

INDUSTRIAL DEHUMIDIFIERS

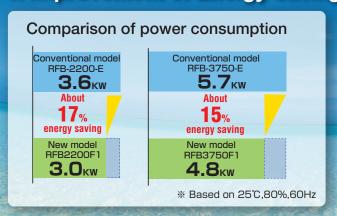


ENERGY SAVING & POWERFUL DEHUMIDIFICATION HEAVY DUTY DEHUMIDIFIERS

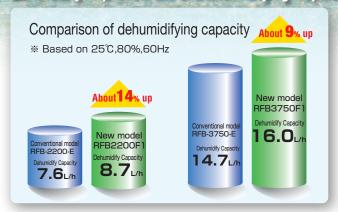
RFB2200F1,2200F1-R,RFB3750F1,3750F1-R

HFC REFRIGERANT (R410A) USED (ZERO DESTRUCTION COEFFICIENT OF OZONE LAYER)

1. Improvement of Energy Saving

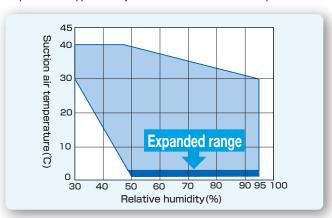


2. Greatly Improvement of Dehumidifying Capacity



3. Wide Operable Range

Lower limit of operation range expanded from 3°C to 1°C. Expanded use application by dehumidification under low-temperature belt





RFB3750F1

4. Improvement of Easy Maintenance

Use of direct acting type blower eliminates maintenance of V-belt in RFB3750F1(-R). Layout is considered for easy maintenance access from the front.

Refer to pages 5 & 6 for the detail specifications.

Dehumidifier

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Product lines, model selection & application examples

9 models of 4 types that satisfy a variety of industrial needs

1. Small portable type (4 models)

They are equipped with casters, and are applicable to various industrial field like food processing industry, agriculture and service industry.

2. Stationary type of large capacity (2 models)

Incorporating humidistat, they have such configuration as thin and compact. Their sophisticated appearance becomes the atmosphere of the installation place.

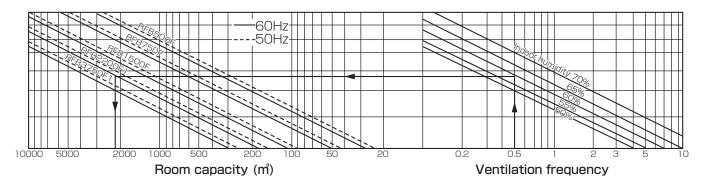
3. Stationary type with air conditioning function (2 models)

The air conditioning function makes it possible to regulate the room temperature.

4. High temperature type (1 model)

Taking drying efficiency into consideration, RFH1500F can cope with high 45℃ of ambient temperature.

Standard for model selection



Conditions: There is not any generating source of water vapor and at 30°C of suction air temperature and 80% of relative humidity.

Example) One RFB2200F1 can be for a room capacity of 2,100m³ at the ventilation frequency of 0.5 time per hour and 60% of indoor humidity.

* If conditions are out of above mentioned range or room temperature control is needed, please consult your nearest local distributor.

* Install an air ventilator if air flow from the dehumidifier is insufficient for the room air circulation.

Natural ventilation frequency as per types of rooms

Types of rooms	Frequency	Types of rooms	Frequency	Types of rooms	Frequency
Shops with many customers going in and out	2~3	Ocorridors School rooms Churches	1 0.5~3 0.75~2	●Cafe (Without ventilating fans) ●Cafe (With	1 4
 Rooms without windows or doors facing the outdoors 	0.5~0.75	Offices Warehouse Factories	0.5~1 0.5~2 0.5~3	ventilating fans) Wooden houses (Western style rooms) Wooden houses	1 1.5
●Reception room	1~2			(Japanese style rooms)	1.5

The quantity of water to be removed changes according to space, structure, frequency of natural ventilation, temperature and humidity of the room. The frequency of natural ventilation is defined as Volume of incoming air (\vec{m}'/h)

Room capacity (m³)

and differs greatly according to the structure of the building or frequency of door opening and closing.

Be sure to read the contents before selection and adoption

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In order to protect you or people around you from any hazards or damage in advance and to use the product safely, be sure to read the following and to observe the instructions.



The cases where the operators are liable to death or severe injury if wrongly handled.

Usage environment (Installation surroundings)

0

Product use limitations

- (1) When using the Product in connection with important facilities, be sure to establish backup and/or failsafe measures so that even in the event of breakdown of such products, such breakdown will not lead to serious accidents or losses.
- (2) The product is designed and produced as general purpose equipment to be used in general industrial applications. Therefore, this warranty will not apply when used in the following applications: However, in cases where the customer/user takes full responsibility and confirms the performance of the product in advance, and takes necessary safety precautions, please consult with ORION and we will consider if use of the product in the desired application is appropriate.
 - ① Atomic energy, aviation, aerospace, railway works, shipping, vehicles (cars and trucks), medical applications, transportation applications, and/or any applications where it might have a great effect on human life or property.
 - ② Electricity, gas, or water supply systems, etc. where high levels of reliability and safety are demanded.
- Install the Product horizontally in a place free from vibrations and sturdy enough to bear the product weight, and surely take necessary measures to prevent it from overturning. Improper installation may cause water leakage, or injury from overturning or a fall.
- Never install the Product in a place where any combustible gases may float in the air or leak out.

Such gases, if leaked and pooled around the Product, may cause a fire accident.

Never use this equipment in the presence of corrosive gases, such as ammonia or sulfur, or in the purpose of drying items generated corrosive elements such as woods, sea products or incense stick.

The corrosion of the products or the heat exchanger may cause malfunctions.

Installation

Please arrange for installation, water supply or drainage works by your dealer or other qualified persons.

Improper installation made by those without sufficient knowledge and experience may cause water leakage, electric shock or fire accident.

Be certain that all electrical wiring is done in accordance with relevant electrical construction and wiring regulations, and use only prescribed cables.

Installation with an insufficient power supply or improper installation can result in electric shock or fire. Improperly securing cables to electrical contacts can lead to electric shock, overheating or fire.

- Always install and use this equipment with an earth leakage breaker.

 Using the equipment without an earth leakage breaker can lead to electric shock.
- Ensure that the equipment is properly grounded. (Installation of a proper ground hookup must be performed by a qualified electrician.)

Improper grounding of this equipment can lead to electric shock.

Operation & running

Operation of this and related equipment should be carried out by persons who are knowledgeable and experienced after all relevant safety is confirmed.

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A CAUTION

The cases where the operators are liable to bodily injury or material damage if wrongly handled.

Usage environment (Installation surroundings)

0	Αv	oid installing the Product under the enviro	nm	en	t described below.
S	1	Places where direct sunlight shines on the Product		8	Coastal areas or other areas wi
	2	Places where freezing may occur		9	Places that have a particularly a
	3	Using in the presence of corrosive gases such as ammonia or sulfur, or in the purpose of drying items generated corrosive elements such as woods, sea products or incense stick			Very dusty places (Dust clogs the
	4	Places where many dust, dirt or oil mist is suspended		11)	Places where rain or other liqui
	5	Places with significant oil spray or vapor (including machine oil)			Pleces where the ambient temp the operational range
	6	Hot springs or other places with excessive sulfide gas		13	Places where proper draining fa such a place where draining by
			î		

Places where combustible gases could be formed or could enter the area

8	Coastal areas or other areas with high salt concentrations
9	Places that have a particularly acidic or alkali atmosphere
10	Very dusty places (Dust clogs the heat exchanger)
11)	Places where rain or other liquids splash on the Product
12	Pleces where the ambient temperature and/or humidity is outside the operational range
13	Places where proper draining facilities cannot be provided (except such a place where draining by moving is possible)
14)	Places where dew condensation occurs

If you would like to use the Product for drying items generated corrosive elements or to install it at the place where corrosion of other machines is extreme, please consult your nearest local distributor.

Installation

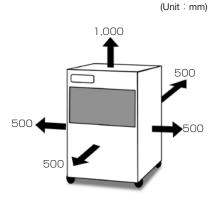
O Do not sit or stand on the Product. And do not put things on the Product in operation.

Make the power voltage to the Product to be within ±10% of the rated voltage and the interphase imbalance to be within ±3% of the rated value.

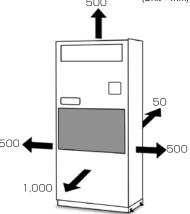
Avoid any rise of piping to drain port, which obstructs smooth draining.

Reserve sufficient space around the Product so that it can perform its capability to the utmost extent and also to allow easy access to it for maintenance.

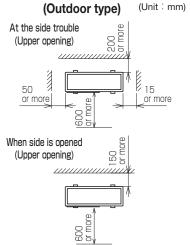
Dehumidifiers of portable type



Dehumidifiers of stationary type 500 (Unit: mm)



Dehumidifiers of stationary type



Preparation for operation



Supply electricity to the Product 12 hours in advance of the operation for trial run or when supply of electricity was stopped for more than 24 hours. (Except for RFB500F & RFB750F.)

If supply of electricity beforehand is failed, the compressor may be damaged.

Maintenance and inspection

After all points with regard to safety about the Product and relative matters are confirmed, Inspect if the condenser and its filter get dirty every month, and clean them regularly.

Dehumidifiers of stationary type

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The large capacity series

Features

- 1. Wide temperature control range from 5°C to 40°C. *The model with cooling function(R type). (Our corresponding conventional models: 16 - 40°C)
- 2. Operating temperature and humidity display by easy operation. Possible to check it in inspection mode, such as a corresponding conventional models.
- 3. Cooling/dehumidifying switching operation by remote control.
 - %The model with cooling function(R type).
 - Easy work through the front side.
- 4. HFC refrigerant (R410A) adoption, ZERO destruction coefficient of ozone layer



RFB3750F1-3750F1-R

Specifications

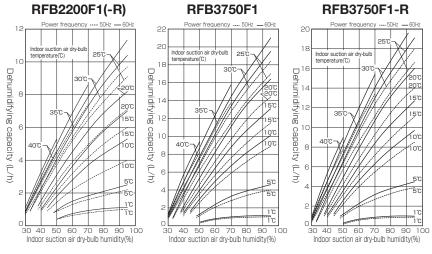
Item		Model	Dehumidifying only	With air conditioning function	Dehumidifying only	With air conditioning function		
		IVIOUCI	RFB2200F1	RFB2200F1-R	RFB3750F1	RFB3750F1-R		
Dehumidit	fying capacity %1	L/h	7.6/8.7		14.0/16.0	13.7/15.6		
Cooling ca	apacity %2	kW	- 9.0/10.0		_	15.3/16.2		
Operable ter	mperature range (Indoor type)	°C	1 ~ 40					
Operable temp	oerature range (Outdoor type) ※3		_	-5~43	_	-5~43		
Controllab	ole temperature range	°C	_	− 5~40 −		5 ~ 40		
	Power source	V		Three phase 200 ± 10% 50/60Hz				
Power	Electric current #1	Α	9.1	/9.7	13.1/15.1			
specifications	Power consumption *1	kW	2.3/3.0		3.7	/4.8		
	Power capacity	kVA	4.9	5.6	7.7	8.0		
	Compressor	kW	2	2	3.	3.75		
	Condenser, Evaporator			Fin and t	ube type			
	Blower	W	270		400			
Equipment	Air capacity	m³/min	30		44	/52		
details	Refrigerant controlling method			Electronic expansion valve				
	Refrigerant			R410A				
	Defrosting method		Hot gas					
	Ventilating fan			Double suction multi blade type				
External din	nensions (H × D × W) * 4	mm	1750(1517) × 400 × 650		1950(1745) × 500 × 800			
Product n	nass **5	kg	119	124	178	183		
Protecting devices	Compressor		Over current relay					
	Compressor		Discharge pipe thermostat (For overheat prevention), Fuse					
	Blower		Internal thermostat, Fuse					
	Refrigerating circuit		High pressure cut					
	Cloatria airquit			Operation	circuit fuse			
	Electric circuit			Motor cir	cuit fuse			
Operation sound level *6 dE		dB	54 59/68			/68		

- **1 The numerical value indicated above is based on 25°C of suction air temperature and 80% of relative humidity. The performance capacity is 90% or more of the indicated. **2 The numerical value indicated above is based on 25°C of suction air temperature, 80% of relative humidity and 30°C of ambient temperature of an outdoor unit. The performance capacity is 90% or more of the indicated.
- 💥 In case of use of beyond operable temperature range, it cannot operate with cooler. (It may rise in room temperature due to force dehumidifying operation.)
- ¾4 The figures in parentheses show dimensions before a plenum chamber is attached.
- %5 Not including outdoor unit.
- *6 The sound level is the value measured 1 meter away from the front and 1 meter high.
 - The plenum chamber shall be assembled and installed at the site.
 - The electric wiring, wiring of an outdoor unit and refrigeration piping must be arranged at the site.

Operable range RFB2200F1(-R)/3750F1(-R)

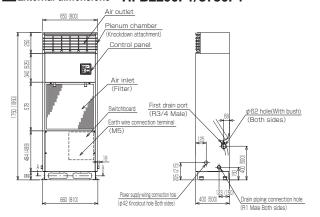
Dehumidifying operation Cooling & dehumidifying operation (RFB2200F1-R/3750F1-R) Indoor unit suction air 40 35 30 25 dry-bulb temperature(°C) 20 Indoor unit suction air dry-bulb humidity(%)

Indoor temperature



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External dimensions RFB2200F1/3750F1

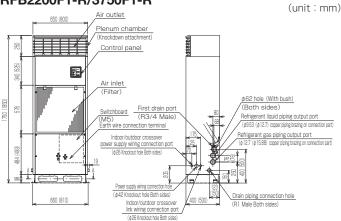


- *Plenum chamber must be assembled and installed at the site
- *Drain pipes can be connected with either the right side or left side.

 *Power wire and transit wire can be connected with either the right side or left side.

 *Refrigerant pipe can be connected with either the right side or left side.
- *Dimensions in parentheses are those of RFB-3750F1

RFB2200F1-R/3750F1-R



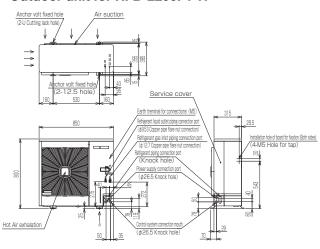
- *Plenum chamber must be assembled and installed at the site.

- *Drain pipes can be connected with either the right side or left side.

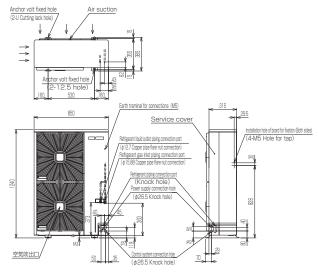
 *Power wire can be connected with either the right side or left side.

 *Refrigerant pipe can be connected with either the right side or left side.
- *Dimensions in parentheses are those of RFB3750F1-R.

Outdoor unit for RFB-2200F1-R



Outdoor unit for RFB-3750F1-R

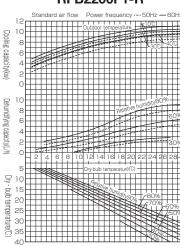


Outdoor unit specification

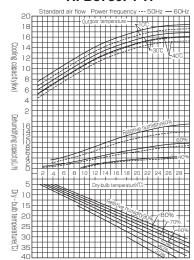
Model		RFB2200F1-R	RFB3750F1-R		
Operable temperature range		-5 ~ 43℃			
Refrigerant		R4	R410A		
Blower		95W	60W+80W		
Mass		23kg	36kg		
Ор	eration sound level	45/46dB	46/46dB		
П	To outdoor unit	φ12.7×t0.8	φ15.88×t1.0		
Piping	From outdoor unit	φ9.53×t0.8	φ12.7×t0.8		
	Pipe length	Actual lengt	h: MAX. 30m		
	Difference in height	Outdoor unit on top/b	/bottom: Max.20m/5m		

- Note 1) Installation works like brazing are required for connection of refrigerant piping between a dehumidifier and outdoor unit. Order your dealer or a specialist for such works.
- Note 2) Power wiring, transit wiring and refrigerant piping must be arranged locally.
- Note 3) If the pipe length between dehumidifier and outdoor unit exceeds 5m, extra refrigerant must be charged.

■Cooling capacity RFB2200F1-R



RFB3750F1-R



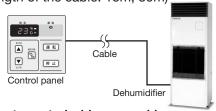
Options

Duct (\$\phi\$ 200) assembly



Cable set

The control panel can be taken away from the dehumidifier to control it remotely. (Length of the cable: 15m, 30m)



Remote control wiring assembly

Connector for remote control terminal on base material

Dehumidifiers of portable type

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The small capacity series

Features

- 1. Improvement of corrosion resistance by cation electrodeposition coating (epoxy resin) adoption.
- 2. HFC Refrigerant (R407C) adoption, ZERO destruction coefficient of ozone layer.
- 3. Single 100V power source adoption (RFE500F).
- 4. Slim and Compact. Easy movement (by casters) to places where dehumidifying is needed. Patented (RFB500F has various options.)
- 5. A high temperature type(up to 45°C) included in the series.



Specifications

				High temperature type				
Item		Model	RFB500F	RFB750F	RFB1500F	RFH1500F * 4		
Dehumidif	ying capacity * 1	L/h	1.4/1.6	1.4/1.7	3.0/3.6	2.0/2.3		
Operable t	temperature range	°C	1 ~ 40			20 ~ 45		
	Power source	V	Single phase $100 \pm 10\% 50/60$ Hz Three phase $200 \pm 10\% 50/60$			60Hz		
Power	Electric current * 1	А	6.1/6.1	2.7/3.0	5.2/5.8	5.1/5.6		
specifications	Power consumption * 1	kW	0.54/0.61	0.71/0.90	1.44/1.86	1.4/1.8		
	Power capacity	kVA	1.0	1.5	3.3	3.0		
	Compressor	kW	0.47	0.65	1.4	1.4		
	Condenser, Evaporator		Forced air cooled fin and tube type Corrugated fin and tube type parall		illel flow			
	Blower	W	10	25	100	100		
Fauinment	Air capacity	m³/min	8/9	13/14	26/30	26/30		
Equipment details	Refrigerant controlling method		Capillary tube					
uerans	Refrigerant		R407C					
	Defrosting method			Hot gas				
	Ventilating fan		Propeller type					
	Humidity regulator		Optional					
External di	imensions (H \times D \times W)	mm	858 × 407 × 377	780 × 400 × 540	1007 × 465 × 655	1007 × 465 × 655		
Product	mass	kg	36	46	77	77		
Protecting Compressor			Over current relay					
devices	Refrigerating circuit High pressure cut			ssure cut				
Annonorios	Drain hose * 3		17L tank (with high water level stopper) ϕ 19 vinyl hose 2m			-		
Accessories	Power cord		With plug 5m Cabtyre cord 3m					
Operation sound level * 5		dB	55/58	61/63	63/67	63/67		

**1 The numerical value indicated above is based on 30°C of suction air temperature and 60% (80% for RFB500F) of relative humidity. The performance capacity is 95% or more of the indicated.

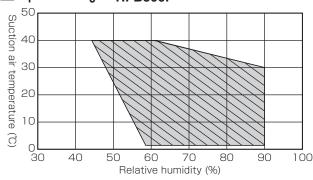
**2 The sound level is the value measured 1 meter away from the front and 1 meter high.

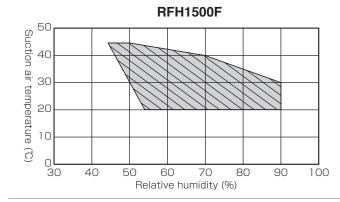
**3 A hose of inside diameter of ∅ 19 can be attached to RFB500F.

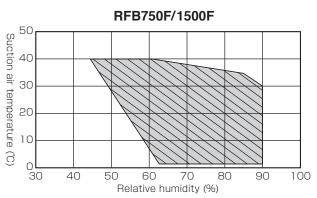
**4 RFH1500F is manufactured to order

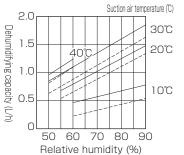
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Operable range RFB500F

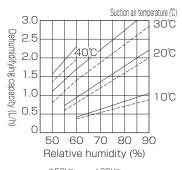








Dehumidifying capacity RFB500F



RFB750F

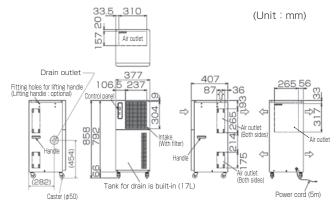
 **50Hz: ---/ 60Hz:
 **50Hz: ---/ 60Hz:

 **The performance curves are for reference only.
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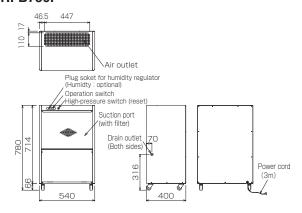
ORION

External dimensions

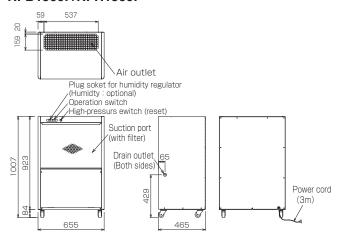
RFB500F



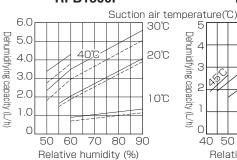
RFB750F



RFB1500F/RFH1500F

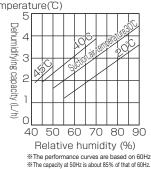


RFB1500F



*50Hz: - - - - / 60Hz: -----*The performance curves are for reference only

RFH1500F



Option

RFB500F

1. Hanging handle



2. Air direction plate

3. Humidistat



4. Large casters (with a base)

Setting range: up to 90% RH





RFB750F/1500F/RFH1500F

1. Humidistat

Setting range: up to 90% RH



2. After heater [Built to order]

Use of an after heater enhances drying efficiency when temperature is low.

■ Applicable model & specifications

EH-1500-B
RFB1500F/RFH1500F
2kW
1~40℃
Synchronized with fan motor and heating
Three phase 200V 50/60Hz
5.8A
2.0kW
188×270×656mm
8kg
Sheathed heater
Temperature controller (Off at 55°C/On at 45°C, Fixed) Overheating protector (Off at 102°C, Manual resetting)

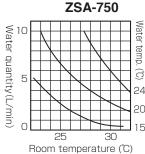
3. After cooler (Water cooled type) [Built to order]

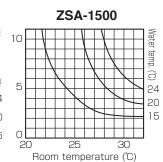
- Ideal for applications that should not raise room temperature
- Prevents dehydrated air temperature from rising



Applicable model & specifications

Model	ZSA-750	ZSA-1500		
Applicable model	RFB750F	RFB1500F	RFH1500F	





Dehumidifiers idealized to use at construction & civil works sites

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L series(manufactured to order)

Features

- 1. Being equipped with large casters, it is easy to move the dehumidifiers.
- 2. It is possible to store dehumidifiers two-storied, thanks to the reinforced frame.
- 3. For such applications as
 - Drying walls and interior of buildings at the construction sites.
 - · Dehumidifying in basement or preventing mildew or abnormal smell from coming out.
 - · Dehumidifying in warehouses or humidity control in production plants.



Storage Example

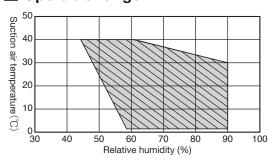


Specifications

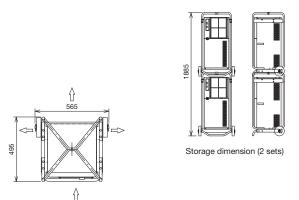
Item		Model	RFB500F L		
Dehumidifying capacity * 1, * 2		L/h	1.4/1.6		
Operable t	temperature range	°C	1 ~ 40		
Power	Power source	V	Single phase $100 \pm 10\% 50/60$ Hz		
specifications	Electric current	Α	6.1/6.1		
specifications	Power consumption	kW	0.54/0.61		
	Compressor	kW	0.47		
	Condenser		Forced air cooled fin and tube type		
	Blower	W	10		
Equipment	Air capacity	m³/min	8/9		
details	Refrigerant controlling method		Capillary tube		
	Refrigerant		R407C		
	Defrosting method		Hot gas		
	Humidity regulator		Optional		
External dimer	nsions (Height × Depth × Width)		970 × 495 × 565		
(Two-storied external dimensions)		mm	$(1885 \times 495 \times 565)$		
Product mass		kg	46		
Protecting Compressor			Over current relay		
devices	Refrigerating circuit		High-pressure pressure switch		
Accessories	Drain hose		17L, with float type's high water level stopper		
Accessories	Power cord		With plug 2 × 5m		
Operation sound level * 3		dB	55 / 58		

- ※1 The value of dehumidifying capacity is based on 30[°]C of suction air temperature and 80% of relative humidity.
- ※2 The dehumidifying capacity is 95% or more of the indicated.
- 3 The sound level is the value measured 1 meter away from the front and 1 meter high.
- •With large casters(Front: Frame, Behind: Tires(φ150))
- •two-storied storage frame.
- WOverturn-prevention should be implemented in case of twostoried installation.
- Optional: Humidistat

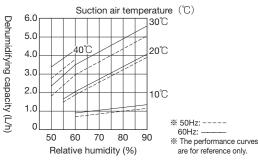
Operable range

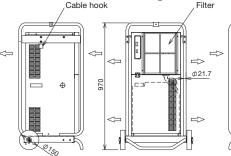


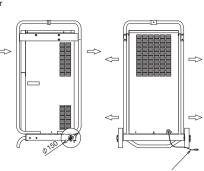
■ External Dimensions











Power cord (5m)

Application Examples

Dehumidifying for various processing & applications

Application Examples

1. DRYING -

For planned production, not being influenced by seasons or weather.

- Drying of concrete or wooden buildings
- Drying of tiles, pottery, dyed goods and others
- Drying of onion seed, noodles, pasta and so forth
- Drying of wet furniture with paint or varnish
- Drying of clothes and shoes at sports facilities



2. STORING

For storing such products, component parts or food from which moisture must be kept away.

- Storing metal or resin materials
- Storing canned food, galenicals and clothes
- Storing fruits and bulbs
- Preventing carton box from the change of shape by humidity.



3. PRODUCTION PROCESSING

For securing stable quality by controlling indoor humidity

- For various manufacturing processes like photo albums, plywood coating, dried food packaging, mixing cosmetic substances, and sealing of seasonings and condiments
- For cultivating mushroom
- Dehumidifying in food producing plants



4. OTHERS-

- Humidity control of three coordinate measuring rooms
- Humidity control of die machining plant
- Humidity control of computer/server room
- Stable operation of copy machine



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 with 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 become 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 with your dealer or contact ORION directly.

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



ORION Machinery Co., Itd is an ISO Certified, Quality Management and Environmental Management company.







ISO 9001 (Main Factory)

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This catalogue contains product specifications as of March, 2015.

Actual product colors may vary slightly from the pictures.