--	--	--	--
Capacity Control	%	25%,50%,75%,100% four steps control (25%,50%-100% Stepless as Option)			
Oil recharge	Type	HBR-B01			
Circuit A	L	14	14	15	18
Circuit B	L	--	--	--	--
Refrigerant	Type	R22			
Circuit A	kg	35	40	60	80
Circuit B	kg	--	--	--	--
Control Type		TXV	TXV	TXV	TXV
Evaporator	Type	Shell and tube direct expansion			
Water content	L	100	150	80	120
Water flow	m³/h	43.5	54.7	68.8	83.4
Pressure drop	kPa	41	36	73	54
Connection Type		Victaulic coupling			
Max. pressure	MPa	1	1	1	1
Water inlet/outlet pipe dia.	mm	80	80	100	125
Condenser	Type	Shell and tube			
Water content	L	150	150	130	160
Water flow	m³/h	54.4	68.4	86	104.3
Pressure drop	kPa	36	41	22	49
Max. pressure	MPa	1	1	1	1
Water inlet/outlet pipe dia.	mm	80	80	100	125
Unit length	mm	2800	2800	2860	3200
Unit width	mm	1165	1165	1285	1300
Unit height	mm	1350	1350	1420	1450
Shipping weight	kg	1540	1870	2250	2610
Running weight	kg	1840	2070	2550	2910

Safety protection device	The following safety devices are equipped as standard. High pressure (pressure switch);Low pressure (pressure sensor) Compressor thermal protection High discharge temperature on the compressor Phase monitor; Low-pressure ratio; Low oil level protection Interrupter protection ;Overload compressor protection Over-voltage & low- voltage protection Sensor malfunction protection Contactor malfunction protection Freeze protection

Note:

Nominal cooling capacities are based on the following conditions:

Chilled water inlet/outlet temp: 12℃/7℃; (53.6F/44.6F); Cooling water inlet/outlet temperature 30/35℃ (86F/96F).

The design fouling factor for both evaporator and condenser are 0.086 m2. ℃/kW, otherwise can be customized.

Dual compressors

LSBLGXXX/MZ		970	1060	1260	1490
Cooling capacity	kW	970	1057	1256	1487
Power input	kW	200	214	250	298
EER	kW/kW	4.85	4.94	5.02	4.99
Semi-hermetic screw compressor					
Circuit A	Quantity	1	1	1	1
Circuit B	Quantity	1	1	1	1
Capacity Control	%	25%,50%,75%,100% four step control (25%,50%-100% Stepless as Option)			
Oil recharge	Type	HBR-B01			
Circuit A	L	18	18	23	23
Circuit B	L	18	23	23	28
Refrigerant	Type	R22			
Circuit A	kg	80	80	110	110
Circuit B	kg	80	90	110	130
Control Type		TXV	TXV	TXV	TXV+EXV
Evaporator	Type	Shell and tube direct expansion			
Water content	L	360	530	740	660
Water flow	m³/h	166.8	181.8	216	255.8
Pressure drop	kPa	83	85	87	76
Connection Type		Victaulic coupling			
Max. pressure	MPa	1	1	1	1
Water inlet/outlet pipe dia.	mm	150	150	200	200
Condenser	Type	Shell and tube			
Water content	L	360	320	460	430
Water flow	m³/h	208.6	227.3	270	319.7
Pressure drop	kPa	40	99	56	99
Max. pressure	MPa	1	1	1	1
Water inlet/outlet pipe dia.	mm	150	150	200	200
Unit length	mm	4100	4100	4450	4600
Unit width	mm	1630	1740	1780	1810
Unit height	mm	1680	1680	1730	1920
Shipping weight	kg	4630	4870	5840	6490
Running weight	kg	5080	5320	6340	7090
Safety protection device		The following safety devices are equipped as standard. High pressure (pressure switch) Low pressure (pressure sensor) Compressor thermal protection High discharge temperature on the compressor Phase monitor; Low-pressure ratio; Low oil level protection Interrupter protection; Overload compressor protection Over-voltage & low- voltage protection Sensor malfunction protection Contactor malfunction protection Freeze protection			

Note:

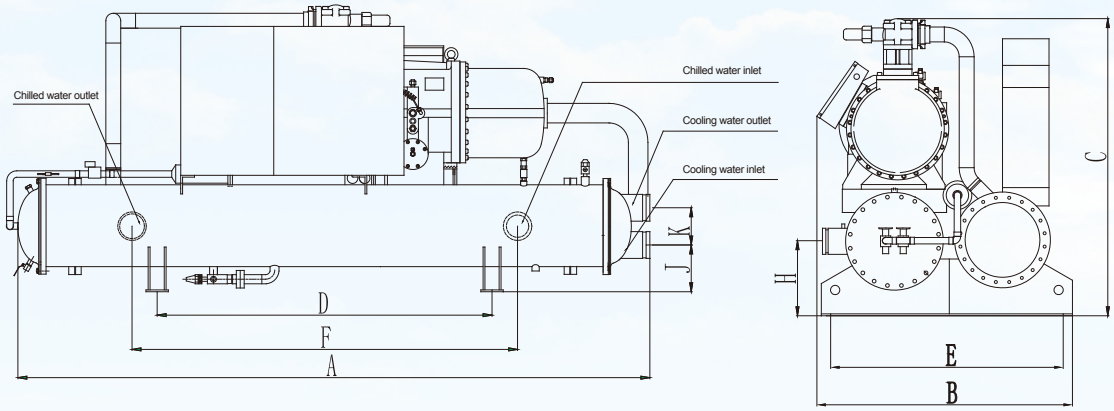
Nominal cooling capacities are based on the following conditions:

Chilled water inlet/outlet temp: 12℃/7℃; (53.6F/44.6F); Cooling water inlet/outlet temperature 30/35℃ (86F/96F).

The design fouling factor for both evaporator and condenser are 0.086 m2. ℃/kW, otherwise can be customized.

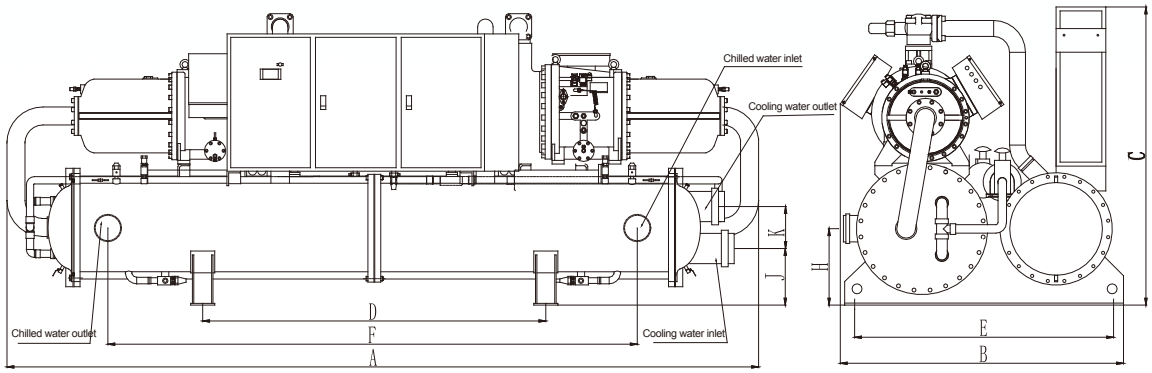
Dimensions

Single compressor



Model LSBLG	A	B	C	D	E	F	H	J	K	Cooling Water In/Outlet	Chilled Water In/Outlet
255/MZ	2800	1165	1350	1600	880	1780	280	210	140	DN80	DN80
320/MZ	2800	1165	1350	1600	880	1760	280	210	140	DN80	DN80
400/MZ	2860	1285	1420	1600	1000	1780	328	246	160	DN100	DN100
485/MZ	3200	1300	1450	1600	1000	1660	330	230	200	DN125	DN125
630/MZ	3430	1480	1600	1800	1220	2150	360	260	200	DN125	DN125
860/MZ	3430	1610	1730	1800	1360	2120	400	300	200	DN150	DN150

Dual compressor



Model LSBLG	A	B	C	D	E	F	H	J	K	Cooling Water In/Outlet	Chilled Water In/Outlet
970/MZ	4100	1630	1680	1800	1440	2120	415	290	200	DN150	DN150
1060/MZ	4100	1740	1680	1800	1440	2680	415	290	200	DN150	DN150
1260/MZ	4450	1780	1730	2000	1540	3080	415	285	260	DN200	DN200
1490/MZ	4600	1810	1920	2000	1640	3080	650	340	260	DN200	DN200

Performance data

Model	Chilled water outlet tempature (°C)	Cooling water inlet tempature (°C)																					
		25		26		27		28		29		30		31		32		33		34		35	
		Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)	Cooling Capacity (kW)	Power Inout (kW)
LSBLG****/MZ	5	0.986	0.903	0.975	0.918	0.964	0.934	0.952	0.949	0.941	0.966	0.929	0.982	0.917	1.000	0.905	1.018	0.893	1.035	0.881	1.054	0.869	1.072
	6	1.023	0.911	1.011	0.926	1.000	0.942	0.988	0.958	0.976	0.975	0.964	0.991	0.952	1.009	0.939	1.026	0.927	1.044	0.914	1.062	0.902	1.081
	7	1.060	0.918	1.049	0.934	1.037	0.950	1.025	0.966	1.012	0.983	1.000	1.000	0.987	1.018	0.975	1.035	0.962	1.053	0.949	1.071	0.936	1.090
	8	1.099	0.927	1.087	0.943	1.075	0.958	1.062	0.975	1.050	0.991	1.037	1.009	1.024	1.026	1.011	1.044	0.998	1.062	0.985	1.081	0.971	1.099
	9	/	/	1.127	0.950	1.114	0.967	1.101	0.983	1.088	1.000	1.075	1.018	1.062	1.035	1.049	1.053	1.035	1.071	1.021	1.089	1.008	1.109
	10	/	/	1.167	0.959	1.154	0.975	1.141	0.991	1.128	1.009	1.115	1.026	1.101	1.044	1.087	1.061	1.073	1.070	1.059	1.099	1.045	1.119
	11	/	/	1.209	0.967	1.196	0.983	1.182	1.000	1.169	1.018	1.155	1.035	1.141	1.053	1.127	1.071	1.113	1.089	1.098	1.108	1.083	1.127
	12	/	/	1.252	0.976	1.239	0.992	1.225	1.009	1.211	1.026	1.196	1.044	1.182	1.061	1.167	1.080	1.153	1.098	1.138	1.118	1.123	1.137
	13	/	/	/	/	1.282	1.000	1.268	1.018	1.254	1.035	1.239	1.053	1.224	1.070	1.209	1.089	1.194	1.108	1.179	1.127	1.164	1.147
	14	/	/	/	/	1.327	1.009	1.313	1.026	1.298	1.044	1.283	1.061	1.268	1.080	1.252	1.098	1.237	1.118	1.221	1.136	1.205	1.157
	15	/	/	/	/	1.373	1.018	1.358	1.035	1.343	1.053	1.328	1.070	1.312	1.089	1.297	1.107	1.281	1.126	1.265	1.146	1.248	1.166

Notes:
1.The above operating table is suitable for all DX type screw chiller, the capacity table is the correction coefficient of different chilled water and cooling water temperature (Correction of the rated cooling capacity and power);
2. The above parameters are in accordance with the 7 degrees evaporator water outlet, 30 degrees condenser water inlet. ;

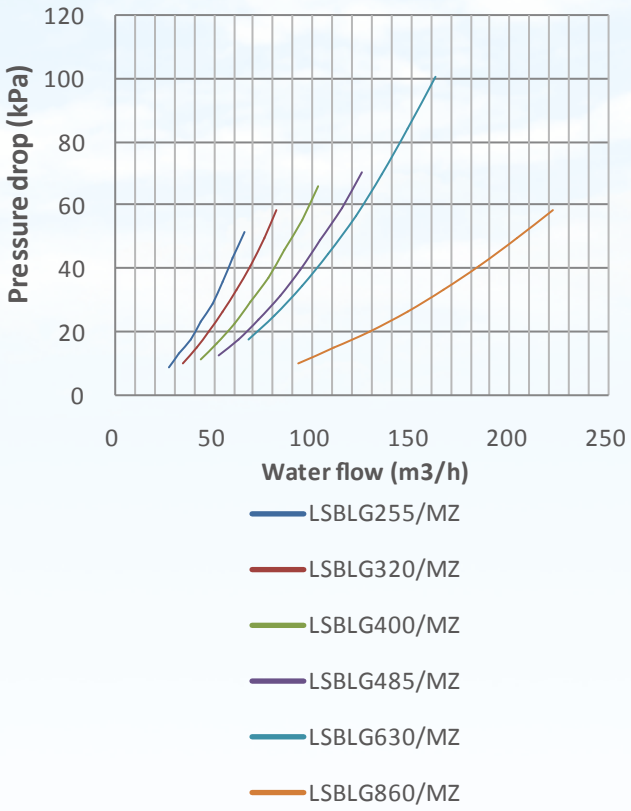
Electrical data

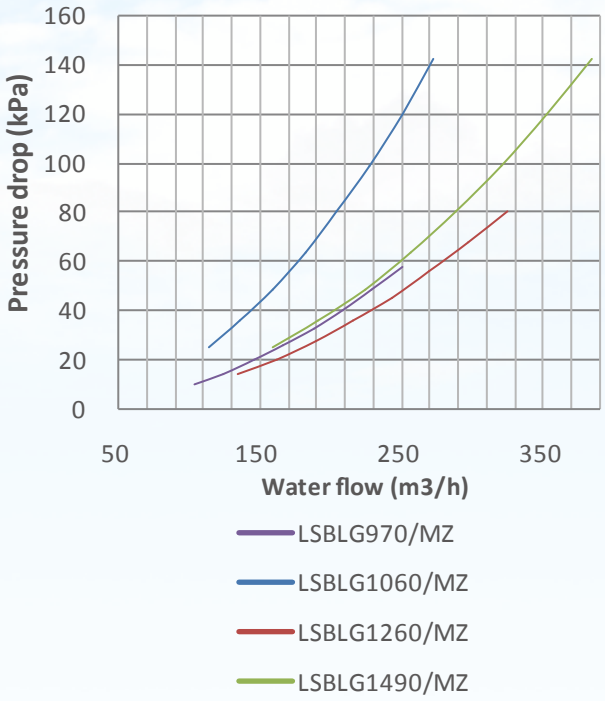
LSBLGXXX/MZ		255	320	400	485	630	860	970	1060	1260	1490
Standard voltage	V	380V 3Ph 50Hz									
Voltage range	V	340~420									
Max. running current	A	120	148	189	205	277	383	445	458	554	662
Max. power consumption	kW	80.6	95.5	127.5	148.1	188.2	255.5	296.2	329.6	376.4	443.7
Rated current	A	92	119	146	171	213	295	341	365	427	509
Compressor A											
Locked rotor Amps.	A	690	780	875	1220	1510	2355	1220	1220	1510	1510
Max. allowed current	A	145.2	171.9	229.6	266.7	338.9	460	266.7	305.1	338.9	338.9
Rated current	A	92	119	146	171	213	295	171	194	213	213
Rated power	kW	53.6	67	85	100	125	173	100	114	125	125
Compressor B											
Locked rotor Amps.	A	--	--	--	--	--	--	1220	1330	1510	2355
Max. allowed current	A	--	--	--	--	--	--	266.7	266.7	338.9	460
Rated current	A	--	--	--	--	--	--	171	171	213	295
Rated power	kW	--	--	--	--	--	--	100	100	125	173
Crankcase heater											
Voltage	V	380	380	380	380	380	380	380	380	380	380
Total input	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6
Total Amps.	A	1.36	1.36	1.36	1.36	1.36	1.36	2.72	2.72	2.72	2.72

NOTE:
1.Customer to specify the exact nominal power supply available at site so that electrical components are selected accurately.
2.Main power must be supplied from a single field supplied and mounted fused circuit breaker.
3.The compressor crankcase heaters must be energized for hours before the unit is initially started or after a prolonged power disconnection.
4.All field wining must be in accordance with local standards.
5.Neutral line required on 380V-3Ph-50Hz(5 wires) power supply.
6.Rated load Amps values are on nominal conditions.
7.The ±10% voltage variation from the nominal is allowed for a short time only,not permanent.

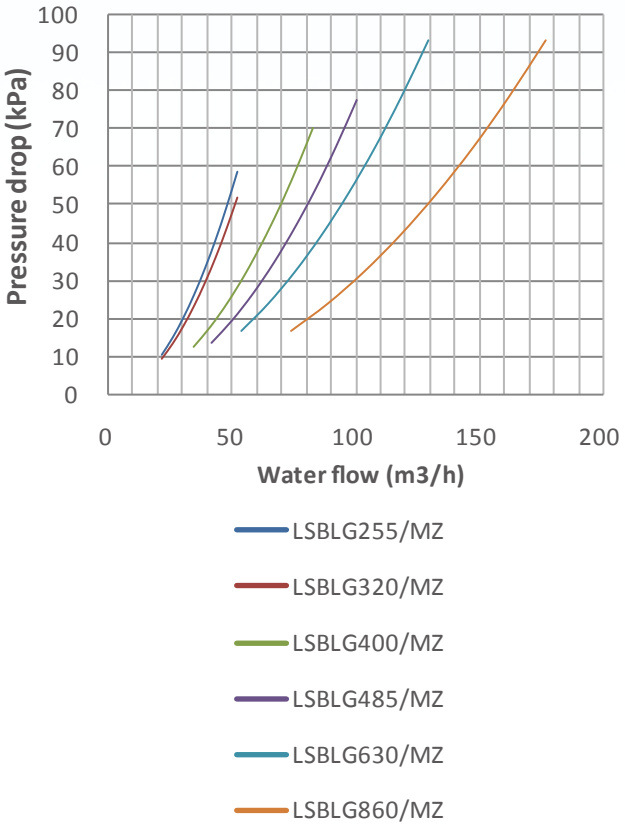
Pressure drop

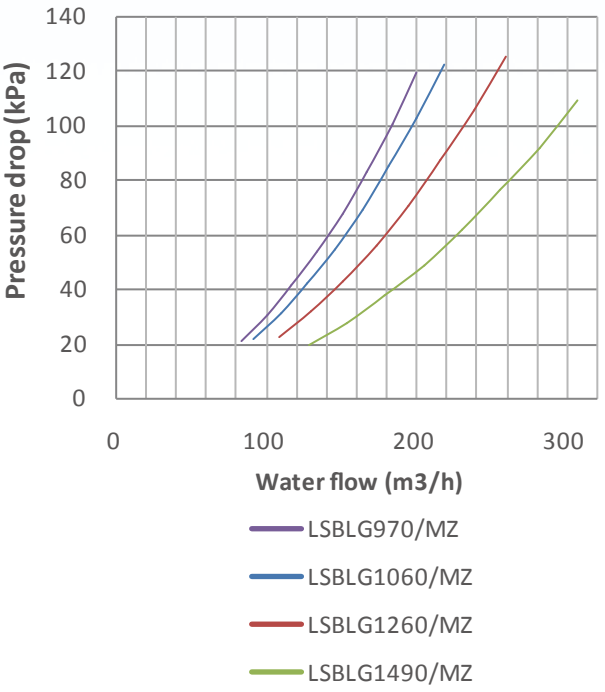
DX type (Evaporator)





DX type (Condenser)





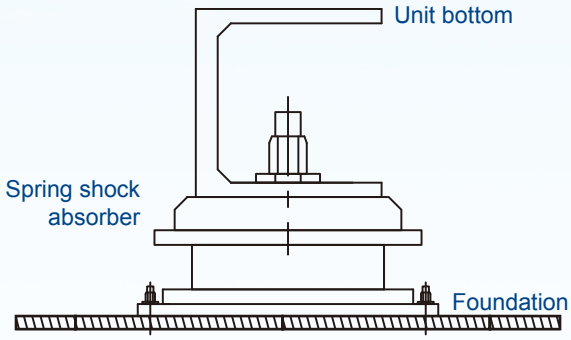
Typical applications

Typical applications

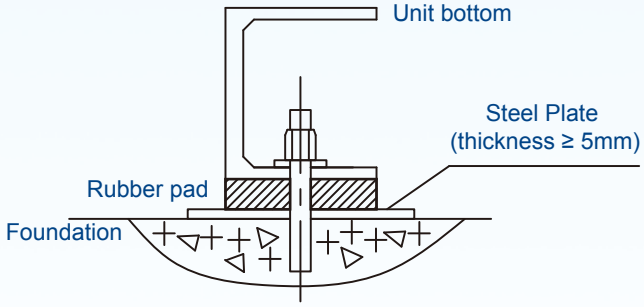
■1. Be sure to take the base preparation and structure into consideration seriously during installation,especially avoid the intensity and noise of floor when the machine is installed on the top stoery ofbuildings. It is recom mended to discuss with the building designer before conducting installation.

■2. The surrounding of the base shall be equipped with drainage ditch and make sure it can dewatering freely for convenient in drain.

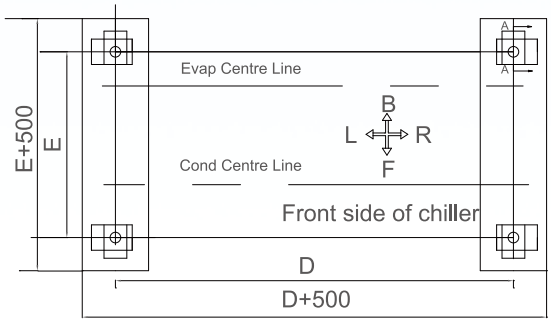
■3. Anti-vibration pad shall be placed between the base frame and fundation in order to avoid transmitting vibration and noise during the runtime of the unit, and make sure the unit is aclinic during installation.

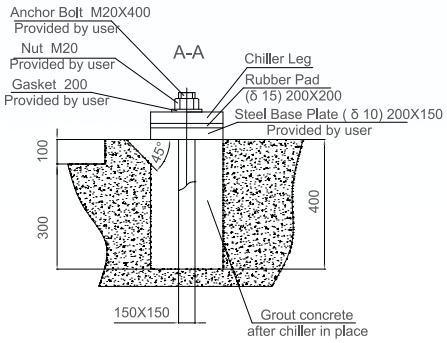


Spring isolator



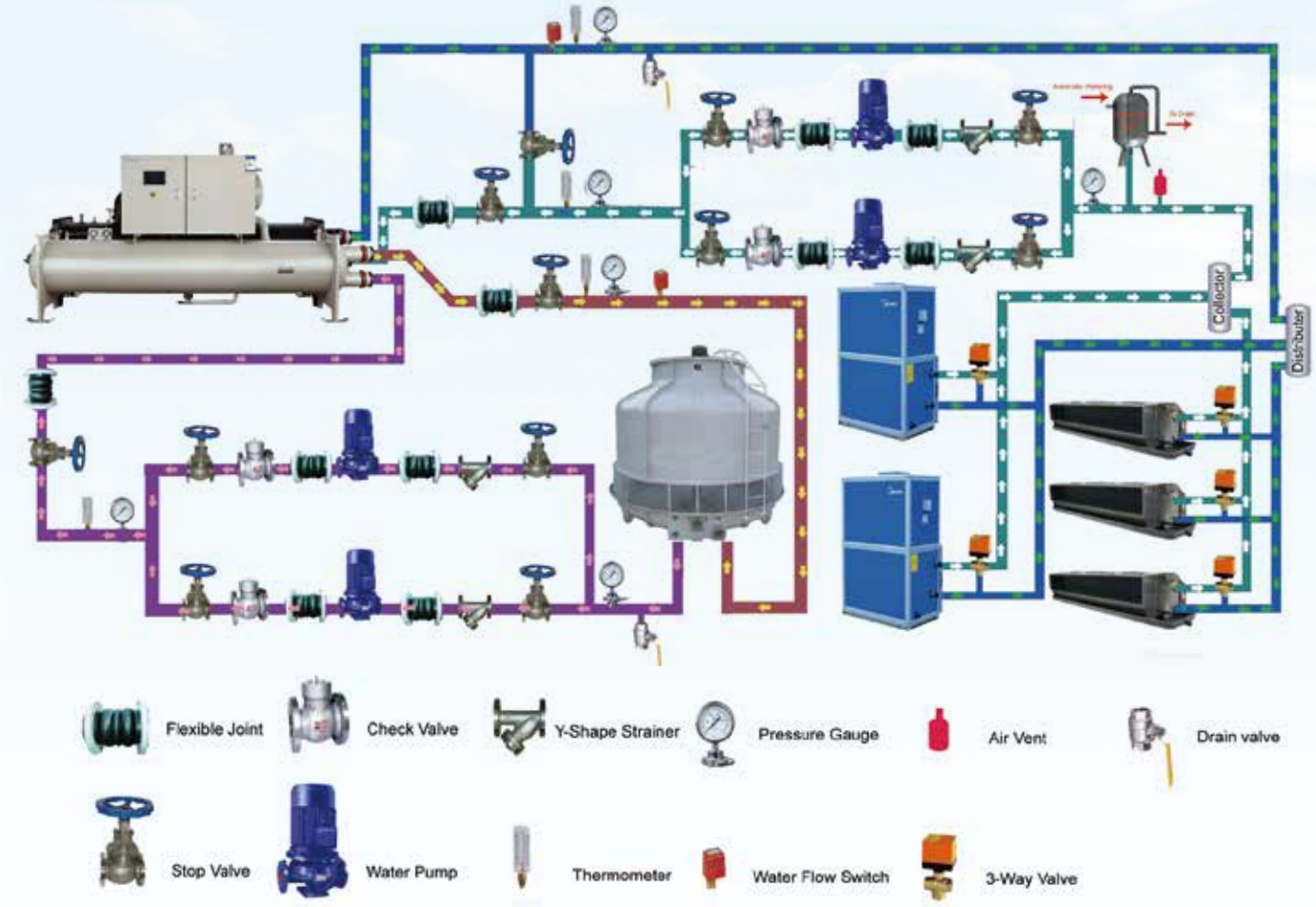
Rubber pad





Model	LSBLG***/MZ									
Dimension	255	320	400	485	630	860	970	1060	1260	1490
D (mm)	1600	1600	1600	1600	1800	1800	1800	1800	2000	2000
E (mm)	880	880	1000	1000	1220	1360	1440	1440	1540	1640

Pipeline and accessory facilities



Construction cautions

1. For parts outside broken line, the customers will independently prepare materials and carry out construction.
2. The water system pressure of evaporator and condenser of water chiller should be not more than 10kgf/cm2 and if so,the chiller is special type.
3. All chiller should be equipped with special water pump and cooling water pump to the extent possible.
4. The pipeline of cooled water and cooling water should be equipped with 10-mesh filter.
5. In order for convenient management and maintenance of chiller, the following devices should be installed besides stop valves which are installed on respective pipeline of inlet/outlet of cooler water and cooling water:
(1) Install thermometer and pressure gauge near the inlet/outlet of cooler water and cooling water
(2) Install exhaust valve on respective pipeline of cooler water and cooling water
6. The start and stop of peripheral equipments must be controlled by control system of water chiller to guarantee interlock protection.
7. The power line inducted into starting cabinet of each compressor and connecting wire of peripheral equipments will be supplied by users and please ask for electric diagram of water chiller from the company during design and construction.

Optional accessories

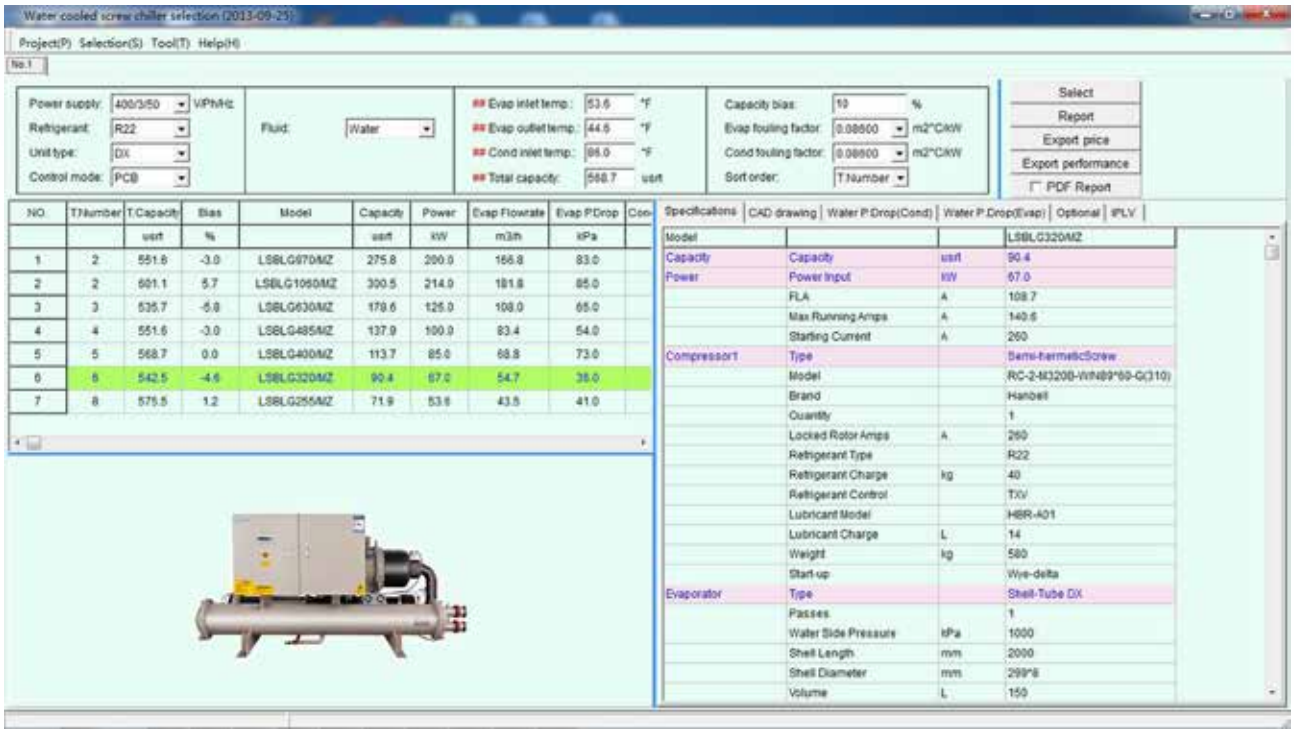
NO.	Name	Model	Instructions	Picture	Quantity
1	Water flow switch	WFS-1001-H (Honeywell)	Installed on evaporator outlet pipe to prevent heat exchange pipe from frost crack.		2
2	Vibration damper	MHD series	To avoid vibration and noise, it must be used between base and foundation when install the unit.		4
3	Remote control cabinet	YCKZ-P	Can be installed in the control room. Through the cable connected to the unit touch screen, it can display all states information and complete all the operations of unit (startup/shutdown, error confirm, etc.)		1
4	Flange	JB81/94 Standard flange	Flange connection can be chosen for water pipe connection. Customer can choose water side pressure 1.6MPa according to requirement.		9

Optional items

Name	Content
Power supply	380V 3Ph 50Hz is standard and 400V/415V is optional.60Hz product is also available.
Water inlet/outlet connection	Victaulic type connection is the standard for the condenser and evaporator. Flange type connection is optional.
High pressure water box	Standard water box can sustain 1.0Mpa pressure .1.6Mpa or 2.0Mpa pressure is optional.
Chiller vibration isolator	Spring isolator and rubber pad are the optional accessories from the factory.
Compressor stepless control	Capacity adjustment in four steps (25%/50%/75%100%) is standard and stepless control is optional.
High entering condenser water temperature	High entering condenser water entering temperature up to 35°C.
Chiller vibration isolator	Spring isolator and rubber pad are the optional accessories from the factory.
Multi units centralized control	Multiple units' centralized control is optional (Chiller plant manager).
PLC (Programmable Logic Control)	The standard electrical controller is Midea Microprocessor and PLC is optional of various applications.
Remote control & monitor panel	Remote control & monitor panel for easy operation in the site.
BMS (Building management system)	Open protocol RS 485 which is BMS compatible (BACnet or LonWorks).
Witness performance testing	Factory provide the witness testing service for the clients.

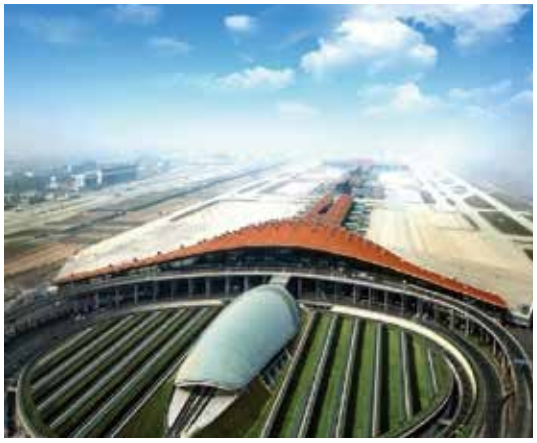
Selection software

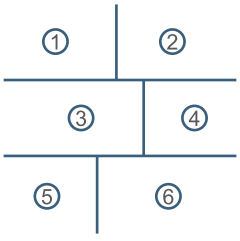
Professional selection software makes product selection process much easier and efficient than conventional manual selection. Simple operating interface and smart arithmetic can greatly improve the selection efficiency. The user just needs to provide several basic parameters, such as cooling capacity, fouling factor, pass number, power supply, etc. Then the computer will find out all the possible models for you to choose the best design. This software can be update through the internet easily. If you get some good advice, please feel free to tell us.



We reserve the right to make change in design and construction at any time without notice.

Reference projects





1-Medical facilities 2- Government offices 3- Hotel
4- Factory 5- Traffic Engineering 6-Shopping mall

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Certificate of Occupational Health and Safety Management System
Certificate No. 15912S20006R0L-1.

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