

Be professional, be the best in China,
and to become a leading Global brand.



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The final explanation right belongs to our company.

VWCF Series



Dynamic Gas Bearing Variable Frequency Centrifugal Water-Cooled Chiller Units



COMPANY PROFILE

VECK, founded in 2014 and headquartered in China, is a vibrant, energetic, passionate and imaginative young enterprise. Since its establishment, our sales have rapidly grown to 345 million USD by year 2023. We are committed to meeting customer needs by creating customized, intelligent, high-quality air conditioning products to provide an exceptional experience for our valuable customers.

After achieving remarkable success in the Chinese market, we are bravely penetrating the international market. VECK aspires to be a pioneering enterprise in the global air conditioning industry, integrating innovation, creativity, and international standards to offer unparalleled service and cutting-edge products to global customers.

In addition to our 4 factories and research and development facilities in China, our Jakarta factory symbolizes VECK's expansion into global manufacturing and services beyond China. We plan to establish our manufacturing and service networks in major global regions to provide more timely and efficient products and services to global users. VECK aims to tirelessly work towards creating a greener, smarter future.



worldwide
5
BASES

CHEGNDU · CHINA
FOOTPRINT: **20,000m²**



ZHENJIANG · CHINA
FOOTPRINT: **100,000m²**



TIANJIN · CHINA
FOOTPRINT: **60,000m²**



JAKARTA · INDONESIA
FOOTPRINT: **4,000m²**



GUAGNZHOU · CHINA
FOOTPRINT: **15,977.71m²**



DYNAMIC GAS BEARING VARIABLE FREQUENCY CENTRIFUGAL WATER-COOLED CHILLER UNITS

The Veck Dynamic Gas Bearing Variable Frequency Centrifugal Water-Cooled Chiller Units is a cutting-edge chiller that utilizes an internationally leading dynamic pressure gas bearing structure.

This series incorporates several core technologies, including dynamic pressure gas bearings, high-efficiency permanent magnet synchronous motors, two-stage compression, and two-stage subcooling. These features ensure the chiller operates oil-free with high efficiency, stability, reliability, cost savings, low noise, and environmental protection, placing it at the forefront of international standards. Additionally, it comes equipped with a reliable industrial-grade microcomputer control system, group control technology, and building communication interface, ensuring excellent operability and rich expandability of the unit. The chiller can be widely applied in air conditioner systems for hotels, shopping malls, theaters, hospitals, schools, office buildings, and other civil buildings, as well as in industrial cooling processes for electronic manufacturing and pharmaceutical chemicals. It is particularly suitable for energy-saving renovation projects of large-scale air conditioner systems, providing customers with high-efficiency, energy-saving green building solutions.



UNIT MODEL NAMING

VWCF	0200	1	2	N	N	A
1	2	3	4	5	6	7

1 Dynamic Gas Bearing Variable Frequency Centrifugal Water-Cooled Chiller Units

2 0200 indicates a unit with a nominal cooling capacity of 200 RT

3 Number of compressors: 1.-Single compressor, 2.-Twin compressor, 3.-Triple compressor

4 Refrigerant: 2-R134A

5 Additional features: N-None

6 Other characteristics: N-None

7 Design number: A

VWCF Series

Oil-Free and Efficient

Dynamic Pressurized Air Bearing Technology

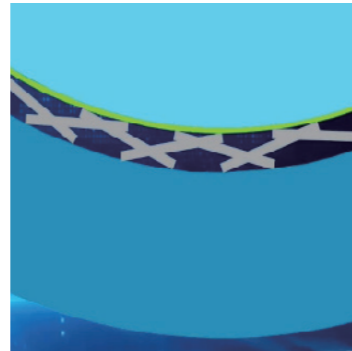
The basic principle of dynamic pressurized air bearing technology is similar to that of an "airplane taking off." An airplane can "hover" in the air once it has reached a certain ground speed. After the rotating shaft of the equipment reaches a certain rotational speed, an air film is formed using the wedge-shaped space created on the surface between the bearing and the rotating shaft, allowing it to bear the load without the need for external auxiliary equipment.



Kick-Start Phase

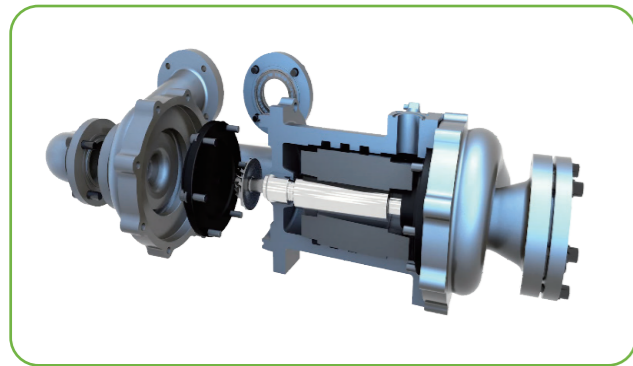


Operational Phase



Shutdown Phase

Maintenance Cost Comparison



The compressor adopts air bearing technology, where the rotor is suspended during operation. This results in no friction for the bearings, low operating noise, and minimal mechanical loss. Operation does not require a lubricating oil system or start-up preparation, allowing for continuous start and stop without maintenance, thus keeping maintenance costs low.

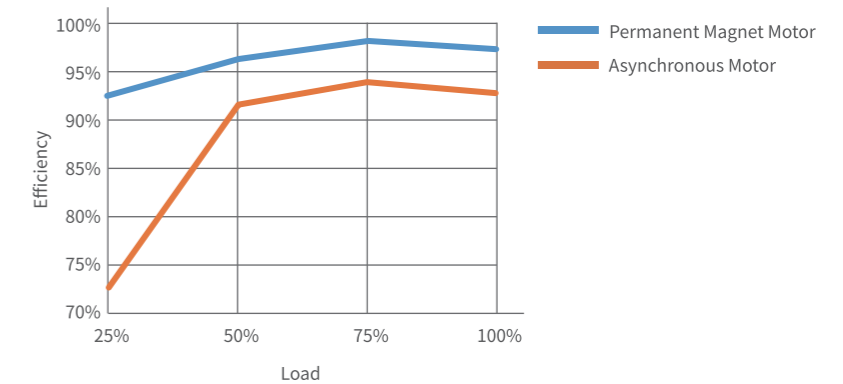
Maintenance Type	General Centrifuge	Gas Bearing Centrifuge
Replacement of Lubricating Oil	Triennial	Unnecessary
Replacement of Oil Filters	Once a Year	Unnecessary
Oil Pump Pressure Test	Quarterly	Unnecessary
Oil Testing (Color, Quality)	Once a Week	Unnecessary
Oil Filter Pressure Drop Detection	Once a Month	Unnecessary
Compressor Vibration Detection	Once a Year	Unnecessary
Oil Pump Insulation Test	Triennial	Unnecessary
Oil Heater Inspection	Triennial	Unnecessary
Motor Winding Inspection	Once a Year	Unnecessary
Contactors Inspection	Once a Year	Unnecessary

High-Efficiency Permanent Magnet Synchronous Motor Drive Technology

The motor is made of aerospace-grade high-temperature alloy material and process, featuring an integrated high-temperature permanent magnet structure.

The electromagnetic characteristics of the motor are matched with the pneumatic characteristics of the impeller and the frequency conversion drive characteristics to optimize the efficiency of the entire system.

The high power density permanent magnet synchronous motor directly drives the rotor and impeller, eliminating the need for the traditional centrifuge speed-increasing gear structure, reducing transmission loss, and improving efficiency.



Efficient Aerospace Pneumatics

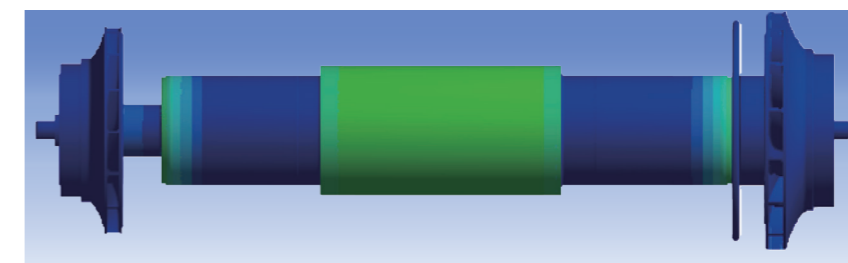
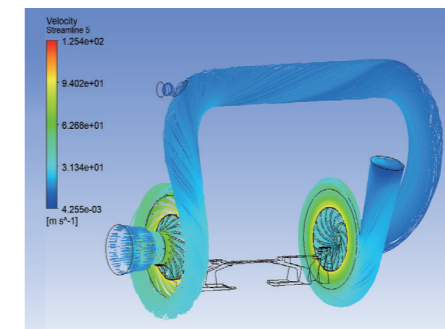
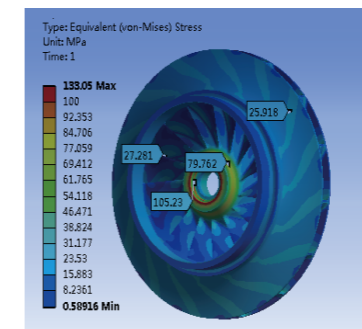
High-efficiency ternary flow closed impeller reduces leakage loss, resulting in higher overall machine efficiency.

Adopting advanced full aerodynamic performance design, optimizing flow field control and aerodynamic performance evaluation to improve compressor cycle efficiency.

Horizontal opposed impeller compression structure, with two-stage impellers horizontally and bidirectionally placed on both sides of the bearing, featuring axial air intake, reducing bearing force and improving compressor efficiency.

Dual-stage compression, enhanced vapor injection technology increase efficiency by 60%* compared to single-stage compression.

*Data from GMPI-certified Veck Lab test data



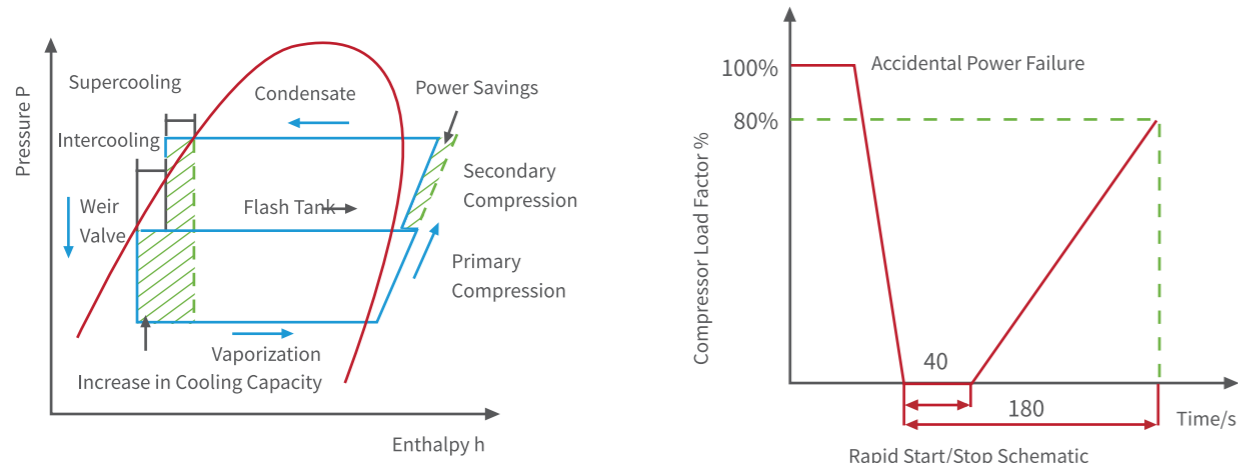
High-Efficiency Variable Frequency Drive Technology

Using IGBTs specialized for high-efficiency inverters, combined with high-efficiency drive control technology for compressors, achieves excellent loss suppression and heat management, effectively controlling issues such as temperature rise and interference in inverters. High-performance vector control technology automatically adjusts the voltage-to-frequency ratio of the inverter output based on the motor's load rate, improving the efficiency of the motor and system while reducing energy consumption, noise, and vibration. Microchannel refrigerant heat dissipation technology addresses high heat flow density, poor heat dissipation, and condensation issues in high-power inverters, greatly enhancing inverter reliability and adaptability. Wide voltage operation technology for a broader application range.



Two-Stage Subcooling Technology & Fast Start/Stop Technology

High-Efficiency Subcooling Design: a separate subcooling tube cluster with a corresponding labyrinth folding plate is designed at the bottom of the condenser, improving the refrigerant subcooling degree by 5°C and increasing energy efficiency by 2%.
Flash Tank: the subcooling degree can be increased to more than 10°C, significantly improving the refrigeration capacity.
Rapid Start/Stop Technology: enables rapid stop/start, reducing wear and tear, prolonging lifespan, reducing operational risk, and minimizing temperature fluctuations during downtime.

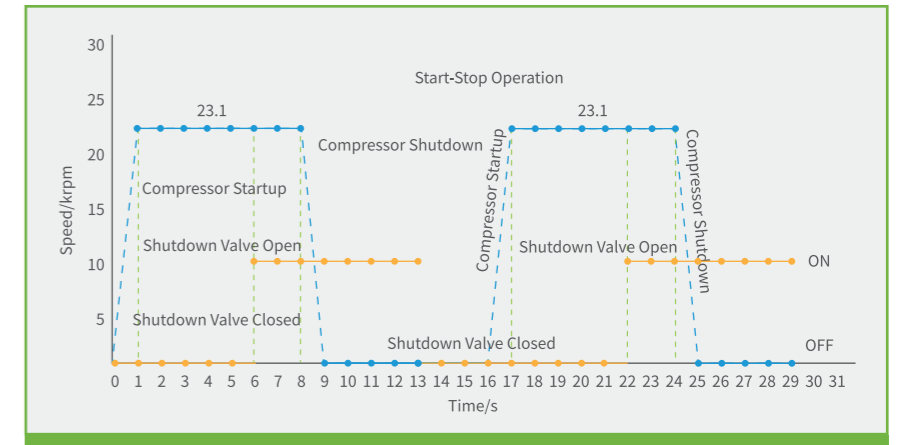


Stable and Reliable

Dynamic gas bearing variable frequency centrifugal water-cooled chiller units have many advantages such as no oil, no friction, low noise, low power consumption, etc., which greatly improve the safety and reliability of the equipment during use.

Start-Stop Count Guarantee & Long Life

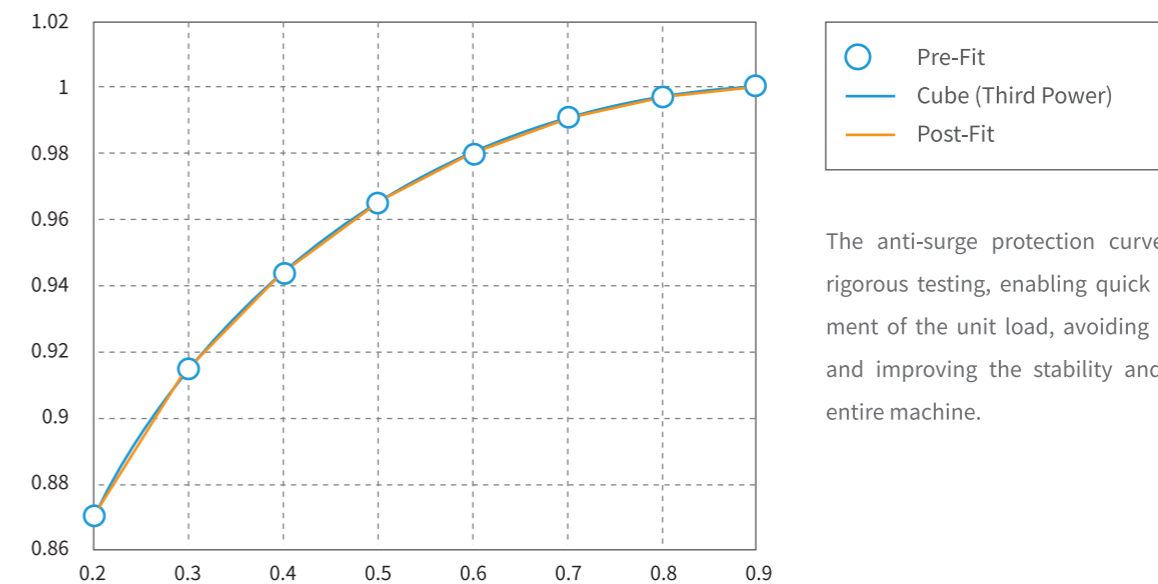
The compressor has passed durability tests with more than 255,000 safe starts and stops.



The compressor starts at 23.1 krpm and maintains this speed for 5 seconds. The control system gives a shutdown command, and the shutdown valve opens for 2 seconds. The compressor then stops in 0.4 seconds, and the shutdown valve closes. After 3 seconds, the compressor restarts, entering the next start/stop cycle.

Anti-Surge Control Technology

By monitoring and adjusting the operating parameters of the compressor in real time, the vibration and noise of the equipment are reduced, enhancing overall operational smoothness. The compressor control module provides a control curve for safe operation, ensuring the compressor always runs within the safety zone through real-time monitoring and timely speed adjustments.



The anti-surge protection curve is derived from rigorous testing, enabling quick and stable adjustment of the unit load, avoiding compressor surge, and improving the stability and reliability of the entire machine.

Level Control Technology

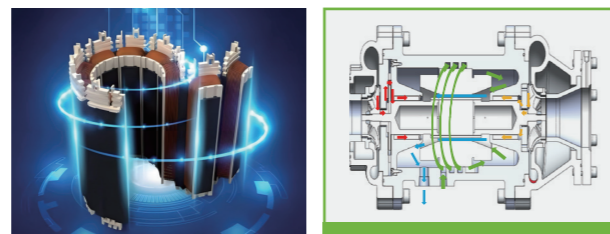
Equipped with a special capacitance level meter for refrigerant measurement, offering higher accuracy, sensitivity, and reliability.



Motor Cooling Technology

Refrigerant cools the motor, precisely controlling the amount of refrigerant entering the motor casing, ensuring a uniform temperature field inside the motor.

With Class F insulation design and pre-built temperature sensors inside the motor windings, the safety of the motor is always guaranteed.



Optimized Control Technology



Efficiency

Increased execution speed of the application program, faster detection of various parameters, faster calculations

Flexibility

A standard USB drive can be used or directly connected to a PC for user convenience; CAREL's proprietary ASIC chip technology with general-purpose I/O functionality allows channels to be configured via software.

Multi-functional

Supports various communication protocols such as Modbus, BACnet, SNMP, OPC-UA, etc., and allows independent management of these protocols.

DYNAMIC GAS BEARING

VARIABLE FREQUENCY CENTRIFUGAL WATER-COOLED CHILLER UNITS

Low Noise and Environmentally Friendly

Oil-free and frictionless, reducing the transmission warmth of mechanical parts.

Compressor horizontal opposed impeller + external pipeline type refluxer structure reduces the aerodynamic noise of refrigerant during flow.

After more than **12,000** hours of trouble-free operation

Noise ≤70dB

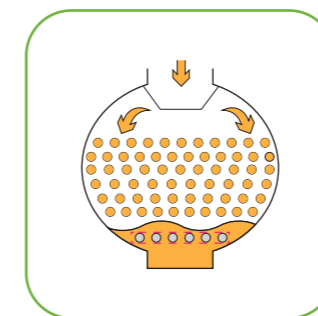
Vibration ≤12μm



General centrifuge operation 88dB(A)

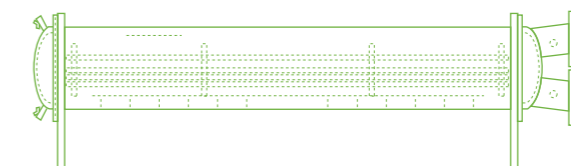
Gas bearing inverter centrifuge 70dB(A)

Highly Efficient Heat Transfer



Condenser

The outer thread of the heat exchanger tube adopts the latest needle design, resulting in a thinner liquid film and reduced thermal resistance. Utilizing oil-free special pipe technology to achieve optimal condenser tube spacing and positioning, the heat exchanger tube group's condensing arrangement structure is optimized to further enhance heat transfer efficiency.



Evaporator

The full-liquid evaporator has a simple structure and process, with the heat exchanger tubes fully submerged in the refrigerant, ensuring complete and uniform evaporation of the medium inside all heat exchanger tubes. Additionally, the use of oil-free special pipe technology and patented liquid distributor structure optimization technology allows for optimal arrangement of evaporator tube spacing and positioning, improving heat transfer efficiency.



Human-Computer Interaction and Control

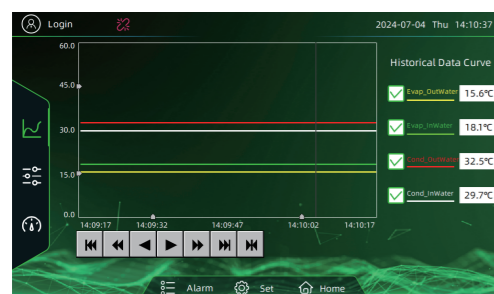
The new microcomputer control system features a new control interface, providing users with a more friendly human-machine interaction experience. The control system integrates intelligent operation, safety protection, and interlocking control functions, ensuring safe start/stop, efficient operation, and intelligent management of the unit.

HMI Control Center



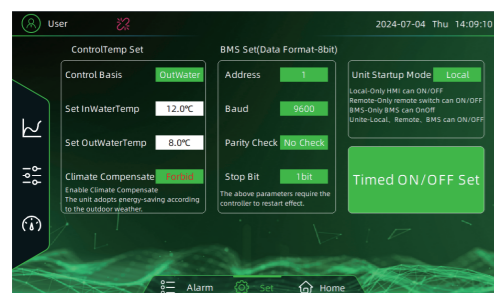
Industrial-grade High-Reliability Touch Screen

The touch screen protection level is up to IP56, with built-in power isolation protection and motherboard coating protection for safety and reliability. Touch screen-controller network port communication offers strong anti-interference and high communication reliability. Real-time detection and graphical accumulation of various parameters of unit operation.



Exclusive UI for Gas Bearing

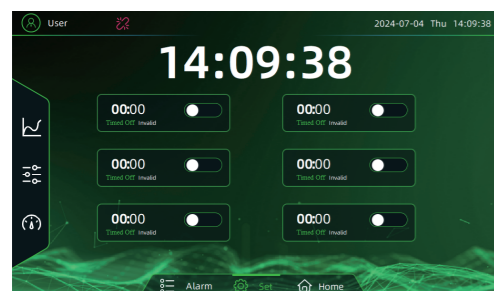
The interface is well laid out and simple to use. The interface is well-laid-out and simple to use. It features unit operation animations and dynamic data displays, making the unit operation status clear at a glance, enhancing the user experience. The touch screen interface supports switching between English and Chinese languages.



Functional Settings Perfected

Three-Stage Advanced Account Management: User privileges, maintenance privileges, manufacturer privileges; password access, privilege-specific, ensuring security and safety. Timing Function: Users can set the timing function according to their needs, enabling unattended and energy-saving operation of the unit.

Onboard Local Control Advantage



Industrial Grade Specialized Controllers

1. Fast response and high control accuracy
2. Flexible I/O configuration, easy to expand
3. Support for various building communication standards
4. Wide temperature range
5. Strong anti-interference, reliable operation

CPS Smart Platform (Optional)

The CPS smart platform is based on central air conditioning, with central air conditioning system monitoring, energy-saving control, energy consumption management, and operation management as its core, expanding to system applications in various industries.

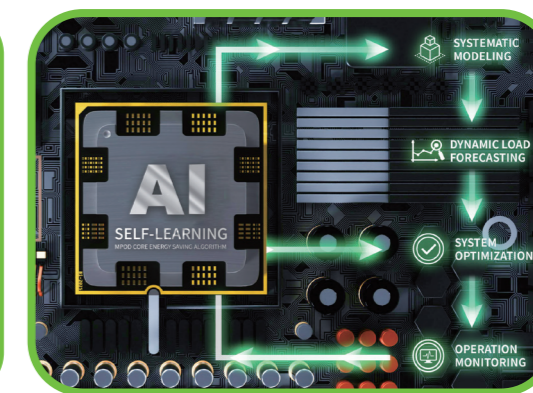
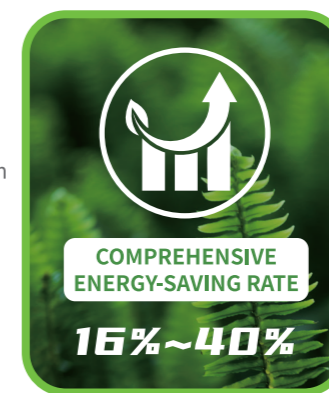


Platform Value

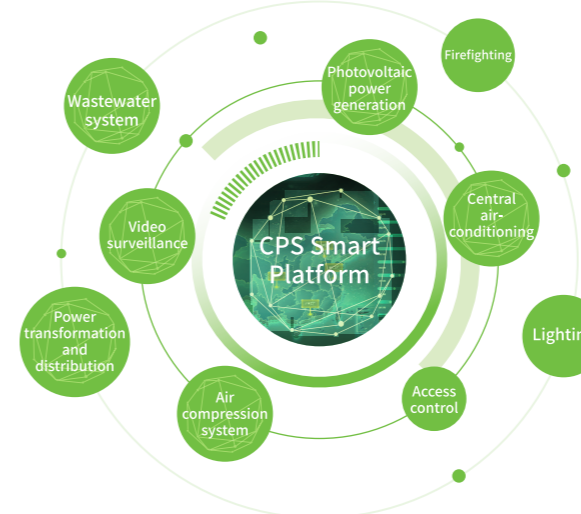


MPOD Core Energy Saving Algorithm

- END PRODUCT PART**
 - Intelligent fresh air regulation
 - Intelligent variable air volume regulation
 - Intelligent humidity regulation
- SYSTEM PART**
 - Host variable water temperature regulation
 - Variable frequency regulation of water pump
 - Environmental compensation




System integration



- Unify management platform and reduce maintenance personnel
- Unify database and simplify enterprise data management
- Break data silos and achieve subsystem linkage

Complete with Optional Features




CUSTOMIZED WATER-SIDE PRESSURE ON DEMAND

According to the actual needs of the project, different water-side pressure evaporators and condensers can be selected. The standard water-side pressure is 1.0 MPa, with options of 1.6 MPa and 2.0 MPa.




HEAT EXCHANGER SELF-CLEANING TECHNOLOGY

Traditional mechanical brushing methods have drawbacks such as incomplete cleaning and downtime for maintenance. Our online self-cleaning technology uses special rubber balls to scrub the heat exchanger walls under water pressure differentials. It adjusts the frequency of ball release based on operational conditions, ensuring a temperature difference of less than 1.5°C at all times and saving energy consumption by 5% to 15%.



UNIT DAMPING

Units can be equipped with optional high-elasticity rubber damping pads or spring shock absorbers to meet higher requirements for low noise and vibration.




CONTROL PANEL

Standard configuration includes a built-in touch screen, with the option of an external robotic arm touch screen. A 10-inch HD touch screen is standard, with an optional upgrade to 15 inches.




EVAPORATOR INSULATION FOAM THICKENING

During unit operation at low temperatures, the evaporator insulation foam thickness can be selected based on project requirements to effectively prevent evaporator condensation. The standard insulation thickness is 20mm, with options of 25mm, 30mm, and 40mm.



DISASSEMBLY FOR SHIPPING IN SECTIONS

When transport pathways restrict the direct shipment of the entire unit to its location, the unit can be disassembled into several large sections for transportation and assembly on site.



PACKAGING FORM

Units come standard with transparent plastic film heat-shrink packaging, facilitating inspection of the unit's exterior upon delivery. Wooden crate packaging is available as an option.

Performance Parameters

Model	VWCF-NNA	006512	007512	009012	011012	012512	014012	015012	017012	020012	022012	025012	027012	030012	032012	
Cooling capacity	kW	229	264	317	387	440	492	527	598	717	774	879	950	1055	1125	
	Tons	65	75	90	100	125	140	150	170	204	220	250	270	300	320	
Input power	kW	37.5	43.34	52.7	62.4	71.1	80.2	84.32	96.4	105.03	115	131.3	142.3	158.4	169.6	
COP	kW/kW	6.10	6.09	6.01	6.20	6.18	6.14	6.25	6.20	6.83	6.73	6.70	6.67	6.66	6.64	
GB-IPLV	kW/kW	8.21	8.18	8.01	8.34	8.32	8.12	8.60	8.56	10.01	9.52	9.65	9.45	9.58	9.43	
Efficiency ratings	-	Grade 1														
Power supply	-	3φ-380V-50Hz														
Starting current	A	15	15	23	23	30	30	34	34	40	40	55	55	65	65	
Maximum current	A	90	96	105	125	160	175	180	210	260	275	290	310	360	375	
Compressor	Type	Dynamic Gas Bearing, variable frequency centrifugal compressor														
	Qty	-	1	1	1	1	1	1	1	1	1	1	1	1	1	
Evaporator	Type	Full liquid evaporator														
	Water flow rate	m ³ /h	39	45	54	67	76	85	91	103	123	133	151	163	181	194
	Pressure drops	kPa	64	68	60	66	38	41	35	37	52	55	44	45	43	45
	Pipe connection size	DN	100	100	125	125	125	125	150	150	150	150	200	200	200	200
Condenser	Type	Shell and tube condenser														
	Water flow rate	m ³ /h	49	57	68	83	95	106	113	129	154	166	189	204	227	242
	Pressure drops	kPa	76	83	71	79	46	50	41	45	51	55	41	43	36	38
	Pipe connection size	DN	100	100	125	125	125	125	150	150	150	150	200	200	200	200
Transportation weight	kg	1630	1650	1870	1910	2500	2530	2550	2580	3130	3160	3220	3260	4380	4410	
Operation weight	kg	1730	1760	2020	2080	2680	2720	2750	2800	3410	3460	3540	3600	4890	4950	

Notes:

1. The above unit design and manufacturing standards refer to GB/T 18430.1 "Vapor Compression Cycle Chilled Water (Heat Pump) Units for Industrial and Commercial Use & Similar Use of Chilled Water (Heat Pump) Units."

working conditions: Chilled water outlet temperature: 7°C, Cooling water inlet temperature: 30°C

Chilled water flow coefficient: 0.172 m³/(h·kW), Cooling water flow coefficient: 0.215 m³/(h·kW)

Evaporator water-side fouling factor: 0.018 m²·°C/kW, Condenser water-side fouling factor: 0.044 m²·°C/kW;

2. Unit energy efficiency level is based on standard GB19577-2024 for determination;

3. Evaporator and condenser water-side design pressure is 1.0 MPa, with other pressure standards requiring customization;

4. VWCF006512NNA-VWCF100022NNA: Clamp form connection, compliant with standard GB5135.11-2006

VWCF110032NNA-VWCF200042NNA: Flanged connection, compliant with standard HG/T20592;

5. The above parameters are subject to optimization adjustments without prior notice.

■ Performance Parameters

Model	VWCF-NNA	035012	037012	040012	042012	045012	047012	050012	050022	055022	060022	065022	070022	075022	080022	
Cooling capacity	kW	1231	1301	1407	1477	1583	1653	1758	1758	1934	2110	2286	2462	2638	2813	
	Tons	350	370	400	420	450	470	500	500	550	600	650	700	750	800	
Input power	kW	183.5	195	207.8	219.5	233	245	264	259	287.4	311.3	340.8	362.1	390.8	415.4	
COP	kW/kW	6.71	6.67	6.77	6.73	6.79	6.75	6.66	6.79	6.73	6.78	6.71	6.80	6.75	6.77	
GB-IPLV	kW/kW	9.58	9.51	9.63	9.49	9.64	9.42	9.58	9.78	9.65	9.77	9.61	9.72	9.65	9.70	
Efficiency ratings	-	Grade 1														
Power supply	-	3φ-380V-50Hz														
Starting current	A	75	75	85	85	90	90	95	55	55	65	65	75	75	85	
Maximum current	A	390	420	450	470	490	500	520	580	620	720	750	760	780	900	
Compressor	Type	Dynamic Gas Bearing,variable frequency centrifugal compressor														
	Qty	-	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Evaporator	Type	Full liquid evaporator														
	Water flow rate	m³/h	212	224	242	254	272	284	302	302	333	363	393	423	454	484
	Pressure drops	kPa	47	49	40	41	42	43	43	46	49	41	43	45	47	49
	Pipe connection size	DN	200	200	250	250	250	250	250	250	250	300	300	300	300	300
Condenser	Type	Shell and tube condenser														
	Water flow rate	m³/h	265	280	302	318	340	355	378	378	416	454	491	529	567	605
	Pressure drops	kPa	41	43	32	33	35	36	36	63	67	56	59	62	65	68
	Pipe connection size	DN	200	200	250	250	250	250	250	250	250	300	300	300	300	300
Transportation weight	kg	4450	4480	5340	5370	5410	5440	5640	6660	6730	7180	7260	7330	7400	8750	
Operation weight	kg	5030	5080	6040	6100	6170	6230	6430	7480	7620	8160	8310	8430	8570	10060	

Notes:

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■ Performance Parameters

Model	VWCF-NNA	085022	090022	095022	100022	110032	120032	130032	140032	150032	160042	170042	180042	190042	200042	
Cooling capacity	kW	2989	3165	3341	3517	3868	4220	4572	4923	5275	5627	5978	6330	6682	7033	
	Tons	850	900	950	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	
Input power	kW	446	466	495	527	569.4	615.8	678	725	780	828	886	936	996	1050	
COP	kW/kW	6.70	6.79	6.75	6.67	6.79	6.85	6.74	6.79	6.76	6.80	6.75	6.76	6.71	6.70	
GB-IPLV	kW/kW	9.68	9.77	9.71	9.61	9.86	10.03	9.90	9.92	9.90	10.04	9.97	10.01	9.96	9.87	
Efficiency ratings	-	Grade 1														
Power supply	-	3φ-380V-50Hz														
Starting current	A	85	90	90	95	85	85	85	90	95	85	85	90	90	90	
Maximum current	A	940	980	1000	1040	1260	1350	1410	1500	1560	1800	1880	1960	2000	2080	
Compressor	Type	Dynamic Gas Bearing,variable frequency centrifugal compressor														
	Qty	-	2	2	2	2	3	3	3	3	3	4	4	4	4	4
Evaporator	Type	Full liquid evaporator														
	Water flow rate	m³/h	514	544	575	605	665	726	786	847	907	968	1028	1089	1149	1210
	Pressure drops	kPa	51	44	45	52	62	57	59	61	64	89	92	94	97	99
	Pipe connection size	DN	300	300	300	300	400	400	400	400	400	450	450	450	450	450
Condenser	Type	Shell and tube condenser														
	Water flow rate	m³/h	643	680	718	756	832	907	983	1059	1134	1210	1285	1361	1437	1512
	Pressure drops	kPa	70	60	61	64	85	76	80	83	87	103	107	110	114	117
	Pipe connection size	DN	300	300	300	300	400	400	400	400	400	450	450	450	450	450
Transportation weight	kg	8820	8890	8960	9240	10700	11950	12160	12360	12570	18280	18480	18700	18900	19110	
Operation weight	kg	10200	10340	10480	10800	12500	14030	14360	14690	15040	21110	21440	21800	22130	22470	

Notes:

1.The above unit design and manufacturing standards refer to GB/T 18430.1 "Vapor Compression Cycle Chilled Water (Heat Pump) Units for Industrial and commercial Use & Similar Use of Chilled Water (Heat Pump) Units.

working conditions: Chilled water outlet temperature: 7°C, Cooling water inlet temperature: 30°C

Chilled water flow coefficient: 0.172 m³/(h·kW), Cooling water flow coefficient: 0.215 m³/(h·kW)

Evaporator water-side fouling factor: 0.018 m²·°C/kW, Condenser water-side fouling factor: 0.044 m²·°C/kW;

2. Unit energy efficiency level is based on standard GB19577-2024 for determination;

3. Evaporator and condenser water-side design pressure is 1.0 MPa, with other pressure standards requiring customization;

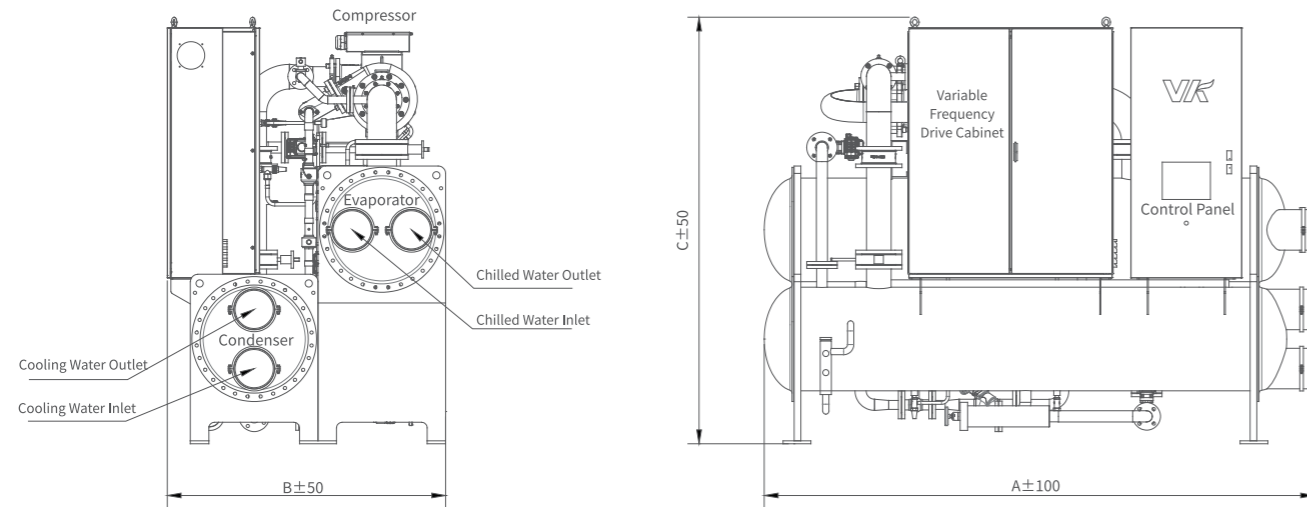
4. VWCF006512NNA~VWCF100022NNA: Clamp form connection, compliant with standard GB5135.11-2006

VWCF110032NNA~VWCF200042NNA: Flanged connection, compliant with standard HG/T20592;

5. The above parameters are subject to optimization adjustments without prior notice.

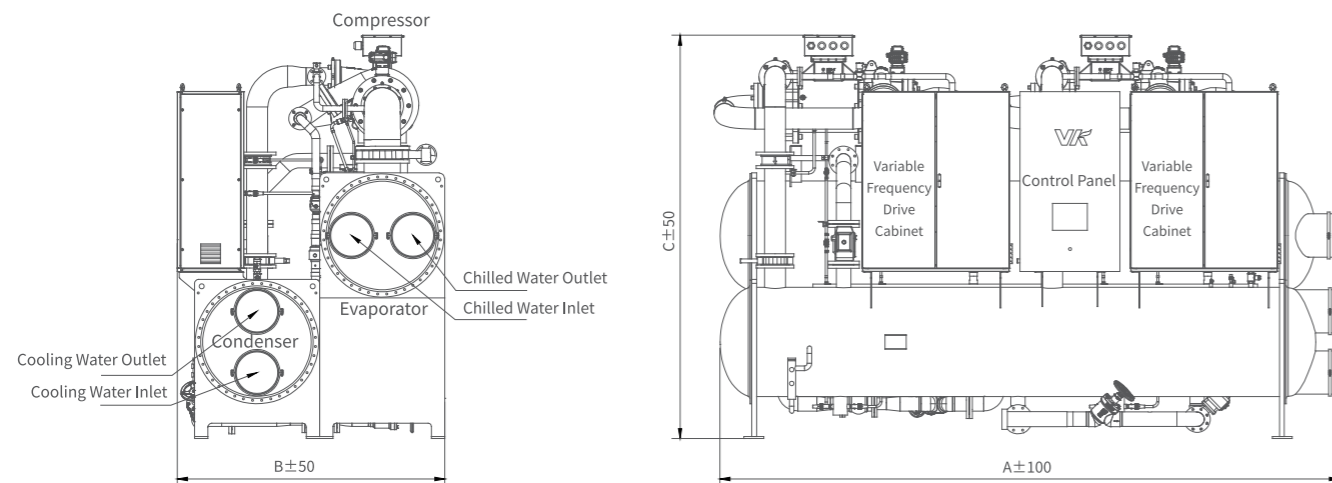
Unit Shape

Single Compressor Unit Dimensions



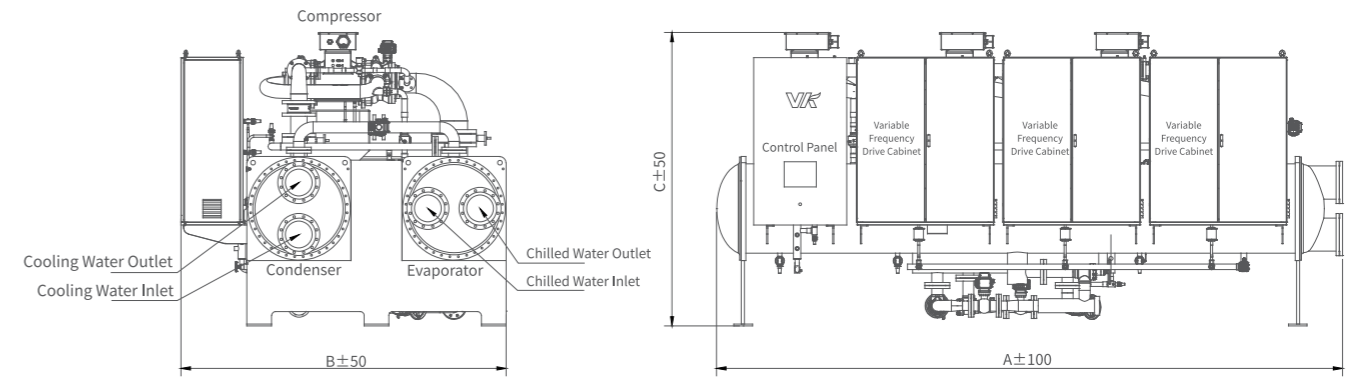
Model	006512	007512	009012	011012	012512	014012	015012	017012	020012	022012	025012	027012	030012	032012	035012	037012	040012	042012	045012	047012	050012	
A	2100	2100	2150	2150	3150	3150	3150	3150	3150	3150	3150	3150	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700
B	1300	1300	1350	1350	1400	1400	1400	1400	1500	1500	1500	1500	1600	1600	1600	1600	1800	1800	1800	1800	1800	1800
C	2050	2050	2150	2150	2150	2150	2150	2150	2250	2250	2250	2250	2450	2450	2450	2450	2800	2800	2800	2800	2800	2800

Twin Compressor Unit Dimensions



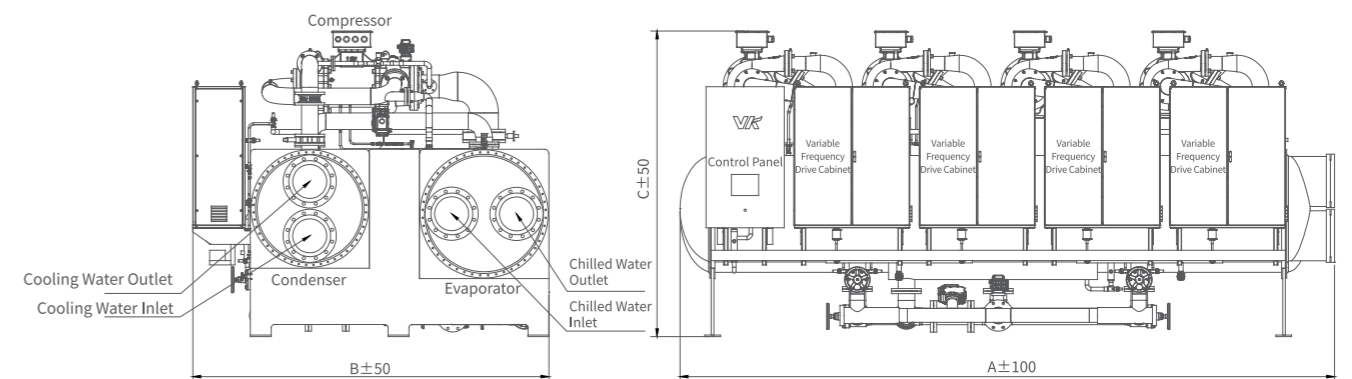
Model	050022	055022	060022	065022	070022	075022	080022	085022	090022	095022	100022
A	4700	4700	4750	4750	4750	4750	5000	5000	5000	5000	5000
B	1850	1850	1900	1900	1900	1900	2000	2000	2000	2000	2000
C	2600	2600	2750	2750	2800	2800	3050	3050	3050	3050	3050

Triple Compressor Unit Dimensions



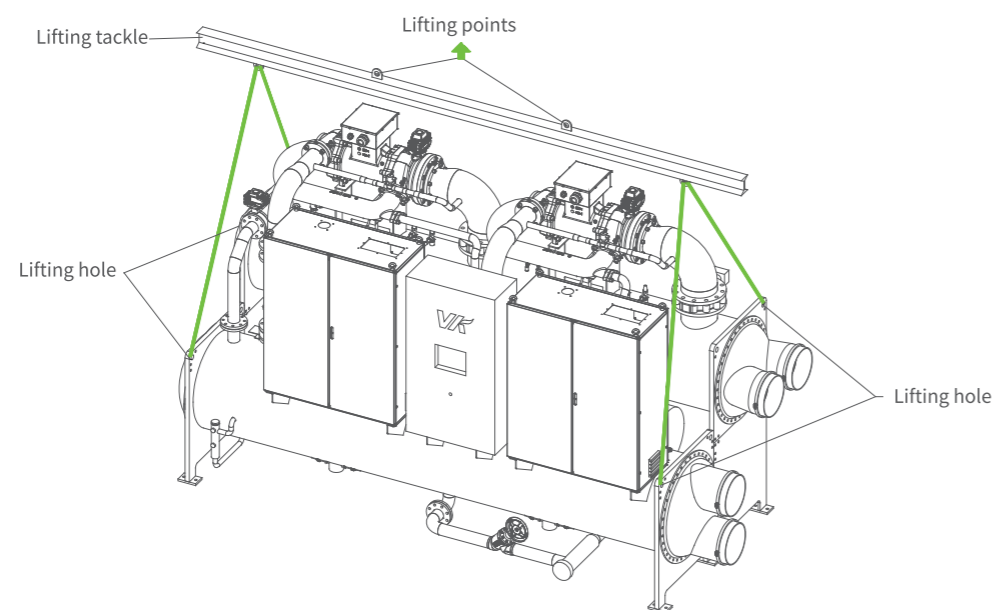
Model	110032	120032	130032	140032	150032
A	5500	5500	5500	5500	5500
B	3100	3100	3100	3100	3100
C	2900	2900	2900	2900	2900

Quad Compressor Unit Dimensions



Model	160042	170042	180042	190042	200042
A	6500	6500	6500	6500	6500
B	3200	3200	3200	3200	3200
C	3000	3000	3000	3000	3000

Unit Lifting and Transportation



1. A unit transportation plan should be prepared in advance, including the transportation date, dimensions, weight, transportation route, reserved wall or floor openings, and lifting equipment;
2. During unit transportation, all operations must comply with site safety regulations. Lifting equipment should be operated under the command of a designated person, with safety precautions in place to ensure the safety of personnel and machinery;
3. When hoisting is required, special lifting tools should be fabricated for the unit. The selected lifting equipment, hooks, and slings must be sturdy enough to bear the weight of the unit;
4. For moving and unloading the unit, rollers or lifting hooks must be used. Direct impact or attaching ropes to fragile components—such as copper pipes, valves, or control panels—is prohibited. Protective padding should be placed where ropes come into contact with the unit to prevent damage;
5. The unit must be handled with care to avoid excessive shaking or collisions, which could cause damage to the unit, personnel, or the building.

Unit Operation Manual

if the chiller's circulating water or cooling water quality seriously exceeds standards, it will affect the unit's performance and lifespan. Therefore, before installing and using the unit, regular sampling and analysis of the circulating and supplemental water is required. If the quality does not meet the requirements, pre-treatment of the water quality should be carried out. The design can refer to GB/T50050 "Industrial Circulating Cooling Water Treatment Design Specification" and GB/T 29044 "Heating and Air Conditioner System Water Quality". The following table shows the chilled water and cooling water quality requirements for the unit.

Parameter	Unit	Cooling Water		Chilled Water		Tendency	
		Circulatory System		Circulatory Water	Makeup Water	Corrosion	Scaling
		Circulatory Water	Makeup Water				
pH(25°C)	-	7.5~9.5	6.5~8.5	7.5~10	7.5~9.5	○	○
Conductivity(25°C)	μS/cm	≤ 2300	≤ 600	≤ 2000	≤ 600	○	○
Chloride Ion (Cl-)	mg/L	<200	≤ 100	≤ 250	≤ 250	○	
Calcium Hardness (CaCO ₃)	mg/L	-	≤ 120	≤ 300	≤ 300		○
Total Hardness (CaCO ₃)	mg/L	≤ 600	≤ 200	≤ 500	≤ 200		○
Iron Content (Fe)	mg/L	≤ 1.0	<0.3	-	-	○	○
Ammonia Ions(NH ₄ ⁺)	mg/L	≤ 10	≤ 5	-	-	○	
Organic Phosphorus (as P)	mg/L	≤ 0.5	-	≤ 0.5	-	○	
Total Heterotrophic Bacteria	↑ /mL	≤ 105	-	-	-	○	○

(1) "○" denotes factors related to corrosion or scaling tendencies;

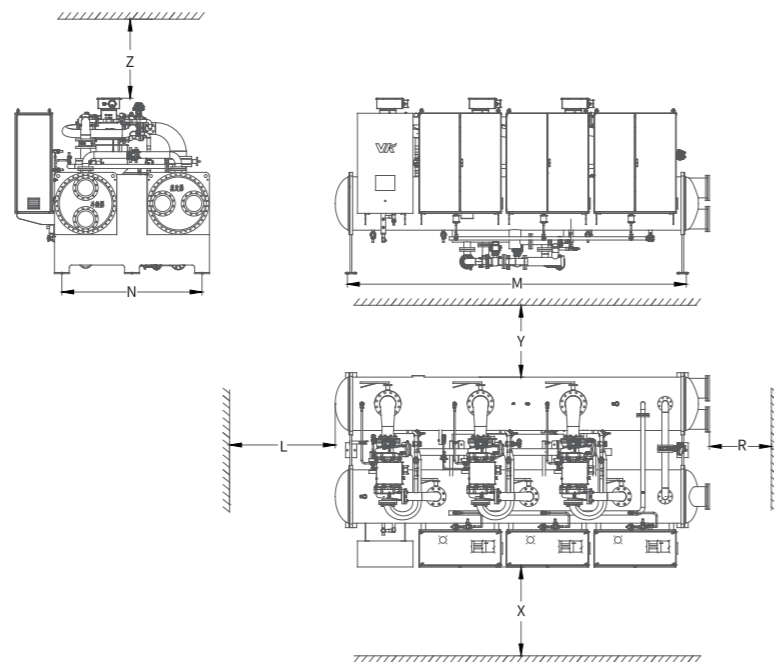
(2) When the water quality does not meet the values indicated in the above table, additional water treatment equipment must be installed in the pipeline to ensure the normal operation of the unit.

Standard Unit Operating Conditions

Parameter	Content	
Power Supply	380V 3N ~ 50Hz	
Voltage Tolerance	-15%~10% (323V~528V)	
Evaporator	Outlet Water Temperature	5°C ~15°C
	Flow Rate Range	50%~120% of rated flow
Condenser	Inlet Water Temperature	10°C *~36°C
	Flow Rate Range	50%~120% of rated flow
Design Water Pressure	≤ 1.0MPa (Custom options: 1.6MPa, 2.0MPa available)	
Operating Ambient Temp	0°C ~40°C	
Storage Temperature Range	-20°C ~50°C	

Important: After unit startup, a positive temperature differential must be established between cooling water and chilled water inlet temperatures within 5 minutes. If this cannot be achieved, install a cooling water bypass valve.

Unit Space Layout and Selection of Installation Site



Model	006512	007512	009012	011012	012512	014012	015012	017012	020012	022012	025012	027012	030012	032012	035012	037012	040012	042012	045012	047012	050012	050012
X	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Y	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
Z	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
L	2000	2000	2000	2000	3000	3000	3000	3000	3000	3000	3000	3000	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
R	500	500	500	500	500	500	500	500	500	500	500	500	600	600	600	600	600	600	600	600	600	600
M	1570	1570	1570	1570	2570	2570	2570	2570	2570	2570	2570	2570	3070	3070	3070	3070	3070	3070	3070	3070	3070	3070
N	1000	1000	1140	1140	1140	1140	1140	1140	1280	1280	1280	1280	1470	1470	1470	1470	1580	1580	1580	1580	1580	1580

Model	050022	055022	060022	065022	070022	075022	080022	085022	090022	095022	100022
X	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Y	600	600	600	600	600	600	600	600	600	600	600
Z	500	500	500	500	500	500	500	500	500	500	500
L	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
R	600	600	600	600	600	600	600	600	600	600	600
M	4070	4070	4070	4070	4070	4070	4070	4070	4070	4070	4070
N	1580	1580	1660	1660	1660	1660	1780	1780	1780	1780	1780

Model	110032	120032	130032	140032	150032
X	1200	1200	1200	1200	1200
Y	600	600	600	600	600
Z	500	500	500	500	500
L	5000	5000	5000	5000	5000
R	700	700	700	700	700
M	4570	4570	4570	4570	4570
N	2680	2680	2680	2680	2680

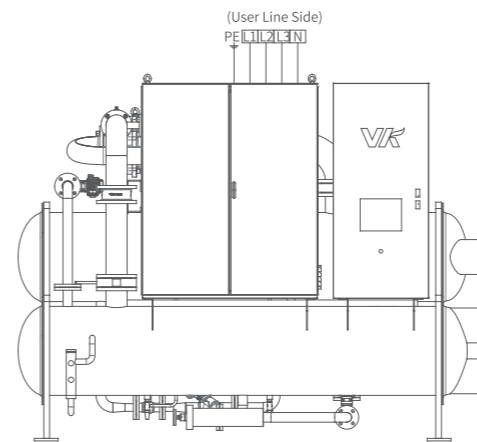
Model	160042	170042	180042	190042	200042
X	1200	1200	1200	1200	1200
Y	600	600	600	600	600
Z	500	500	500	500	500
L	6000	6000	6000	6000	6000
R	700	700	700	700	700
M	5570	5570	5570	5570	5570
N	2660	2660	2660	2660	2660

Notes:

1. Please select a site that can fully support the operating weight of the unit. The ground should have high strength, be resistant to resonance and noise generation, and a drainage ditch should be reserved around it;
2. The unit is suitable for indoor use. When it needs to be installed outdoors, avoid placing it in areas exposed to wind, rain, direct sunlight, or other places where there is direct radiation from heat sources;
3. The ambient temperature around the unit should be within the range of 10 to 40°C (machine room temperature), the relative humidity should be within 80%, and there should be good ventilation and less dust;
4. Reserve the service space with the distances specified in the table around the unit to facilitate maintenance and inspection;
5. The diameter of the installation hole of the unit is $\phi 20$. The spacing of the anchor bolts and the installation requirements are as shown in the diagram;
6. The above parameters may be adjusted due to product improvement and optimization without prior notice. Please refer to the actual product.

Electrical Wiring Diagram

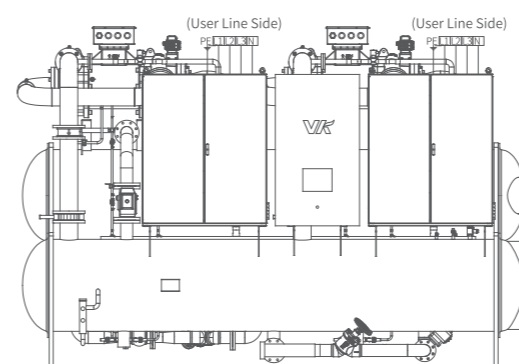
Single-Unit Incoming Line Wiring Diagram



VWCF006512NNA~VWCF050012NNA Wiring Parameters

Model	Cable Specification (Phase + Ground + Neutral)
VWCF006512NNA	WDZC-BPYJYRP-3*35+1*16+1*16
VWCF007512NNA	WDZC-BPYJYRP-3*35+1*16+1*16
VWCF009012NNA	WDZC-BPYJYRP-3*50+1*25+1*16
VWCF011012NNA	WDZC-BPYJYRP-3*50+1*25+1*16
VWCF012512NNA	WDZC-BPYJYRP-3*95+1*50+1*16
VWCF014012NNA	WDZC-BPYJYRP-3*95+1*50+1*16
VWCF015012NNA	WDZC-BPYJYRP-3*95+1*50+1*16
VWCF017012NNA	WDZC-BPYJYRP-3*95+1*50+1*16
VWCF020012NNA	WDZC-BPYJYRP-3*150+1*70+1*16
VWCF022012NNA	WDZC-BPYJYRP-3*150+1*70+1*16
VWCF025012NNA	WDZC-BPYJYRP-3*150+1*70+1*16
VWCF027012NNA	WDZC-BPYJYRP-3*150+1*70+1*16
VWCF030012NNA	WDZC-BPYJYRP-3*185+1*95+1*16
VWCF032012NNA	WDZC-BPYJYRP-3*185+1*95+1*16
VWCF035012NNA	WDZC-BPYJYRP-3*185+1*95+1*16
VWCF037012NNA	WDZC-BPYJYRP-3*185+1*95+1*16
VWCF040012NNA	WDZC-BPYJYRP-3*240+1*120+1*16
VWCF042012NNA	WDZC-BPYJYRP-3*240+1*120+1*16
VWCF045012NNA	WDZC-BPYJYRP-3*240+1*120+1*16
VWCF047012NNA	WDZC-BPYJYRP-3*240+1*120+1*16
VWCF050012NNA	WDZC-BPYJYRP-3*300+1*150+1*16

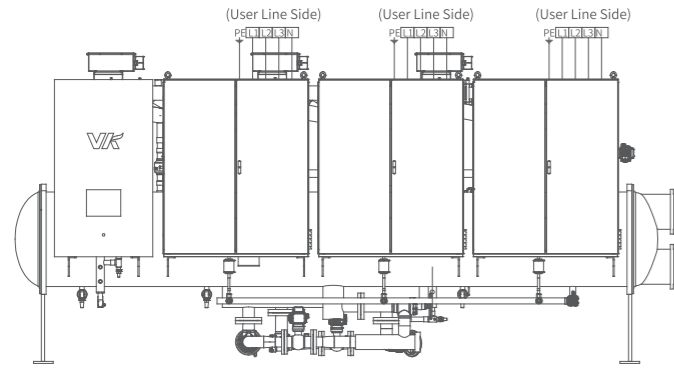
Dual-Unit Incoming Line Wiring Diagram



VWCF050022NNA~VWCF100022NNA Wiring Parameters

Model	Cable Specification (Phase + Ground + Neutral)
VWCF050022NNA	(WDZC-BPYJYRP-3*150+1*70+1*16) *2
VWCF055022NNA	(WDZC-BPYJYRP-3*150+1*70+1*16) *2
VWCF060022NNA	(WDZC-BPYJYRP-3*185+1*95+1*16) *2
VWCF065022NNA	(WDZC-BPYJYRP-3*185+1*95+1*16) *2
VWCF070022NNA	(WDZC-BPYJYRP-3*185+1*95+1*16) *2
VWCF075022NNA	(WDZC-BPYJYRP-3*185+1*95+1*16) *2
VWCF080022NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *2
VWCF085022NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *2
VWCF090022NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *2
VWCF095022NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *2
VWCF100022NNA	(WDZC-BPYJYRP-3*300+1*150+1*16) *2

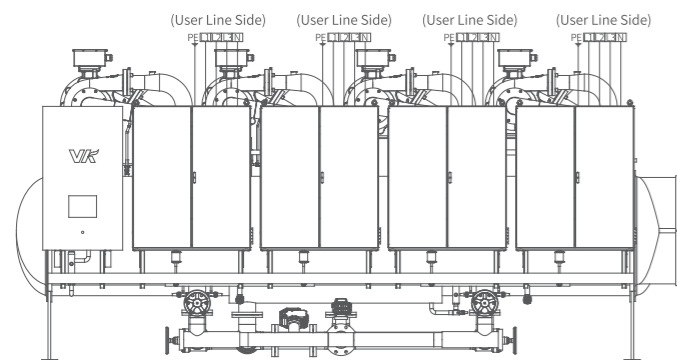
Three-Unit Incoming Line Wiring Diagram



VWCF110032NNA~VWCF150032NNA Wiring Parameters

Model	Cable Specification (Phase + Ground + Neutral)
VWCF110032NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *3
VWCF120032NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *3
VWCF130032NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *3
VWCF140032NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *3
VWCF150032NNA	(WDZC-BPYJYRP-3*300+1*150+1*16) *3

Four-Unit Incoming Line Wiring Diagram



VWCF160042NNA~VWCF200042NNA Wiring Parameters

Model	Cable Specification (Phase + Ground + Neutral)
VWCF160042NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *4
VWCF170042NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *4
VWCF180042NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *4
VWCF190042NNA	(WDZC-BPYJYRP-3*240+1*120+1*16) *4
VWCF200042NNA	(WDZC-BPYJYRP-3*300+1*150+1*16) *4

Notes:

- Low-voltage wiring recommendations are based on GB/T 16895.6 "Low-voltage electrical installations - Part 5-52: Selection and erection of electrical equipment - Wiring systems". The installation conditions for YJV-0.6/1kV cables are: Ambient temperature: 35°C, Perforated cable tray, Single-layer contact installation, Cable type: XLPE-insulated copper conductor cable. The number of cables in the same tray layer shall be calculated according to the total quantity of three-phase cables listed in the table.
- Each air suspension compressor unit shall be independently wired. For example, in the recommended power supply wiring table:
 - 3*185+1*95+1*16 indicates that the unit is a single head, with one 185mm² cable per phase, one 95mm² cable for the ground wire, and one 16mm² cable for the neutral wire;
 - 2* (3*185+1*95+1*16) indicates that the unit has dual heads, with one 185mm² cable for each phase of each head, one 95mm² cable for the ground wire, and one 16mm² cable for the neutral wire;
 - 3* (3*185+1*95+1*16) indicates that the unit has three heads, with one 185mm² cable for each phase of each head, one 95mm² cable for the ground wire, and one 16mm² cable for the neutral wire;
 - 4* (3*185+1*95+1*16) indicates that the unit has four heads, with one 185mm² cable for each phase of each head, one 95mm² cable for the ground wire, and one 16mm² cable for the neutral wire;
- If the cable insulation material, installation method, or quantity of cables in the same tray layer differs from the recommendations (e.g., when using multi-layer cable trays, conduits, or high-temperature environments), or when line voltage drop exceeds 2% due to distance, please reselect the cable specifications based on the unit's maximum operating current. When using alternative cable types, please ensure: The cable lug dimensions are compatible. The electrical clearance complies with relevant standards.
- In areas where the temperature exceeds 45 °C, please calibrate the circuit breaker model based on the high-temperature derating curve of the selected brand to prevent misoperation or insufficient capacity.
- When multiple cables are connected in parallel for use, each cable should be of equal length, the laying method should be consistent, and conductors of the same material and cross-section should be used.
- The recommended cable size above is the minimum allowable wire diameter for the unit, and the cable should be provided by the customer.
- After completing cable laying and crimping, securely fasten all cover plates and implement reliable waterproofing measures.
- The wiring diagrams provided are for reference only. Actual connection points may vary depending on the unit model. Please refer to the physical product for accurate wiring locations. For specific connection details, consult our professional after-sales technicians.