COMMERCIAL AIR CONDITIONERS

Water Cooled Centrifugal Chiller
standard efficiency: 450-2200 Ton
High efficiency: 650-2200 Ton
R134a
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.

Midea Central Air-conditioner

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.
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.
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.

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, 1500kW 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.

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, 30/35°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 data 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 compressors. 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.
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.

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, 1500kW 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.
In 2013 Midea launched the third generation centrifugal chillers with higher efficiency and more compact size compared to the second generation. By using the advanced design platform the compressing efficiency and heat exchanging rate have been increased significantly. The full failing film heat exchange technology also be used to increase the efficiency and decrease the refrigerant charging volume up 40% less compared to the flooded type. It is a innovation to protect our environment and decrease the CO2 emission effectivly.

In order to cater to different efficiency requirement and consider the cost-effective for various investments Midea provides three class efficiency for the clients. Dual compressors can be customized for big capacity up to 4400Ton.

<table>
<thead>
<tr>
<th>Type</th>
<th>Standard efficiency</th>
<th>High efficiency</th>
<th>Super high efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>LC*M</td>
<td>LC*M</td>
<td>LC*M</td>
</tr>
<tr>
<td>COP(W/W)</td>
<td>5.3~5.7</td>
<td>5.6~6.8</td>
<td>7~7.11</td>
</tr>
<tr>
<td>Compression stage</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Capacity(Ton)</td>
<td>450-1200</td>
<td>1200-2200</td>
<td>650-1100</td>
</tr>
<tr>
<td>Evaporator type</td>
<td>Flooded type</td>
<td>Full failing film</td>
<td>Flooded type</td>
</tr>
<tr>
<td>Recommend power supply</td>
<td>380/400/415V</td>
<td>6kV/10kV</td>
<td>380V/6kV/10kV</td>
</tr>
</tbody>
</table>

R134a, centrifugal chiller

The motor is cooled by refrigerant which ensures an excellent performance in various working condition and long life span. The motor is high efficiency type with higher power factor up to 97%.

The compressor is designed on Midea advanced design platform, the impeller and chamber are matching perfectly. The compressor equipped with less moving parts and compact size. By using the double layer design technology the noise and vibration can be controlled excellently.

The economizer is used in the dual stages compressing Midea unique design economizer improves the efficiency from 5% to 8% compared with the single stage.

The condenser is shell and tube type for easy service. Flooded type evaporator used in the single stage product and full falling film evaporator used in dual stages chiller.

R134a is environment friendly gas with zero ODP (Ozone Depletion Potential) and very less GWP (Global Warming Potential). The R134a refrigeration is no phase out gas and good choice for big chiller.

The system is control by industry type PLC with multiple function and good stability. It is open protocol of RS 485 which is compatible for BMS. The operation screen is user friendly with 10 inch colorful touchable screen.
In 2013 Midea launched the third generation centrifugal chillers with higher efficiency and more compact size compared to the second generation. By using the advanced design platform the compressing efficiency and heat exchanging rate have been increased significantly. The full failing film heat exchange technology also be used to increase the efficiency and decrease the refrigerant charging volume up 40% less compared to the flooded type. It is a innovation to protect our environment and decrease the CO2 emission effectively.

In order to cater to different efficiency requirement and consider the cost-effective for various investments Midea provides three class efficiency for the clients. Dual compressors can be customized for big capacity up to 4400Ton.

<table>
<thead>
<tr>
<th>Type</th>
<th>Standard efficiency</th>
<th>High efficiency</th>
<th>Super high efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>LC*M</td>
<td>LC*MS</td>
<td>LC*M</td>
</tr>
<tr>
<td>COP(W/W)</td>
<td>5.3~5.7</td>
<td>5.8~6.8</td>
<td>7~7.11</td>
</tr>
<tr>
<td>Compression stage</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Capacity(Ton)</td>
<td>450-1200</td>
<td>1200-2200</td>
<td>650-1100</td>
</tr>
<tr>
<td>Evaporator type</td>
<td>Flooded type</td>
<td>Full failing film</td>
<td>Flooded type</td>
</tr>
<tr>
<td>Recommend power suply</td>
<td>380/400/415V</td>
<td>6KV/10KV</td>
<td>380V/6KV/10KV</td>
</tr>
</tbody>
</table>

S: The compressor is double stage
M: Standard efficiency type
H: High efficiency type
E: Super high efficiency type

Cooling capacity 1500RT

R134a, centrifugal chiller

<table>
<thead>
<tr>
<th>TONS</th>
<th>0</th>
<th>500</th>
<th>1000</th>
<th>1500</th>
<th>2000</th>
<th>2500</th>
<th>3000</th>
<th>3500</th>
<th>4000</th>
<th>4500</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super High Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Omit for 380V 6: 6KV 10: 10KV

The compressor is double stage
Omit: The compressor is single stage

The motor is cooled by refrigerant which ensures an excellent performance in various working condition and long life span. The motor is high efficiency type with higher power factor up to 97%.

The condenser is shell and tube type for easy service. Flooded type evaporator used in the single stage product and full failing film evaporator used in dual stages chiller.

The compressor is designed on Midea advanced design platform, the impeller and chamber are matching perfectly. The compressor equipped with less moving parts and compact size. By using the double layer design technology the noise and vibration can be controlled excellently.

The economizer is used in the dual stages compressing. Midea unique design economizer improves the efficiency from 5% to 8% compared with the single stage.

The system is control by industry type PLC with multiple function and good stability. It is open protocol of RS 485 which is compatible for BMS. The operation screen is user friendly with 10 inch colorful touchable screen.

The compressor is cooled by refrigerant which ensures an excellent performance in various working condition and long life span. The motor is high efficiency type with higher power factor up to 97%.

Shell and tube condenser and flooded type evaporator

Advanced system control and user friendly screen

Environment friendly refrigeration

Gas cooled motor

Economizer in dual stages type

R134a is environment friendly gas with zero ODP (Ozone Depletion Potential) and very less GWP (Global Warming Potential). The R134a refrigeration is no phase out gas and good choice for big chiller.
Feature and Benefits

Six Core Technologies

Explore the Frontier of Aerodynamic Technology

Full Flow Pass Optimization, further increases the efficiency

Newly designed three-dimensional flow impeller, coupling with the optimized volute, ensures the flow velocity and maximizes the efficiency.

- Midea centrifugal compressor adopts the over-hung volute thus compacting the structure.
- The gas flow perfectly matches the interior flow channel, hence the loss of impact reduced.
- Aerodynamic loss balance design reduces the aerodynamic noise.
- The newly designed high efficient three-dimension flow alloy impeller, produced in German GMD 5-axis machine center, has high machining precision and reduces 30% of thickness for the impeller, thus reducing the axial force loss and separation loss.

Keyless impeller coupling with high speed shaft (PATENT NO.: ZL 01 2 56824.4)

The impeller is coupling with the shaft without any key to eliminate the stress to the shaft. Ensure the high speed shaft working stable and long life span.

Inlet guide vane (IGV) match with movable diffuser (PATENT NO.: ZL01 2 56825.2)

The IGV matches with the moveable diffuser to ensure the compressor working stable in low partial load without any surge and stall. Capacity adjustment is from 10% to 100%.

Full falling film heat exchange technology (PATENT NO: 20121041053.9 201220552298)

Unique spraying technology makes the liquid refrigerant film formed on the tube surface and then evaporation. By using this technology the heat exchange rate increase 3 to 8 % and refrigerant charge decrease 40%.
Feature and Benefits

Six Core Technologies

Explore the Frontier of Aerodynamic Technology

Full Flow Pass Optimization, further increases the efficiency

Newly designed three-dimensional flow impeller, coupling with the optimized volute, ensures the flow velocity and maximizes the efficiency

- Midea centrifugal compressor adopts the over-hung volute thus compacting the structure.

- The gas flow perfectly matches the interior flow channel, hence the loss of impact reduced.

- Aerodynamic loss balance design reduces the aerodynamic noise

- The newly designed high efficient three-dimension flow alloy impeller, produced in German GMD 5-axis machine center, has high machining precision and reduces 30% of thickness for the impeller, thus reducing the axial force loss and separation loss.

Keyless impeller coupling with high speed shaft (PATENT NO.: ZL 01 2 56824.4)
The impeller is coupling with the shaft without any key to eliminate the stress to the shaft. Ensure the high speed shaft working stable and long life span.

Inlet guide vane (IGV) match with movable diffuser (PATENT NO.: ZL01 2 56825.2)
The IGV matches with the movable diffuser to ensure the compressor working stable in low partial load without any surge and stall. Capacity adjustment is from 10% to 100%.

Full falling film heat exchange technology (PATENT NO: 20121041053.9 201220552298)
Unique spraying technology makes the liquid refrigerant film formed on the tube surface and then evaporation. By using this technology the heat exchange rate increase 3 to 8 % and refrigerant charge decrease 40%.

Midea centrifugal compressor adopts the over-hung volute thus compacting the structure.
Pre-swirling Guide Vane Technology

The compressor is equipped with airfoil shape pre-swirling guide vane, which will produce swirl under different load conditions, hence to extend the operation range and increase the part load efficiency.

Dual stage compression Technology

- Unique designed dual stage compression technology enhances the heat absorption capacity of refrigerant, and lowers the power consumption, which increases 6% of efficiency over the single stage compressor.
- Dual stage impeller is an equal ratio compression design, which helps to reduce the rotate speed and enhance the reliability.
- Unique three-stage separation economizer simplifies the system design.

Creative Heat-exchanging Technology

Full falling-film Evaporating Technology

The unique full falling-film evaporating technology: spraying technology makes the liquid refrigerant form and evaporate on the surface of evaporating tubes, which significantly boosts the heat-exchanging efficiency and reduces 40% refrigerant charge. Midea adopts patented technologies to ensure refrigerant distributed evenly and avoid non liquid on part tubes, which extend the potential heat-exchanging capacity to the full and enhance the efficiency of the whole system.

Condenser

High efficient heat-exchanger and optimized structure enhance the heat exchanging performance. The design of reverse flow sub-cooling chamber with multiple turbulences increases the sub-cooling degree and improves the performance.
Pre-swirling Guide Vane Technology

The compressor is equipped with airfoil shape pre-swirling guide vane, which will produce swirl under different load conditions, hence to extend the operation range and increase the part load efficiency.

Dual stage compression Technology

- Unique designed dual stage compression technology enhances the heat absorption capacity of refrigerant and lowers the power consumption, which increases 6% of efficiency over the single stage compressor.
- Dual stage impeller is an equal ratio compression design, which helps to reduce the rotate speed and enhance the reliability.
- Unique three-stage separation economizer simplifies the system design.

Creative Heat-exchanging Technology

Full falling-film Evaporating Technology

The unique full falling-film evaporating technology: spraying technology makes the liquid refrigerant form and evaporate on the surface of evaporating tubes, which significantly boosts the heat-exchanging efficiency and reduces 40% refrigerant charge. Midea adopts patented technologies to ensure refrigerant distributed evenly and avoid non liquid on part tubes, which extend the potential heat-exchanging capacity to the full and enhance the efficiency of the whole system.

Condenser

High efficient heat-exchanger and optimized structure enhance the heat exchanging performance. The design of reverse flow sub-cooling chamber with multiple turbulences increases the sub-cooling degree and improves the performance.
Prospective-Control Logic

The microcomputer control system has such as the trend prediction, self-diagnosis, self-adjustment and safety protection, capable to predict real load change according to the target values and historical load levels, prospectively modify the operation load and prevent energy waste.

Free Cooling Technology-Refrigeration Migration

Midea 3G Centrifugal Chiller features the ‘Free Cooling Technology’. When the outdoor temperature is low and large commercial buildings’ interior spaces may need cooling, the main unit will work on ‘Free Cooling’ mode. Free cooling is the production of chilled water Without running compressor. The relative warm, and the energy is carried directly to the low pressure condenser, where it is cooled and condensed by the water from the cooling tower. Then the low temperature liquid refrigerant flows to the evaporator driving by gravity, then naturally circulates. The cost is saved due to the compressor’s inactivity, zero power consumption of the main unit. The principle is that the refrigerant tends to move towards the coldest point in a refrigeration circuit. It can be used generally in the transition season such as late fall, winter and early spring.

Compressor Reliability

Centrifugal compressors are dynamic machines in which rotating impellers accelerate the gas. Main flow is radial. The velocity head is converted into pressure, partially in the rotating elements and partially in stationary diffusers.

Midea third generation “Smart Start” centrifugal compressors are carefully tested throughout the manufacturing process in order to guarantee a perfect match to their design criteria and to assure long lasting, continuous operation. All components were exclusively designed and tested for re-confirming it’s reliability. The following tests are typically carried out on components and assembled machines:

- Casing: hydraulic pressure test and hydraulic blasting testing
- Shaft: Ultrasonic testing and tensile testing
- Impellers: Ultrasonic and dynamically balanced testing
- Impeller/Rotor: Over speed testing
- Motor wiring: 3 phase resistance balance testing
- Other mechanical run test
- Performance testing for each chiller before delivery

Beside the mechanical testing the Thermodynamic Performance Test ensure the entire compressor working at any conditions.

Thermodynamic Performance Test

Note: AHRI condition testing example
Prospектив-Control Logic

The microcomputer control system has such as the trend prediction, self-diagnosis, self-adjustment and safety protection, capable to predict real load change according to the target values and historical load levels, prospectively modify the operation load and prevent energy waste.

Free Cooling Technology-Refrigeration Migration

Midea 3G Centrifugal Chiller features the ‘Free Cooling Technology’. When the outdoor temperature is low and large commercial buildings’ interior spaces may need cooling, the main unit will work on ‘Free Cooling’ mode. Free cooling is the production of chilled water Without running compressor. The relative warm, and the energy is carried directly to the low pressure condenser, where it is cooled and condensed by the water from the cooling tower. Then the low temperature liquid refrigerant flows to the evaporator driving by gravity, then naturally circulates. The cost is saved due to the compressor’s inactivity, zero power consumption of the main unit. The principle is that the refrigerant tends to move towards the coldest point in a refrigeration circuit. It can be used generally in the transition season such as late fall, winter and early spring.

Compressor Reliability

Centrifugal compressors are dynamic machines in which rotating impellers accelerate the gas. Main flow is radial. The velocity head is converted into pressure, partially in the rotating elements and partially in stationary diffusers.

Midea third generation “Smart Start” centrifugal compressors are carefully tested throughout the manufacturing process in order to guarantee a perfect match to their design criteria and to assure long lasting, continuous operation. All components were exclusively designed and tested for re-confirming it’s reliability. The following tests are typically carried out on components and assembled machines:

- Casing: hydraulic pressure test and hydraulic blasting testing
- Shaft: Ultrasonic testing and tensile testing
- Impellers: Ultrasonic and dynamically balanced testing
- Impeller/Rotor: Over speed testing
- Motor wiring: 3 phase resistance balance testing
- Other mechanical run test
- Performance testing for each chiller before delivery

Beside the mechanical testing the Thermodynamic Performance Test ensure the entire compressor working at any conditions.

Thermodynamic Performance Test

Note: AHRI condition testing example
Compressor Components

Advanced design platform improves the performance of impeller, volute and other key components of Midea centrifugal chiller, raising the isentropic efficiency of compressor up to 88.2%. Increase the efficiency as well as the stability.

Hermetic Motor
The motors are hermetically sealed from the machineroom, cooling is accomplished by spraying liquid refrigerant on the motor windings and shaft. This highly efficient cooling method results in the use of smaller, cooler-running motors. As a result, hermetic motors require lower inrush current and are smaller/lighter and quieter than comparable air-cooled motors.

High Efficiency Impeller
The impeller features high strength aluminum-alloy backward curved vanes, refrigerant gas flows through the internal impeller passages without hydraulic interaction with the stationary casing walls. The impeller is designed for balanced thrust and is dynamically balanced and over speed tested.

Keyless Impeller Coupling
The impeller and the main shaft are coupled by keyless connection, it eliminates stress concentration on the power transmission surface and thus the life span of the impeller is greatly increased. Since there is no friction, the efficiency is higher than the traditional key coupling. This unmatched mechanical design was awarded by the State Intellectual Property Office of P.R.China. (Patent No.ZL 01 2 56825.2)

Precise Gearing
The specially engineered, single helical gear with crowned teeth keep more than one tooth in contact at all times to provide even distribution of compressor load and quiet operation. Gear tooth surfaces are case hardened and precision ground which can reach the class of 5. Gears are integrally assembled in the compressor rotor support and are oil film lubricated. Each gear is individually mounted in its own journal and thrust bearings to isolate it from impeller and motor forces. The double layer soundproof compressor design prevents the gear contacting noise.

Bearings
Motor is suitable journal bearings to take care of the radial load, axial load and speed of the drive. The slide bearing base is embedded babbitt alloy covering which is softer than the main shaft and protect the shaft first when emergency happen. With high technology oil film lubrication design which keep the bearing and shaft only transitory contact and friction free when operation.

Lower Sound Levels and Vibration
Special engineered gearing, double soundproof gearbox structure, optimized impeller and tunnel design ensure our chiller achieve lower sound levels. A gear-driven compressor runs at higher impeller rotational speeds but tends to have less vibration than the larger, much heavier, direct drive units.

Condenser Baffle
The baffle prevents direct impingement of high velocity compressor gas onto the condenser tubes. That eliminates the related vibration and wears of the tubes and distributes the refrigerant flow evenly over the length of the vessel for improved efficiency.

Advanced Capacity Adjustment
Inlet guide vanes work together with moveable diffuser lead to stepless capacity range from 10% to 100% and free of surge. The IGV openness is driven by one precision stepping motor which called actuator and be controlled by the PLC directly. And this technology was awarded by the State Intellectual Property Office of P.R.China. (Patent No.ZL01 2 56824.4).

Reliable Lubricant System
The lubrication system consists of an internal oil sump with oil heaters, positive displacement oil pump, brazed plate oil cooler, and oil return line. High position oil sump supply oil to the gear surface for lubrication, prevent the gear from burnt if sudden power loss happens.

Unmatched Oil Reclaim System
During the running of chiller unit, a small amount of lube may interfuses into the refrigerant. Midea patented oil reclaim system designed to return the oil from the heat exchanger back to the oil tank. It will improve the refrigerant purity to increase the thermal exchange efficiency and provide sufficient oil to compressor.

Low Inrush Current
Standard starter for Midea centrifugal chiller is a popular type for centrifugal chiller applications, that’s wye-delta starter. The motor windings first connect in a “wye” configuration to reduce the inrush current to 33.3% of locked rotor amps and producing 33.3% of normal starting torque. After a brief delay (transition time), the electrical load is momentarily transitioned to resistances while the motor windings are changed to the “delta” configuration. The resistances minimize the second inrush current when the delta configuration becomes active. The soft start and VSD also available for various applications.

Oil Filter and Oil cooler
A plate type oil cooler is factory mounted aside the compressor. An external oil filter and oil cooler is easy to do maintenance and replacement. Change of the oil filter or oil cooler can be done after closed the isolation valve in the pipe line.

100% Factory Run-Tested
In Midea factory, after assembled, the unit will 100% go through performance test in the test center. The benefits of a performance test include verification of performance, prevention of operational problems and assurance of a smooth start-up. A chiller that has been tested is operation and performance-proven.
Compressor Components

Advanced design platform improves the performance of impeller, volute and other key components of Midea centrifugal chiller, raising the isentropic efficiency of compressor up to 88.2%. Increase the efficiency as well as the stability.

Hermetic Motor
The motors are hermetically sealed from the machineroom, cooling is accomplished by spraying liquid refrigerant on the motor windings and shaft. This highly efficient cooling method results in the use of smaller, cooler-running motors. As a result, hermetic motors require lower inrush current and are smaller, lighter and quieter than comparable air-cooled motors.

High Efficiency Impeller
The impeller features high strength aluminum-alloy backward curved vanes, refrigerant gas flows through the internal impeller passages without hydraulic interaction with the stationary casing walls. The impeller is designed for balanced thrust and is dynamically balanced and over speed tested.

Keyless Impeller Coupling
The impeller and the main shaft are coupled by keyless connection, it eliminates stress concentration on the power transmission surface and thus the life span of the impeller is greatly increased. Since there is no friction, the efficiency is higher than the traditional key coupling. This unmatched mechanical design was awarded by the State Intellectual Property Office of P.R.China. (Patent No.2001 2 56824.4).

Precise Gearing
The specially engineered, single helical gear with crowned teeth keep more than one tooth in contact at all times to provide even distribution of compressor load and quiet operation. Gear tooth surfaces are case hardened and precision ground which can reach the class of 5. Gears are integrally assembled in the compressor rotor support and are oil film lubricated. Each gear is individually mounted in its own journal and thrust bearings to isolate it from impeller and motor forces. The double layer soundproof compressor design prevents the gear contacting noise.

Bearings
Motor is suitable journal bearings to take care of the radial load, axial load and speed of the drive. The slide bearing base is embedded babbitt alloy covering which is softer than the main shaft and protect the shaft first when emergency happen. With high technology oil film lubrication design which keep the bearing and shaft only transitory contact and friction free when operation.

Lower Sound Levels and Vibration
Special engineered gearing, double soundproof gearbox structure, optimized impeller and tunnel design ensure our chiller achieve lower sound levels. A gear-driven compressor runs at higher impeller rotational speeds but tends to have less vibration than the larger, much heavier, direct drive units.

Condenser Baffle
The baffle prevents direct impingement of high velocity compressor gas onto the condenser tubes. That eliminates the related vibration and wears of the tubes and distributes the refrigerant flow evenly over the length of the vessel for improved efficiency.

Advanced Capacity Adjustment
Inlet guide vanes work together with moveable diffuser lead to stepless capacity range from 10% to 100% and free of surge. The IGV openness is driven by one precision stepping motor which called actuator and be controlled by the PLC directly. And this technology was awarded by the State Intellectual Property Office of P.R.China. (Patent No.ZL01 2 56824.4).

Reliable Lubricant System
The lubrication system consists of an internal oil sump with oil heaters, positive displacement oil pump, brazed plate oil cooler, and oil return line. High position oil sump supply oil to the gear surface for lubrication, prevent the gear from burnt if sudden power loss happens.

Oil Filter and Oil cooler
A plate type oil cooler is factory mounted aside the compressor. An external oil filter and oil cooler is easy to do maintenance and replacement. Change of the oil filter or oil cooler can be done after closed the isolation valve in the pipe line.

Unmatched Oil Reclaim System
During the running of chiller unit, a small amount of lube may interfuses into the refrigerant. Midea patented oil reclaim system designed to return the oil from the heat exchanger back to the oil tank. It will improve the refrigerant purity to increase the thermal exchange efficiency and provide sufficient oil to compressor.

Low Inrush Current
Standard starter for Midea centrifugal chiller is a popular type for centrifugal chiller applications, that’s wye-delta starter. The motor windings first connect in a “wye” configuration to reduce the inrush current to 33.3% of locked rotor amps and producing 33.3% of normal starting torque. After a brief delay (transition time), the electrical load is momentarily transitioned to resistances while the motor windings are changed to the “delta” configuration. The resistances minimize the second inrush current when the delta configuration becomes active. The soft start and VSD also available for various applications.

100% Factory Run-Tested
In Midea factory, after assembled, the unit will 100% go through performance test in the test center. The benefits of a performance test include verification of performance, prevention of operational problems and assurance of a smooth start-up. A chiller that has been tested is operation and performance-proven.
## Specification

### Standard efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>LC1000 M</th>
<th>LC1300 M</th>
<th>LC1400 M</th>
<th>LC1500 M</th>
<th>LC1600 M</th>
<th>LC1700 M</th>
<th>LC1800 M</th>
<th>LC1900 M</th>
<th>LC2000 M</th>
<th>LC2100 M</th>
<th>LC2200 M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coiling capacity</strong></td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
<td>kW</td>
</tr>
<tr>
<td>RT</td>
<td>1200</td>
<td>1300</td>
<td>1400</td>
<td>1500</td>
<td>1600</td>
<td>1700</td>
<td>1800</td>
<td>1900</td>
<td>2000</td>
<td>2100</td>
<td>2200</td>
</tr>
<tr>
<td>kW</td>
<td>4219</td>
<td>4571</td>
<td>4922</td>
<td>5274</td>
<td>5626</td>
<td>5977</td>
<td>6329</td>
<td>6680</td>
<td>7032</td>
<td>7384</td>
<td>7735</td>
</tr>
<tr>
<td><strong>t^0°C/kW</strong></td>
<td>363</td>
<td>393</td>
<td>423</td>
<td>454</td>
<td>484</td>
<td>514</td>
<td>544</td>
<td>575</td>
<td>605</td>
<td>635</td>
<td>665</td>
</tr>
<tr>
<td><strong>Chilled water inlet/outlet temperature</strong></td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
</tr>
<tr>
<td>RT</td>
<td>736</td>
<td>786</td>
<td>847</td>
<td>907</td>
<td>968</td>
<td>1028</td>
<td>1089</td>
<td>1149</td>
<td>1210</td>
<td>1270</td>
<td>1331</td>
</tr>
<tr>
<td><strong>Chilled water pressure drop</strong></td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
<td>kPa</td>
</tr>
<tr>
<td>RT</td>
<td>83</td>
<td>85</td>
<td>84</td>
<td>81</td>
<td>83</td>
<td>87</td>
<td>89</td>
<td>90</td>
<td>88</td>
<td>89</td>
<td>90</td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td>Power supply</td>
<td>kW/RT 0.603</td>
<td>0.604</td>
<td>0.604</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
</tr>
<tr>
<td><strong>Motor cooled by</strong></td>
<td>Refrigerant</td>
<td>0.603</td>
<td>0.604</td>
<td>0.604</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>kg</td>
<td>18330</td>
<td>18760</td>
<td>19250</td>
<td>22410</td>
<td>22650</td>
<td>22900</td>
<td>23150</td>
<td>23380</td>
<td>23710</td>
<td>24090</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>kW/RT</td>
<td>0.603</td>
<td>0.604</td>
<td>0.604</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
<td>0.599</td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td>1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 32°C/35°C(90°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu), otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Specification

### Standard efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>LC1200 M</th>
<th>LC1300 M</th>
<th>LC1400 M</th>
<th>LC1500 M</th>
<th>LC1600 M</th>
<th>LC1700 M</th>
<th>LC1800 M</th>
<th>LC1900 M</th>
<th>LC2000 M</th>
<th>LC2100 M</th>
<th>LC2200 M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooling capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kW</td>
<td>1200</td>
<td>1300</td>
<td>1400</td>
<td>1500</td>
<td>1600</td>
<td>1700</td>
<td>1800</td>
<td>1900</td>
<td>2000</td>
<td>2100</td>
<td>2200</td>
</tr>
<tr>
<td></td>
<td>4219</td>
<td>4571</td>
<td>4922</td>
<td>5274</td>
<td>5626</td>
<td>5977</td>
<td>6329</td>
<td>6680</td>
<td>7032</td>
<td>7384</td>
<td>7735</td>
</tr>
<tr>
<td><strong>10^4 k.cal/h</strong></td>
<td>363</td>
<td>393</td>
<td>423</td>
<td>454</td>
<td>484</td>
<td>514</td>
<td>544</td>
<td>575</td>
<td>605</td>
<td>635</td>
<td>665</td>
</tr>
<tr>
<td><strong>Chilled water inlet/outlet temperature</strong></td>
<td>m³/h</td>
<td>726</td>
<td>786</td>
<td>847</td>
<td>907</td>
<td>968</td>
<td>1028</td>
<td>1089</td>
<td>1149</td>
<td>1210</td>
<td>1270</td>
</tr>
<tr>
<td></td>
<td><strong>Cooling water inlet/outlet temperature</strong></td>
<td>°C</td>
<td>861</td>
<td>932</td>
<td>1004</td>
<td>1075</td>
<td>1147</td>
<td>1218</td>
<td>1289</td>
<td>1360</td>
<td>1431</td>
</tr>
<tr>
<td></td>
<td>°F</td>
<td>1862</td>
<td>2034</td>
<td>2206</td>
<td>2378</td>
<td>2550</td>
<td>2722</td>
<td>2924</td>
<td>3126</td>
<td>3328</td>
<td>3530</td>
</tr>
<tr>
<td><strong>Evaporator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Chilled water inlet/outlet temperature</td>
<td>°C</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
<td>12/7</td>
</tr>
<tr>
<td>Water pipe inlet/outlet diameter</td>
<td>DN350</td>
<td>DN350</td>
<td>DN350</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td><strong>Condenser</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Water pipe inlet/outlet diameter</td>
<td>mm</td>
<td>DN350</td>
<td>DN350</td>
<td>DN350</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Running power</td>
<td>kW</td>
<td>724</td>
<td>785</td>
<td>841</td>
<td>898</td>
<td>950</td>
<td>1011</td>
<td>1064</td>
<td>1122</td>
<td>1180</td>
<td>1238</td>
</tr>
<tr>
<td>Configured power</td>
<td>kW</td>
<td>760</td>
<td>840</td>
<td>930</td>
<td>1000</td>
<td>1090</td>
<td>1180</td>
<td>1270</td>
<td>1360</td>
<td>1450</td>
<td>1540</td>
</tr>
<tr>
<td>Power supply</td>
<td>10000V–3Ph-50Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>kW/RT</td>
<td>0.603</td>
<td>0.604</td>
<td>0.605</td>
<td>0.606</td>
<td>0.607</td>
<td>0.608</td>
<td>0.609</td>
<td>0.610</td>
<td>0.611</td>
<td>0.612</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>kg</td>
<td>18330</td>
<td>18760</td>
<td>19250</td>
<td>22410</td>
<td>22650</td>
<td>22900</td>
<td>23150</td>
<td>23390</td>
<td>23910</td>
<td>24250</td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
<td>1. Nominal Cooling capacities are based on following conditions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chilled water inlet/outlet temperature 30°C/35°C(86°F/95°F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cooling water inlet/outlet temperature 30°C/35°C(86°F/95°F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu). Otherwise can be customized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. The design working pressure for both evaporator and condenser is 1.0MPa, higher pressure demand can be customized.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## High efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>LC650H</th>
<th>LC700H</th>
<th>LC750H</th>
<th>LC800H</th>
<th>LC850H</th>
<th>LC900H</th>
<th>LC950H</th>
<th>LC1000H</th>
<th>LC1100H</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT</td>
<td>650</td>
<td>700</td>
<td>750</td>
<td>800</td>
<td>850</td>
<td>900</td>
<td>950</td>
<td>1000</td>
<td>1100</td>
</tr>
<tr>
<td>kW</td>
<td>2285</td>
<td>2461</td>
<td>2637</td>
<td>2813</td>
<td>2989</td>
<td>3164</td>
<td>3340</td>
<td>3516</td>
<td>3868</td>
</tr>
<tr>
<td>±10°C/ºF</td>
<td>109</td>
<td>212</td>
<td>227</td>
<td>242</td>
<td>257</td>
<td>272</td>
<td>287</td>
<td>302</td>
<td>333</td>
</tr>
<tr>
<td>Chilled water flow volume (m³/h)</td>
<td>393</td>
<td>423</td>
<td>454</td>
<td>464</td>
<td>514</td>
<td>544</td>
<td>575</td>
<td>605</td>
<td>665</td>
</tr>
<tr>
<td>Chilled water pressure drop (kPa)</td>
<td>72</td>
<td>70</td>
<td>74</td>
<td>75</td>
<td>78</td>
<td>80</td>
<td>82</td>
<td>85</td>
<td>83</td>
</tr>
</tbody>
</table>

| Notes: 1. Nominal Cooling capacities are based on following conditions: Chilled water inlet/outlet temperature 12°C/7°C(53.6°F/44.6°F);Cooling water inlet/outlet temperature 30°C/35°C(86°F/95°F). 2. The design fouling factor for both evaporator and condenser are 0.086m²·°C/kW (0.0005ft²·°F·hr/Btu),otherwise can be customized. 3. The design working pressure for both evaporator and condenser are 1.0MPa, higher pressure demand can be customized.  |
## Notes:
1. Nominal Cooling capacities are based on following conditions:
   - Chilled water inlet/outlet temperature: 12°C/7°C (53.6°F/44.6°F);
   - Cooling water inlet/outlet temperature: 30°C/35°C (86°F/95°F).
2. The design fouling factor for both evaporator and condenser are 0.086 m²·°C/kW (0.0005 ft²·°F·hr/Btu), otherwise can be customized.
3. The design working pressure for both evaporator and condenser are 1.0 MPa, higher pressure demand can be customized.
### LC1200MS-LC1700MS

#### Foundation arrangement drawing

- **The condenser center line**
- **The evaporator center line**
- **Foundation bolt M30 × 400**
- **Rubber pad δ 15 × P × R**
- **Fill with concrete**
- **Drainage line**

#### Model Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Unit</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC1200MS</td>
<td>5490</td>
<td>2800</td>
<td>3010</td>
</tr>
<tr>
<td>LC1300MS</td>
<td>5490</td>
<td>2800</td>
<td>3010</td>
</tr>
<tr>
<td>LC1400MS</td>
<td>5490</td>
<td>2800</td>
<td>3010</td>
</tr>
<tr>
<td>LC1500MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
<tr>
<td>LC1600MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
<tr>
<td>LC1700MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
</tbody>
</table>

#### Pipe Locate Position

<table>
<thead>
<tr>
<th>Model</th>
<th>F</th>
<th>L</th>
<th>K</th>
<th>I</th>
<th>H</th>
<th>J</th>
<th>Evaporator</th>
<th>Condenser</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC1200MS</td>
<td>765</td>
<td>1315</td>
<td>725</td>
<td>740</td>
<td>1360</td>
<td>1400</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1300MS</td>
<td>765</td>
<td>1315</td>
<td>725</td>
<td>740</td>
<td>1360</td>
<td>1400</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1400MS</td>
<td>765</td>
<td>1315</td>
<td>725</td>
<td>740</td>
<td>1360</td>
<td>1400</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1500MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1600MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1700MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
</tbody>
</table>

### LC1800MS-LC2200MS

#### Foundation arrangement drawing

- **The condenser center line**
- **The evaporator center line**
- **Foundation bolt M30 × 400**
- **Rubber pad δ 15 × P × S**
- **Fill with concrete**
- **Drainage line**

#### Model Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Unit</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC1800MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
<tr>
<td>LC1900MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
<tr>
<td>LC2000MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
<tr>
<td>LC2100MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
<tr>
<td>LC2200MS</td>
<td>5790</td>
<td>3150</td>
<td>3450</td>
</tr>
</tbody>
</table>

#### Pipe Locate Position

<table>
<thead>
<tr>
<th>Model</th>
<th>F</th>
<th>L</th>
<th>K</th>
<th>I</th>
<th>H</th>
<th>J</th>
<th>Evaporator</th>
<th>Condenser</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC1800MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1900MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC2000MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC2100MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC2200MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
</tbody>
</table>
### LC1200MS-LC1700MS

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Unit Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>LC1200MS</td>
<td>5490</td>
<td>2800</td>
</tr>
<tr>
<td>LC1300MS</td>
<td>5490</td>
<td>2800</td>
</tr>
<tr>
<td>LC1400MS</td>
<td>5490</td>
<td>2800</td>
</tr>
<tr>
<td>LC1500MS</td>
<td>5790</td>
<td>2800</td>
</tr>
<tr>
<td>LC1600MS</td>
<td>5790</td>
<td>2800</td>
</tr>
<tr>
<td>LC1700MS</td>
<td>5790</td>
<td>3150</td>
</tr>
</tbody>
</table>

### LC1800MS-LC2200MS

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Unit Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>LC1800MS</td>
<td>5790</td>
<td>3150</td>
</tr>
<tr>
<td>LC1900MS</td>
<td>5790</td>
<td>3150</td>
</tr>
<tr>
<td>LC2000MS</td>
<td>5790</td>
<td>3150</td>
</tr>
<tr>
<td>LC2100MS</td>
<td>5790</td>
<td>3150</td>
</tr>
<tr>
<td>LC2200MS</td>
<td>5790</td>
<td>3150</td>
</tr>
</tbody>
</table>

### Model Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>F</th>
<th>L</th>
<th>K</th>
<th>I</th>
<th>H</th>
<th>J</th>
<th>Evaporator</th>
<th>Condenser</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC1200MS</td>
<td>765</td>
<td>1315</td>
<td>725</td>
<td>740</td>
<td>1360</td>
<td>1400</td>
<td>DN350</td>
<td>DN350</td>
</tr>
<tr>
<td>LC1300MS</td>
<td>765</td>
<td>1315</td>
<td>725</td>
<td>740</td>
<td>1360</td>
<td>1400</td>
<td>DN350</td>
<td>DN350</td>
</tr>
<tr>
<td>LC1400MS</td>
<td>765</td>
<td>1315</td>
<td>725</td>
<td>740</td>
<td>1360</td>
<td>1400</td>
<td>DN350</td>
<td>DN350</td>
</tr>
<tr>
<td>LC1500MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1600MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1700MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
</tbody>
</table>

### Model Pipe Locate Position

<table>
<thead>
<tr>
<th>Model</th>
<th>F</th>
<th>L</th>
<th>K</th>
<th>I</th>
<th>H</th>
<th>J</th>
<th>Evaporator</th>
<th>Condenser</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC1200MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1300MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1400MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1500MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1600MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
<tr>
<td>LC1700MS</td>
<td>740</td>
<td>1440</td>
<td>840</td>
<td>790</td>
<td>1410</td>
<td>1575</td>
<td>DN400</td>
<td>DN400</td>
</tr>
</tbody>
</table>

Legend:
- **A-A** and **B-B** indicate the foundation arrangement drawing.
- The unit body floor and rubber pad are provided by the contractor.
- Nut, washer, and rubber pad are provided by the contractor.
- Fill with concrete is recommended.
- Dimensions in mm are provided.
### LC650H-LC1100H

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Unit Base</th>
<th>Pipe Locate Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(A)</td>
<td>(B)</td>
<td>(C)</td>
</tr>
<tr>
<td>LC650H</td>
<td>5020</td>
<td>2100</td>
<td>2610</td>
</tr>
<tr>
<td>LC700H</td>
<td>2400</td>
<td>900</td>
<td>800</td>
</tr>
</tbody>
</table>

### LC1200HS-LC2200HS

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension</th>
<th>Unit Base</th>
<th>Pipe Locate Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(A)</td>
<td>(B)</td>
<td>(C)</td>
</tr>
<tr>
<td>LC1200HS</td>
<td>5490</td>
<td>2800</td>
<td>3010</td>
</tr>
<tr>
<td>LC1400HS</td>
<td>5490</td>
<td>2800</td>
<td>3010</td>
</tr>
</tbody>
</table>

---

**Model:**
- LC650H
- LC700H
- LC800H
- LC900H
- LC1000H

**Dimensions:**
- (A): 5020
- (B): 2100
- (C): 2610

**Unit Base:**
- 240, 900, 800, 200
- 240, 200, 350, 400, 80
- 4080

**Pipe Locate Position:**
- DN300

---

**Model:**
- LC1200HS
- LC1400HS
- LC1500HS
- LC1600HS
- LC1700HS
- LC1800HS
- LC1900HS
- LC2000HS
- LC2100HS
- LC2200HS

**Dimensions:**
- (A): 5490
- (B): 2800
- (C): 3010

**Unit Base:**
- 1150, 1050, 300, 280, 300, 450, 600, 100

---

**Diagram:**
- Foundation arrangement drawing
- The evaporator center line
- The condenser center line
- Fill with concrete
- Washer Φ30
- The unit body floor
- The base plate δ 20 × P × S
- Nut M30 × 400
- Foundation bolt M30 × 400

---

**Notes:**
- Provided by contractor
- Rubber pad δ 15 × P × S
- Provided by contractor
- Rubber pad δ 15
- Provided by contractor

---

**Foundation bolt M30 × 400**

---

**Model:**
- LC1200HS
- LC1400HS
- LC1500HS
- LC1600HS
- LC1700HS
- LC1800HS
- LC1900HS
- LC2000HS
- LC2100HS
- LC2200HS

**Dimensions:**
- (A): 5490
- (B): 2800
- (C): 3010

**Unit Base:**
- 1150, 1050, 300, 280, 300, 450, 600, 100

---

**Diagram:**
- Foundation arrangement drawing
- The evaporator center line
- The condenser center line
- Fill with concrete
- Washer Φ30
- The unit body floor
- The base plate δ 15 × P × S
- Nut M30 × 400
- Foundation bolt M30 × 400

---

**Notes:**
- Provided by contractor
1. Motor
2. Air Release Valve
3. Water Drainage Valve
4. Oil Filter
5. Oil pump
6. Oil Cooler
7. Oil Level Sight Glass
8. Refrigerant Charge valve
9. Evaporator
10. Control Panel
11. Refrigerant Level Sight Glass
12. Evaporator Security Valve
13. Compressor
14. Guide Vane Actuator
15. Lifting Points
16. Condenser Security Valve
17. Oil Reclaim Device
18. Liquid Line Butterfly Valve (Optional)
19. Condenser
20. Discharge Line Butterfly Valve (Optional)

1. Water outlet/inlet temperature sensor
2. Security Valve
3. Guide Vane Actuator
4. Compressor
5. Oil level Sight Glass
6. Motor
7. Air Release Valve
8. Water Drainage Valve
9. Evaporator
10. Control Panel
11. Motor Connection Box
12. Economizer
13. Condenser
14. Electric Valve
Construction

**LC450M- LC1200M**

1. Motor
2. Air Release Valve
3. Water Drainage Valve
4. Oil Filter
5. Oil pump
6. Oil Cooler
7. Oil Level Sight Glass
8. Refrigerant Charge valve
9. Evaporator
10. Control Panel
11. Refrigerant Level Sight Glass
12. Evaporator Security Valve
13. Compressor
14. Guide Vane Actuator
15. Lifting Points
16. Condenser Security Valve
17. Oil Reclaim Device
18. Liquid Line Butterfly Valve (Optional)
19. Condenser
20. Discharge Line Butterfly Valve (Optional)

**LC12000MS- LC2200MS**

1. Water outlet/inlet temperature sensor
2. Security Valve
3. Guide Vane Actuator
4. Compressor
5. Oil Level Sight Glass
6. Motor
7. Air Release Valve
8. Water Drainage Valve
9. Evaporator
10. Control Panel
11. Motor Connection Box
12. Economizer
13. Condenser
14. Electric Valve
Service Space

Service space for standard efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Service Space(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>LC450M-LC750M</td>
<td>1100</td>
</tr>
<tr>
<td>LC800M-LC1200M</td>
<td>1500</td>
</tr>
<tr>
<td>LC1200MS-LC1800MS</td>
<td>1500</td>
</tr>
<tr>
<td>LC1900MS-LC2200MS</td>
<td>1500</td>
</tr>
</tbody>
</table>

Service space for high efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Service Space(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>LC500H-LC1100H</td>
<td>1500</td>
</tr>
<tr>
<td>LC1200HS-LC1400HS</td>
<td>1800</td>
</tr>
<tr>
<td>LC1700HS-LC2200HS</td>
<td>1800</td>
</tr>
</tbody>
</table>

Note:
The size "T" stands for the dimension to pull out the copper tube from the heat exchanger. It can be done from both sides.

Insulation

Note:
The gray area need to be insulated. Normally the chiller is insulated in the factory. If the chiller has to be insulated in the jobsite, it must ensure that:
- Moveable components and parts shouldn’t be affected by insulation.
- Please don’t leave connecting bolt in insulation.
- Please don’t leave name plate in insulation.
- Please open water box cover when clean the evaporator tubes.

Insulation will be elastomeric foam of Class ‘O’ in accordance with BS 476 either factory or field-installed suitable to prevent sweating in environments with RH 85% & dry bulb temperature ranging from 18 °C to 35°C.

The properties of the elastomeric foam shall be as follows:
- CFC free closed cell nitrile rubber & noncombustible material.
- Density: 65-75 kg/m3.
- Thermal conductivity: Maximum 0.04 W/mK at a mean temperature of 20°C.
- Maximum & minimum service temperature: 105°C & 0°C.
- Water vapor permeability: 0.13 ugm/Nh.
- Moisture absorption: Less than 2.5 percent by volume.

The insulation will cover all low temperature surfaces to include the evaporator, water boxes, oil return lines, chilled water flow switch piping, condenser bottom portion (if sweats during shutdown) and compressor suction line to the satisfaction of the Owner. Final color of the insulation shall match the chiller body not insulated to provide a homogenous color tone.
Service Space

Service space for standard efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Service Space(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>LC450M-LC750M</td>
<td>1100</td>
</tr>
<tr>
<td>LC800M-LC1200M</td>
<td>1500</td>
</tr>
<tr>
<td>LC1200M-LS1800MS</td>
<td>1500</td>
</tr>
<tr>
<td>LC1900M-LS2200MS</td>
<td>1500</td>
</tr>
</tbody>
</table>

Service space for high efficiency

<table>
<thead>
<tr>
<th>Model</th>
<th>Service Space(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>LC550M-LC1100H</td>
<td>1500</td>
</tr>
<tr>
<td>LC1200H-LS1400HS</td>
<td>1800</td>
</tr>
<tr>
<td>LC1700H-LS2200HS</td>
<td>1800</td>
</tr>
</tbody>
</table>

Note: The size "T" stands for the dimension to pull out the copper tube from the heat exchanger. It can be done from both sides.

Insulation

Insulation will be elastomeric foam of Class ‘O’ in accordance with BS 476 either factory or field-installed suitable to prevent sweating in environments with RH 85% & dry bulb temperature ranging from 18 °C to 35°C. The properties of the elastomeric foam shall be as follows:
- CFC free closed cell nitrile rubber & noncombustible material.
- Density: 65-75 kg/m³.
- Thermal conductivity: Maximum 0.04 W/mK at a mean temperature of 20°C.
- Maximum & minimum service temperature: 105°C & 0°C.
- Water vapor permeability: 0.13 ug/mlh.
- Moisture absorption: Less than 2.5 percent by volume.

The insulation will cover all low temperature surfaces to include the evaporator, water boxes, oil return lines, chilled water flow switch piping, condenser bottom portion, if it sweats during shutdown, and compressor suction line to the satisfaction of the Owner. Final color of the insulation shall match the chiller body not insulated to provide a homogenous color tone.
Refrigeration System
Midea LC centrifugal chiller is the steam-compressing cycle type. The refrigerant will be imposed vertical energy by the high speed impeller to increase its temperature and pressure. The high pressure and temperature refrigerant gas will release its thermal energy to the cooling water in condenser, thus decrease its temperature. After throttled by the orifice its pressure will be decreased dramatically. In evaporator the low temperature and low pressure refrigerant will absorb the thermal energy from the chilled water to evaporating. The low temperature chilled water produced in this refrigeration circulation. One refrigeration circulation includes four indispensable processes: compressing, condensing, throttling and evaporating.
Refrigeration Cycle

Refrigeration system
Midea LC centrifugal chiller is the steam-compressing cycle type. The refrigerant will be imposed vertical energy by the high speed impeller to increase its temperature and pressure. The high pressure and temperature refrigerant gas will release its thermal energy to the cooling water in condenser, thus decrease its temperature. After throttled by the orifice its pressure will be decreased dramatically. In evaporator the low temperature and low pressure refrigerant will absorb the thermal energy from the chilled water to evaporating.

The low temperature chilled water produced in this refrigeration circulation. One refrigeration circulation includes four indispensable processes: compressing, condensing, throttling and evaporating.

SP01: Evaporator pressure
SP02: Condenser pressure
SP03: Oil supply pressure
SP04: Oil sump pressure
ST01: Evaporator water inlet temperature
ST02: Evaporator water outlet temperature
ST03: Condenser water inlet temperature
ST04: Condenser water outlet temperature
ST05: Oil sump temperature
ST06: Oil supply temperature
ST07: Motor winding temperature
A1: Compressor motor current
A2: Oil pump current
### Basic Indication Items
- Chilled water inlet temperature
- Chilled water outlet temperature
- Cooling water inlet temperature
- Cooling water outlet temperature
- Condensing pressure
- Evaporating pressure
- Oil supply temperature
- Oil supply pressure
- Oil sump temperature
- Oil sump pressure
- Oil supply pressure difference
- Inlet guide vane opening
- Running current (percentage)
- Total power on time
- Total running time
- Total start-up time

### Safety Cutouts
The all protection control, if necessary, shuts the chiller off or limits the open of inlet guide van to protect the chiller from possible damage.

- Inadequate oil supply pressure difference
- Excessive oil supply temperature
- Inadequate oil sump temperature
- Compressor motor ampere high & too high
- Evaporator pressure low/too low (Evaporator)
- Refrigerant pressure high/too high (Condenser)
- Oil pump overload
- Starter fault
- Long time starting
- Water cut off in evaporator or condenser
- Anti-freezing protection

### User Settings
- Restart temperature
- Pause temperature
- Current limit
- Full load/rated load
- Chilled water outlet temperature
- Rated motor currency
- System control mode
- Low oil supply pressure difference (before start)
- Low oil supply pressure difference (after start)
- Minimum oil supply pressure difference
- High oil supply temperature
- Maximum oil supply temperature
- Low evaporation pressure
- Minimum evaporation pressure
- High condensing temperature
- Maximum condensing temperature
- Low chilled water outlet temperature
- Critical inlet guide vane opening
- Critical water temperature

### User-friendly Interface
- The Microprocessor-based control system is equipped with an MODBUS-RTU port or other optional protocols that offers multiple remote control, monitoring and diagnostic possibilities. It provides a platform to display the real time information and self-control the entire system. It also integrates the logical program such as pre-alarm, safety protection, interlock control etc., which ensures the system’s proper start/start, normal operation and energy saving pause operation.

- The unit controller is factory mounted, wired and tested before shipment, to ensure machine operation in a proper condition.

### Interface Display
- Graphical display
- Touch screen
- Operation status

### Operation Parameters
- Pre-alarm/alarm
- Operation Parameters
- Time and record
- Enquiry function for historical data and trend curve

### Operation Control
- Set outlet temperature by users
- Automatically load or unload according to the chilled water temperature
- Pause function reduces the operation cost
- Independent start/stop control

### Safety Protection
- Oil pressure difference low/too low
- Oil temp. High & too high
- Compressor motor ampere high & too high
- Compressor motor ampere too low
- Evaporator pressure low/too low (Evaporator)
- Refrigerant pressure high/too high (Condenser)
- Oil pump overload
- Starter fault
- Long time starting
- Water cut off in evaporator or condenser
- Anti-freezing protection

### Interlock Control
- Oil pump pre-lubrication/ post-lubrication
- Water pump pre-running/ post-running
- Starter interlock control
- Pause/Stop mode Inlet Guide Vane interlock
- Pre-alarm interlock control

### Capacity Control
- Minimum IGV opening control
- Maximum main motor current control
- Leaving chilled water temperature control
- Inlet guide vane actuator
- Manual mode option

**Note:** Setting values refer to user manual.
User-friendly Interface

- The Microprocessor-based control system is equipped with an MODBUS-RTU port or other optional protocols that offers multiple remote control, monitoring and diagnostic possibilities. It provides a platform to display the real time information and self-control the entire system. It also integrates the logical program such as pre-alarm, safety protection, interlock control etc., which ensures the system’s proper start/start, normal operation and energy saving pause operation.
- The unit controller is factory mounted, wired and tested before shipment, to ensure machine operation in a proper condition.

Basic Indication Items
- Chilled water inlet temperature
- Chilled water outlet temperature
- Cooling water inlet temperature
- Cooling water outlet temperature
- Condensing pressure
- Evaporating pressure
- Oil supply temperature
- Oil supply pressure
- Oil sump temperature
- Oil sump pressure
- Oil supply pressure difference
- Inlet guide vane opening
- Running current (percentage)
- Total power on time
- Total running time
- Total start-up time

Capacity Control
- Minimum IGV opening control
- Maximum main motor current control
- Leaving chilled water temperature control
- Inlet guide vane actuator
- Manual mode option

User Settings
- Restart temperature
- Pause temperature
- Current limit
- Full load/rated load
- Chilled water outlet temperature
- Rated motor currency
- System control mode
- Low oil supply pressure difference (before start)
- Low oil supply pressure difference (after start)
- Minimum oil supply pressure difference
- High oil supply temperature
- Maximum oil supply temperature
- Low evaporation pressure
- Minimum evaporation pressure
- High condensing temperature
- Maximum condensing temperature
- Low chilled water outlet temperature
- Critical inlet guide vane opening
- Critical water temperature

Safety Cutouts
The all protection control, if necessary, shuts the chiller off or limits the open of inlet guide van to protect the chiller from possible damage.

- Inadequate oil supply pressure difference
- Excessive oil supply temperature
- Inadequate oil sump temperature
- Oil pump current overload
- Compressor motor ampere high & too high
- Compressor motor ampere too low
- Evaporator pressure low/too low (Evaporator)
- Refrigerant pressure high/too high (Condenser)
- Refrigerant pressure high/too high (Condenser)
- Oil pump overload
- Starter fault
- Long time starting
- Water cut off in evaporator or condenser
- Anti-freezing protection

Interface Display
- Graphical display
- Touch screen
- Operation status

Operation Parameters
- Pre-alarm/alarm indication and record
- Enquiry function for historical data and trend curve

Operation Control
- Set outlet temperature by users
- Automatically load or unload according to the chilled water temperature
- Pause function reduces the operation cost
- Independent start/stop control

Safety Protection
- Oil pressure difference low/too low
- Oil temp. High & too high
- Compressor motor ampere high & too high
- Compressor motor ampere too low
- Evaporator pressure low/too low (Evaporator)
- Refrigerant pressure high/too high (Condenser)

Interlock Control
- Oil pump pre-lubrication/ post-lubrication
- Water pump pre-running/ post-running
- Starter interlock control
- Pause/Stop mode Inlet Guide Vane interlock
- Pause/stop mode Inlet Guide Vane interlock
- Safety testing before start
- Pre-alarm interlock control
Standard Protection

- **Low Supply Oil-pressure Difference Protection**
  Oil pressure is indication of oil flow and oil-pump operation. A significant drop in oil pressure difference indicates a failure of the oil pump, oil leakage, or other blockage in the oil-circuit. The differential pressure during compressor pre-lube mode should not fall below set point. A failure on meets this requirement leads to inhibit the start of the chiller. When the compressor is running, an alarm will be displayed if the differential pressure is below set point. And if this value decreases to the minimum set point the chiller will shut-down.

- **Oil-Temperature Protection**
  High oil temperature when the oil pump and/or compressor are running may be an indication of oil-cooler failure, overheating of the oil and the bearings, or oil filter blockage. If the oil temperature continuous increase to the maximum set point, the chiller will shut-down. The start of the compressor will be inhibited if the oil sump temperature is below the set point. The diagnostic will display at the user interface.

- **Oil Pump Current Overload Protection**
  The oil pump control panel will monitor the current of oil pump, and shut the chiller off when the oil pump current exceeds its maximum set point.

- **High Condenser-Pressure Protection**
  The chiller controller’s algorithm keeps the condenser pressure under a specified maximum pressure. The chiller can run up to 100 percent of this setpoint in a safe and reliable condition. If the condenser pressure exceeds the set point, the system will prohibit the open of the inlet guide vane to decrease the pressure or shut off the chiller immediately according to the different set point.

- **Low Evaporator-Pressure Protection**
  The chiller controller’s algorithm keeps the evaporator pressure under a specified minimum pressure. The chiller can run up to 100 percent of this setpoint in a safe and reliable status. If the evaporator pressure decreases below the set point, the system will prohibit the open of the inlet guide vane to increase the pressure or shut off the chiller immediately according to the different set point.

- **Water Flow Protection**
  The water flow switches is required to install in the water piping system. The chiller controller has a digital input that will indicate the water flow. When this input does not prove flow within a fixed time during the starting, the process will be terminated. If the flow is lost while the chiller is in running, the system will shut the chiller off to protect the chiller from possible damage.

- **Low Chilled Water Outlet Temperature Protection**
  Low chilled water outlet temperature protection, also known as anti-freeze protection, avoids water freezing in the evaporator by immediately pause the chiller if the chilled water outlet temperature reaches its minimum allowable value. After the chilled water inlet temperature reach the restart set point, the chiller will start automatically. This protection may be due to the sensor fault, incorrect set point of chilled water outlet temperature or lack of chilled water flow.

- **Current Overload Protection**
  The control panel will monitor the current drawn by each line of the motor and if the highest of the three line currents exceeds 110% of the rated current, the system will close the inlet guide vane automatically and check whether the current decrease to normal condition. And the system will shut the chiller off if the highest of the three line currents exceeds 115% of the rated current. The current overload protection does not prohibit the chiller from reaching its full-load ampere.

- **High Motor-Winding Temperature Protection**
  This function monitors the motor temperature and terminates chiller operation when the temperature is excessive. The controller monitors the winding-temperature sensors any time the controller is energized. And immediately shut the chiller off if the temperature surpasses the maximum set point.

- **Start Time Limit Protection**
  When start the chiller, if the time from Wye connection change to Delta connection exceeds set point. The system will shut the chiller off immediately to protect the chiller from possible damage.

- **Power Supply Protection**
  A factory installed transformer or power supply protection module in the starter, if any overvoltage or undervoltage, phase-unbalance, phase-loss, phase reversal happens, the control system will detect it and shut the chiller off in time.

- **Starter Failure Protection**
  The chiller will protect itself from a starter failure, that ensures the compressor motor disconnecting from the line when the motor reach the limits of its capabilities. The controller starts and stops the chiller through the starter. If the starter malfunctions and does not disconnect the compressor motor from the line in an emergency situation, the controller will recognize the fault and shut the chiller off immediately.
Standard Protection

- **Low Supply Oil-pressure Difference Protection**
  Oil pressure is indication of oil flow and oil-pump operation. A significant drop in oil pressure difference indicates a failure of the oil pump, oil leakage, or other blockage in the oil-circuit. The differential pressure during compressor pre-lube mode should not fall below set point. A failure on meets this requirement leads to inhibit the start of the chiller. When the compressor is running, an alarm will be displayed if the differential pressure is below set point. And if this value decreases to the minimum set point the chiller will shut-down.

- **Oil-Temperature Protection**
  High oil temperature when the oil pump and/or compressor are running may be an indication of oil-cooler failure, overheating of the oil and the bearings, or oil filter blockage. If the oil temperature continuous increase to the maximum set point, the chiller will shut-down. The start of the compressor will be inhibited if the oil sump temperature is below the set point. The diagnostic will display at the user interface.

- **Oil Pump Current Overload Protection**
  The oil pump control panel will monitor the current of oil pump, and shut the chiller off when the oil pump current exceeds its maximum set point.

- **High Condenser-Pressure Protection**
  The chiller controller’s algorithm keeps the condenser pressure under a specified maximum pressure. The chiller can run up to 100 percent of this setpoint in a safe and reliable condition. If the condenser pressure exceeds the set point, the system will prohibit the open of the inlet guide vane to decrease the pressure or shut off the chiller immediately according to the different set point.

- **Low Evaporator-Pressure Protection**
  The chiller controller’s algorithm keeps the evaporator pressure under a specified minimum pressure. The chiller can run up to 100 percent of this setpoint in a safe and reliable status. If the evaporator pressure decreases below the set point, the system will prohibit the open of the inlet guide vane to increase the pressure or shut off the chiller immediately according to the different set point.

- **Water Flow Protection**
  The water flow switches is required to install in the water piping system. The chiller controller has a digital input that will indicate the water flow. When this input does not prove flow within a fixed time during the starting, the process will be terminated. If the flow is lost while the chiller is in running, the system will shut the chiller off to protect the chiller from possible damage.

- **Low Chilled Water Outlet Temperature Protection**
  Low chilled water outlet temperature protection, also known as anti-freeze protection, avoids water freezing in the evaporator by immediately pause the chiller if the chilled water outlet temperature reaches its minimum allowable value. After the chilled water inlet temperature reach the restart set point, the chiller will start automatically. This protection may be due to the sensor fault, incorrect set point of chilled water outlet temperature or lack of chilled water flow.

- **Current Overload Protection**
  The control panel will monitor the current drawn by each line of the motor and if the highest of the three line currents exceeds 110% of the rated current, the system will close the inlet guide vane automatically and check whether the current decrease to normal condition. And the system will shut the chiller off if the highest of the three line currents exceeds 115% of the rated current. The current overload protection does not prohibit the chiller from reaching its full-load ampere.

- **High Motor-Winding Temperature Protection**
  This function monitors the motor temperature and terminates chiller operation when the temperature is excessive. The controller monitors the winding-temperature sensors any time the controller is energized. And immediately shut the chiller off if the temperature surpasses the maximum set point.

- **Start Time Limit Protection**
  When start the chiller, if the time from Wye connection change to Delta connection exceeds set point. The system will shut the chiller off immediately to protect the chiller from possible damage.

- **Power Supply Protection**
  A factory installed transformer or power supply protection module in the starter, if any overvoltage or undervoltage, phase-unbalance, phase-loss, phase reversal happens, the control system will detect it and shut the chiller off in time.

- **Starter Failure Protection**
  The chiller will protect itself from a starter failure, that ensures the compressor motor disconnecting from the line when the motor reach the limits of its capabilities. The controller starts and stops the chiller through the starter. If the starter malfunctions and does not disconnect the compressor motor from the line in an emergency situation, the controller will recognize the fault and shut the chiller off immediately.
Centralized Control

- **Intelligent Control Logic Ensures System Reliability**
  By monitoring all the parameters such as chilled water outlet temp., setting temp., evaporating pressure, condensing pressure and inlet guide vane opening degree, etc., the intelligent control logic decides the best load adjustment method and optimizes the frequency of motor and the opening rate of inlet guide vane to guarantee the safe operation in various load conditions.

- **Advanced Control Room & Centralized Controls**
  The conventional BMS system only focuses on the interlock control, operation status and parameter monitor, which is capable to achieve automation and energy management, but it neglects the optimization of equipment matching and controlling. Midea centralized energy management system attaches importance on building load prediction and control, and coordinates the operation of air-conditioner, fan and water pumps to realize the optimum energy management.

- **Centralized Control and Remote Management**
  **System Control Functions:**
  - Pragmatic Control Modes
    Various and auto control, remote and local control, etc.
  - Equalized operation time:
    Automatically balance the operation time of each unit to extend the life-span and minimize the maintenance
  - Optimum operation schedule:
    Optimizes the operation schedule and qty. of water pumps, to minimize the total system power consumption.
  - System data report:
    It reports the operation capacity, power consumption and energy saving effect, as well the malfunction record and historical operation record.
  - Strategies to address problems
    System status indication and pre-alarm/alarm functions ensure the safety. Complete event management provides operator convenience to check historical records.
  - Remote communication function
    Adoption of the public open protocol enables the data exchange between the onsite energy management centre and the upper remote monitoring system and remote operation, maintenance and management.

  **Energy management:**
  - Climatic feedback control: Collect outdoor temperature and accordingly adjust the water volume when climate changes, thus reducing the energy consumption.
  - Cycle duty operation: Supply different capacity according to specific application in each building
  - Load prediction control: Due to perspective control logic, it decreases the frequency of startup and shutdown and minimizes the impact to the power grid, therefore extending the life span and reducing power consumption.

**Typical Wiring Diagram**

Note: The wiring diagram for reference only.
Centralized Control

**Intelligent Control Logic Ensures System Reliability**

By monitoring all the parameters such as chilled water outlet temp., setting temp., evaporating pressure, condensing pressure and inlet guide vane opening degree, etc., the intelligent control logic decides the best load adjustment method and optimizes the frequency of motor and the opening rate of inlet guide vane to guarantee the safe operation in various load conditions.

**Advanced Control Room & Centralized Controls**

The conventional BMS system only focuses on the interlock control, operation status and parameter monitor, which is capable to achieve automation and energy management, but it neglects the optimization of equipment matching and controlling. Midea centralized energy management system attaches importance on building load prediction and control, and coordinates the operation of air-conditioner, fan and water pumps to realize the optimum energy management.

**Centralized Control and Remote Management**

**System Control Functions:**
- Pragmatic Control Modes
  - Various and auto control, remote and local control, etc.
  - Equalized operation time: Automatically balance the operation time of each unit to extend the life-span and minimize the maintenance
  - Optimum operation schedule: Optimizes the operation schedule and qty. of water pumps, to minimize the total system power consumption.
  - System data report: It reports the operation capacity, power consumption and energy saving effect, as well the malfunction record and historical operation record.
  - Strategies to address problems
    - System status indication and pre-alarm/alarm functions ensure the safety. Complete event management provides operator convenience to check historical records.
  - Remote communication function
    - Adoption of the public open protocol enables the data exchange between the onsite energy management centre and the upper remote monitoring system and remote operation, maintenance and management.

**Energy management:**
- Climatic feedback control: Collect outdoor temperature and accordingly adjust the water volume when climate changes, thus reducing the energy consumption.
- Cycle duty operation: Supply different capacity according to specific application in each building
- Load prediction control: Due to perspective control logic, it decreases the frequency of startup and shutdown and minimizes the impact to the power grid, therefore extending the life span and reducing power consumption.

---

*Note: The wiring diagram for reference only.*

**Typical Wiring Diagram**

*Low voltage (Closed star-delta connection)*

*High voltage (Direct on line connection)*
### Starter Cabinet Dimensions

![Starter Cabinet Dimensions](image)

### Recommended Copper Size

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. Current</th>
<th>Y1 Cable in</th>
<th>Y1 Cable out</th>
<th>Auto-transformer input</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC450M</td>
<td>770</td>
<td>2xBV/R40</td>
<td>2xVR100</td>
<td>2xVR240</td>
</tr>
<tr>
<td>LC500M</td>
<td>770</td>
<td>2xBV/R240</td>
<td>2xVR300</td>
<td>2xVR240</td>
</tr>
<tr>
<td>LC550M</td>
<td>890</td>
<td>2xBV/R120</td>
<td>2xVR240</td>
<td></td>
</tr>
<tr>
<td>LC600M</td>
<td>974</td>
<td>2xVR150</td>
<td>2xVR240</td>
<td></td>
</tr>
<tr>
<td>LC1050M</td>
<td>1113</td>
<td>3xVR185</td>
<td>3xVR240</td>
<td></td>
</tr>
<tr>
<td>LC1200M</td>
<td>1250</td>
<td>3xVR240</td>
<td>3xVR240</td>
<td></td>
</tr>
<tr>
<td>LC1250M</td>
<td>1382</td>
<td>3xVR240</td>
<td>3xVR240</td>
<td></td>
</tr>
<tr>
<td>LC1500M</td>
<td>1502</td>
<td>4xVR240</td>
<td>4xVR240</td>
<td></td>
</tr>
<tr>
<td>LC1600M</td>
<td>1502</td>
<td>4xVR240</td>
<td>4xVR240</td>
<td></td>
</tr>
<tr>
<td>LC1800M</td>
<td>1570</td>
<td>4xVR240</td>
<td>4xVR240</td>
<td></td>
</tr>
</tbody>
</table>

### Note:

- The recommended copper cable size is suitable for the single phase from the same supplier and same standard.
- It may be slightly change due to the ambient temperature and surroundings.
Starter Cabinet Dimensions

Recommended Copper Size

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. Current</th>
<th>Y-L Cable in</th>
<th>Y-L Cable out</th>
<th>Auto-transformer input</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC450M</td>
<td>770</td>
<td>2xVR240</td>
<td>2xVR240</td>
<td></td>
</tr>
<tr>
<td>LC500M</td>
<td>770</td>
<td>2xVR240</td>
<td>2xVR240</td>
<td></td>
</tr>
<tr>
<td>LC550M</td>
<td>850</td>
<td>2xVR250</td>
<td>2xVR300</td>
<td></td>
</tr>
<tr>
<td>LC600M</td>
<td>974</td>
<td>2xVR300</td>
<td>2xVR330</td>
<td></td>
</tr>
<tr>
<td>LC650M</td>
<td>1113</td>
<td>3xVR240</td>
<td>3xVR240</td>
<td></td>
</tr>
<tr>
<td>LC700M</td>
<td>1252</td>
<td>3xVR240</td>
<td>3xVR240</td>
<td></td>
</tr>
<tr>
<td>LC750M</td>
<td>1382</td>
<td>3xVR300</td>
<td>3xVR330</td>
<td></td>
</tr>
<tr>
<td>LC800M</td>
<td>1502</td>
<td>4xVR240</td>
<td>4xVR240</td>
<td></td>
</tr>
<tr>
<td>LC850M</td>
<td>1610</td>
<td>4xVR240</td>
<td>4xVR240</td>
<td></td>
</tr>
<tr>
<td>LC900M</td>
<td>1670</td>
<td>4xVR240</td>
<td>4xVR240</td>
<td></td>
</tr>
</tbody>
</table>

High voltage

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Ampere (1000V)</th>
<th>Max Ampere (10000V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC450M</td>
<td>61.3</td>
<td>37.2</td>
</tr>
<tr>
<td>LC500M</td>
<td>61.3</td>
<td>37.2</td>
</tr>
<tr>
<td>LC550M</td>
<td>70.1</td>
<td>42.5</td>
</tr>
<tr>
<td>LC600M</td>
<td>70.1</td>
<td>42.5</td>
</tr>
<tr>
<td>LC650M</td>
<td>78.8</td>
<td>47.9</td>
</tr>
<tr>
<td>LC700M</td>
<td>78.8</td>
<td>47.9</td>
</tr>
<tr>
<td>LC750M</td>
<td>87.0</td>
<td>52.8</td>
</tr>
<tr>
<td>LC800M</td>
<td>96.1</td>
<td>57.4</td>
</tr>
<tr>
<td>LC850M</td>
<td>105.1</td>
<td>63.8</td>
</tr>
<tr>
<td>LC900M</td>
<td>105.1</td>
<td>63.8</td>
</tr>
<tr>
<td>LC950M</td>
<td>113.7</td>
<td>72.2</td>
</tr>
<tr>
<td>LC1000M</td>
<td>125.3</td>
<td>75.2</td>
</tr>
<tr>
<td>LC1050M</td>
<td>132.3</td>
<td>75.2</td>
</tr>
<tr>
<td>LC1100M</td>
<td>139.2</td>
<td>83.5</td>
</tr>
<tr>
<td>LC1150M</td>
<td>153.2</td>
<td>93.4</td>
</tr>
<tr>
<td>LC1200M</td>
<td>161.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note:
The recommended copper cable size is suitable for the single phase from the same supplier and same standard.
It may be slightly change due to the ambient temperature and surroundings.
Typical Piping and Cable Layout

Choose the proper power supply cable size and tag clearly. Filter must be used in the water system. Thermometer and pressure meter must be installed in the water system. Recommend to use a steel pipe to connect the security release valve to the outside. Recommend to use an oxygen density indicator that alarm automatically when the density lower than 19.5%. Cable and pipe layout should be done based on local regulation.

Mechanical Specification

■ Compressor
The centrifugal compressor with high-strength aluminum alloy fully shrouded impellers and moveable inlet guide vane. The enclosed type impeller is designed for balanced thrust and is dynamically balanced and overspeed tested for smooth, vibration free operation. Airfoil shaped inlet guide vane minimize flow disruption for the most efficient part load performance. The movement of the inlet guide vane is controlled by a mounted electric actuator in response to refrigeration load on the evaporator. The rotor assembly consists of a heat-treated alloy steel drive shaft with a high strength, and the high speed shaft is forged with high strength and reliability.

■ Motor
Midea centrifugal chiller use semi-hermetic two-pole motor and is cooled by the circular refrigerant, winding embedded sensors provide positive thermal protection to the motor. Asynchronism squirrel cage type motor can achieve higher operation performance and longer life span. Refrigerant cooled motor keeps motor heat out of the mechanical room, decrease vibration and shaft seal maintenance compare with open motors. Also refrigerant cooled motor have lower inrush currents and lower noise than open motor which cooled by air, there is no need to provide additional ventilation or air conditioning for the mechanical room than open motor design. The motor is bolt connected to the compressor gear housing and shaft labyrinth seal prevents refrigerant leakage from the motor to the gear box. Low voltage motor provides 6 terminals for reduce starting voltage (wye-delta or auto transformer start). High voltage motor provides three terminal posts for full voltage (across the line). Motor terminal pads are supplied. A moveable steel sheet terminal box encloses the terminal board area to insulation.

■ Impeller And Inlet Guide Vane
High strength aluminum-alloy compressor impellers feature backward-curved vanes for high efficiency Airfoil shaped inlet guide vane minimize flow disruption for the most efficient part load performance. Precisely positioned and tightly fitted, it allows the compressor to unload smoothly from 10% to 100% load output for excellent operation in real air conditioning application. The movement is controlled by a mounted electrical operator in response to refrigeration load on the evaporator. Impeller is made of high strength aluminum alloy which is tested at 125% design operating speed.
**Typical Piping and Cable Layout**

Choose the proper power supply cable size and tag clearly.

Filter must be used in the water system.

Thermometer and pressure meter must be installed in the water system.

Recommend to use a steel pipe to connect the security release valve to the outside.

Recommend to use an oxygen density indicator that alarm automatically when the density lower than 19.5%.

Cable and pipe layout should be done based on local regulation.

---

**Mechanical Specification**

- **Compressor**
  The centrifugal compressor with high-strength aluminum alloy fully shrouded impellers and moveable inlet guide vane. The enclosed type impeller is designed for balanced thrust and is dynamically balanced and overspeed tested for smooth, vibration free operation. Airfoil shaped inlet guide vane minimize flow disruption for the most efficient part load performance. The movement of the inlet guide vane is controlled by a mounted electric actuator in response to refrigeration load on the evaporator. The rotor assembly consists of a heat-treated alloy steel drive shaft with a high strength, and the high speed shaft is forged with high strength and reliability.

- **Motor**
  Midea centrifugal chiller use semi-hermetic two-pole motor and is cooled by the circular refrigerant, winding embedded sensors provide positive thermal protection to the motor. Asynchronism squirrel cage type motor can achieve higher operation performance and longer life span. Refrigerant cooled motor keeps motor heat out of the mechanical room, decrease vibration and shaft seal maintenance compare with open motors. Also refrigerant cooled motor have lower inrush currents and lower noise than open motor which cooled by air, there is no need to provide additional ventilation or air conditioning for the mechanical room than open motor design. The motor is bolt connected to the compressor gear housing and shaft labyrinth seal prevents refrigerant leakage from the motor to the gear box. Low voltage motor provides 6 terminals for reduce starting voltage (wye-delta or auto transformer start). High voltage motor provides three terminal posts for full voltage (across the line). Motor terminal pads are supplied. A moveable steel sheet terminal box encloses the terminal board area to insulation.

- **Impeller And Inlet Guide Vane**
  High strength aluminum-alloy compressor impellers feature backward-curved vanes for high efficiency Airfoil shaped inlet guide vane minimize flow disruption for the most efficient part load performance. Precisely positioned and tightly fitted, it allows the compressor to unload smoothly from 10% to 100% load output for excellent operation in real air conditioning application. The movement is controlled by a mounted electrical operator in response to refrigeration load on the evaporator. Impeller is made of high strength aluminum alloy which is tested at 125% design operating speed.
Heat Exchanger Tube
Heat exchanger tubes are high-efficiency, externally and internally enhanced type to provide optimum performance. Tubes in both the evaporator and condenser are 3/4” O.D. copper alloy providing an internal and external surface. This provides extra wall thickness (up to twice as thick) and non-work hardened copper at the support location, extending the life span of the heat exchanger. Each tube is roller expanded into the tube sheets providing a leakproof seal, and is individually replaceable. Copper alloy material as a standard choice and 90/10 copper-nickel, 304 stainless steel or titanium material can be customized.

Evaporator
The evaporator is a shell and tube type heat exchanger. A flow equalizer provides uniform distribution of refrigerant over the entire tube length to yield optimum heat transfer. The evaporator shell contains a dual refrigerant relief valve arrangement set at 185 PSIG (1280 kPa) or single-relief valve arrangement. Intermediate tube support sheets positioned along the shell axis prevent relative tube motion. The waterside is hydraulic tested at 1.5 times of the maximum working pressure.

Condenser
The condenser is shell and tube type, with discharge gas baffle to prevent direct high velocity gas impingement on the tubes. The baffle is also used to distribute the refrigerant gas flow properly for most efficient heat transfer. An integral sub-cooler is located at the bottom of the condenser shell providing highly effective liquid refrigerant subcooling to provide the highest cycle efficiency. Regarding the dual-stage compressing, using the economizer can improve the efficiency by 5-8%. The condenser contains a refrigerant relief valve sets at 1.6 MPa. Standard maximum waterside working pressure is 1.0 MPa. The waterside is hydraulic tested at 1.5 times of maximum working pressure.

Water Box
The removable water boxes are fabricated of steel. The design working pressure is 150 PSIG (1034 kPa) and the boxes are tested at 225 PSIG (1551 kPa). Integral steel water baffles are located and welded within the water box to provide the required pass arrangements. The nozzle connections are suitable for flanges and are capped when shipment. Plugged 3/4” drain and vent connections are provided in each water box.

Orifice
There are three refrigerant control devices used in the industry, expansion valves, fixed orifices, and float systems. Midea standard efficiency uses the fixed orifice without any move part and the reliability is high. The high efficiency and super high efficiency type centrifugal chiller equipped the orifice as well as electronic ball valve plus the liquid level control technology to improve the efficiency in the partial load. These matches ensure the chiller working in stable in any working situation and improve the IPLV and NPLV significantly.

Control Panel
Midea adopts the state-of-the-art microprocessor control system with 10.4 inch LCD touchable screen and high disturbance resistance. The LCD touchable screen with graphical display of chiller parameters, fast and easy to access makes the operation relatively simple. It also can communicate with the user’s PC and carry out the remote control for start, operation and stop of the cooling system. More than 30 item protections and malfunctions used to make the chiller operation secure and reliable. The latest 10 items of failure information can be recorded for inquiry.

Lubrication System
A separately driven electric oil pump assembly supplies lube to the compressor at proper temperature and pressure. After filtration the lube been pressed to the oil cooler to cooling it to certain temperature. And then adjust its pressure before transmitted to bearings. Special designed seals are installed at inner side of motor bearings at both ends to minimize the lube that leaked into the main motor and mixed into the R134a in evaporator. Besides, electric heater is used inside the oil tank to maintain the oil in proper temperature all the time. In this way, when the compressor shuts down, certain oil temperature can be maintained. Thus prevent the R134a gas from entering the oil to decrease the efficiency of lubrication. Therefore, while the compressor is shut down, it is necessary to keep oil heater on to make the oil temperature in certain temperature. If the compressor will out of service for a long time, it is required to run the oil heater to maintain the proper oil temperature.
**Heat Exchanger Tube**

Heat exchanger tubes are high-efficiency, externally and internally enhanced type to provide optimum performance. Tubes in both the evaporator and condenser are 3/4” O.D. copper alloy providing an internal and external surface. This provides extra wall thickness (up to twice as thick) and non-work hardened copper at the support location, extending the life span of the heat exchanger. Each tube is roller expanded into the tube sheets providing a leakproof seal, and is individually replaceable. Copper alloy material as a standard choice and 90/10 copper-nickel, 304 stainless steel or titanium material can be customized.

**Evaporator**

The evaporator is a shell and tube type heat exchanger. A flow equalizer provides uniform distribution of refrigerant over the entire tube length to yield optimum heat transfer. The evaporator shell contains a dual refrigerant relief valve arrangement set at 185 PSIG (1280 kPa) or single-relief valve arrangement. Intermediate tube support sheets positioned along the shell axis prevent relative tube motion. The waterside is hydraulic tested at 1.5 times of the maximum working pressure.

**Condenser**

The condenser is shell and tube type, with discharge gas baffle to prevent direct high velocity gas impingement on the tubes. The baffle is also used to distribute the refrigerant gas flow properly for most efficient heat transfer. An integral sub-cooler is located at the bottom of the condenser shell providing highly effective liquid refrigerant subcooling to provide the highest cycle efficiency. Regarding the dual-stage compressing, using the economizer can improve the efficiency by 5-8%. The condenser contains a refrigerant relief valve sets at 1.6 MPa. Standard maximum waterside working pressure is 1.0 MPa. The waterside is hydraulic tested at 1.5 times of maximum working pressure.

**Water Box**

The removable water boxes are fabricated of steel. The design working pressure is 150 PSIG (1034 kPa) and the boxes are tested at 225 PSIG (1551 kPa). Integral steel water baffles are located and welded within the water box to provide the required pass arrangements. The nozzle connections are suitable for flanges and are capped when shipment. Plugged 3/4” drain and vent connections are provided in each water box.

**Orifice**

There are three refrigerant control devices used in the industry, expansion valves, fixed orifices, and float systems. Midea standard efficiency uses the fixed orifice without any move part and the reliability is high. The high efficiency and super high efficiency type centrifugal chiller equipped the orifice as well as electronic ball valve plus the liquid level control technology to improve the efficiency in the partial load. These matches ensure the chiller working in stable in any working situation and improve the IPLV and NPLV significantly.

**Control Panel**

Midea adopts the state-of-the-art microprocessor control system with 10.4 inch LCD touchable screen and high disturbance resistance. The LCD touchable screen with graphical display of chiller parameters, fast and easy to access makes the operation relatively simple. It also can communicate with the user’s PC and carry out the remote control for start, operation and stop of the cooling system. More than 30 item protections and malfunctions used to make the chiller operation secure and reliable. The latest 10 items of failure information can be recorded for inquiry.

**Lubrication System**

A separately driven electric oil pump assembly supplies to the compressor at proper temperature and pressure. After filtration the lube been pressed to the oil cooler to cooling it to certain temperature. And then adjust its pressure before transmitted to bearings. Special designed seals are installed at inner side of motor bearings at both ends to minimize the lube that leaked into the main motor and mixed into the R134a in evaporator. Besides, electric heater is used inside the oil tank to maintain the oil in proper temperature all the time. In this way, when the compressor shuts down, certain oil temperature can be maintained. Thus prevent the R134a gas from entering the oil to decrease the efficiency of lubrication. Therefore, while the compressor is shut down, it is necessary to keep oil heater on to make the oil temperature in certain temperature. If the compressor will out of service for a long time, it is required to run the oil heater to maintain the proper oil temperature.
Selection Software

For optimize the configuration and performance of Midea product, as well as to match the actual requirements of your HVAC system. This independent software can select the best components configuration according to the requirement of your HVAC system. After input the general parameters such as cooling capacity, fouling factor, pass number, power supply, etc. Nominal data and physical data for typical compressor-evaporator - condenser combinations are given by product list. Midea R&D fellow and software engineers will update the improvement of the product online in time, and our customer can get the update information through the internet.

Optional items / Accessories

60Hz is optimal

50Hz is standard and 60Hz is also available.

Water inlet/outlet connection

Flange type connection is the standard for the condenser and evaporator. Victaulic type connection is optional.

High pressure water box

Standard water box can sustain 1.0Mpa pressure. 1.6Mpa or 2.0Mpa pressure is optional.

Marine water box

The condenser and evaporator can be provided with marine water box on the water connection side which provides easy access to the tube for inspection, clearing and remove without disturbing the water pipe connection.

Pass

The standard chiller is 2 passes. 1 pass or 3 passes are optional.

VSD (Variable speed drive)

Capacity less than 1300Ton product can be equipped with VSD for super high efficiency partial load.

Chiller starter

Delta star is a standard starter which provided with the chiller. Auto transmit starter is another option for the low voltage chiller. Softer starter also can be provided to reduce the rush to the power supply net. Direct on line (DOL) is optional for the high voltage chiller (3000-11000V).

Chiller sequence management (Chiller Plant Manager)

Chiller plant manager can be provided to the multiple installations for control & monitor low side work.

Chiller vibration isolator

Spring isolator and rubber pad are the optional accessories from the factory.

Dual compressor

Dual compressor system can be provided to the big capacity or strong back up for the chiller system.

Sectional transportation

The chiller can be part transport to the site and reassembling on the site under Midea engineer’s inspection.

Witness performance testing

Factory provide the witness testing service for the clients.
Selection Software

For optimizing the performance and configuration of Midea products, our software can select the best components according to the requirements of your HVAC system. After input the general parameters such as cooling capacity, fouling factor, pass number, power supply, etc. Nominal data and physical data for typical compressor-evaporator - condenser combinations are given by product list. Midea R&D fellow and software engineers will update the improvement information of the product online in time, and our customer can get the update information through the internet.

Optional items / Accessories

60Hz is optional

50Hz is standard and 60Hz is also available.

Water inlet/outlet connection

Flange type connection is the standard for the condenser and evaporator. Victaulic type connection is optional.

High pressure water box

Standard water box can sustain 1.0Mpa pressure. 1.6Mpa or 2.0Mpa pressure is optional.

Marine water box

The condenser and evaporator can be provided with marine water box on the water connection side which provides easy access to the tube for inspection, cleaning and remove without disturbing the water pipe connection.

Pass

The standard chiller is 2 passes. 1 pass or 3 passes are optional.

VSD (Variable speed drive)

Capacity less than 1300Ton product can be equipped with VSD for super high efficiency partial load.

Chiller starter

Delta star is a standard starter with provided with the chiller. Auto transmit starter is another option for the low voltage chiller. Softer starter also can be provided to reduce the rush to the power supply net. Direct on line (DOL) is standard for the chiller. Spring isolator and rubber pad are the optional accessories from the factory.

Chiller vibration isolator

Spring isolator and rubber pad are the optional accessories from the factory.

Dual compressor

Dual compressor system can be provided to the big capacity or strong back up for the chiller system.

Sectional transportation

The chiller can be part transport to the site and reassembling on the site under Midea engineer’s inspection.

Witness performance testing

Factory provide the witness testing service for the clients.
### Conversion table

**Temperature:** °F — °C

<table>
<thead>
<tr>
<th>Fahrenheit</th>
<th>Celsius</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40.0</td>
<td>-40.0</td>
</tr>
<tr>
<td>-30.0</td>
<td>-30.0</td>
</tr>
<tr>
<td>-20.0</td>
<td>-20.0</td>
</tr>
<tr>
<td>-10.0</td>
<td>-10.0</td>
</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>10.0</td>
<td>2.0</td>
</tr>
<tr>
<td>20.0</td>
<td>6.0</td>
</tr>
<tr>
<td>30.0</td>
<td>10.0</td>
</tr>
<tr>
<td>40.0</td>
<td>14.0</td>
</tr>
<tr>
<td>50.0</td>
<td>18.0</td>
</tr>
<tr>
<td>60.0</td>
<td>22.0</td>
</tr>
<tr>
<td>70.0</td>
<td>26.0</td>
</tr>
<tr>
<td>80.0</td>
<td>30.0</td>
</tr>
<tr>
<td>90.0</td>
<td>34.0</td>
</tr>
<tr>
<td>100.0</td>
<td>38.0</td>
</tr>
</tbody>
</table>

Formulas: C = (F - 32) × 5 / 9, F = (C × 9 / 5) + 32

### Pressure: PSI—kPa—kg/m²

<table>
<thead>
<tr>
<th>PSI</th>
<th>kPa</th>
<th>kg/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>6.89</td>
<td>0.00</td>
</tr>
<tr>
<td>2.0</td>
<td>13.79</td>
<td>0.01</td>
</tr>
<tr>
<td>3.0</td>
<td>20.68</td>
<td>0.01</td>
</tr>
<tr>
<td>4.0</td>
<td>27.58</td>
<td>0.02</td>
</tr>
<tr>
<td>5.0</td>
<td>34.47</td>
<td>0.03</td>
</tr>
<tr>
<td>6.0</td>
<td>41.37</td>
<td>0.04</td>
</tr>
<tr>
<td>7.0</td>
<td>48.26</td>
<td>0.04</td>
</tr>
<tr>
<td>8.0</td>
<td>55.16</td>
<td>0.05</td>
</tr>
<tr>
<td>9.0</td>
<td>62.05</td>
<td>0.06</td>
</tr>
<tr>
<td>10.0</td>
<td>68.95</td>
<td>0.07</td>
</tr>
<tr>
<td>11.0</td>
<td>75.84</td>
<td>0.07</td>
</tr>
<tr>
<td>12.0</td>
<td>82.74</td>
<td>0.08</td>
</tr>
<tr>
<td>13.0</td>
<td>89.63</td>
<td>0.09</td>
</tr>
<tr>
<td>14.0</td>
<td>96.53</td>
<td>0.09</td>
</tr>
<tr>
<td>15.0</td>
<td>103.42</td>
<td>0.10</td>
</tr>
<tr>
<td>16.0</td>
<td>110.31</td>
<td>0.11</td>
</tr>
<tr>
<td>17.0</td>
<td>117.21</td>
<td>0.12</td>
</tr>
<tr>
<td>18.0</td>
<td>124.11</td>
<td>0.12</td>
</tr>
<tr>
<td>19.0</td>
<td>131.01</td>
<td>0.13</td>
</tr>
<tr>
<td>20.0</td>
<td>137.90</td>
<td>0.14</td>
</tr>
<tr>
<td>21.0</td>
<td>144.79</td>
<td>0.15</td>
</tr>
<tr>
<td>22.0</td>
<td>151.68</td>
<td>0.16</td>
</tr>
<tr>
<td>23.0</td>
<td>158.58</td>
<td>0.16</td>
</tr>
<tr>
<td>24.0</td>
<td>165.47</td>
<td>0.16</td>
</tr>
<tr>
<td>25.0</td>
<td>172.37</td>
<td>0.17</td>
</tr>
<tr>
<td>26.0</td>
<td>179.26</td>
<td>0.18</td>
</tr>
<tr>
<td>27.0</td>
<td>186.16</td>
<td>0.19</td>
</tr>
<tr>
<td>28.0</td>
<td>193.05</td>
<td>0.19</td>
</tr>
<tr>
<td>29.0</td>
<td>199.95</td>
<td>0.20</td>
</tr>
<tr>
<td>30.0</td>
<td>206.84</td>
<td>0.21</td>
</tr>
<tr>
<td>31.0</td>
<td>213.74</td>
<td>0.22</td>
</tr>
<tr>
<td>32.0</td>
<td>220.63</td>
<td>0.25</td>
</tr>
<tr>
<td>33.0</td>
<td>227.53</td>
<td>0.25</td>
</tr>
<tr>
<td>34.0</td>
<td>234.42</td>
<td>0.29</td>
</tr>
<tr>
<td>35.0</td>
<td>241.32</td>
<td>0.29</td>
</tr>
<tr>
<td>36.0</td>
<td>248.21</td>
<td>0.33</td>
</tr>
<tr>
<td>37.0</td>
<td>255.11</td>
<td>0.36</td>
</tr>
<tr>
<td>38.0</td>
<td>262.00</td>
<td>0.37</td>
</tr>
<tr>
<td>39.0</td>
<td>268.90</td>
<td>0.37</td>
</tr>
<tr>
<td>40.0</td>
<td>275.79</td>
<td>0.38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PSI</th>
<th>kPa</th>
<th>kg/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>6.89</td>
<td>0.00</td>
</tr>
<tr>
<td>2.0</td>
<td>13.79</td>
<td>0.01</td>
</tr>
<tr>
<td>3.0</td>
<td>20.68</td>
<td>0.01</td>
</tr>
<tr>
<td>4.0</td>
<td>27.58</td>
<td>0.02</td>
</tr>
<tr>
<td>5.0</td>
<td>34.47</td>
<td>0.03</td>
</tr>
<tr>
<td>6.0</td>
<td>41.37</td>
<td>0.04</td>
</tr>
<tr>
<td>7.0</td>
<td>48.26</td>
<td>0.04</td>
</tr>
<tr>
<td>8.0</td>
<td>55.16</td>
<td>0.05</td>
</tr>
<tr>
<td>9.0</td>
<td>62.05</td>
<td>0.06</td>
</tr>
<tr>
<td>10.0</td>
<td>68.95</td>
<td>0.07</td>
</tr>
<tr>
<td>11.0</td>
<td>75.84</td>
<td>0.07</td>
</tr>
<tr>
<td>12.0</td>
<td>82.74</td>
<td>0.08</td>
</tr>
<tr>
<td>13.0</td>
<td>89.63</td>
<td>0.09</td>
</tr>
<tr>
<td>14.0</td>
<td>96.53</td>
<td>0.09</td>
</tr>
<tr>
<td>15.0</td>
<td>103.42</td>
<td>0.10</td>
</tr>
<tr>
<td>16.0</td>
<td>110.31</td>
<td>0.11</td>
</tr>
<tr>
<td>17.0</td>
<td>117.21</td>
<td>0.12</td>
</tr>
<tr>
<td>18.0</td>
<td>124.11</td>
<td>0.12</td>
</tr>
<tr>
<td>19.0</td>
<td>131.01</td>
<td>0.13</td>
</tr>
<tr>
<td>20.0</td>
<td>137.90</td>
<td>0.14</td>
</tr>
<tr>
<td>21.0</td>
<td>144.79</td>
<td>0.15</td>
</tr>
<tr>
<td>22.0</td>
<td>151.68</td>
<td>0.16</td>
</tr>
<tr>
<td>23.0</td>
<td>158.58</td>
<td>0.16</td>
</tr>
<tr>
<td>24.0</td>
<td>165.47</td>
<td>0.16</td>
</tr>
<tr>
<td>25.0</td>
<td>172.37</td>
<td>0.17</td>
</tr>
<tr>
<td>26.0</td>
<td>179.26</td>
<td>0.18</td>
</tr>
<tr>
<td>27.0</td>
<td>186.16</td>
<td>0.19</td>
</tr>
<tr>
<td>28.0</td>
<td>193.05</td>
<td>0.19</td>
</tr>
<tr>
<td>29.0</td>
<td>199.95</td>
<td>0.20</td>
</tr>
<tr>
<td>30.0</td>
<td>206.84</td>
<td>0.21</td>
</tr>
<tr>
<td>31.0</td>
<td>213.74</td>
<td>0.22</td>
</tr>
<tr>
<td>32.0</td>
<td>220.63</td>
<td>0.25</td>
</tr>
<tr>
<td>33.0</td>
<td>227.53</td>
<td>0.25</td>
</tr>
<tr>
<td>34.0</td>
<td>234.42</td>
<td>0.29</td>
</tr>
<tr>
<td>35.0</td>
<td>241.32</td>
<td>0.29</td>
</tr>
<tr>
<td>36.0</td>
<td>248.21</td>
<td>0.33</td>
</tr>
<tr>
<td>37.0</td>
<td>255.11</td>
<td>0.36</td>
</tr>
<tr>
<td>38.0</td>
<td>262.00</td>
<td>0.37</td>
</tr>
<tr>
<td>39.0</td>
<td>268.90</td>
<td>0.37</td>
</tr>
<tr>
<td>40.0</td>
<td>275.79</td>
<td>0.38</td>
</tr>
</tbody>
</table>

We reserve the right to make changes in design and construction at any time without notice.
### Temperature: °F — °C

<table>
<thead>
<tr>
<th>Fahrenheit</th>
<th>Celsius</th>
</tr>
</thead>
<tbody>
<tr>
<td>-26.0</td>
<td>-32.75</td>
</tr>
<tr>
<td>-16.0</td>
<td>-26.67</td>
</tr>
<tr>
<td>-8.0</td>
<td>-17.78</td>
</tr>
<tr>
<td>0.0</td>
<td>0.00</td>
</tr>
<tr>
<td>8.0</td>
<td>32.22</td>
</tr>
<tr>
<td>16.0</td>
<td>7.78</td>
</tr>
<tr>
<td>24.0</td>
<td>11.11</td>
</tr>
<tr>
<td>32.0</td>
<td>16.67</td>
</tr>
<tr>
<td>40.0</td>
<td>4.44</td>
</tr>
</tbody>
</table>

Formulas:  
- \( C = (F - 32) \times \frac{5}{9} \)  
- \( F = \left(\frac{C \times 9}{5}\right) + 32 \)

### Pressure: PSI—kPa—kg/m²

<table>
<thead>
<tr>
<th>PSI</th>
<th>kPa</th>
<th>kg/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>6.89</td>
<td>0.07</td>
</tr>
<tr>
<td>2.0</td>
<td>13.79</td>
<td>0.14</td>
</tr>
<tr>
<td>3.0</td>
<td>20.68</td>
<td>0.21</td>
</tr>
<tr>
<td>4.0</td>
<td>27.58</td>
<td>0.28</td>
</tr>
<tr>
<td>5.0</td>
<td>34.47</td>
<td>0.35</td>
</tr>
<tr>
<td>6.0</td>
<td>41.37</td>
<td>0.42</td>
</tr>
<tr>
<td>7.0</td>
<td>48.26</td>
<td>0.49</td>
</tr>
<tr>
<td>8.0</td>
<td>55.16</td>
<td>0.56</td>
</tr>
<tr>
<td>9.0</td>
<td>62.05</td>
<td>0.63</td>
</tr>
<tr>
<td>10.0</td>
<td>68.95</td>
<td>0.70</td>
</tr>
<tr>
<td>11.0</td>
<td>75.84</td>
<td>0.77</td>
</tr>
<tr>
<td>12.0</td>
<td>82.74</td>
<td>0.84</td>
</tr>
<tr>
<td>13.0</td>
<td>89.63</td>
<td>0.91</td>
</tr>
<tr>
<td>14.0</td>
<td>96.53</td>
<td>0.98</td>
</tr>
<tr>
<td>15.0</td>
<td>103.42</td>
<td>1.05</td>
</tr>
<tr>
<td>16.0</td>
<td>110.32</td>
<td>1.12</td>
</tr>
<tr>
<td>17.0</td>
<td>117.21</td>
<td>1.20</td>
</tr>
<tr>
<td>18.0</td>
<td>124.11</td>
<td>1.27</td>
</tr>
<tr>
<td>19.0</td>
<td>130.91</td>
<td>1.34</td>
</tr>
<tr>
<td>20.0</td>
<td>137.80</td>
<td>1.41</td>
</tr>
<tr>
<td>21.0</td>
<td>144.69</td>
<td>1.48</td>
</tr>
<tr>
<td>22.0</td>
<td>151.58</td>
<td>1.55</td>
</tr>
<tr>
<td>23.0</td>
<td>158.48</td>
<td>1.62</td>
</tr>
<tr>
<td>24.0</td>
<td>165.37</td>
<td>1.69</td>
</tr>
<tr>
<td>25.0</td>
<td>172.27</td>
<td>1.76</td>
</tr>
<tr>
<td>26.0</td>
<td>179.17</td>
<td>1.83</td>
</tr>
<tr>
<td>27.0</td>
<td>186.06</td>
<td>1.90</td>
</tr>
<tr>
<td>28.0</td>
<td>192.96</td>
<td>1.97</td>
</tr>
<tr>
<td>29.0</td>
<td>199.85</td>
<td>2.04</td>
</tr>
<tr>
<td>30.0</td>
<td>206.75</td>
<td>2.11</td>
</tr>
<tr>
<td>31.0</td>
<td>213.64</td>
<td>2.18</td>
</tr>
<tr>
<td>32.0</td>
<td>220.53</td>
<td>2.25</td>
</tr>
<tr>
<td>33.0</td>
<td>227.43</td>
<td>2.32</td>
</tr>
<tr>
<td>34.0</td>
<td>234.32</td>
<td>2.39</td>
</tr>
<tr>
<td>35.0</td>
<td>241.22</td>
<td>2.46</td>
</tr>
<tr>
<td>36.0</td>
<td>248.12</td>
<td>2.53</td>
</tr>
<tr>
<td>37.0</td>
<td>255.01</td>
<td>2.60</td>
</tr>
<tr>
<td>38.0</td>
<td>261.91</td>
<td>2.67</td>
</tr>
<tr>
<td>39.0</td>
<td>268.80</td>
<td>2.74</td>
</tr>
<tr>
<td>40.0</td>
<td>275.70</td>
<td>2.81</td>
</tr>
</tbody>
</table>

We reserve the right to make changes in design and construction at any time without notice.
COMMERCIAL AIR CONDITIONERS

Water Cooled Centrifugal Chiller
standard efficiency: 450-2200Ton
High efficiency: 650-2200Ton
R134a