

ORION

冷熱と真空でイノベーション
Innovating with Thermal Control and Vacuum

Heavy Duty Chiller with Built-In Water Tank

Cooling Capacity :
57/60kW, 70.0/73.0kW, 96.0kW



Cooling Capacity :
12.2 ~ 96.0kW



Cooling Capacity :
29.2/31.4kW



Energy savings and high precision control

Apr. 2023 | D-RG10E

Heavy Duty Chiller with Built-In Water Tank Catalog

Striving to Make Products that Move You

ORION Reliability & One Stop Service

With ORION's One Stop Service, we aim to be your best partner with our motto of providing consistent service throughout, from initially hearing about particular details, to providing periodic maintenance.

*Specific service offerings may differ depending on the country, region, or model.



We have the equipment that meets your needs! See page 11 for details.

We offer free loans of demo machinery. Feel free to contact us with any inquiries.

Energy Saving Proposal Example: **Change-up from RKL-3750V-C1 to RKE3750B-V**

Energy Savings
66%

Reduction in CO₂ Output
4,818 kg-CO₂/year

Effective Savings
176,250 yen/year

Energy Saving Points

Control that Adapts to Fluctuations in Cooling Load

•Comparison Conditions

Compared Models:

RKL-3750V-C1 (HB Control *1)

RKE3750B-V (Inverter Chiller)

Power source: Three-phase 200 V 60 Hz

Water Temp Setting: 20 °C

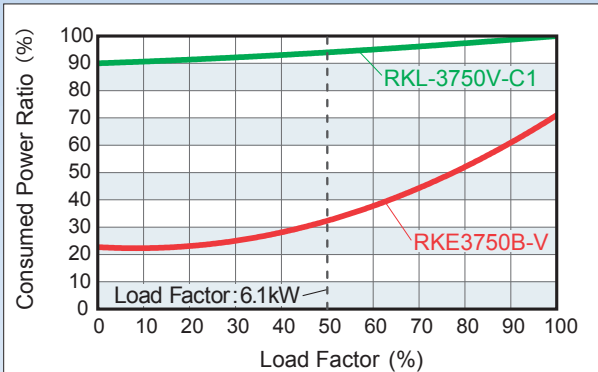
Ambient Temperature: 32 °C

Average Load: 6.1 kw (50% of Rated Load)

Operating Time: 10 hours/day (250 days/year)

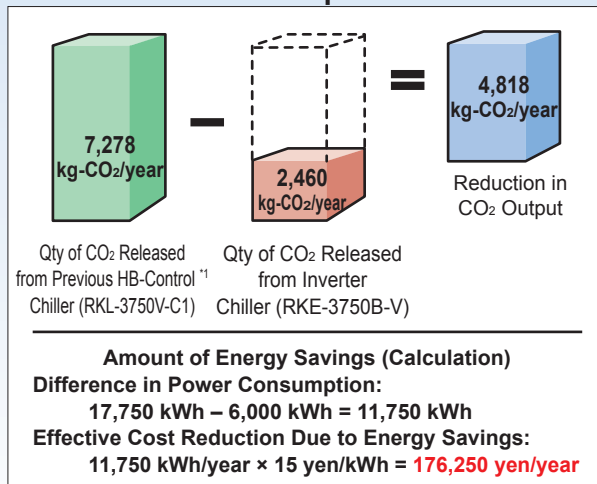
Electricity Cost: 15 yen/kWh

•Power Consumption Rate According to Chiller Load Factor

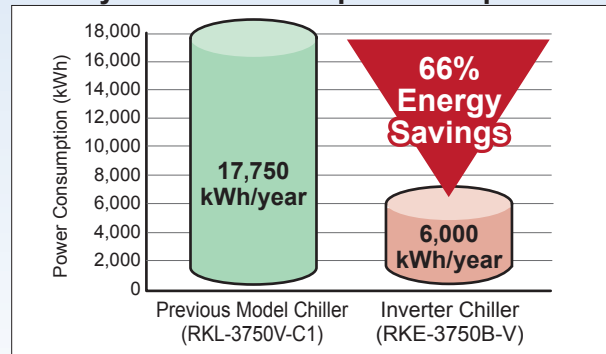


* The rate of power consumption is a value based on 100% being the RKL-3750V-C1 operating at its rated power consumption (7.6 kW), at 60 Hz, under the rated operating conditions.

•Reduction in CO₂ Output



•Yearly Power Consumption Comparison



*1 HB Control = Hot Gas Bypass Control. Liquid temperature is controlled by bypassing high-temperature refrigerant gas to the evaporator.

*2 The CO₂ emission coefficient used is 0.410, which is the average of 8 power companies.

Global Service Network

Europe Service Network

North America Service Network

East Asia Service Network

South America Service Network

ASEAN & South Asia Service Network

Our service network is developing in Asia, Europe, North America and South America. We make effort to expand the network into the future.

East Asia Service Network

ORION Machinery (Shanghai) Co., Ltd. (China)
 Dongguan Orion Machinery Co., Ltd. (China)
 ORION (HONG KONG) Co., Ltd. (Hong Kong)
 ORION KOREA Co., Ltd. (South Korea)
 Taiwan Orion Industry Co., Ltd. (Taiwan)

ASEAN Service Training Center

ORION Machinery Asia Co., Ltd. (Thailand)

Europe Service Network

Europe Customer Support Center

Limko N.V. (Belgium)
 Italy U.K. Germany France
 Sweden Norway Hungary Czech

ASEAN & South Asia Service Network

Siam Seimitsu (Thailand)
 iwatech Malaysia (Malaysia)
 iwatech Singapore (Singapore)
 VE & JA (Vietnam)
 Tan Dai Phu Sy (Vietnam)
 MESCO (Philippines)
 PT. S-Tech (Indonesia)
 GEM Orion Machinery (P) Ltd. (India)

North America Service Network

North America Customer Support Center

ORION Machinery North America (US)
 Over 150 locations throughout US, Canada and Mexico.

South America Service Network

A&M Engenharia (Brazil)

Products

Air Dryer



Chiller



Precision Air Processor



C O N T E N T S

- **ORION Reliability & One Stop Service** P1
- **Global Service Network** P2
- **RKE-B Series** P3 – 10
 - Functions P11
 - Accessory (Sold Separately) P12
 - Chart of Included Functions P13 – 20
- **RKE-B Series (CE Marking)** P21 – 24
- **RKE-B Series (Brine Chiller)** P25 – 26
- **RKE-A Series (Heavy Duty Models)** P27 – 28
- **RKE-A Series (Heavy Duty Water-Cooled Models)** P29 – 30
- **RKED Series (Digital Control Models)** P31
- **Accessory (Sold Separately)** P32 – 34
- **ORION IoT System** P35
- **Important Unloading and Placement Information**
 - RKE-B Series P36 – 40
 - RKE-A / RKED Series P41 – 45
- **Working Principles and Model Configurations** P46

RKE-B Series

Energy Saving Specs. Are Top Class in the Industry!

Air Cooled	Water Cooled	IPX4 Equiv. Rating Splash-proof
Cooling Capacity	12.2 to 96.0 kW	
Operable Ambient Temp.	-20 to 45 °C [Air Cooled] 2 to 45 °C [Water Cooled]	
Operable Liquid Temp. Range	3 to 35 °C	
Temp. Control Precision	±0.1 °C	



RKE3750B-V



RKE22000B-V



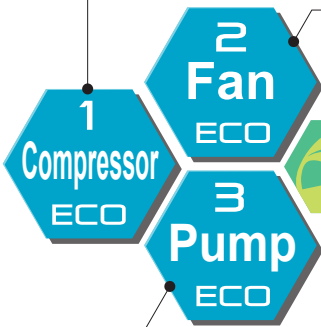
TESC (Triple Eco Speed Control) Built-In

Compressor Speed Control

DC Inverter Drive with Automatic Optimized Operation Judgment

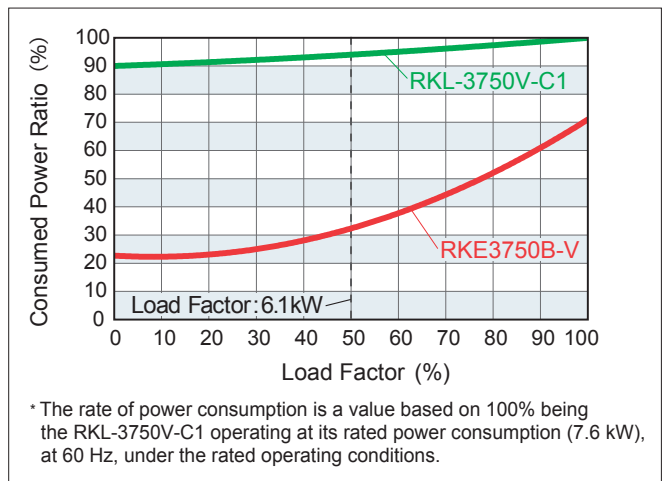
Fan Speed Control

Automatic Optimized Operation Judgment from the Inverter



Pump Speed Control

Operates at the minimum speed needed to achieve the required flow rate. Reduces water supply waste.



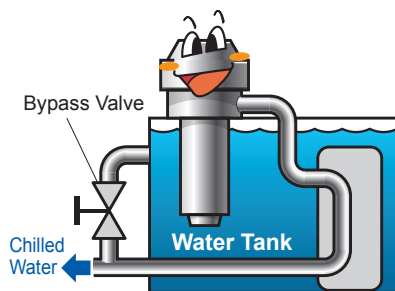
* The rate of power consumption is a value based on 100% being the RKL-3750V-C1 operating at its rated power consumption (7.6 kW), at 60 Hz, under the rated operating conditions.

Our units can maintain control at low loads that were previously difficult to work with and as the graph shows, even compared with previous inverter driven chillers, we've achieved energy savings!

Pump Is Also Inverter Driven

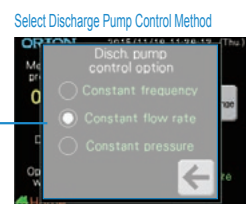
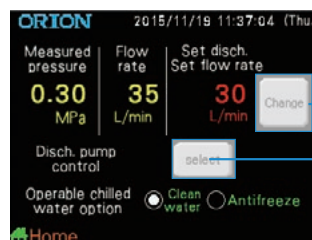
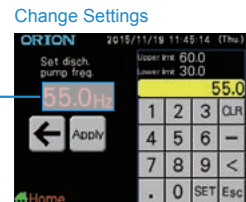
Inverter Drive for the Compressor, Fan, and Now Also the Pump!

Being able to achieve just the required flow rate eliminates waste, even without bypass-valve control.



Choose the Desired Pump Control Method

In addition to the operating frequency, the flow rate (*) or water pressure can be set. Operation is possible at the optimum flow rate or pressure in accordance with the load.

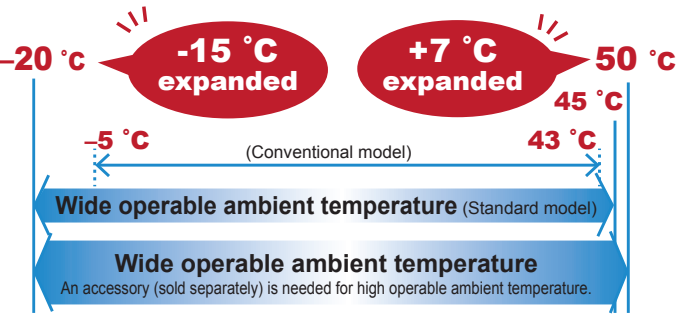


*The noted flow rate is a calculated value. The actual flow rate may differ. If an exact measured flow rate is required, then an external (user supplied) flow gauge should be installed.

Wide Operable Ambient Temperature Range

Can withstand summer temperatures up to 50 °C with our special-spec. Our chillers can also exhibit maximum performance in factory environments where hot air flow

tends to accumulate. In winter temperatures as low as -20 °C, you can count on our air cooled models continuing to perform, even in outside installations.



Summer **O.K. up to 50 °C**
With an accessory (sold separately)
Except for RKE11000B1-V, RKE22000B-V, RKE30000B-V

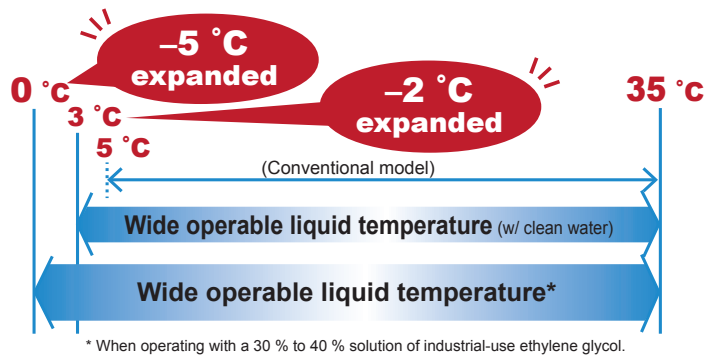
Winter **O.K. down to -20 °C** (Air cooled model)
* When setting antifreeze operating mode.

Wide Operable Liquid Temperature Range

Operable Liquid Temperature Range : 3 °C to 35 °C
 Low liquid Temperature Expanded to 3 °C

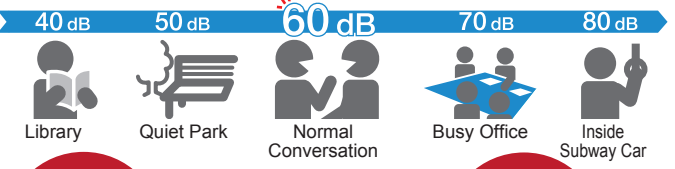
Operable Liquid Temperature Range
O.K. down to 0 °C
(When using antifreeze.)

Tougher and Easier to Use !



Low Noise and Noise Reducing Design

Ideal inverter fan speed control through optimized refrigeration cycle control. Achieves much lower operating noise levels.
 * Operating noise measured from a distance of 1 m from the front of the unit at a height of 1 m.



<p>Operating Noise 59 dB or less</p>	RKE3750B-VW	58 dB	<p>Operating Noise 64 dB or less</p>	RKE3750B-V	60 dB	<p>Operating Noise 69 dB or less</p>	RKE11000B1-V	69 dB
	RKE5500B-VW	59 dB		RKE5500B-V	63 dB		RKE15000B-V	68 dB
	RKE7500B-VW	59 dB		RKE7500B-V	63 dB			
	RKE15000B-VW	59 dB		RKE22000B-V	63 dB			
			RKE30000B-V	64 dB				
			RKE11000B1-VW	61 dB				

Specifications

Model			RKE3750B-V G1 / G2	RKE5500B-V	RKE7500B-V
Performance Specifications	Cooling Capacity *1	kW	12.2	20.3	25.0
	Heating Capacity *8	kW	2.8	3.7	
	Operable Ambient Temperature Range	°C	-20 to 45 (-20~50 with an accessory, sold separately)		
	Operable Liquid Temperature Range	°C	3 to 35 (w/ brine: 0 to 35) *7		
	Control Precision *4		±0.1 °C (Energy saving mode: ±2.0 °C)		
Operating Flow Rate	L / min	15 to 60	60 to 170		
Power Specifications	Power Source *2	V (Hz)	Three-phase 200 to 220 ±10% (50/60)		
	Power Consumption *1	kW	5.4	9.8	10.2
	Electric Current *1	A	16.5	30.1	33.5
	Power Capacity *3	kVA	7.0	11.0	11.8
	Breaker Capacity *6	A	30	50	
Operation Control Method			Compressor speed control		
Equipment Details	Compressor	Construction	Fully sealed rotary type (inverter driven)		
		Output	1.7	3.0	4.6
	Condenser	Fin and tube forced air cooling			
	Heat Exchanger	Construction	Plate type heat exchanger		
		Material	SUS316 (Brazeing: Cu)		
	Discharge Pump	Construction	Multistage centrifugal immersion type		
		Output	kW	1.1 (Inverter driven)	1.5 (Inverter driven)
	Fan Motor	Output	kW	0.4 (Inverter driven)	0.75 (Inverter driven)
	Water Tank Capacity	L	Approx. 60	Approx. 90	
	Refrigerant	R-410A			
Charged Amount	kg	2.6	3.1	3.7	
External Dimensions (H×D×W)	mm	G1 : 1410 (G2 : 1536) × 752 × 720		1700 × 854 × 870	
Unit Mass (dry weight)	kg	G1: 200 / G2: 205		280	290
Operating Noise Level (50/60 Hz) *5	dB	60		63	

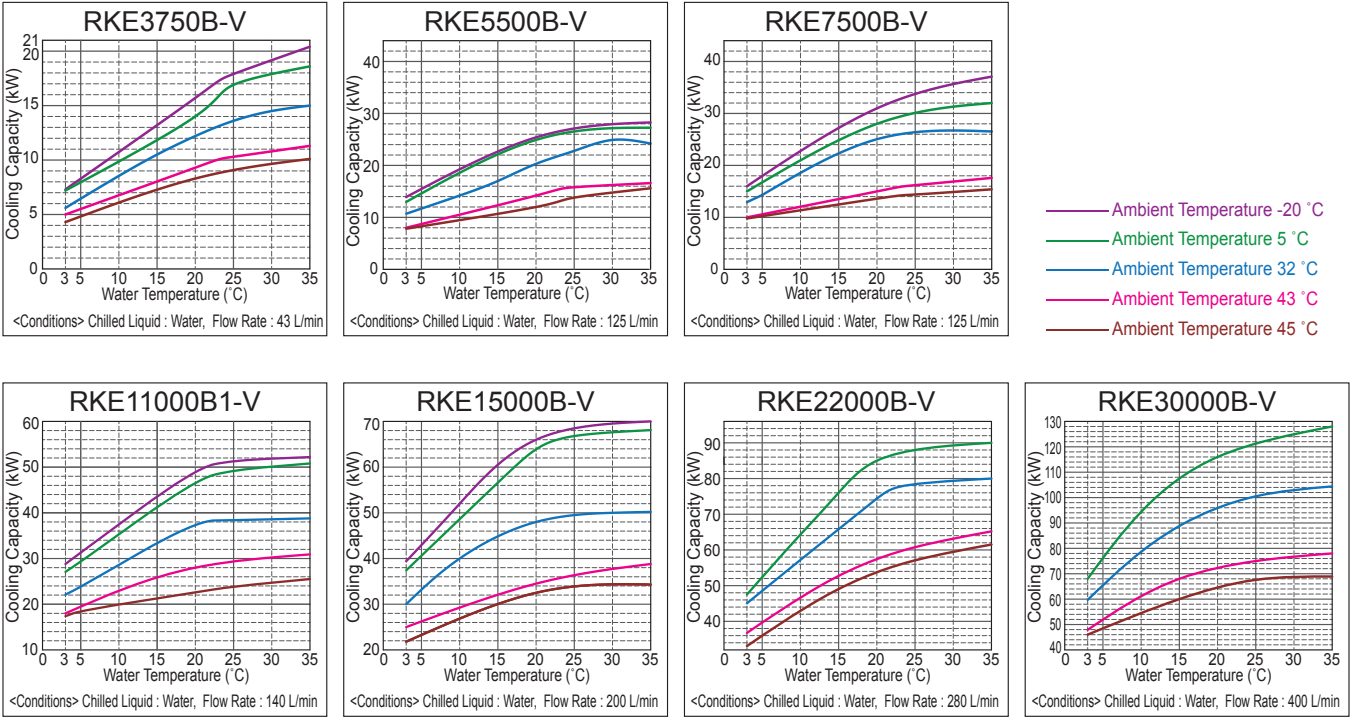
Model			RKE11000B1-V	RKE15000B-V	RKE22000B-V	RKE30000B-V	
Performance Specifications	Cooling Capacity *1	kW	37.2	48.0	74.4	96.0	
	Heating Capacity *8	kW	8.0	10.0	16.0	20.0	
	Operable Ambient Temperature Range	°C	-20 to 45 (-20~50 with an accessory, sold separately)		-20 to 45		
	Operable Liquid Temperature Range	°C	3 to 35 (w/ brine: 0 to 35) *7				
	Control Precision *4		±0.1 °C (Energy saving mode: ±2.0 °C)				
Operating Flow Rate	L / min	100 to 230		200 to 460			
Power Specifications	Power Source *2	V (Hz)	Three-phase 200 to 220 ±10% (50/60)				
	Power Consumption *1	kW	13.5	18.1	23.9	37.2	
	Electric Current *1	A	41.4	56.3	73.6	114.9	
	Power Capacity *3	kVA	17.7	22.0	34.1	43.3	
	Breaker Capacity *6	A	75	100	125	175	
Operation Control Method			Compressor speed control				
Equipment Details	Compressor	Construction	Fully sealed scroll type (inverter driven)		Fully sealed scroll type		
		Output	7.46	11.19	7.46 × 2 (Inverter driven)	11.19 × 2 (Inverter driven)	
	Condenser	Fin and tube forced air cooling					
	Heat Exchanger	Construction	Plate type heat exchanger				
		Material	SUS316 (Brazeing: Cu)				
	Discharge Pump	Construction	Multistage centrifugal immersion type				
		Output	kW	4.0 (Inverter driven)		4.0 × 2 (Inverter driven)	
	Fan Motor	Output	kW	0.4 × 2 (Inverter driven)		0.86 × 2 (Inverter driven)	
	Water Tank Capacity	L	Approx. 100		Approx. 250		
	Refrigerant	R-410A					
Charged Amount	kg	5.2	7.0	6.7 × 2			
External Dimensions (H×D×W)	mm	1700 × 854 × 1380	1800 × 854 × 1610	2190 × 1340 × 2150			
Unit Mass (dry weight)	kg	415	460	1050	1065		
Operating Noise Level (50/60 Hz) *5	dB	69	68	63	64		

*1. Operating conditions: Chilled water temp : 20 °C, Ambient temp : 32 °C. Cooling capacity is at least 95% of listed figures. *2. Source voltage phase unbalance should be less than ±3%. *3. The figure noted is when operating at the highest capacity in the normal operating range. *4. Continuous current load fluctuation within ±10%, and with stable ambient temp and power supply, etc. Does not include starting times or when the cooling load is too small, in which case the compressor may cycle on and off. *5. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *6. Unit comes with a built-in multi-purpose overload and short circuit protection breaker. *7. For liquid temperature settings of 0 to 3 °C, use a 30 to 40% solution of industrial-use ethylene glycol. *8. At time of startup only. Will differ depending on ambient temperature.

Note 1: The recommended liquid (chilled water) that can be used is either clean water or a 30 to 40% ethylene glycol solution. Note that there will be a 10% reduction in cooling capacity if using a 30 to 40% ethylene glycol solution. Alternatively, if deionized water is to be used, it should have an electrical conductivity of at least 1 µS/cm.

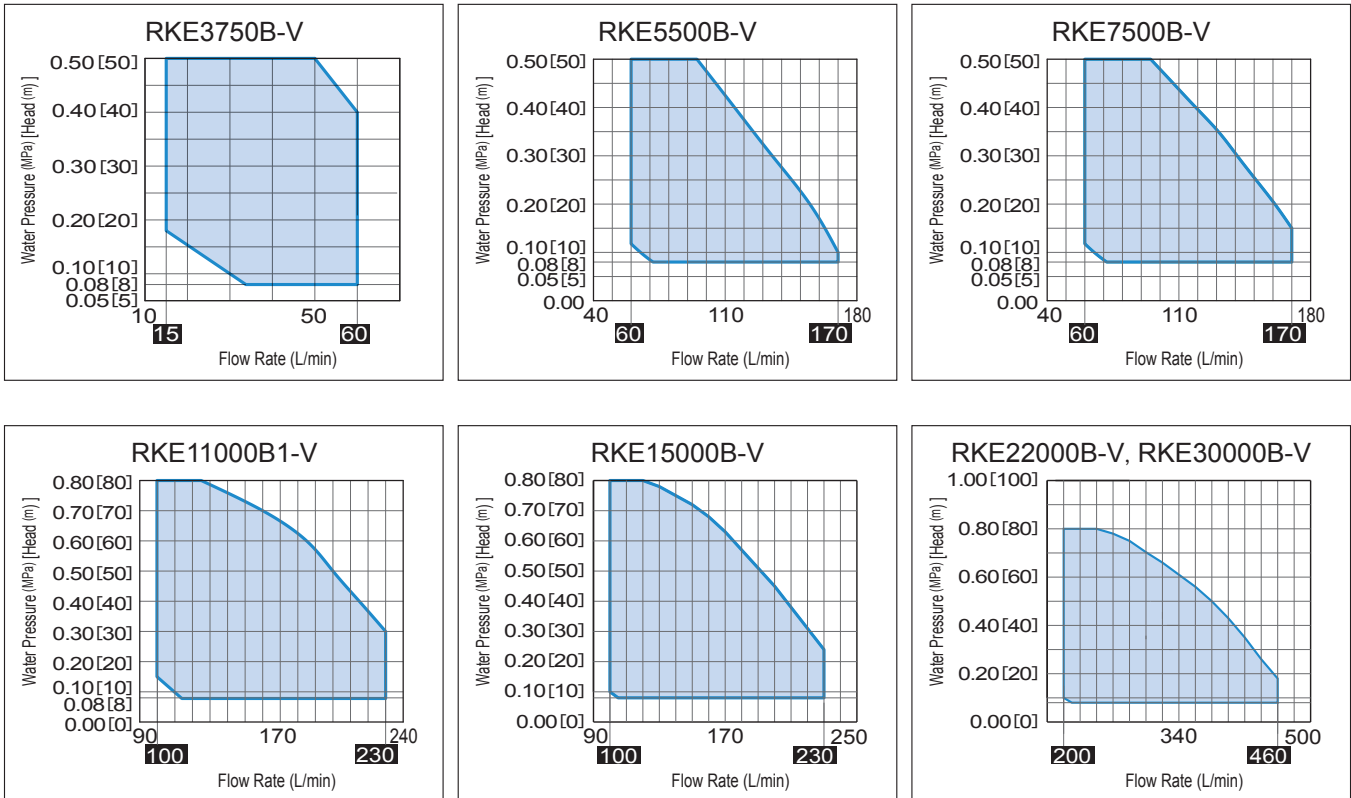
Note 2: Heat output from the unit (in kW) is approx. 1.3 times that of the cooling capacity.

Cooling Capacity Diagram



Chilled Water Flow Chart

- * The illustration shows the actual measured flow rate value when the bypass valve is closed.
- * Flow rate changes based on inverter frequency
- * The shaded area indicates the range possible for the adjusted frequency value.
- * If additives are used, the flow rate characteristics will change due to factors such as the additive used, the concentration, fluid temp, etc.



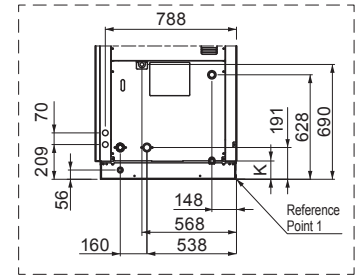
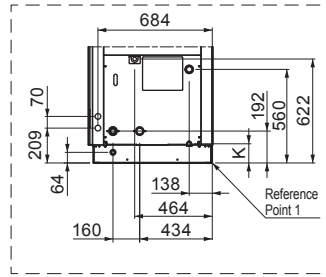
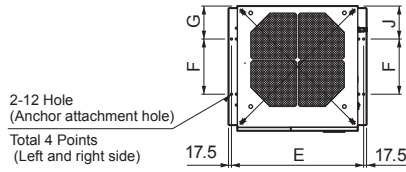
Specifications

RKE-B Series Air-Cooled Models

RKE-B Series

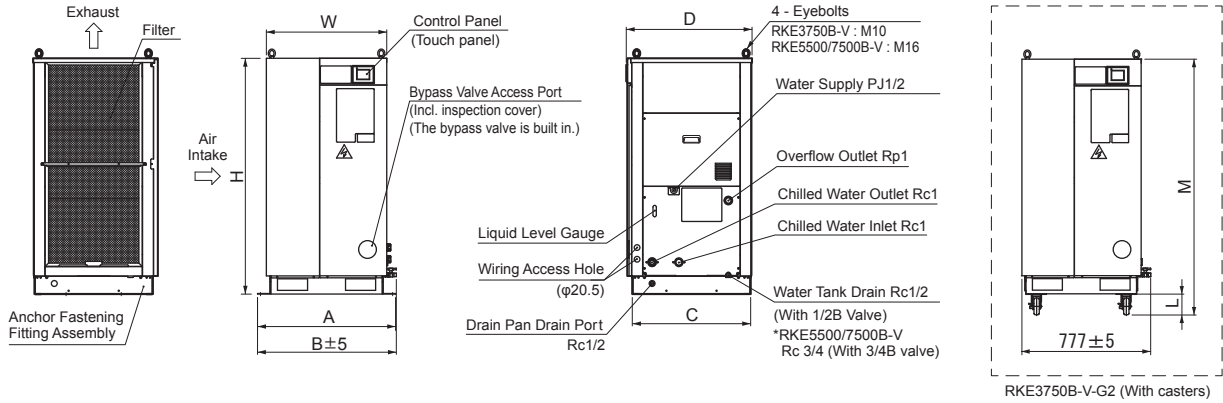
External Dimensions (Units: mm)

RKE3750B-V
RKE5500B-V
RKE7500B-V



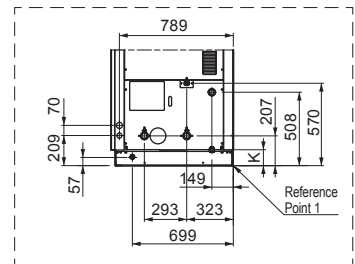
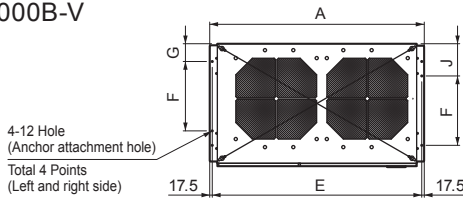
Detail of Chilled Water Circuit Parts (RKE3750B-V)

Water Circuit Section Detail (RKE5500/7500B-V)

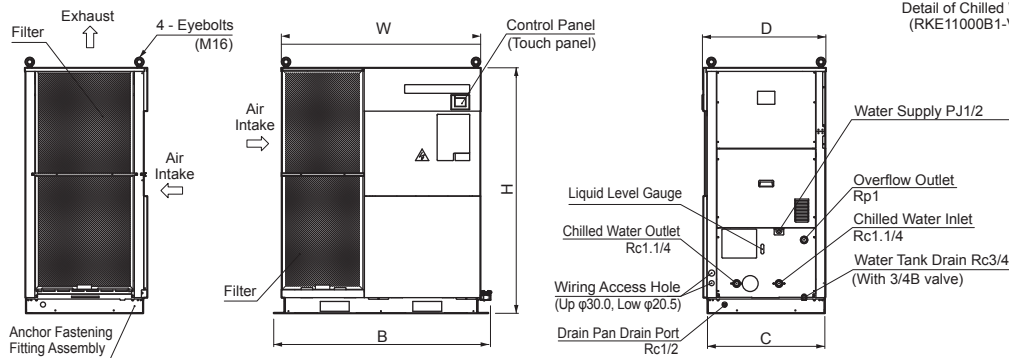


RKE3750B-V-G2 (With casters)

RKE11000B1-V
RKE15000B-V



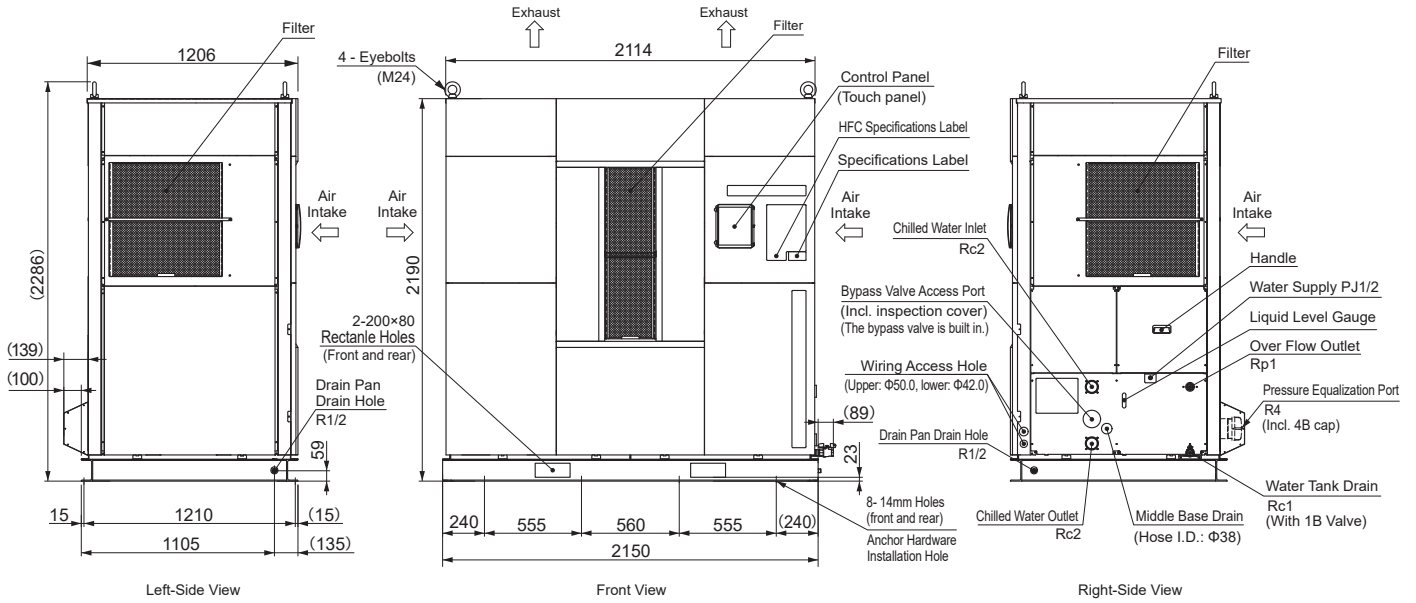
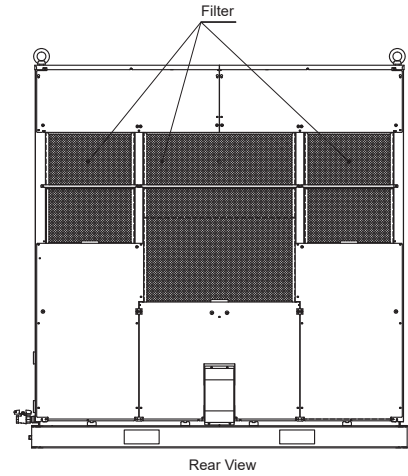
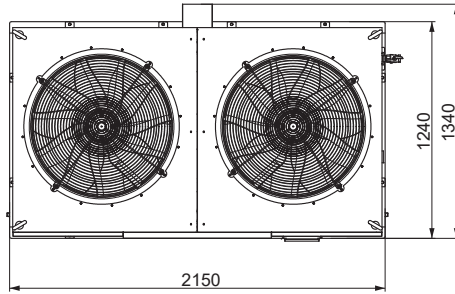
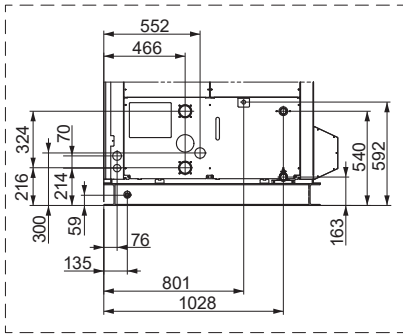
Detail of Chilled Water Circuit Parts (RKE11000B1-V, RKE15000B-V)



External Dimension Table (units : mm)

Model	W	H	A	B	C	D	E	F	G	J	K	L	M
RKE3750B-V	720	1410	826	830	708	752	791	330	197	197	115	126	1536
RKE5500B-V	870	1700	975	990	812	854	940	480	121	221	110	-	-
RKE7500B-V													
RKE11000B1-V	1380	1700	1485	1500	812	854	1450	480	123	223	110	-	-
RKE15000B-V	1610	1800	1715	1730	812	854	1680	480	123	223	110	-	-

RKE22000B-V
RKE30000B-V



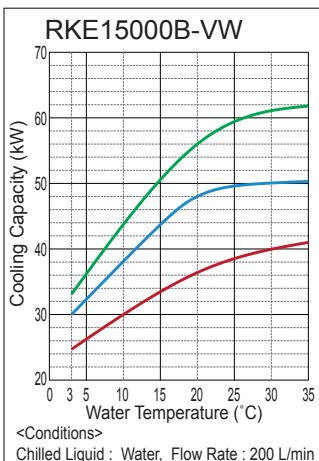
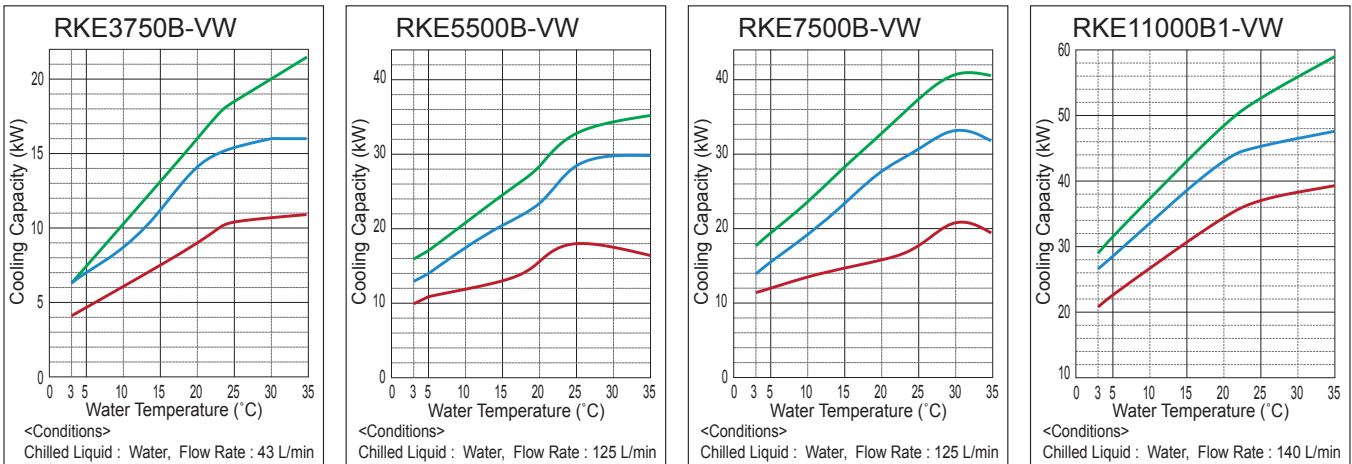
1. Route signal and communications wiring through access holes separate from power cables.
2. General Tolerance JIS B0405(1991)-v

Specifications

Model		RKE3750B-VW G1/G2 (w/ casters)	RKE5500B-VW	RKE7500B-VW	RKE11000B1-VW	RKE15000B-VW	
Performance Specifications	Cooling Capacity *1	kW	14.1	23.4	27.3	43.0	48.0
	Heating Capacity *8	kW	2.8	3.0	3.1	9.1	10.0
	Operable Ambient Temperature Range	°C	2 to 45 (-20~50 with an accessory, sold separately)				2 to 45
	Cooling Water Temperature Range	°C	5 to 45				
	Operable Liquid Temperature Range	°C	3 to 35 (w/ brine: 0 to 35) *7				
Control Precision *4			±0.1 °C (Energy saving mode: ±2.0 °C)				
Operating Flow Rate		L/min	15 to 60	60 to 170		100 to 230	
Power Specifications	Power Source *2	V (Hz)	Three-phase 200 ±10% (50) / 200 to 220 ±10% (60)				
	Power Consumption *1	kW	5.1	8.8	10.1	11.7	15.3
	Electric Current *1	A	19.2	31.8	33.0	36.3	48.2
	Power Capacity *3	kVA	8.0	12.2	12.6	17.2	19.5
	Breaker Capacity *6	A	30	50		75	
Operation Control Method			Compressor speed control				
Equipment details	Compressor	Construction	Fully sealed rotary type (inverter driven)			Fully sealed scroll type (inverter driven)	
		Output	kW	1.7	3.0	4.6	7.46
	Condenser	Double pipe water cooling					
		Plate type heat exchanger					
	Heat Exchanger	Construction	Plate type heat exchanger				
		Material	SUS316 (Brazing: Cu)				
	Discharge Pump	Construction	Multistage centrifugal immersion type				
		Output	kW	1.1 (Inverter driven)	1.5 (Inverter driven)		4.0 (Inverter driven)
Water Tank Capacity	L	Approx. 60	Approx. 90		Approx. 100		
Refrigerant		R-410A					
Charged Amount	kg	2.6		2.8	3.6		
External Dimensions (H×D×W)	mm	G1 : 1410 (G2 : 1536) × 752 × 720		1700 × 854 × 870		1410 × 854 × 1380	
Unit Mass (dry weight)	kg	G1 : 200 / G2 : 205		280	290	405	
Operating Noise Level (50/60 Hz) *5	dB	58		59	61		59

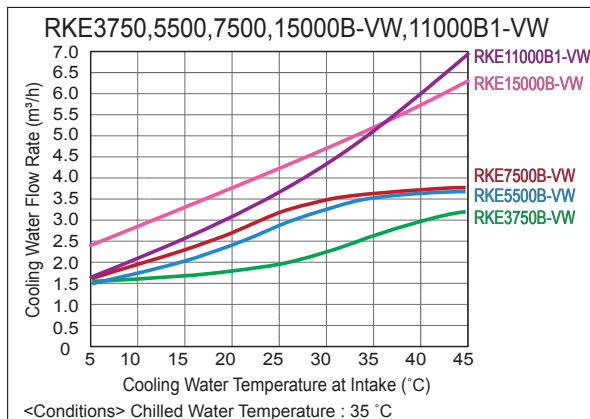
*1. Operating conditions: Chilled water temp.: 20 °C, Cooling water temp.: 32 °C, Ambient temp.: 32 °C. Cooling capacity is at least 95% of listed figures. *2. Source voltage phase unbalance should be less than ±3%. *3. The figure noted is when operating at the highest capacity in the normal operating range. *4. Continuous current load fluctuation within ±10%, and with stable ambient temp. and power supply, etc. Does not include starting times or when the cooling load is too small, in which case the compressor may cycle on and off. *5. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *6. Unit comes with a built-in multi-purpose overload and short circuit protection breaker. *7. For liquid temperature settings of 0 to 3 °C, use a 30 to 40% solution of industrial-use ethylene glycol. *8. At time of startup only. Will differ depending on ambient temperature and cooling water temperature.
 Note 1: The recommended liquid (chilled water) that can be used is either clean water or a 30 to 40% ethylene glycol solution. Note that there will be a 10% reduction in cooling capacity if using a 30 to 40% ethylene glycol solution. Alternatively, if deionized water is to be used, it should have an electrical conductivity of at least 1 µS/cm.

Cooling Capacity Diagram: Air Cooled Model Cooling Power Comparison Diagram



— Cooling water temperature at intake : 5 °C
 — Cooling water temperature at intake : 32 °C
 — Cooling water temperature at intake : 45 °C

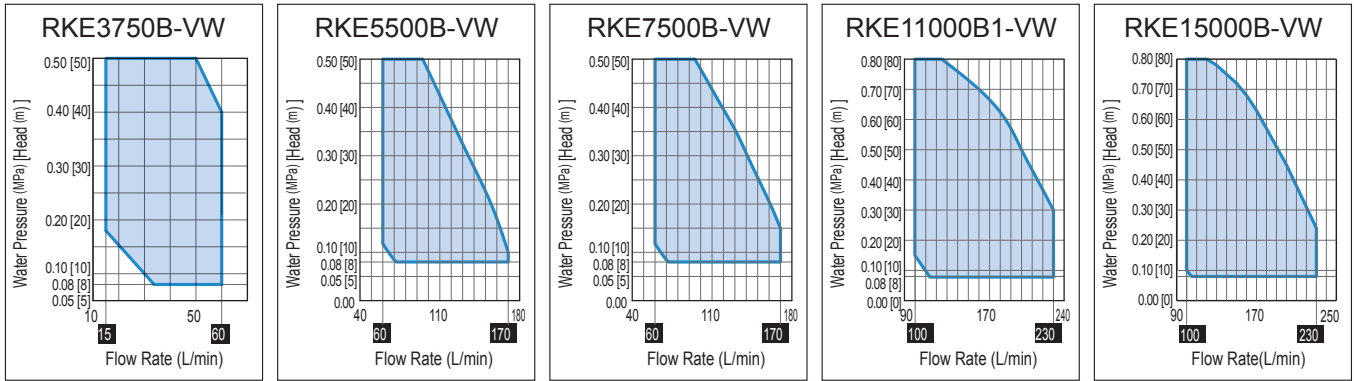
Cooling Water Flow Rate (For the water cooled condenser)



* Actual cooling water flow rate will depend on the water temperature.
 * Ensure the required quantity of water as shown in the graphs below.

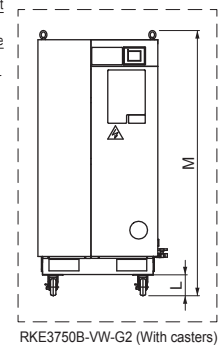
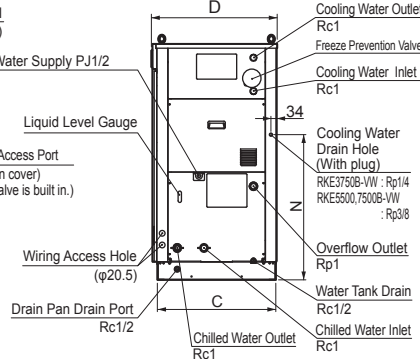
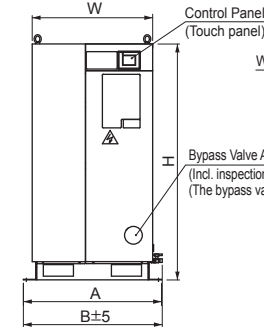
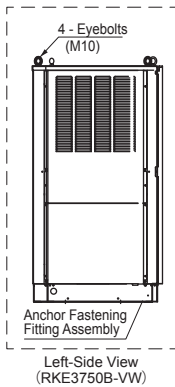
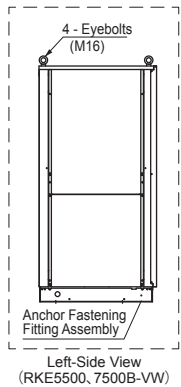
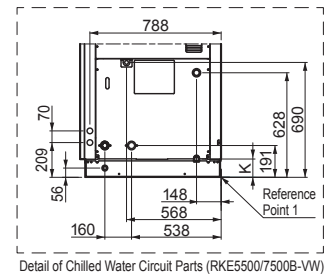
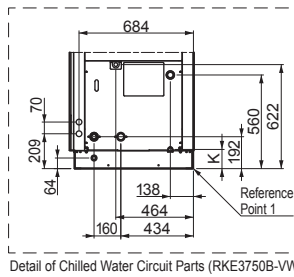
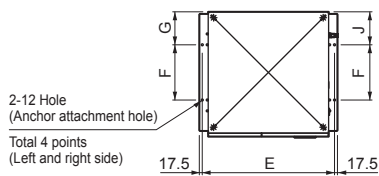
Chilled Water Flow Chart

- * The illustration shows the actual measured flow rate value when the bypass valve is closed.
- * Flow rate changes based on inverter frequency
- * The shaded area indicates the range possible for the adjusted frequency value.
- * If additives are used, the flow rate characteristics will change due to factors such as the additive used, the concentration, fluid temp, etc.

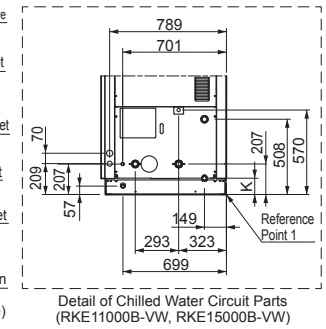
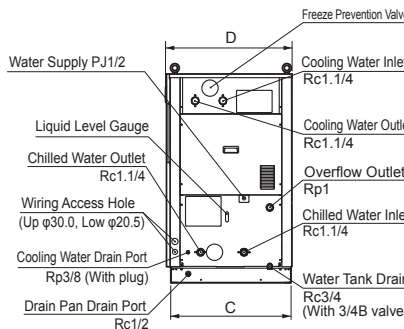
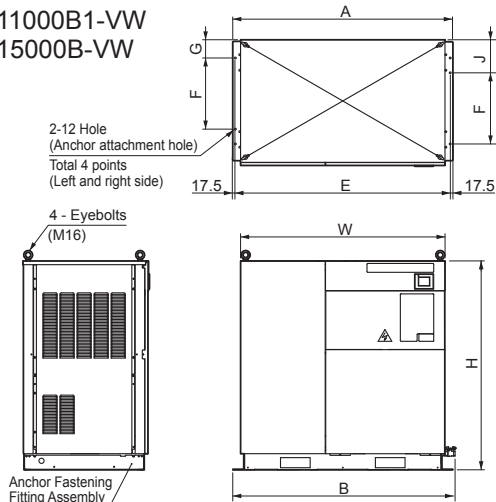


External Dimensions (Units: mm)

RKE3750B-VW
RKE5500B-VW
RKE7500B-VW



RKE11000B1-VW
RKE15000B-VW



External Dimension Table (units : mm)

Model	W	H	A	B	C	D	E	F	G	J	K	L	M	N
RKE3750B-VW	720	1410	826	830	708	752	791	330	197	197	115	126	1536	869
RKE5500B-VW	870	1700	975	990	812	854	940	480	121	221	110	-	-	939
RKE7500B-VW														
RKE11000B1-VW	1380	1410	1485	1500	812	854	1450	480	123	223	110	-	-	-
RKE15000B-VW	1380	1410	1485	1500	812	854	1450	480	123	223	110	-	-	-

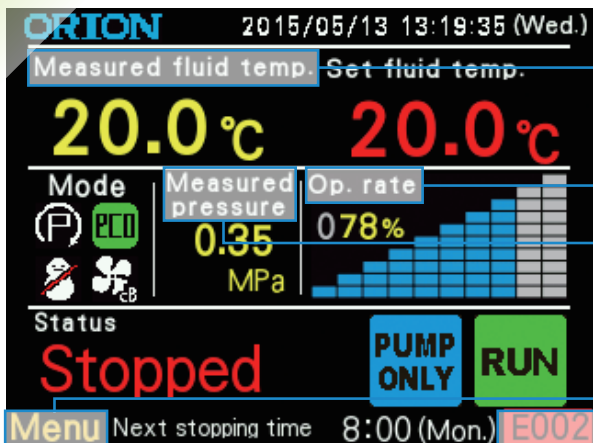
* See External Dimensions

RKE-B Series Standard-Equipped Functionality

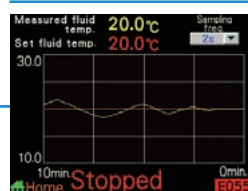
ORION produces a variety of products geared toward making our Inverter Chillers meet the wide-ranging needs of all of our customers.

Intelligent Touch Panel

Various settings and operating conditions can be visually and intuitively checked and operated via the touch panel controller. The displayed language can be changed to English, Japanese or Chinese.

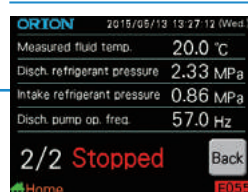


① Graph Display



Touching the "Measured Liquid Temp." button will change the display to the Graph Screen where changes in liquid temperature will be graphed over a particular time period (up to 53 hours) in order to better aid in liquid temperature management.

② Unit Operating Ratio (Power indicator)



The compressor operating state is indicated on a 10 level bar graph which shows the level of energy saving at a glance. Touching the "Op. rate" button brings up the Monitor Screen where operating conditions can be easily checked.

③ Measured Pressure

Touch "Measured Pressure" to change the discharge pump control option between frequency, flow rate, and pressure.

④ Menu

Touching "Menu" will bring up a menu of useful functions for easy confirmation and setting of Parameters, Alarm History, Main Components, Accumulated Time, Timer Function, etc.

⑤ Timer Setting

Touching "0 : 00" on the display allows stop and start times to be set. Actions can be repeated or set according to the day.

⑥ Easy Maintenance/Alarm Display

Alarm numbers are displayed when alarm conditions occur. Touching the "Details" ("Alarm" on 2000 and 3000 models) will show details about the alarm and suggestions on how to deal with it.

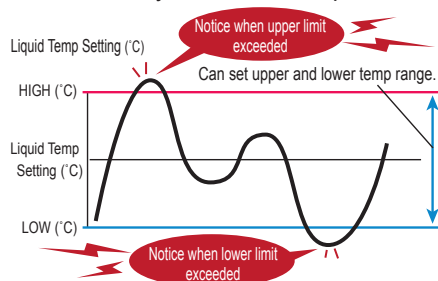


Displayed language can be changed to English, Japanese or Chinese.



Liquid temp Upper / Lower Limit Warning

A warning message can be displayed or an audible alarm sounded when the liquid temperature goes beyond a set upper or lower limit beyond the set temperature.



Earth Leakage Breaker (ELB)

To help insure safety, as a preventive measure, the unit includes an earth leakage breaker as standard equipment.

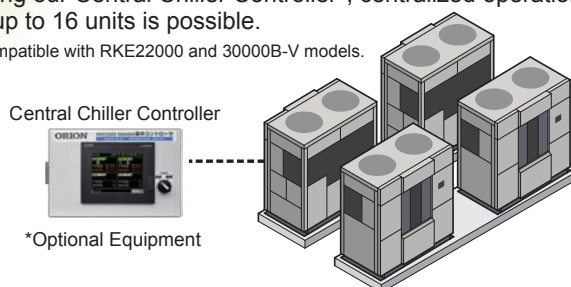


* See pages 13 to 14, 17 to 18 for details.

Supports Linking of Multiple Units As many as 4 units can be connected

Using our Central Chiller Controller*, centralized operation of up to 16 units is possible.

*Compatible with RKE22000 and 30000B-V models.



*Optional Equipment

Linked Model Example (Number of units)

HP	Cooling capacity (kW)	RKE22000B-V (30HP)	RKE30000B-V (40HP)
30	74	1	-
40	96	-	1
60	148	2	-
80	192	-	2
90	222	3	-
120	288	-	3
160	384	-	4

RKE-B Series Accessory (Sold Separately)

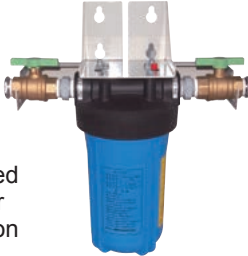
We have a wide-ranging lineup of accessory (sold separately) to meet every need.

RKE-B Series

Accessory (Sold Separately) See pages 13 to 20 for details.

Water Filter Equipment

Use to prevent clogging in the water circuits of your chiller or other equipment and can also be used as a prefilter for water purification equipment.



Ion Exchange Resin Purifying Equipment

•For Circulating Water Systems

When installed as a bypass circuit within the chilled water circulation circuit, it can prevent rises in electrical conductivity in the circulating water.



•For Water Supply and Purification

Can suppress sharp rises in electrical conductivity of circulating water that occurs when supplying water to the water tank.



Remote Control (Wired)

Remote Control Sets include cables. The set model number differs depending on the cable length. (Max cable lengths: 20 m, 50 m, 100 m.)



Central Chiller Controller (Wired)

The cable for the Central Chiller Controller is not included. The part number depends on the cable length. (20 m or 50 m)



*Compatible with RKE22000 and 30000B-V models.

Snow Protection Hood

The Snow Protection Hood supports outside installations in snowy regions.



Wind Shield

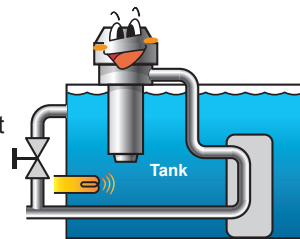
The Ventilation Hood supports outside installations. The hood also helps to keep dust and dirt out of the unit.



Special Specification

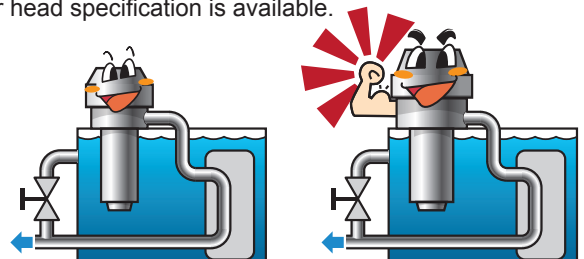
Heater

At time when the liquid temperature is rising, the heater should be used if high-precision control is required even when the load is low (and there is not the minimum amount of heat required for inverter control).



Discharge Pump for High Head Applications

High flow rate pump built-in. A built-in pump supporting a higher head specification is available.



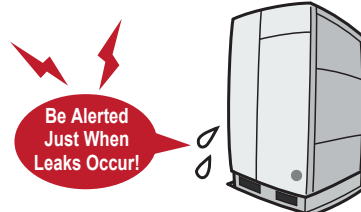
Cleanroom (Leakage Alarm Spec.)

Leakage Alarm Spec. models are available for use in cleanrooms.



Leakage Detection Spec.

If for some reason a water leak occurs, an alarm will be activated.



* See pages 13, 14, 17 and 18 for details.

External Surface Paint Thickness

The thickness of the applied outer surface paint can be changed to suit particular applications or needs.



Meets the Demands of World Markets

CE Marking

See pages 21 and 22 for details.

Other International Standards

Please consult our sales staff regarding any of your particular needs.

RKE-B Air-Coolde Series Equipment (Standard / Optional) List

	Item Detail	Function	
Operating Environment	30 to 40% ethylene glycol solution. *1		
	Deionized water. Electrical Conductivity: 1 µS/cm or higher.		
	Working Liquid (chilled water) Temperature	3 to 35 °C	
		0 to 35 °C	
	Operable Ambient Temp Range	Low temp area spec.: -20 to 45 °C (air cooled), 2 to 45 °C (water cooled)	
		High temp area spec.: to 50 °C Requires Distribution Panel High-Temperature Set	
	Freeze-Prevention Mode	This function operates the discharge pump in order to prevent water temperature drops and freezing during winter months when unit operations is stopped. When enabled, the discharge pump will operate when the water temperature falls to 3 °C or below.	
	Warm Up Mode	This function will automatically operate the discharge pump when the unit is otherwise not operating when the ambient temperature is low, for example during winter months, in order to prevent the water temperature from dropping too much and in order to help maintain the set water temperature. When this mode is enabled, the water temperature can be set within the temperature range of 10 °C to 35 °C as desired.	
	Low Noise Mode *2	This function will limit the upper speed of the fan and the fan ventilation noise level will be decreased.	
	Outside Installation	IPX4 Equiv. Rating	
	Snow Protection Mode	When enabled, and when the unit is stopped, the fan will periodically and automatically start in order to blow fallen snow from the upper exhaust port.	
	Snow Protection Hood	Prevents falling snow from entering the fan intake.	
	Wind Shield	Consider a wind speed of 8 m/s or higher as a guideline.	
	Cleanroom (Leakage Alarm Spec.)	In addition to the standard specification, leakage sensors, pressure resistant piping, refrigerant piping insulation, and water piping insulation are added.	
Water Leakage Detection	Leak detector built-in.		
Vibration Reducing Base	Reduces transmission of vibration from the chiller.		
Chilled Water Circuit	Discharge Pump Specs.	High flow rate pump built-in. Can replace the built-in high pressure pump.	
	Relief Valve (Pressure valve)	Can provide equipment-side pressure protection.	
	Water Tank Water-Level Alarm (Lower limit alarm)	Used to avoid water shortages due to evaporation.	
	Water Supply Port Open/Close	A ball tap is provided in the water tank in order to maintain a uniform water level.	
		A ball valve is added to the water supply port.	
	Chilled Water Inlet/Outlet Open/Close	Gate valves are added to the chilled water inlet and outlet ports.	
		Compression fittings are added to the chilled water inlet and outlet ports.	
	Chilled Water Circuit Water Filter	Water Filter "A" Assembly	
		Water Filter "B" Assembly	
		Water Filter "C" Assembly	
Deionized Water Equipment for Chilled Water Circulation Circuit	Water Purifier "C" Assembly		
	Water Purifier "D" Assembly		
	Water Purifier "E" Assembly		
Deionized Water Equipment for Chilled Water Supply and Supply Circuits	Purification assembly for supply water.		
Power Supply and Control Specs	Primary Power Supply Voltage	4 voltages : Three-phase 200 to 220 V (50/60 Hz)	
		Three-phase 230 V (50 Hz), 380 V / 400 V / 415 V / 440 V / 480 V (50/60 Hz)	
	Overload Safety Devices	The unit comes with a built in multipurpose overload and short circuit protection breaker.	
	Intelligent Touch Panel	Time and Date Display (Year/Month/Date/ Hour:Min (Day)) / Measured Water Temperature, Set Water Temperature, and a graph of the measured water temperature.) Parameter Mode Display / Water Pressure • Flow Rate • Discharge Pump Operating Frequency and Operating Conditions Display. Japanese • English • Chinese Display (Selectable)	
	Operation Action Settings	Can enable or disable operation from among the main unit, remote control, external communications, or remote switch.	
	Independent Pump Operation / Control Setting	Pump-only operation can be enabled/disabled via the main unit, remote control, external communications signal, or the remote switch.	
	Power Outage Recovery Operation Settings	Can choose the recovery pattern after power outage. (Manual recovery / Automatic recovery / Remote operation priority)	
	Settings Lock Setting	Control from each of the following can be enabled or disabled: Main Unit, Remote Control, or External Communications Signal.	
Audible Alarm Enable/Disable	Audible alarm can be enabled or disabled for each audible alarm or warning.		

*1. Note that there will be a 10% reduction in cooling capacity. *2. Note that there will be max. 20% reduction in cooling capacity. *3. Copper alloy is used for wetted parts on standard units.

■ = Accessory (Sold Separately) / Part Number ◆ = Special Specification

Comments	Model Air-Cooled (RKE Series)						
	3750B-V	5500B-V	7500B-V	11000B1-V	15000B-V	22000B-V	30000B-V
Cannot be mixed with deionized water.	Operation Possible						
Wetted parts are copper-free. *3	◆						
	Standard						
Please operate with a 30% to 40% solution of industrial-use ethylene glycol.	Standard						
Be careful of freezing at low temperatures as well as abnormal temperature rises due to placement in direct sunlight.	Standard						
	04105977010	04106046010	-	04107416010	-		
Can be enabled or disabled via the intelligent touch panel. * Cannot be used at the same time as the warming up mode.	Standard Equipment						
Can be enabled or disabled via the intelligent touch panel. * Cannot be used at the same time as the freeze-prevention mode.	Standard Equipment						
Can change between normal or low operation modes via the intelligent touch panel.	Standard Equipment						
Installation in direct sunlight, strong wind (8 m/sec or higher), contact with falling snow, or freezing conditions requires further measures.	Standard						
Can be turned on or off via the intelligent touch panel.	Standard Equipment						
	03108111010	03108121010	03108887010	03109803010	03111091010		
	03108110010	03108120010	03108881010	03109802010	02104017010		
Particulate is not taken account.	◆						
	◆						
The vibration reducing base should be installed on a level full foundation with no uneven surfaces. If there is a difference in height of more than 5 mm between the four corners of the vibration reducing base when the chiller is installed, adjustment is required.	0A003386010	0A003433010	0A003805010	0A004173020	0A004626010		
Specify the required flow rate and pressure.	◆						
Specify the relief pressure.	◆						
	Standard Equipment						
	Standard Equipment						
Standard chiller port size, brass or stainless steel.	◆						
Standard chiller port size, brass or stainless steel.	◆						
	◆						
Filtration Rating: 100 μm (5μm, 10μm, 20μm, and 50μm are available as a special specification product.) *Operate at or below 0.5 MPa.	04100489010	-			◆		
	-	04100491010	-		◆		
	-	04100490010		◆			
	04100614010	-					
Water Quality: 10 μS/cm or lower	-	04100597010	-				
	-	04100437010					
Including electrical conductivity gauge and flow regulating valve.	04100522010						
	4 Voltages						
These voltages require an external transformer. (Sold separately)	◆						
	Current Sensitivity : 30 mA			Current Sensitivity : 100 mA			
	Standard Equipment						
Can be enabled or disabled via the intelligent touch panel.	Standard Equipment						
Can be enabled or disabled via the intelligent touch panel.	Standard Equipment						
Action to be taken after recovery can be enabled or disabled via the intelligent touch panel.	Standard Equipment						
Can be enabled or disabled via the intelligent touch panel.	Standard Equipment						
The audible alarm can be enabled or disabled via the intelligent touch panel.	Standard Equipment						

RKE-B Air-Cooled Series Equipment (Standard / Optional) List

		Function	
Item Detail			
Power Supply and Control Specs	Action on Compressor Related Alarm	In cases where an alarm signal has been generated, this setting allows the user to choose whether the unit will completely shut down or if components that are able to operate will continue to do so.	
	Liquid (Chilled Water) Temp Upper/Lower Limit Warning Option	The method of abnormal liquid (chilled water) temperature detection can be selected. Can enable or disable the alarm and standby sequence for relative value and absolute value alarms. * Regarding the standby sequence, the alarm will be output after startup until the liquid temperature has initially reached a normal value and then later goes outside the normal range.	
	Liquid (Chilled Water) Temp Upper/Lower Limit Warning / Absolute Value Upper Limit	The warning will occur if the water temperature goes above this set temperature regardless of the actual set water temperature. Will be active when the "Liquid (Chilled Water) Temperature Upper/Lower Limit Warning" Absolute Value has been selected.	
	Liquid (Chilled Water) Temp Upper/Lower Limit Warning / Absolute Value Lower Limit	The warning will occur if the water temperature goes below this set temperature regardless of the actual set water temperature. Will be active when the "Liquid (Chilled Water) Temperature Upper/Lower Limit Warning" Absolute Value has been selected.	
	Time Elapsed Warning: Time Setting	A warning will be output if the select time is exceeded. This will be useful, for example, maintenance timing management. The unit can continue to operate when this occurs.	
	Communications	USB and RS-422A/485 communications allow operation and setting changes from a remote location. To connect multiple units, set the communication device address number to any number between 0 and 31.	
	Remote Control (Wired)	By connecting the remote control, the product can be operated from a remote location, and various settings can be changed as if using the touch panel.	
	Central Chiller Controller	By connecting the Central Chiller Controller to multiple units, individual units can be operated, and their settings changed. (Registration of up to 4 groups with 4 units per group is possible.)	
	Remote Control Terminals	Remote Operation (No-voltage contacts) *2	
		Remote Operation (24 Vdc input) *2	Only available as factory installed options.
		Remote Operation (200 Vac input) *2	Only available as factory installed options.
	Signal Output Terminals	Operation Signal	
		Alarm Signal *1	
	Alarm Signal Output Options	Can choose the state of contacts of the remote alarm signal output. (Contacts either ON or OFF during alarm condition.)	
Temperature Warning Signal Output Option	Determines the open/closed state of contacts when a temperature warning signal is present.		
Settings Lock	Changes to the water temperature setting and other parameter settings can be locked out.		
Other	Casters	2 freewheeling casters with lock, 2 freewheeling casters without lock	
		With lock	
		With leveling foot	
	External Surface Coating Thickness	Polyester resin, min. 30 μm	
		Polyester resin, min. 45 μm (Salt-corrosion prevention spec.)	
	Color Designation * Specify the color designation as a JPMa No. or Munsell No (including a color sample).		
	Packaging for Export	Basic plywood packaging	
	Water Temperature Control Percision	±0.1 °C	
	Heating Functionality	Used to raise the temperature during unit startup. (Built-in 200 Vac electric heater.) * ON/OFF control to the set liquid temperature minus 2 ±0.5 °C.	
	Inspection Manual	Japanese	
English			
Test Results Chart	Japanese		
	English		
Initial Inspection			

<Please Note> *1. In addition, there are contacts for the temperature warning signal. *2. There are 2 operating modes -- unit operation, and pump-only operation. *3. Comes as standard equipment on G-2 spec models only. *4. Also available as a special specification product. *5. Please consult your dealer if high precision control is required even under low loads (the minimum amount of heat required to maintain inverter control).

■ = Accessory (Sold Separately) / Part Number ◆ = Special Specification

Comments	Model Air-Cooled (RKE Series)						
	3750B-V	5500B-V	7500B-V	11000B1-V	15000B-V	22000B-V	30000B-V
Can be set via the intelligent touch panel.	Standard Equipment						
Can be set from the intelligent touch panel.	Standard Equipment						
Water temperature setting can be set from the intelligent touch panel.	Standard Equipment						
Water temperature setting can be set from the intelligent touch panel.	Standard Equipment						
The number of hours (1 h to 30,000 h) can be set from the intelligent touch panel.	Standard Equipment						
	Standard Equipment						
Max. wiring length: 20 m	03107963010		03108949010		03111017010		
Max. wiring length: 50 m	03107963020		03108949020		03111017020		
Max. wiring length: 100 m	03107963030		03108949030		03111017030		
The Central Chiller Controller does not include connection cables. See page 31 for details.	-					RKE-CT001	
Max. wiring length: 20 m (w/o cable)	Standard Equipment						
Max. wiring length: 100 m	◆						
Max. wiring length: 20 m	◆						
Max. wiring length: 100 m	◆						
Max. wiring length: 20 m	◆						
Max. wiring length: 100 m	◆						
No-voltage contacts	Standard Equipment						
Voltage output (200 V output)	◆						
No-voltage contacts	Standard Equipment						
Voltage output (200 V output)	◆						
The relay action can be set to ON or OFF via the intelligent touch panel.	Standard Equipment						
The type of relay output (ON/OFF) when an alarm condition occurs can be selected from the intelligent touch panel.	Standard Equipment						
Can enable or disable setting changes from the intelligent touch panel.	Standard Equipment						
	*3	-					
2 free-wheeling casters, 2 fixed casters *4	03108410010	03108407010	-				
4 free-wheeling casters *4	03108408010	03108405010	-				
4 free-wheeling casters *4	03108409010	03108406010	-				
External screws are stainless steel. Condenser and refrigerant piping are treated with a corrosion-resistant coating.	Standard Equipment						
Acrylic resin coating, at least 15 µm thick	◆						
For other paint / coatings:	◆						
Please consult your dealer for details regarding JIS standard packaging.	◆						
*5	Standard Equipment						
Heating output: Selectable among 2 / 3 / 4 / 5 kW, or 5 kW × 2	◆						
	◆						
	◆						
	◆						
	◆						

RKE-B Water-Cooled Series Equipment (Standard / Optional) List

	Item Detail	Function	
Operating Environment	30 to 40% ethylene glycol solution. *1		
	Deionized water. Electrical Conductivity: 1 μS/cm or higher.		
	Working Liquid (chilled water) Temperature	3 to 35 °C	
		0 to 35 °C	
	Operable Ambient Temp Range	Low temp area spec.: -20 to 45 °C (air cooled), 2 to 45 °C (water cooled)	
		High temp area spec.: to 50 °C Requires Distribution Panel High-Temperature Set	
	Freeze-Prevention Mode	This function operates the discharge pump in order to prevent water temperature drops and freezing during winter months when unit operations is stopped. When enabled, the discharge pump will operate when the water temperature falls to 3 °C or below.	
	Warm Up Mode	This function will automatically operate the discharge pump when the unit is otherwise not operating when the ambient temperature is low, for example during winter months, in order to prevent the water temperature from dropping too much and in order to help maintain the set water temperature. When this mode is enabled, the water temperature can be set within the temperature range of 10 °C to 35 °C as desired.	
	Low Noise Mode *2	This function will limit the upper speed of the fan and the fan ventilation noise level will be decreased.	
	Outside Installation	IPX4 Equiv. Rating	
	Snow Protection Mode	When enabled, and when the unit is stopped, the fan will periodically and automatically start in order to blow fallen snow from the upper exhaust port.	
	Snow Protection Hood	Prevents falling snow from entering the fan intake.	
	Wind Shield	Consider a wind speed of 8 m/s or higher as a guideline.	
	Cleanroom (Leakage Alarm Spec.)	In addition to the standard specification, leakage sensors, pressure resistant piping, refrigerant piping insulation, and water piping insulation are added.	
Water Leakage Detection	Leak detector built-in.		
Vibration Reducing Base	Reduces transmission of vibration from the chiller.		
Chilled Water Circuit	Discharge Pump Specs.	High flow rate pump built-in. Can replace the built-in high pressure pump.	
	Relief Valve (Pressure valve)	Can provide equipment-side pressure protection.	
	Water Tank Water-Level Alarm (Lower limit alarm)	Used to avoid water shortages due to evaporation.	
	Water Supply Port Open/Close	A ball tap is provided in the water tank in order to maintain a uniform water level.	
		A ball valve is added to the water supply port.	
	Chilled Water Inlet/Outlet Open/Close	Gate valves are added to the chilled water inlet and outlet ports.	
		Compression fittings are added to the chilled water inlet and outlet ports.	
	Chilled Water Circuit Water Filter	Water Filter "A" Assembly	
		Water Filter "B" Assembly	
		Water Filter "C" Assembly	
	Deionized Water Equipment for Chilled Water Circulation Circuit	Water Purifier "C" Assembly	
Water Purifier "D" Assembly			
Water Purifier "E" Assembly			
Deionized Water Equipment for Chilled Water Supply and Supply Circuits	Purification assembly for supply water.		
Cooling Water (Condenser circuit) Inlet/Outlet Open/Close	Gate valves are added to the cooling water inlet and outlet ports.		
	Compression fittings are added to the cooling water inlet and outlet ports.		
Power Supply and Control Specs	Primary Power Supply Voltage	3 voltages : Three-phase 200 V (50/60 Hz), Three-phase 220 V (60 Hz)	
		Three-phase 230 V (50 Hz), 380 V / 400 V / 415 V / 440 V / 480 V (50/60 Hz)	
	Overload Safety Devices	The unit comes with a built in multipurpose overload and short circuit protection breaker.	
	Intelligent Touch Panel Display Functions	Time and Date Display (Year/Month/Date/ Hour:Min (Day)) / Measured Water Temperature, Set Water Temperature, and a graph of the measured water temperature.) Parameter Mode Display / Water Pressure • Flow Rate • Discharge Pump Operating Frequency and Operating Conditions Display. Japanese • English • Chinese Display (Selectable)	
	Operation Action Settings	Can enable or disable operation from among the main unit, remote control, external communications, or remote switch.	
	Independent Pump Operation / Control Setting	Pump-only operation can be enabled/disabled via the main unit, remote control, external communications signal, or the remote switch.	
Power Outage Recovery Operation Settings	Can choose the recovery pattern after power outage. (Manual recovery / Automatic recovery / Remote operation priority)		

*1. Note that there will be a 10% reduction in cooling capacity. *2. Note that there will be max. 20% reduction in cooling capacity. *3. Copper alloy is used for wetted parts on standard units.

■ = Accessory (Sold Separately) / Part Number ◆ = Special Specification

Comments	Model Water-Cooled (RKE Series)				
	3750B-VW	5500B-VW	7500B-VW	11000B1-VW	15000B-VW
Cannot be mixed with deionized water.	Operation Possible				
Wetted parts are copper-free. *3	◆				
	Standard				
Please operate with a 30% to 40% solution of industrial-use ethylene glycol.	Standard				
Be careful of freezing at low temperatures as well as abnormal temperature rises due to placement in direct sunlight.	Standard				
	04105977020	04106046020	-	04107734010	
Can be enabled or disabled via the intelligent touch panel. * Cannot be used at the same time as the warming up mode.	Standard Equipment				
Can be enabled or disabled via the intelligent touch panel. * Cannot be used at the same time as the freeze-prevention mode.	Standard Equipment				
Can change between normal or low operation modes via the intelligent touch panel.	-				
Installation in direct sunlight, strong wind (8 m/sec or higher), contact with falling snow, or freezing conditions requires further measures.	Standard				
Can be turned on or off via the intelligent touch panel.	-				
	-				
	-				
Particulate is not taken account.	◆				
	◆				
	0A003386010	0A003433010	0A003805010	0A003805010	
Specify the required flow rate and pressure.	◆				
Specify the relief pressure.	◆				
	Standard Equipment				
	Standard Equipment				
Standard chiller port size, brass or stainless steel.	◆				
Standard chiller port size, brass or stainless steel.	◆				
	◆				
Filtration Rating: 100 μm (5μm, 10μm, 20μm, and 50μm are available as a special specification product.)	04100489010		-		
	-	04100491010		-	
		-		04100490010	
Water Quality: 10 μS/cm or lower	04100614010		-		
	-	04100597010		-	
		-		04100437010	
Including electrical conductivity gauge and flow regulating valve.	04100522010				
Standard chiller size, brass or stainless steel.	◆				
	◆				
	3 Voltages				
These voltages require an external transformer. (Sold separately)	◆				
	Current Sensitivity : 30 mA		Current Sensitivity : 100 mA		
	Standard Equipment				
Can be enabled or disabled via the intelligent touch panel.	Standard Equipment				
Can be enabled or disabled via the intelligent touch panel.	Standard Equipment				
Action to be taken after recovery can be enabled or disabled via the intelligent touch panel.	Standard Equipment				

RKE-B Water-Cooled Series Equipment (Standard / Optional) List

		Function	
Item Detail			
Power Supply and Control Specs	Settings Lock Setting	Control from each of the following can be enabled or disabled: Main Unit, Remote Control, or External Communications Signal.	
	Audible Alarm Enable/Disable	Audible alarm can be enabled or disabled for each audible alarm or warning.	
	Action on Compressor Related Alarm	In cases where an alarm signal has been generated, this setting allows the user to choose whether the unit will completely shut down or if components that are able to operate will continue to do so.	
	Liquid (Chilled Water) Temp Upper/Lower Limit Warning Option	The method of abnormal liquid (chilled water) temperature detection can be selected. Can enable or disable the alarm and standby sequence for relative value and absolute value alarms. * Regarding the standby sequence, the alarm will be output after startup until the liquid temperature has initially reached a normal value and then later goes outside the normal range.	
	Liquid (Chilled Water) Temp Upper/Lower Limit Warning / Absolute Value Upper Limit	The warning will occur if the water temperature goes above this set temperature regardless of the actual set water temperature. Will be active when the "Liquid (Chilled Water) Temperature Upper/Lower Limit Warning" Absolute Value has been selected.	
	Liquid (Chilled Water) Temp Upper/Lower Limit Warning / Absolute Value Lower Limit	The warning will occur if the water temperature goes below this set temperature regardless of the actual set water temperature. Will be active when the "Liquid (Chilled Water) Temperature Upper/Lower Limit Warning" Absolute Value has been selected.	
	Time Elapsed Warning: Time Setting	A warning will be output if the select time is exceeded. This will be useful, for example, maintenance timing management. The unit can continue to operate when this occurs.	
	Communications	USB and RS-422A/485 communications allow operation and setting changes from a remote location. To connect multiple units, set the communication device address number to any number between 0 and 31.	
	Remote Control (Wired)	By connecting the remote control, the product can be operated from a remote location, and various settings can be changed as if using the touch panel.	
	Remote Control Terminals	Remote Operation (No-voltage contacts) *2	
		Remote Operation (24 VDC input) *2	Only available as factory installed options.
		Remote Operation (200 VAC input) *2	Only available as factory installed options.
	Signal Output Terminals	Operation Signal	
		Alarm Signal *1	
Alarm Signal Output Options	Can choose the state of contacts of the remote alarm signal output. (Contacts either ON or OFF during alarm condition.)		
Temperature Warning Signal Output Option	Determines the open/closed state of contacts when a temperature warning signal is present.		
Settings Lock	Changes to the water temperature setting and other parameter settings can be locked out.		
Other	Casters	2 freewheeling casters with lock, 2 freewheeling casters without lock	
		With lock	
		With leveling foot	
	External Surface Coating Thickness	Polyester resin, min. 30 μm	
		Polyester resin, min. 45 μm (Salt-corrosion prevention spec.)	
	Color Designation * Specify the color designation as a JPMA No. or Munsell No (including a color sample).		
	Packaging for Export	Basic plywood packaging	
	Water Temperature Control Percision	±0.1 °C	
	Heating Functionality	Used to raise the temperature during unit startup. (Built-in 200 VAC electric heater.) * ON/OFF control to the set liquid temperature minus 2 ±0.5 °C.	
	Inspection Manual	Japanese	
English			
Test Results Chart	Japanese		
	English		
Initial Inspection			

<Please Note> *1. In addition, there are contacts for the temperature warning signal. *2. There are 2 operating modes -- unit operation, and pump-only operation. *3. Comes as standard equipment on G-2 spec models only. *4. Also available as a special specification product. *5. Please consult your dealer if high precision control is required even under low loads (the minimum amount of heat required to maintain inverter control).

Comments	Model Water-Cooled (RKE Series)				
	3750B-VW	5500B-VW	7500B-VW	11000B1-VW	15000B-VW
Can be enabled or disabled via the intelligent touch panel.	Standard Equipment				
The audible alarm can be enabled or disabled via the intelligent touch panel.	Standard Equipment				
Can be set via the intelligent touch panel.	Standard Equipment				
Can be set from the intelligent touch panel.	Standard Equipment				
Water temperature setting can be set from the intelligent touch panel.	Standard Equipment				
Water temperature setting can be set from the intelligent touch panel.	Standard Equipment				
The number of hours (1 h to 30,000 h) can be set from the intelligent touch panel.	Standard Equipment				
	Standard Equipment				
Max. wiring length: 20 m	03107963010		03108949010		
Max. wiring length: 50 m	03107963020		03108949020		
Max. wiring length: 100 m	03107963030		03108949030		
Max. wiring length: 20 m (w/o cable)	Standard Equipment				
Max. wiring length: 100 m	◆				
Max. wiring length: 20 m	◆				
Max. wiring length: 100 m	◆				
Max. wiring length: 20 m	◆				
Max. wiring length: 100 m	◆				
No-voltage contacts	Standard Equipment				
Voltage output (200 V output)	◆				
No-voltage contacts	Standard Equipment				
Voltage output (200 V output)	◆				
The relay action can be set to ON or OFF via the intelligent touch panel.	Standard Equipment				
The type of relay output (ON/OFF) when an alarm condition occurs can be selected from the intelligent touch panel.	Standard Equipment				
Can enable or disable setting changes from the intelligent touch panel.	Standard Equipment				
	*3	-			
2 free-wheeling casters, 2 fixed casters *4	03108410010	03108407010	-		
4 free-wheeling casters *4	03108408010	03108405010	-		
4 free-wheeling casters *4	03108409010	03108406010	-		
Salt-corrosion prevention spec. (Acrylic resin, min. 45 μm) External screws are stainless steel. Condenser and refrigerant piping are treated with a corrosion-resistant coating.	Standard Equipment				
Acrylic resin coating, at least 15 μm thick	◆				
For other paint / coatings	◆				
Please consult your dealer for details regarding JIS standard packaging.	◆				
*5	Standard Equipment				
Heating output: Selectable among 2 / 3 / 4 / 5 kW, or 5 kW × 2	◆				
	◆				
	◆				
	◆				
	◆				

CE Marking Certified Chillers RKE-B (Air-Cooled Series)

CE Certified Air-Cooled Models

Air Cooled

IPX4 Equiv. Rating Splash-proof

Cooling Capacity

12.2 to 48.0 kW

Operable Ambient Temp

-20 to 45 °C

Operable Liquid Temp Range

3 to 35 °C

Temp Control Precision

±0.1 °C

Compliance Standard

Low Voltage Directive (2014/35/EU)
EU60204-1:2018
RoHS2 Directive
[2011/65/EU+(EU)2015/863]

EMC Directive (2014/30/EU): Industrial Environment
EN61000-6-2:2005 EN61000-6-4:2007+A1:2011



Warranty period of the refrigerant circuit is 2 years from the date of purchase (or 10,000 hours of operating time).



RKE3750B-V-CE



RKE11000B-V-CE

Specifications

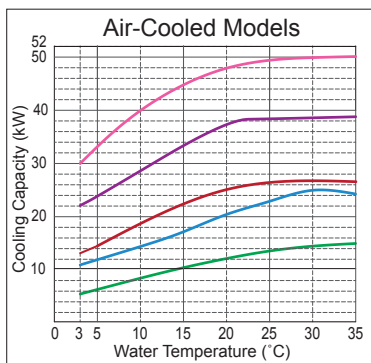
Model		RKE3750B-V-CE G1 / G2(w/ casters)	RKE5500B-V-CE	RKE7500B-V-CE	RKE11000B-V-CE	RKE15000B-V-CE		
Performance Specifications	Cooling Capacity *1	kW	12.2	20.3	25.0	37.2	48.0	
	Heating Capacity *8	kW	2.8	3.7		8.0	10.0	
	Operable Ambient Temperature Range	°C	-20 to 45 (-20~50 with an accessory, sold separately)					
	Operable Liquid Temperature Range	°C	3 to 35 (w/ brine: 0 to 35) *7					
Control Precision *4		±0.1 °C (Energy saving mode: ±2.0 °C)						
Operating Flow Rate		L / min	15 to 60	60 to 170		100 to 230		
Power Source *2		V (Hz)	Three-phase 200 to 220 ±10% (50/60)					
Power Specifications	Power Consumption *1	kW	5.4	9.8	10.2	14.4	18.1	
	Electric Current *1	A	16.5	30.1	33.5	47.0	56.3	
	Power Capacity *3	kVA	7.0	11.0	11.8	19.5	22.0	
	Breaker Capacity *6	A	30	50		75	100	
Operation Control Method		Compressor speed control						
Equipment Details	Compressor	Construction	Fully sealed rotary type (inverter driven)			Fully sealed scroll type (inverter driven)		
		Output	kW	1.7	3.0	4.6	7.46	11.19
	Heat Exchanger	Construction	Fin and tube forced air cooling					
		Material	Plate type heat exchanger SUS316 (Brazeing: Cu)					
	Discharge Pump	Construction	Multistage centrifugal immersion type					
		Output	kW	1.1 (Inverter driven)	1.5 (Inverter driven)		4.0 (Inverter driven)	
	Fan Motor	Output	kW	0.4 (Inverter driven)	0.75 (Inverter driven)		0.4 × 2 (Inverter driven)	
	Water Tank Capacity	L	Approx. 60	Approx. 90		Approx. 100		
	Refrigerant	R-410A						
	Charged Amount	kg	2.6	3.1	3.7	5.2	7.0	
External Dimensions (H×D×W)	mm	G1: 1410 (G2: 1536) × 752 × 720	1700 × 854 × 870		1700 × 854 × 1380	1800 × 854 × 1610		
Unit Mass (dry weight)	kg	G1:200 / G2:205	280	290	415	460		
Operating Noise Level (50/60 Hz) *5	dB	60	63		69	68		

*1. Operating conditions: Chilled water temp : 20 °C, Cooling water temp : 32 °C (water cooled units only), Ambient temp : 32 °C. Cooling capacity is at least 95% of listed figures. *2. Source voltage phase unbalance should be less than ±3%. *3. The figure noted is when operating at the highest capacity in the normal operating range. *4. Continuous current load fluctuation within ±10%, and with stable ambient temp and power supply, etc. Does not include starting times or when the cooling load is too small, in which case the compressor may cycle on and off. *5. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *6. Unit comes with a built-in multi-purpose overload and short circuit protection breaker. *7. For liquid temperature settings of 0 to 3 °C, use a 30 to 40% solution of industrial-use ethylene glycol. *8. At time of startup only. Will differ depending on ambient temperature.

Note 1: The recommended liquid (chilled water) that can be used is either clean water or a 30 to 40% ethylene glycol solution. Note that there will be a 10% reduction in cooling capacity if using a 30 to 40% ethylene glycol solution. Alternatively, if deionized water is to be used, it should have an electrical conductivity of at least 1 µS/cm.

Note 2: Heat output from the unit (in kW) is approx. 1.3 times that of the cooling capacity.(Air cooled models)

Cooling Capacity



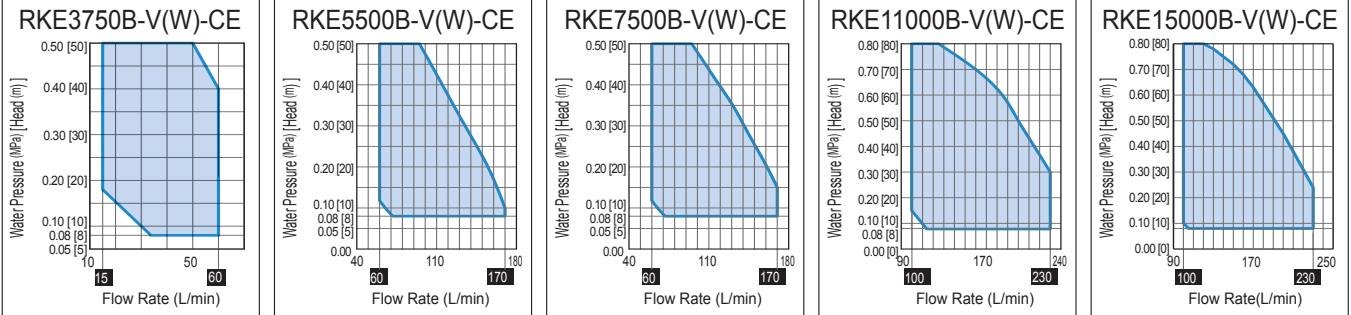
— RKE15000B-V-CE
— RKE11000B-V-CE
— RKE7500B-V-CE
— RKE5500B-V-CE
— RKE3750B-V-CE

<Conditions>

- Chilled Liquid : Water
- Flow Rate : RKE3750B-V-CE 43 L/min
RKE5500B-V-CE • 7500B-V-CE 125 L/min
RKE11000B-V-CE 140 L/min
RKE15000B-V-CE 200 L/min
- Ambient Temperature : 32 °C
- Cooling Water Temperature : 32 °C

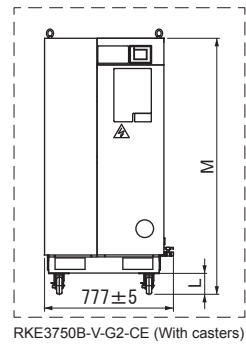
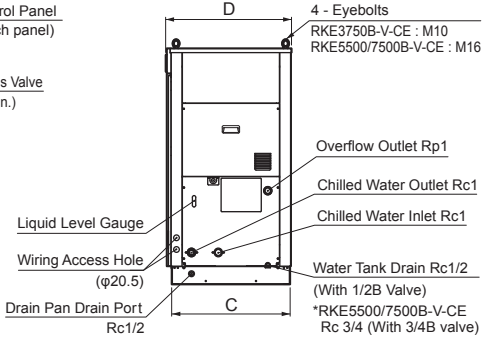
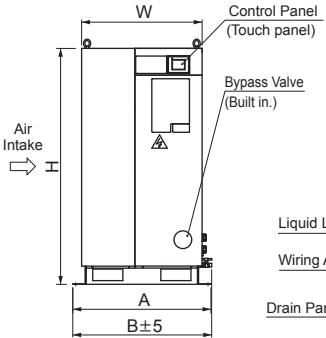
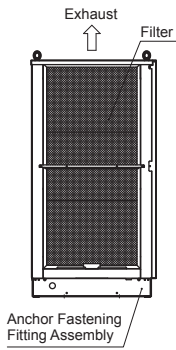
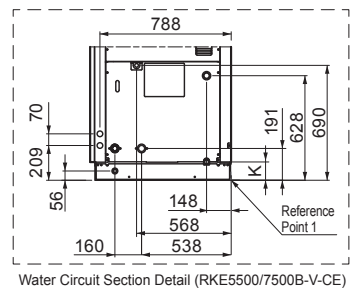
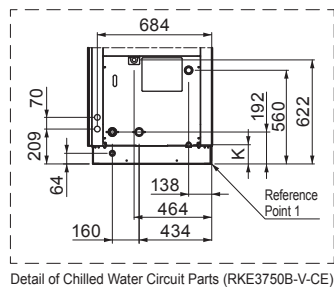
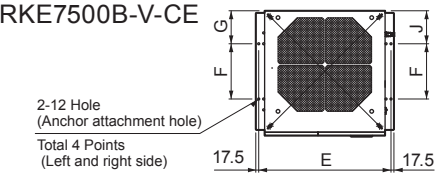
Chilled Water Flow Chart

- * The illustration shows the actual measured flow rate value when the bypass valve is closed.
- * Flow rate changes based on inverter frequency
- * The shaded area indicates the range possible for the adjusted frequency value.
- * If additives are used, the flow rate characteristics will change due to factors such as the additive used, the concentration, fluid temp, etc.

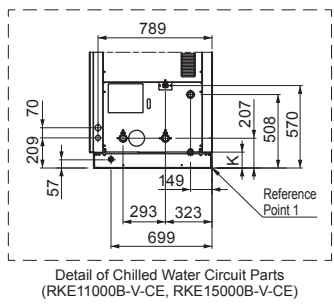
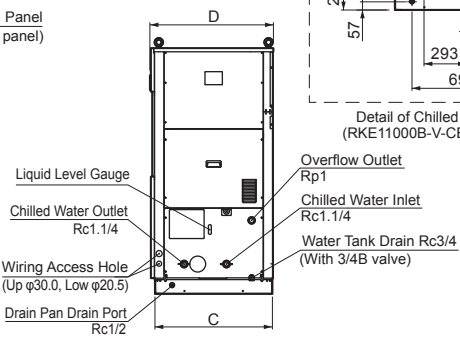
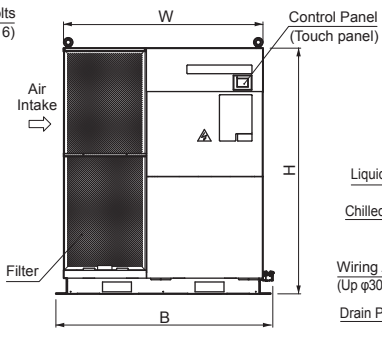
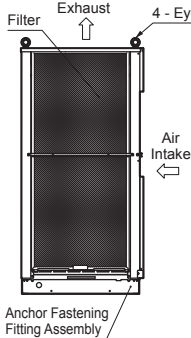
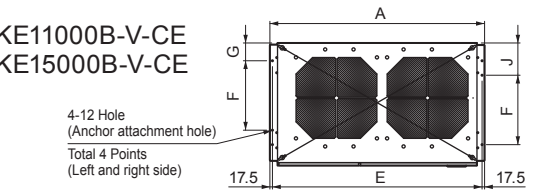


External Dimensions (Units: mm)

RKE3750B-V-CE
RKE5500B-V-CE
RKE7500B-V-CE



RKE11000B-V-CE
RKE15000B-V-CE



External Dimension Table (units : mm)

Model	W	H	A	B	C	D	E	F	G	J	K	L	M
RKE3750B-V-CE	720	1410	826	830	708	752	791	330	197	197	115	126	1536
RKE5500B-V-CE	870	1700	975	990	812	854	940	480	121	221	110	-	-
RKE7500B-V-CE													
RKE11000B-V-CE	1380	1700	1485	1500	812	854	1450	480	123	223	110	-	-
RKE15000B-V-CE	1610	1800	1715	1730	812	854	1680	480	124	224	110	-	-

CE Marking Certified Chillers RKE-B (Water-Cooled Series)

CE Certified Water-Cooled Models

Water Cooled

IPX4 Equiv.
Rating Splash-proof

Cooling Capacity **14.1 to 48.0 kW**

Operable Ambient Temp **2 to 45 °C**

Operable Liquid Temp Range **3 to 35 °C**

Temp Control Precision **±0.1 °C**

Compliance Standard

Low Voltage Directive (2014/35/EU)
EU60204-1:2018
RoHS2 Directive
[2011/65/EU+(EU)2015/863]

EMC Directive (2014/30/EU): Industrial Environment
EN61000-6-2:2005 EN61000-6-4:2007+A1:2011



Warranty period of the refrigerant circuit is 2 years from the date of purchase (or 10,000 hours of operating time).



RKE3750B-VW-CE



RKE11000B-VW-CE

Specifications

Model		RKE3750B-VW-CE G1 / G2 (w/ casters)	RKE5500B-VW-CE	RKE7500B-VW-CE	RKE11000B-VW-CE	RKE15000B-VW-CE	
Performance Specifications	Cooling Capacity *1	kW	14.1	23.4	27.3	43.0	48.0
	Heating Capacity *8	kW	2.8	3.0	3.1	9.1	10.0
	Operable Ambient Temperature Range	°C	2 to 45 (w/ option: 2 to 50)				2 to 45
	Cooling Water Temperature Range	°C	5 to 45				
	Operable Liquid Temperature Range	°C	3 to 35 (w/ option: 0 to 35) *7				
Power Specifications	Control Precision *4		±0.1 °C (Energy saving mode: ±2.0 °C)				
	Operating Flow Rate	L/min	15 to 60	60 to 170		100 to 230	
	Power Source *2	V (Hz)	Three-phase 200 ±10% (50) / 200 to 220 ±10% (60)				
	Power Consumption *1	kW	5.1	8.8	10.1	12.7	15.3
	Electric Current *1	A	19.2	31.8	33.0	41.0	48.2
Operation Control Method	Power Capacity *3	kVA	8.0	12.2	12.6	17.5	19.5
	Breaker Capacity *6	A	30	50		75	
Equipment Details	Compressor speed control						
	Compressor	Construction	Fully sealed rotary type (inverter driven)			Fully sealed scroll type (inverter driven)	
		Output	kW	1.7	3.0	4.6	7.46
	Condenser	Double pipe water cooling					
		Plate type heat exchanger					
	Heat Exchanger	SUS316 (Brazing: Cu)					
		Multistage centrifugal immersion type					
	Discharge Pump	Construction					
Output		kW	1.1 (Inverter driven)	1.5 (Inverter driven)		4.0 (Inverter driven)	
Water Tank Capacity	L	Approx. 60	Approx. 90		Approx. 100		
Refrigerant	R-410A						
Charged Amount	kg	2.6		2.8		3.6	
External Dimensions (H×D×W)	mm	G1: 1410 (G2: 1536) × 752 × 720		1700 × 854 × 870		1410 × 854 × 1380	
Unit Mass (dry weight)	kg	G1: 200 / G2: 205		280	290	405	
Operating Noise Level (50/60 Hz) *5	dB	58		59	61		59

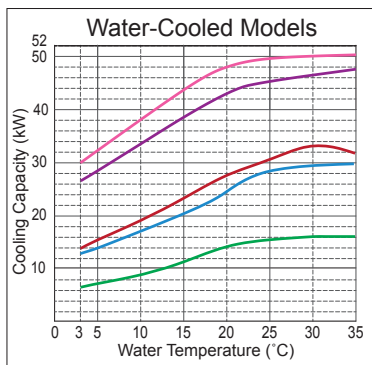
*1. Operating conditions: Chilled water temp : 20 °C, Cooling water temp : 32 °C (water cooled units only), Ambient temp : 32 °C. Cooling capacity is at least 95% of listed figures. *2. Source voltage phase unbalance should be less than ±3%. *3. The figure noted is when operating at the highest capacity in the normal operating range. *4. Continuous current load fluctuation within ±10%, and with stable ambient temp and power supply, etc. Does not include starting times or when the cooling load is too small, in which case the compressor may cycle on and off.

*5. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *6. Unit comes with a built-in multi-purpose overload and short circuit protection breaker.

*7. For liquid temperature settings of 0 to 3 °C, use a 30 to 40% solution of industrial-use ethylene glycol. *8. At time of startup only. Will differ depending on ambient temperature and cooling water temperature.

Note 1: The recommended liquid (chilled water) that can be used is either clean water or a 30 to 40% ethylene glycol solution. Note that there will be a 10% reduction in cooling capacity if using a 30 to 40% ethylene glycol solution. Alternatively, if deionized water is to be used, it should have an electrical conductivity of at least 1 µS/cm.

Cooling Capacity



— RKE15000B-VW-CE
— RKE11000B-VW-CE
— RKE7500B-VW-CE
— RKE5500B-VW-CE
— RKE3750B-VW-CE

<Conditions>

• Chilled Liquid : Water

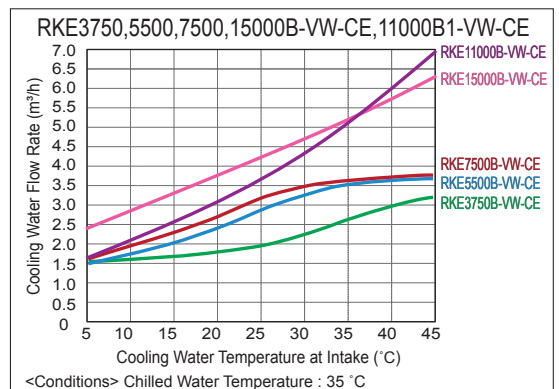
• Flow Rate :

RKE3750B-VW-CE 43 L/min
RKE5500B-VW-CE • 7500B-VW-CE 125 L/min
RKE11000B-VW-CE 140 L/min
RKE15000B-VW-CE 200 L/min

• Ambient Temperature : 32 °C

• Cooling Water Temperature : 32 °C

Cooling Water Flow Rate (For the water cooled condenser)

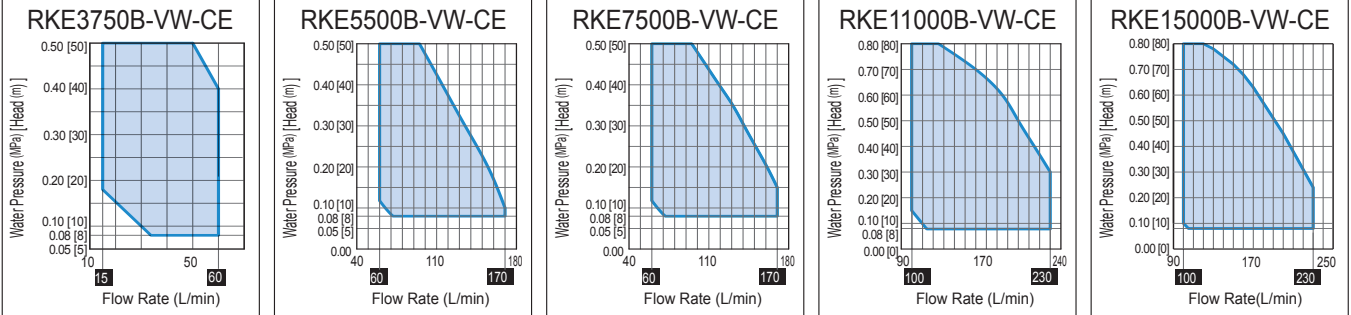


* Actual cooling water flow rate will depend on the water temperature.

* Ensure the required quantity of water as shown in the graphs below.

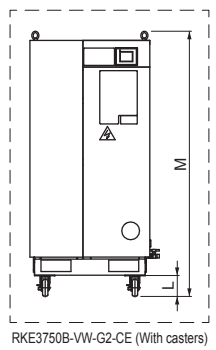
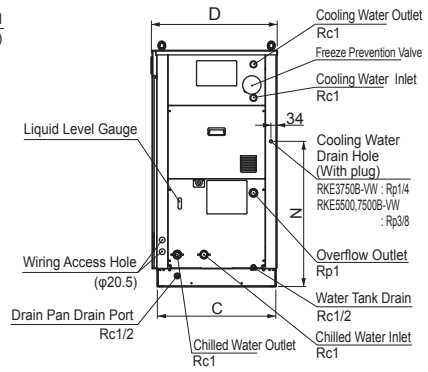
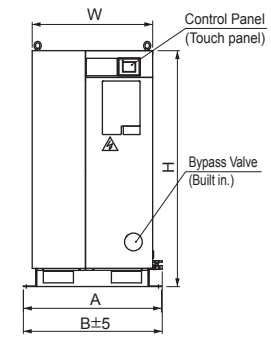
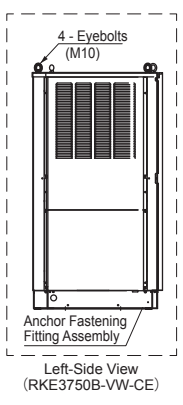
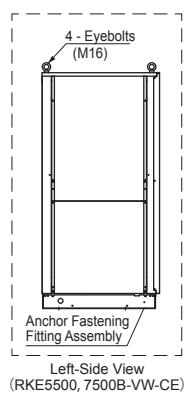
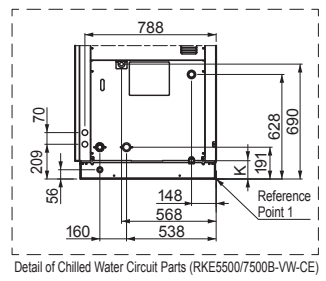
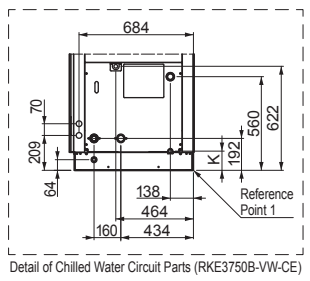
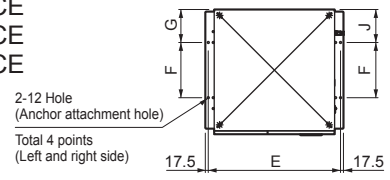
Chilled Water Flow Chart

- * The illustration shows the actual measured flow rate value when the bypass valve is closed.
- * Flow rate changes based on inverter frequency
- * The shaded area indicates the range possible for the adjusted frequency value.
- * If additives are used, the flow rate characteristics will change due to factors such as the additive used, the concentration, fluid temp, etc.

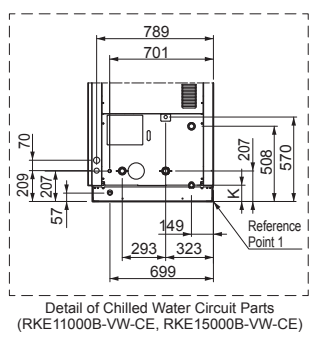
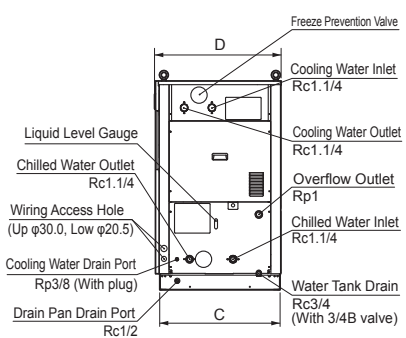
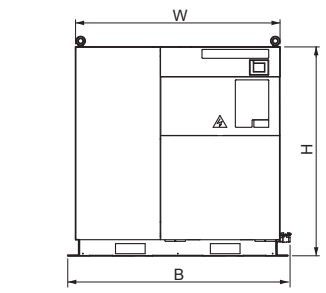
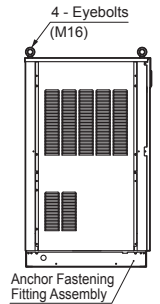
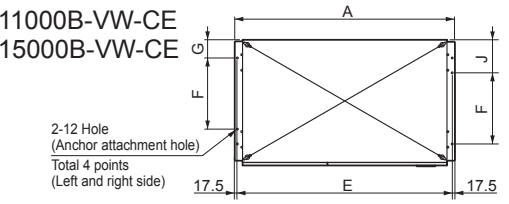


External Dimensions (Units: mm)

RKE3750B-VW-CE
RKE5500B-VW-CE
RKE7500B-VW-CE



RKE11000B-VW-CE
RKE15000B-VW-CE



External Dimension Table (units : mm)

Model	W	H	A	B	C	D	E	F	G	J	K	L	M	N
RKE3750B-VW-CE	720	1410	826	830	708	752	791	330	197	197	115	126	1536	869
RKE5500B-VW-CE	870	1700	975	990	812	854	940	480	121	221	110	-	-	939
RKE7500B-VW-CE	1380	1410	1485	1500	812	854	1450	480	123	223	110	-	-	*
RKE11000B-VW-CE	1380	1410	1485	1500	812	854	1450	480	123	223	110	-	-	-

* See External Dimensions

Brine Chiller RKE-B (Air-Cooled Series)

Air Cooled

IPX4 Equiv.
Rating Splash-proof

Cooling Capacity **3.6 to 8.3 kW**

Operable Ambient Temp **-20 to 45 °C**

Operable Liquid Temp Range **-5 to 10 °C**

Temp Control Precision **±0.1 °C**



※ Warranty period of the refrigerant circuits 2 years from the date of purchase (or 10,000 hours of operating time).



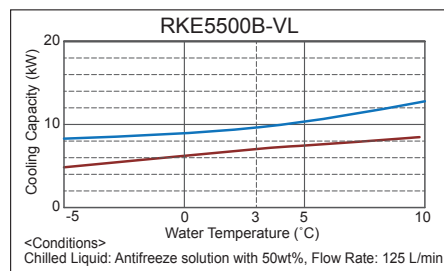
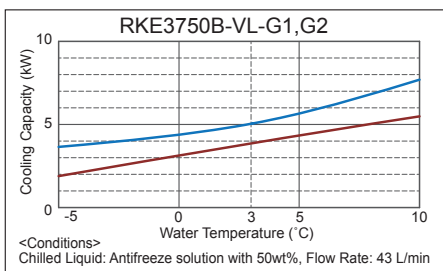
RKE5500B-VL

Specifications

Model		RKE3750B-VL-G1 (w/o caster)	RKE3750B-VL-G1 (w/ casters)	RKE5500B-VL	
Performance Specifications	Cooling Capacity *1	3.6		8.3	
	Legal Refrigeration Tonnage	1.31		2.21	
	Operable Ambient Temperature Range	-20~45			
	Operable Liquid Temperature Range	-5~10			
Control Precision		±0.1 °C (Energy saving mode: ±2.0 °C)			
Power Specifications	Power Source	V(Hz) Three-phase 200V to 220V±10% 50/60Hz			
	Electric Current *1	15.7		21.7	
	Power Capacity	7.0		11.0	
Operation Control Method		Compressor Speed Control			
Equipment Details	Compressor	Construction	Fully sealed rotary type		
		Output	1.7(Inverter driven)	3.0(Inverter driven)	
	Condenser		Fin and tube forced-air cooling		
	Heat Exchanger	Construction	Plate type heat exchanger		
		Material	SUS316 (Brazing: Cu)		
	Discharge Pump	Construction	Multistage centrifugal immersion type		
		Output	1.1(Inverter driven)		1.5(Inverter driven)
		Operating Flow Rate	15 to 60 when temperature is 5 to 10 °C / 28 to 60 when temperature is -5 to 5 °C		
	Fan Motor	Output	0.4(Inverter driven)		0.75(Inverter driven)
	Water Tank Capacity		L Approx. 60		
Refrigerant		R410A			
Charged Amount		2.6		3.1	
External Dimensions (H×D×W)		1410×752×720	1536×752×720	1700×854×870	

*1 Operating conditions: Chilled liquid temp.: 20 °C, Ambient temp.: 32 °C. Cooling capacity is at least 95% of listed figures. Brine should be ethylene glycol-based and used at a concentration of 40 to 50%. Outside installation is possible (IPX4 equivalent rating), but installation in direct sunlight, strong wind, contact with falling snow, or freezing conditions requires further measures. Equipped with contacts for remote operation, operation signal and alarm signal. Equipped with a 3.5" color touch panel for operation. Secure at least 800 mm of space around the unit for maintenance. Sufficient insulation must be provided for piping outside the unit. Piping outside the unit must be well fixed and supported so excessive load will not be applied to each connecting port.

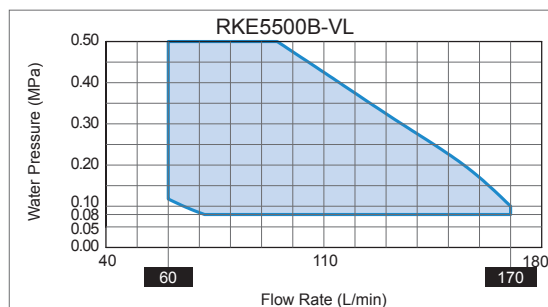
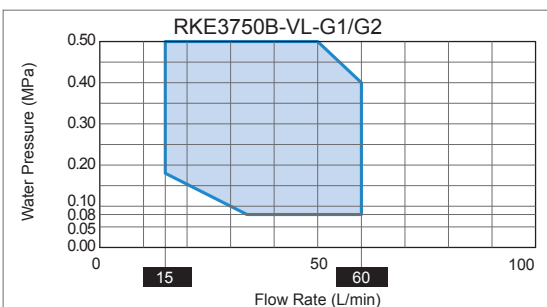
Cooling Capacity



— Ambient Temperature 32 °C
— Ambient Temperature 45 °C

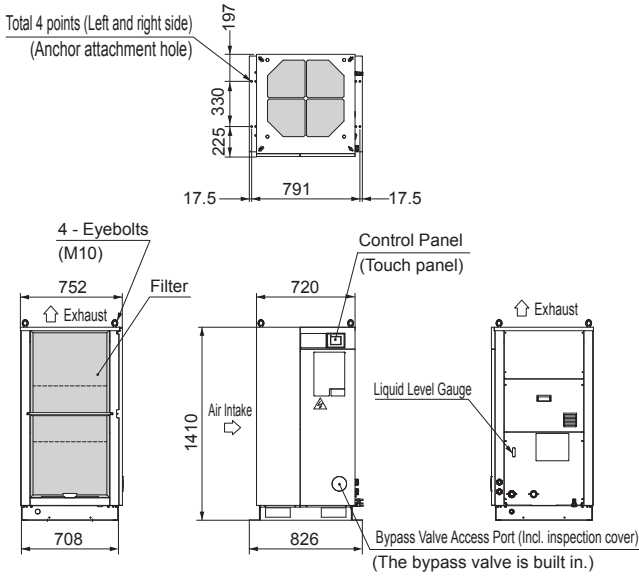
Chilled Water Flow Chart

- * The illustration shows the actual measured flow rate value when the bypass valve is closed.
- * Flow rate changes based on inverter frequency.
- * The shaded area indicates the range possible for the adjusted frequency value.
- * If additives are used, the flow rate characteristics will change due to factors such as the additive used, the concentration, fluid temp, etc.

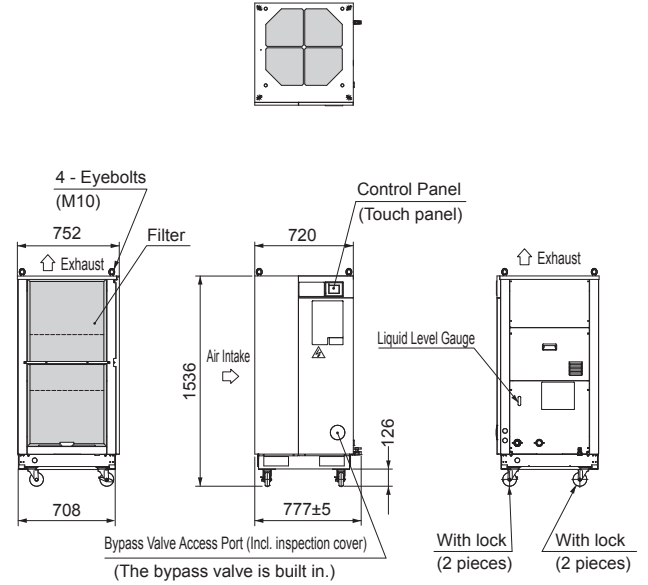


External Dimensions (Units: mm)

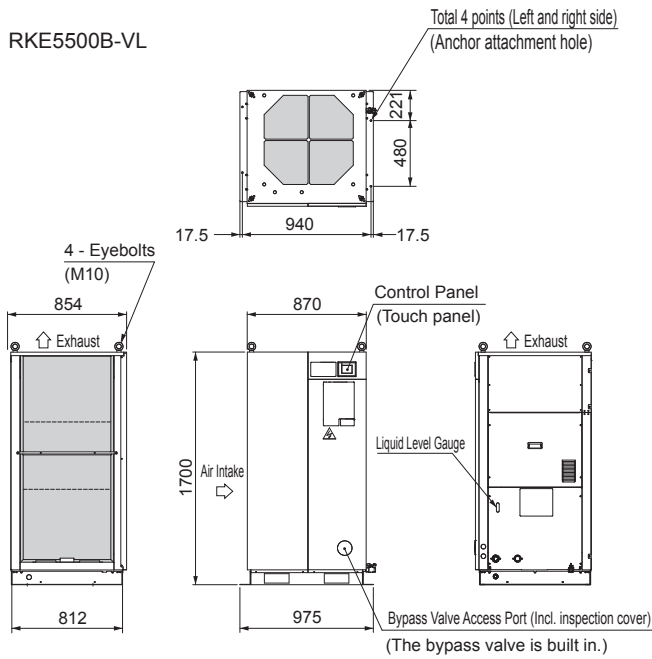
RKE3750B-VL-G1



RKE3750B-VL-G1 (w/ casters)



RKE5500B-VL



Accessories (Sold Separately)

Part Name	RKE3750B-VL	RKE5500B-VL
Wind Shield Assembly	03108110010	03108120010
Snow Protection Assembly	03108111010	03108121010
Optional Casters A-Assembly (4 freewheeling casters with lock)	03108408010	03108405010
Optional Casters B-Assembly (4 freewheeling casters with leveling foot)	03108409010	03108406010
Optional Casters C-Assembly (2 freewheeling casters with lock, 2 fixed casters)	03108410010	03108407010
Distribution Panel High-Temperature Set	04105977010	04106046010
Vibration Reducing Base	0A003386010	0A003433010

RKE-A Series (Heavy Duty Models)

Inverter Controlled Compressor

Built-In Discharge Pump

External Warning Alarm Terminals
Operation / Alarm / Remote operation

IPX4 Equip.
Rating Splash-proof

HFC Refrigerant
R-407C

Remote Control
Panel (Optional)

Features

- Operates with a maximum energy savings of 57%. *
These Orion chillers respond to work loads using the least amount of energy. (* Compared with HB control models running at a 30% load)
- Highly Precise liquid temperature control possible.
The chiller senses the liquid temperature and adjusts the compressor speed accordingly, thus achieving liquid temperature precision control of ± 0.5 to ± 1.0 °C. (Precision is subject to work loads. Please consult your dealer if high precision control is demanded.)
- Wide range of liquid temperature control.
Wide range of liquid temperature control.
- Comes with built-in communications interface as standard equipment.
Allows temperature control via RS232C or RS422 interfaces.



Warranty period of the refrigerant circuit is 2 years from the date of purchase (or 10,000 hours of operating time).



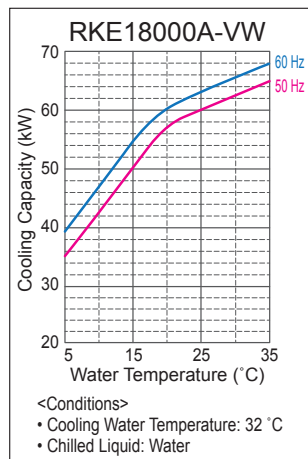
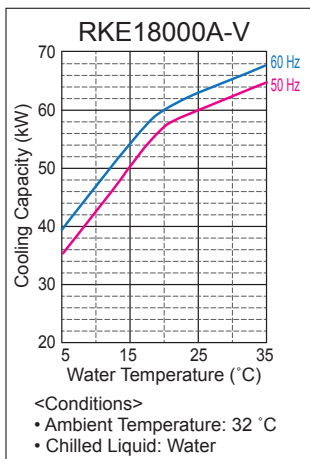
RKE18000A-V

Specifications

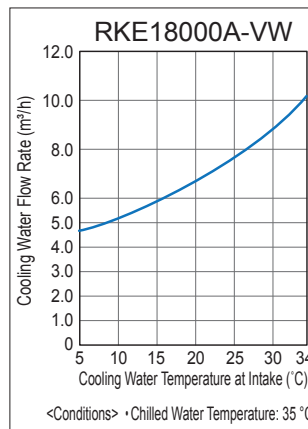
Model		Air-Cooled Model		Water-Cooled Model		
		RKE18000A-V		RKE18000A-VW		
Performance Specifications	Cooling Capacity (50/60 Hz) *1	kW		57/60		
	Operable Ambient Temperature range	°C		-5 to 43		
	Operable Liquid Temperature Range	°C		5 to 35		
Control Precision *4		Under high precision setting ± 1.0 °C (± 0.5 °C during stable load), under energy-saving setting ± 1.0 °C (± 0.5 °C during stable load, ± 2.0 °C during ON/OFF cycle mode)				
Power Specifications	Power Source *2	V (Hz)		Three-phase 200 $\pm 10\%$ (50/60), 220 $\pm 10\%$ (60)		
	Power Consumption (50/60 Hz, 220 V) *1	kW		25.5/28.0, 28.0		
	Electric Current (50/60 Hz, 220 V) *1	A		82.2/89.8, 89.8		
	Power Capacity *3	kVA		35		
Equipment Details	Breaker Capacity	A		125 *7		
	Compressor Output	kW		3.0, 7.46		
	Condenser			Fin and tube forced air cooling		
	Heat Exchanger	Construction		Plate type heat exchanger		
		Material		SUS316 grade stainless steel (brazing: copper)		
	Discharge Pump	Output	kW		3.2 (inverter driven)	
		Flow Rate *5	L/min		200 (Head: 50 m)	
	Fan Motor Output	W		750 \times 2 (inverter driven)		
	Water Tank Capacity	L		Approx. 160		
	Refrigerant			R-407C		
Charged Amount	kg		6.1, 5.2			
External Dimensions (HxD×W)	mm		1800×960×1720			
Unit Mass (dry weight)	kg		Approx. 660			
Operating Noise Level *5	dB		69			

*1. Operation when liquid temp is 20 °C, ambient temp is 32 °C, and cooling water temp. is 32 °C. Cooling capacity is at least 95% of listed figures. *2. Source voltage phase unbalance should be less than $\pm 3\%$. *3. The figure noted is when the equipment is operating at the highest capacity of its normal operating range. *4. Stable load indicates continued operation with maximum load fluctuations of $\pm 10\%$ of the current load. (However, this is excluding loads in the 25% to 40% range.) Setting can be changed by adjusting parameter F15. (Default setting is the high-precision setting.) *5. Please operate with a head of 50 m or less. *6. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *7. Unit comes with a built-in multi-purpose overload and short circuit protection breaker. Note 1: Please install the included strainer (40 mesh) to the liquid intake port. Note 2: The recommended liquid (chilled water) that can be used is either clean water or a 30 to 40 % industrial-use ethylene glycol solution. Alternatively, if deionized water is used, it should have an electrical conductivity of at least 1 μ S/cm. Note 3: Heat output of the equipment (in kW) is about 1.3 times the cooling capacity. (Air cooled only.) Note 4: RKE18000A-VW model is built to order item.

Cooling Capacity

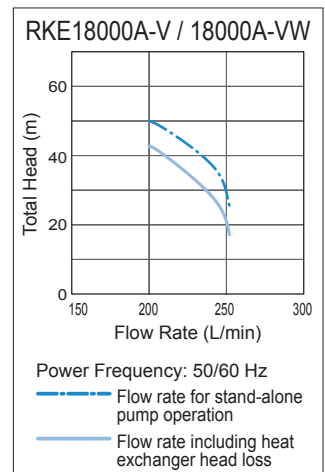


Cooling Water Flow Rate (for condenser)



Chilled Water Flow Rate

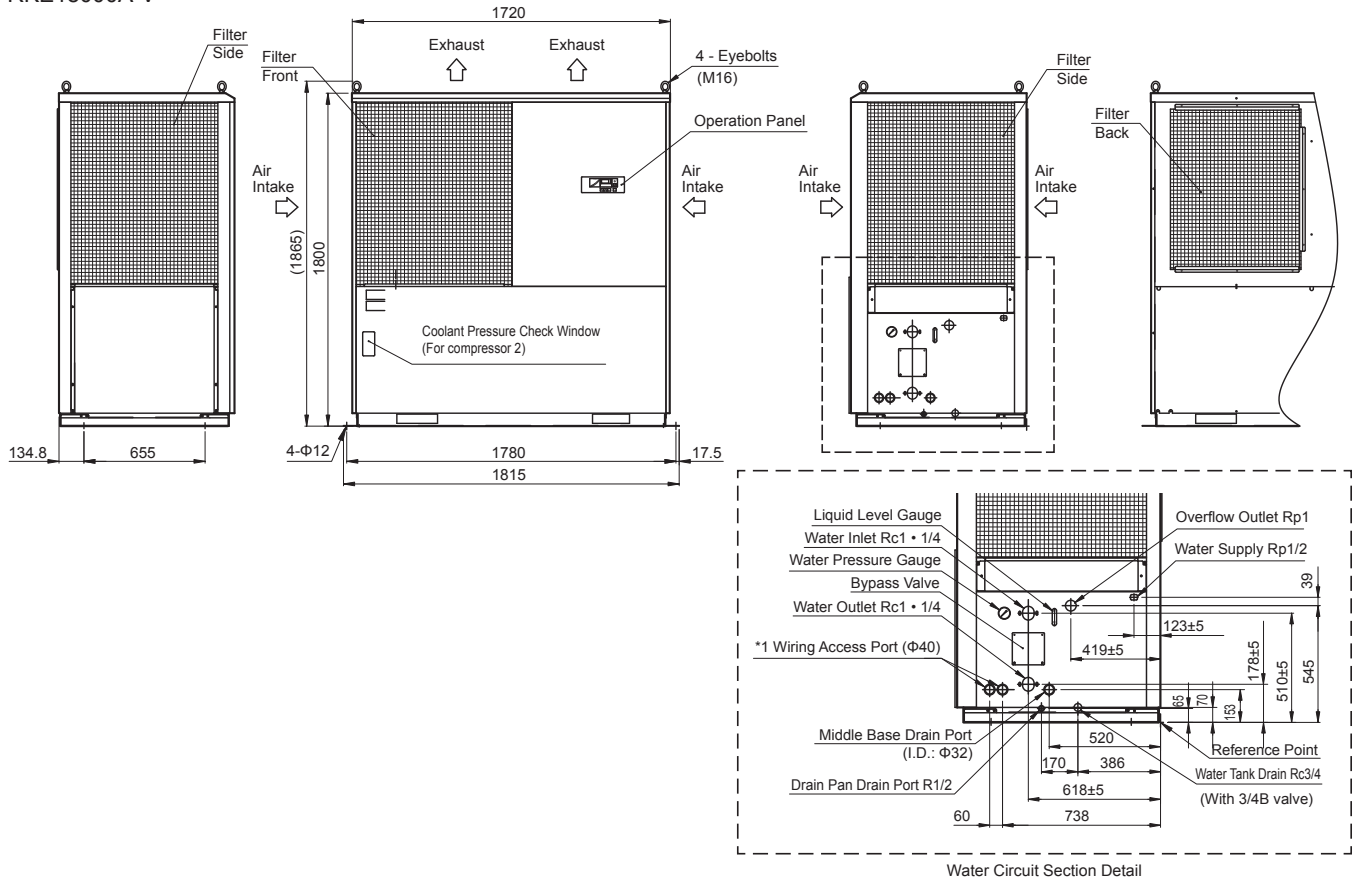
* Internal (return side) Head Loss: 0.7 m or less.



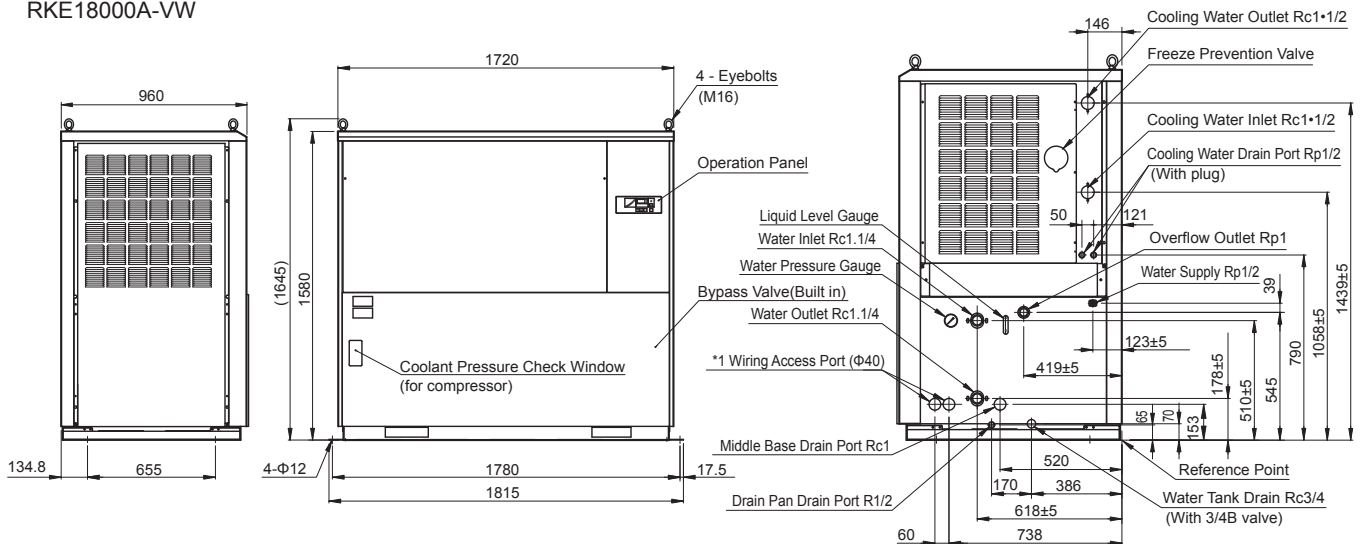
External Dimensions (Units: mm)

*1 : Put the signal lines and communication cables for respective wirings through the holes separate from the power cord hole.

RKE18000A-V



RKE18000A-VW



RKE-A Series (Heavy Duty Water-Cooled Models)

Inverter Controlled Compressor

Built-In Discharge Pump

External Warning Alarm Terminals
Operation / Alarm / Remote operation

IPX4 Equiv.
Rating Splash-proof

HFC Refrigerant
R-407C

Features

- Operates with a maximum energy savings of 57%. *
Orion chillers respond to work loads using the least amount of energy. (8 Compared with HB control models running at a 30% load)
- Highly precise liquid temperature control possible.
The chiller senses the liquid temperature and adjusts the compressor speed accordingly, thus achieving liquid temperature precision control of ± 0.5 to ± 1.0 °C. (Precision is subject to work loads. Please consult your dealer if high precision control is demanded.)
- Wide range of liquid temperature control.
User settings of liquid temperatures between 15 to 30 °C are now possible.
- Adopted for use with environmentally friendly refrigerant.
Uses non ozone-depleting R-407C refrigerant.
- Comes with built-in communications interface as standard equipment.
Allows temperature control via RS232C or RS422 interfaces.
RKE30000A-VW models excluded.



* Warranty period of the refrigerant circuit is 2 years from the date of purchase (or 10,000 hours of operating time).



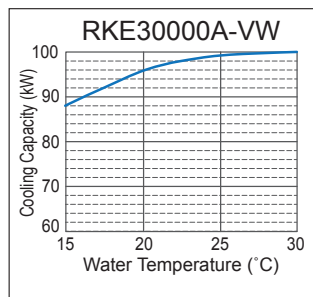
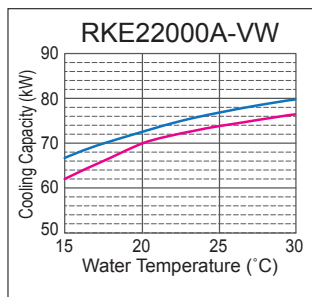
RKE22000A-VW

Specifications

Model			Water-Cooled Models	
			RKE22000A-VW	RKE30000A-VW
Performance Specifications	Cooling Capacity (50/60 Hz) *1	kW	70.0/73.0	
	Operable Ambient Temperature Range	°C	2 to 43	
	Operable Liquid Temperature Range	°C	15 to 30	
Control Precision *4			Under high precision setting ± 1.0 °C (± 0.5 °C during stable load), under energy-saving setting ± 1.0 °C (± 0.5 °C during stable load, ± 2.0 °C during ON/OFF cycle mode)	
Power Specifications	Power Source *2	V (Hz)	Three phase 200 $\pm 10\%$ (50/60), 220 $\pm 10\%$ (60)	
	Power Consumption *1	kW	38.0/40.0, 40.0	43, 43
	Electric Current *1	A	125/128, 128	126, 126
	Power Capacity *3	kVA	50.0	54
	Breaker Capacity	A	175 *6	
Equipment Details	Compressor Output	kW	7.5, 7.46	7.5 $\times 2$
	Condenser		Double pipe water cooling Plate type heat exchanger	
	Heat Exchanger	Construction	SUS316 grade stainless steel (brazing: copper)	
		Material		
	Discharge Pump	Output	3.2 Inverter driven pump $\times 2$	
		Flow Rate	L/min	Minimum 400 (Head: 50 m)
	Fan Motor Output	kW	-	
	Water Tank Capacity	L	Approx. 250	Approx. 320
	Refrigerant		R-407C	
	Charged Amount	kg	6.0, 3.4	6.0 $\times 2$
External Dimensions (H \times D \times W)	mm	1700 \times 1240 \times 2050	1700 \times 1340 \times 2350	
Unit Mass (dry weight)	kg	1100	1420	
Operating Noise Level (50/60 Hz) *5	dB	61	62	

*1. When operating under these conditions: chilled water temperature is 20 °C, ambient temperature is 32 °C, cooling water temperature is 32 °C. Cooling capacity will be at least 95% of the noted figures. *2. Source voltage phase unbalance should be less than $\pm 3\%$. *3. The figure noted is when the equipment is operating at the highest capacity of its normal operating range. *4. Stable load indicates continued operation with maximum load fluctuations of $\pm 10\%$ of the current load. (However, this excludes cases where the electronic capacity control valve cycles on and off.) The setting can be changed by adjusting parameter F15. (Default value: High-precision setting.) *5. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *6. Unit comes with a built-in multi-purpose overload and short circuit protection breaker. Note 1: Please install the included strainer (40 mesh) to the liquid intake port. Note 2: The recommended liquid (chilled water) that can be used is either clean water or a 30 to 40 % industrial-use ethylene glycol solution. Alternatively, if deionized water is used, it should have an electrical conductivity of at least 1 μ S/cm. Note 3: The above two models are built-to-order items.

Cooling Capacity

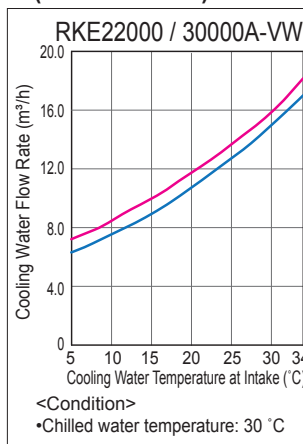


— 60 Hz
— 50 Hz

<Conditions>

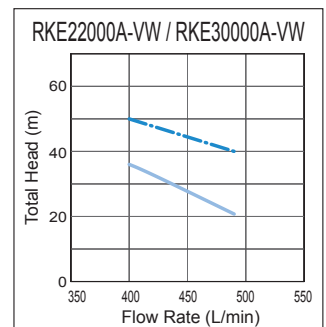
- Cooling Water Temperature: 32 °C
- Chilled Liquid: Water

Cooling Water Flow Rate (for condenser)



— RKE30000A-VW
— RKE22000A-VW

Chilled Water Flow Rate



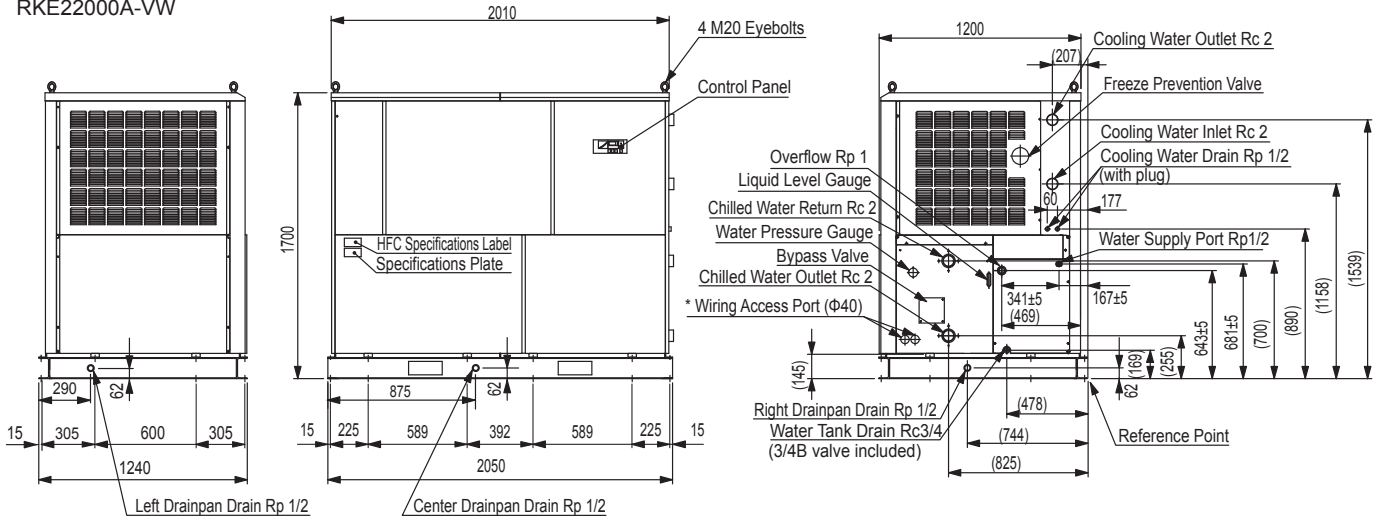
Power Frequency: 50/60 Hz

- Installed Pumps: Two 40MMF03.2 pumps
 - Internal (return side) Head Loss: 0.7 m or less.
- Flow rate for stand-alone pump operation
— Flow rate including heat exchanger head loss

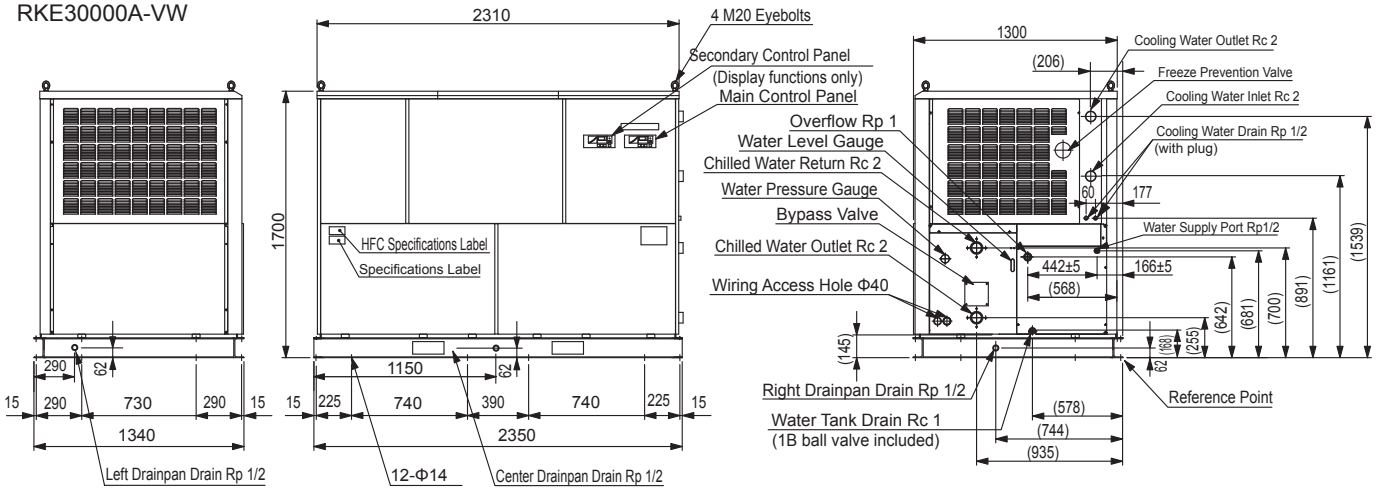
External Dimensions (Units: mm)

*1: Signal and communications related wiring should not pass through the same hole as power cables.

RKE22000A-VW



RKE30000A-VW



RKED Series (Digital Control Models)

Digitally Controlled Compressor

Built-In Discharge Pump

External Warning Alarm Terminals
Operation / Alarm / Remote operation

IPX4 Equip.
Rating Splash-proof

HFC Refrigerant
R-407C

Remote Control Panel (Optional)

Features

- Digital Compressor Control for an Additional 65% in Energy Savings**
Thanks to our original digital control (LOAD/UNLOAD) technology, we have achieved high-efficiency energy savings across the full range of loads from 0% to 100%.
- Safe and Reliable Design**
The RKED Series inherits its primary functionality from ORION chillers which have been receiving high marks from our customers. And thanks to simplified structural components, we've achieved a highly reliable chiller suitable in a wide variety of applications.
- External communications interface included as standard equipment.**
Allows temperature control via RS232C or RS422 interfaces.



※ Warranty period of the refrigerant circuits 2 years from the date of purchase (or 10,000 hours of operating time)



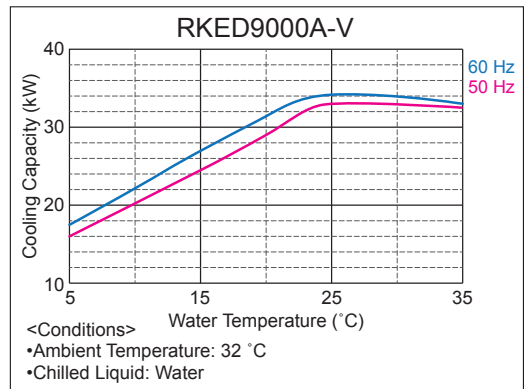
RKED9000A-V

Specifications

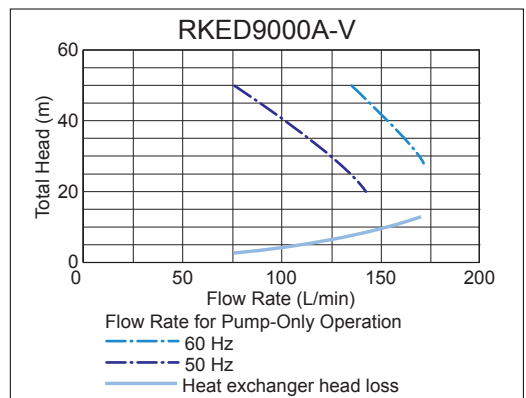
Model		Air-Cooled Model RKED9000A-V		
Performance Specifications	Cooling Capacity (50/60 Hz) *1	kW	29.2/31.4	
	Operable Ambient Temperature Range	°C	-5 to 43	
	Operable Liquid Temperature Range	°C	5 to 35	
	Control Precision *4	±1.0 °C (during periods of a stable load: ±0.5 °C)		
Power Specifications	Power Source *2	V (Hz)	Three phase 200 ±10% (50/60), 220 ±10% (60)	
	Power Consumption (50/60 Hz, 220 V) *1	kW	14/17, 17	
	Electric Current (50/60 Hz, 220 V) *1	A	45/52, 52	
	Power Capacity *3	kVA	20	
	Breaker Capacity	A	75 *7	
Equipment Details	Compressor Output	kW	7.09	
	Condenser	Fin and tube forced air cooling		
	Heat Exchanger	Construction	Plate type heat exchanger	
		Material	SUS316 grade stainless steel (brazing: copper)	
	Discharge Pump *5	Output	kW	2.2
		Flow Rate (50/60 Hz)	L/min	60/125 (Head: 50 m)
	Fan Motor Output	W	750 (inverter driven)	
	Water Tank Capacity	L	Approx. 95	
	Refrigerant Control Method	Electronic expansion valve (controlled by stepping motor)		
	Refrigerant	R-407C		
Charged Amount	kg	4.5		
External Dimensions (H×D×W)	mm	1800×850×1200		
Unit Mass (dry weight)	kg	435		
Operating Noise Level (50/60 Hz) *6	dB	69/71		

*1. When operating under these conditions: chilled water temperature is 20 °C, ambient temperature is 32 °C, cooling water temperature is 32 °C. Cooling capacity is at least 95% of listed figures. *2. Source voltage phase unbalance should be less than ±3%. *3. The figure noted is when the equipment is operating at the highest capacity of its normal operating range. *4. Stable load indicates continued operation with maximum load fluctuations of ±10% of the current load. *5. The capacity figures listed represent just one point on this model's flow-rate/head characteristic curve. Pumps differ between models; for model specific details, please refer to the pump characteristic curves. *6. Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. *7. Unit comes with a built-in multi-purpose overload and short circuit protection breaker. Note 1: The recommended liquid (chilled water) that can be used is either clean water or a 30 – 40. % industrial-use ethylene glycol solution. Alternatively, if deionized water is used, it should have an electrical conductivity of at least 1 μS/cm. Note 2: Please install the included strainer (40 mesh) to the liquid intake port. Note 3: Heat output of the equipment (in kW) is about 1.3 times the cooling capacity. (air cooled models only)

Cooling Capacity



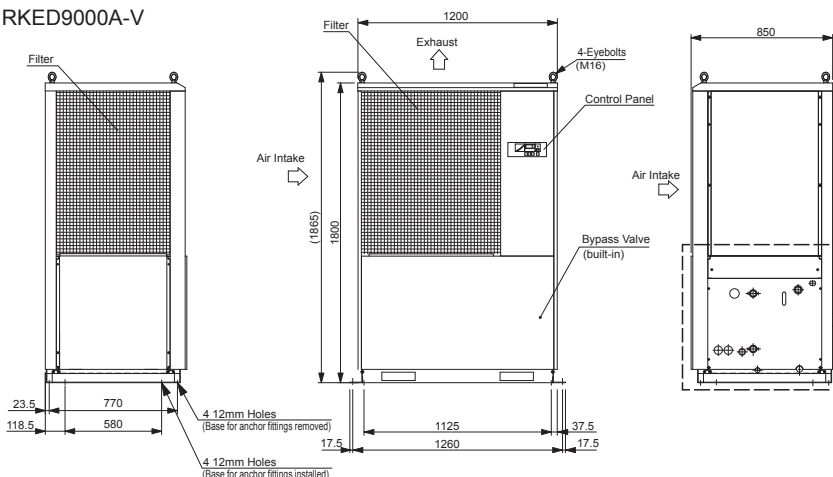
Chilled Water Flow Rate



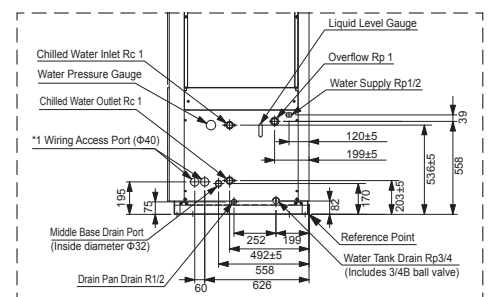
* To estimate the evaporator head loss, the external piping resistance to the evaporator head loss and read the flow rate and pressure accordingly.

External Dimensions (Units: mm)

RKED9000A-V



*1: Signal lines and power cords should be routed through different access holes.



Water Circuit Section Detail

RKE-B Series

• Central Chiller Controller(Wired)



Part Name	Applicable Models
RKE-CT001	RKE22000B-V RKE30000B-V

Using our Central Chiller Controller, Run/Stop operations on as many as 16 units is possible.

*1 Maximum 4 units per group.

The Central Chiller Controller does not include communication cables. See the following and order separately as needed.

Part Name	Part Number	Applicable Models
Central Chiller Controller Communication Cable Assembly, 20 m.	04107977010	RKE22000B-V RKE30000B-V
Central Chiller Controller Communication Cable Assembly, 50 m.	04107977020	

• Remote Control (Wired)



Remote Control Sets include cables. The set model number differs depending on the cable length.

Remote Control (Includes cable)	Part Number	Applicable Models
Max. cable length: 20 m	03107963010	RKE3750B-V(W) RKE5500B-V(W) RKE7500B-V(W)
Max. cable length: 50 m	03107963020	
Max. cable length: 100 m	03107963030	
Max. cable length: 20 m	03108949010	RKE11000B1-V(W) RKE15000B-V(W)
Max. cable length: 50 m	03108949020	
Max. cable length: 100 m	03108949030	
Max. cable length: 20 m	03111017010	RKE22000B-V RKE30000B-V
Max. cable length: 50 m	03111017020	
Max. cable length: 100 m	03111017030	

• Wind Shield

The Wind Shield is used for outdoor installations.



Part Name	Part Number	Applicable Models
Wind Shield	03108110010	RKE3750B-V(L)
	03108120010	RKE5500B-V(L) RKE7500B-V
	03108881010	RKE11000B1-V
	03109802010	RKE15000B-V
	02104017010	RKE22000B-V RKE30000B-V

• Snow Protection Hood

The Snow Protection Hood supports outdoor installations in snowy regions.



Part Name	Part Number	Applicable Models
Snow Protection Hood	03108111010	RKE3750B-V(L)
	03108121010	RKE5500B-V(L) RKE7500B-V
	03108887010	RKE11000B1-V
	03109803010	RKE15000B-V
	03111091010	RKE22000B-V RKE30000B-V

RKE-A and RKED Series

• Remote Control (Wired)



Remote Control Cable Assembly

Remote Control (Wired) Set

The Remote Control (Wired) Set does not come with a cable. Please order the Remote Control Cable Assembly.

Part Name	Part Number	Applicable Models
Remote Control (Wired) Set A	04110395010	RKE18000A-V(W)
Remote Control (Wired) Set B	04110396010	RKED9000A-V RKE22000A-VW
Remote Control Cord Assembly (20 m)	04110397010	RKE *1 and RKED Series All Models
Remote Control Cord Assembly (50 m)	04100541020	
Remote Control Cord Assembly (100 m)	04100541030	

* Chiller models made before April 2006 require a CPU replacement in order to use this remote control. Please inform your dealer of the chiller serial number before purchasing.

*1. Except RKE30000A-VW

• Wind Shield

* Items for RKE18000A-V models are built-to-order.
* Does not include a wind shield for the rear side of the product. The rear-side wind shield is available with a chiller as a special specification product. (This item is not installable on-site.)



Part Name	Part Number	Applicable Models
Wind Shield Assembly	03091230010	RKED9000A-V
	03091363010	RKE18000A-V

• Snow Protection Hood

* Please arrange a special-order number for items used with RKE22000 and 30000A-V models.



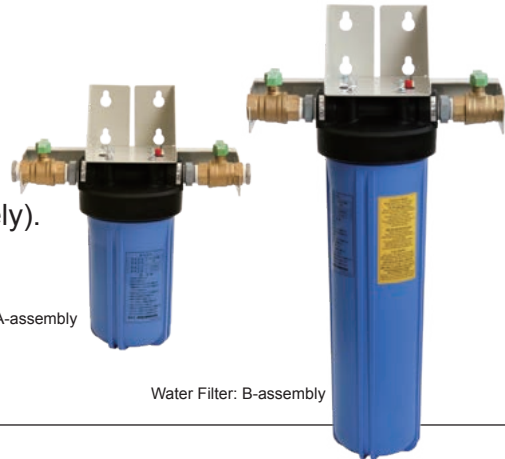
Part Name	Part Number	Applicable Models
Snow Protection Hood Assembly	03091238020	RKED9000A-V RKE18000A-V (2 hoods)

Water Filtering Equipment

Helps to prevent clogging within the water circuit of chillers and other equipment. Can also be used as a pre-filter for water purification equipment.

Features

1. Wall mount type for easy cartridge replacement.
2. Includes ball valves as standard equipment.
3. Stand mount available as an accessory (sold separately).



Water Filter: A-assembly

Water Filter: B-assembly

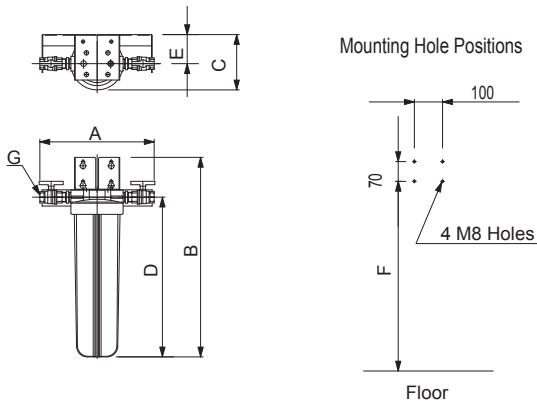
Specifications

Model		Water Filter: A-Assembly	Water Filter: B-Assembly	Water Filter: C-Assembly
Part number		04100489010	04100491010	04100490010
Applicable Models		RKE3750B-V(W)	RKE5500B-V(W) RKE7500B-V(W) RKED9000A-V	RKE11000B1-V(W) *2 RKE15000B-V(W) *2
Operating Ranges	Maximum Working Pressure	MPa 0.5		
	Maximum Working Temperature	°C 50		
Performance Specifications	Degree of Filtration	µm 100		
	Initial Element Pressure Loss	MPa 0.02 (flow rate 43 L/min)	0.02 (flow rate 125 L/min)	0.02 (flow rate 140 L/min)
Main Dimensions	Piping Connection Size	Rc1/2 (Rc1) *1	Rc1	Rc1*1/4
	Mass	kg 6.3	8.0	10.0
Element Model Number		SD-100-250-B	SD-100-500-B	
Element Part Number		40605000410	40605000400	
O-ring Part Number		83000014420		

Note: Configuration for use with RKE18000A-V(W) models and higher are special order items.

*1. Can be replaced by removing the 1×1/4B adaptor bushing. *2. Operate with a chilled water pressure of 0.50 MPa or below.

External Dimensions

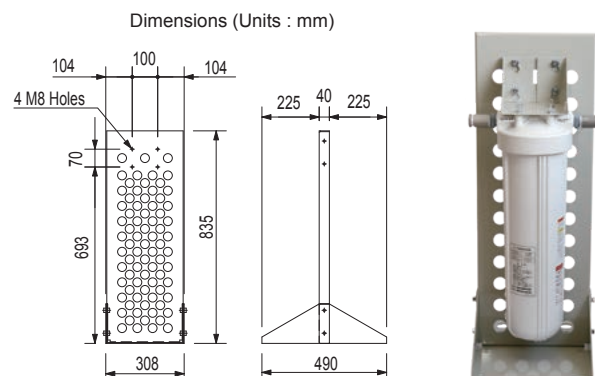


(Units:mm)

Model	Water Filter:A-Assembly	Water Filter:B-Assembly	Water Filter:C-Assembly
A	(435)	(405)	(449)
B	458	708	715
C	197	197	197
D	312	562	565
E	103	103	103
F	423 min.	673 min.	680 min.
G	Rc1/2	Rc1	Rc1*1/4

Stand Mount (Part No.: 04100569010)

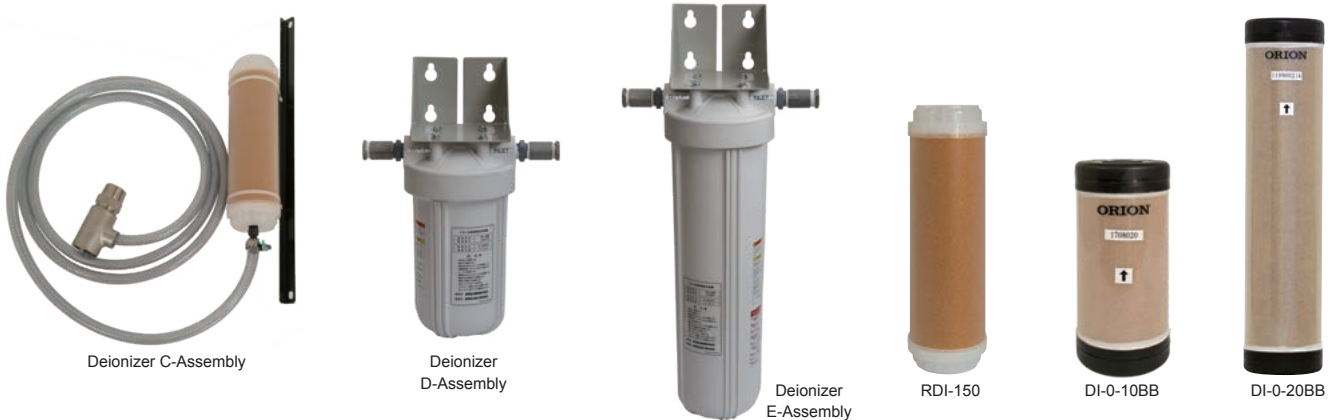
- Works with all filters, Deionizer D-Assembly, and Deionizer E-Assembly.
- 2 filters can be mounted one over the other on a single stand allowing for space saving configurations, such as having a water filter mounted over an ion exchange filter.



Deionizers

Cartridge and Filter types for easy connections. Water purification without the hassle!

■ **For circulating water setups** (Installed in a bypass configuration, it can help protect against rising electrical conductivity within the water circuit.)



Model	Deionizer C-Assembly	Deionizer D-Assembly	Deionizer E-Assembly
Part Number	04100614010	04100597010	04100437010
Applicable Models	RKE3750B-V(W)	RKE5500A-V(W) RKE7500A-V(W) RKED9000A-V	RKE11000B1-V(W) RKE15000B-V(W) RKE18000A-V(W) RKE22000B-V RKE30000B-V
Ion Exchange Resin	RDI-150	DI-0-10BB	DI-0-20BB
Ion Exchange Resin Part Number	0A001387000	0A001108000	0A001017000
Processing Capacity *1,2	L	Approx. 600 L	Approx. 1600 L
Water Quality	µS/cm	Approx. 150 L	Approx. 150 L
Working Water Pressure	MPa	0.05 – 0.2 *5	
Working Water Temperature	°C	5 – 40	
Dimensions	Φ74.5, H : 248 mm (ion exchange resin)	Φ185, H : 449 mm	Φ185, H : 592 mm
Mass	g	Approx. 670 (ion exchange resin)	Approx. 5700
Type of Installation	On the side of the unit	On a wall *4	
Inlet / Outlet Piping Fixture		Rc1/2	
Included Parts	Spare deionizer *3 ball valve, mounting hardware hose nipple, hose band tee coupling, nipple, hose	Mounting bracket, resin nipple, socket, bushing (preassembled on the filter) filter removal wrench	

- *1. Processing capacity figure based on water source standard purity level of 150 µS/cm. Capacity may vary according to water quality.
- *2. Processing capacity is not based on circulating water flow system. Ion exchange resin lifespan and water quality may fluctuate depending on the properties of the wetted parts and surfaces, as well as the particular working environment.
- *3. It is recommended that the initially supplied water be either water that has been purified by having passed through an ion exchange resin, or be commercially purchased deionized water. If tap water (or a similar grade of water) is used, the effective life of the ion exchange resin will be greatly reduced. In this case, please replace the ion exchange resin with the spare soon. (Ion exchange resin assemblies A, B, C, and F only.)
- *4. Ion exchange resin assemblies D and E are wall mounted. Please confirm that there is a suitable installation place before installing the filter. A stand mount is available as an accessory (sold separately). (The mounting hole positions of Ion Exchange Resin D and E assemblies are the same as the mounting hole positions on Water Filter A and B assemblies respectively. Please refer to the Water Filter Equipment page for details regarding dimensions.)
- *5. On Ion Exchange Resin D and E assemblies, if there is a chance that the water pressure within the purification vessel will exceed 0.2 MPa, a pressure reducing valve should be installed.
Note : Avoid installing the ion exchange resin where it will be in direct sunlight or in places where there is a risk of it being damaged.

■ **For Water Supply and Purification** (Keeps sudden rises in electrical conductivity down during water tank supply and replenishment.)

Model	Model Deionizer Assembly for Water Supply
Part Number	04100522010
Applicable Purifier	AP-10
Processing Capacity *1,2	L
Water Quality	µS/cm
Working Water Pressure	MPa
Working Water Pressure	°C
Dimensions	Φ165, H : 851 mm
Unit Mass	kg
Inlet Connection	Universal faucet adaptor
Outlet Connection	Braided hose (Φ12 × Φ18)
Ion Exchange Resin Part Number	0A001213000
Comments	Electrical conductivity gauge (0 – 3 µS/cm) included Flow regulating valve (2.2 L/min) included 3 anchor bolt holes (Φ10 mm × 3)



- *1 For water tank supply and replenishment.
- *2 Processing capacity figure based on water source standard purity level of 200 µS/cm. Actual processing capacity may change depending on water quality, temperature, etc.
- *3 If there is a chance that the water pressure within the vessel will exceed 0.34 MPa, a pressure reducing valve should be installed.
Note : Avoid installation of the deionizer where it will be in direct sunlight or in places where there is a risk of it being damaged.

Introducing the ORION IoT System

Remote Monitoring & Remote Operation of ORION Products.

Uses your factory's internal network for safety against leaks of internal information.

Compatible Models

RKE (-B) Series



Monitoring

Data Collection*1

Communication

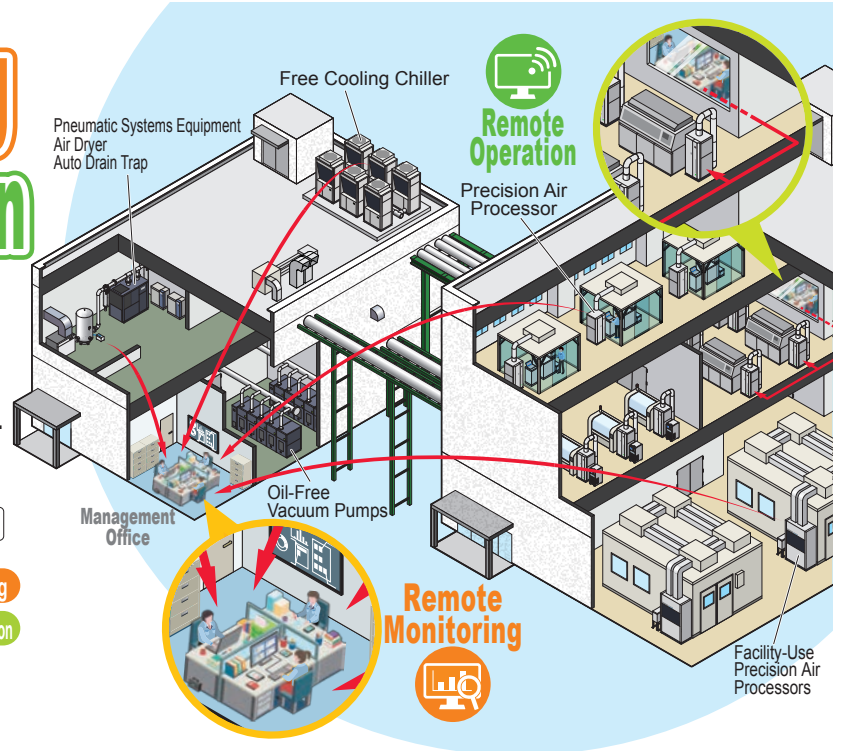
RKED Series



Monitoring

Communication

*1:RKE-B Series (3750B and above)



Contact-State Monitoring Software

Includes Mail-Alert Functionality



Need to walk to the site every day in order to check the operating state of your equipment...

And the constant worry that you won't be around when an alarm condition occurs!

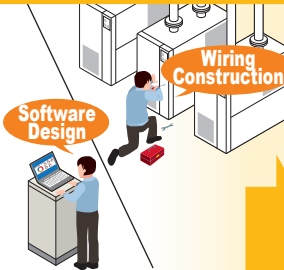
Monitoring of product operating states from remote sites is possible. Can be used as long as contact outputs are **non-voltage contacts**. Get email alerts when alarms occur! Getting alerts while away from the PC gives peace of mind!

Checking operating states is easy! Mail alerts for alarm conditions give peace-of-mind when away from the site.



Operation Data Acquisition Software

Includes Mail-Alert Functionality



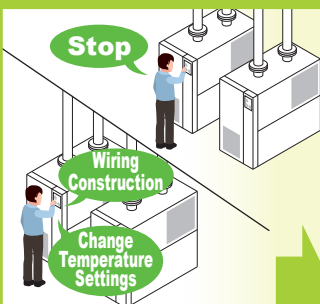
We need to design wiring and specialized software to enable data logging product operating-states and operating conditions...

Can perform CSV-format logging of product operation status. Data can be graphed using our free downloadable software that is easy and safe, even for beginners!

Data can be viewed from other PCs or tablets through the Internet.



ORION Communication Software



Need to walk to the factory each time to start and stop operation...

Run/Stop operations are possible from remote locations. And temperature settings can also be changed.

Now, Run/Stop and other operations are easier!



How to Download our IoT Software

STEP 1

Visit our website.



STEP 2

Confirm the download you need from the list of software.

STEP 3

Perform the registration process and enter the product model number and serial number.

Note that our software is only offered in Japanese. Operation with non-Japanese operating systems has not been confirmed. Please refer to the instruction manual for required equipment and specifications.

⚠ WARNING = Failure to follow instructions contained in a WARNING may result in death or serious injury.

⚠ CAUTION = Failure to follow instructions contained in a CAUTION may result in injury to the operator or damage to property.

Pre-Unloading and Unloading Procedures

• Before Unloading

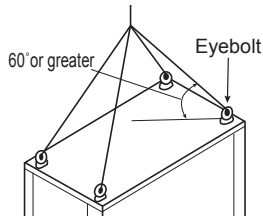
After unpacking, check the nameplate of the unit to ensure it is the correct model ordered. Also, check that the below mentioned included parts are present.

Machine Part Name	Specifications	Qty Per Unit
Y-Strainer	40 mesh equiv. Pipe connection : 1B Model : RKE3750B-V/VW/VL, RKE5500B-V/VW/VL, RKE7500B-V/VW	1 pc
	40 mesh equiv. Pipe connection : 1.1/4B Model : RKE11000B-V/B-VW, RKE15000B-V/B-VW	
	40 mesh equiv. Pipe connection : 2B Model : RKE22000B-V, RKE30000B-V	
Barrel Nipple	1B × 100 L (to attach the Y-strainer) Model : RKE3750 – 7500B-V/B-VW	1 pc
	1.1/4B × 100 L (to attach the Y-strainer) Model : RKE11000B-V/B-VW, RKE15000B-V/B-VW	
	2B (to attach the Y-strainer) Model : RKE22000B-V, RKE30000B-V	

It is possible that the unit could be damaged during shipping, transport, or other handling. When receiving the unit, check to make sure that there are no scratches or other abnormalities. If any damage or abnormality is detected, please contact the dealer where the unit was purchased.

⚠ WARNING

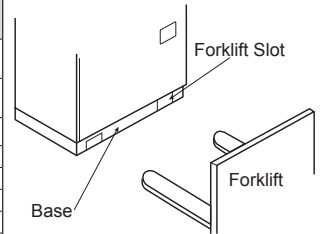
When making use of the eyebolts, suspend the unit from all 4 eyebolts and make sure there is at least a 60° angle between the top face of the unit and each of the suspension cables. Improper suspension may lead to the unit tipping over or falling, which could result in injury.



• Unloading Procedure

The unit is heavy; please be careful when transporting it. The unit has rectangular slots at its base in order to accept forklift tines. When lifting the unit by forklift, make sure the forklift tines go through the forklift slots all the way and protrude from the other side of the unit.

Model	Mass (when water tank is empty)
RKE3750B-V/VW/VL-G1 : No casters	200 kg
RKE3750B-V/VW/VL-G2 : Casters included	205 kg
RKE5500B-V/VW	280 kg
RKE7500B-V/VW	290 kg
RKE11000B1-V	415 kg
RKE11000B1-VW	405 kg
RKE15000B-V	460 kg
RKE15000B-VW	405 kg
RKE22000B-V	1050kg
RKE30000B-V	1065kg



⚠ WARNING

Installation of this equipment should be performed by your dealer or other qualified personnel. Improper installation by the end user may lead to water leakage, electric shock, and fire.

Unit Placement

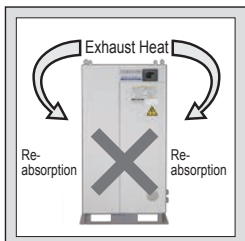
• Choice of Installation Location

Choose an installation location that is free from combustible materials, areas that could lead to electric shock, or environments that could lead to unit breakdown.

⚠ CAUTION

Install on a level surface that can adequately support the weight of the unit and fix the unit down with anchor bolts to prevent it from moving around. Not properly installing the equipment as indicated can result in water leaks or injury etc., from the unit tipping over or falling.

- Ensure there is adequate space for heat ventilation as well as sufficient space for maintenance and inspection of the unit. Also note that if the unit is enclosed as in the illustration below, exhaust heat from the unit will be forced back into the unit, causing the refrigerant pressure to rise, and eventually causing the unit to stop.
- If the unit will be installed where a wind of 8 m/s or higher will be blown on it, measures to block the wind from hitting the unit such as installation of a wind-break panel or wall is required.
- Install out of direct sunlight and do not install where the unit would be affected by heat. Contact with direct sunlight or heat can cause the unit



* If there are no obstacles within 150 cm of the front and sides of the unit, then the space from the top of the unit to the obstacle above can be as low as 100 cm or higher.

* For RKE22000B-V and 30000B-V models, ensure there is at least 300 cm clearance above the product and there are no obstacles within 100 cm of the front, back and sides. Model in the illustration: RKE3750B-V.

Upper Barrier (Roof, eaves, ceiling, etc.)



to perform below specified performance equal to the amount of that exposure. It can also lead to the activation of built-in safety devices which will prevent unit operation.

- Air cooled: Operate the unit in the ambient temperature of -20 to 45 °C. Operating outside this temperature range can lead to breakdown of the compressor. And operating in temperatures over 45 °C will result in a drop in the effectiveness of thermal radiation of the condenser. Built-in safety devices may activate causing the unit to shut down. If the ambient temperature will be above 45 °C, install ducting, following the section on page 28, "Ducting Design Points".
- Water cooled: Operate the unit in the ambient temperature of 2 to 45 °C. Operating outside this temperature range can lead to breakdown of the compressor.

When performing ductwork, install such that the piping is not constricted along the way. Failure to follow this rule can also lead to activation of built-in safety devices which will stop unit operation.

- Install in a place that is generally free of dust and dirt. Installation in places with heavy dust and dirt can result in reduction of unit performance.
- Note that operating air-cooled models solely in the Snow-Protection Mode in areas that heavy snowfall will result in reduced performance. It is therefore recommended that the unit be installed away from falling snow. (Air cooled only)
- Operate the product at a cooling water temperature within the range of 5 to 45 °C. If operated outside the specified range, the safety device will be activated to shutdown the product. It can also cause the compressor to malfunction. (Water cooled only)



	RKE3750B-V	RKE3750B-V(L)	RKE5500B-V(L)	RKE7500B-V	RKE11000B1-V	RKE15000B-V	RKE22000B-V	RKE30000B-V
Maintenance and Inspection Space (cm)	Front View			80				100
	Left/Right Views			80				100
	Rear View			0				100
	Top View				200			300

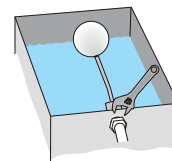
Water Supply and Drainage Construction

- Reliably install water supply and drainage piping. Improper water supply and drainage construction could result in water spraying out, causing water damage to the surrounding area.
- Keep water supply pressure at or below 0.50 MPa. Too high pressure can lead to equipment damage, which may lead to water leaks, flooding of the surrounding area, and electric shock.
- Keep the cooling water pressure below 0.69 MPa. Higher pressure may damage the components to cause water leakage and may result in electric shock.
- When performing water piping, be careful to avoid the following

points. Failure to do so can result in water leakage.

- Overtightening the piping connected to the water supply port.
- Having external forces on the water supply port.
- Piping installation that does not absorb vibrations of water hammer, etc.

- When connecting piping to the water supply port, always use two tools, using one to support the ball tap valve, as shown in the illustration to the right.



Chilled Water / Cooling Water Piping

Piping Sizes

Piping diameters for each model are listed below.

Piping Item	Piping Size		
	RKE3750B-V/VW/VL	RKE5500B-V/VW/VL RKE7500B-V/VW	RKE11000B1-V/VW RKE15000B-V/VW
Chilled Water Inlet	Rc1		Rc1.1/4
Chilled Water Outlet	Rc1		Rc1.1/4
Water Tank Drain	Rc1/2	Rc3/4	
Overflow Port	Rp1		
Drain Pan Drain Port	Rc1/2		
Water Supply Port	PJ1/2		
Cooling Water Inlet	Rc1 (Water cooled only)	Rc1.1/4 (Water cooled only)	
Cooling Water Outlet	Rc1 (Water cooled only)	Rc1.1/4 (Water cooled only)	

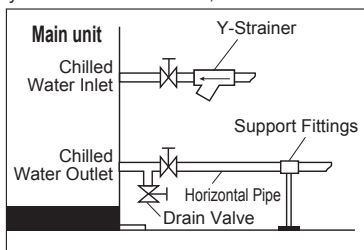
Piping Item	Piping Size	
	RKE22000B-V, RKE30000B-V	
Chilled Water Inlet	Rc2	
Chilled Water Outlet	Rc2	
Water Tank Drain	Rc1	
Overflow Port	Rp1	
Drain Pan Supply Port	R1/2	
Water Supply Port	PJ1/2	
Pressure Equalization Port*	R4	

* Only used for linked units.

Piping Methods

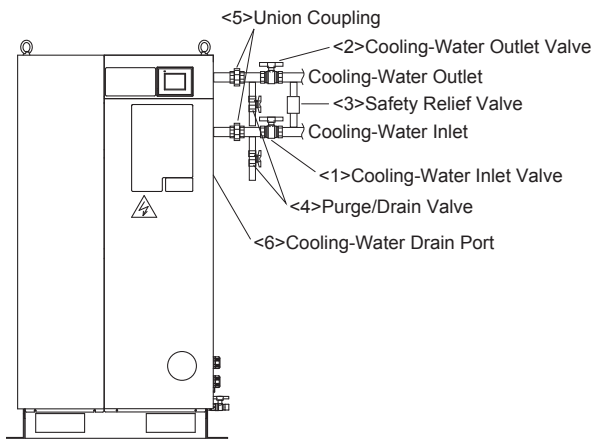
Piping installation should follow the guidelines below.

- Check the cooling water inlet and outlet side ports.
- Make pipe lengths as short as possible, and also avoid vertical and curved piping as much as possible.
- When tightening piping connections, use 2 pipe wrenches or adjustable wrenches in order to grasp both sides of the joint.
- Always install valves (customer supplied) at the chilled water inlet and outlet ports.
- Install the included Y-strainer on the chilled water intake side port.
- Make sure that there is no excessive weight or vibration directed on the unit from the connected piping. long horizontal piping should be supported with additional support hardware to ensure unreasonable forces are not applied directly to the unit's connection ports. Failure to properly support piping can lead to equipment damage.
- Piping should be insulated. (Install the pipe insulation such that there is enough gap to allow the removal of the cabinet water supply port.)
- If an automatic water supply system is to be installed, be sure to install a valve on the supply port. Also, keep water supply pressure at or below 0.50 MPa.
- Always support water supply piping with support fittings, and make sure that piping is horizontal.



Pipe Connection Procedure (Water cooled)

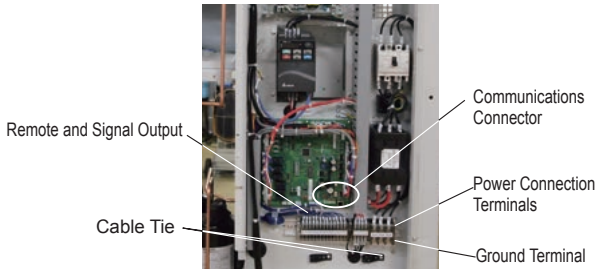
- Confirm the positions of the Cooling Water inlet and outlet. The Cooling Water inlet and outlet are specified with stickers. ("Cooling Water inlet", "Cooling Water Outlet")
- Follow the instructions below for piping work.
 - Mount the Cooling Water inlet valve <1> and the Cooling Water outlet valve <2>.
 - Be sure to mount the safety relief valve <3>. The regulating valve that is installed in the cooling water circuit performs the opening and closing of the valve automatically by detecting the refrigerant pressure. Thus, there is a possibility that the regulating valve becomes full-closed during operation. Be sure to install the safety relief valve for the water leakage prevention in the cooling water circuit, and set the cooling water inlet pressure 0.69 MPa or lower.
 - Install the purge/drain valve <4>.
 - Be sure to install the union coupling <5>. Make sure that the product and the cooling water piping can be easily disassembled when carrying out the cleaning of water-cooled condenser inside the product.



Electrical Wiring

• Correct Wiring Installation

When performing electrical wiring, be sure to carefully follow the guidelines listed below.



1. Choose a power cable based on the breaker capacity shown in the table to the right. Hook up the ground wire to the earth (ground) terminal located in the distribution box. Also, regarding the power and signal terminal block, refer to the chart on the right for the screw size and terminal block width.
2. There is a combined use overload protection and earth leakage breaker installed inside the distribution box and the specifications are in the table to the right.
3. Route the power cord through the power cord access hole, located on the lower-right part of the unit, to the inside of the terminal box. (Use 1 of the 2 available power cord access holes. The other can be used for remote control panel connections, etc.) Connect the power cord to the L1, L2, and L3 terminals on the terminal block. Fix the power cord in place with a cable tie.
4. Always properly ground this unit. Connect the ground wire to a proper earth/ground point that has been installed by a qualified electrician. Furthermore, the diameter of the grounding wire must be at least 2 mm².
* Prepare the ground wire terminal of a size according to the screw size listed in the table to the right.
5. Ensure the source voltage is within ±10% of the specified voltage. Also make sure the source voltage phase unbalance is within ±3%.

		RKE3750B-V/VW	RKE5500, RKE7500B-V/VW	RKE11000B1, 15000B-V/VW
Power Source (V·Hz)	Air cooled	Three-phase 200 to 220 ±10% (50/60)		
	Water cooled	Three-phase 200 ±10% (50), 200 to 220 ±10% (60)		
Terminal Block	Screw Size	M5		M6
	Terminal Block Width (mm)	M3		
Terminal Block	Power	12	13	17
	Signal	5.9		

	RKE3750B-V/VW/VL	RKE5500B-V/VW/VL, 7500B-V/VW	RKE11000B1-V/VW	RKE15000B-V	RKE15000B-VW
Breaker Capacity (A)	30	50	75	100	75
Current Sensitivity (mA)	30				100

	RKE3750B-V/VW/VL, 5500B-V/VW/VL, 7500B-V/VW	RKE11000B1, 15000B-V/VW
Ground Terminal	M5	M6

		RKE22000B-V	RKE30000B-V
Power Source (V·Hz)		Three-phase 200 to 220 ±10% (50/60)	
Terminal Block	Screw Size	M8	
	Terminal Block Width (mm)	M3	
Terminal Block	Power	23	
	Signal	5.9	
Breaker Capacity (A)	125	175	
Current Sensitivity (mA)	100		
Ground Terminal	M8		

* Phase unbalance (%) = (Maximum voltage [V] - Minimum voltage [V]) ÷ Average voltage of 3 phases (V) × 67. (Based on IEC61800-3.)

<IMPORTANT>

- Make sure the power cord does not come into contact with the refrigerant piping or any motor within the unit. Contact with hot surfaces could cause the cord to melt, resulting in an electrical short. (Secure the power cable with the cable tie inside the distribution box.)
- Never operate the unit when the water circuit is empty. Always fill the water tank and confirm the water level before operating.
- Do not attempt to perform withstand voltage tests or insulation resistance tests. Doing so can damage the semiconductors used in the chiller control board or inverter. If the tests are deemed necessary, please consult with your dealer.

If Employing Remote Control Operation

• Information Regarding Remote Operation and Communications Functions

Perform the wiring after confirming the required specifications.

* Please prepare terminals that fit M3 size screws.

1. Please confirm the unit specifications which are as follows.

Remote Operation Input Specifications	<ul style="list-style-type: none"> • No-voltage contacts input (alternate switch) • Maximum cable length: 20 m • Input resistance: 1200 Ω • Open circuit voltage (Voc): 12 V DC • Short circuit current (Isc): 10 mA DC
Signal Output Specifications	<ul style="list-style-type: none"> • No-voltage relay contact output (c contact) • 250 Vac / 30 Vdc, 5 A (resistance load) (normally open) • 250 Vac / 30 Vdc, 3 A (resistance load) (normally closed) • Minimum operating current (for reference only) 5 Vdc, 10 mA

2. Remote operation and signal output terminals are as follows:

Remote Operation Terminals	Remote Operation	20	
	Remote Discharge Pump Operation	22	
Signal Output Terminals	Operating Signal	24	When power source is cut off: 24 – 26 closed, 25 – 26 open
		25	Unit operation is stopped and the unit is operating in pump-only mode: 24 – 26 closed, 25 – 26 open
		26	Equipment operating: 24 – 26 open, 25 – 26 closed
	Alarm Signal	27	When power source is cut off: 27 – 29 closed, 28 – 29 open
		28	No alarm : 27 – 29 closed, 28 – 29 open (initial setting)
		29	During alarm: 27 – 29 open, 28 – 29 closed (initial setting)
	Temp. Warning Signal	30	When power source is cut off: 30 – 32 closed, 31 – 32 open
		31	No temperature warning: 30 – 32 closed, 31 – 32 open (initial setting)
		32	During temperature warning: 30 – 32 open, 31 – 32 closed (initial setting)

•When Using Communications Functions

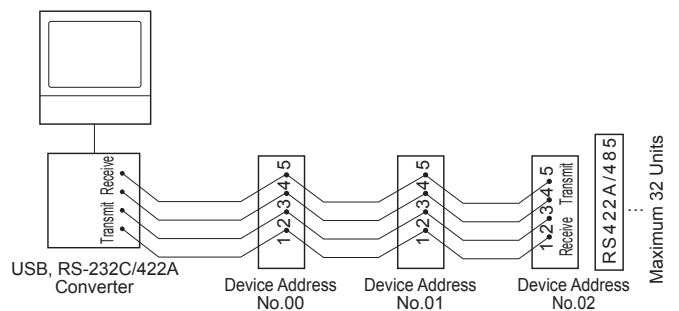
USB	<ul style="list-style-type: none"> • Connector: USB type B connector • Data cable max. length: 3 m. * May differ depending on specific operating conditions.
RS-422A (RS-485)	<ul style="list-style-type: none"> • Attach the stripped wires and use as is. • Data cable wire size: AWG16 – 26 • Data cable max. length: 100 m. (from host to terminal end) * May differ depending on specific operating conditions.

• Communications Cables and Connectors

1. USB
 - <1> Compatible connector: Type B (male) connector
 - <2> Maximum cable length: 3 m. However, it may be shorter depending on actual operating conditions.
2. RS-422A (RS-485)
 - (1) Connector: Terminal block
 - (2) Cable Gauge: AWG16 – 26 (Use AWG18 – 24 if 2 wires are to be inserted into a single terminal connection.)
 - (3) Length of Insulation to Remove From Cable: 10 mm
 - (4) Attaching the Cables: Use either of the following methods: Attach the stripped wires as is. When performing hookups, be careful not to allow frayed wires to come into contact with or short out nearby wiring.
 - (5) Maximum Cable Length: 100 m or less -- May differ depending on operating conditions.
 - (6) Connection Example

* If connecting via RS-422A/485, make the connection by purchasing and using an RS-232C/422A converter.

Example of Commercially Available Connector :
 Network Supply Inc. GPNET232-485CT (Main Unit) GP-259RS (DOS/PC 9-Pin Connector), SFN-830 (AC Adapter)



Ducting Design Points (Air cooled only)

• Ducting Design Points (For User Installed Ducting)

If the area where the unit is to be installed is narrow or has a low ceiling, the ambient temperature could raise to above 45 °C from the heat coming from the ventilation outlet. In such cases, ducting should be used to move the heat outside of the room or at least away from the unit so that the effects of it do not cause the temperature around the unit to rise. Take the following into consideration when planning duct work.

1. Duct cross sectional area

(1) For duct that rises up:

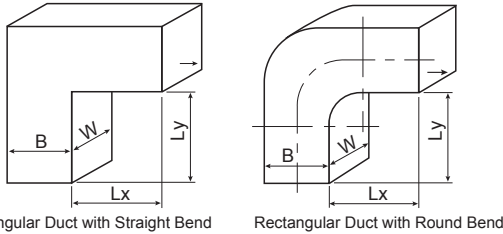
	RKE3750B-V/VL	RKE5500B-V/VL, 7500B-V	RKE11000B1, 15000B-V
Minimum Cross Sectional Area (m ²) [B×W]	0.429	0.611	0.8
Maximum Length (m)	20	20	20

	RKE22000B-V, RKE30000B-V Right Unit	RKE22000B-V, RKE30000B-V Left Unit
Minimum Cross Sectional Area (m ²) [B×W]	0.64	0.64
Maximum Length (m)	20	20

(2) Rectangular ducting with bends:

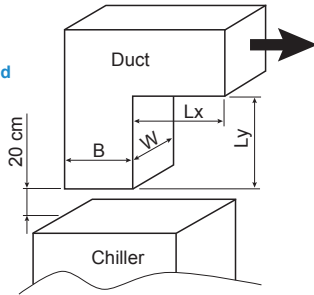
- The cross sectional area should be greater than above, and Lx and Ly should be less than 2 m. (See Fig. 1.)
- If the length of Lx and Ly go over 2 m, then there should be a 20 cm gap between the hot exhaust air outlet from the unit and a fan should be installed on the duct outlet. Do not allow Lx and Ly to be longer than 5 m. (See Fig. 2.)

► Fig. 1 Examples of Bent Rectangular Ducting



* The duct in the figure is one example. The particular direction the duct exhaust port goes from the unit does not matter, however the following important points must be enforced.

► Fig. 2 : Duct installation method when Lx and Ly exceed 2 m.



Model	RKE3750B-V/VL	RKE5500B-V/VL, 7500B-V	RKE11000B1, 15000B-V
Recommended Fan	50 Hz power EWF-50FTA (Mitsubishi Electric Corporation)	EJ-80FTC3 (Mitsubishi Electric Corporation)	EWF-50FTA (Mitsubishi Electric Corporation) × 2
	60 Hz power EWG-50ETA (Mitsubishi Electric Corporation)	EWG-60FTA (Mitsubishi Electric Corporation)	EWG-50ETA (Mitsubishi Electric Corporation) × 2
Minimum Required Airflow (m ³ /min)	119	186	119 × 2

Model	RKE22000B-V, RKE30000B-V
Minimum Required Airflow (m ³ /min)	233 × 2

<IMPORTANT>

Do not have anything such as walls or other obstacles that could obstruct exhaust output within 2 m of the unit in the direction of the duct exhaust output. Failure to follow this rule will result in decreased air flow, the main unit heat ventilation will be insufficient, and built-in safety devices may activate, which would cause unit operation to stop.

• Installing Ducting on the Unit

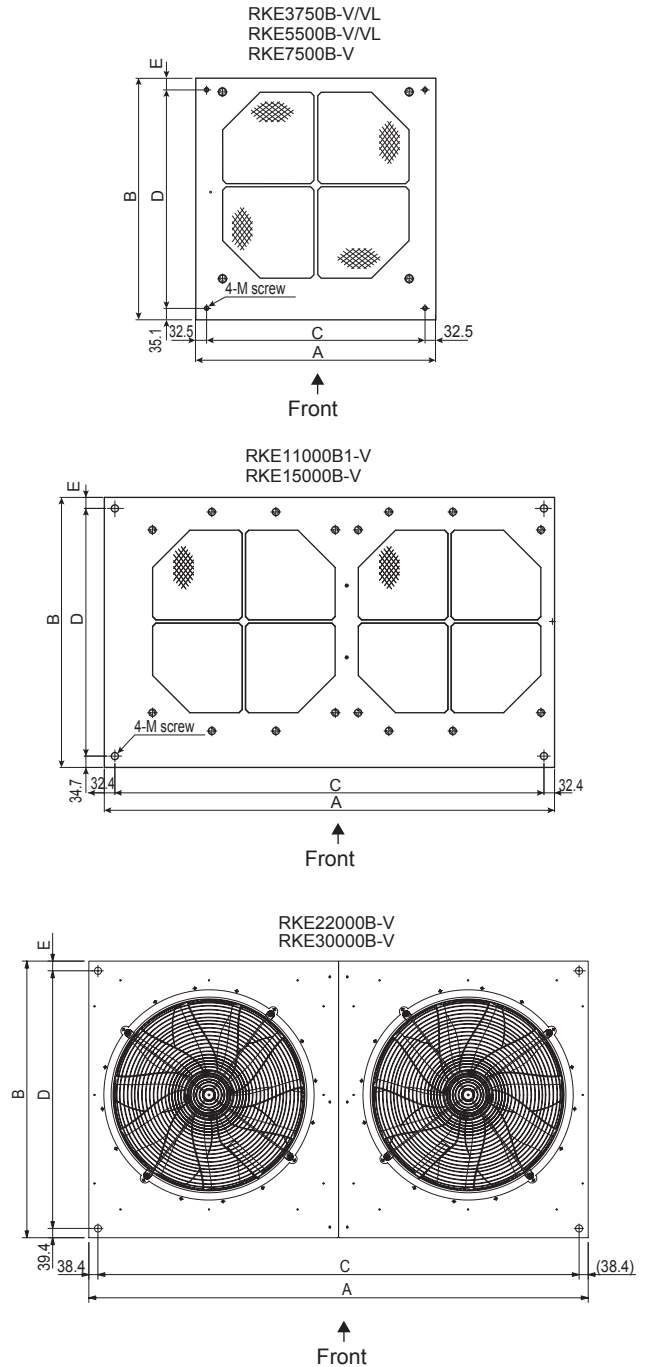
If ducting is to be affixed to the unit, first remove the suspension eyebolts from the top and replace them with M size bolts of the appropriate size. In this case, install ducting such that at least 50 cm of ducting above the product can be removed when needed in order to allow for easy fan maintenance and inspection.

Model	A	B	C	D	E	M Screw
RKE3750B-V/VL	720	723.5	655	654.6	33.8	M10
RKE5500B-V/VL, 7500B-V	869.5	825.2	804.5	758.6	31.5	M16
RKE11000B1-V	1379	827	1314.2	758.6	33.7	M16
RKE15000B-V	1609	827	1544.2	758.6	33.7	M16
RKE22000, 30000	2113.8	1171	2037	1090.6	41	M24

<IMPORTANT>

Unit : mm

- If ducting is to be affixed directly on the unit, be sure to install support hardware along the ducting in order to prevent the unit from tipping over.



Points to Follow to Achieve Performance Specifications

Important Points to Ensure Optimum Product Performance

1. Note the operating ranges and always operate the unit within these ranges. Operating outside the designated ranges can lead to unit breakdown.

Clause	RKE3750B-V/VW/VL, 5500B-V/VW/VL, 7500B-V/VW	RKE11000B1, 15000B, 22000B, 30000-V
Ambient Temp Range (°C)	-20 to 45 (Air cooled) / 2 to 45 (Water cooled)	-20 to 45
Liquid Temp Range (°C)	3 to 35	
Power (V•Hz)	200 to 220 ±10% (50/60 : Air cooled) 200 ±10% (50 : Water cooled), 200 to 220 ±10% (60 : Water cooled)	200 to 220 ±10% (50/60)
Discharge Pump Operating Pressure (Mpa)	0.08 to 0.50	0.08 to 0.80

- Do not use aluminum parts for parts that will be wetted with the chilled water. The unit's water circuits operate with parts made of copper or copper alloys, so if user-installed wetted parts containing aluminum are present, the resulting copper ions will lead to electrolytic corrosion and copper deposits, which can cause water leakage around mechanical seals and clogging in the heat exchanger.
- Please consult your dealer before using any corrosion inhibiting water additives. Troubles such as the water becoming dirty, or damage to the refrigeration unit from clogging etc. can result depending on the type of additive used.
- Always apply power to the unit at least 12 hours before performing initial test runs or after the unit has been unpowered for 24 hours or more. Failure to apply power in advance as directed can lead to damage to the refrigeration compressor.

5. Operating with antifreeze rust inhibitor additives can reduce the lifespan of the mechanical seals.

<IMPORTANT>

Do not operate with the discharge pump circuit (cooling water inlet/outlet) blocked. Operating the unit with the circuit blocked can result in freezing or damage of the evaporator, breakdown of the discharge pump, disconnection of hoses, or other trouble.

- If a brine solution is to be used for freeze prevention then in order to maintain cooling capacity, using a 40% or weaker solution of ethylene glycol and water is recommended. However, note that use of a solution of 30% or less can result in decomposition of the liquid. Therefore freeze-prevention by means of automatic pump operation is recommended.
- Frequent starting and stopping can lead to unit breakdown. Allow at least 5 minutes between starting and stopping the unit. If the unit is started less than 5 minutes after stopping, warning "C064" or "C065" will be generated.
- Always fill the water tank and check the water level before operating. If the water level gauge goes below the "E" mark, alarm "E006" will occur and the unit cannot be operated.
- The water pressure at the water supply port should be 0.50 MPa or less. Too high pressure will result in the water supply failing to shut off or leakage.
- Always keep the water clean, inspect the water circuits monthly, and replace the water when necessary.
- Clean the condenser filter every month.
- Water cooled: The cooling water should be checked monthly to ensure that it is clean. The water should be changed if dirty.

Chilled Water

Chilled Water Standards

The recommended liquid (chilled water) that can be used is either clean water (see chart below for water quality standard) or a 30 to 40% ethylene glycol solution. Alternatively, if deionized water is to be used, it should have

Item	Standard Levels
pH (25 °C)	6.8 – 8.0
Conductivity (µS/cm) (25 °C)	1 – 400
Chloride Ion (mgCl ⁻ /L)	Max. 50
Sulphate (mgSO ₄ ²⁻ /L)	Max. 50
Acid Consumption (pH 4.8) (mgCaCO ₃ /L)	Max. 50
Total Hardness (mgCaCO ₃ /L)	Max. 70
Calcium Hardness (mgCaCO ₃ /L)	Max. 50
Silica Ion (mgSiO ₂ /L)	Max. 30

an electrical conductivity of at least 1 µS/cm. Cooling non-approved liquid can result in equipment damage, leaking, and possible electric shock or electrical shorts.

Item	Standard Levels
Iron (mgFe/L)	Max. 1.0
Copper (mgCu/L)	Max. 1.0
Sulfide Ion (mgS ²⁻ /L)	Not detected
Ammonium Ion (mgNH ₄ ⁺ /L)	Max. 1.0
Residual Chlorine (mgCl/L)	Max. 0.3
Free Carbon Dioxide (mgCO ₂ /L)	Max. 4.0

* Excerpt from JRA-GL-02-1994 guidelines from The Japan Refrigeration and Air Conditioning Industry Association.

Cooling Water

Water Selection

Water for the water-cooled condenser may be ground water, municipal water, or cooling-tower water. Refer to the following water quality standard for guidance in selecting the water type.

Water Quality Standard Guidelines

Primary cooling water (refrigeration unit condenser cooling water, constant temperature water for the water temperature controller, and humidification water) should meet the water quality standard as described in the chart on the right

1. Standard Concentration Levels for Primary Cooling Water

- If tap water is used as the primary cooling water for water cooled equipment, then the water should meet the following water quality standard.
- "o" marks in a tendency column show the factor related to either corrosion or scale generation tendency.
- The 15 items listed to the right are the primary components that can lead to corrosion or scaling.

Clause	Cooling Water		Tendencies		
	Circulation Water	Supplied Water	Corrosion	Scaling	
Standard Items	pH (25 °C)	6.5 to 8.2	6.0 to 8.0	o	o
	Electric Conductivity (µS/cm) (25 °C)	800 or below	300 or below	o	o
	Chloride Ion (mgCl ⁻ /L)	200 or below	50 or below	o	
	Sulfate Ion (mgSO ₄ ²⁻ /L)	200 or below	50 or below	o	
	Acid Consumption (pH 4.8) (mgCaC ₃ /L)	100 or below	50 or below		o
	Total Hardness (mgCaCO ₃ /L)	200 or below	70 or below		o
	Calcium Hardness (mgCaCO ₃ /L)	150 or below	50 or below		o
Reference Items	Ionic Silica (mgSiO ₂ /L)	50 or below	30 or below		o
	Iron (mgFe/L)	1.0 or below	0.3 or below	o	o
	Cu (mgCu/L)	0.3 or below	0.1 or below	o	
	Sulfide Ion (mgS ²⁻ /L)	None detected	None detected	o	
	Ammonium Ion (mgNH ₄ ⁺ /L)	1.0 or below	0.1 or below	o	
	Residual Chlorine (mgCl/L)	0.3 or below	0.3 or below	o	
	Free Carbon Dioxide (mgCO ₂ /L)	4.0 or below	4.0 or below	o	
	Stability Index	6.0 to 7.0	-	o	o

* Excerpt from JRA-GL-02-1994 guidelines from The Japan Refrigeration and Air Conditioning Industry Association.

WARNING = Failure to follow instructions contained in a WARNING may result in death or serious injury.

CAUTION = Failure to follow instructions contained in a CAUTION may result in injury to the operator or damage to property.

Pre-Unloading and Unloading Procedures

• Before Unloading

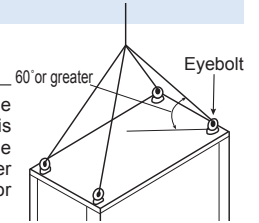
After unpacking, check the nameplate of the unit to ensure it is the correct model ordered. Also, check that the below mentioned included parts are present.

Part Name	Specifications	Qty Per Unit
Y-Strainer	40 mesh equiv., 1B Model : RKED9000A-V	1 pc.
	40 mesh equiv., 1.1/4B Model : RKE18000A-V/A-VW	1 pc.
	40 mesh equiv., 2B Model : RKE22000A-VW RKE30000A-VW	1 pc.
Nipple	1B (To attach the Y-strainer) Model : RKED9000A-V	1 pc.
	1.1/4B (To attach the Y-strainer) Model : RKE18000A-V/A-VW	1 pc.
	2B (To attach the Y-strainer) Model : RKE22000A-VW RKE30000A-VW	1 pc.

It is possible that the unit could be damaged during shipping, transport, or other handling. When receiving the unit, check to make sure that there are no scratches or other abnormalities. If any damage or abnormality is detected, please contact the dealer where the unit was purchased.

WARNING

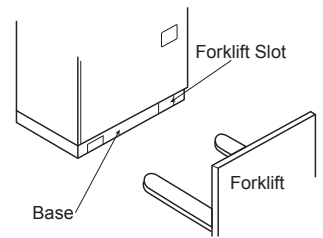
When making use of the eyebolts, suspend the unit from all 4 eyebolts and make sure there is at least a 60° angle between the top face of the unit and each of the suspension cables. Improper suspension may lead to the unit tipping over or falling, which could result in injury.



• Unloading Procedure

The unit is heavy; please be careful when transporting it. The unit has rectangular slots at its base in order to accept forklift tines. When lifting the unit by forklift, make sure the forklift tines go through the forklift slots all the way and protrude from the other side of the unit.

Model	Mass (Dry weight)
RKED9000A-V	435 kg
RKE18000A-V	approx. 660 kg
RKE18000A-VW	610 kg
RKE22000A-VW	approx. 1100 kg
RKE30000A-VW	approx. 1420 kg



WARNING

Installation of this equipment should be performed by your dealer or other qualified personnel. Improper installation by the end user may lead to water leakage, electric shock, and fire.

Unit Placement

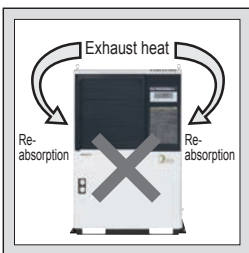
• Choice of Installation Location

Choose an installation location that is free from combustible materials, areas that could lead to electric shock, or environments that could lead to unit breakdown.

CAUTION

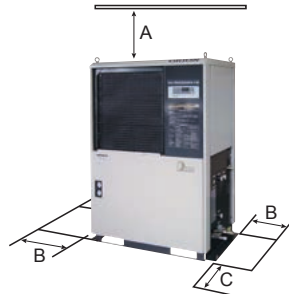
Install on a level surface that can adequately support the weight of the unit and fix the unit down with anchor bolts to prevent it from moving around. Not properly installing the equipment as indicated can result in water leaks or injury etc., from the unit tipping over or falling.

1. Ensure there is adequate space for heat ventilation as well as sufficient space for maintenance and inspection of the unit. Also note that if the unit is enclosed as in the illustration below, exhaust heat from the unit will be forced back into the unit, causing



* If there are no obstacles within 150 cm of the front and sides of the unit, then the space from the top of the unit to the obstacle above can be as low as 100 cm or higher.

Upper Barrier (Roof, eaves, ceiling, etc.)



the refrigerant pressure to rise, and eventually causing the unit to stop.

- If the unit will be installed where a wind of 8 m/s or higher will be blown on it, measures to block the wind from hitting the unit such as installation of a wind-break panel or wall is required.
- Install out of direct sunlight and do not install where the unit would be affected by heat. Contact with direct sunlight or heat can cause the unit to perform below specified performance equal to the amount of that exposure. It can also lead to the activation of built-in safety devices which will prevent unit operation.
- Air cooled: Operate the unit in the ambient temperature of -5 °C – 43 °C. Operating outside this temperature range can lead to breakdown of the compressor. And operating in temperatures over 43 °C will result in a drop in the effectiveness of thermal radiation of the condenser. Built-in safety devices may activate causing the unit to shut down. If the ambient temperature will be above 43 °C, install ducting, following the section on page 32, "Ducting Design Points".
Water cooled: Operate the unit in the ambient temperature of 2 °C – 43 °C. Operating outside this temperature range can lead to breakdown of the compressor.

When performing ductwork, install such that the piping is not constricted along the way. Failure to follow this rule can also lead to activation of built-in safety devices which will stop unit operation.

- Install in a place that is generally free of dust and dirt. Installation in places with heavy dust and dirt can result in reduction of unit performance.
- Note that operating air-cooled models solely in the Snow-Protection Mode in areas that heavy snowfall will result in reduced performance. It is therefore recommended that the unit be installed away from falling snow. (Air cooled only)
- Operate the product at a cooling water temperature within the range of 5 °C to 34 °C. If operated outside the specified range, the safety device will be activated to shutdown the product. It can also cause the compressor to malfunction. (Water cooled only)

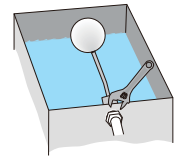
Item		RKED9000A-V	RKE18000A-V	RKE18000A-VW	RKE22000A-VW	RKE30000A-VW
Maint. & Insp. Space (cm)	A	200				
	B C	80		80	100	
	Rear	-	10 or more			
Ambient Temp (°C)		-5 to 43			2 to 43	
Cooling Water Temp (°C)					5 to 34	

Water Supply and Drainage Construction

- Reliably install water supply and drainage piping. Improper water supply and drainage construction could result in water spraying out, causing water damage to the surrounding area.
- Keep water supply pressure at or below 0.50 MPa. Too high pressure can lead to equipment damage, which may lead to water leaks, flooding of the surrounding area, and electric shock.
- Keep the cooling water pressure below 0.69 MPa. Higher pressure may damage the components to cause water leakage and may result in electric shock.

- When performing water piping, be careful to avoid the following points. Failure to do so can result in water leakage.

1. Overtightening the piping connected to the water supply port.
2. Having external forces on the water supply port.
3. Piping installation that does not absorb vibrations of water hammer, etc.



- When connecting piping to the water supply port, always use two tools, using one to support the ball tap valve, as shown in the illustration to the right.

Chilled Water / Cooling Water Piping

Piping Sizes

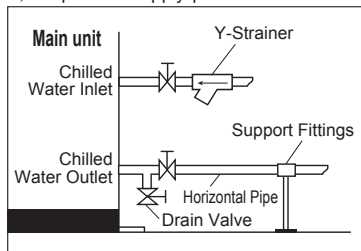
Piping diameters for each model are listed below.

Piping Item	Piping Size				
	RKED9000A-V	RKE18000A-V	RKE18000A-VW	RKE22000A-VW	RKE30000A-VW
Chilled Water Inlet	Rc1		Rc1.1/4		Rc2
Chilled Water Outlet	Rc1		Rc1.1/4		Rc2
Water Tank Drain			Rc3/4		Rc1
Overflow			Rp1		
Drain Pan Drain Port		Rc1/2			Rc1/2, 3 locations
Water Supply Port			Rp1/2		
Cooling Water Piping Inlet	-		Rc1.1/2		Rc2
Cooling Water Piping Outlet	-		Rc1.1/2		Rc2

Piping Methods

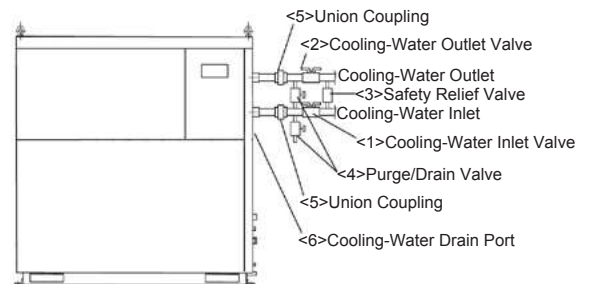
Piping installation should follow the guidelines below.

1. Check the cooling water inlet and outlet side ports.
2. Make pipe lengths as short as possible, and also avoid vertical and curved piping as much as possible.
3. When tightening piping connections, use 2 pipe wrenches or adjustable wrenches in order to grasp both sides of the joint.
4. Always install valves (customer supplied) at the chilled water inlet and outlet ports.
5. Install the included Y-strainer on the chilled water intake side port.
6. Make sure that there is no excessive weight or vibration directed on the unit from the connected piping. long horizontal piping should be supported with additional support hardware to ensure unreasonable forces are not applied directly to the unit's connection ports. Failure to properly support piping can lead to equipment damage.
7. Piping should be insulated. (Install the pipe insulation such that there is enough gap to allow the removal of the cabinet water supply port.)
8. If an automatic water supply system is to be installed, be sure to install a valve on the supply port. Also, keep water supply pressure at or below 0.50 MPa.
9. Always support water supply piping with support fittings, and make sure that piping is horizontal.



Pipe Connection Procedure (Water cooled)

1. Confirm the positions of the Cooling Water inlet and outlet. The Cooling Water inlet and outlet are specified with stickers. ("Cooling Water inlet", "Cooling Water Outlet")
2. Follow the instructions below for piping work.
 - (1) Mount the Cooling Water inlet valve <1> and the Cooling Water outlet valve <2>.
 - (2) Be sure to mount the safety relief valve <3>. The regulating valve that is installed in the cooling water circuit performs the opening and closing of the valve automatically by detecting the refrigerant pressure. Thus, there is a possibility that the regulating valve becomes full-closed during operation. Be sure to install the safety relief valve for the water leakage prevention in the cooling water circuit, and set the cooling water inlet pressure 0.69 MPa or lower.
 - (3) Install the purge/drain valve <4>.
 - (4) Be sure to install the union coupling <5>. Make sure that the product and the cooling water piping can be easily disassembled when carrying out the cleaning of water-cooled condenser inside the product.

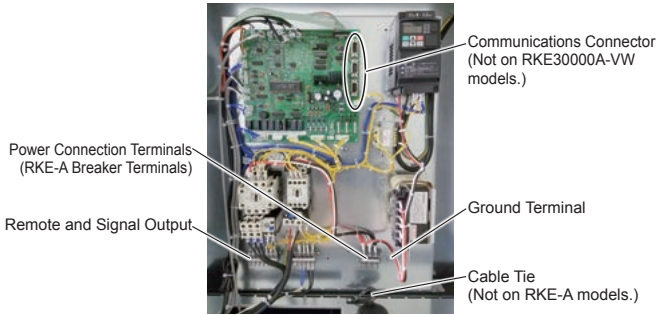


Electrical Wiring

• Correct Wiring Installation

When performing electrical wiring, be sure to carefully follow the guidelines listed below.

* Photo below shows the piping arrangement of model RKED2200A-V.



1. Choose a power cable based on the breaker capacity shown in the table to the right. Hook up the ground wire to the earth (ground) terminal located in the distribution box. Also, regarding the power and signal terminal block, refer to the chart on the right for the screw size and terminal block width.
2. Route the power cord through the power cord access hole, located on the lower-right part of the unit, to the inside of the terminal box. (Use 1 of the 2 available power cord access holes. The other can be used for remote control panel connections, etc.) Connect the power cord to the L1, L2,

and L3 terminals on the terminal block. Fix the power cord in place with a cable tie.

3. Always properly ground this unit. Connect the ground wire to a proper earth/ground point that has been installed by a qualified electrician. Furthermore, the diameter of the grounding wire must be at least 2 mm².
* Prepare the ground wire terminal of a size according to the screw size listed in the chart to the right.
4. Ensure the source voltage is within ±10% of the specified voltage. Also make sure the source voltage phase unbalance is within ±3%.
* Phase unbalance (%) = (Maximum voltage [V] - Minimum voltage [V]) ÷ Average voltage of 3 phases (V) × 67. (Based on IEC61800-3.)

<IMPORTANT>

- Make sure the power cord does not come into contact with the refrigerant piping or any motor within the unit. Contact with hot surfaces could cause the cord to melt, resulting in an electrical short. (Secure the power cable with the cable tie inside the distribution box.)
- Never operate the unit when the water circuit is empty. Always fill the water tank and confirm the water level before operating.
- Do not attempt to perform withstand voltage tests or insulation resistance tests. Doing so can damage the semiconductors used in the chiller control board or inverter. If the tests are deemed necessary, please consult with your dealer.

Item		RKED9000A-V	RKE18000A-V	RKE18000A-VW	RKE22000A-VW	RKE30000A-VW
Power Source (V•Hz)		Three-phase 200 V, 50/60 Hz; three-phase 220 V, 60 Hz				
Terminal Block	Screwsize	Power	M8			
		Signal	M3.5			
	Terminal Block Width (mm)	Power	19			23
		Signal	7.5			
Breaker Capacity (A)		75	125		175	
Current Sensitivity (mA)		30		100		
Ground Terminal		M5	M6		M8	
Ground Terminal (mm ²)		2 or more				

If Employing Remote Control Operation

• Information Regarding Remote Operation and Communications Functions

Perform the wiring after confirming the required specifications. * Please prepare terminals that fit M3 size screws.

1. Please confirm the unit specifications which are as follows.

Remote Operation Input Specifications	<ul style="list-style-type: none"> • No-voltage contacts input (alternate switch) • Maximum cable length: 20 m • Input resistance: 1200 Ω • Open circuit voltage (Voc): 12 Vdc • Short circuit current (Isc): 10 mA DC
Signal Output Specifications	<ul style="list-style-type: none"> • No-voltage relay contact output (a contact) • 250 Vac / 30 Vdc, 3 A (resistance load) (normally closed) • Minimum operating current (for reference only) 5 Vdc, 10 mA

2. Remote operation and signal output terminals are as follows:

Remote Operation Contacts	
Signal Output Contacts	<ul style="list-style-type: none"> 13 Operation Signal (Closed during operation) 14 Alarm Signal (Closed during alarm condition) 15 16

• When Using Communications Functions

RS-232C	Connector: D sub 9 pin female connector Comm. cable max. length: 15 m. * May differ depending on specific operating conditions.
---------	---

RS-422A (RS-485)	Terminal Block Comm. Cable Size: AWG 16 to 24 * If inserting 2 wires into one location on the terminal block: AWG 18 to 24 * Length of insulation to remove: 10 mm Max. comm. cable length: 100 m. (From host to the end-unit) * May differ depending on specific operating conditions.
------------------	---

Ducting Design Points (Air cooled only)

• Ducting Design Points (For User Installed Ducting)

If the area where the unit is to be installed is narrow or has a low ceiling, the ambient temperature could raise to above 43 °C from the heat coming from the ventilation outlet. In such cases, ducting should be used to move the heat outside of the room or at least away from the unit so that the effects of it do not cause the temperature around the unit to rise. Take the following into consideration when planning duct work.

1. Duct cross sectional area

(1) For duct that rises up:

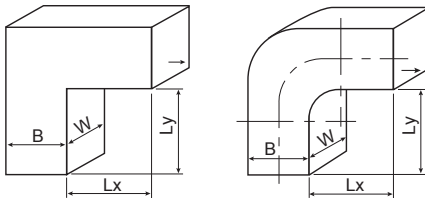
Model	RKED9000A-V	RKE18000A-V
Min. Cross Sectional Area (m ²) [B×W]	0.519	
Max. Length (m)	20	
Recommended Fan	50 Hz Power	EJ-80FTC3 (Mitsubishi Elec. Co.)
	60 Hz Power	EWG-60FTA (Mitsubishi Elec. Co.)
Min. Req. Air Flow (m ³ /min)	186	186 × 2

(2) Rectangular ducting with bends:

- The cross sectional area should be greater than above, and Lx and Ly should be less than 2 m. (See Fig. 1.)
- If the length of Lx and Ly go over 2 m, then there should be a 20 cm gap between the hot exhaust air outlet from the unit and a fan should be installed on the duct outlet. Do not allow Lx and Ly to be longer than 5 m. (See Fig. 2.)

* The duct in the figure is one example. The particular direction the duct exhaust port goes from the unit does not matter, however the following important points must be enforced.

▶ Fig. 1 Examples of bent rectangular ducting.



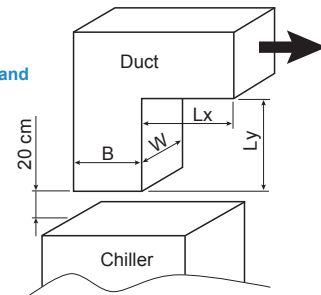
• Installing Ducting on the Unit

If ducting is to be installed directly onto the product, then use the duct mounting holes located at the top of the product. In such cases, in order to allow for easy fan maintenance and inspection, provide for at least 50 cm of space above the product to allow for removal of the ducting.

<IMPORTANT>

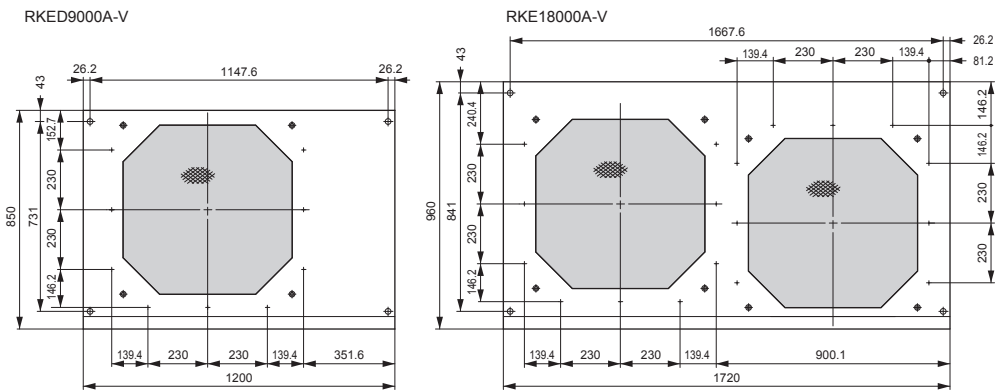
Do not have anything such as walls or other obstacles that could obstruct exhaust output within 2 m of the unit in the direction of the duct exhaust output. Failure to follow this rule will result in decreased air flow, the main unit heat ventilation will be insufficient, and built-in safety devices may activate, which would cause unit operation to stop.

▶ Fig. 2 : Duct installation method when Lx and Ly exceed 2 m.



<IMPORTANT>

- If ducting is to be affixed directly on the unit, be sure to install support hardware along the ducting in order to prevent the unit from tipping over.



Points to Follow to Achieve Performance Specifications

• Important Points to Ensure Optimum Product Performance

1. Note the operating ranges and always operate the unit within these ranges. Operating outside the designated ranges can lead to unit breakdown.

Item	RKED9000A-V	RKE18000A-V	RKE18000A-VW	RKE22000A-VW	RKE30000A-VW
Operable Ambient Temp Range (°C)	-5 to 43		2 to 43		
Operable Liquid Temp Range (°C)	5 to 35			15 to 30	
Power (V•Hz)	Three-phase 200 ±10% (50/60), three-phase 220 ±10% (60)				
Discharge Pump Operating Pressure (MPa)	0.5 or lower				

- Do not use aluminum parts for parts that will be wetted with the chilled water. The unit's water circuits operate with parts made of copper or copper alloys, so if user-installed wetted parts containing aluminum are present, the resulting copper ions will lead to electrolytic corrosion and copper deposits, which can cause water leakage around mechanical seals and clogging in the heat exchanger.
- Please consult your dealer before using any corrosion inhibiting water additives. Troubles such as the water becoming dirty, or damage to the refrigeration unit from clogging etc. can result depending on the type of additive used.
- Always apply power to the unit at least 12 hours before performing initial test runs or after the unit has been unpowered for 24 hours or more. Failure to apply power in advance as directed can lead to damage to the refrigeration compressor.
- Operating with antifreeze rust inhibitor additives can reduce the lifespan of the mechanical seals.

<IMPORTANT>

Do not operated with the discharge pump circuit (cooling water inlet/outlet) blocked. Operating the unit with the circuit blocked can result in freezing or damage of the evaporator, breakdown of the discharge pump, disconnection of hoses, or other trouble.

- If a brine solution is to be used for freeze prevention then in order to maintain cooling capacity, using a 40% or weaker solution of ethylene glycol and water is recommended. However, note that use of a solution of 30% or less can result in decomposition of the liquid. Therefore freeze-prevention by means of automatic pump operation is recommended.
- Frequent starting and stopping can lead to unit breakdown. Allow at least 5 minutes between starting and stopping the unit. If the unit is started less than 5 minutes after stopping, warning "C064" or "C065" will be generated.
- Always fill the water tank and check the water level before operating. If the water level gauge goes below the "E" mark, alarm "E006" will occur and the unit cannot be operated.
- The water pressure at the water supply port should be 0.50 MPa or less. Too high pressure will result in the water supply failing to shut off or leakage.
- Always keep the water clean, inspect the water circuits monthly, and replace the water when necessary.
- Clean the condenser filter every month.
- Water cooled: The cooling water should be checked monthly to ensure that it is clean. The water should be changed if dirty.

Chilled Water

• Chilled Water Standards

The recommended liquid (chilled water) that can be used is either clean water (see chart below for water quality standard) or a 30 to 40% ethylene glycol solution. Alternatively, if deionized water is to be used, it should have

an electrical conductivity of at least 1 µS/cm. Cooling non-approved liquid can result in equipment damage, leaking, and possible electric shock or electrical shorts.

Item	Standard Levels
pH (25 °C)	6.8 – 8.0
Conductivity (µS/cm) (25 °C)	1 – 400
Chloride Ion (mgCl ⁻ /L)	Max. 50
Sulphate (mgSO ₄ ²⁻ /L)	Max. 50
Acid Consumption (pH 4.8) (mgCaCO ₃ /L)	Max. 50
Total Hardness (mgCaCO ₃ /L)	Max. 70
Calcium Hardness (mgCaCO ₃ /L)	Max. 50
Silica Ion (mgSiO ₂ /L)	Max. 30

Item	Standard Levels
Iron (mgFe/L)	Max. 1.0
Copper (mgCu/L)	Max. 1.0
Sulfide Ion (mgS ²⁻ /L)	Not detected
Ammonium Ion (mgNH ₄ ⁺ /L)	Max. 1.0
Residual Chlorine (mgCl/L)	Max. 0.3
Free Carbon Dioxide (mgCO ₂ /L)	Max. 4.0

* Excerpt from JRA-GL-02-1994 guidelines from The Japan Refrigeration and Air Conditioning Industry Association.

Cooling Water

• Water Selection

Water for the water-cooled condenser may be ground water, municipal water, or cooling-tower water. Refer to the following water quality standard for guidance in selecting the water type.

• Water Quality Standard Guidelines

Primary cooling water (refrigeration unit condenser cooling water, constant temperature water for the water temperature controller, and humidification water) should meet the water quality standard as described in the chart on the right

1. Standard Concentration Levels for Primary Cooling Water

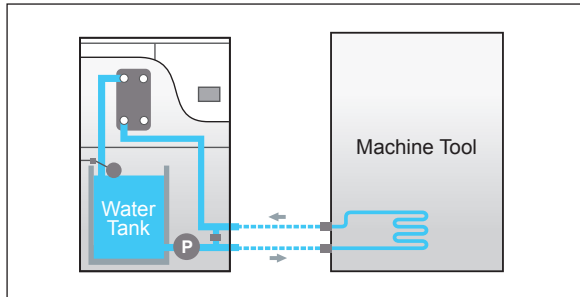
- If tap water is used as the primary cooling water for water cooled equipment, then the water should meet the following water quality standard.
- "o" marks in a tendency column show the factor related to either corrosion or scale generation tendency.
- The 15 items listed to the right are the primary components that can lead to corrosion or scaling.

Clause	Cooling Water		Tendencies		
	Circulation Water	Supplied Water	Corrosion	Scaling	
Standard Items	pH (25 °C)	6.5 to 8.2	6.0 to 8.0	o	o
	Electric Conductivity (µS/cm) (25 °C)	800 or below	300 or below	o	o
	Chloride Ion (mgCl ⁻ /L)	200 or below	50 or below	o	
	Sulfate Ion (mgSO ₄ ²⁻ /L)	200 or below	50 or below	o	
	Acid Consumption (pH4.8) (mgCaC ₂ /L)	100 or below	50 or below		o
	Total Hardness (mgCaCO ₃ /L)	200 or below	70 or below		o
	Calcium Hardness (mgCaCO ₃ /L)	150 or below	50 or below		o
	Ionic Silica (mgSiO ₂ /L)	50 or below	30 or below		o
Reference Items	Iron (mgFe/L)	1.0 or below	0.3 or below	o	o
	Cu (mgCu/L)	0.3 or below	0.1 or below	o	
	Sulfide Ion (mgS ²⁻ /L)	None detected	None detected	o	
	Ammonium Ion (mgNH ₄ ⁺ /L)	1.0 or below	0.1 or below	o	
	Residual Chlorine (mgCl/L)	0.3 or below	0.3 or below	o	
	Free Carbon Dioxide (mgCO ₂ /L)	4.0 or below	4.0 or below	o	
	Stability index	6.0 to 7.0	-	o	o

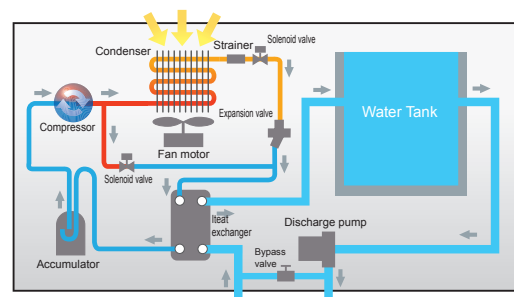
* Excerpt from JRA-GL-02-1994 guidelines from The Japan Refrigeration and Air Conditioning Industry Association.

Working principles -- Diagrams

■ With Built-In Water Tank (Closed loop)



Working Principles



The pump built into the unit pumps liquid from the water tank and then through the heat exchanger. There, the liquid is cooled and then returns to the tank. This cycle is repeated and the liquid is continuously cooled until it reaches the desired set temperature, at which time the temperature regulator shuts off the chiller. And if the liquid temperature rises above the set control value, the chiller is automatically started again. In this way, the liquid temperature is maintained and the liquid is pumped out via the discharge pump.

* In addition to the discharge pump, some models are equipped with built-in circulation pumps. Please refer to individual model specifications for further details.

* The above image is for illustrative purpose only. Please refer to individual model specifications for further details.

Making the Right Model Choice

Sample cooler heat calculation and model selection methods are listed below.

Please make a model choice that best suits your operating conditions and requirements.

Example 1

Find the cooling capacity required to deal with heat generated by a piece of equipment which is to be cooled by a chilled water flow ; the temperature difference between the cooling water going into and out of the equipment is known.

The equipment to be cooled is accepting a cooling water flow of 12 L/min, the water temperature going into the equipment is 17 °C, and the temperature of the water coming out is 20 °C . What is the amount of heat being generated by this equipment?

$$Q = \frac{(t_2 - t_1) \times X \times C \times \rho}{60} = \frac{(20 - 17) \times 12 \times 4.2 \times 1}{60} \doteq 2.5 \text{ kJ/s} = 2.5 \text{ kW}$$

Note: When making a model selection, also consider heat from external sources that might raise the water temperature. In order to compensate for such external heat sources, it is recommended that an additional 20% in cooling capacity be added to the calculation.

$$Q = 2.5 \times 1.2 = 3.0 \text{ kW}$$

Example 2

In case a certain temperature drop is required in a fixed amount of time.

For example, if 40 L of 20 °C water is in a separate tank, what is the heat dissipation required to lower the temperature of the water to 5 °C in one hour?

$$Q = \frac{W \times C \times (t_2 - t_1)}{H} = \frac{40 \times 4.2 \times (20 - 5)}{3600} = 0.7 \text{ kJ/s} = 0.7 \text{ kW}$$

Note: When making a model selection, also consider heat from external sources that might raise the water temperature. In order to compensate for such external heat sources, it is recommended that an additional 20% in cooling capacity be added to the calculation.

$$Q = 0.7 \times 1.2 = 0.84 \text{ kW}$$

Q: Amount of heat in kW (kW = kJ/s)

W: Weight of liquid to be cooled (volume (L) x specific gravity)

ρ : Specific gravity (kg/L, 1 in case of water)

C: Specific heat (kJ/kg°C, 4.2 in case of water)

t₂: Upper temperature (°C)

t₁: Lower temperature (°C)

H: Required cooling time in second

X: Water flow per minute (L/min)



Orion Products -- Service and Safety

● Safety Notes

- Before operating this equipment, please read the operating manual carefully, and only use as indicated.
- For installation of this equipment and required wiring, employ a qualified person or consult with your dealer.
- Be sure to select equipment which suits your needs. Do not use this equipment for purposes other than those for which it is intended. Doing so can lead to accidents or equipment breakdown.

● Air-Cooled Models

If the condenser becomes clogged with dust or dirt, heat exchange will be greatly reduced and electricity consumption will increase. This will lead not only to decreased performance, but can also lead to the activation of built-in safety devices, and eventual damage to the equipment. For these reasons, the condenser should be cleaned on a regular basis.

● Water-Cooled Models

In general, water used to cool condensers will be well-water, tap water, or water from a cooling tower. However water of insufficient quality can lead to scaling in cooling pipes resulting in lower levels of heat exchange, increased electricity consumption and lower performance. Therefore water quality should be confirmed on a regular basis.

Regarding After-Service

- For information regarding repair of equipment that has been in operation, please consult your dealer.
- The customer will be responsible for charges incurred for repairs conducted after the warranty period has expired. In cases where equipment function can be improved by certain service procedures, such procedures will be taken at the specific request of the customer.
- Regarding spare parts... "Spare parts" are those which are necessary in order to maintain the function of the product. It is the policy of ORION to maintain a stock of replacement parts for 7 years after production of the product ceases.

Recommended Maintenance Inspections

- Depending on the particular item, extended use can lead to the product becoming dirty or worn, which can lead to decreased performance. In order to realize continued best performance of this equipment, in addition to prescribed customer maintenance, it is also recommended that regular inspections be conducted. (Service and inspection fees apply.) For further information please consult your dealer or contact ORION directly.

Refrigerant Management

Some of the products in this catalog contain HFC refrigerants. Refrigeration technologies that use HFC refrigerants are essential for achieving efficient temperature control, and while such technologies make great contributions toward saving energy, there is also concern of the impact that the accidental release of HFC refrigerants into the atmosphere has on global warming.

When dealing with HFCs, please ensure compliance with laws and regulations and be sure to manage them appropriately for your safety and for the protection of the environment.

●GWP Values of Refrigerants Used in Our Products

Refrigerant	Global Warming Potential (100-year GWP)
R134a	1430
R404A	3920
R407C	1770
R410A	2090
R32	675

* For details about the refrigerant used in specific products, please refer to the product's specification page.

ORION is continuing to develop a complete and trustworthy nationwide network of expedient sales and service -- everywhere, anytime.



*ORION has wide reaching regional service bases in various countries throughout the world. Please consult your ORION dealer for details.



For inquiries, please contact the following representative:

ORION MACHINERY CO.,LTD.

International Group 246, Kotaka, Suzaka-shi, Nagano-ken, 382-8502 Japan
TEL +81-(0)26-246-5664 FAX +81-(0)26-246-5022
Email: kokusai@orionkikai.co.jp

Head Office & Factory 246, Kotaka, Suzaka-shi, Nagano-ken, 382-8502 Japan
TEL +81-(0)26-245-1230 FAX +81-(0)26-245-5424
URL: <http://www.orionkikai.co.jp>

This catalog contains product specifications as of April, 2023.

- Actual product colors may vary slightly from the pictures.
- Please note that the structure or specifications of products contained in this catalog are subject to change without prior notice.