



Commercial Air Conditioners **2017/2018**



Water Cooled Screw Chiller

Flooded type 340 - 1780kW (R134a)



Midea CAC

Midea CAC is a key division of the Midea Group, a leading producer of consumer appliances and provider of heating, ventilation and air conditioning solutions. Midea CAC has continued with the tradition of innovation upon which it was founded, and emerged as a global leader in the HVAC industry. A strong drive for advancement has created a groundbreaking R&D department that has placed Midea CAC at the forefront of a competitive field. Through these independent efforts and joint cooperation with other global enterprises, Midea has supplied thousands of innovative solutions to customers worldwide.



**Midea Company
Introduction**



**Midea CAC
Introduction**



There are three production bases: Shunde, Chongqing and Hefei.

MCAC Shunde: 38 product lines focusing on VRF, Split Products, Heat Pump Water Heaters, and AHU/FCU.

MCAC Chongqing: 14 product lines focusing on Water Cooled Centrifugal/Screw/Scroll Chillers, Air Cooled Screw/Scroll Chillers, and AHU/FCU.

MCAC Hefei: 11 product lines focusing on VRF, Chillers, and Heat Pump Water Heaters.

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500

2016 >> Acquired 80% stake in Clivet.

2015 >> An international strategic Platform brings Midea Group, Carrier Corporation and Chongqing Mechanical & Electrical come together for the chiller business in the field of commercial air conditioners.

2014 >> Proudly introduced the new series of water cooled screw chillers, featuring high efficiency.

2013 >> Launched the first super efficiency centrifugal chiller with dual stage compressor and full falling-film evaporator.

2010 >> Launched the centrifugal heat pump chiller units.

2008 >> Developed the Smart Star new generation Semi-hermetic centrifugal chiller.

2007 >> Won the first Midea centrifugal chiller project oversea.

2006 >> Launched the first Chinese VSD (Variable Speed Drive) centrifugal chiller unit.

2004 >> Acquired MGRE entered the chiller industry.

2001 >> The R134a (LC) series centrifugal chiller was named as the national key product.

1999 >> Entered the CAC field.



Midea water cooled screw chiller is a classic products that operates on a flooded type evaporator and high efficiency compressor. Optimized system design and enhanced heat exchange efficiency mean the unit works best under both full load and partial load. Every chiller is fully factory tested and gas charged before shipment. It's an ideal choice for hotels, shopping malls, hospitals, factories, cinemas and other civil architecture air conditioning system. Its uses also extend into the plastic industry, electroplating industry, food processing, chemical industry and other processing facilities that require large amounts of chilled water.



Contents

05 ► Nomenclature

06 ► Features and benefits

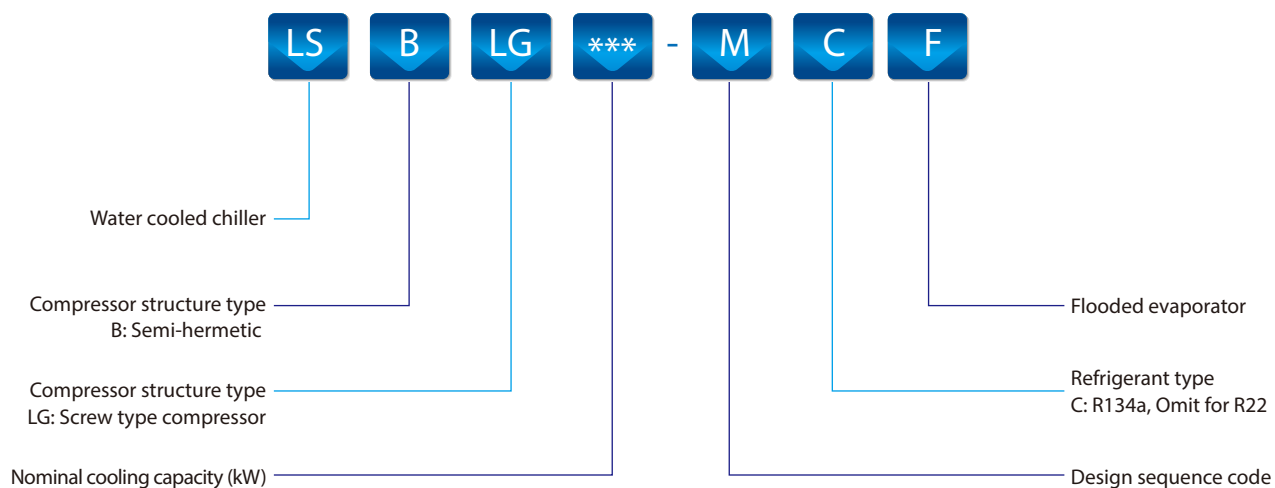
10 ► Specifications

12 ► Dimensions

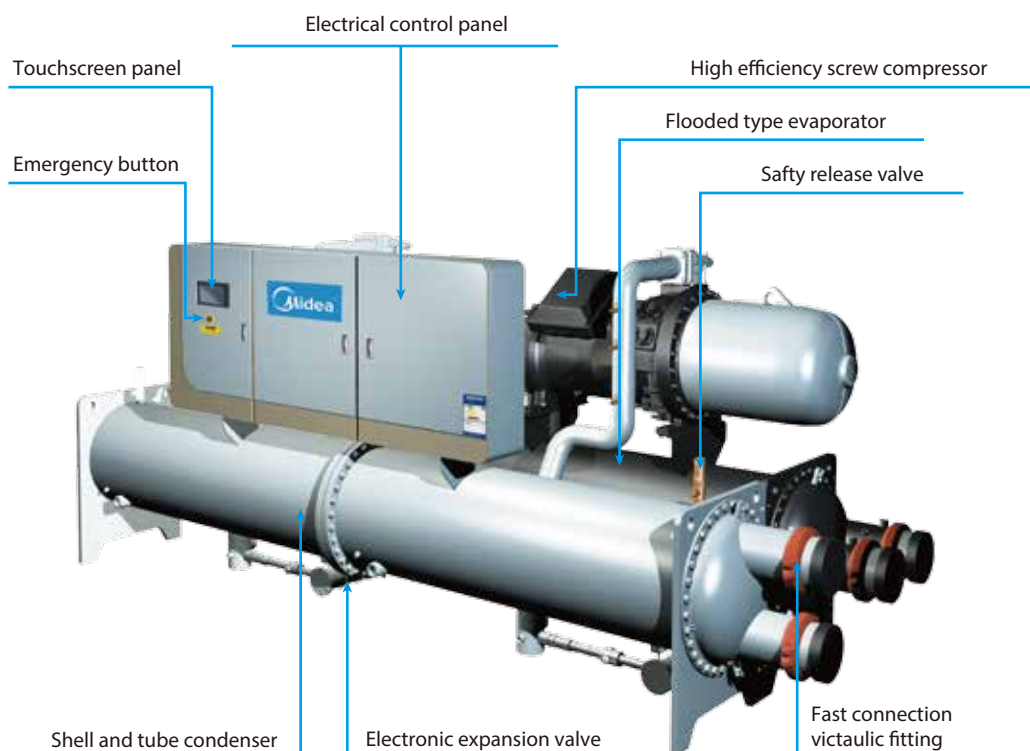
20 ► Selection software

21 ► Reference projects

Nomenclature



Structure



Features and benefits

Green chiller >>

R134a environmentally-friendly refrigerant:
Refrigerant is chlorine-free HFC with zero ODP (Ozone Depletion Potential).
Very low GWP (Global Warming Potential).



Stable and Reliable >>

Advanced twin-rotor screw compressor

Adjustable capacity valve

Stepless adjustment or four stage adjustable capacity.

Built-in oil separator

High precision filter, oil separation efficiency up to 99.5%.

Direct motor drive

High mechanical efficiency, low compressor speed, low noise levels.

Refrigerant discharge

One-way valve to avoid rotate in reverse during long time stop.

Twin screw rotor

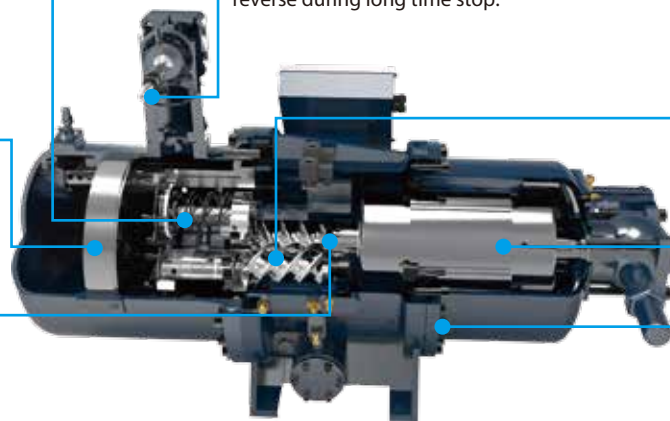
Patented type line design, high volumetric efficiency, smooth operation.

Hermetic motor

Refrigerant cooled motor, no expelled heat.

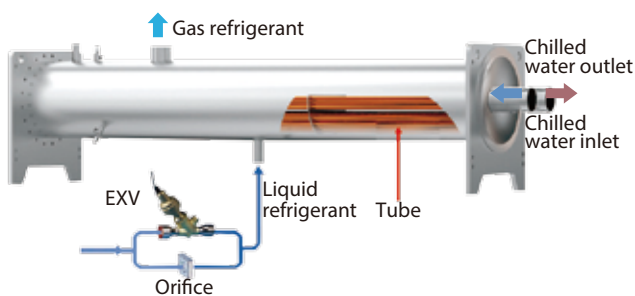
Semi-hermetic structure

Semi-hermetic compressor, moveable bolts, easy maintenance.

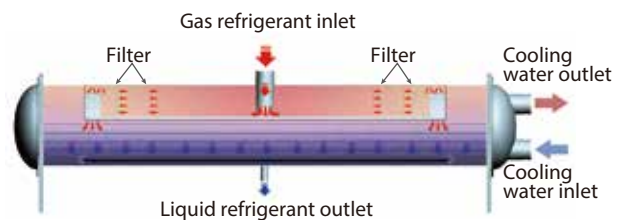


High efficiency heat exchange technology >>

Evaporator



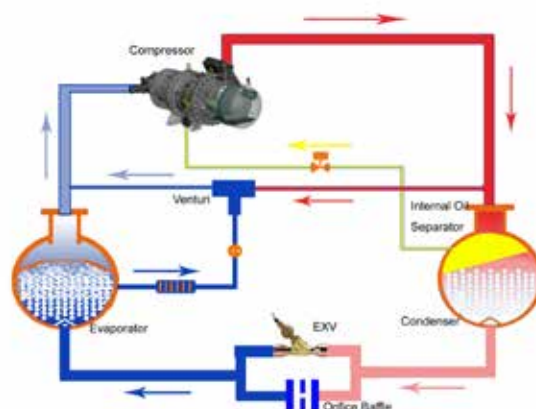
Condenser



High efficiency shell and tube heat exchanger, 2 pass, straight water pipe, easy to clean. Both two side cover can be exchanged to meet customer's requirement for condenser.

Advanced oil system >>

Adoption of the special oil separation and return system, built-in oil separator, ensure the systems' stability. The lubrication system can heat oil to match the chillers exact requirements, guaranteeing the system is always protected against unnecessary wear.



User-friendly operating interface >>

Complete and safe control system: The unit is designed with multiple security measures to ensure safety and reliability. All sensors and safety features are assembled, equipped and undergo strict testing in factory.

Touchscreen display: Color coded, easy for operation.

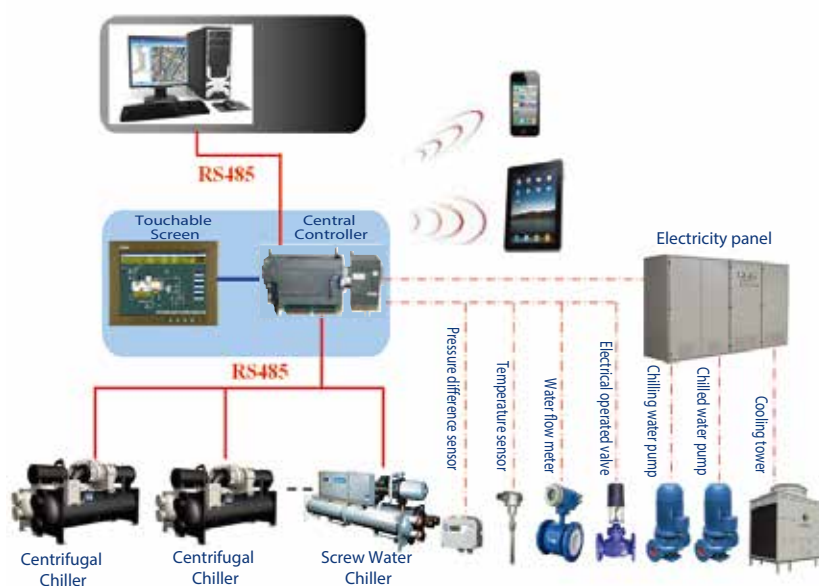
Three status indicators on the screen clearly indicate power, system status and communication



Intelligent control >>

By monitoring all parameters, the intelligent control logic decides the best load adjustment method, it optimizes the EXV and the capacity slider to guarantee safe operation under various load conditions.

Conventional BMS systems only focus on the interlock control, operation status and parameter monitoring, which achieves automation and energy management, but fails to realize the benefits of equipment synchronization. Midea centralized energy management system attaches importance to building load prediction and control, and coordinates the operation of air-conditioner, fan and water pumps to realize optimum energy management.



System control functions:

- Pragmatic control modes
- Equalized operation time
- Optimum operation schedule
- System data report
- Strategies to address problems
- Remote communication function

Electrical control >>



Midea intelligent controller >>

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

True color touchscreen >>

Control regulations, operating parameters, diagnostics reports, and error messages are all displayed on a 7 inch, 65636 colors TFT screen with 800×480 resolution. The screen also displays error codes, various settings, specified temperature and pressure values, the status of operating parameters and options.



Weekly operation scheduling >>

The user can set the chiller operation schedule on the weekly timetable to run and stop the chiller automatically. If an unscheduled shutdown occurs, the chiller will not restart unless manually reset.

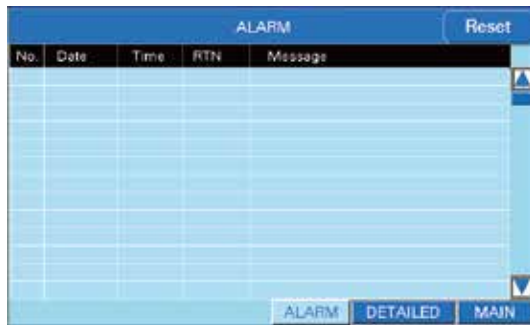


Power-down memory function >>

When powered-down, the chiller will maintain previous running mode and parameter set point.

Data acquisition & storing >>

Records a max. of 256 of the latest alarms and 500 seconds of chilled/cooling water temperature trend display.



Password protection >>

A user, installation and commissioning technician as well as a factory password are pre-generated for each unit. Unauthorized access to the control is protected by randomly-generated passwords.



Self-Diagnosis >>

Self-diagnosis is always performed prior to start-up to enable safe operation. Only after all the requirements are met, the chiller will start. If any malfunction occurs, it will be displayed on the screen.

Multiple protection features guarantee the safety and stability of the unit.

Items	Function
High/low pressure protection	Guarantees the Comp. runs in the right range thus ensuring its lifespan
Power open phase protection	Protects Comp. from damage in case of open phase or anti-phase
Anti-freeze protection under cooling mode	Protects the evaporators' copper pipes from damage caused by water freeze
Frequent startup protection	Protects Comp. motor winding from burnout caused by frequent startup
Overcurrent protection of Comp.	Protects Comp. from burnout caused by heavy current
Overheat protection of compressor	Protects Comp. from damage caused by a lack of refrigerant or lubricant
Water flow protection	Protects Comp. from burnout caused by heat-exchanger failure
Reversal protection control(APRS)	Guarantees the comp. motor runs in the right direction

Specifications

LSBLGXXX/MCF		340	440	540	720	805	890
Cooling capacity	kW	340.0	440.0	540.0	720.0	805.0	890.0
Power input	kW	60.00	77.00	94.00	127.5	144.3	155.0
COP	kW/kW	5.66	5.71	5.74	5.64	5.57	5.74
Semi-hermetic screw compressor							
Circuit A	Quantity	1	1	1	1	1	1
Circuit B	Quantity	--	--	--	--	--	--
Oil recharge							
Circuit A	L	18	20	23	28	40	40
Circuit B	L	--	--	--	--	--	--
Refrigerant	Type	R134a					
Circuit A	kg	130	145	160	230	230	250
Circuit B	kg	--	--	--	--	--	--
Control Type		EXV+Orifice					
Evaporator	Type	Shell and Tube Flooded					
Water flow	m ³ /h	58.46	75.67	92.88	123.8	138.5	153.1
Pressure drop	kPa	30.0	32.3	32.2	27.1	33.2	33.1
Max. pressure	kPa	1000	1000	1000	1000	1000	1000
Connection Type		Vactaule coupling					
Water inlet/outlet pipe dim.		DN150	DN150	DN150	DN200	DN200	DN200
Condenser	Type	Shell and Tube					
Water flow	m ³ /h	73.12	94.61	116.1	154.8	173.1	191.4
Pressure drop	kPa	38.0	39.7	40.2	37.0	40.0	42.8
Max. pressure	kPa	1000	1000	1000	1000	1000	1000
Connection Type		Vactaule coupling					
Water inlet/outlet pipe dim.		DN150	DN150	DN150	DN200	DN200	DN200
Unit length	mm	3496	3496	3496	3521	3521	3521
Unit width	mm	1200	1200	1200	1400	1400	1400
Unit height	mm	1716	1768	1848	1928	2026	2026
Packing length	mm	3950	3950	3950	3950	3950	3950
Packing width	mm	1340	1340	1340	1560	1560	1560
Packing height	mm	1950	2020	2120	2220	2240	2240
Net weight	kg	2380	2460	2830	3400	3900	4000
Shipping weight	kg	2525	2540	2875	3550	3950	4030
Running weight	kg	2515	2560	2935	3770	4180	4270

Note:

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

Cooling water inlet/outlet temperature 30/35°C(86°F /95°F).

The design fouling factor for evaporator is 0.0176m²°C/kW(0.0001ft² F.hr/Btu) and for condenser is 0.044m²°C/kW(0.00025ft² F.hr/Btu).

LSBLGXXX/MCF		1055	1200	1300	1410	1620	1780
Cooling capacity	kW	1055	1200	1300	1410	1620	1780
Power input	kW	186.6	206.0	231.7	242.7	278.0	306.0
COP	kW/kW	5.65	5.82	5.61	5.81	5.82	5.81
Semi-hermetic screw compressor							
Circuit A	Quantity	1	1	1	1	1	1
Circuit B	Quantity	--	1	1	1	1	1
Oil recharge							
Circuit A	L	40	28	28	28	40	40
Circuit B	L	--	28	28	28	40	40
Refrigerant	Type	R134a					
Circuit A	kg	360	165	165	170	200	200
Circuit B	kg	--	165	165	170	200	200
Control Type		EXV+Orifice					
Evaporator	Type	Shell and Tube Flooded					
Water flow	m ³ /h	181.5	206.4	223.6	242.6	278.6	306.2
Pressure drop	kPa	32.7	63.0	71.0	64.9	71.0	77.0
Max. pressure	kPa	1000	1000	1000	1000	1000	1000
Connection Type		Victaulic coupling					
Water inlet/outlet pipe dim.		DN200					
Condenser	Type	Shell and Tube					
Water flow	m ³ /h	226.9	257.9	279.5	303.2	348.2	382.7
Pressure drop	kPa	37.7	72.2	81.7	81.9	83.9	86.1
Max. pressure	kPa	1000	1000	1000	1000	1000	1000
Connection Type		Victaulic coupling					
Water inlet/outlet pipe dim.		DN200					
Unit length	mm	3588	4593	4593	4593	4820	4820
Unit width	mm	1500	1500	1500	1500	1600	1600
Unit height	mm	2168	2002	2002	2002	2230	2230
Packing length	mm	3950	5050	5050	5050	5050	5050
Packing width	mm	1660	2080	2080	2080	2180	2180
Packing height	mm	2370	2255	2255	2255	2470	2470
Net weight	kg	4520	6610	6690	6940	8090	8190
Shipping weight	kg	5170	6212	6292	6340	7590	7710
Running weight	kg	5430	6432	6512	6610	8110	8260

Note:

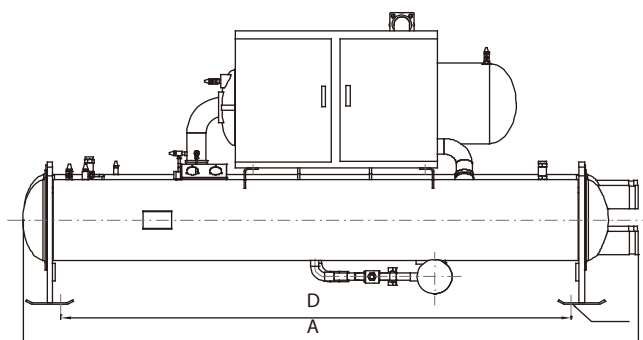
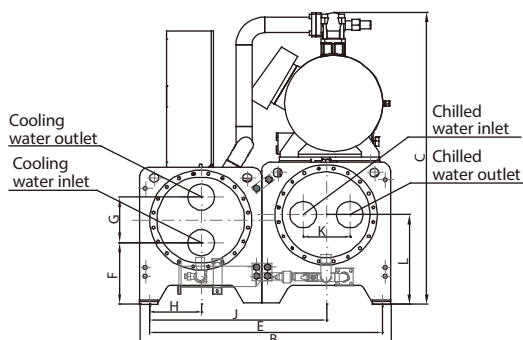
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Dimensions

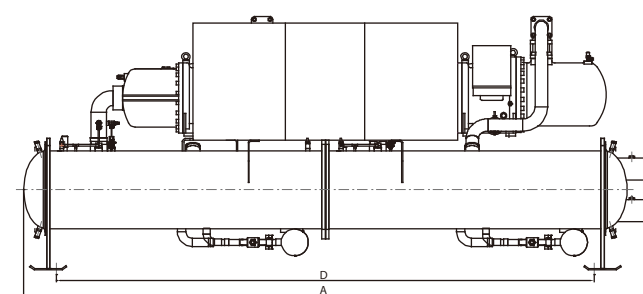
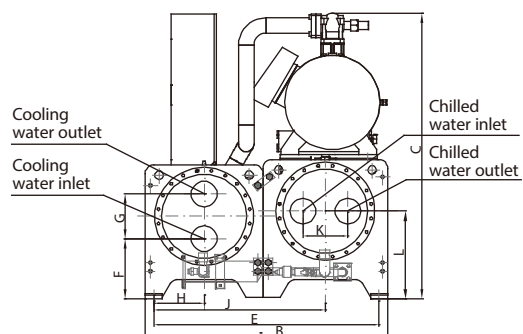
Single compressor(LSBLG340~1055/MCF)



Unit: mm

Model	A	B	C	D	E	F	G	H	J	K	L	Water inlet/outlet
LSBLG340/MCF	3496	1200	1716	2850	1100	411	260	300	600	260	541	DN150
LSBLG440/MCF	3496	1200	1768	2850	1100	411	260	300	600	260	541	DN150
LSBLG540/MCF	3496	1200	1848	2850	1100	411	260	300	600	260	541	DN150
LSBLG720/MCF	3521	1400	1928	2850	1300	441	300	350	700	300	591	DN200
LSBLG805/MCF	3521	1400	2026	2850	1300	441	300	350	700	300	591	DN200
LSBLG890/MCF	3521	1400	2026	2850	1300	441	300	350	700	300	591	DN200
LSBLG1055/MCF	3588	1500	2168	2850	1400	443	350	375	750	375	618	DN200

Dual compressor(LSBLG1200~1780/MCF)



Unit: mm

Model	A	B	C	D	E	F	G	H	J	K	L	Water inlet/outlet
LSBLG1200/MCF	4593	1500	2002	3850	1400	443	350	375	750	350	618	DN200
LSBLG1300/MCF	4593	1500	2002	3850	1400	443	350	375	750	350	618	DN200
LSBLG1410/MCF	4593	1500	2002	3850	1400	443	350	375	750	350	618	DN200
LSBLG1620/MCF	4820	1600	2230	3850	1500	468	350	400	800	350	643	DN200
LSBLG1780/MCF	4820	1600	2230	3850	1500	468	350	400	800	350	643	DN200

Electrical data

LSBLGXXX/MCF		340	440	540	720	805	890	1055	1200	1300	1410	1620	1780
Standard voltage	V	380V 3Ph 50Hz											
Voltage range	V	340~420											
Max. running current	A	141.4	169.4	206.1	281.2	331.7	366.8	405.9	454.8	562.3	562.3	663.5	733.6
Max. power consumption	kW	83.70	100.5	123.2	168.3	192.8	214.4	242.2	272.0	336.6	336.6	380.6	428.8
Rated current	A	103.2	130.4	162.7	219.1	254.8	269.6	330.5	356.1	396.3	429	514.9	532.3

Compressor A

Locked rotor Amps.	A	810	875	1340	1990	2260	2260	3090	1430	1990	1990	2260	2260
Max. allowed current	A	141.4	169.4	206.1	281.2	331.7	366.8	405.9	227.4	281.1	281.1	331.7	366.8
Rated current	A	103.2	130.4	162.7	219.1	254.8	269.6	328.9	178.0	198.1	214.5	257.4	266.1
Rated power	kW	60.00	77.00	94.00	127.5	144.3	155.0	186.6	103.0	115.8	124.8	145.7	153.0

Compressor B

Locked rotor Amps.	A	--	--	--	--	--	--	--	1430	1990	1990	2260	2260
Max. allowed current	A	--	--	--	--	--	--	--	227.4	281.1	281.1	331.7	366.8
Rated current	A	--	--	--	--	--	--	--	178.0	198.1	214.5	257.4	266.1
Rated power	kW	--	--	--	--	--	--	--	103.0	115.8	124.8	145.7	153.0

Crankcase heater

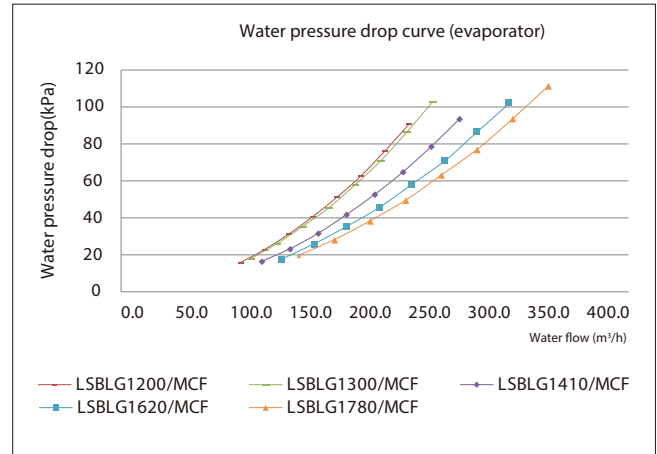
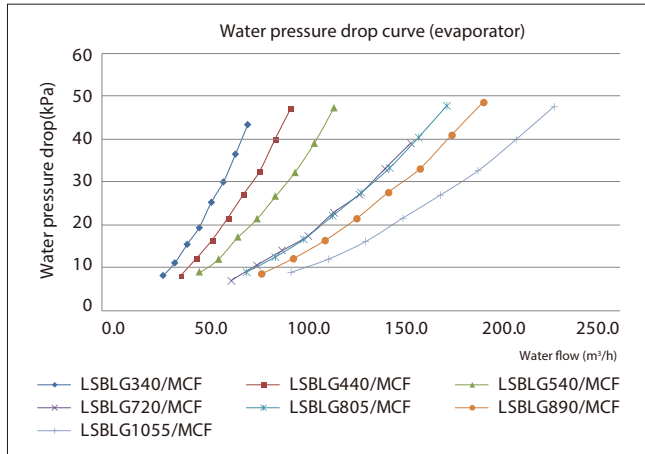
Voltage	V	220	220	220	220	220	220	220	220	220	220	220	220
Total input	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.6
Total Amps.	A	1.36	1.36	1.36	1.36	1.36	1.36	1.36	2.72	2.72	2.72	2.72	2.72

Note:

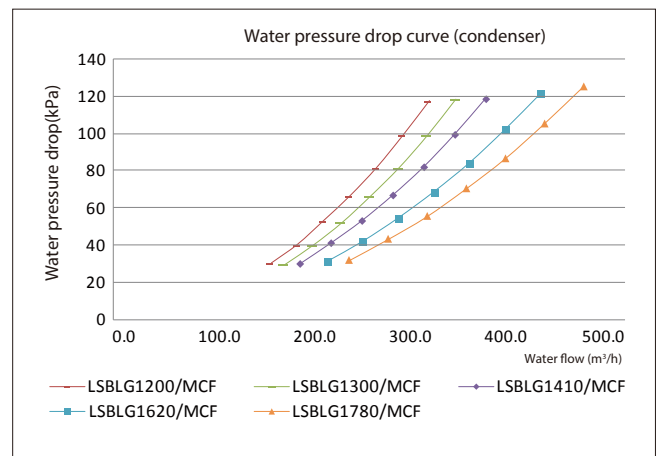
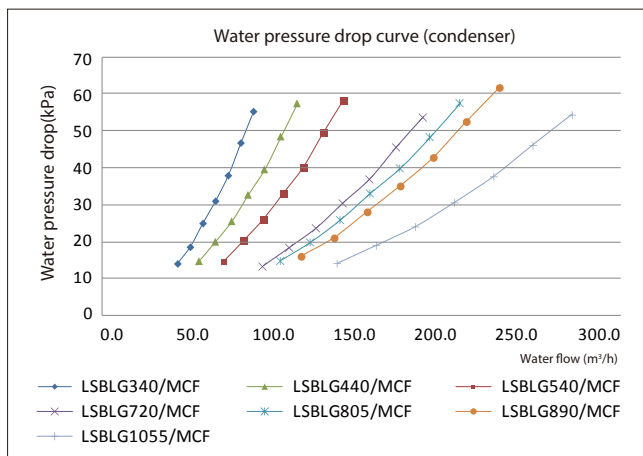
1. Customer to specify the exact nominal power supply available on site so that correct electrical components are selected.
2. Main power must be supplied from a single field supplied and mounted fused circuit breaker.
3. The compressor crankcase heaters must be energized for hours before the unit is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

Pressure drop

Flooded type (Evaporator) >>



Flooded type (Condenser) >>



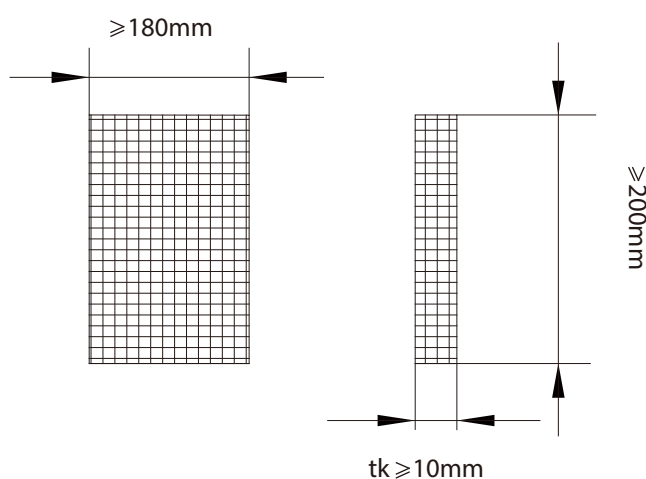
Application Range

Items	Application range
Condenser water entering temperature	25°C~35°C
Evaporator water leaving temperature	5°C~15°C
Water flow volume	Flow volume rating $\pm 20\%$
Temperature difference	4~8°C
Fouling factor (m ² ·°C/kW)	Evaporator: 0.0176, condenser: 0.044
Voltage tolerance	Voltage rating $\pm 10\%$
Phase tolerance	$\pm 2\%$
Power supply frequency	Frequency rating $\pm 2\%$
Evaporator max. working pressure on water side	1.0MPa
Compressor max. start count	4 times/h 8times/day
Environment quality	Highly corrosive environments 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 humidity)	In + 40°C does not exceed 50%, + 25°C no more than 90%
Applicable altitude range	No more than 1000m

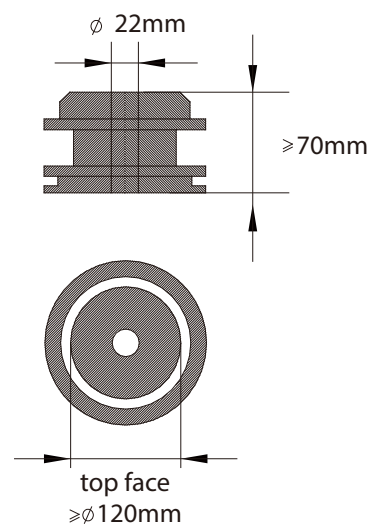
Isolator »

Position the absorbers under the unit saddles before final positioning of the unit. The quantity of absorption 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	
	Minimum load bearing (kg/EA)	Minimum Quantity	Minimum load bearing (kg/EA)	Quantity
LSBLG340/MCF	900	4	900	4
LSBLG440/MCF	1000	4	1000	4
LSBLG540/MCF	1200	4	1200	4
LSBLG720/MCF	1400	4	1400	4
LSBLG805/MCF	1800	4	1800	4
LSBLG890/MCF	1800	4	1800	4
LSBLG1055/MCF	2000	4	2000	4
LSBLG1200/MCF	2200	4	2200	4
LSBLG1300/MCF	2200	4	2200	4
LSBLG1410/MCF	2200	4	2200	4
LSBLG1620/MCF	2200	4	2200	4
LSBLG1780/MCF	2200	4	2200	4

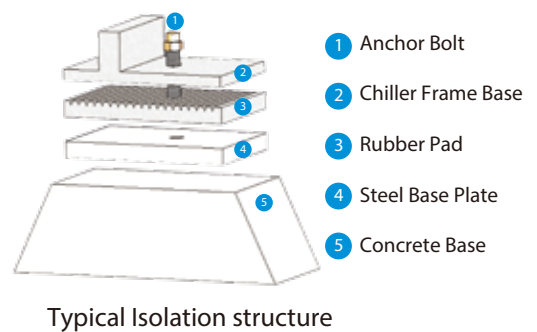
Note:

- (1) Pads have to extend the full length of the saddle when isolation pads are used.
- (2) Level the unit to within 5mm over its length and width after absorbers are installed.



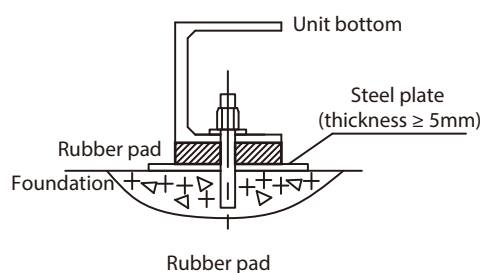
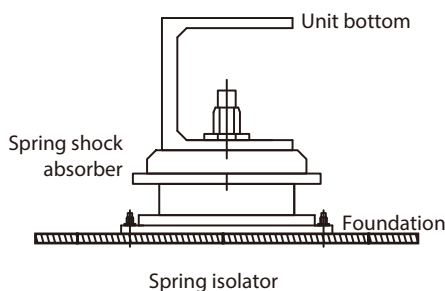
Installation requirements:

- ❖ Be sure to take the base preparation and structure into consideration seriously during installation, particularly on rooftop installations in order to avoid noise and vibration. Consulting the building designer before conducting installation is recommended.
- ❖ A drainage ditch should surround the base to ensure dewatering occurs.
- ❖ Anti-vibration pad is to be placed between the base frame and foundation in order to avoid vibrations and unnecessary noise, and make sure the unit is acclinic during installation.

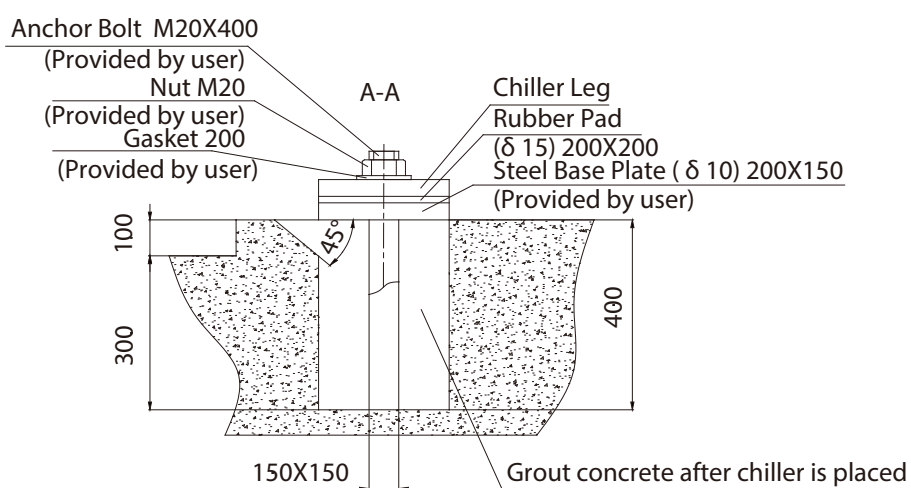
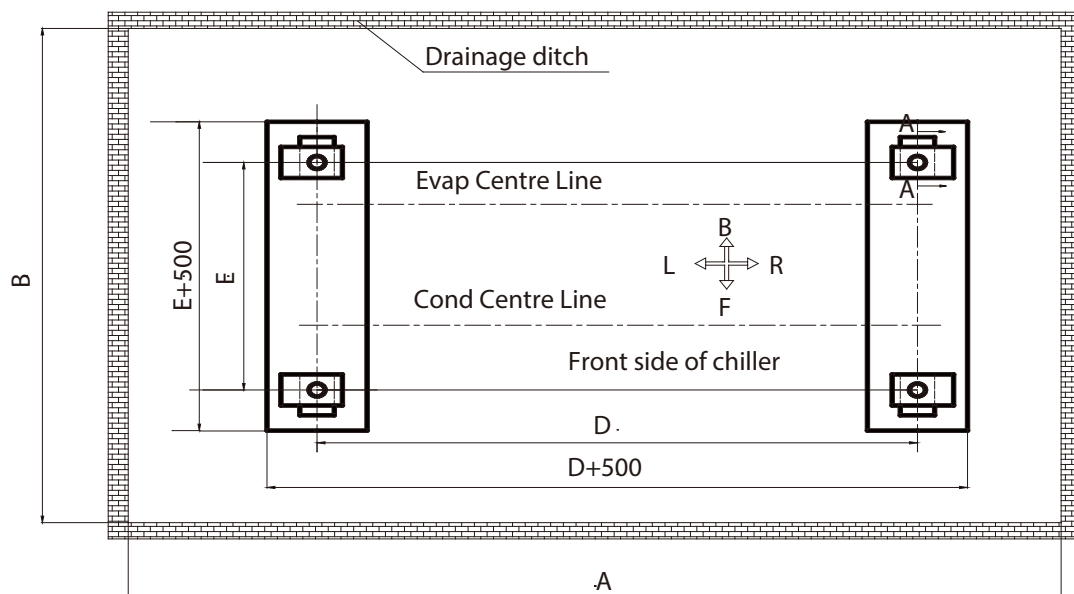


Notes:

- ❖ The maximum altitude difference (levelness) should be within 3mm for the chiller base.
- ❖ The base should be raised 100mm.
- ❖ The installation base of the unit must be concrete or steel structure, which can bear the running weight of the machine. The top should be horizontal. It is ideal to prepare a drainage ditch around installation base.
- ❖ Put the steel plate and anti-vibration pad in the correct position. Finish the installation of the unit and the foundation bolt before secondary concreting. The foundation bolt should protrude 100mm.
- ❖ Spring isolators are specified on the sales order as an option.



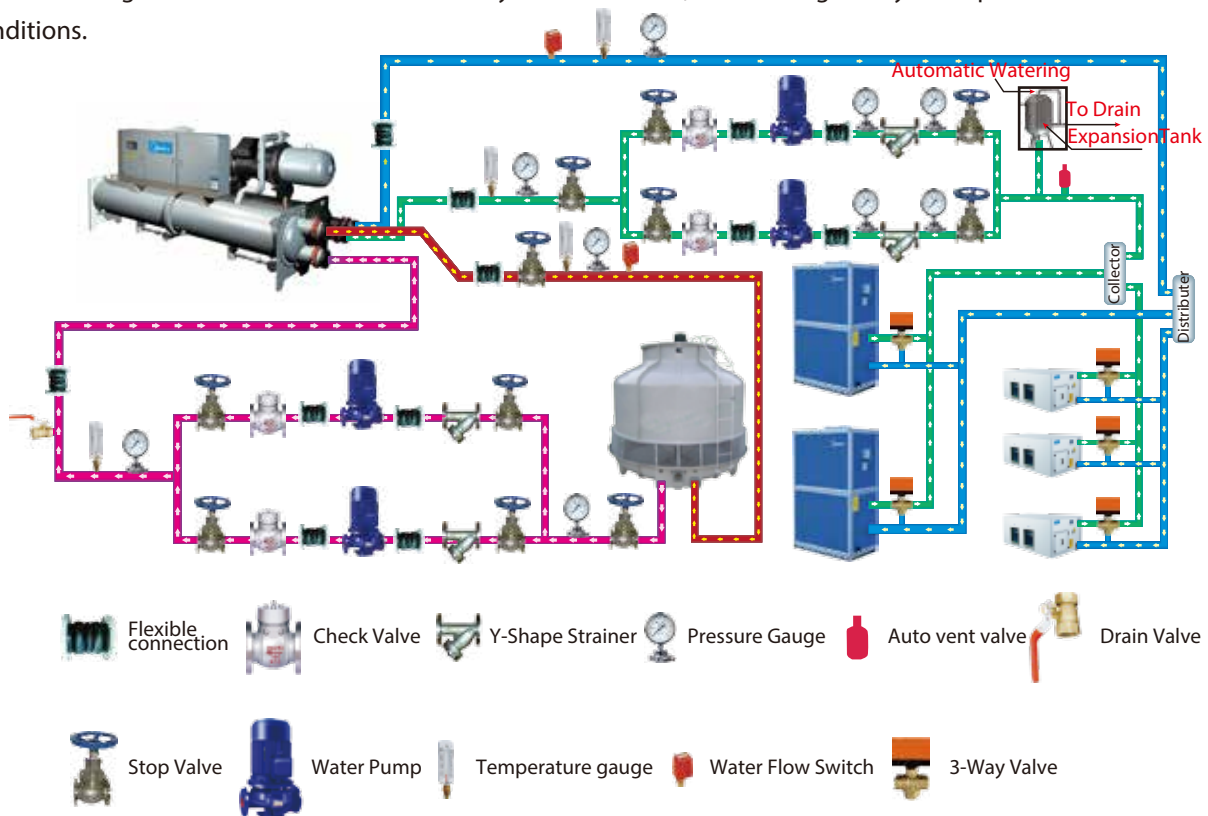
Foundation dimensions >>



Model Dimensions	LSBLG*** / MCF R134a											
	340	440	540	720	805	890	1055	1200	1300	1400	1620	1780
D(mm)	2850	2850	2850	2850	2850	2850	2850	3850	3850	3850	3850	3850
E(mm)	1100	1100	1100	1300	1300	1300	1400	1400	1400	1400	1500	1500

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.
- ❖ Water flow switch is required and should be installed on the straight line (5 times the pipe diameter) of the Chilled/Cooling water outlet.
- ❖ It is recommended to install a thermometer and pressure gauge to measure the units' operational condition.
- ❖ Notes: The diagram is the recommended water system schematic, some changes may be required to accommodate local conditions.



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.
 - ❖ Minimize pipe joint, reducing joints, pipe reducers, manifolds, and valves unnecessary to reduce local resistance loss.
 - ❖ Choose proper water strainer (structure/meshes) and periodically clean.
2. Using a variable frequency water pump is recommended as it can reduce energy consumption by 30%-45%.
3. Using a water distributor and valves between floors or terminal SV to prevent chilled water from circulating in non-working terminals is recommended.
4. Do periodic cleaning of cooling tower and pipe system.
5. Select a location that provides sufficient air-flow for both air-inlet and outlet.
6. Make appropriate adjustments to chilled water inlet/outlet temperature and temperature difference according to the local climate.

Optional accessories

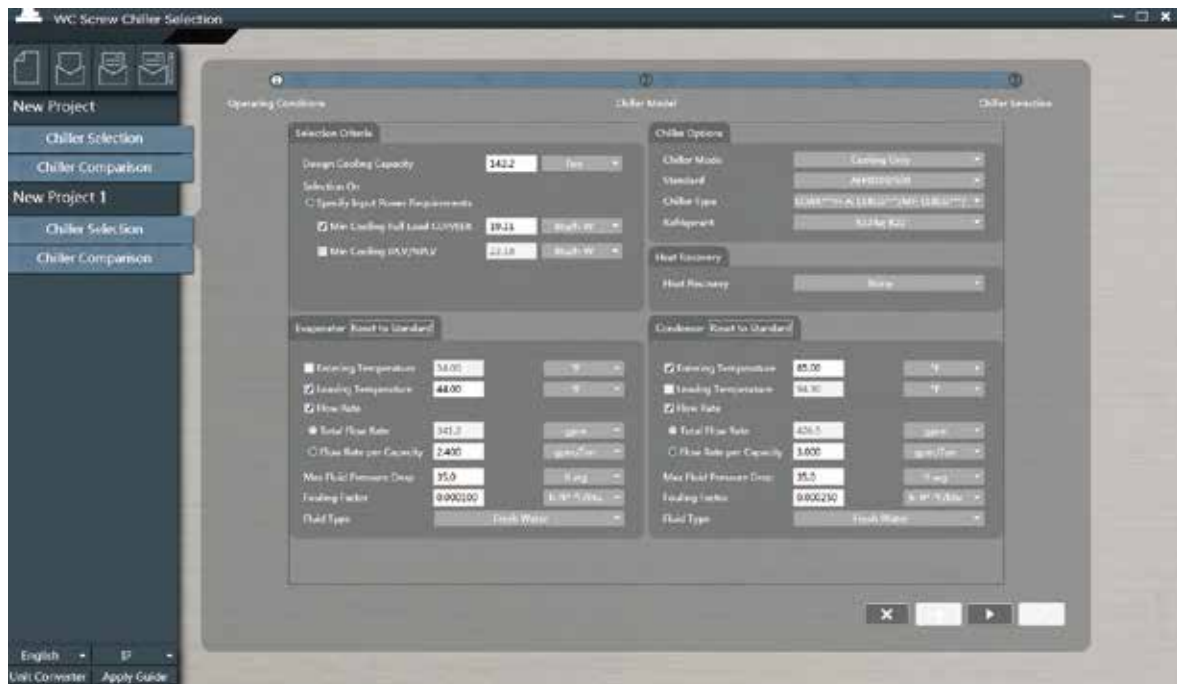
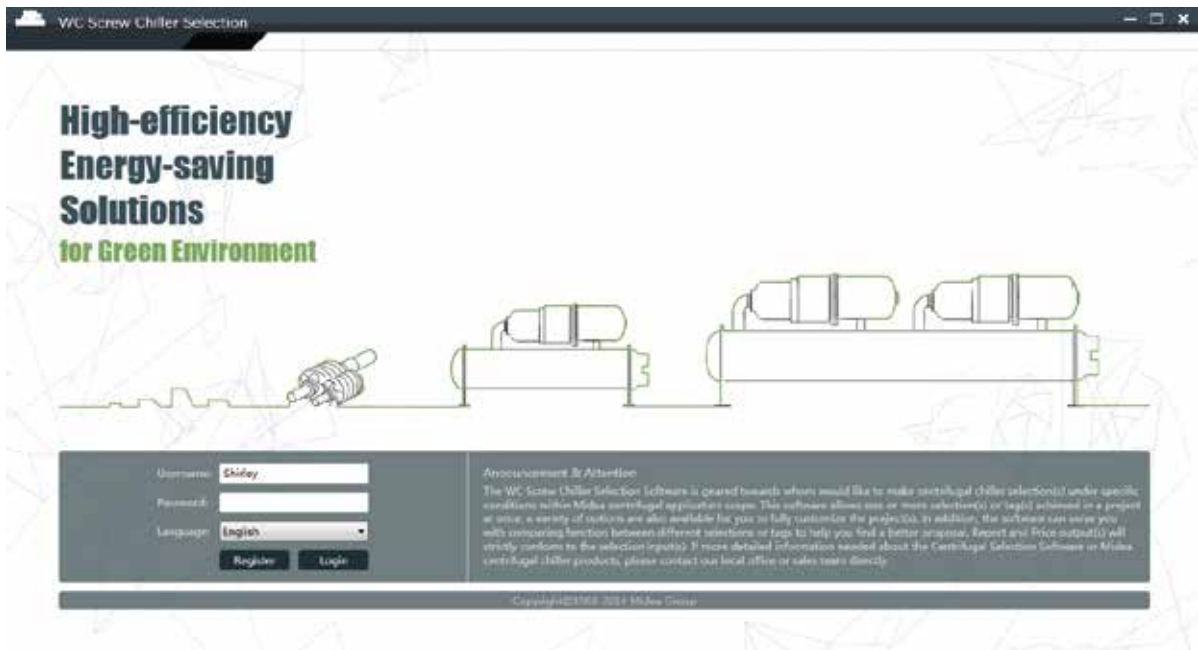
NO.	Name	Model	Instructions	Picture	Quantity
1	Vibration damper	SHA series	Vibration damper reduces vibration and noise by isolating the supports from the floor.		4
2	Remote control cabinet	YCKZ-P	Can be installed in the control room through the cable connected to the unit touch screen. It can display all status information and complete all the unit operations(startup/shutdown, error confirm, etc.)		1
3	Flange	JB81/94 Standard flange	Flange connection can be chosen for water pipe connection. Customer can choose water side pressure 1.6MPa according to requirements.		8

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 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.
Four steps compressor control	Stepless compressor control is standard and capacity adjust in four steps is optional.
High entering condenser water temperature	High entering condenser water entering temperature up to 35°C.
Multi unit 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 for various applications.
Remote control & monitor panel	Remote control & monitor panel for easy operation on site.
BMS (Building management system)	Open protocol RS 485 which is BMS compatible (BACnet or LonWorks).
Witness performance testing	Factory can arrange testing observation for customers.

Selection software

Professional selection software makes the product selection process much easier and more efficient than conventional manual selection. Simple operating interface and smart arithmetic greatly improves selection efficiency. The user simply needs to provide several basic parameters, such as cooling capacity, fouling factor, power supply, etc. The program will then display all suitable models for easy selection. This software can be conveniently updated online. If you have any questions please feel free to contact us.



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