

INDUSTRIAL DEHUMIDIFIERS

9 models of 4 different types
meet your various applications.

The ORION Dehumidifiers
eliminate harmful moisture.



RFB500F

RFB1500F

RFB3750F1

Contents

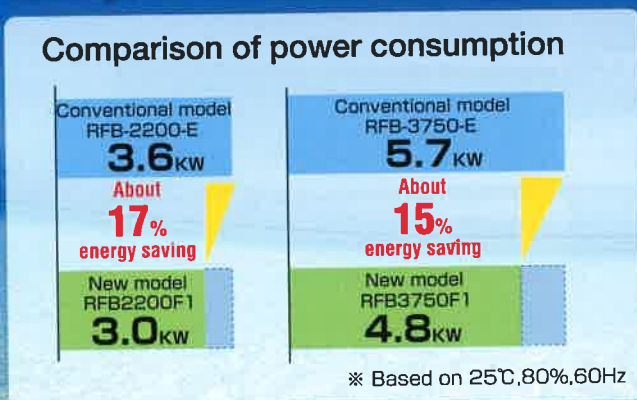
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ENERGY SAVING & POWERFUL DEHUMIDIFICATION HEAVY DUTY DEHUMIDIFIERS

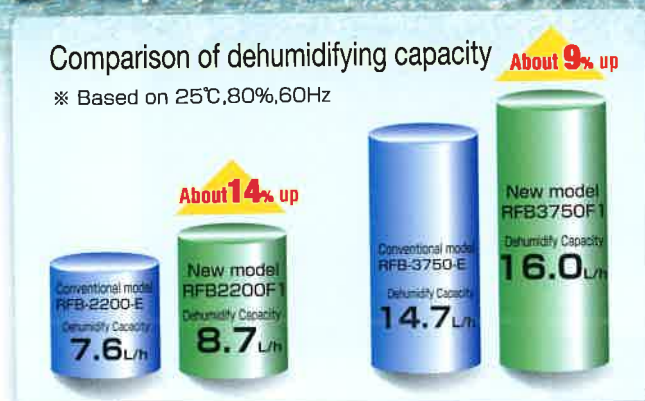
RFB2200F1, 2200F1-R, RFB3750F1, 3750F1-R

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

1. Improvement of Energy Saving

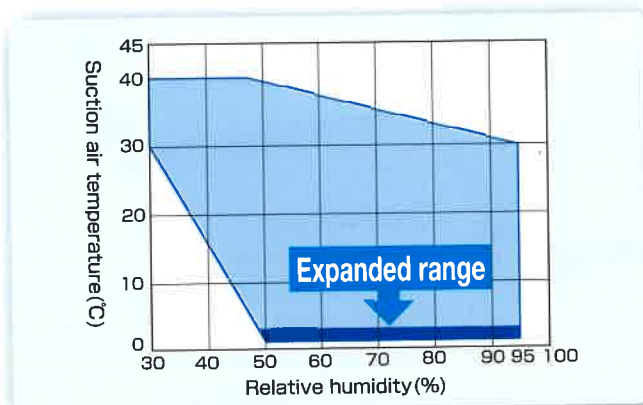


2. Greatly Improvement of Dehumidifying Capacity



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

ORION

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.

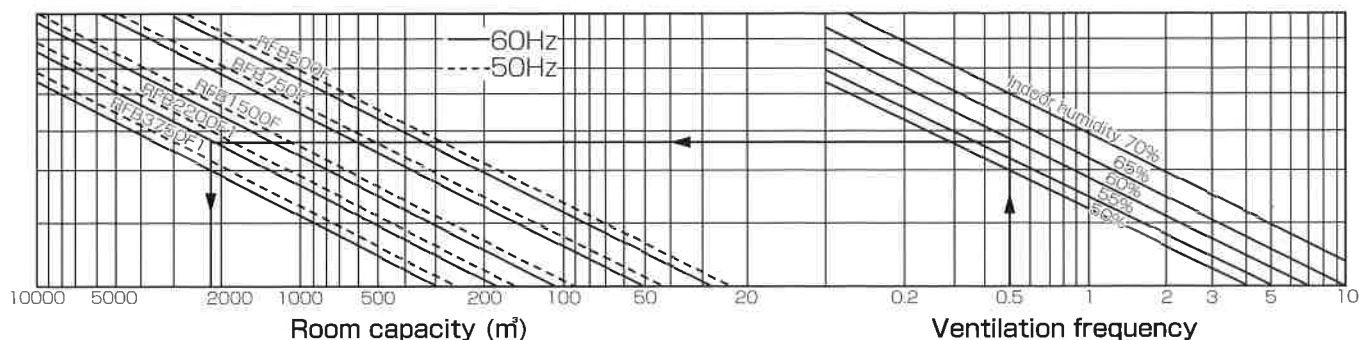
3. Stationary type with air conditioning function (2 models)

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

4. High temperature type (1 model)

Taking drying efficiency into consideration, RFB1500F can cope with high 45°C 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	● Corridors	1	● Cafe (Without ventilating fans)	1
● Rooms without windows or doors facing the outdoors	0.5~0.75	● School rooms	0.5~3	● Cafe (With ventilating fans)	4
● Reception room	1~2	● Churches	0.75~2	● Wooden houses (Western style rooms)	1
		● Offices	0.5~1	● Wooden houses (Japanese style rooms)	1.5
		● Warehouse	0.5~2		
		● Factories	0.5~3		

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

$$\frac{\text{Volume of incoming air (m}^3/\text{h)}}{\text{Room capacity (m}^3\text{)}}$$

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

ORION

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.



WARNINGS

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

Usage environment (Installation surroundings)



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.

CAUTION

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

Usage environment (Installation surroundings)

Avoid installing the Product under the environment described below.

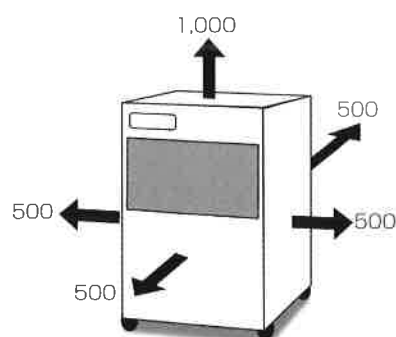
①	Places where direct sunlight shines on the Product	⑧	Coastal areas or other areas with high salt concentrations
②	Places where freezing may occur	⑨	Places that have a particularly acidic or alkali atmosphere
③	Using in the presence of corrosive gases such as ammonia or sulfur, or in the purpose of drying items generated corrosive elements such as woods, sea products or incense stick	⑩	Very dusty places (Dust clogs the heat exchanger)
④	Places where many dust, dirt or oil mist is suspended	⑪	Places where rain or other liquids splash on the Product
⑤	Places with significant oil spray or vapor (including machine oil)	⑫	Places where the ambient temperature and/or humidity is outside the operational range
⑥	Hot springs or other places with excessive sulfide gas	⑬	Places where proper draining facilities cannot be provided (except such a place where draining by moving is possible)
⑦	Places where combustible gases could be formed or could enter the area	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.

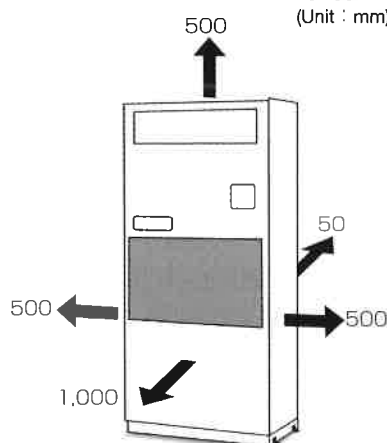
Installation

- 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 $\pm 10\%$ of the rated voltage and the interphase imbalance to be within $\pm 3\%$ 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.**

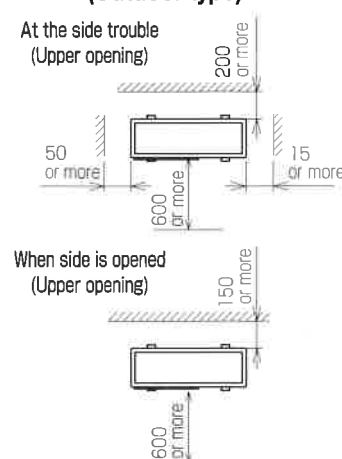
Dehumidifiers of portable type
(Unit : mm)



Dehumidifiers of stationary type
(Unit : mm)



Dehumidifiers of stationary type
(Outdoor type)
(Unit : mm)



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

ORION

The large capacity series



RFB3750F1·3750F1-R

Features

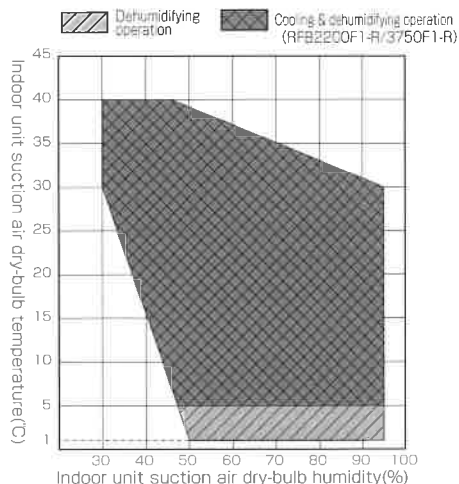
- Wide temperature control range from 5°C to 40°C.** ※The model with cooling function(R type).
(Our corresponding conventional models: 16 - 40°C)
- Operating temperature and humidity display by easy operation.**
Possible to check it in inspection mode, such as a corresponding conventional models.
- Cooling/dehumidifying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

Specifications

Item		Model	Dehumidifying only RFB2200F1		With air conditioning function RFB2200F1-R		Dehumidifying only RFB3750F1		With air conditioning function RFB3750F1-R	
Dehumidifying capacity ※1		L/h	7.6/8.7				14.0/16.0		13.7/15.6	
Cooling capacity ※2		kW	—		9.0/10.0		—		15.3/16.2	
Operable temperature range (Indoor type)		℃			1 ~ 40					
Operable temperature range (Outdoor type) ※3		℃	—		-5~43		—		-5~43	
Controllable temperature range		℃	—		5 ~ 40		—		5 ~ 40	
Power specifications	Power source	V	Three phase 200 ± 10% 50/60Hz							
	Electric current ※1	A	9.1/9.7				13.1/15.1			
	Power consumption ※1	kW	2.3/3.0				3.7/4.8			
	Power capacity	kVA	4.9	5.6		7.7		8.0		
Equipment details	Compressor	kW	2.2				3.75			
	Condenser, Evaporator		Fin and tube type							
	Blower	W	270				400			
	Air capacity	m³/min	30				44/52			
	Refrigerant controlling method		Electronic expansion valve							
	Refrigerant		R410A							
	Defrosting method		Hot gas							
	Ventilating fan		Double suction multi blade type							
External dimensions (H × D × W) ※4		mm	1750(1517) × 400 × 650				1950(1745) × 500 × 800			
Product mass ※5		kg	119		124		178		183	
Protecting devices	Compressor		Over current relay							
			Discharge pipe thermostat (For overheat prevention), Fuse							
	Blower		Internal thermostat, Fuse							
	Refrigerating circuit		High pressure cut							
	Electric circuit		Operation circuit fuse							
Operation sound level ※6		dB	54				59/68			

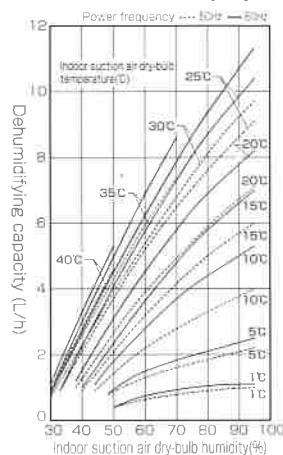
- ※1 The numerical value indicated above is based on 25°C of suction air temperature and 80% of relative humidity. The performance capacity is 90% or more of the indicated.
- ※2 The numerical value indicated above is based on 25°C of suction air temperature, 80% of relative humidity and 30°C of ambient temperature of an outdoor unit.
The performance capacity is 90% or more of the indicated.
- ※3 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.)
- ※4 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)

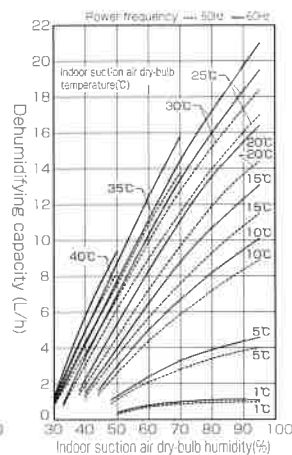


Indoor temperature

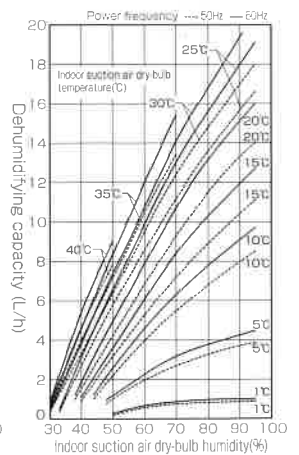
RFB2200F1(-R)



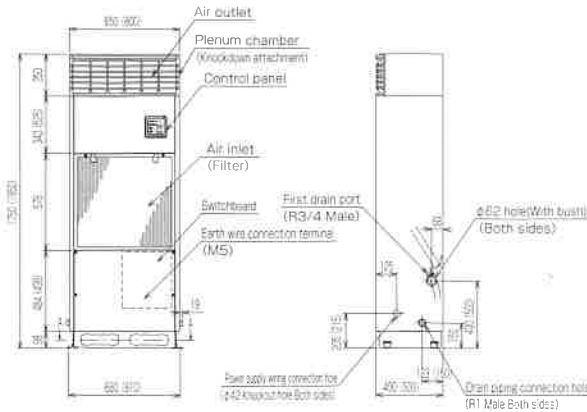
RFB3750F1



RFB3750F1-R

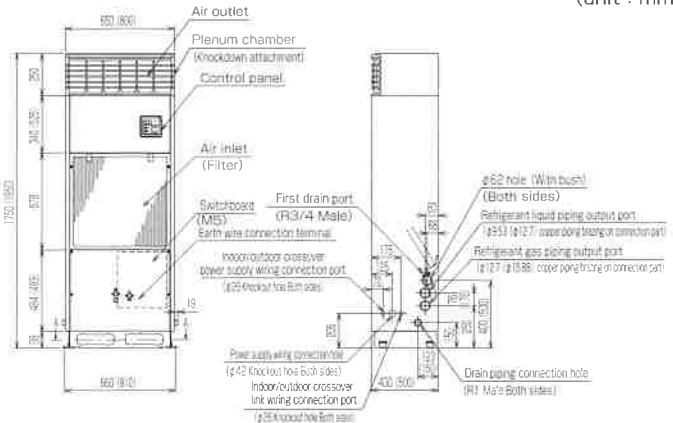


■ External dimensions RFB2200F1/3750F1



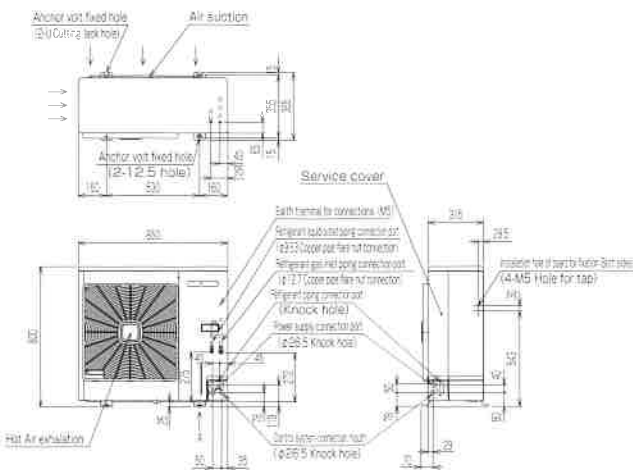
- ※ Plenum chamber must be assembled and installed at the site.
- ※ Drain pipes can be connected with either the right side or left side.
- ※ Power wire and transit wire can be connected with either the right side or left side.
- ※ Refrigerant pipe can be connected with either the right side or left side.
- ※ Dimensions in parentheses are those of RFB-3750F1.

RFB2200F1-R/3750F1-R

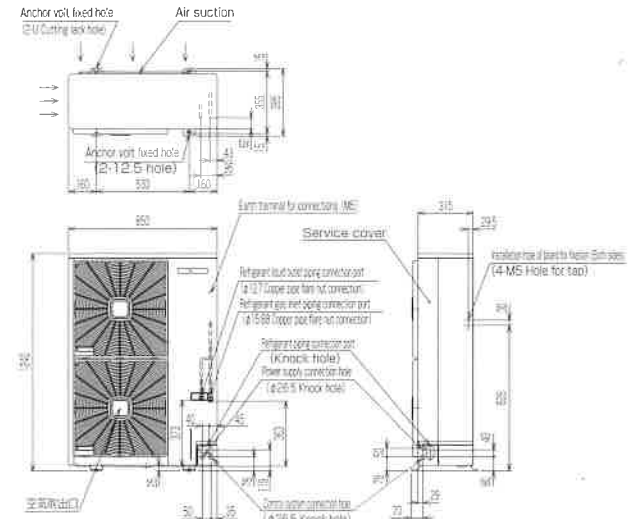


- ※ Plenum chamber must be assembled and installed at the site.
- ※ Drain pipes can be connected with either the right side or left side.
- ※ Power wire can be connected with either the right side or left side.
- ※ Refrigerant pipe can be connected with either the right side or left side.
- ※ Dimensions 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°C	
Refrigerant	R410A	
Blower	95W	60W+80W
Mass	23kg	36kg
Operation sound level	45/46dB	46/46dB
Piping	To outdoor unit	ø12.7×t0.8
	From outdoor unit	ø9.53×t0.8
	Pipe length	Actual length: MAX. 30m
	Difference in height	Outdoor unit on top/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.

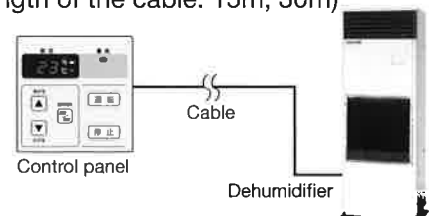
■ Options

Duct (ø 200) assembly

RFB2200F1
RFB2200F1-RRFB3750F1
RFB3750F1-R

Cable set

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

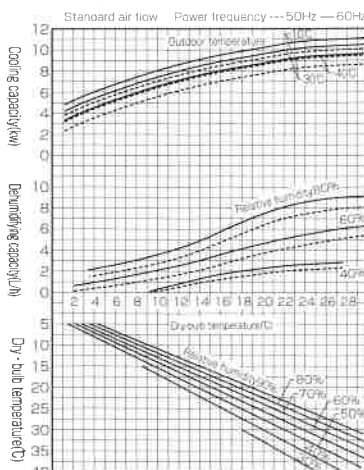


Remote control wiring assembly

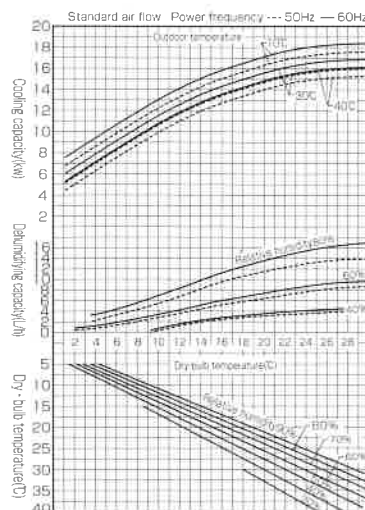
Connector for remote control terminal on base material

■ Cooling capacity

RFB2200F1-R



RFB3750F1-R



Dehumidifiers of portable type

ORION

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.



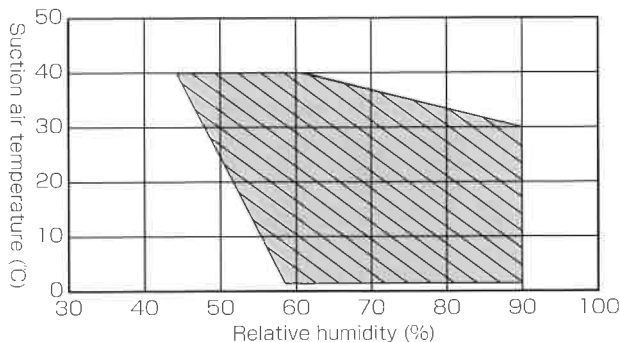
Specifications

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

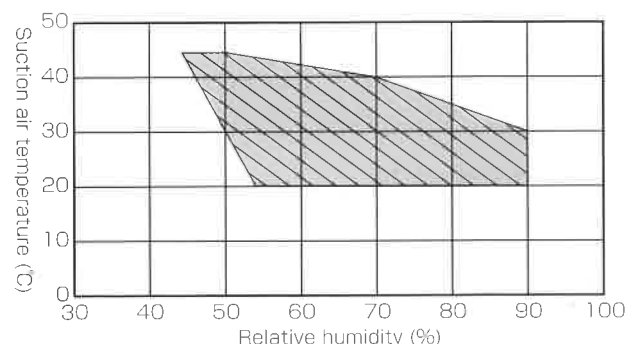
※ 1 The numerical value indicated above is based on 30°C of suction air temperature and 60% (80% for RFB500F) of relative humidity. The performance capacity is 95% or more of the indicated.

※ 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 φ 19 can be attached to RFB500F. ※ 4 RFH1500F is manufactured to order.

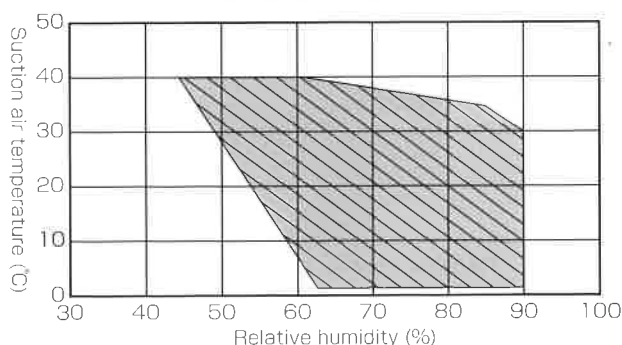
Operable range RFB500F



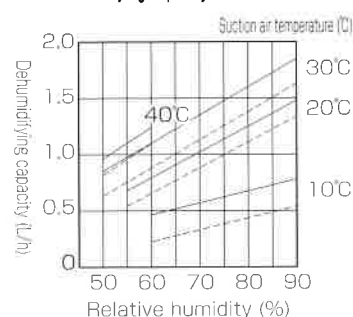
RFH1500F



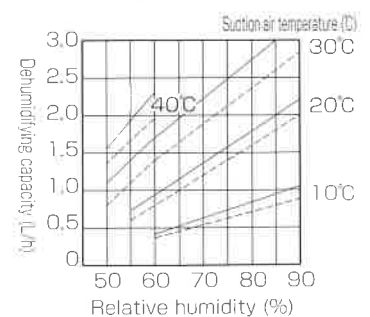
RFB750F/1500F



Dehumidifying capacity RFB500F

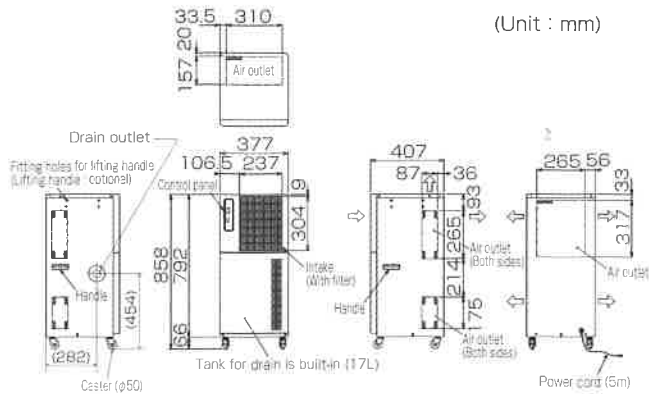


RFB750F

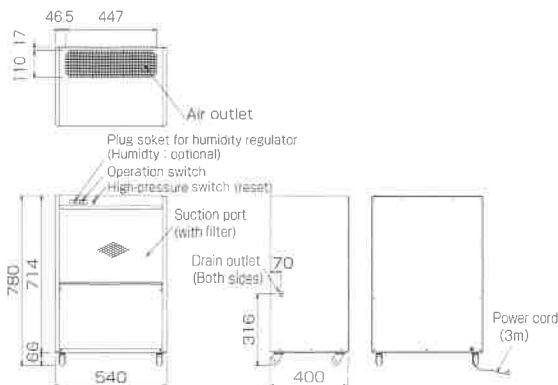


External dimensions

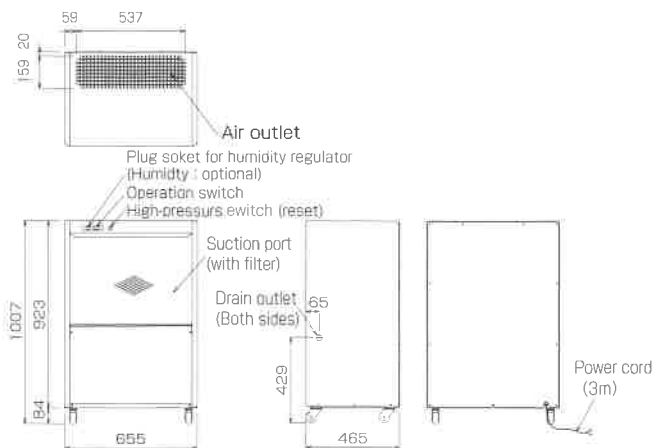
RFB500F



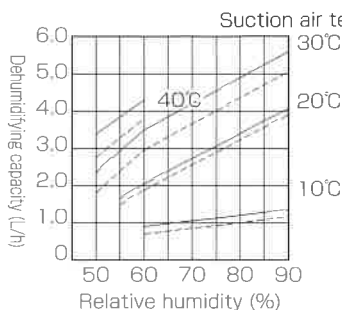
RFB750F



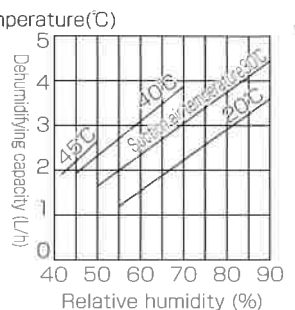
RFB1500F/RFH1500F



RFB1500F



RFH1500F



Option

RFB500F

1. Hanging handle



2. Air direction plate



3. Humidistat

Setting range: up to 90% RH



4. Large casters (with a base)



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

Model	EH-1500-B
Applicable model	RFB1500F/RFH1500F
Heating capacity	2kW
Operable temperature range	1~40°C
Operation controlling method	Synchronized with fan motor and heating
Power source	Three phase 200V 50/60Hz
Electric current	5.8A
Power consumption	2.0kW
External dimensions (Height×Depth×Width)	188×270×656mm
Mass	8kg
Heat source	Sheathed heater
Safety devices	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]

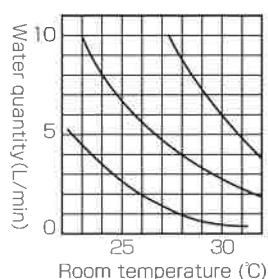
- Ideal for applications that should not raise room temperature
- Prevents dehydrated air temperature from rising



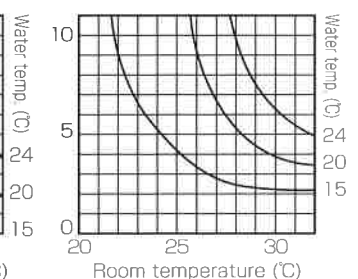
Applicable model & specifications

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

ZSA-750



ZSA-1500



Dehumidifiers idealized to use at construction & civil works sites

ORION

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.

Specifications

Item	Model	RFB500F L
Dehumidifying capacity ※ 1, ※ 2	L/h	1.4/1.6
Operable temperature range	°C	1 ~ 40
Power specifications	Power source	V
	Electric current	A
	Power consumption	kW
	Compressor	kW
Equipment details	Condenser	Forced air cooled fin and tube type
	Blower	W
	Air capacity	m ³ /min
	Refrigerant controlling method	Capillary tube
	Refrigerant	R407C
	Defrosting method	Hot gas
External dimensions (Height x Depth x Width)	mm	970 x 495 x 565
	(Two-storied external dimensions)	(1885 x 495 x 565)
Product mass	kg	46
Protecting devices	Compressor	Over current relay
	Refrigerating circuit	High-pressure pressure switch
Accessories	Drain hose	17L, with float type & high water level stopper
	Power cord	With plug 2 x 5m
Operation sound level ※ 3	dB	55 / 58

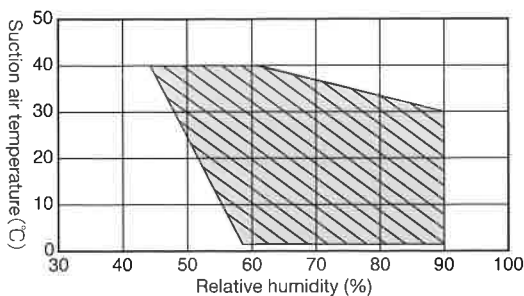


Storage Example

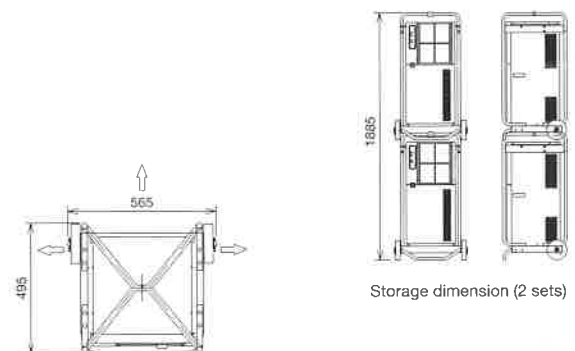
RFB500F L

- ※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(φ 150))
 ●two-storied storage frame.
 ※Overturn-prevention should be implemented in case of two-storied installation.
 ●Optional: Humidistat

Operable range

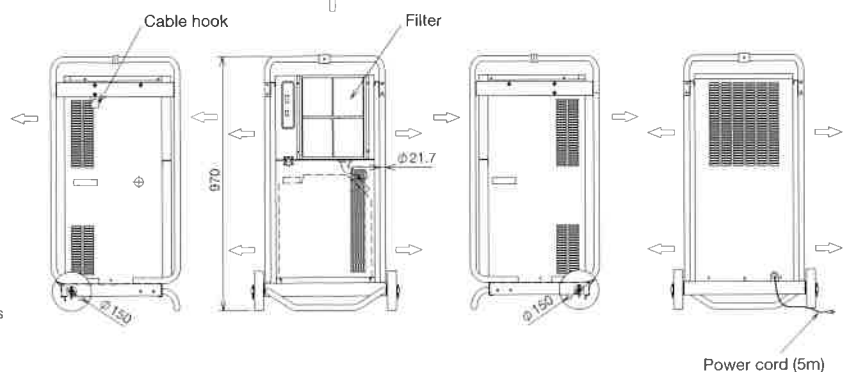
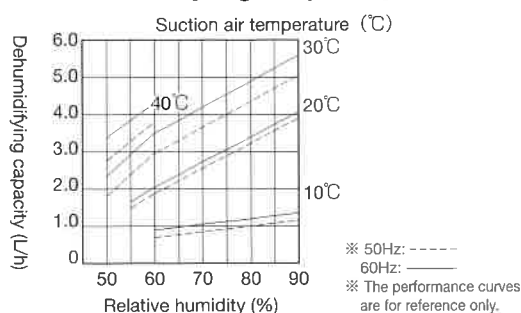


External Dimensions



Storage dimension (2 sets)

Dehumidifying Capacity



Power cord (5m)

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





● 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., LTD.



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



ISO 9001 (Main Factory)



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