

technical data

Heat Recovery Ventilation

Product introduction

HRV

Heat Recovery Ventilation



Model name

VAM 150FAVE
VAM 250FAVE
VAM 350FAVE
VAM 500FAVE
VAM 650FAVE
VAM 800FA5VE
VAM1000FA5VE
VAM1500FA5VE
VAM2000FA5VE

1. Product introduction

1.1 HRV (Heat Recovery Ventilation)

Background

To maintain the comfortable environment in a building, the fresh air intake is essential the same as an appropriate room temperature control.

The heating / cooling efficiency of conventional standard ventilating systems drops during cooling / heating operation and it is waste of energy.

The Heat Recovery Ventilation was developed to solve those problems.

What is HRV (Heat Recovery Ventilation) ?

HRV is a system which recovers the thermal energy of exhaust air and reuses it for heating or cooling of supply air.

It exchanges heat between the exhaust and the supply air.

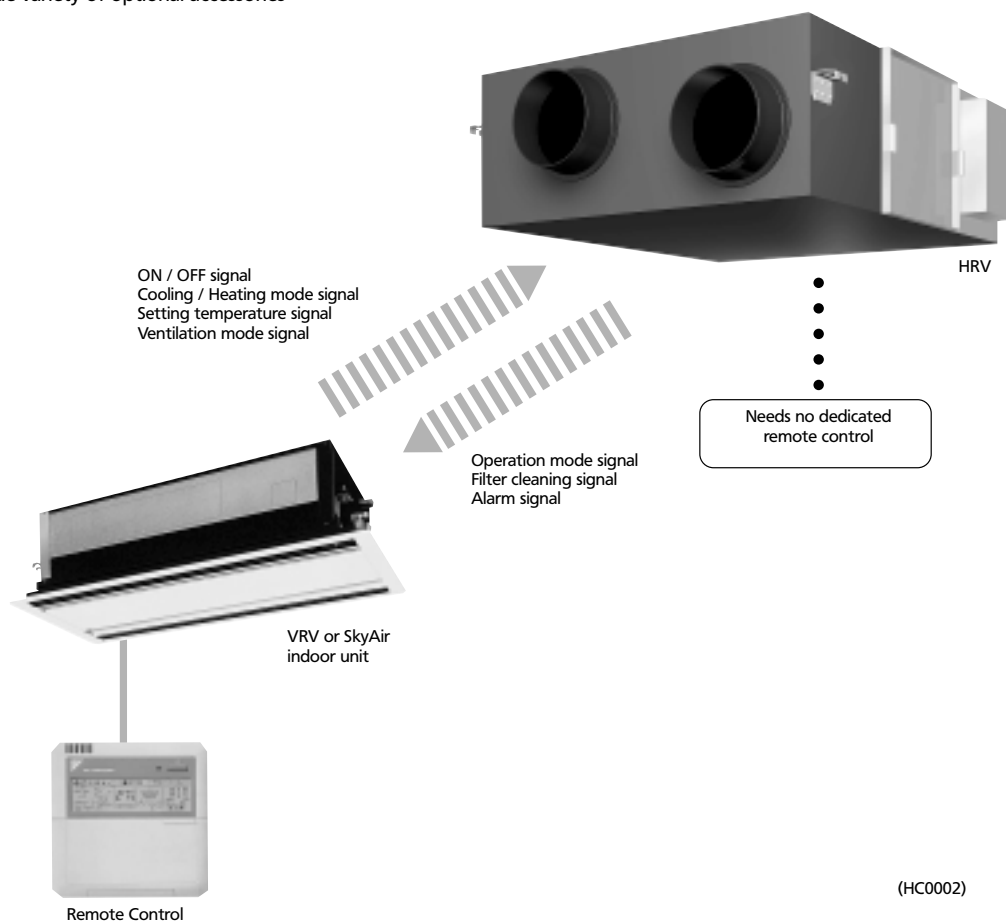
Daikin's HRV

Daikin's HRV greatly reduces the total power consumption by operation interlocked with air conditioner such as VRV or SkyAir.

The total heat exchange mode and the ventilation mode can be automatically selected by setting to the automatic ventilation mode

Main Features

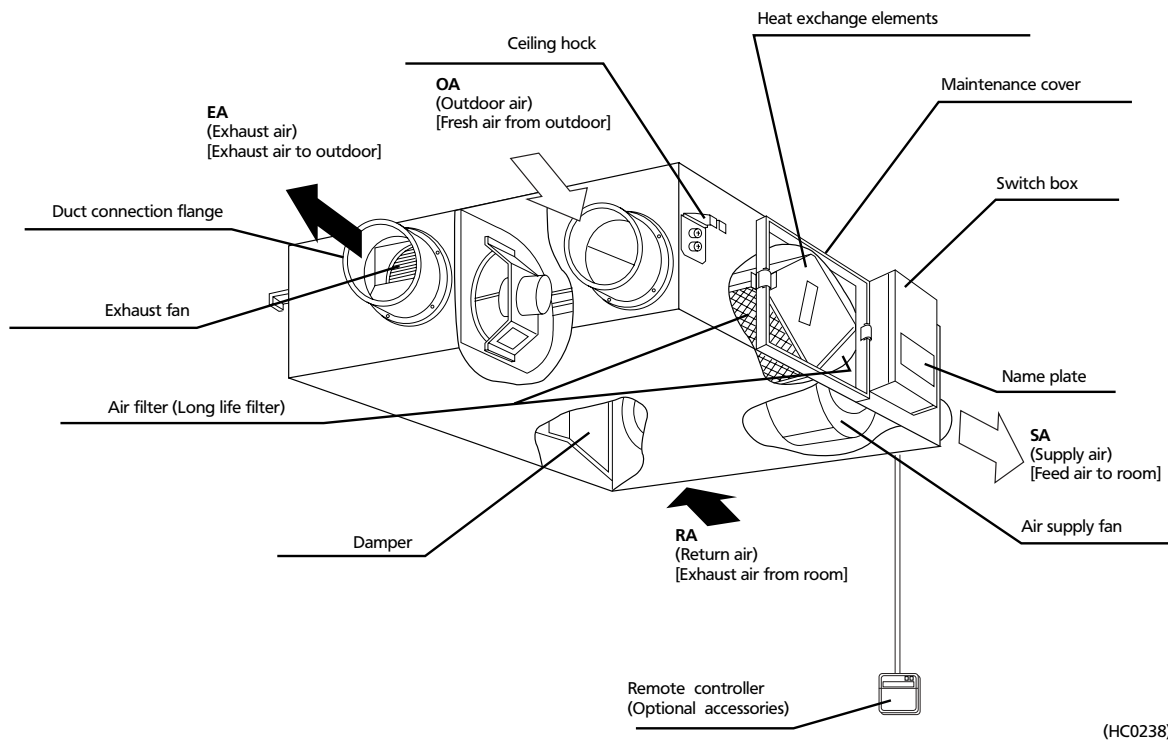
1. Interlocked operation with VRV (SkyAir)
2. Automatic ventilation mode changeover
3. Energy Saving
4. FRESH-UP operation
5. Downsized compared with EJ Series
6. Quiet operation
7. Easy installation
8. Easy maintenance
9. Wide variety of optional accessories



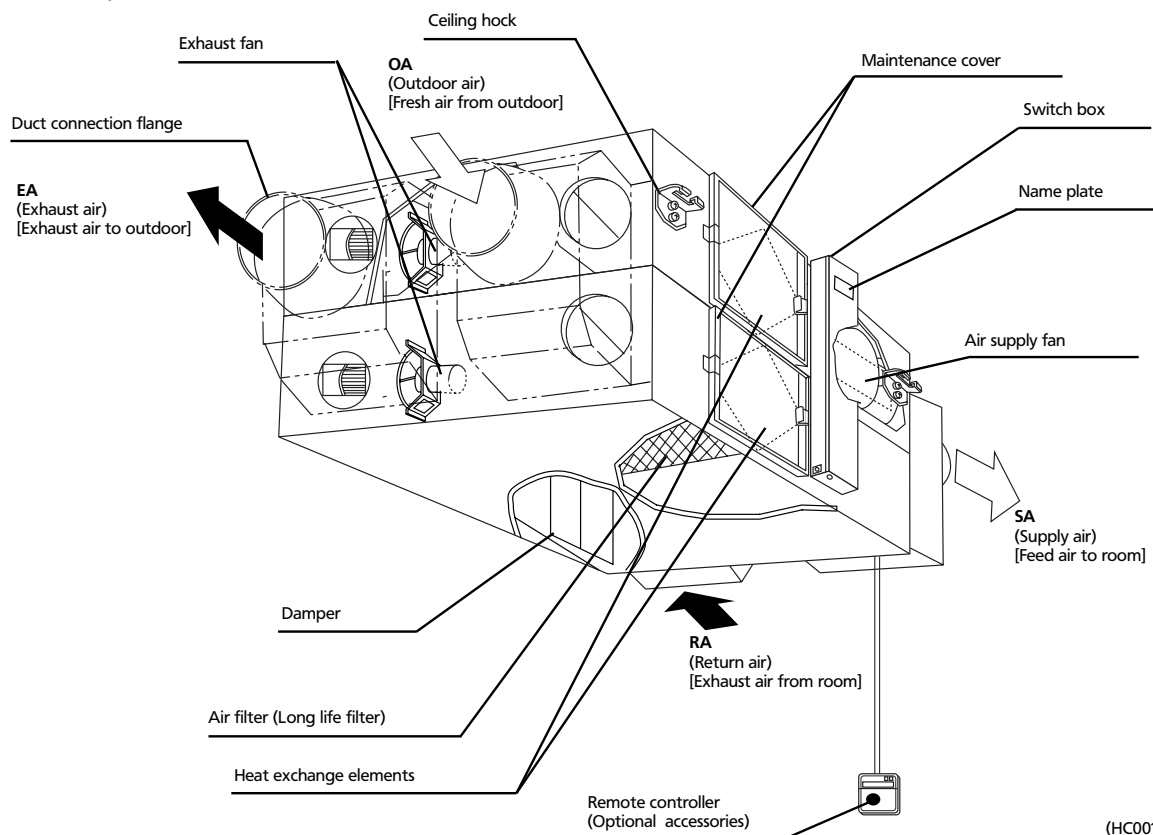
1.2 Structure

2

VAM150,250,350,500,650FAVE
VAM800,1000FA5VE



VAM1500,2000FA5VE



1.3 Features

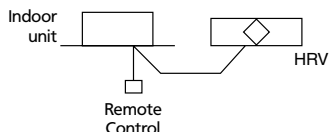
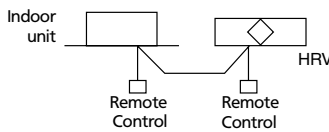
3

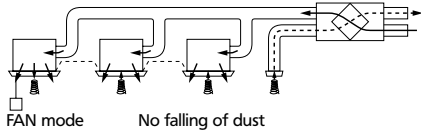
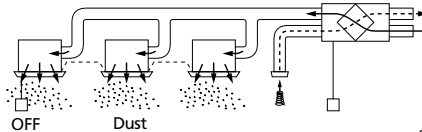
1.3.1 Interlocked operation with VRV (SkyAir)

1. Simultaneous ON / OFF with the indoor unit by the indoor unit remote control.
2. HRV independent operation during air conditioning off season by the indoor unit remote control.
3. Automatic ventilation mode changeover: Auto / Heat Recovery / Bypass
4. Fan speed changeover by the indoor unit remote control: High / Low, Ultra-High / High, Ultra-High / Low
5. Precooling / heating control function setting to delay the start of ventilation during air conditioner start-up to realize the high energy saving efficiency.
6. FRESH-UP operation setting
7. Filter sign display notifies the time for cleaning the filter
8. No need to purchase or install the HRV exclusive remote control
9. Advantage to IAQ (Internal Air Quality.)

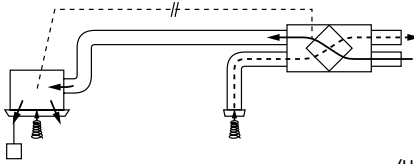
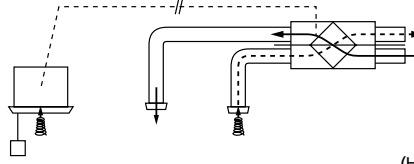
Note:

5-7 can be set at the initial setting only.

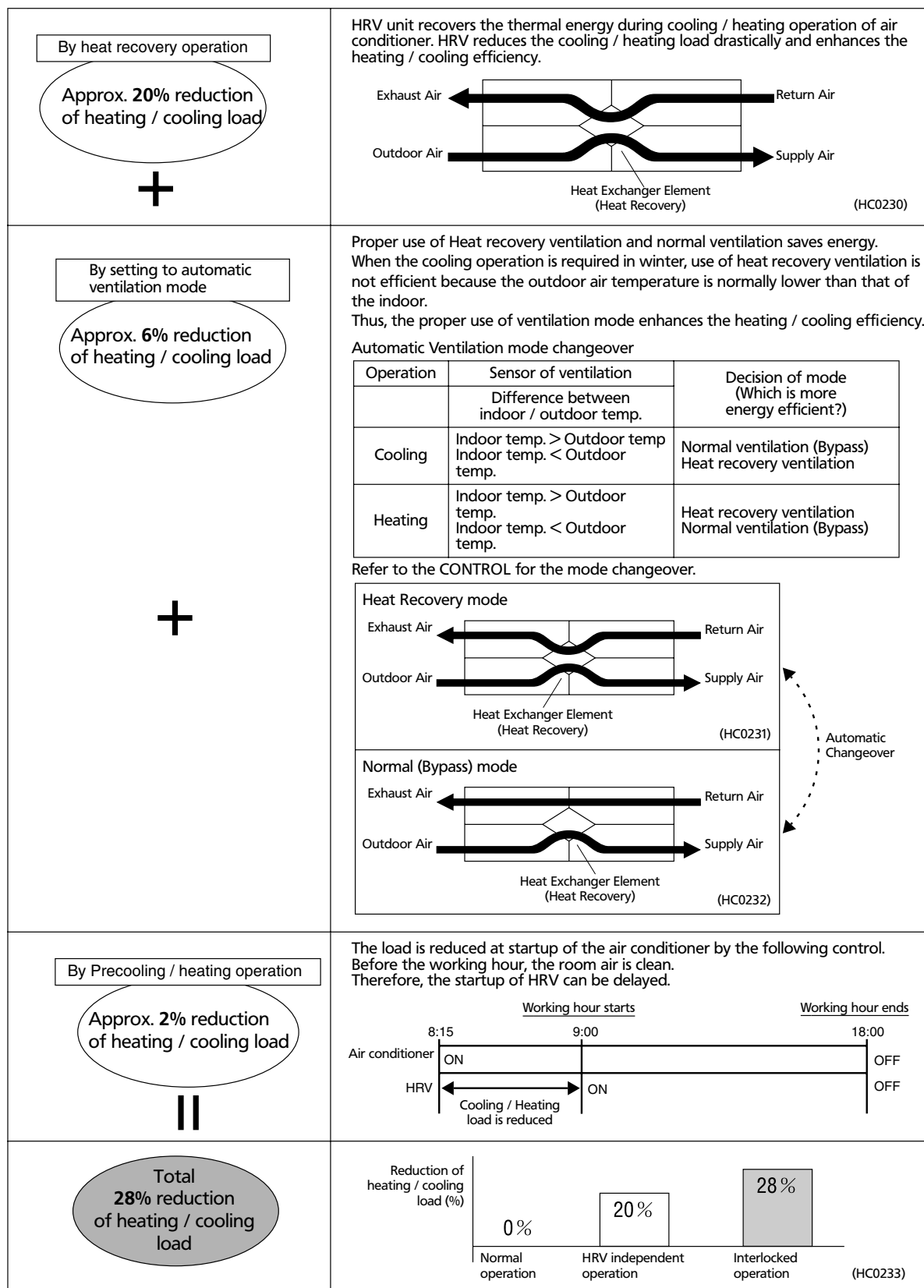
Type	Interlocked operation with air conditioner	HRV independent operation
Structure		
Features	<ul style="list-style-type: none"> • Simultaneous operation by air conditioner's remote control is available • Fan speed can be set at the initial setting. 	<ul style="list-style-type: none"> • Both simultaneous operation by air conditioner's remote control and independent operation by HRV exclusive remote control are available • Fan speed can be changed by switch of HRV (High / Low, High / Ultra-high, Low / Ultra-high)
Connectable Indoor unit	VRV (all indoor unit), SkyAir (Optional connecting PCB is required.)	

<p>Daikin's HRV</p>  <p>Dust does not fall off from the air filter because the air supply fan of the interlocked indoor unit remains activated even when the HRV is operated independently.</p>	<p>Other types</p>  <p>If conventional HRV, with exclusive remote control, is directly connected to indoor unit of air conditioner, dust may fall off from air filter when air conditioner is OFF.</p>
---	---

Installation Examples

<p>Direct duct connection system</p> 	<p>Independent duct system</p> 
---	--

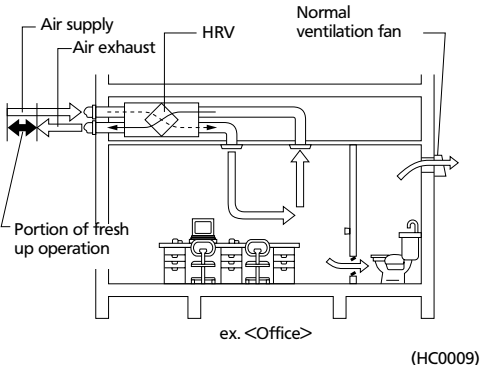
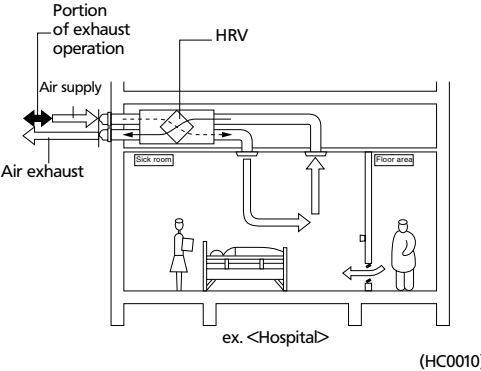
1.3.2 Energy Saving

**Note:**

The total heating / cooling load may vary depending on the climate or the other environmental conditions.

1.3.3 FRESH-UP operation

Both the excessive supply mode and the excessive exhaust mode are selectable.
This function creates a more comfortable air environment.

	Supply Fresh-up (Excessive outdoor air supply)	Exhaust Fresh-up (Excessive Exhaust air supply)
Detail	Supply air volume can be set at a higher level than the exhaust air by the remote control.	Exhaust air volume can be set at a higher level than the supply air by the remote control.
Major effects	<ul style="list-style-type: none"> Prevents inflow of toilet odor Prevents inflow of outdoor air in winter 	<ul style="list-style-type: none"> Prevents outflow of airborne bacteria from rooms in a hospital Prevents outflow of odors from rooms in a nursing home
Application	Offices, etc.	Hospitals, Nursing homes, etc.
Example		

1.3.4 Element (HEP element)

Material

The heat exchanger element adopts a new paper of high permeability. The material recovers exhaust humidity at a speed of 2 times of the previous model.

The material is flame-retardant for safety.

The fungiproof design also keeps the air clean.

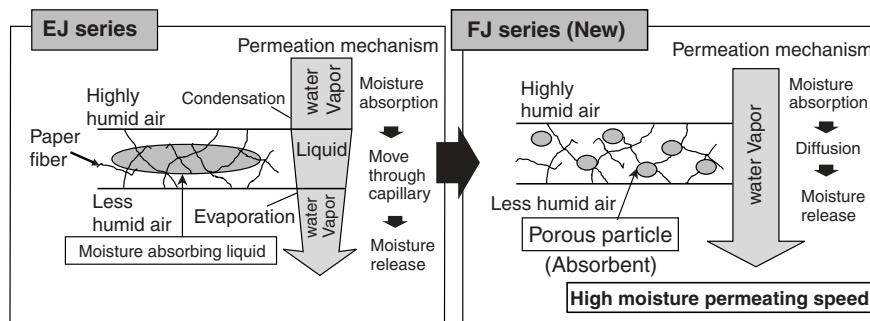
Structure

The heat exchanger element is designed without moving parts for higher durability and reliability.

The supply air passage and the exhaust air passage are arranged in right angle to prevent the supply and exhaust air from getting mixed.



(HC0013)



1.3.5 Easy Installation and service maintenance

Downsized

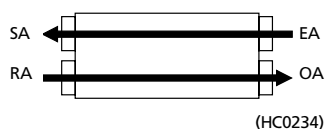
Total volume is reduced to 68% of EJ series and the unit fits into a small space.

(Comparison with FJ and previous EJ series)

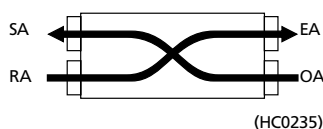
Model name	Height		Height Difference (mm)	Volume compared with EJ series
	FJ	EJ		
VAM 500FAVE	285	← 310	-25	68%
VAM 800FA5VE	348	← 388	-40	70%
VAM1000FA5VE	348	← 388	-40	78%
VAM2000FA5VE	710	← 790	-80	82%

Parallel air flow system (Daikin)

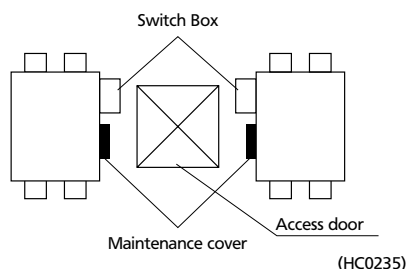
This system prevents misconnection and simplify the installation work.



Cross air flow system



Service Maintenance



Upside-down installation is available.

It allows the common use of the access door and reduces the space and installation work.

For 2 units closely installed, only one inspection hole of 450 × 450 mm will do for maintenance or replacement of the heat exchanger element etc.

Long life filter is equipped.

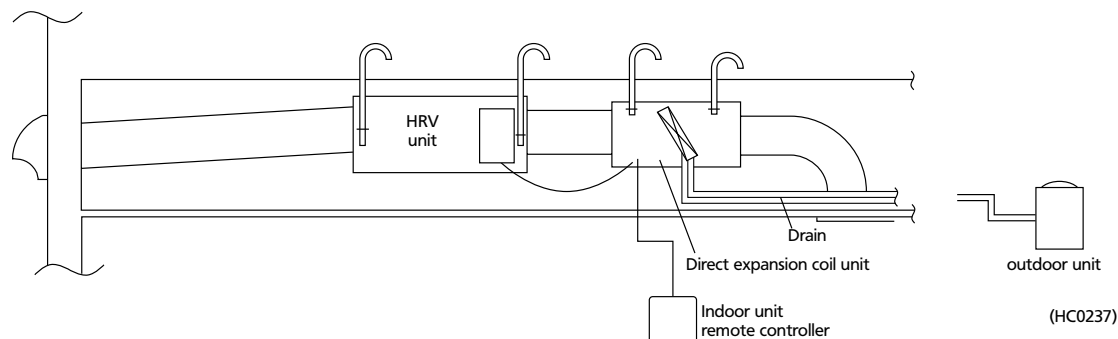
1.3.6 Additional Optional accessories compared with EJ Series

Built-in optional high efficiency filter

It greatly reduces the installation space.

The installation of access doors and the unit can be reduced.

Direct expansion coil



The direct expansion coil helps to recover approx. 100% of exhaust air heat and prevents unpleasant draft. It can also operate as an air conditioner.

Connectable unit: VRV and HRV.

BRP4A50

Refer to 6.16 Heater control kit (page 145) for the detail.

1.4 Selection Procedures

Various methods are used to calculate the required ventilating airflow rate according to CO₂ generated by inhabitants in a room, waste gas generated by use of fire, and other conditions of a room. Here are 2 patterns of calculating methods.

1.4.1 Based on inhabitants

$$\text{Required ventilating air flow rate (m}^3/\text{h)} = \frac{20 \times A}{B}$$

A: 20 × Living room floor space (m²)

B: Area occupied per person (m²)

The above equation conforms to article 20, 2 No.2 of the Building Standards Act in Japan.

Notes:

- 20 (in the above equation) means "20(m³ / h / person)", which is the required ventilating air flow rate based on the CO₂ exhausted by an adult sitting still in a room. If smoking is allowed, other calculation method should be used.
- Use 10 (m²) if the area occupied per person exceeds 10 (m²).

<Table 1>

Type of building	Area occupied per person (N)	Remarks
Eating houses, restaurants, coffee-shops	3 m ²	Floor space of a part used for business purposes.
Cabarets, beer halls	2 m ²	Floor space of a part used for business purposes.
Japanese-style restaurants, hall for hire	3 m ²	Floor space of a part used for business purposes.
Store market	3 m ²	Floor space of a part used for business purposes.
Pool rooms, Ping-pong rooms, dance halls, bowling alleys	2 m ²	Floor space of a part used for business purposes.
Pin-ball parlors, Go club houses, mahjong parlors	2 m ²	Floor space of a part used for business purposes.
Inns, hotels, and motels	10 m ²	Floor space of a part used for business purposes.
Massage parlors	5 m ²	Floor space of a part used for business purposes.
Meeting places, public halls	0.5 – 1 m ²	Persons accommodated simultaneously with the number of persons calculated per unit.
Offices	5 m ²	Floor space of an office.

*: Values set by the Metropolitan Maintenance Bureau in Japan.

Notes:

- Table indicates the required ventilating air flow rate calculated as 20 m³ / h.
- The area occupied per person by type of business is calculated in reference to Application Standards for building administration in compliance with Building Standards Act in Japan.

1.4.2 Based on Room size

$$\text{Required ventilating air flow rate (m}^3/\text{h)} = C \times D \times E$$

C: Number of ventilation required per hour (ventilation / h)

D: Area of room (m²) (See Table 3 of the following page)

E: Height of Ceiling (m) (See table 2)

Calculation is based on the experiences of hygienic laboratory, etc. to find out the number of hourly ventilation of the room air.

(Selection example)

Place: Living room of common household

Required ventilation: 6 times / h (See table 2)

Area of room: Approx. 9.9 (m²)

Height of ceiling: 2.4 m

Required ventilating air flow rate =

$$6 \times 9.9 \times 2.4 \approx 143 \text{ (m}^3/\text{h)}$$

Required ventilating air flow rate and the unit size such as 150, 250, 3502000 are almost equal.

So select the close size of the unit.

In this case, select VAM150FJVE.

<Table 2>

Groups	Type of room	Ventilation required	Groups	Type of room	Ventilation required
Common household	Living room, bathroom, drawing room, toilet, kitchen	6 6 6 10 15	Playhouses and movie theaters	Audience room, corridor, smoking room, toilet, projector room	6 6 12 12 20
	Restaurant, sushi restaurant, banquet hall, tempura restaurant, cooking room	6 6 10 20 20		Office room, general work room, telephone room, spinning plant, printing plant, battery room, machinery plant, generator room, substation room, painting shop, welding shop, chemical plant, food plant, wood working plant, casting plant	6 6 6 10 10 10 15 15 15 15 20 20 50
	Guest room, corridor, dance hall, large dining hall, washroom, toilet, cooking room, laundry room, engine room, boiler room	5 5 8 8 10 15 15 20 20		Office room, waiting room, show room, toilet, conference room	6 10 10 12
	Consultation office, sick room, office room, corridor, waiting room, bathroom, dining room, toilet, respiratory disease room, laundry room, cooking room, surgery room, sterilizing room, engine room, boiler room	6 6 10 10 10 10 10 10 15 15 15 20 20		Dark rooms for photo	16
	Class room, library, auditorium, experimental chemistry room, gymnasium, toilet, cooking room	6 6 6 8 12 15	Guest rooms of ship		6
Hospitals				Room of potential noxious gas or combustible gas	20 or more
Schools					

Note:

Refer to the following pages for the tables.

<Table 3> Criteria for Model Selection

Required ventilating AFR per person (m ³ / h / person)	Area per person (m ² / person)	Model Name	Frequency	Air Flow Rate		Application area (m ²)
			Hz	L	H	
20	3	VAM 150FAVE	50	110	150	16.5 – 22.5
			60	110	150	16.5 – 22.5
		VAM 250FAVE	50	155	250	23.3 – 37.5
			60	145	250	21.8 – 37.5
		VAM 350FAVE	50	230	350	34.5 – 52.5
			60	210	350	31.5 – 52.5
		VAM 500FAVE	50	350	500	52.5 – 75.0
			60	300	500	45.0 – 75.0
		VAM 650FAVE	50	500	650	75.0 – 97.5
			60	440	650	66.0 – 97.5
		VAM 800FA5VE	50	670	800	100.5 – 120.0
			60	660	800	99.0 – 120.0
		VAM1000FA5VE	50	870	1000	130.5 – 150.0
			60	800	1000	120.0 – 150.0
		VAM1500FA5VE	50	1200	1500	180.0 – 225.0
			60	1200	1500	180.0 – 225.0
		VAM2000FA5VE	50	1400	2000	210.0 – 300.0
			60	1400	2000	210.0 – 300.0
	5	VAM 150FAVE	50	110	150	27.5 – 37.5
			60	110	150	27.5 – 37.5
		VAM 250FAVE	50	155	250	38.8 – 62.5
			60	145	250	36.3 – 62.5
		VAM 350FAVE	50	230	350	57.5 – 87.5
			60	210	350	52.5 – 87.5
		VAM 500FAVE	50	350	500	87.5 – 125.0
			60	300	500	75.0 – 125.0
		VAM 650FAVE	50	500	650	125.0 – 162.5
			60	440	650	110.0 – 162.5
		VAM 800FA5VE	50	670	800	167.5 – 200.0
			60	660	800	165.0 – 200.0
		VAM1000FA5VE	50	870	1000	217.5 – 250.0
			60	800	1000	200.0 – 250.0
		VAM1500FA5VE	50	1200	1500	300.0 – 375.0
			60	1200	1500	300.0 – 375.0
		VAM2000FA5VE	50	1400	2000	350.0 – 500.0
			60	1400	2000	350.0 – 500.0
	10	VAM 150FAVE	50	110	150	55.0 – 75.0
			60	110	150	55.0 – 75.0
		VAM 250FAVE	50	155	250	78.0 – 125.0
			60	145	250	72.0 – 125.0
		VAM 350FAVE	50	230	350	115.0 – 175.0
			60	210	350	105.0 – 175.0
		VAM 500FAVE	50	350	500	175.0 – 250.0
			60	300	500	150.0 – 250.0
		VAM 650FAVE	50	500	650	250.0 – 325.0
			60	440	650	220.0 – 325.0
		VAM 800FA5VE	50	670	800	335.0 – 400.0
			60	660	800	330.0 – 400.0
		VAM1000FA5VE	50	870	1000	435.0 – 500.0
			60	800	1000	400.0 – 500.0
		VAM1500FA5VE	50	1200	1500	600.0 – 750.0
			60	1200	1500	600.0 – 750.0
		VAM2000FA5VE	50	1400	2000	700.0 – 1000.0
			60	1400	2000	700.0 – 1000.0

Required ventilating AFR per person (m ³ / h / person)	Area per person (m ² / person)	Model Name	Frequency	Air Flow Rate		Application area (m ²)
			Hz	L	H	
40	3	VAM 150FAVE	50	110	150	8.3 – 11.3
			60	110	150	8.3 – 11.3
		VAM 250FAVE	50	155	250	11.6 – 18.8
			60	145	250	10.9 – 18.8
		VAM 350FAVE	50	230	350	17.3 – 26.3
			60	210	350	15.8 – 26.3
		VAM 500FAVE	50	350	500	26.3 – 37.5
			60	300	500	22.5 – 37.5
		VAM 650FAVE	50	500	650	37.5 – 48.8
			60	440	650	33.0 – 48.8
		VAM 800FA5VE	50	670	800	50.3 – 60.0
			60	660	800	49.5 – 60.0
		VAM1000FA5VE	50	870	1000	65.3 – 75.0
			60	800	1000	60.0 – 75.0
		VAM1500FA5VE	50	1200	1500	90.0 – 112.5
			60	1200	1500	90.0 – 112.5
		VAM2000FA5VE	50	1400	2000	105.0 – 150.0
			60	1400	2000	105.0 – 150.0
	5	VAM 150FAVE	50	110	150	13.8 – 18.8
			60	110	150	13.8 – 18.8
		VAM 250FAVE	50	155	250	19.4 – 31.3
			60	145	250	18.1 – 31.3
		VAM 350FAVE	50	230	350	28.8 – 43.8
			60	210	350	26.3 – 43.8
		VAM 500FAVE	50	350	500	43.8 – 62.5
			60	300	500	37.5 – 62.5
		VAM 650FAVE	50	500	650	62.5 – 81.3
			60	440	650	55.0 – 81.3
		VAM 800FA5VE	50	670	800	83.8 – 100.0
			60	660	800	82.5 – 100.0
		VAM1000FA5VE	50	870	1000	108.8 – 125.0
			60	800	1000	100.0 – 125.0
		VAM1500FA5VE	50	1200	1500	150.0 – 187.5
			60	1200	1500	150.0 – 187.5
		VAM2000FA5VE	50	1400	2000	175.0 – 250.0
			60	1400	2000	175.0 – 250.0
	10	VAM 150FAVE	50	110	150	27.5 – 37.5
			60	110	150	27.5 – 37.5
		VAM 250FAVE	50	155	250	38.8 – 62.5
			60	145	250	36.3 – 62.5
		VAM 350FAVE	50	230	350	57.5 – 87.5
			60	210	350	52.5 – 87.5
		VAM 500FAVE	50	350	500	87.5 – 125.0
			60	300	500	75.0 – 125.0
		VAM 650FAVE	50	500	650	125.0 – 162.5
			60	440	650	110.0 – 162.5
		VAM 800FA5VE	50	670	800	167.5 – 200.0
			60	660	800	165.0 – 200.0
		VAM1000FA5VE	50	870	1000	217.5 – 250.0
			60	800	1000	200.0 – 250.0
		VAM1500FA5VE	50	1200	1500	300.0 – 375.0
			60	1200	1500	300.0 – 375.0
		VAM2000FA5VE	50	1400	2000	350.0 – 500.0
			60	1400	2000	350.0 – 500.0

Note:

AFR Air Flow Rate

3

Heat Recovery Ventilation



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.

VRV products are not within the scope of the Eurovent certification programme.

Specifications are subject to change without prior notice

DAIKIN EUROPE N.V.

Zandvoordestraat 300
B-8400 Ostend - Belgium
Internet: <http://www.daikineurope.com>

technical data

Heat Recovery Ventilation

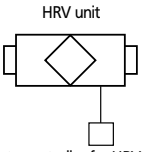
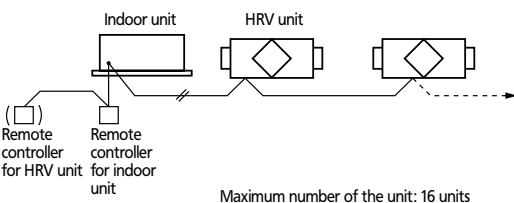
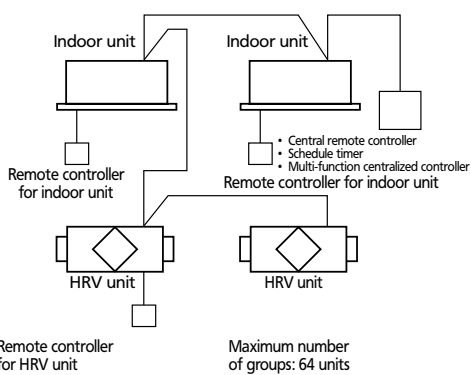
Control System

2. Control System

2.1 Introduction of control system

The control systems introduced here is for the HRV unit adopting the high speed and high performance transmission system (DIII-NET), the same as the VRV systems and SkyAir series,

Description of system

Control system	Purposes and applications	Description of system	Control system									
			Controller						Function			
			Central remote controller	Unified On / Off controller	Schedule timer	Remote controller for HRV unit	Remote controller for indoor unit	Operation / Stop	Ventilation mode changer		Air flow rate changer (High / Low)	Malfunction display
Independent	<ul style="list-style-type: none"> Basic method to operate HRV unit (Operation by exclusive remote controller for HRV unit) 	 <p>Remote controller for HRV unit</p>				○		○	○	○	○	○
Interlocked operation	<ul style="list-style-type: none"> Interlocked operation with indoor unit by remote controller for indoor unit The HRV unit can also be operated independently by the remote controller for indoor unit, even if indoor unit is not in operation. The HRV unit cannot be operated independently when the duct is connected directly to the indoor unit. 	 <p>Maximum number of the unit: 16 units</p>				○*1	○	○	○	Initial setting required		○
Centralized control	<ul style="list-style-type: none"> [Unified On / Off controller] A maximum of 16 groups can be controlled of "On / Off" by one unified On / Off controller. (Note) Up to 4 unified On / Off controllers can be installed in one system. [Schedule timer] One schedule timer can control the weekly schedule of up to 128 units. [Central remote controller] Up to 64 groups of the units can be controlled individually by one central remote controller. 	 <p>Maximum number of groups: 64 units</p>	○	○	○	○		○	○	○	(Only when remote controller for HRV unit is used) ○	(Initial setting required when remote controller for HRV unit is not used) ○

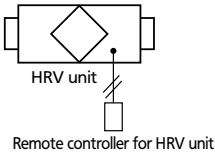
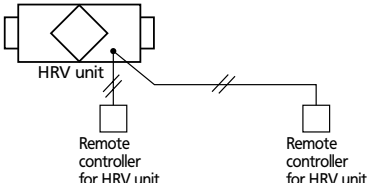
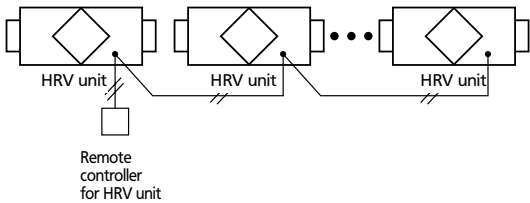
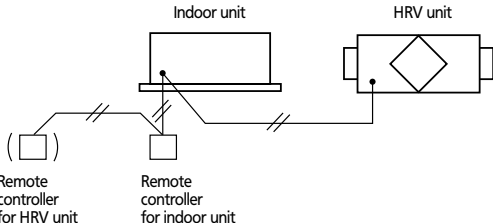
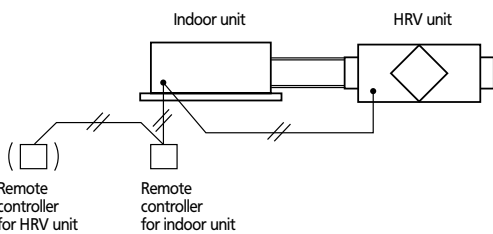
(HC0018)

*1. A remote control for HRV unit can be connected as the 2nd remote control. In addition to air volume control, selection of ventilation mode and Fresh up mode is available.

*2. In case of installing Indoor unit remote control only, initial setting is required for the setting of above function. However, in case of installing both indoor unit remote control and HRV unit remote control, initial setting is not required.

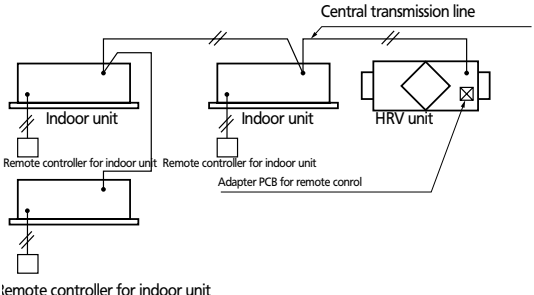
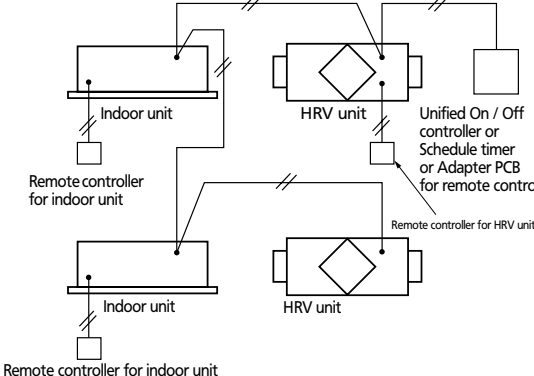
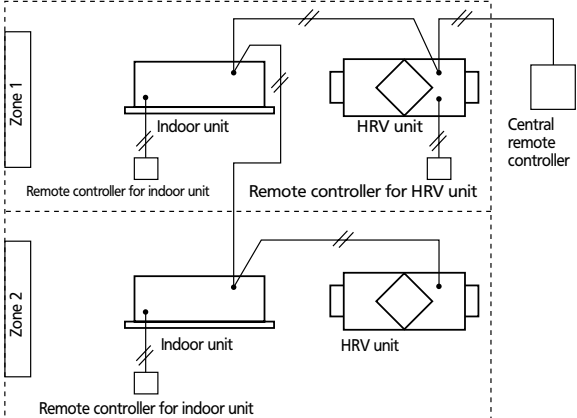
2.2 Basic patterns

2.2.1 List of control system

Control system	Purposes and applications	Description of system	Optional accessories required	
Independent system	Operation by main switch	<ul style="list-style-type: none"> Basic method to operate HRV unit The remote controller for HRV unit is installed on each HRV unit for its operation. 	BRC301B61 Liquid crystal remote controller	
	Control with two remote controllers	<ul style="list-style-type: none"> The HRV is operable from a place near the unit or a remote place and the selected control is indicated in the display. (Priority is on the last selection) 	BRC301B61 Liquid crystal remote controller	
	Group control	<ul style="list-style-type: none"> Simultaneous control of multiple units installed in such as a spacious room is available. 	BRC301B61 Liquid crystal remote controller	
Interlocked operation system with VRV systems and Sky Air series	Single-group interlocked operation	<ul style="list-style-type: none"> The HRV unit operates whenever the indoor unit is in operation, and can also be operated independently by the remote controller for indoor unit, even if the indoor unit is not in operation. 	_____	
	Direct duct connection system	<ul style="list-style-type: none"> Within the same group, the remote controller for indoor unit can control the operation of both the indoor unit and HRV unit connected by duct. 	_____	

	Function	Nos. of the unit controlled and length of wiring	Cautions	page
	BRC301B61 <ul style="list-style-type: none"> • ON / OFF • Ventilation mode (Auto / Heat Exchange / Bypass) • Ventilating rate (High / Low) • Fresh up mode (On / Off) 	<ul style="list-style-type: none"> • One remote controller operates each HRV unit. • Remote control wiring can be extended up to 500 m maximum. 	<ul style="list-style-type: none"> • The wire for remote controller is not included as standard accessories and should be arranged locally. • By connecting the adapter PCB, the operation signal can be taken out remotely. • "Fresh-up operation" is possible by external input. • The group control is not possible by the remote controller for HRV unit. 	16
	BRC301B61 <ul style="list-style-type: none"> • ON / OFF • Ventilation mode (Auto / Heat Exchange / Bypass) • Ventilating rate (High / Low) • Fresh up mode (On / Off) • Timer setting (On / Off) • Indication of filter cleaning signal • Digital indication of malfunction 	<ul style="list-style-type: none"> • Control of one HRV with two remote controllers • The maximum allowable total length of remote controller wiring is 500 m. 	<ul style="list-style-type: none"> • Same as operation from local place. • It is necessary to set the Master / Slave changeover switch in the remote controller. • Two remote controller operation is not available with simple remote controllers. 	17
		<ul style="list-style-type: none"> • Up to 16 HRV units can be controlled with one liquid crystal remote controller. • The maximum total length of remote controller wiring is 500 m. • Control with two remote controllers is available. 	<ul style="list-style-type: none"> • Same as operation from local place. • Group control is not available with a simple remote controller. • All the settings of HRVs in the same group are the same (However, it is possible to fix the individual setting by each unit) 	17
	<ul style="list-style-type: none"> • The HRV unit operates whenever the indoor unit is in operation. • Precool / preheat operation is also possible. • Various settings are available by adding the HRV remote controllers. 	<ul style="list-style-type: none"> • A maximum of 16 units of indoor unit and HRV unit can be controlled by the remote controller for indoor unit. (If they are in the same group) • Remote control wiring can be extended up to 500 m maximum. 		18
		<ul style="list-style-type: none"> • A maximum of 16 units of indoor unit and HRV unit can be controlled the operation by the remote controller for indoor unit. • Remote control wiring can be extended up to 500 m maximum. 	<ul style="list-style-type: none"> • Make sure to set "ON" for direct ducting setting. • The HRV cannot be operated independently to prevent the dust, when the indoor unit is not in operation. However, if the fan of indoor unit is in operation, the HRV unit can be operated independently. 	18

(HC0019)

Control system	Purposes and applications	Description of system	Optional accessories required	
Interlocked operation system with VRV systems and SkyAir series	Interlocked operation with 2 or more groups	 <p>Central transmission line</p> <p>Indoor unit</p> <p>Remote controller for indoor unit</p> <p>Adapter PCB for remote control</p> <p>HRV unit</p> <p>Remote controller for indoor unit</p> <p>Remote controller for indoor unit</p>	KRP2A61 ◆ Adapter PCB for remote control (One adapter PCB should be installed in either the HRV unit or the indoor unit.)	
Centralized control system	Colective / Individual control	 <p>Indoor unit</p> <p>Remote controller for indoor unit</p> <p>HRV unit</p> <p>Unified On / Off controller or Schedule timer or Adapter PCB for remote control</p> <p>Remote controller for HRV unit</p> <p>Indoor unit</p> <p>HRV unit</p> <p>Remote controller for indoor unit</p>	DCS301B61 ◆ Unified On / Off Controller (up to 4 controllers) DST301B61 ◆ Schedule timer KRP2A61 ◆ Adapter PCB for remote control (not possible to use together with other central controller) * One of the above controller should be installed in indoor unit. (However, only KRP2A61 can also be installed in HRV unit.)	
	Zone control system	 <p>Zone 1</p> <p>Indoor unit</p> <p>Remote controller for indoor unit</p> <p>HRV unit</p> <p>Remote controller for HRV unit</p> <p>Zone 2</p> <p>Indoor unit</p> <p>Remote controller for indoor unit</p> <p>HRV unit</p> <p>Central remote controller</p>	DCS302B61 ◆ Central remote controller	

	Function	Nos. of the unit controlled and length of wiring	Cautions	page
	<ul style="list-style-type: none"> The HRV unit operates of one of the indoor units connected to the central control transmission line is in operation. The various setting for the operation of HRV unit should be set by the remote controller for the indoor unit. 	<ul style="list-style-type: none"> A maximum of 64 groups of the units can be controlled. The central control transmission line can be extended up to 1000 m maximum. 	<ul style="list-style-type: none"> No direct duct connection is possible. Set "ON" for collective zone interlock setting. 	19
	<p>Collective / Individual operation</p> <p>[The unified On / Off controller]</p> <ul style="list-style-type: none"> Each group can be controlled "On / Off" individually. Each 16 groups can be controlled "On / Off" collectively. The power supply terminal for the schedule timer is provided. <p>[The schedule timer]</p> <ul style="list-style-type: none"> The schedule timer can control collectively the operation "ON / OFF" twice a day by weekly. Back-up power supply for 48 hours is provided, when the power failure is occurred. <p>[Adapter PCB for remote control]</p> <ul style="list-style-type: none"> The HRV units can be controlled "On / Off" collectively by external input. 	<ul style="list-style-type: none"> A maximum of 64 groups connected by the central transmission line can be controlled. The central transmission line can be extended up to 1000 m maximum. 	<ul style="list-style-type: none"> When you use the central controller, no direct duct connection is possible. <p>[The unified On / Off controller]</p> <ul style="list-style-type: none"> Each group should be set the group number. (It cannot be set by the remote controller for HRV unit.) The power must be supplied. <p>[The schedule timer]</p> <ul style="list-style-type: none"> When you use the schedule timer alone, it is necessary to supply the power of DC16V, which can be supplied from the printed circuit board of the unit. (from CN11 in case of HRV unit) <p>[Adapter PCB for remote control]</p> <ul style="list-style-type: none"> The adapter PCB for remote control cannot be used with other central controller. (It can be installed in the either indoor unit or HRV unit.) Only KRP2A61 can be installed in the HRV unit. (KRP2A2.A3 cannot be installed in the HRV unit because of their size.) 	20
	<p>The interlocked operation</p> <p>[Multi function centralized controller]</p> <ul style="list-style-type: none"> It can control the operation "On / Off" individually or collectively. The several group of the units can be controlled collectively by zone. It can control the interlocked operation of the indoor units and the HRV units in the same zone. The electrical terminal for the schedule timer is provided. 	<ul style="list-style-type: none"> A maximum of 64 groups connected by the centralized transmission line can be controlled. The central transmission line can be extended up to 1000 m maximum. 	<ul style="list-style-type: none"> The initial setting by remote controller for indoor unit is needed. (The collective zone interlock setting should be "On".) However, if there is no indoor unit in the same zone (only HRV units), the initial setting is not required. When you use the central transmission line, no direct duct connection is possible. <p>[Multi function central controller]</p> <ul style="list-style-type: none"> Each group should be set the group number for central control. (It cannot be set by the remote controller for HRV unit.) The power supply is needed. 	21

(HC0020)

2.2.2 Independent system

Operation by main switch

2

Purposes and functions

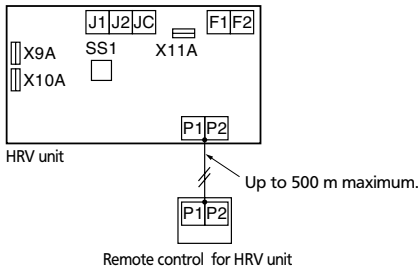
- Basic method to operate HRV unit
The remote control for HRV unit is installed on each HRV unit for its operation.

[When you use remote control for HRV unit]

Cautions

1. The remote control for HRV unit should be connected to the terminal no. P1 and P2.
2. The remote control wiring should be arranged locally.
3. The operation by two remote controls or the group control is not possible.
4. The initial setting cannot be done by the remote control for HRV unit, which has to be set by the remote control for indoor unit.

Example of control wiring



(HC0021)

Switch setting of HRV unit

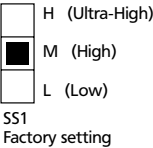
- No change is required. (as per factory setting)

Optional accessories required

- Remote control for HRV unit BRC301B61

Information

1. If you increase the air flow rate from “High” to “Ultra-High” by the remote control for HRV unit, it is necessary to have a initial setting by the remote control for indoor unit or HRV unit.
2. The SS1 on the HRV unit is the selector switch of air flow rate.
When the remote control is not used, set the SS1 on the PC board to H.



(HC0022)

Control with two remote controls

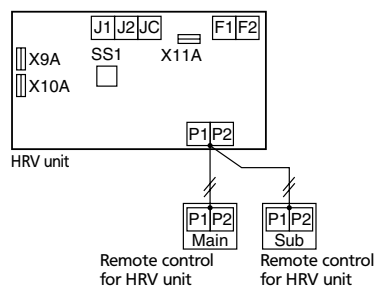
Purpose and functions

- For control of one HRV unit (Also one group control is possible)
Sophisticated operation and indication output are possible from either local place or remote place by two liquid crystal remote controls.
- Either one of two liquid crystal remote controls can be used for all operations and indications.
(However, initial setting can only be carried out by the master remote control)

Point

- The wiring to the remote controls must be branched from the unit as shown in the diagram.
(Though the crossover between the master and slave remote controls is acceptable, the work to put two wires into the remote control takes time.)

Example of wiring for control



(HC0023)

Note

- The maximum allowable total length of wires to the remote control is 500 m.
- Simple remote controls cannot be used for control with two remote controls.

The following setting is required

- Either one of two remote controls must be set as a slave remote control.

Required optional accessories

- Liquid crystal remote control × 2
BRC301B61

Group control

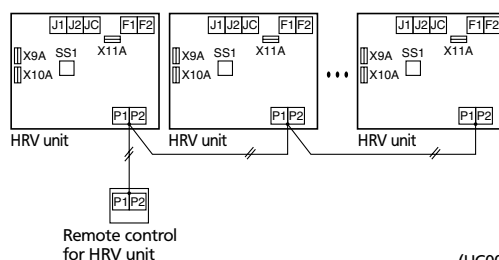
Purpose and functions

- Simultaneous control of multiple HRV units (max. 16 units) is available. (for application to such as a spacious room)
- All operation and individual setting can be carried out from one remote control.
- In case the liquid crystal indicates malfunction, the indication of HRV unit No. shows in the display. (If another remote control is additionally installed, control with two remote controls is possible.)

Point

- No address setting is required because address is automatically set.
(The address is optionally allocated. The address No. can be confirmed by setting to service mode "Forced fan operation" and be checked whether the unit is in operation or not.)

Example of wiring for control



(HC0024)

Note

- The maximum allowable total length of wires to the remote control is 500 m.
- One liquid crystal remote control is always required.
- Simple remote controls cannot be used for control with two remote controls.

The following setting is required

- No setting is required. (product is to be just as it was when shipped from the factory)

Required optional accessories

- One set of liquid crystal remote control
BRC301B61

2.2.3 The interlocked operation system

Single-group interlocked operation (Basic pattern)

Purposes and functions

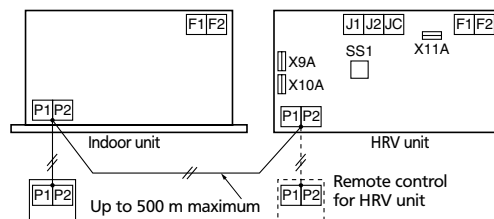
- The remote control for indoor unit can control the interlocked operation with the HRV unit, and it can make an initial setting of the ventilation flow rate, the ventilation mode changeover and fresh-up operation. The HRV unit can independently be operated, even if the indoor unit is not in operation.

Note

- The remote control should be connected to the terminal no. P1 and P2, the same as the group control wiring of indoor units.
- Since this is two remote control system (for Indoor unit and HRV unit), the Master / Slave setting is required.

Remote control for	Setting
Indoor unit	Slave
HRV unit	Master

Example of control wiring



(HC0025)

Switch setting for HRV unit

- No change is required. (as per factory setting)

Optional accessories required

- None

Single-group interlocked operation (Direct duct connection)

Purposes and functions

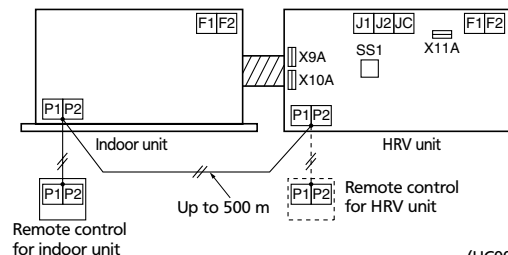
- The operation of HRV unit is interlocked to the indoor unit connected by the duct, which has a fresh air intake.
- It can reduce the number of outlets for supply air.
- The HRV unit cannot be operated independently to prevent a reverse stream of fresh air to the suction side of the indoor unit, unless the fan of indoor is in operation.

Note

- The amount of fresh air to the indoor unit should be less than 20% of the total air volume of the indoor unit. (If the amount of fresh air is too much, the capacity of the indoor unit may reduce and the operating sound might be higher.)
- The HRV unit can be operated independently, if the fan of indoor unit is in operation.
- Since this is two remote control system (for Indoor unit and HRV unit), the Master / Slave setting is required.

Remote control for	Setting
Indoor unit	Slave
HRV unit	Master

Example of control wiring



(HC0026)

Switch setting for HRV unit

The initial setting by the remote control for indoor unit

Direct duct setting "ON" [17(27)-5-02]

Optional accessories required

- None

Interlocked operation with 2 or more group of VRV system

Purposes and functions

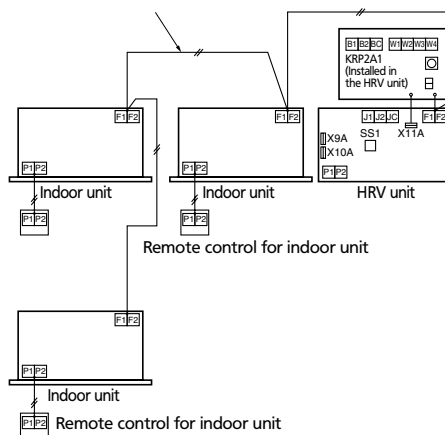
- When the HRV unit is interlocked to 2 or more group of indoor units, the HRV unit operates, if one of indoor unit in groups is in operation. The HRV unit can also be operated independently by remote control for indoor unit, even if the indoor unit is not in operation.

Cautions

- It is not necessary to set the group number for central control.
- One adapter PCB for remote control should be installed in the one of the unit connected to the central transmission line.
(When you install an adapter PCB for remote control in the indoor unit, select the applicable model number of Adapter PCB to be installed.)

Example of control wiring

Up to 1000 m maximum



(HC0027)

Note:

The central transmission line can be extended up to 1000 m maximum.

Switch setting for HRV unit

The initial setting by the remote control for indoor unit or HRV unit.

Optional accessories required

- Adapter PCB for remote control: KRP2A61

2.2.4 Centralized control system

Collective / individual control [Unified On / Off control DCS301B61]

Purposes and functions

- One control can control the operation of "ON / OFF" of 16 groups of the units collectively or individually.
Also up to 4 controls can be installed in one centralized transmission line (in one system), which enable to control up to 64 groups. (16 groups \times 4 = 64 groups)
- The ventilation mode will be selected automatically.

Cautions

- It is necessary to assign a central group number to each indoor unit and HRV unit.
- The operation of HRV unit is not interlocked with the operation of indoor unit under this control system. If you like to have a interlocked operation, please consider other control system.

Switch setting for HRV unit

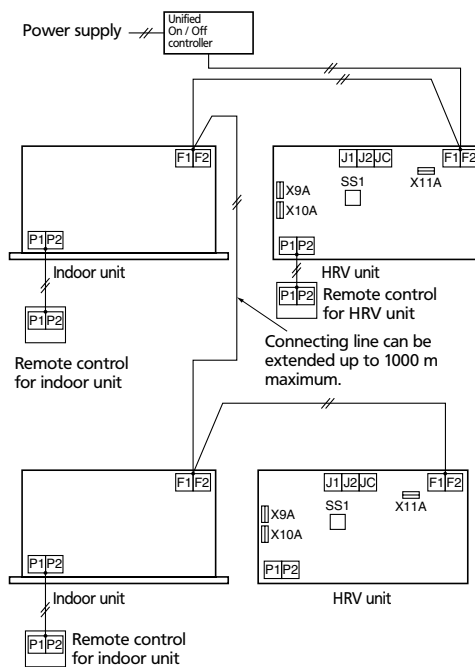
The initial setting is required by the remote control for indoor unit or HRV unit.

- No change is required. (as per factory setting)

Optional accessories required

- Remote control (Only when you use) BRC301B61

Example of control wiring



(HC0028)

Zone control system (Central remote control DCS302B61)

Purposes and functions

- A maximum of 64 groups can be controlled On / Off individually by one control. And also the central remote control can control the On / Off operation of the units in each zone collectively. (It also can control the interlocked operation as well as the independent operation within the same zone.)
- If the zone setting is not required, or if you like to operate the HRV unit whenever one of indoor unit of any group connected to the central transmission line is in operation, refer to the applied system.

Cautions

1. It is necessary to assign a central control group number.
2. If you operate the HRV unit interlocked to the operation of indoor unit, please set the same zone number. At that time, it is necessary to set the zone operation on the HRV unit.
3. It is not possible to operate On / Off from the remote control for the HRV unit in zone 1.
4. It is not necessary to set the zone operation mode in zone 2, which is already set at the factory.

Switch setting for HRV unit

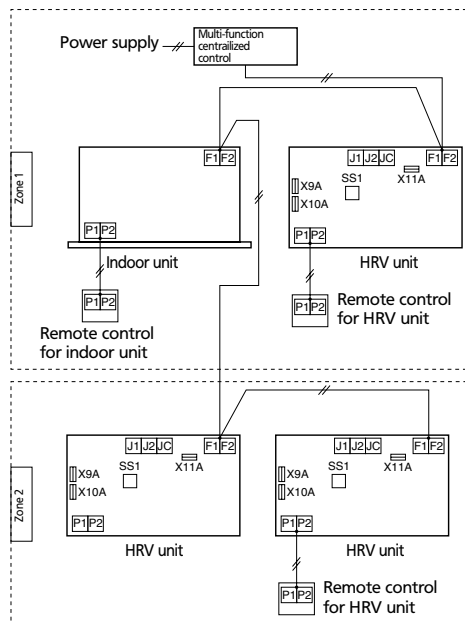
The initial setting is required by the remote control for indoor unit or HRV unit.

- For zone 1....."ON" [17(27)-8-02]
- For zone 2.....Factory set (No change is required)

Optional accessories required

- Remote control (Only when you use) BRC301B61

Example of control wiring



(HC0029)

2.3 Applicable patterns

2.3.1 Additional functions

Operation by power supply [HRV unit]

3

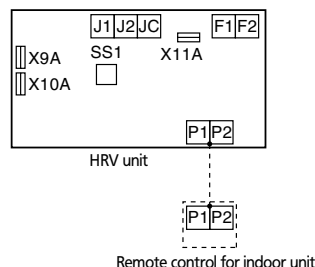
Purposes and functions

- The HRV unit is operated by "On / Off" of the main power breaker. This is possible only for the independent operation system. (When the main power is disconnected, the transmission error will be displayed if the HRV unit is interlocked to the indoor unit or controlled by the centralized control.)

Cautions

- Install insect control wire net on the air intake and exhaust openings. (If the power is disconnected when the damper is open, the damper remains open and the insects may get into the room.)
- When you install the remote control, it is possible to have normal operation after the electric power is supplied.

Example of control wiring



(HC0030)

Switch setting for HRV unit

The initial setting is required by the remote control for indoor unit. Power-on setting.... "ON" [18(28)-1-02]

Install the remote control for indoor unit for the initial setting. After completion of the initial setting, remove the remote control.

Optional accessories required

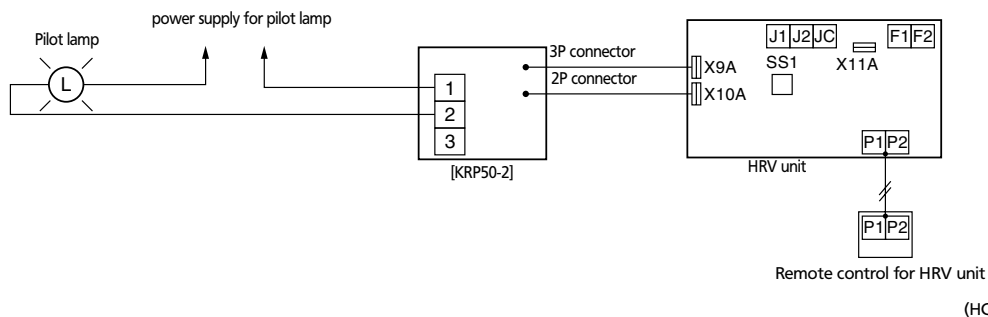
- None

Monitor of operation (KRP50-2) [HRV unit → operating pilot lamp (local supply)]

Purposes and functions

To monitor the operation of one HRV unit.

Example of control wiring



(HC0031)

Switch setting for HRV unit

- No change is required. (as per factory setting)

Optional accessories required

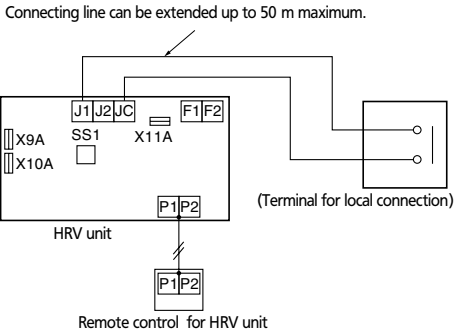
- Adapter PCB: KRP50-2

Fresh-up operation by external input [HRV unit]

Purposes and functions

When the operation is interlocked with the local ventilating fan (such as the one for toilet or kitchen), the HRV unit performs the over-supply operation to prevent the reverse flow of the odor. The flow rate of supply air becomes higher than that of exhaust air.)

Example of control wiring



(HC0032)

• Local wiring

Operation of HRV unit	Terminal for local connection	Capacity of connecting terminal
Fresh-up	Short-circuit	No-voltage normally open contact for micro-current 16 V, 10 mA
Normal	Open circuit	

Note:

The connecting wiring between HRV unit and the terminal for local connection can be extended up to 50 m maximum.

Switch setting of HRV unit

- No change is required. (factory setting)

Optional accessories required

- None

Precool / preheat operation

Purposes and functions

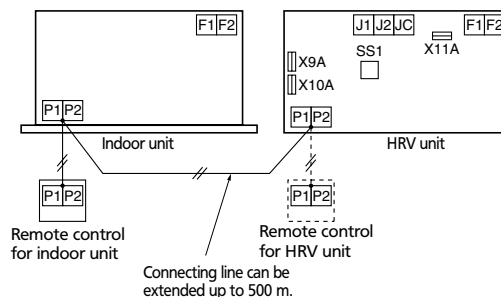
- The operation of HRV unit is delayed when the air conditioner begins operation.

Cautions

- The precool / preheat function is possible only when the operation of HRV unit is interlocked to one-group or two-group of indoor unit. (It will not function when the HRV unit is in independent operation.)
- You can select the preset time of 30 / 45 / 60 minutes for delayed operation at the time of initial setting.
If this preset time is not sufficient, you can extend the preset time for further 30 / 60 / 90 minutes only the preheating function.
- Since this is two remote control system (for Indoor unit and HR unit), the Master / Slave setting is required.

Remote control for	Setting
Indoor unit	Slave
HRV unit	Master

Example of control wiring



(HC0033)

Switch setting of the HRV unit

The initial setting by the remote control for the indoor unit.

- Precool / preheat On / Off setting
..... "ON" [17(27)-2-02]
- Precool / preheat time setting
..... "Time" [17(27)-3-1]
- Preheat extra time setting
..... "Time" [17(27)-9-2]

*1 setting01 for 30, 02 for 45 and 03 for 60 minutes.

*2 setting01 for 0 (factory set), 02 for 30, 03 for 60 and 04 for 90 minutes.

Optional accessories required

- None

Remote control operation by input from outside

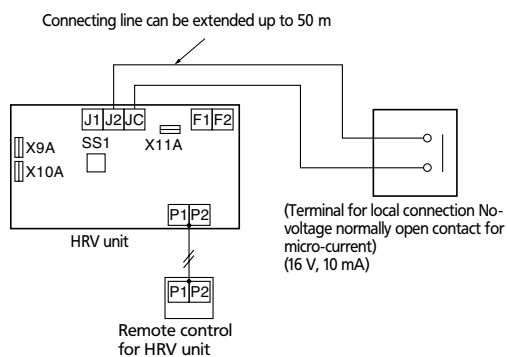
Purposes and functions

- The HRV unit can be controlled the operation of "On / Off" remotely by the signal from no-voltage normally open contact.

Cautions

- When the system is under group control, the input from outside controls the operation of "ON / OFF" collectively, if it is installed in the one of the unit.

Example of control wiring



(HC0034)

Switch setting of HRV unit

- No change is required.

Optional accessories required

- None

2.3.2 To connect the remote control to the HRV unit

(Part 1) single-group interlocked operation

Purposes and functions

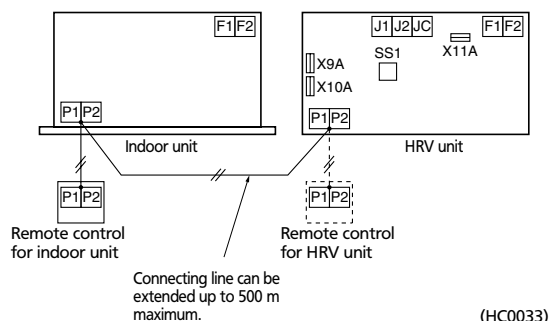
When the HRV unit is interlocked to the single-group control system, the remote control for HRV unit will be connected to change the setting mode at the HRV unit side.

Cautions

1. It is not possible to set the "On / Off" and "timer" setting by the remote control for HRV unit. Also it is not possible to display the filter-sign and malfunction code neither on the remote control for indoor unit nor on the remote control for HRV unit.
2. Since this is two remote control system (for Indoor unit and HR unit), the Master / Slave setting is required.

Remote control for	Setting
Indoor unit	Slave
HRV unit	Master

Example of control wiring



(HC0033)

Switch setting of the HRV unit

- No change is required. (as per factory setting)

Optional accessories required

- Remote control BRC301B61

(Part 2) Centralized control operation

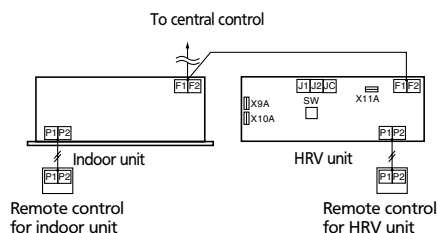
Purposes and functions

- Beside the operation by central remote control, the remote control for HRV unit can change the ventilation mode setting, the ventilation air flow setting and etc.

Cautions

1. In case of Zone control, the operation / stop and the timer setting cannot be done by the remote control for the HRV unit. (The operation lamp blinks twice to indicate that the operation is not possible.)
2. The remote control for the HRV unit cannot set the group no. for centralized control. In this case, the remote control for the indoor unit has to be connected once for this setting.
3. It is not possible to have Precool / preheat time setting function.

Example of control wiring



(HC0035)

Switch setting of the HRV unit

Group no. setting for central control is required.

It is necessary to set the group number for each unit connected to the central transmission line (terminal no. (F1) and (F2)).

Initial setting is required by the remote control for indoor unit.

- In case of collective / individual control
Collective zone interlock setting
..... "OFF" (as per factory set)
- In case of zone control
Collective zone interlock setting
..... "ON" [17(27)-8-02]

Optional accessories required

- Remote control BRC301B61

2.3.3 Central control system (DCS302B61)

Collective / individual operation (Central remote control)

Purposes and functions

It is possible to have collective On / Off or individual On / Off without zone control (while setting the 64 zones).

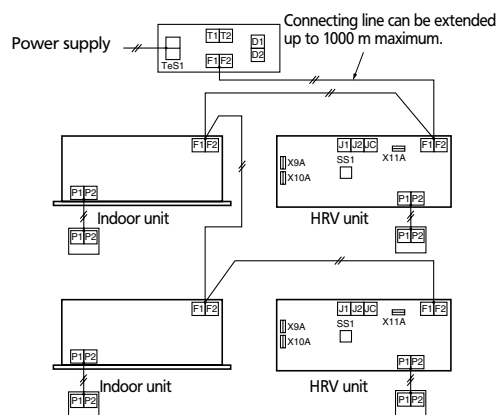
It is also possible to connect the unified On / Off control and etc.

Cautions

1. It is required the local setting of the group number for central control.
2. The HRV unit judges the ventilation mode, individually.

Example of control wiring

Central remote control



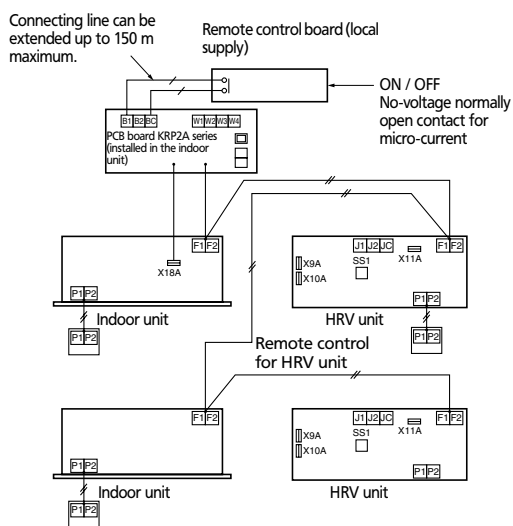
Collective operation [Adapter PCB for remote control KRP2A Series]

Purposes and functions

A maximum of 64 groups can be controlled the operation of "ON / OFF" collectively. (For the individual control, use the central remote control or the unified On / Off control.)

Cautions

1. Adapter PCB can be installed in any unit connected to the central transmission line.
2. It cannot be used with other central control.
3. The setting of group number is not required.
4. The HRV unit judges the ventilation mode, individually.

Example control wiring

(HC0038)

Switch setting of the HRV unit

The initial setting is required by the remote control for the indoor unit or HRV unit.

- Collective zone interlock setting
..... "OFF" (as per factory setting)
- The setting of switch on the PCB
- Voltage / no-voltage changeover switch(SS1)
..... "no-voltage"
- * Remote control mode changeover switch (RS1)
should be selected.

Optional accessories required

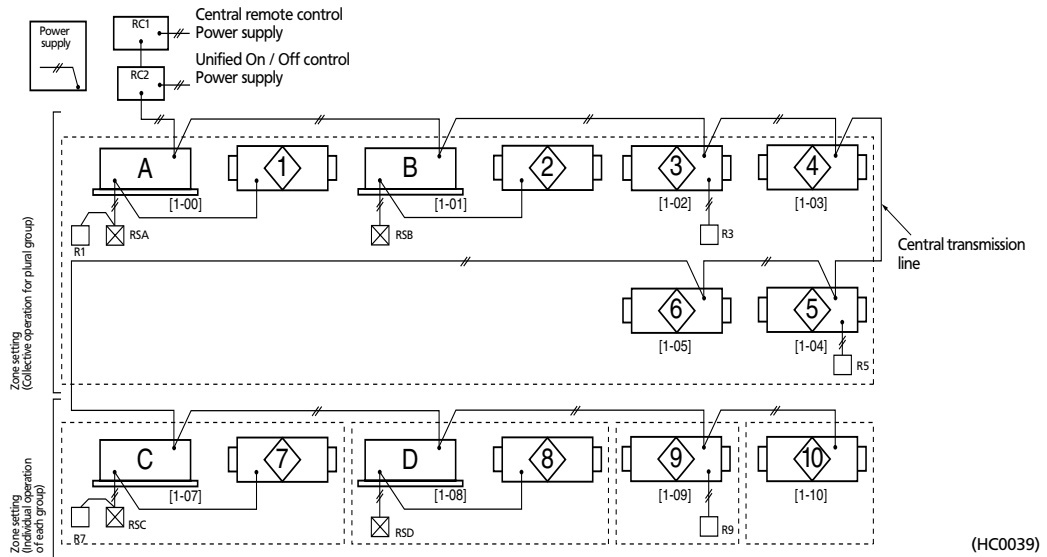
Adapter PCB for remote control KRP2A61

Multi function central control + Unified On / Off Control

Proper control should be selected according to the functions required.

System description

* It is possible to combine the schedule timer.
 RC1 Central remote control
 RC2 Unified On / Off control
 RSA – D... Remote control for the Indoor unit
 R1 – 11 Remote control for the HRV unit



Unit No.	Setting				Operation display functions (○ means possible)																Choose condition		
	Zone setting		Interlocked zone control		Group number setting for central control Required (●) Not Required	Operation / stop				Independent ventilation Operation/stop				Ventilation air flow Ventilation mode Fresh-up				Filter-sign Malfunction code				HRV unit side	
	Collective	Individual	On	Off		RC1	RC2	RSA - D	R1 - 9	RC1	RC2	RSA - D	R1 - 9	RC1	RC2	RSA - D	R1 - 9	RC1	RC2	RSA - D	R1 - 9		
①	●			●	Collective by zone	Linked to A / B	○	—	—	Linked to A / B	○	—	—	—	—	○	—	—	—	○	○	AA	
②	●			●		Linked to A / B	○	—	—	Linked to A / B	○	—	—	—	—	*2	—	*3	—	*3	—	○	AA
③	●		●			—	○	—	—	—	○	—	—	—	—	—	○	○	—	—	○	○	AA
④	●		●			—	○	—	—	—	○	—	—	—	—	—	○	—	—	—	○	○	BB
⑤	●			●		○	—	○	—	*1	○	—	○	—	—	—	○	○	—	—	○	—	CC
⑥	●			●		○	—	—	—	○	—	—	—	—	—	—	○	—	—	—	○	—	DD
⑦		●		●		Linked to C / D	○	—	—	—	Linked to C / D	○	—	—	—	—	○	—	—	—	○	○	AA
⑧		●		●		Linked to C / D	○	—	—	—	Linked to C / D	○	—	—	—	*2	—	*3	—	*3	—	○	AA
⑨		●		●		○	○	—	○	○	○	—	○	—	—	—	○	○	—	—	○	—	*5 CC
⑩		●		●		○	○	—	—	○	○	—	—	—	—	—	○	—	—	—	○	—	*5 DD

*1. Independent operation for ventilation is possible, if collective zone interlock setting is "ON" with the indoor unit in the same zone.

*2. It is possible by the initial setting.

*3. Display of malfunction code only.

*4. The meaning of total evaluation

AA: Interlocked operation with energy saving and changeable of Ventilation mode / Air flow rate

BB: Interlocked operation with energy saving and no changeable of Ventilation mode / Air flow rate

CC: No interlocked operation with energy saving and changeable of Ventilation mode / Air flow rate

DD: No interlocked operation with energy saving and no changeable of Ventilation mode / Air flow rate

*5. Interlocked operation setting must not be done for individual zone. (Because there is no unit to combine in zone except 1 unit.)

2.3.4 Examples of mistakes in wiring and system designing

It is necessary to install the remote control for the transmission line. The centralized transmission line should be connected to the indoor unit.

<Part 1>

- When you connect the transmission line for the remote control, the remote control should be installed on the transmission line.

Example of control wiring

No remote control

(HC0041)

Reason

Because the signal through the transmission line is originated from the remote control, there is no transmission signal to operate the units, if the remote control is not installed.

<Part 2>

- If the HRV unit is interlocked to the centralized control, the central transmission line should be connected to the terminal no. F1 and F2 of indoor unit.

Example of control wiring

To central control

Centralized transmission line

Indoor unit

HRV unit

Remote control for indoor unit

(HC0042)

Reason

The information from the indoor unit cannot be transmitted to the central control through the HRV unit. And also the information from the central control cannot be transmitted to the indoor unit through the HRV unit.

Setting of Remote Control for HRV unit

List of Settings

Mode no.		Setting switch no.	Description of Setting	Setting position no. (Caution *1.)					
Group settings	Individual settings			01	02	03	04	05	06
17	27	0	Filter cleaning time setting	Approx. 2500 hours	Approx. 1250 hours	No counting	—	—	—
		2	Precool / preheat on / off setting	Off	On	—	—	—	—
		3	Precool / preheat time setting	30 min	45 min	60 min	—	—	—
		4	Fan speed initial setting	Normal	Ultra high	—	—	—	—
		5	Yes / No setting for direct duct Connection with VRV system	No duct (Air flow setting)	With duct (fan off)	—	—	—	—
		5	Setting for cold areas (Fan operation selection for heater thermo OFF)	—	—	No duct		With duct	
						Fan off	Fan L	Fan off	Fan L
		7	Centralized / individual setting	Centralized	Individual	—	—	—	—
		8	Centralized zone interlock setting	No	Yes	Priority on Operation	—	—	—
18	28	9	Preheat time extension setting	0 min	30 min	60 min	90 min	—	—
		0	External signal JC / J2	Last command	Priority on external input	—	—	—	—
		1	Setting for direct Power ON	Off	On	—	—	—	—
		2	Auto restart setting	Off	On	—	—	—	—
		4	Indication of ventilation mode / Not indication	Indication	No Indication	—	—	—	—
		7	Fresh air supply / exhaust setting	No Indication	No Indication	Indication	Indication	—	—
				Supply	Exhaust	Supply	Exhaust	—	—
19	29	8	External input terminal function selection (between J1 and J2)	Fresh-up	Overall alarm	Overall malfunction	Forced off	Fan forced off	Air flow Increase
		9	KRP50-2 output switching selection (between 1 and 3)	Humidify	Abnormal	Fan on / off	—	—	—
		0	Ventilation air flow setting	Low	Low	Low	Low	High	High
		2	Ventilation mode setting	Automatic	Exchange	By pass	—	—	—
		3	"Fresh Up" on / off setting	Off	On	—	—	—	—
19	29	8	Electric heater setting	No delay	No delay	On, off delay	On, off delay	—	—

Caution

- The setting positions are set at "01" at the factory.

The ventilation air flow, however, is set at "05" (medium) in the HRV unit. When lower or higher setting is desired, change the setting after installation.

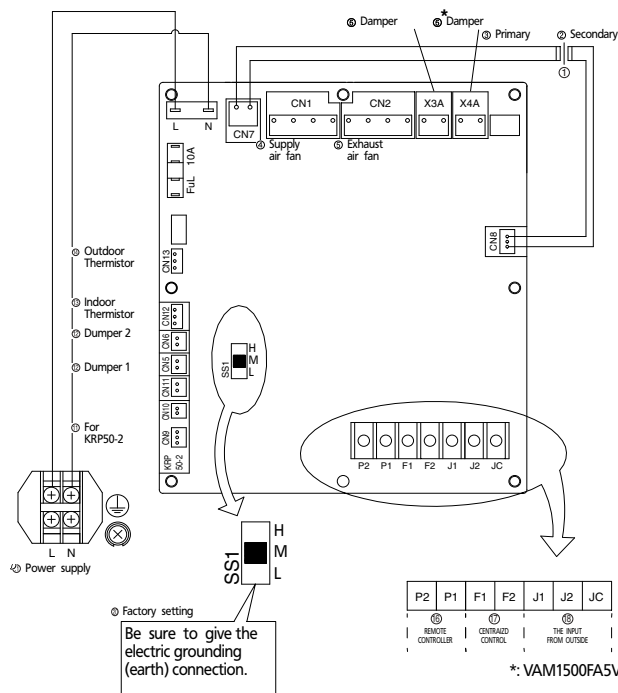
Group number setting for centralized control

- Mode no. 00: Group control
- Mode no. 30: Individual control

* Regarding the setting procedure, refer to the section "Group number setting for centralized control" in the operating manual of either the on / off control or the central control.

2.4 Functions of Printed Circuit Board

2.4.1 Layout of switches on Printed Circuit Board



(HC0110)
3P034928-2B

2.4.2 Function of main connection terminals

Terminal No.	Contents of function
Power supply L N TeS1	Single phase 220 - 240 V Power supply and earth terminal
Remotcontroller P1 P2	Connection terminal for remote controller for HRV unit. This terminal is used to receive information of the indoor unit for interlocked operation.
Centralizedcontrol F1 F2	This terminal is used to receive information when centralized controller is connected.
Inputfromoutside J1 J2 JC	Between terminal no. (J1) ~ (JC) Used for "fresh up operation" by external input. Between terminal no. (J2) ~ (JC) Used for Operation / Stop by external input.

(HC0043)

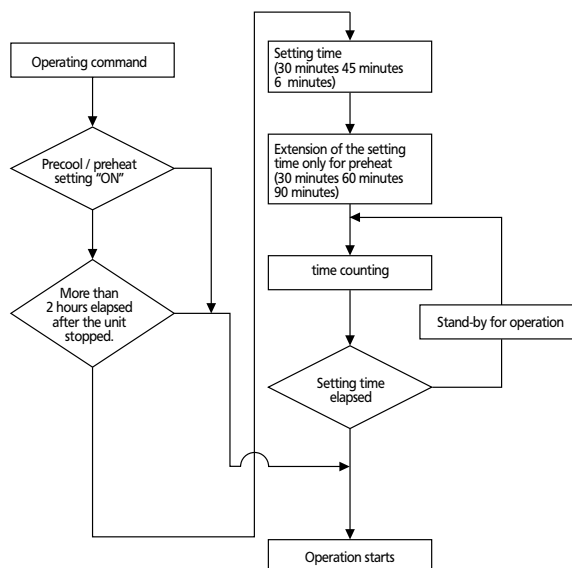
2.5 Fan operation setting

Interlocked operation system	With remote controller for indoor unit	Initial setting by the remote controller for indoor unit			Fan operation			
		Ventilation air flow setting	Fan speed	Fresh-up operation	Fresh-up Supply air setting		Fresh-up Exhaust air setting	
					Supply side	Exhaust side	Supply side	Exhaust side
		Independent system	With remote controller for HRV unit	Ventilation air flow setting	Fan speed	Terminal between J1 and JC (Fresh-up by external command)	Supply side	Exhaust side
Low	Low						Low	Low
Normal	Low			Open	Low	Low	Low	Low
				Short-circuit	High	Low	Low	High
	High			Open	High	High	High	High
				Short-circuit	Ultra-high	High	High	Ultra-high
Ultra-high	Low			Open	Low	Low	Low	Low
				Short-circuit	High	Low	Low	High
	High			Open	Ultra-high	Ultra-high	Ultra-high	Ultra-high
				Short-circuit	Ultra-high	High	High	Ultra-high
Centralized control system	With remote controller for HRV unit	Ventilation air flow setting	Fan speed	Terminal between J1 and JC (Fresh-up by external command)	Supply side	Exhaust side	Supply side	Exhaust side
					Low	Low	Low	Low
Independent system	With remote controller	Switch on the PCB (H / M / L)		Terminal between J1 and JC (Fresh-up by external command)	Fan operation			
					Supply side	Exhaust side	Supply side	Exhaust side
		“L”	Open	Low	Low	Low	Low	
			Short-circuit	High	Low	Low	High	
		“M”	Open	High	High	High	High	
			Short-circuit	Ultra-high	High	High	Ultra-high	
		“H”	Open	Ultra-high	Ultra-high	Ultra-high	Ultra-high	
			Short-circuit	Ultra-high	High	High	Ultra-high	

(HC0044)

2.6 Pre -Operation flowchart

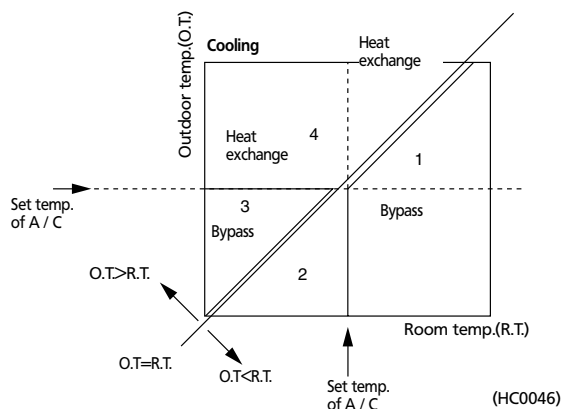
		Operating command		Operation command
		By the remote control for indoor unit	By the central control	
system				Mode setting by remote control for indoor unit mode setting
Interlocked operation	Interlocked control interlocked to single-group and two-groups	○	—	Only for cooling and heating mode



(HC0045)

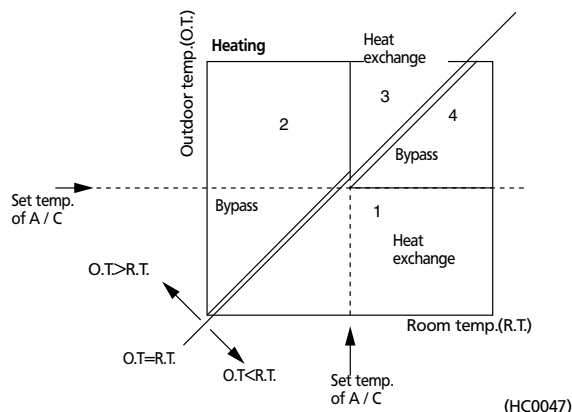
2.7 Operation mode change over

1. In case of cooling operation



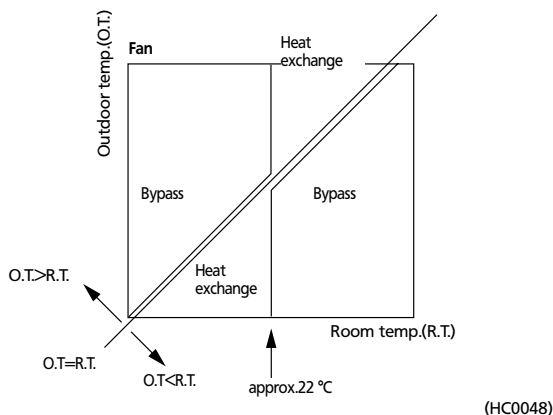
- 1 zone: Free cooling (cooling by outdoor air) in bypass mode.*
 - 2 zone: Room temperature to be achieved to set temperature by heat exchange mode.
 - 3 zone: Room temperature to be achieved to set temperature in bypass mode.*
 - 4 zone: Fresh air supply is cooled down by indoor air in heat exchange mode (energy saving).
- * The air cannot be supplied at the same temperature as the outdoor air because it is partly heat-exchanged.

2. In case of heating operation



- 1 zone: Fresh air supply is heated up by indoor air in heat exchange mode (energy saving).
 - 2 zone: Free heating (heating by outdoor air) in bypass mode.*
 - 3 zone: Room temperature to be achieved to set temperature by heat exchange.
 - 4 zone: Room temperature to be achieved to set temperature by bypass mode.*
- * The air cannot be supplied at the same temperature as the outdoor air because it is partly heat-exchanged.

3. In case of fan operation only



Ventilation mode is individually determined by the original formula of HRV with the temperature sensors.

3

Heat Recovery Ventilation



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.

VRV products are not within the scope of the Eurovent certification programme.

Specifications are subject to change without prior notice

DAIKIN EUROPE N.V.

Zandvoordestraat 300
B-8400 Ostend - Belgium
Internet: <http://www.daikineurope.com>



technical data

Heat Recovery Ventilation

Product Specification

3. Product Specification

3.1 Specification

(50Hz)

Model name				VAM150FAVE	VAM250FAVE	VAM350FAVE
Power supply				Single phase 220 – 240 V / 50Hz		
Temperature exchanging efficiency		Ultra-High	%	74	72	75
		High	%	74	72	75
		Low	%	79	77	80
Enthalpy exchange efficiency	Cooling	Ultra-High	%	58	58	61
		High	%	58	58	61
		Low	%	64	62	67
	Heating	Ultra-High	%	64	64	65
		High	%	64	64	65
		Low	%	69	68	70
		Casing			Galvanized steel plate	
Insulating material			Self-extinguishable urethane foam			
Dimensions		H × W × D	mm	269 × 760 × 509	269 × 760 × 509	285 × 812 × 800
Heat exchanging system				Air to air cross flow total heat (sensible heat + latent heat) exchange		
Heat exchanging element				Specially processed nonflammable paper		
Air filter				Multidirectional fibrous fleeces		
Fan	Type			Sirroco fan		
	Fan speed	Ultra-High	m³ / h	150	250	350
		High	m³ / h	150	250	350
		Low	m³ / h	110	155	230
	External static pressure	Ultra-High	Pa	69	64	98
		High	Pa	39	39	70
		Low	Pa	20	20	25
Fan motor			Type	Open type capacitor permanent split-phase induction motor, 4 poles × 2		
Motor output			kW	0.030 × 2	0.030 × 2	0.090 × 2
Sound pressure level	Heat exchange mode	Ultra-High	dBA	27 – 28.5	28 – 29	32 – 34
		High	dBA	26 – 27.5	26 – 27	31.5 – 33
		Low	dBA	20.5 – 21.5	21 – 22	23.5 – 26
	Bypass mode	Ultra-High	dBA	27 – 28.5	28 – 29	32 – 34
		High	dBA	26.5 – 27.5	27 – 28	31 – 32.5
		Low	dBA	20.5 – 21.5	21 – 22	24.5 – 26.5
Operation range (Ambient)				–10 °C to 50 °CDB (80% RH or less)		
Connection duct diameter			mm	φ 100	φ 150	φ 150
Weight			kg	24	24	33
Drawing number				4D036749	4D036750	4D036751

(HC0049)

Test conditions are as follows

Condition	Indoor		Outdoor	
	°CDB	R-H (%)	°CDB	R-H (%)
Cooling condition	27	50	35	60
Heating condition	20	40	7	70

Notes:

1. Operation sound is measured at 1.5 m below the center the body.
2. Fan speed can be changed over to Low mode or High mode.
3. Operating sound is measured in an anechoic chamber.
Operating sound level generally become greater than this value depending on the operating conditions, reflected sound, and peripheral noise.
4. The sound level at the air discharge port is about 8 dB higher than the unit's operating sound.

(50Hz)

Model name				VAM500FAVE		VAM650FAVE	
Power supply				Single phase 220 – 240 V / 50Hz			
Temperature exchanging efficiency		Ultra-High	%	74		74	
		High	%	74		74	
		Low	%	77		77	
Enthalpy exchange efficiency	Cooling	Ultra-High	%	58		58	
		High	%	58		58	
		Low	%	63		63	
	Heating	Ultra-High	%	62		63	
		High	%	62		63	
		Low	%	67		66	
Casing				Galvanized steel plate			
Insulating material				Self-extinguishable urethane foam			
Dimensions		H × W × D	mm	285 × 812 × 800		348 × 988 × 852	
Heat exchanging system				Air to air cross flow total heat (sensible heat + latent heat) exchange			
Heat exchanging element				Specially processed nonflammable paper			
Air filter				Multidirectional fibrous fleeces			
Fan	Type		Sirroco fan				
	Fan speed	Ultra-High	m ³ / h	500		650	
		High	m ³ / h	500		650	
		Low	m ³ / h	350		500	
	External static pressure	Ultra-High	Pa	98		93	
		High	Pa	54		39	
		Low	Pa	25		25	
Fan motor			Type	Open type capacitor permanent split-phase induction motor, 4 poles × 2			
Motor output			kW	0.090 × 2		0.140 × 2	
Sound pressure level	Heat exchange mode	Ultra-High	dBA	33 – 34.5		34.5 – 35.5	
		High	dBA	31.5 – 33		33 – 34	
		Low	dBA	24.5 – 26.5		27 – 28	
	Bypass mode	Ultra-High	dBA	33.5 – 34.5		34.5 – 35.5	
		High	dBA	32.5 – 33.5		34 – 35	
		Low	dBA	25.5 – 27.5		27 – 28.5	
Operation range (Ambient)				–10 °C to 50 °CDB (80% RH or less)			
Connection duct diameter			mm	φ 200		φ 200	
Weight			kg	33		48	
Drawing number				4D036752		4D036753	

(HC0050)

Test conditions are as follows

Condition	Indoor		Outdoor	
	°CDB	R-H (%)	°CDB	R-H (%)
Cooling condition	27	50	35	60
Heating condition	20	40	7	70

Notes:

- Operation sound is measured at 1.5 m below the center the body.
- Fan speed can be changed over to Low mode or High mode.
- Operating sound is measured in an anechoic chamber.
Operating sound level generally become greater than this value depending on the operating conditions, reflected sound, and peripheral noise.
- The sound level at the air discharge port is about 8 dB higher than the unit's operating sound.

(50Hz)

Model name				VAM800FA5VE	VAM1000FA5VE	VAM1500FA5VE	VAM2000FA5VE	
Power supply				Single phase 220 – 240 V / 220 V, 50 / 60 Hz				
Temperature exchanging efficiency		Ultra-High	%	74	75	75	75	
		High	%	74	75	75	75	
		Low	%	76	76.5	78	78	
Enthalpy exchange efficiency	Cooling	Ultra-High	%	60	61	61	61	
		High	%	60	61	61	61	
		Low	%	62	63	64	66	
	Heating	Ultra-High	%	65	66	66	66	
		High	%	65	66	66	66	
		Low	%	67	68	68	70	
		Power supply				Single phase 220-240 V, 50Hz / 220V, 60Hz		
Normal Amp.	Heat exchange mode	Ultra-High	A	2.53	2.46	4.97	5.00	
		High	A	2.15	2.16	4.12	3.97	
		Low	A	1.79	1.74	3.43	3.27	
	bypass mode	Ultra-High	A	2.53	2.46	4.97	5.00	
		High	A	2.15	2.16	4.12	4.77	
		Low	A	1.79	1.74	3.43	3.27	
Normal input	Heat exchange mode	Ultra-High	W	451	469	864	953	
		High	W	400	432	758	767	
		Low	W	346	349	655	653	
	bypass mode	Ultra-High	W	451	469	864	953	
		High	W	400	432	758	767	
		Low	W	346	349	655	653	
Casing				Galvanized steel plate				
Insulating material				Self-extinguishable urethane foam				
Dimensions		H × W × D	mm	348 × 988 × 852	348 × 988 × 1140	710 × 1498 × 852	710 × 1498 × 1140	
Heat exchanging system				Air to air cross flow total heat (sensible heat + latent heat) exchange				
Heat exchanging element				Specially processed nonflammable paper				
Air filter				Multidirectional fibrous fleeces				
Fan	Type			Sirroco fan				
	Air flow rate	Heat exchange mode	Ultra-High	m³ / h	800	1000	1500	2000
			High	m³ / h	800	1000	1500	2000
			Low	m³ / h	670	870	1200	1400
		Bypass mode	Ultra-High	m³ / h	800	1000	1500	2000
			High	m³ / h	800	1000	1500	2000
			Low	m³ / h	670	870	1200	1400
	External static pressure		Ultra-High	Pa	137	157	137	137
			High	Pa	98	98	98	78
			Low	Pa	49	78	49	59
Motor output			kW	0.230 × 2	0.230 × 2	0.230 × 4	0.230 × 4	
Operating sound	Heat exchange mode	Ultra-High	dBA	36 – 37	36 – 37	39.5 – 41.5	40 – 42.5	
		High	dBA	34.5 – 36	35 – 36	38 – 39	38 – 41	
		Low	dBA	31 – 32	31 – 32	34 – 36	35 – 37	
	Byapss mode	Ultra-High	dBA	36 – 37	36 – 37	40.5 – 41.5	40 – 42.5	
		High	dBA	34.5 – 36	35.5 – 36	38 – 39	38 – 41	
		Low	dBA	31 – 33	31 – 32	33.5 – 36	35 – 37	
Operation range (Ambient)				–15 °C to 50 °CDB (80% RH or less)				
Connection duct diameter			mm	φ 250	φ 250	φ 350	φ 350	
Weight			kg	48	61	132	158	
Operation mode				Heat exchange mode, bypass mode, freshup mode				
Accessories				Operation manual, installation manual				
Drawing number				4D036754	4D036755	4D036756	4D036835	

(HC0051)

Test conditions are as follows

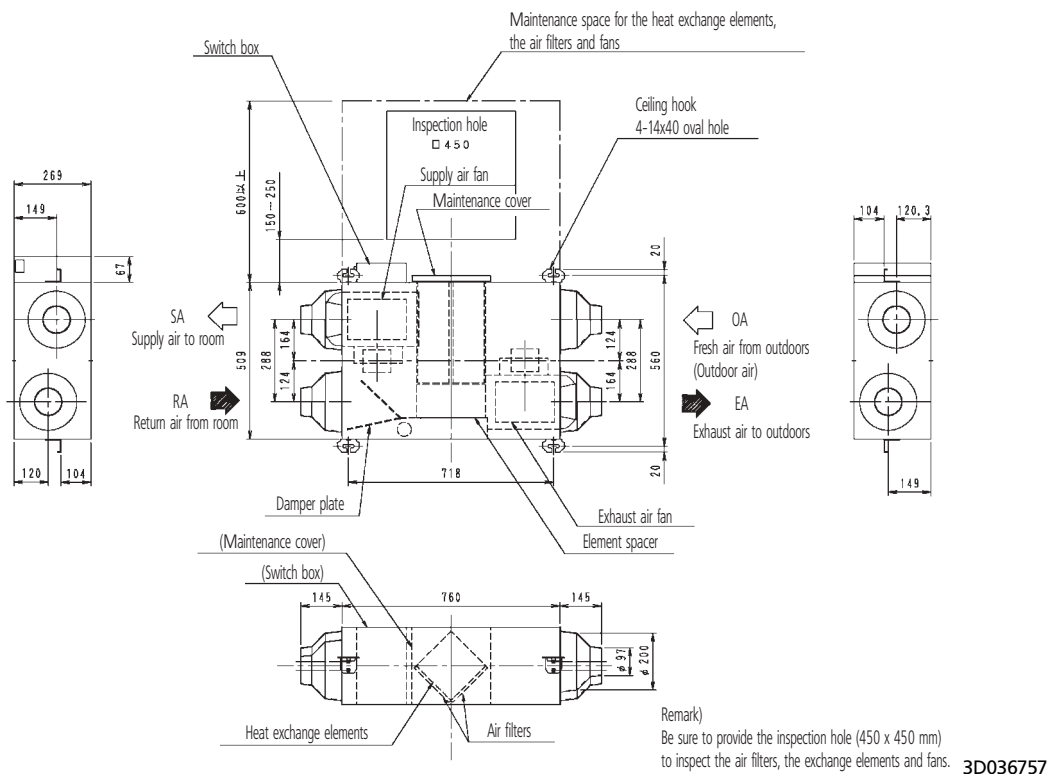
Condition	Indoor unit		Outdoor unit	
	°CDB	R-H (%)	°CDB	R-H (%)
Cooling condition	27	50	35	60
Heating condition	20	40	7	70

Notes:

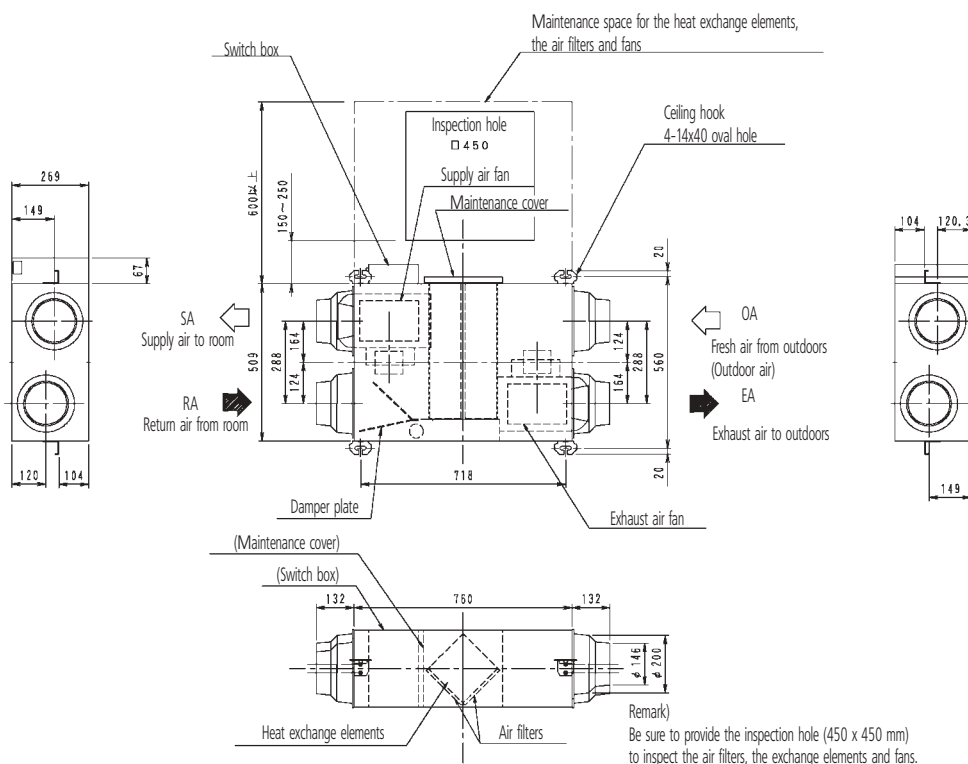
1. Operation sound is measured at 1.5 m below the center the body.
2. Air flow rate can be changed over to Low mode or High mode.
3. Normal Amp., input, efficiency depend on the other above conditions.
4. Operating sound is measured in an anechoic chamber.
Operating sound level generally become greater than this value depending on the operating conditions, reflected sound, and peripheral noise.
5. The noise level at the air discharge port is about 8 dBA higher than the unit's operating sound.
6. The specifications, designs and information here are subject to change without notice.

3.2 Dimensions

VAM150FAVE

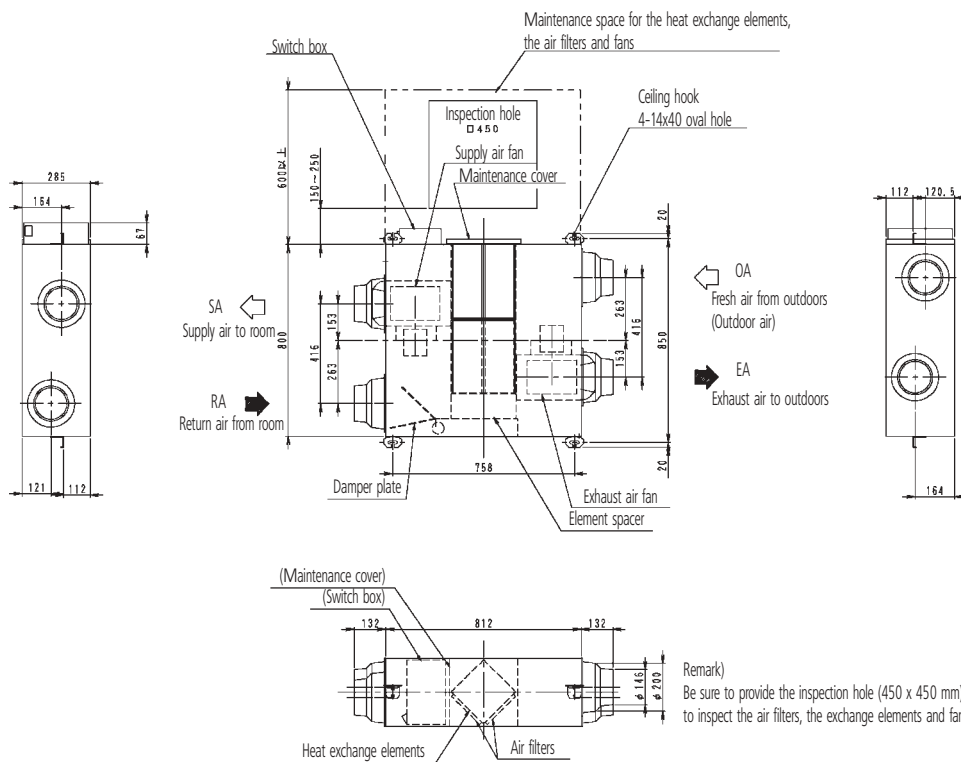


VAM250FAVE



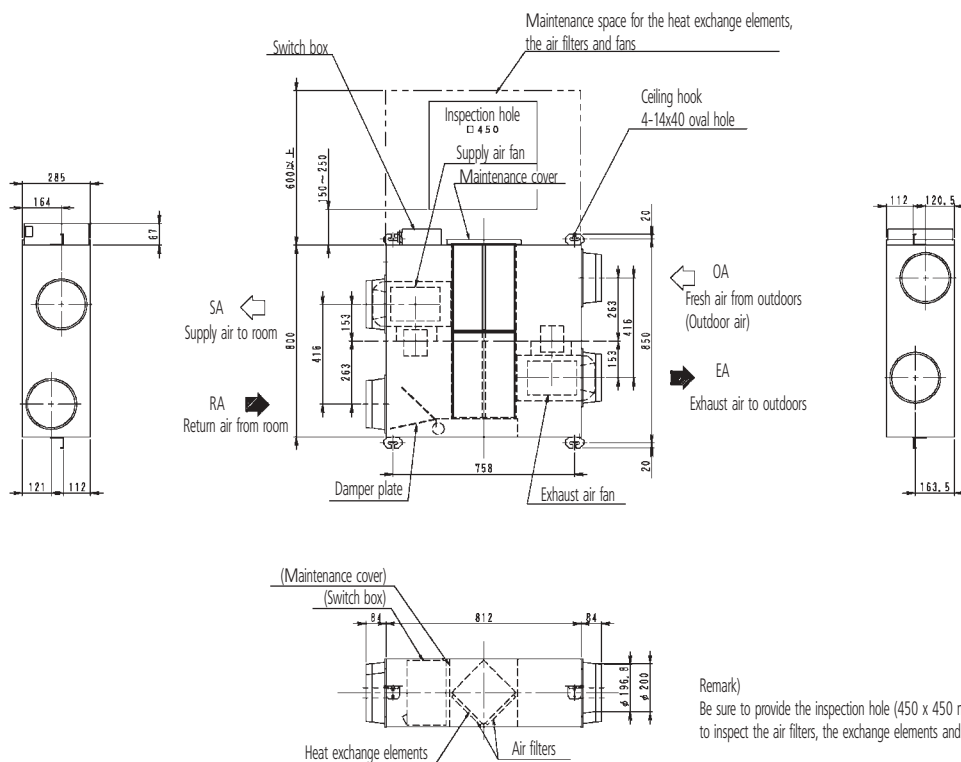
VAM350FAVE

2



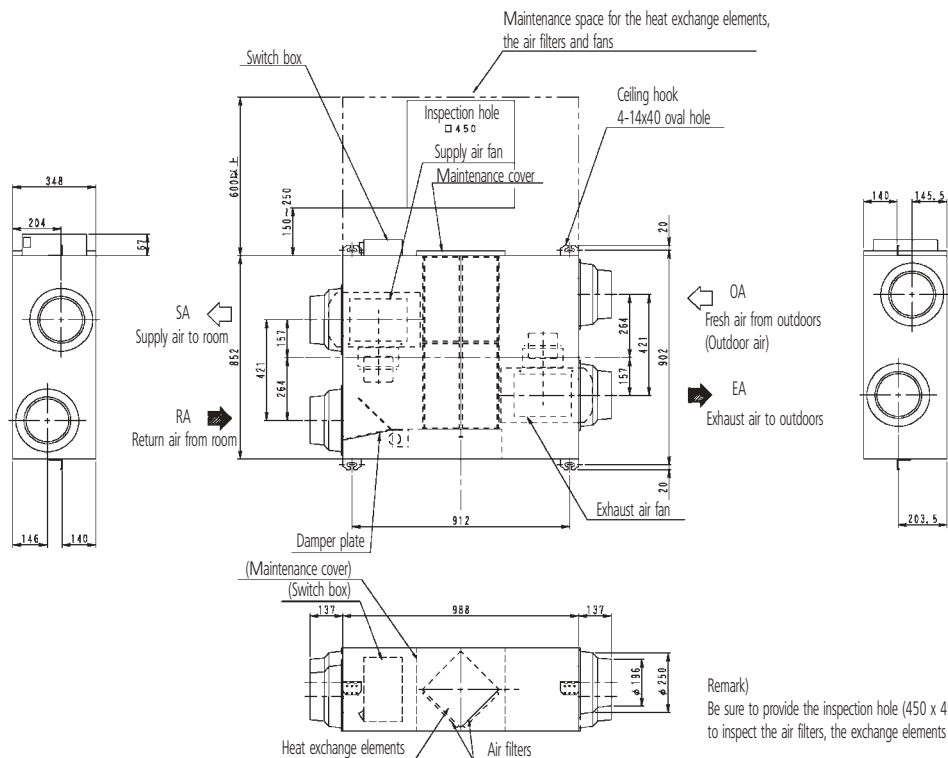
3D036759

VAM500FAVE



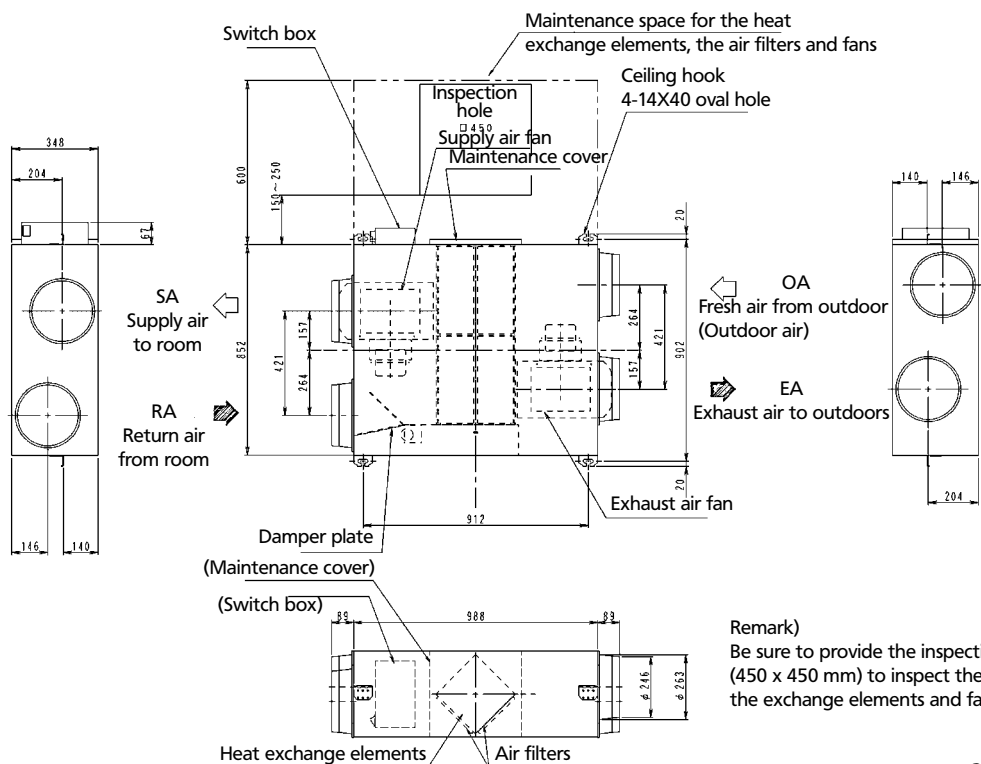
3D036760

VAM650FAVE



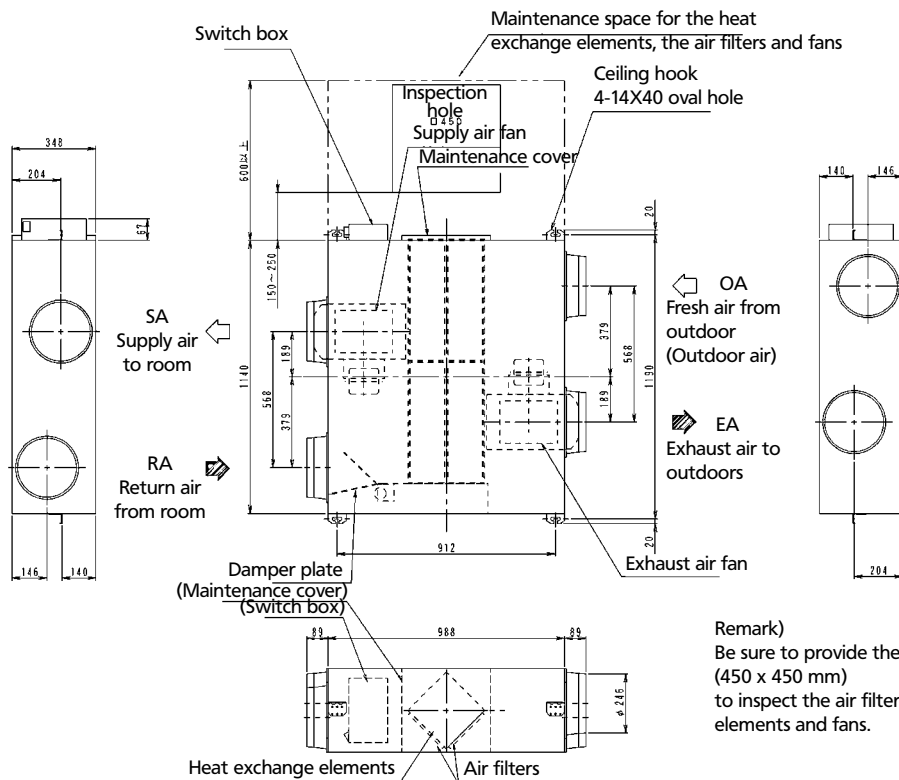
3D036761

VAM800FA5VE

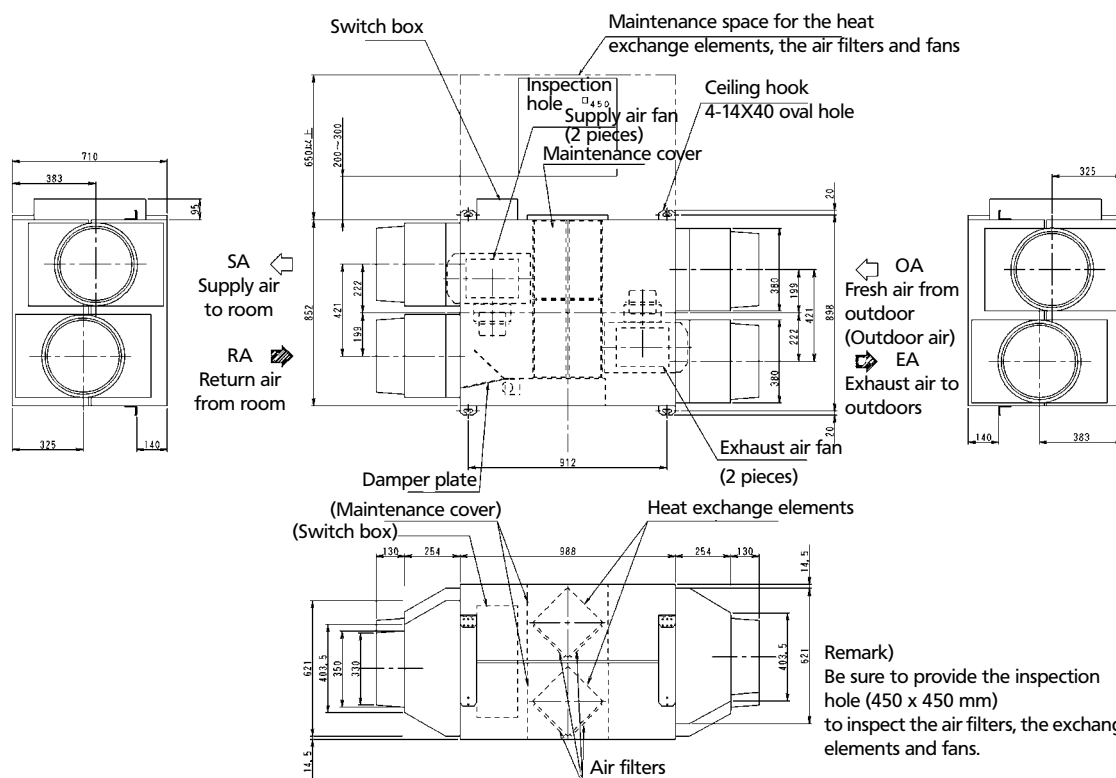


3D036762

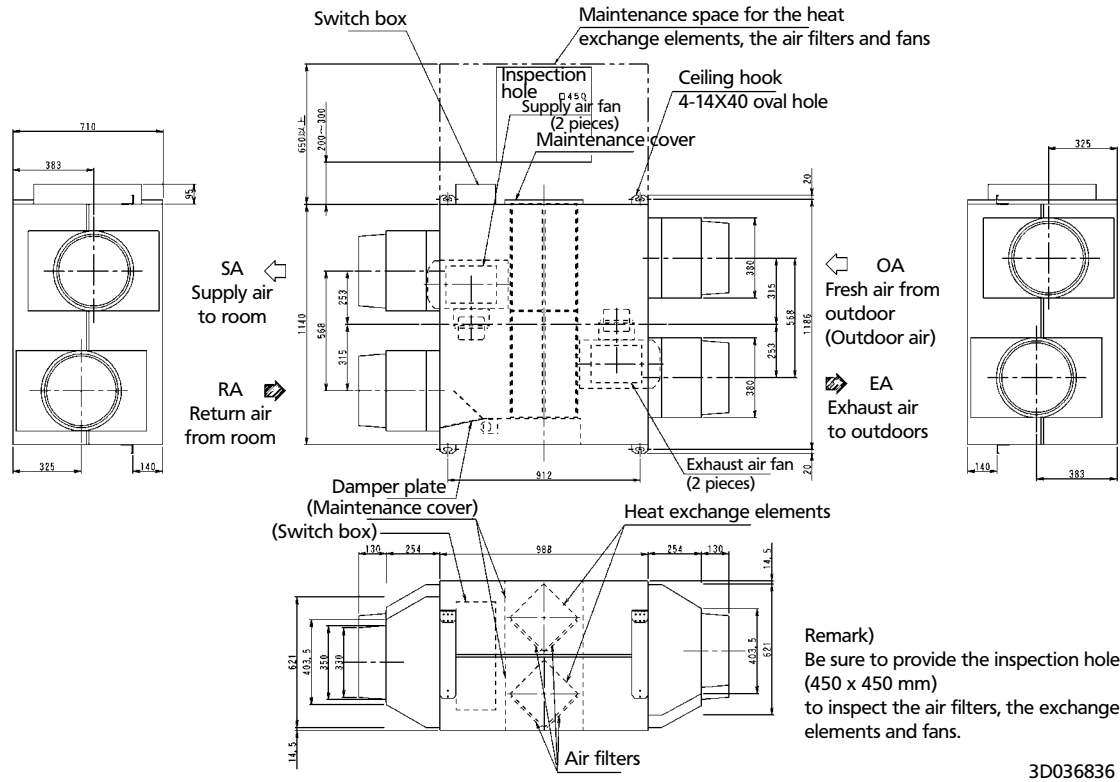
VAM1000FA5VE



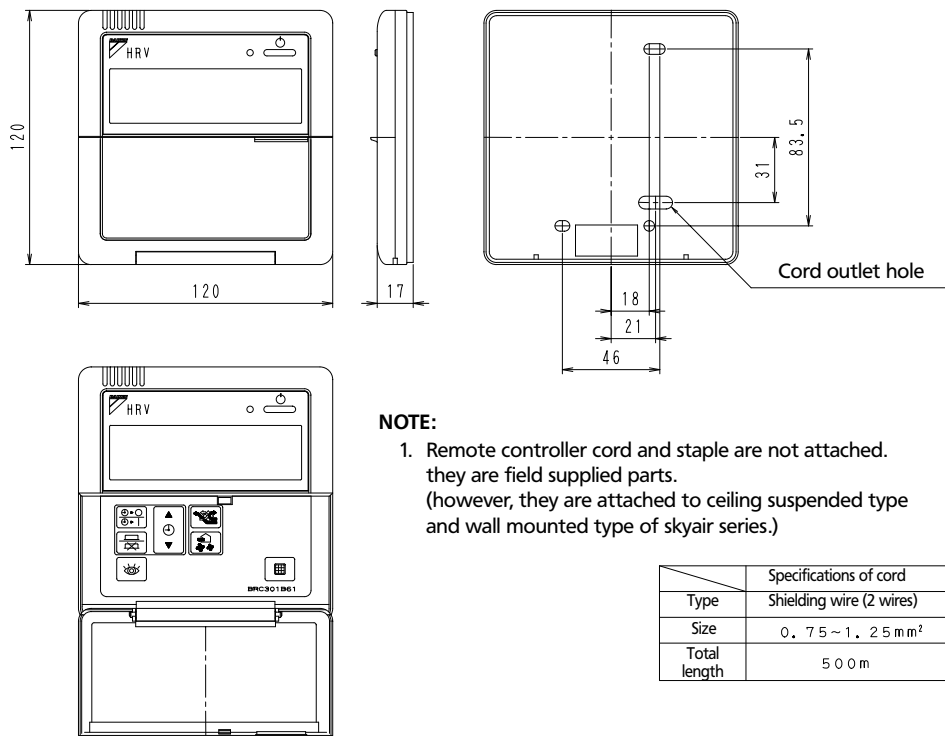
VAM1500FA5VE



VAM2000FA5VE

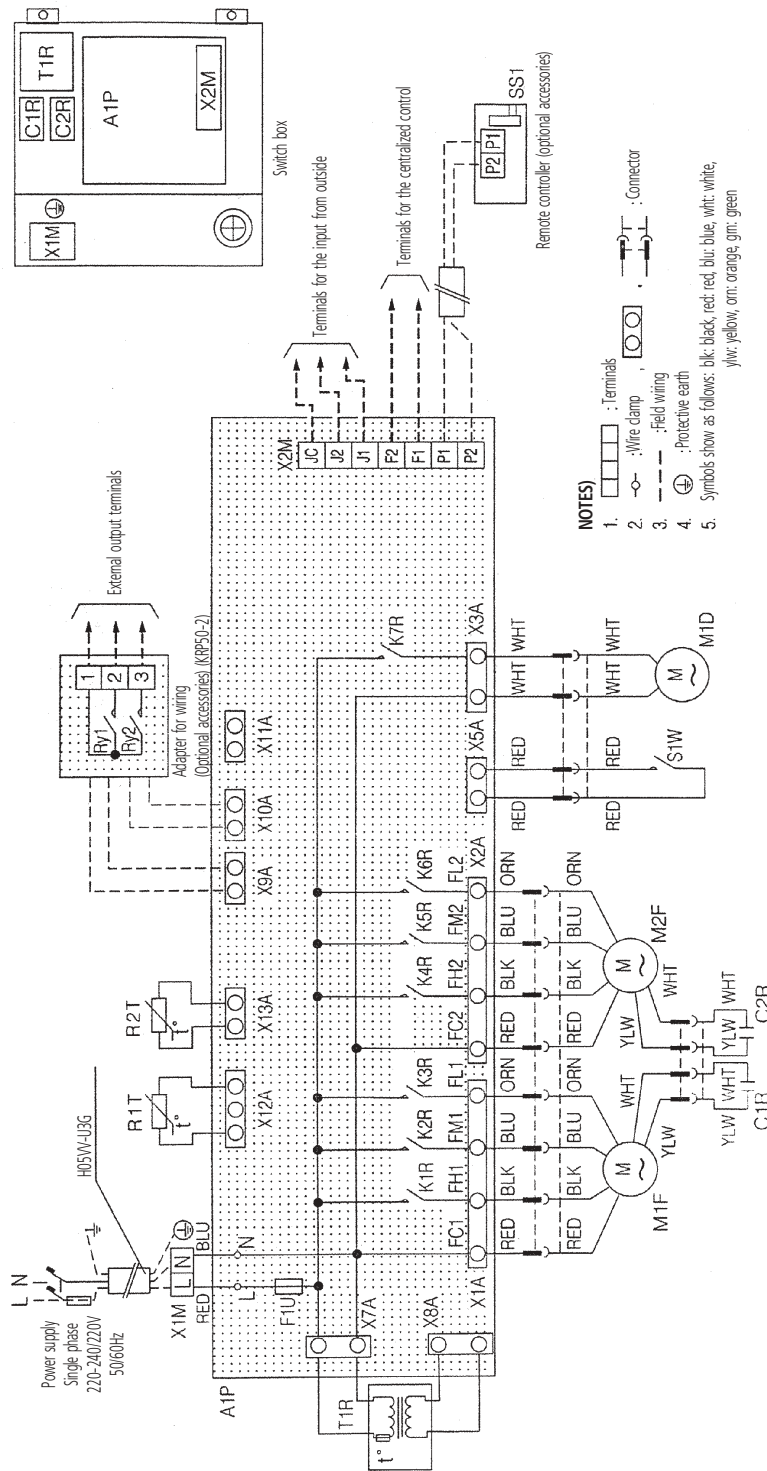


Remote control (BRC301B61)



3.3 Wiring diagram

VAM150,250,350,500,650 FAVE
VAM800,1000FA5VE

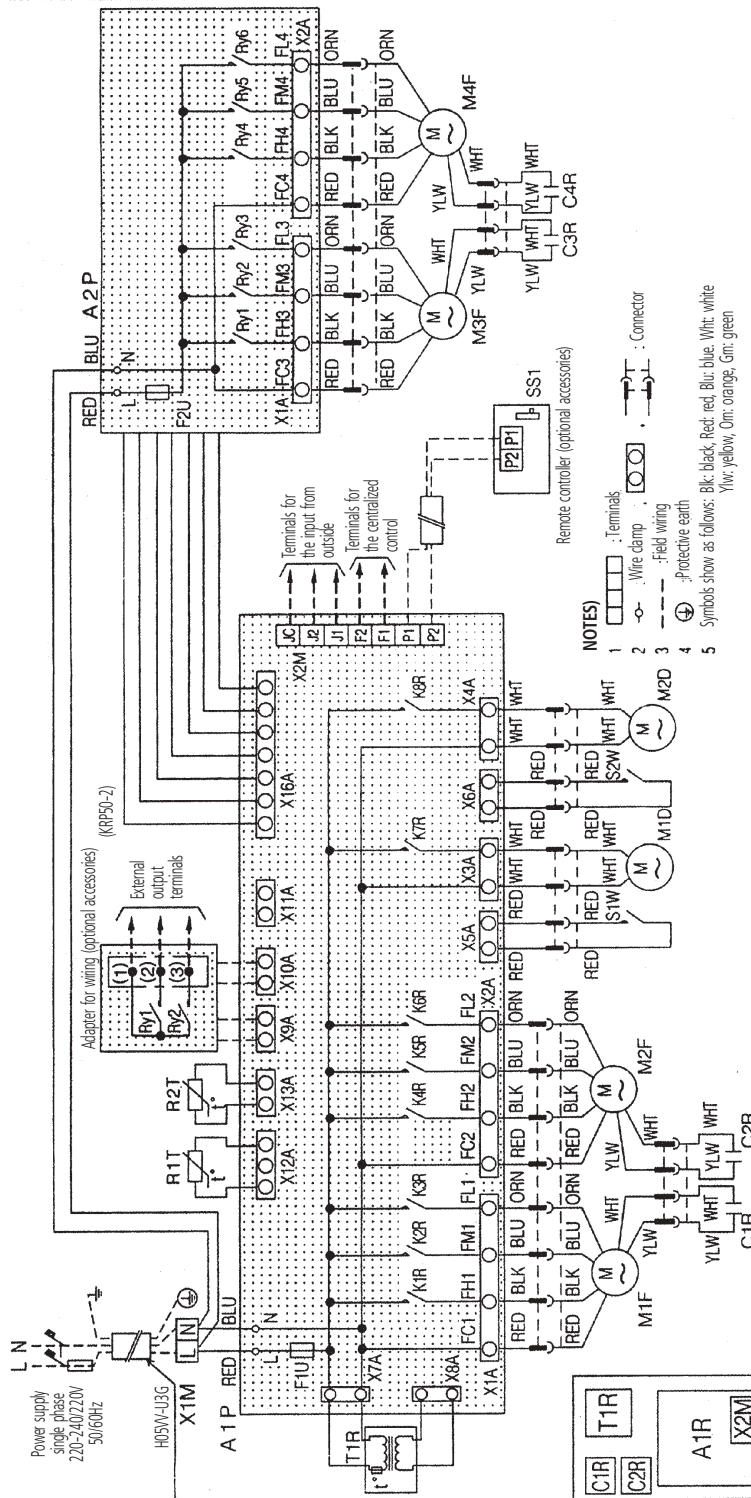


- NOTES
1. [Symbol] : Terminals
 2. [Symbol] : Wire clamp
 3. [Symbol] : Field wiring
 4. [Symbol] : Protective earth
 5. Symbols show as follows: blk: black, red: red, blu: blue, wht: white, ylw: yellow, orn: orange, grn: green

L - RED	N - BLU	M2F	Optional accessories
A1P	Printed circuit board	Q1L • Q2L	Adapter for wiring (KRP50-2)
C1R • C2R	Capacitor (MF1 • M2F)	R1T	Thermistor (indoor air)
F1U	Fuse (250V, 10A)	R2T	Thermistor (outdoor air)
K1R ~ K3R	Magnetic relay (M1F)	S1W	Limit switch
K4R ~ K6R	Magnetic relay (M2F)	T1R	Transformer (supply 220-240V/22V)
K7R	Magnetic relay (M1D)	X1M	Terminal (power supply)
M1D	Motor (damper motor)	X2M	Terminal (control)
M1F	Motor (air supply fan motor)		

21W24836-1A

VAM1500,2000FA5VE

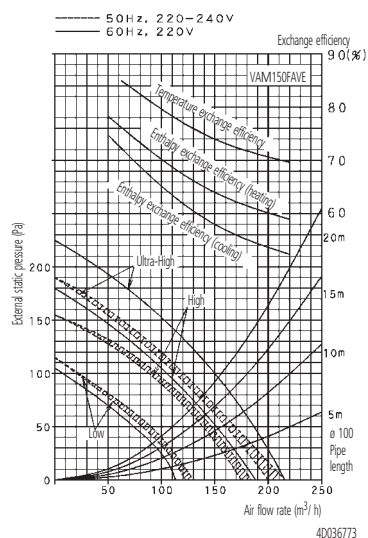


L - RED	N-BLU	M2F-M4F	Optional accessories
A1P	Printed circuit board (control)	Motor (exhaust fan motor)	Adapter for wiring (KRP50-2)
A2P	Printed circuit board (interface)	Thermo switch (MF1 ~ M4F built-in)	Magnetic relay (on/off)
C1R - C4R	Capacitor (MF1 ~ M4F)	Magnetic relay (M2F)	Magnetic relay (humidifier operation)
F1U-F2U	Fuse (250V, 10A)	Magnetic relay (M4F)	Remote controller
K1R-K3R	Magnetic relay (M1F)	Thermistor (indoor air)	Selector switch (main/sub)
K4R-K6R	Magnetic relay (M2F)	Thermistor (outdoor air)	Connector for optional parts
K7R	Magnetic relay (M1D)	Limit switch	Connector (for KRP50-2)
K8R	Magnetic relay (M2D)	Transformer (220-240V/22V)	Connector (for KRP50-2)
M1D-M2D	Motor (damper motor)	Terminal (power supply)	Connector
M1F-M3F	Motor (air supply fan motor)	Terminal (control)	

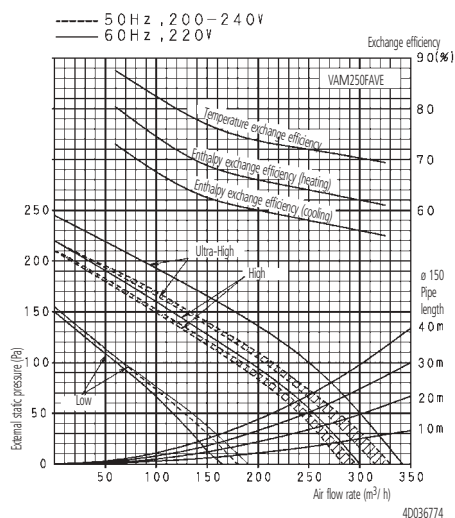
ZTW24906-1A

3.4 Fan performance

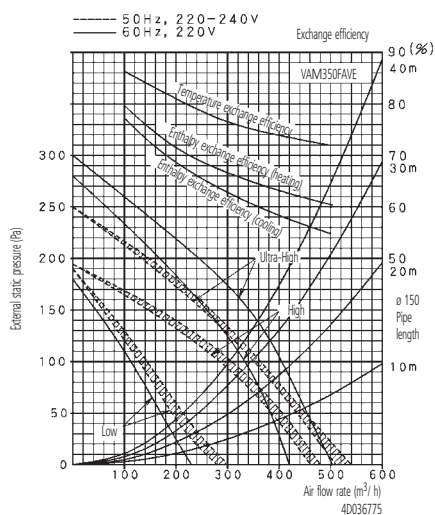
VAM150FAVE



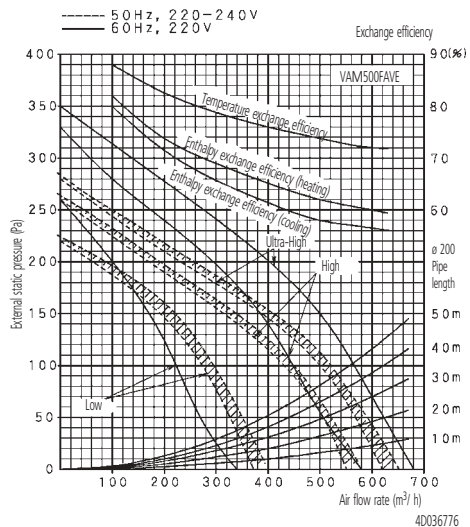
VAM250FAVE



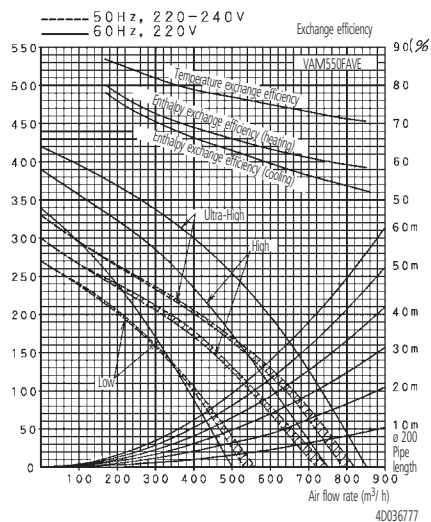
VAM350FAVE



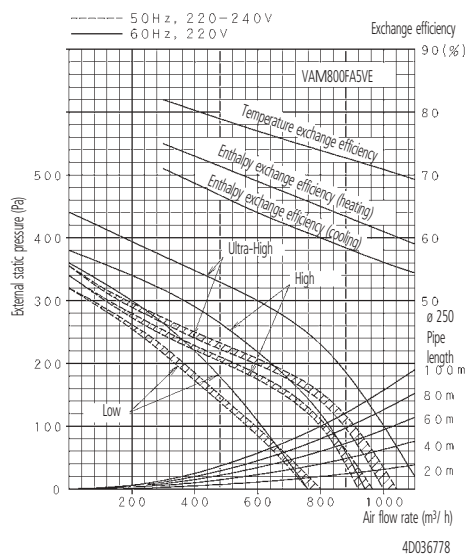
VAM500FAVE



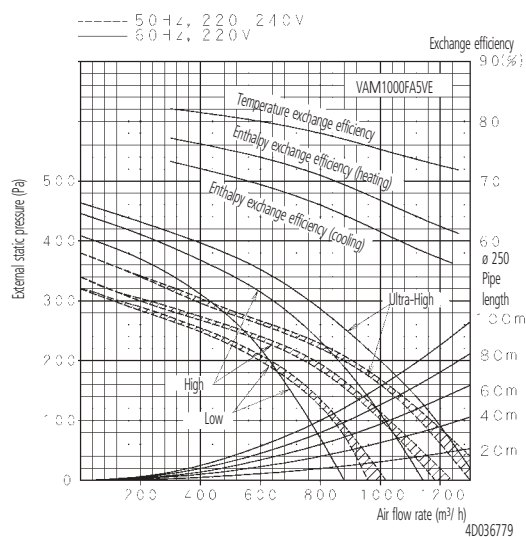
VAM650FAVE



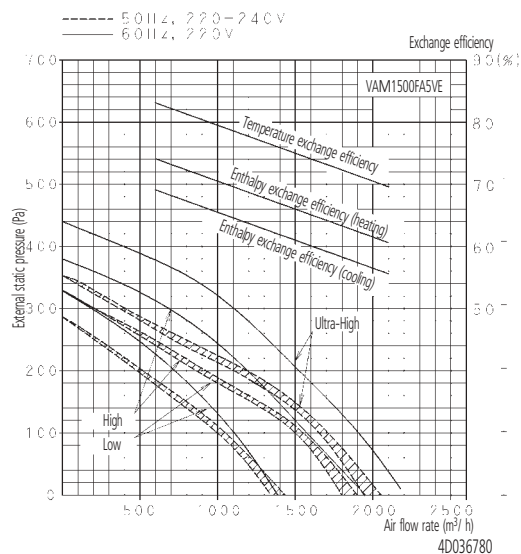
VAM800FA5VE



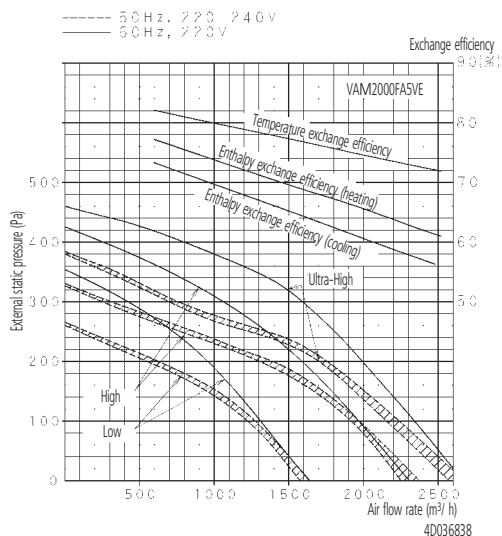
VAM1000FA5VE



VAM1500FA5VE

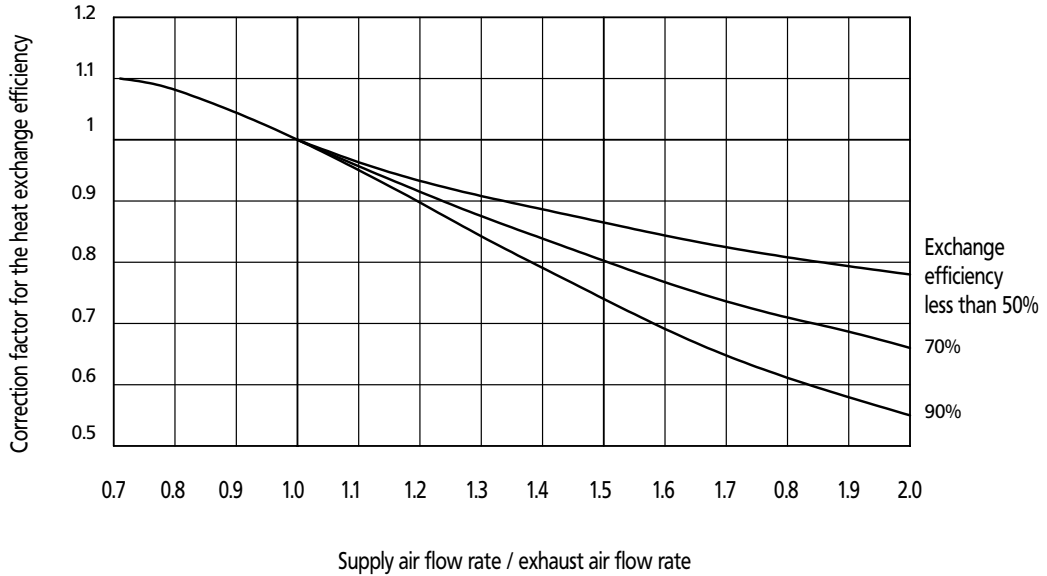


VAM2000FA5VE



3.5 The correction ratio of exchange efficiency

5



C: 4D023764 + 4D023764

<Example of correction>

VAM500 (50Hz): Air flow rate at strong notch 500 m³/h
(Cooling) Enthalpy exchanging efficiency
58%

Supply air and exhaust air flow rate for fresh-up mode:
Supply air flow rate / Exhaust air flow rate = 550 / 500 = 1.1
(Cooling) Enthalpy exchange efficiency from above Table
 $58 \times 0.96 = 55.6\%$

↑ Correction ratio

3.6 Sound level data

3.6.1 Overall sound pressure levels

Ventilation Mode		220V / 50Hz						230V / 50Hz					
		Total Heat Exchange mode			Bypass mode			Total Heat Exchange mode			Bypass mode		
Fan Speed		U-H	H	L	U-H	H	L	U-H	H	L	U-H	H	L
Model	VAM150FAVE	27	26	20.5	27	26.5	20.5	28	27	21	28	27	21
	VAM250FAVE	28	26	21	27.5	27	21	28.5	26.5	21.5	28	27.5	21.5
	VAM350FAVE	32	31.5	23.5	31.5	31	24.5	33	32	25	32	31.5	25.5
	VAM500FAVE	33	31.5	24.5	33.5	32.5	24	34	32.5	25.5	34	33	26.5
	VAM650FAVE	34.5	33	27	34.5	33	27	35	33.5	27.5	35	34.5	27
	VAM800FA5VE	35.5	34.5	31	35.5	34.5	31	36.5	35.5	31.5	36.5	35.5	31.5
	VAM1000FA5VE	36	35	31.5	36	35.5	32	36.5	35.5	31.5	36.5	35.5	32
	VAM1500FA5VE	39.5	38	34	40.5	38	33	41	38.5	35	41	38.5	35
	VAM2000FA5VE	40	38	35	41	38	33	41.5	40	36	41.5	40	35

Ventilation Mode		240V / 50Hz						220V / 60Hz					
		Total Heat Exchange mode			Bypass mode			Total Heat Exchange mode			Bypass mode		
Fan Speed		U-H	H	L	U-H	H	L	U-H	H	L	U-H	H	L
Model	VAM150FAVE	28.5	27.5	21.5	28.5	27.5	21.5	28.5	26.5	19	28	27	20
	VAM250FAVE	29	27	22	28.5	28	22	29.5	26	19.5	29	27	20.5
	VAM350FAVE	34	33	26	33.5	32.5	26.5	34.5	32	22	34.5	33	22
	VAM500FAVE	34.5	33	27.5	34.5	33.5	27.5	35.5	33.5	24	35	33	24
	VAM650FAVE	35.5	34	28	35.5	35	28.5	36	33	27	35.5	34	27
	VAM800FA5VE	37	36	32	37	36	32	36	34.5	31	37	35	31
	VAM1000FA5VE	37	36	32	37	36	33	37	35	31	37	35	31
	VAM1500FA5VE	41.5	39	36	41.5	39	36	40.5	38	33	40.5	38	33
	VAM2000FA5VE	41.5	40	38	42.5	41	37	41	38	34	41	38	35

3.6.2 Sound power spectrum

VAM150FAVE

[dB]

Model	Power supply		H/ Notch	63	125	250	500	1000	2000	4000	8000
VAM150FA5VE	50Hz	220V	U-H	50	48	46	40.5	38.5	34	25.5	27
			H	47	47	42	40	37.5	27.5	25	26.5
			L	44	42	38.5	35.5	29.5	21.5	22.5	23.5
		230V	U-H	51	49	47	41.5	39.5	35	27	28.5
			H	47.5	47.5	42.5	39.5	37	28.5	26	27.5
			L	44	42	38.5	36	29.5	21.5	22.5	23.5
		240V	U-H	53	50.5	46.5	42	40	36.5	30	31.5
			H	49.5	49.5	45	42	39.5	31.5	29.5	31.5
			L	44.5	42.5	39.5	36	30	22.5	23.5	25
	60Hz	220V	U-H	52	51	46	42.5	39.5	33.5	24.5	27
			H	49	49	44.5	40.5	37	29.5	26	27.5
			L	41	42	39	35.5	29	21	21.5	23.5

4D036765

VAM250FAVE

[dB]

Model	Power supply		Hz/ Notch	63	125	250	500	1000	2000	4000	8000
VAM250FAVE	50Hz	220V	U-H	51.1	51	48	42	38.5	33.5	25.5	25.5
			H	49.5	48.5	46	40	36.5	29	22	23.5
			L	44.5	44	42	34	28	19.5	21	22
		230V	U-H	52	51.5	47	43	39.5	34	27	27
			H	50.5	49.5	47	41	37.5	30	24.5	26
			L	44.5	44.5	42	35	28	19.5	21	22
	240V	U-H	51.5	52.5	48	44.5	41	36	29	29.5	
		H	52	52	48.5	40.5	38	32.5	28	30	
		L	45	44.5	43	34.5	28.5	21	22.5	23.5	
	60Hz	220V	U-H	51.5	52	49	43.5	39.5	34	25.5	25.5
			H	49	50	45.5	40	38	30	24.5	26
			L	44.5	41	39	34.5	30.5	20	20	22

4D036766

VAM350FAVE

[dB]

Model	Power supply		H/ Notch	63	125	250	500	1000	2000	4000	8000
VAM350FAVE	50Hz	220V	U-H	57.5	53	49.5	45	42.5	39.5	31.5	25.5
			H	58.5	51	46.5	43.5	40.5	35	26	26.5
			L	58.5	45.5	41.5	38	33.5	24	25	27
		230V	U-H	59.5	54	50.5	46	43.5	40.5	32.5	27.5
			H	60	52	49	46	42	36.5	29.5	28.5
			L	59.5	46	42.5	38.5	34.5	25	26	28
		240V	U-H	62	55.5	52	47.5	45	42	34.5	30
			H	64	54.5	49.5	46	44	38.5	31	32
			L	60	46.5	44	39	35	26	26.5	28.5
	60Hz	220V	U-H	59	53.5	52.5	48.5	45	41	32.5	27.5
			H	61.5	52	49.5	46.5	41.5	37	28	30
			L	55.5	44	41	36	32.5	23.5	22.5	24

4D036767

VAM500FAVE

[dB]

Model	Power supply		H/ Notch	63	125	250	500	1000	2000	4000	8000
VAM500FAVE	50Hz	220V	U-H	57	54	51	48	45	37.5	27.5	25.5
			H	54	51.5	49	46	42.5	36	26.5	26
			L	50.5	47.5	44	39	33.5	25	23	24.5
		230V	U-H	57.5	54.5	51.5	48.5	45.5	38	28.5	26.5
			H	55	52.5	50	47	43.5	37	28	28
			L	51.5	48.5	45	39.5	34.5	26.5	25	26.5
		240V	U-H	58.5	55.5	52.5	49.5	46.5	39	29.5	28.5
			H	56.5	54	51.5	48.5	45.5	38.5	30	30
			L	52	48.5	45.5	40	34.5	27	25.5	27.5
	60Hz	220V	U-H	57.5	54	51	49	46.5	39	29	25.5
			H	55	52	49.5	47	44	36	26.5	26
			L	51	47	44	39.5	33	23.5	22.5	25.5

4D036768

VAM650FAVE

[dB]

Model	Power supply		H/ Notch	63	125	250	500	1000	2000	4000	8000
VAM650FAVE	50Hz	220V	U-H	62	58	52.5	48.5	45.5	41.5	34	26
			H	61	56.5	51	47	44.5	39	30	26
			L	53.5	50.5	46	42	37.5	32	24	25.5
		230V	U-H	62.5	58.5	53	49	46	42	35	27
			H	61.5	57	51.5	47.5	45	39.5	30.5	27
			L	54.5	51.5	47	43	38.5	33	26	27.5
		240V	U-H	63.5	59.5	54	50	47	43	36	28.5
			H	63	58.5	53	49	46.5	41.5	32.5	29.5
			L	56	43	48.5	44.5	40	34.5	28	30
	60Hz	220V	U-H	59.5	58	53.5	48.5	46	43	38	23
			H	61.5	56	51	47	44	40	30	26.5
			L	54	51	46	42	38.5	31	23	25.5

4D036769

Measuring place

Notes:

1. Operation sound is measured in an anechoic chamber.
2. The operating sound level may become greater than this value depending on the operating conditions, reflected sound, and peripheral noise.
3. Operation sound differs with operation and ambient conditions.
4. The power levels have been calculated on the assumption that the measuring point were right under the source of operating sound.
5. U-H: Ultra high
H: High
L: Low

VAM800FA5VE

[dB]

Model	Power supply		Hz/ Notch	63	125	250	500	1000	2000	4000	8000
VAM800FA5VE	50Hz	220V	U-H	58	58	52.5	49.5	48.5	41.5	33.5	26
			H	58.5	57	51.5	49.5	47	40.5	31	27.5
			L	54.5	54.5	47.5	44.5	43	35.5	24.5	23.5
		230V	U-H	58.5	59.5	53	50	49	42	34	27
			H	59	58.5	52	50	47.5	41	31.5	28.5
			L	55.5	54	49.5	46.5	44	37.5	27.5	28
	240V	220V	U-H	59	58	53	50	49	43.5	34.5	27
			H	59.5	59	52.5	50.5	48	41.5	32	29.5
			L	58	58	51	48	46.5	39	29.5	30.5
		230V	U-H	58	57.5	54	50.5	49	43	33.5	26
			H	58.5	57.5	52.5	50	47	39.5	30	27
			L	54	54	48.5	45	43	35	24	23.5

4D036770

VAM1000FA5VE

[dB]

Model	Power supply		Hz/ Notch	63	125	250	500	1000	2000	4000	8000
VAM1000FA5VE	50Hz	220V	U-H	62	58.5	54	50.5	49	42	36.5	28
			H	61	57	52	50	48	38.5	31	25.5
			L	58	55	49	45.5	43.5	36.5	27.5	24
		230V	U-H	62.5	57.5	54.5	51	49.5	42.5	37	29
			H	61.5	57.5	52.5	50.5	48.5	39	31.5	26.5
			L	58.5	55	49	47	43.5	37	28	25
	240V	220V	U-H	62.5	59	54.5	51.5	50.5	42.5	37	29
			H	62	58	53	51	49	39.5	32	27.5
			L	59	55.5	49.5	47.5	44	37.5	29	26
		230V	U-H	62.5	57.5	53.5	52	49.5	42	36	27
			H	61	57	52	50	48	38	30	24.5
			L	59	54	51	47.5	43	35.5	26	24.5

4D036771

VAM1500FA5VE

[dB]

Model	Power supply		Hz/ Notch	63	125	250	500	1000	2000	4000	8000
VAM1500FA5VE	50Hz	220V	U-H	60.5	61	55.5	52.5	50.5	46	39.5	29.5
			H	60.5	60	53.5	51.5	49.5	44.5	37	31
			L	58.5	58	51	49	47	39.5	30.5	31
		230V	U-H	61	61.5	57	54.5	52	48.5	41.5	30.5
			H	61	60.5	54.5	52.5	49.5	43	34	31.5
			L	59.5	59.5	52	49.5	48	40.5	31.5	32
	240V	220V	U-H	61.5	63	59	56	53	46.5	40	32
			H	61	60.5	54	52	49.5	43	34	31.5
			L	60	60	52.5	50	48.5	41	32	32.5
		230V	U-H	62	62	57	54.5	52	46	37	31
			H	61	60.5	56	53	50	42.5	33	31.5
			L	59.5	59	51.5	49	45.5	39.5	31.5	32.5

4D036772

VAM2000FA5VE

[dB]

Model	Power supply		Hz/ Notch	63	125	250	500	1000	2000	4000	8000
VAM2000FA5VE	50Hz	220V	U-H	65	61.5	57	54	53	45	39.5	32.5
			H	64	60	55	53	51	41.5	34.5	30.5
			L	62	58	51.5	50	48.5	40.5	32.5	30.5
		230V	U-H	65.5	62	58	55.5	53.5	45.5	40	33
			H	65	61	56.5	54	52	42.5	35.5	32
			L	62	59	53	50.5	48.5	40.5	33	31
	240V	220V	U-H	66	62.5	58	55	54	46	40.5	33.5
			H	65	61	56	54	52	42.5	35.5	32
			L	63	60	54.5	52	50	41.5	34	32.5
		230V	U-H	66.5	61.5	57.5	56	53.5	46	40.5	33
			H	64	60	55	53	51	41	33.5	30
			L	60.5	57.5	51	48.5	46.5	41	32.5	32.5

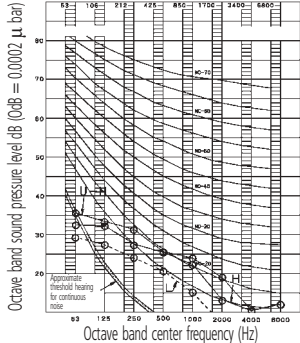
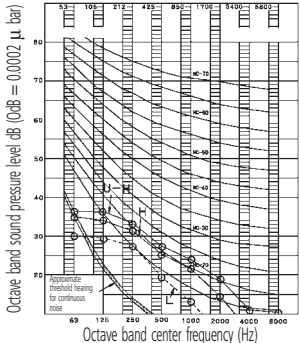
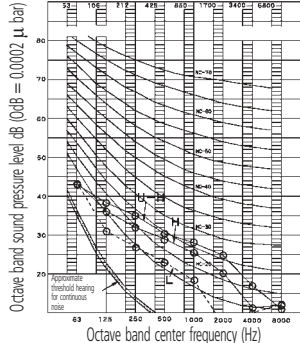
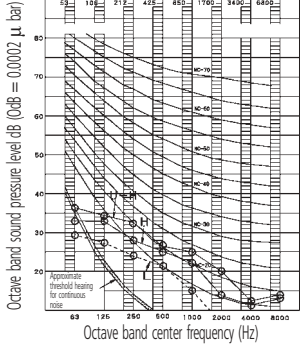
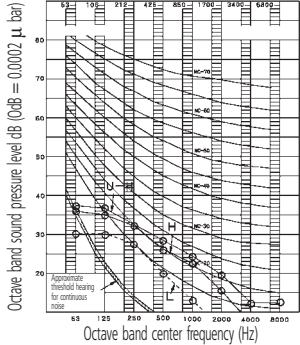
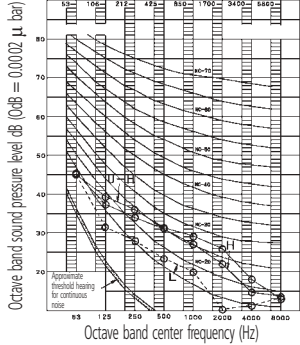
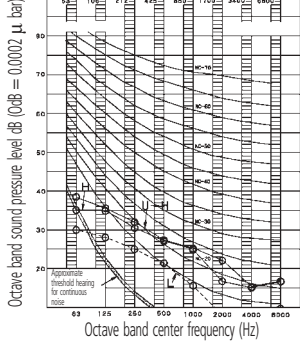
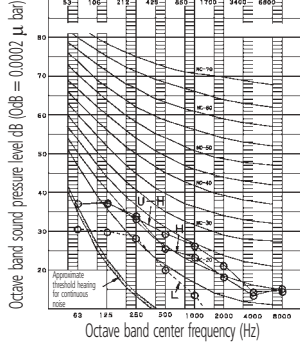
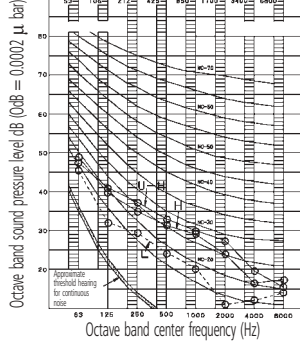
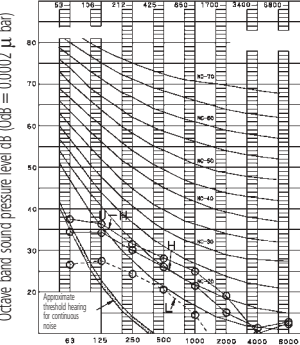
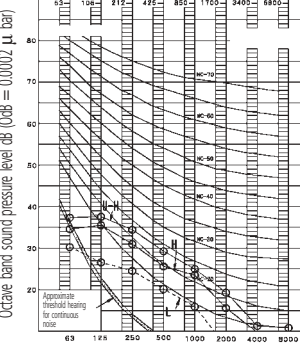
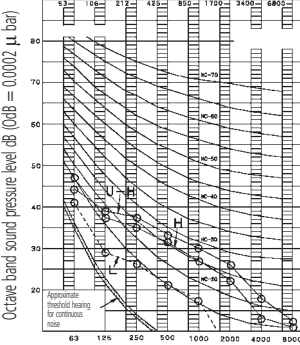
4D036837

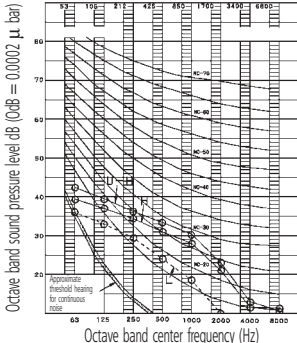
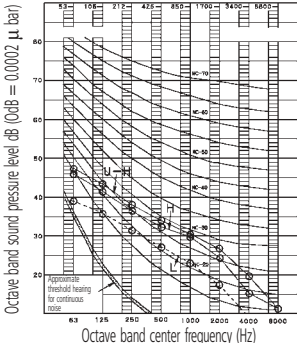
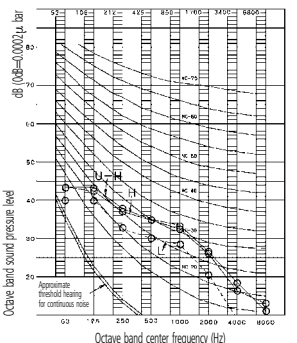
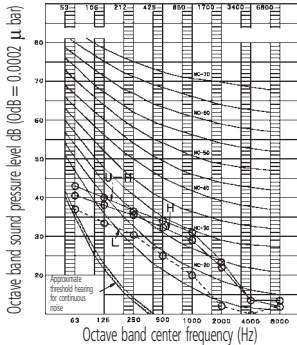
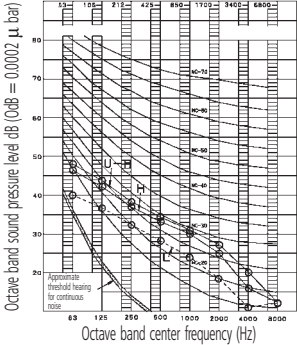
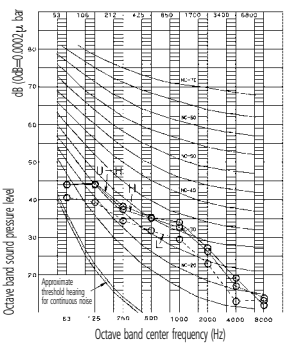
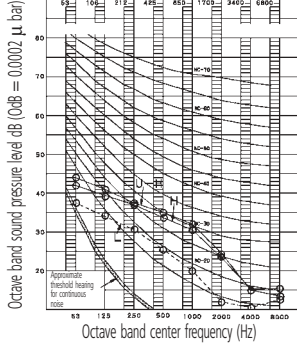
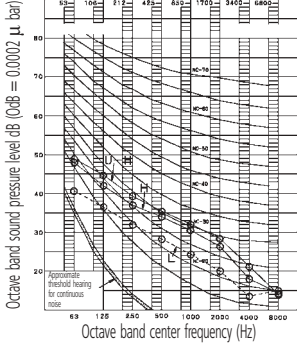
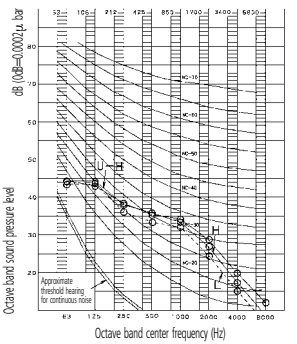
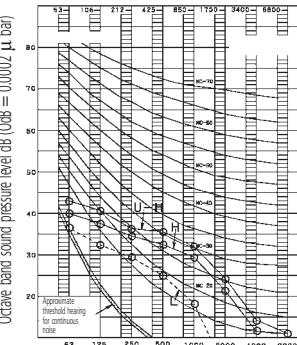
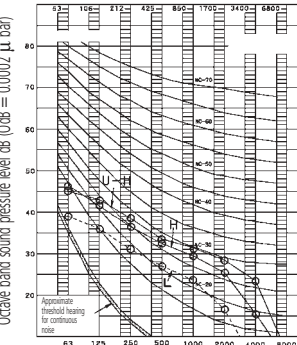
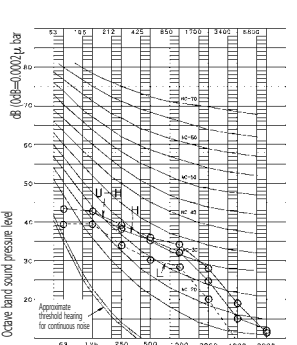
Measuring place

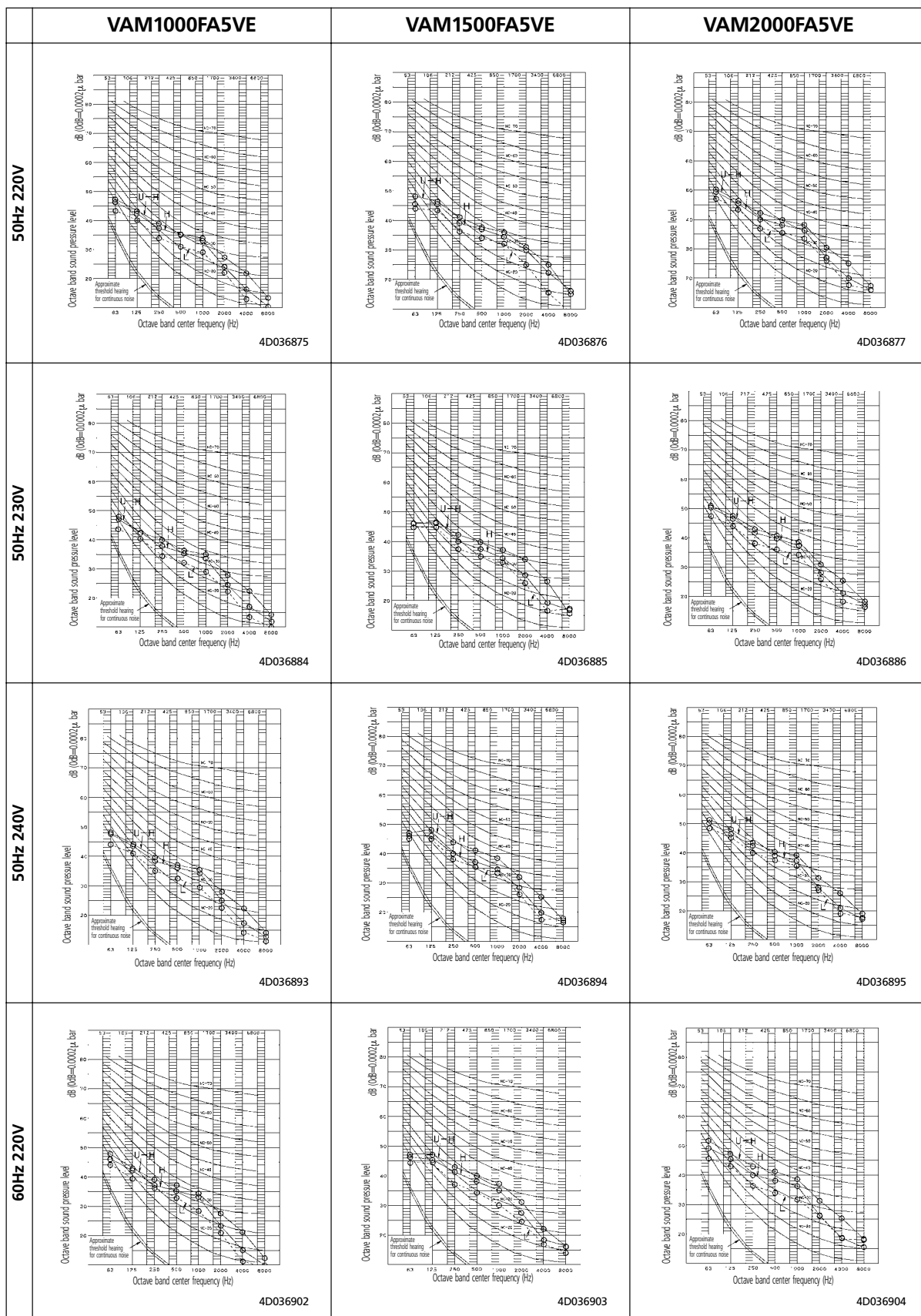
Notes:

1. Operation sound is measured in an anechoic chamber.
2. The operating sound level may become greater than this value depending on the operating conditions, reflected sound, and peripheral noise.
3. Operation sound differs with operation and ambient conditions.
4. The power levels have been calculated on the assumption that the measuring point is right under the source of operating sound.

3.6.3 Sound pressure spectrum

	<p>VAM150FAVE</p>  <p>4D036868</p>	<p>VAM250FAVE</p>  <p>4D036870</p>	<p>VAM350FAVE</p>  <p>4D036871</p>
50Hz 230V	 <p>4D036878</p>	 <p>4D036879</p>	 <p>4D036880</p>
50Hz 240V	 <p>4D036887</p>	 <p>4D036888</p>	 <p>4D036889</p>
60Hz 220V	 <p>4D036896</p>	 <p>4D036897</p>	 <p>4D036898</p>

	VAM500FAVE	VAM650FAVE	VAM800FA5VE
50Hz 220V	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036872</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036873</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036874</p>
50Hz 230V	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036881</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036882</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036883</p>
50Hz 240V	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036890</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036891</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036892</p>
60Hz 220V	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036899</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036900</p>	 <p>Octave band sound pressure level dB (0dB = 0.0002 μ bar)</p> <p>Octave band center frequency (Hz)</p> <p>4D036901</p>



3.7 Electric characteristics

Units			Power supply		FM	
Model name	50Hz	60Hz	MCA	MFA	kW	FLA
VAM150FAVE	Power supply max.264V min.198V	Power supply max. 242V min.138V	0.9	15	0.03×2	0.4×2
VAM250FAVE			0.9	15	0.03×2	0.4×2
VAM350FAVE			1.35	15	0.03×2	0.6×2
VAM500FAVE			1.35	15	0.03×2	0.6×2
VAM650FAVE			2.3	15	0.14×2	1.0×2
VAM800FA5VE			3.4	15	0.23×2	1.5×2
VAM1000FA5VE			3.4	15	0.23×2	1.5×2
VAM1500FA5VE			6.75	15	0.23×4	1.5×4
VAM2000FA5VE			6.75	15	0.23×4	1.5×4

SYMBOLS:

- MCA: min. circuit amps. (A)
 MFA: max. fuse amps. (A) (See note 5)
 FM: fan motor
 FLA: full load amps. (A)
 kW: fan motor rated output (kW)

NOTES:

- Voltage range units are suitable for use on the electrical systems where the voltage supplied to the unit terminals is not below or above the listed range limits.
- Maximum allowable voltage variation between phases is 2 %.
- MCA/MFA

$$MCA = 1.25 \times FLA_{(fm1)} + FLA_{(fm2)}$$

$$MFA \leq 4 \times FLA$$
 (VAM2000FA5VE is regarded as $2 \times VAM1000FA5VE$)
- Select wire size based on the value of MCA.
- Instead of the fuse, use the circuit breaker.

4D036862

Specifications for field supplied fuses and wire

Model	Type	Power supply wiring			Transmission wiring	
		Field supplied fuses	Wire	Size	Wire	Size
VAM150FA VAM250FA VAM350FA VAM500FA VAM600FA VAM800FA5 VAM1000FA5 VAM1500FA5 VAM2000FA5	VE	15A	H05VV-U3G	Wire size must comply with local codes.	Shield wire (2 wire)	$0.75 - 1.25 \text{ mm}^2$

3

Heat Recovery Ventilation



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.

VRV products are not within the scope of the Eurovent certification programme.

Specifications are subject to change without prior notice

DAIKIN EUROPE N.V.

Zandvoordestraat 300
B-8400 Ostend - Belgium
Internet: <http://www.daikineurope.com>

technical data

Heat Recovery Ventilation

Installation

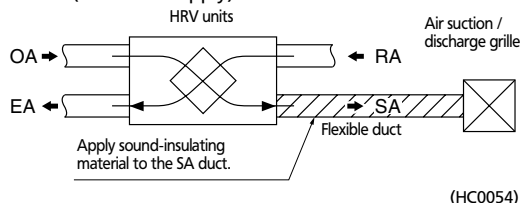
4. Installation

4.1 Reducing operating sound

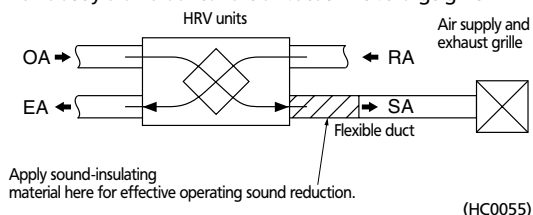
The air suction and discharge grille may give out operating sound higher by 8 to 11 phons than of the HRV units body. When installing this unit in a quiet place, take measures to reduce operating sound.

4.1.1 Points for reducing operating sound

1. Operating sound heard from the air discharge outlet can be reduced just by applying sound-insulating material to the SA (indoor air supply) duct.

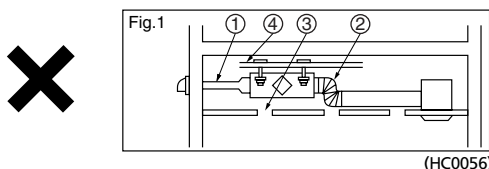


2. Operating sound can be reduced more effectively by applying sound-insulating material to a portion of the SA duct near the unit body than that near the air suction / discharge grille.

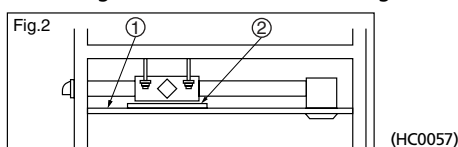


4.1.2 Taking measures to reduce operating sound heard from attic-installed equipment and air ducts.

1. When installing large air volume models (650 m³ / h or more), avoid the following wherever possible if it is expected to be necessary to apply sound-insulating material to them. (Fig.1)



- ① Making the duct diameter extremely small (Example: $\phi 250 \rightarrow \phi 150$, $\phi 200 \rightarrow \phi 100$)
 - ② Making the duct extremely bent using bellows (in particular, connecting bellows to the air discharge outlet of the unit body)
 - ③ Making opening holes on the ceiling
 - ④ Hanging the unit on a material which does not have enough hanging strength
See "Precautions for installing and handling the unit" on pages 77 and 87.
2. Take the following sound reduction measures. (Fig.2)



- ① Use a sound-insulating (low-permeability-to-sound) ceiling.

Note:

Some sound-insulating ceilings are not very effective in reducing low-frequency element of the operating sound.

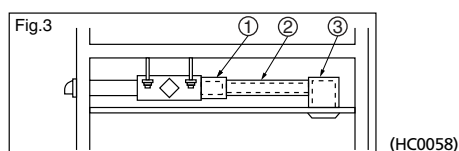
- ② Place a sound-reducing material under the source of the operating sound.

Note:

When using a sound-insulating sheet, it is necessary to have the entire body of the unit covered with it. Note, however, that some models do not allow the use of a sound-insulating sheet because it may badly affect the ventilation of their radiation heat.

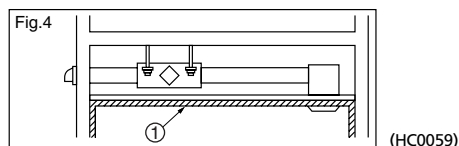
4.1.3 Reducing operating sound heard from the air discharge outlet (suction inlet)

1. Use the following recommended optional accessories to reduce operating sound heard from attic-installed duct type models. (Fig.3)



- ① Sound-eliminating box (Silencer)
- ② Flexible duct
- ③ Sound-eliminating air suction / discharge grille

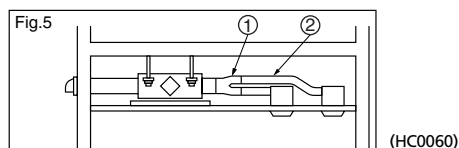
2. If the above accessories do not give satisfactory effect or when an attic-installed cassette type model is used, take the following measure.



- ① Apply a sound-absorbing material to the interior of the room.

3. To reduce the air flow sound heard from the air discharge outlet (suction inlet) of an attic-installed duct type model, use a small diameter flexible duct, which excels in sound absorptivity, for greater sound reduction effect.

- ① Branched duct (for letting air flow through two ducts to slow down its speed before it reaches the air discharge outlets (suction inlets))



- ② Flexible duct

4. Installation of the unit with the source of its operating sound located at a corner of a room will be a partially effective sound reduction measure; it will keep persons in the center of the room free from the annoying operating sound, with those in the corner of the room kept annoyed by the operating sound. To avoid this, try to find the best installation place from which the operating sound is least heard by everyone in the room.

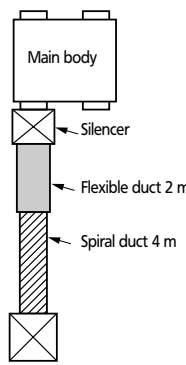
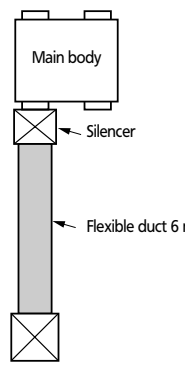
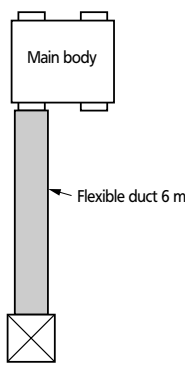
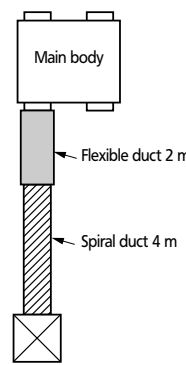
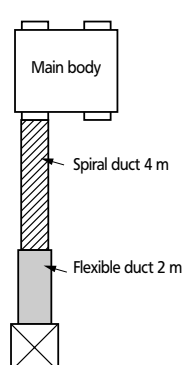
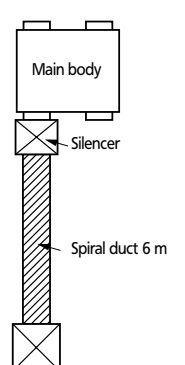
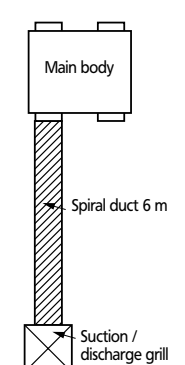
4.1.4 Effect of remedy for sound

Caution

1. Be sure to connect a flexible duct (2 m) to an outlet of the main body in the indoor air supply side.
2. Do not connect a spiral duct and an aluminium bellows directly to the outlet of the main body.

*A silencer is effective especially when using the flexible duct at the same time.

4.1.5 General comparison of the effect (① → ⑥ in more effective order)

① Mounting a silencer + flexible duct 2 m long Mounting a silencer + flexible duct 6 m long		② Mounting a flexible duct 6 m long	③ Mounting a flexible duct 2 m long to the main body	
  <p>(Effect of a remedy for noise does not change even for over 2 m long duct)</p>				
④ Mounting a flexible duct 2 m long to an air suction discharge grill	⑤ Mounting a silencer	⑥ Spiral duct 6 m No measures taken		
				
				(dB)
				+ 10
				+ 5
				Catalog Value
				- 5
				① ② ③ ④ ⑤ ⑥

(HC0061)

Note:

Measure the noise at 1.5 m below the air supply grille. Operating noise conforms to JIS standard and the value is converted in terms of the anechoic chamber.

4.1.6 Nameplate for note

"Notes for duct work" is written on the HRV units as indicated below.

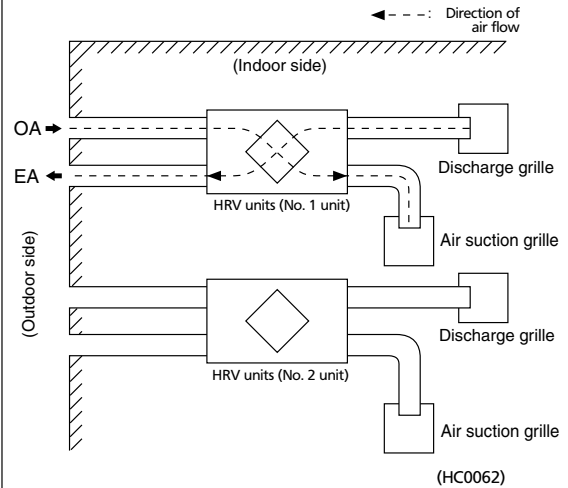
- When connecting a spiral duct or an aluminum bellows, sound at the air discharge outlet is higher by 8~11 phon than the main body operating sound.
- When using this unit in a quiet place, take a remedy for sound by connecting an optional flexible duct at the outlet of the indoor air suction side of the main body.

4.2 Centralized piping

Wherever possible, avoid centralized OA and EA pipings for two or more HRV units, and install ducts for each body of the unit. (Fig. 2)

Because the air flow shown in Fig.1 is generated when centralized OA and EA pipings for two or more HRV units normal air flow cannot be maintained. If a back flow prevention damper is installed in the duct on OA and EA side of each HRV units (Fig.3), costs will increase as compared with the case a duct is installed for each body. It is therefore recommended that a duct be in-stalled for each body. (Before installing the back flow prevention damper, contact our engineering section.)

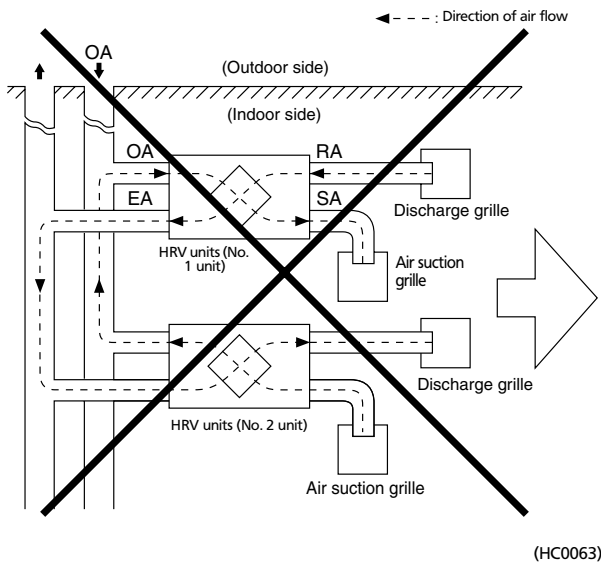
Fig.2: Install a duct for each HRV unit.



In the above duct system diagram, the air of No.1 unit will flow into normal direction regardless of the operation of No.2 unit when one duct is provided for each unit.

2

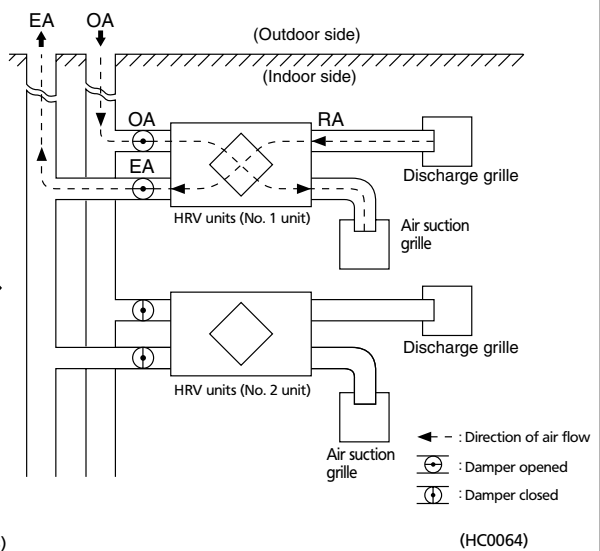
Fig.1: Centralized piping cannot be installed.



In the above duct system diagram, if a damper is not provided and No.1 unit is operated with No.2 unit being stopped, the air flows in the direction indicated by a broken line, the amount of the air supplied from outside to OA side is decreased, and the air is discharged from the discharge grille of EA side.

Therefore, the air will not flow into the normal direction.

Fig.3: Install a back flow prevention damper on each duct on OA and EA sides. (Field supply)



In the above duct system diagram, if a back flow prevention damper (field supply) is installed on each duct on OA and EA sides and the damper interlocked to the operation signals of HRV units, faults such as those shown in Fig.1 can be eliminated and the normal air flow maintained.

(Note, however, that the above does not apply to the standard duct system.)

4.3 Cautions

1. Install the unit on a rigid and stable place. Refer to the specification and weight of the unit.

Use suspension bolts for installation. Confirm that the place for installation can stand the weight of the unit. If not, reinforce the place with beams, etc. and install the suspension bolts.

If the strength of the place for installation is not sufficient, the place resonates to the vibration of the unit and abnormal noise may be transmitted.

2. Install a service space and an inspection hole. Refer to the outline drawing for details.

Be sure to provide a service space and an inspection hole for inspection of air filter, heat exchange element and fan. HRV units require one inspection hole.

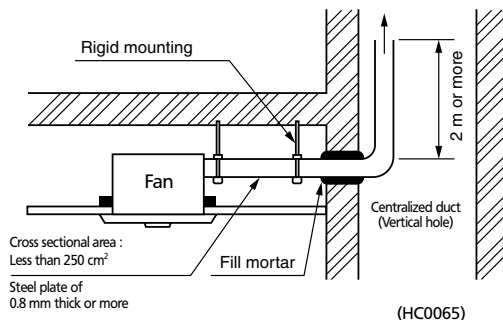
3. Bellows may not be able to use depending on the local regulations. (In the case in Japan)

Some local regulations may not allow the use of bellows in view of the safety for fire prevention. Before using the bellows, contact administrative agencies or fire department in your district. Note that bellows are not allowed in Tokyo in accordance with the Fire Prevention Act of Tokyo.

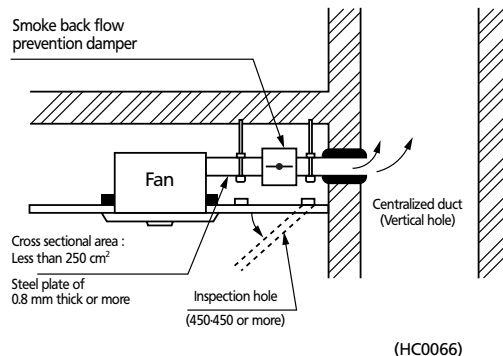
4. When exhausting air into the centralized duct (vertical hole), install a riser duct of steel plate of over two meters long inside the vertical hole or install an approved smoke back flow prevention damper. (In the case in Japan)

When exhausting air into centralized duct (vertical hole), the Building Standards Act requires that the duct must be capable of preventing fire from expanding through the duct should a fire break out.

When a riser duct of steel plate of 2 m long is installed



When a smoke back flow prevention damper is installed



Caution

- Installing a 2 m exhaust duct in a centralized duct involves difficulty in construction and maintenance, and is not practised generally. In actual installation, the approved smoke back flow prevention damper is used. Use Daikin's optional smoke back flow prevention damper.

5. Air filters are provided on the air intake side and exhaust air side. Be sure to install these filters.

Air filter cleans the air and prevents clogging of the element, and must be installed properly.

6. Confirm the using conditions of HRV units before installation.

Ambient conditions for use: -10°C to 50°CDB at 80% RH or less

Outdoor air temperature condition

When used below -10°C , indoor air temperature varies greatly from outdoor air temperature and frost may form on the heat exchange element depending on conditions of temperature and humidity. Further, the frost formation may be frozen. The frozen frost melts during the day as the temperature rises but the heat exchange efficiency drops before the frozen frost is melted.

As a countermeasure, preheating of the air on low temperature side is considered.

In a place where the temperature exceeds 50°C , deformation of resin parts such as air filter and reduced life of motor and electric parts due to deteriorated insulation are considered.

7. The precise available conditions are shown below.

Conditions:

Ambient temperature & humidity for HRV unit	-10 to 50°CDB 80% RH or less
Indoor / Outdoor air	-10 to 43°CDB The relative humidity [% RH] is as described below

1) Operation in highly humid areas (in cooling mode)

To prevent dew formation, use the unit under the condition that the indoor discharge air is 95% RH or less on the psychrometric chart.

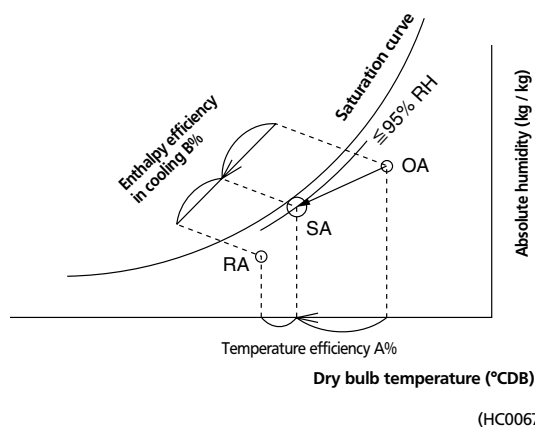


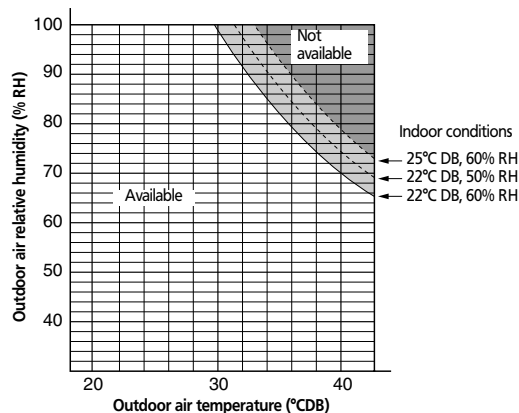
Fig.1 shows the limit under normal indoor conditions.

Fig.1 Conditions:

Temperature efficiency A = 72%

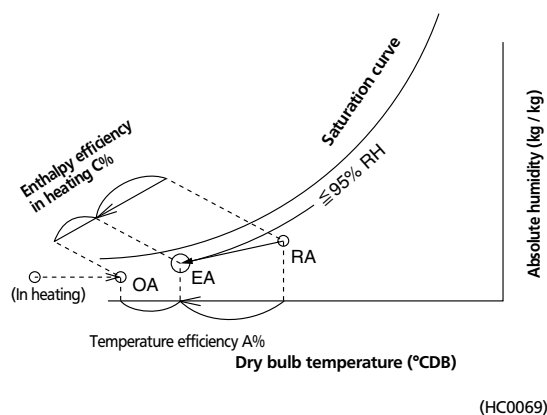
Enthalpy efficiency B = 56% (In cooling)

This conditions are at the minimum efficiency that are the severest to dew formation.



2) Operation in cold areas (in heating mode)

To prevent dew formation and freezing, use the unit under the conditions that the outdoor discharge air is 95% RH or less on the psychrometric chart.



Note:

If the outdoor discharge air exceeds 95% RH, please preheat the outdoor suction air before it goes through the heat exchanger.

8. Do not use HRV units where the air contains noxious gas and corrosive components of materials such as acid, alkali, organic solvent, carbon black and paint. Also, do not use in a place where damage from sea wind and hot spring prevail or where air containing odor is recovered for supply to other locations.

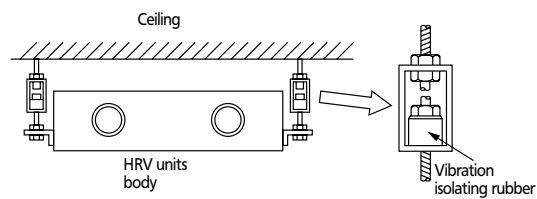
9. Do not operate HRV units in [Bypass] ventilation mode when the indoor is heated during winter.

Such operation may cause frost to form in the body and dirty ceiling may result.

10. When a unit is installed on the ceiling using short suspension bolts, abnormal noise may be generated due to resonance with the ceiling.

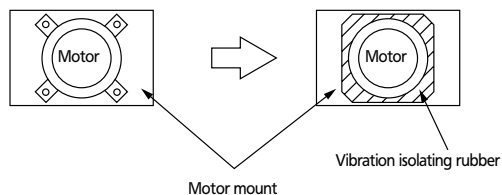
Provide resonance preventive measures for the body suspension bolts.

Example



(HC0070)

If abnormal noise is suspected generating from a spiral duct connection, change the duct to flexible duct. The above preventive measure is considered to eliminate the problem (resonance) but contact our service group and provide means to prevent vibration or necessary changes of the motor of the unit body.



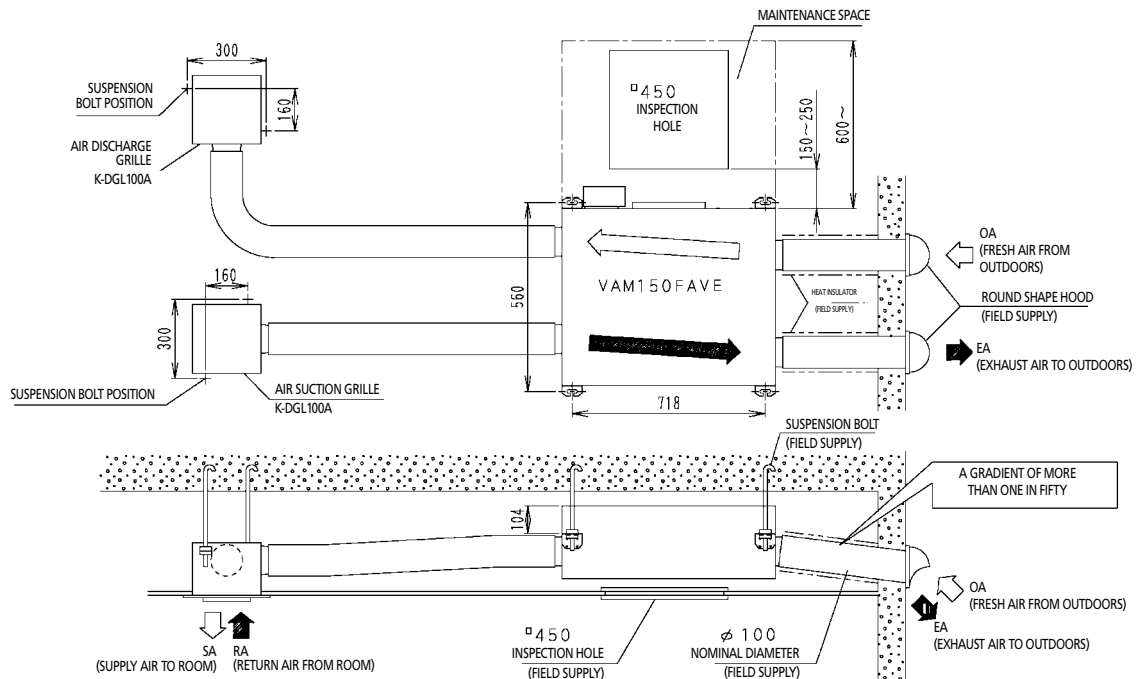
(HC0071)

Caution

- When the outdoor air infiltrates into the ceiling and the temperature and humidity in the ceiling become high, insulate the metal part of the unit.

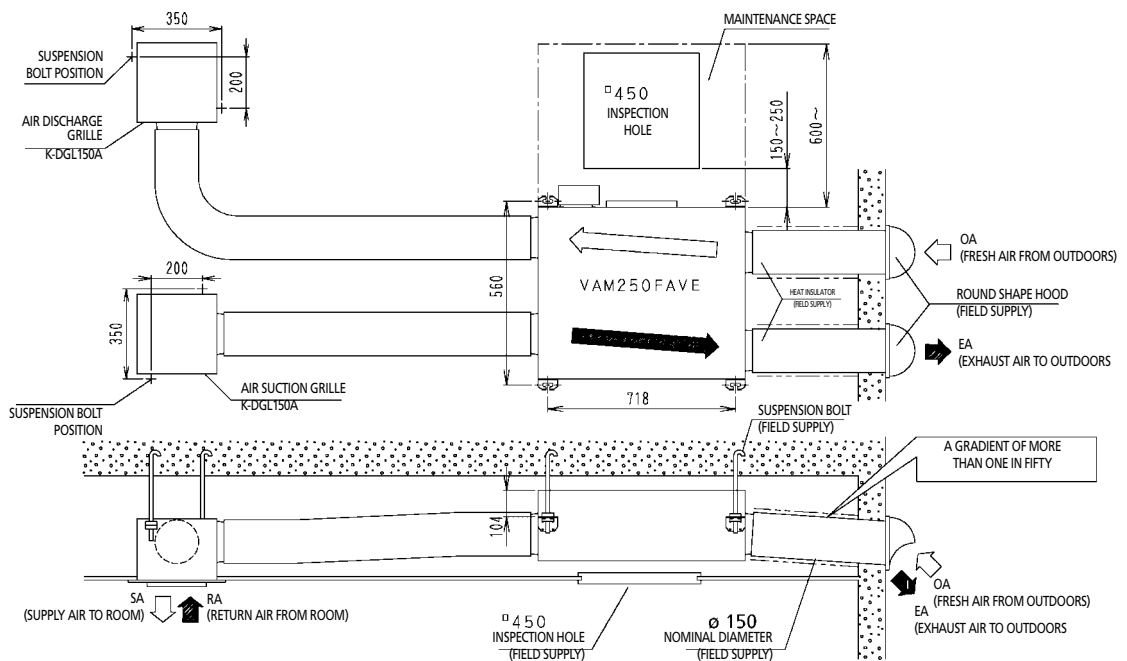
4.4 Standard drawing for installation

VAM150FAVE



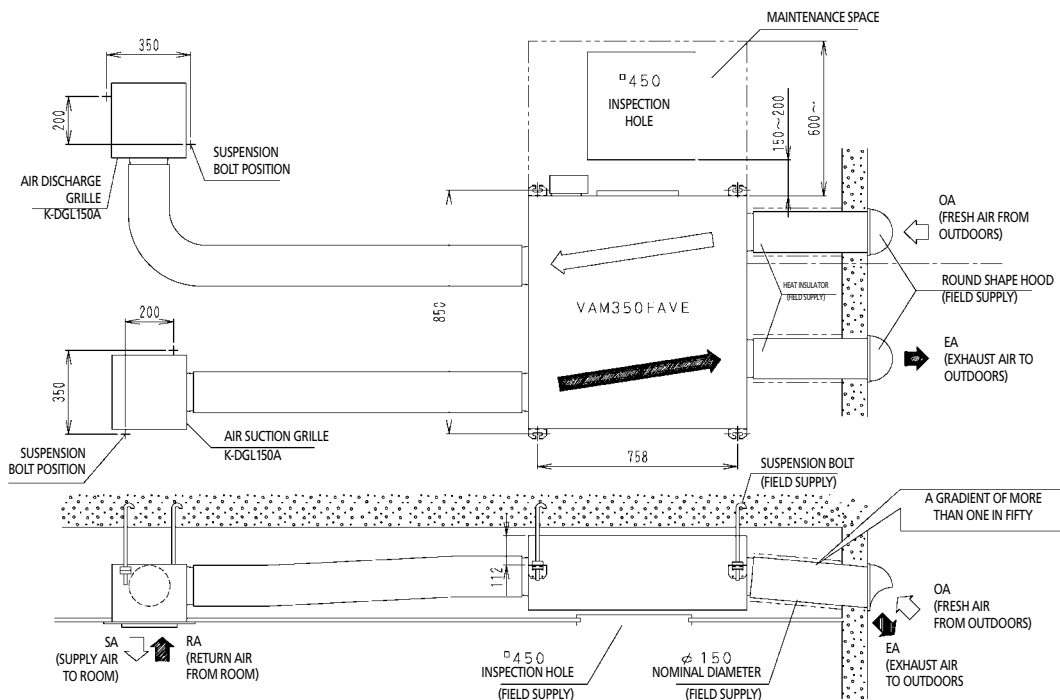
3D036781

VAM250FAVE



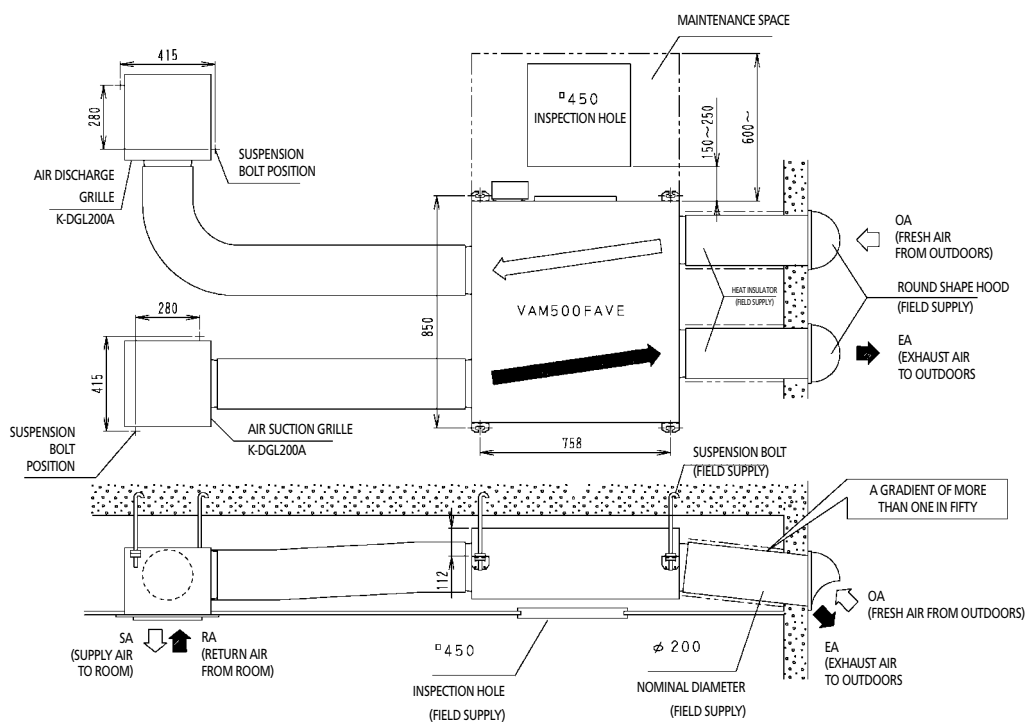
3D036782

VAM350FAVE



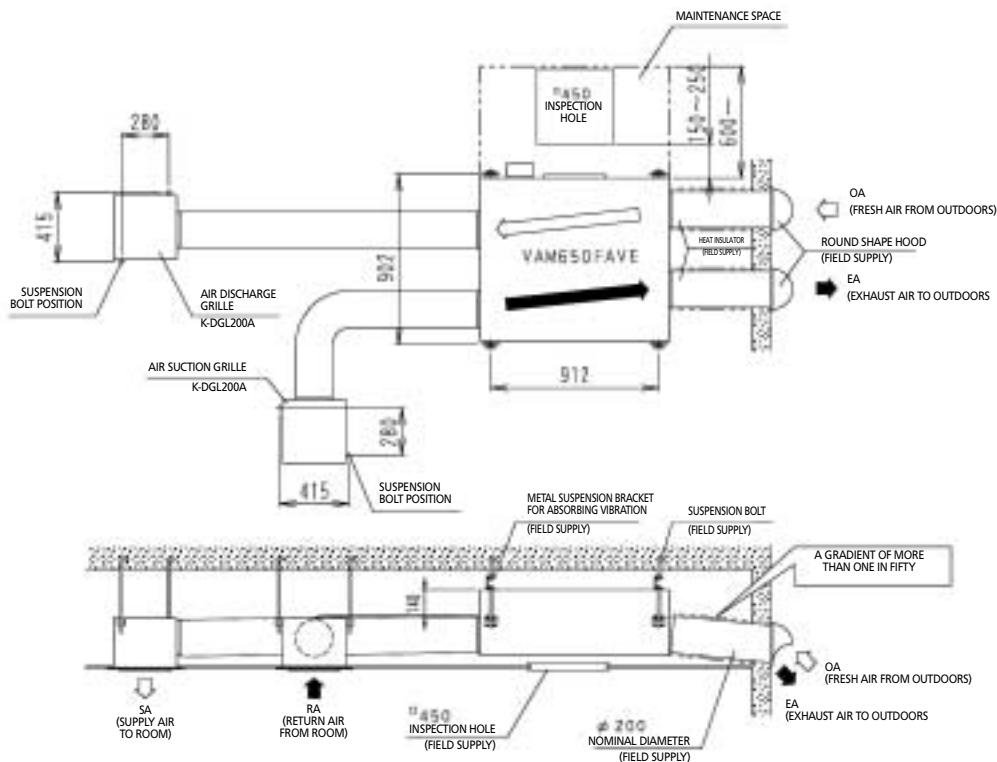
3D036786

VAM500FAVE



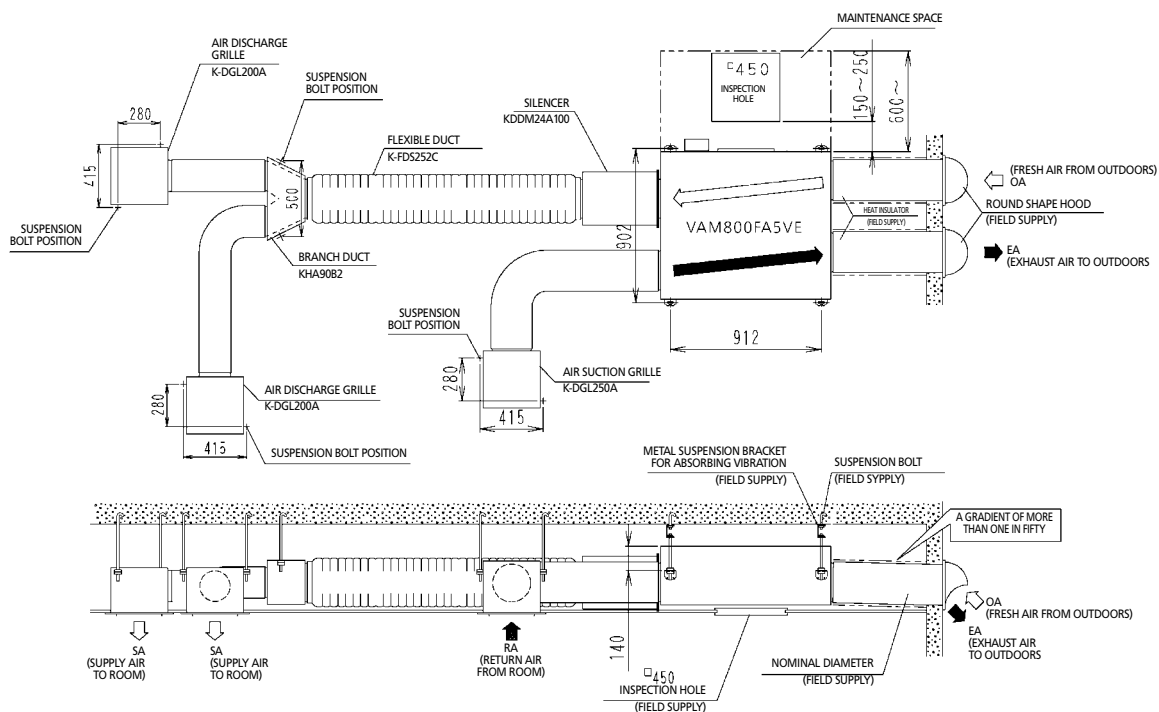
3D036787

VAM650FAVE



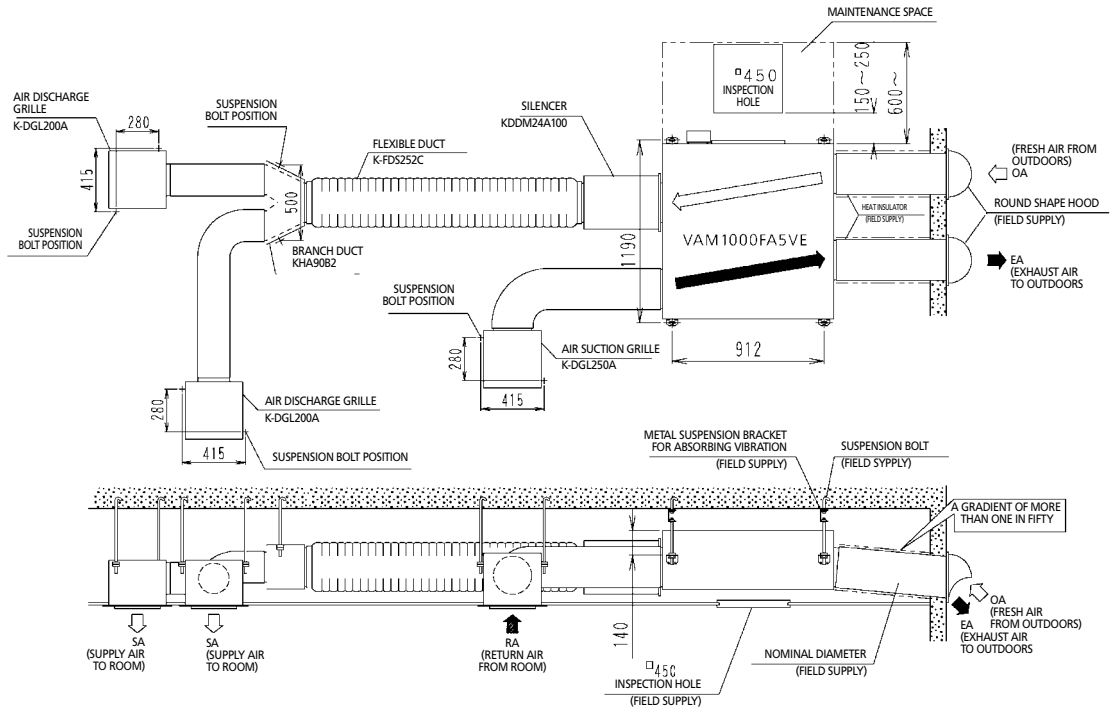
3D036788

VAM800FA5VE



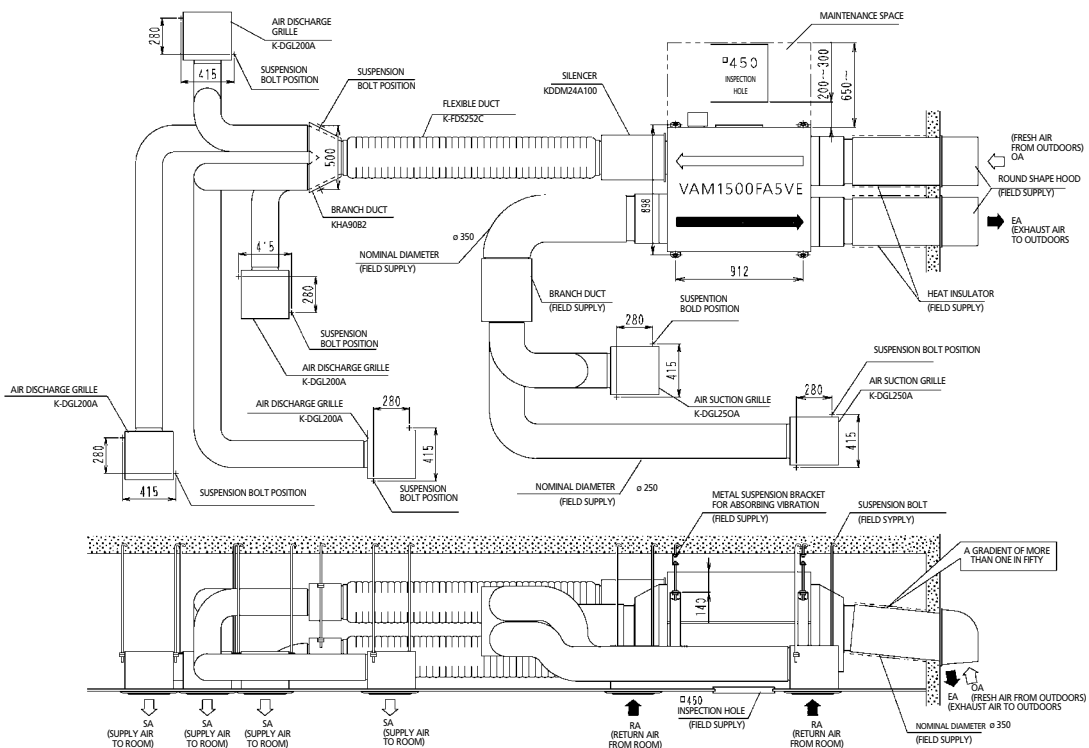
3D036789

VAM1000FA5VE



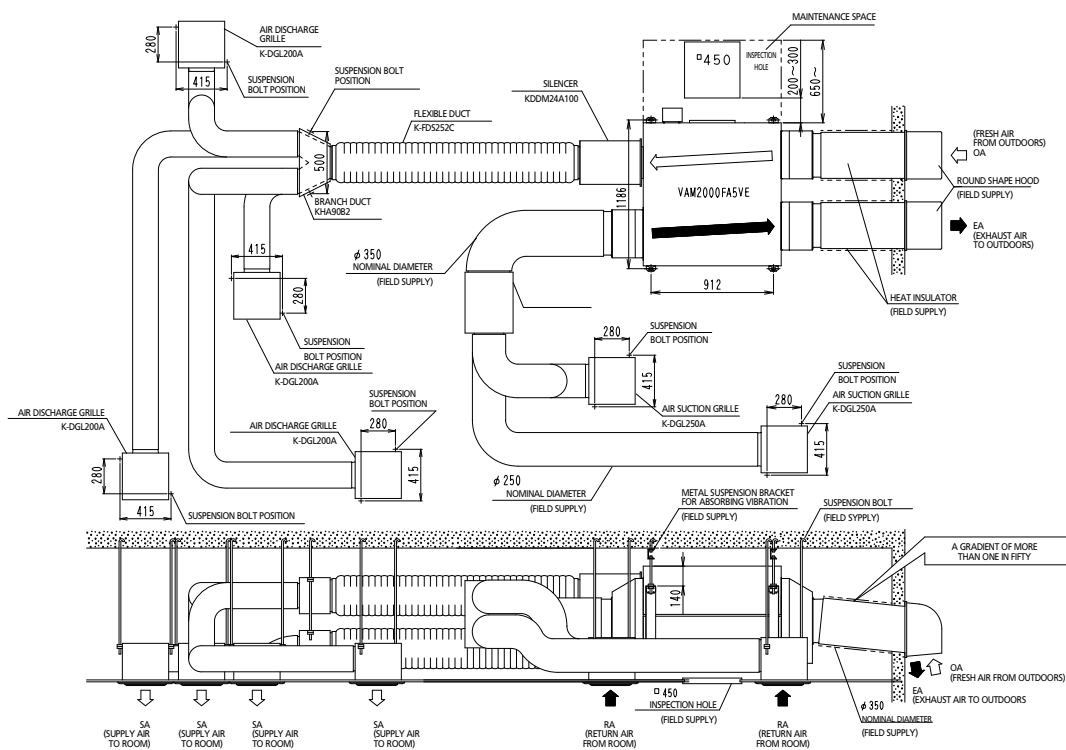
3D036790

VAM1500FA5VE



3D036791

VAM2000FA5VE

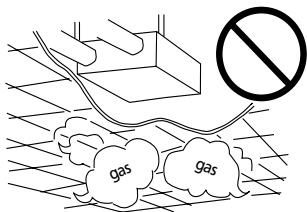


3D020531

4.5 Cautions in installation

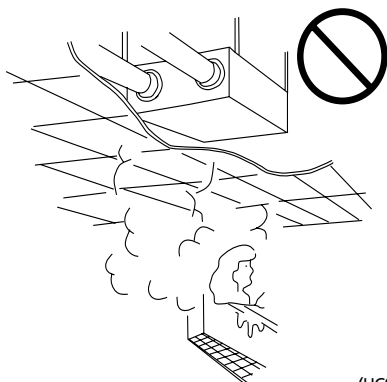
Do not use a HRV or an air suction / discharge grille in the following places.

- Place such as machinery plant and chemical plant where gas, which contains noxious gas or corrosive components of materials such as acid, alkali, organic solvent and paint, is generated. Place where combustible gas leakage is likely. Such gas can cause fire.



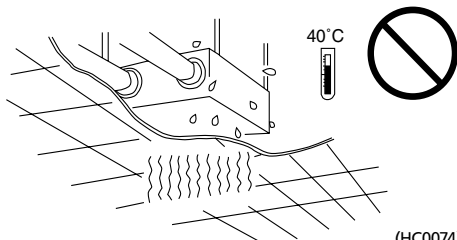
(HC0072)

- Place such as bathroom subjected to moisture. Electric leak or electric shock and other failure can be caused.



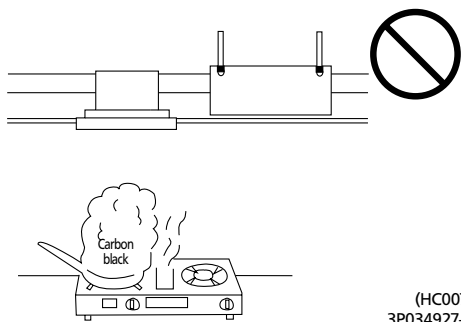
(HC0073)

- Place subjected to high temperature or direct flame. Avoid a place where the temperature near the HRV unit and the air suction / discharge air grille exceeds 40°C. If the unit is used at high temperature, deformed air filter and heat exchange element or burned motor result.



(HC0074)

- Place subjected to much carbon black. Carbon black attaches to air filter and heat exchange element, marking them unable to use.

(HC0075)
3P034927-2B

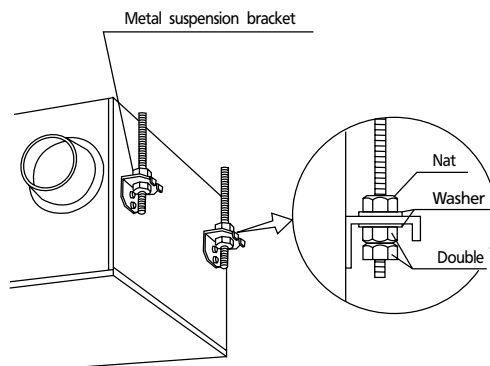
4.6 Installation

4.6.1 Installation of HRV units

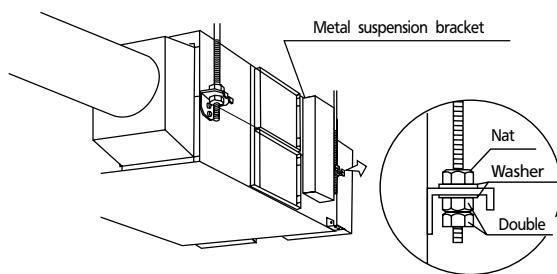
- Install the anchor bolt (M10 to 12) in advance. Pass the ceiling suspension fixture through the anchor bolt and secure the anchor bolt with washer and nut. (Before installation, check for foreign objects such as vinyl and paper remaining inside the fan housing.)
- The ceiling suspension fixture is fitted on top of the standard unit. If the anchor bolt is long, install it on the bottom of the unit. (Be sure to screw in the removed mounting screw on top to prevent air leakage.)

Install the duct caution name plate properly on the indoor side (SA-RA) and outdoor side (EA-OA).

VAM150FAVE, VAM250FAVE, VAM350FAVE
VAM500FAVE, VAM650FAVE, VAM800FA5VE,
VAM1000FA5VE



VAM1500FA5VE, VAM2000FA5VE



(HC0076)

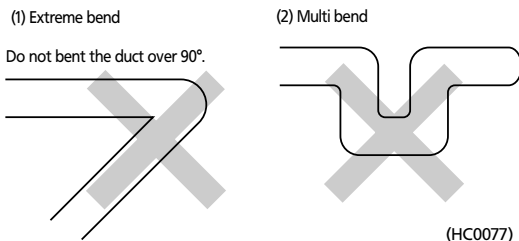
Note:

Remove the clamp (at two locations) for securing the unit in transit, if it prevents installation work. (Be sure to screw in the removed mounting screw on the body side to prevent air leakage.)

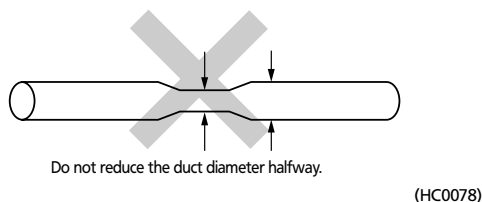
4.7 Duct Work

4.7.1 Caution

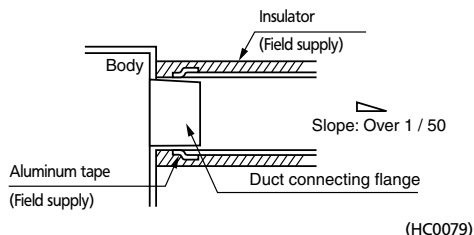
- Do not install ducts as shown below.



- (3) Reduce the diameter of the duct to be connected.



- To prevent air leakage, wind aluminum tape round the section after the duct connecting flange and the duct are connected.
- Install the opening of the indoor air intake as far as from the opening of the exhaust suction.
- Use the duct applicable to the model of unit used (Refer to the outline drawing.)
- Install the two outdoor ducts with down slope (slope of 1 / 50 or more) to prevent entry of rain water. Also, provide insulation for both ducts to prevent dew formation. (Material: Glass wool of 25 mm thick)



- If the level of temperature and humidity inside the ceiling is always high install a ventilation equipment inside the ceiling.
- Insulate the duct and the wall electrically when a metal duct is to be penetrated through the metal lattice and wire lattice or metal lining of a wooden structure wall.

4.7.2 Going through the external wall

1. Hole diameter

Duct dia. + 50 or 75

(I.D. depends on the core drill specification)

<e.g.>

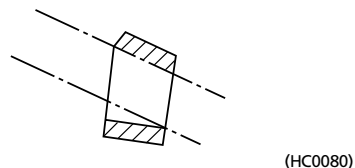
Duct diameter	Hole diameter
$\phi 100 + 50$	$\phi 150$
$\phi 150 + 50$	$\phi 200$

2. Drilling the hole

Ideally it is better to grade in the same procedure as refrigerant piping.

In the case of a square duct

Grade a wood frame of a duct stay.



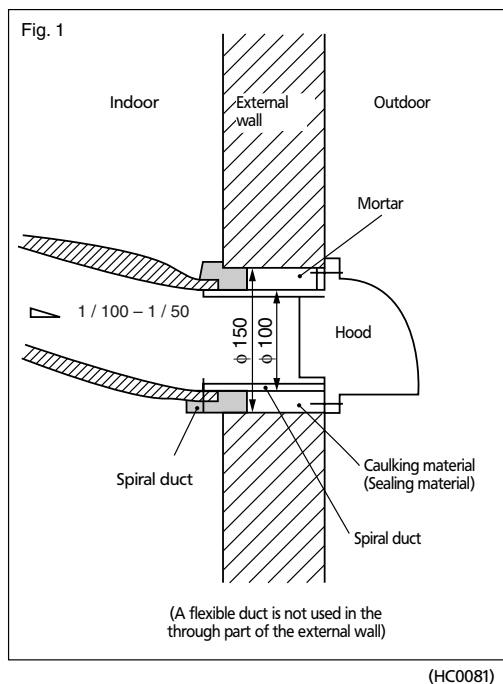
In the case of a round duct

Drill a hole horizontally because the hole cannot be made with the tool graded.

3. Preventing wind and rain from entering

Most of a space between the duct and the external wall is protected by mortar. Coated wall is filled with a caulking material. (See fig. 1)

Image picture



4. How about the building which has already been built?

Same as the newly-built building.

- Only hole diameter 100 is instructed in a drawing by a drawing company, so a detailed work is executed by the judgement of an installation company.

4.8 Electrical wiring procedure

▲ Before obtaining access to terminal devices, all power supply circuits must be interrupted.

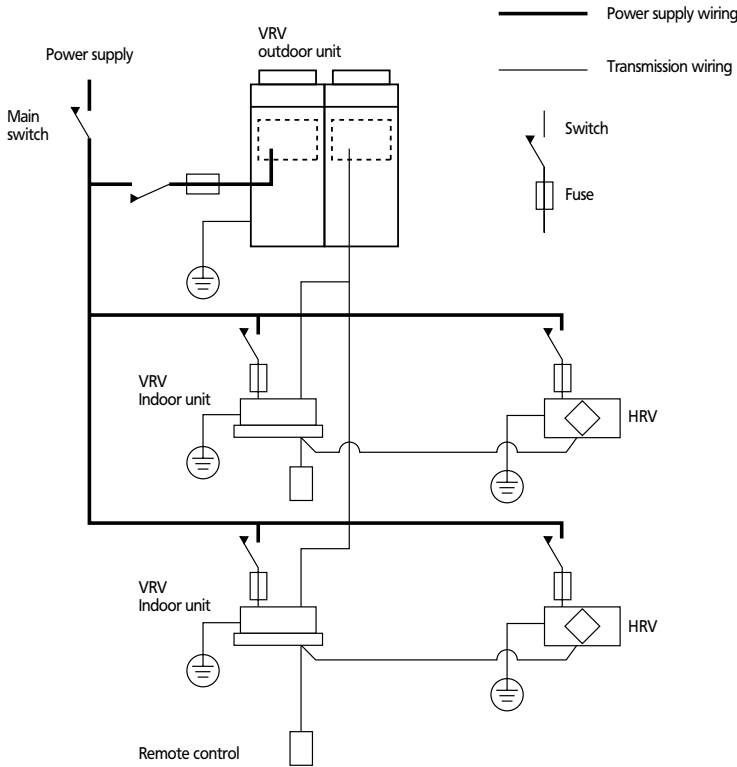
Connection of Wiring

- Connect the wires in accordance with the diagram of each system.
- All wiring must be performed by an authorized electrician.
- All field supplied parts and materials and electric works must conform to local codes.
- Use copper wire only.

Connection of wiring

- A circuit breaker capable of shutting down supply to the entire system must be installed.
- A single switch can be used to supply power to units on the same system. However, branch switches and branch circuit breakers must be selected carefully.
- Fit the power supply wiring of each unit with a switch and fuse as shown in the drawing.
- Be sure to give the electric grounding (earth) connection.

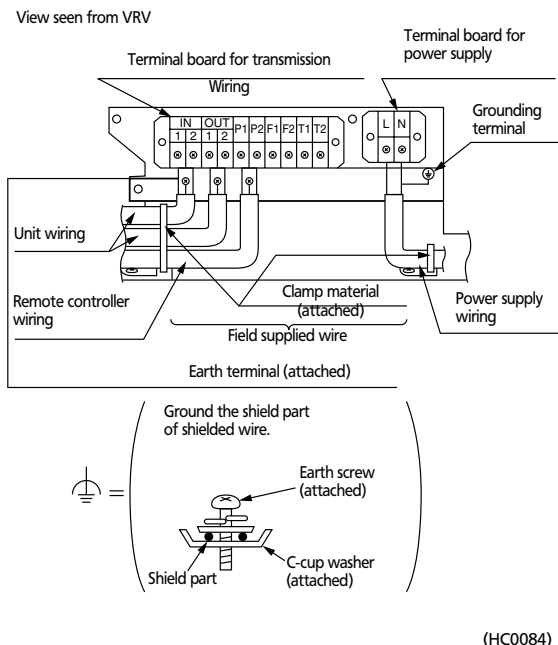
Complete System Example



(HC0082)

Model	Type	Power supply wiring			Transmission wiring	
		Field supplied fuses	Wire	Size	Wire	Size
VAM150FA	VE	15A	H05VV-U3G	Wire size must comply with local codes.	Shield wire (2 wire)	0.75 ñ 1.25 mm2
VAM250FA						
VAM350FA						
VAM500FA						
VAM650FA						
VAM800FA						
VAM1000FA5						
VAM1500FA5						
VAM2000FA5						

(HC0083)



▲ PRECAUTIONS

1. Do not connect wires of different gauge to the same power supply terminal. Looseness in the connection may cause overheating. When connecting more than one wire to the power supply wiring, use a 2 mm² (φ 1.6) gauge wire.

Same gauge wires



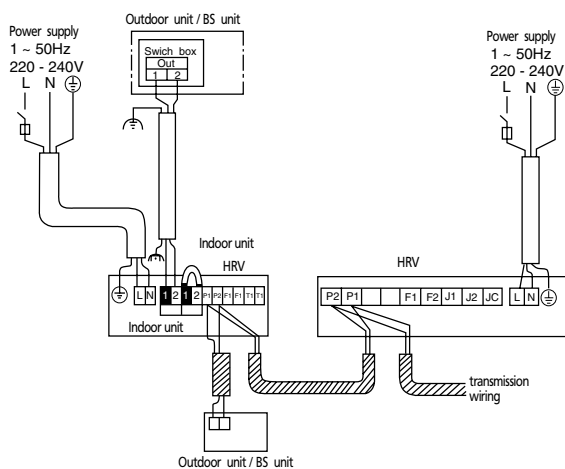
Different gauge wires



2. Keep total current of crossover wiring between indoor units less than 12 A. When using two power wiring of gauge greater than 2 mm² (φ 1.6), branch the line outside the terminal board of the unit in accordance with electrical equipment standards. The branch must be sheathed so as to provide an equal or greater degree of insulation as the power supply wiring itself.
3. Do not connect wires of different gauge to the same grounding terminal. Looseness in the connection may deteriorate protection.
4. Keep the power supply wiring distant from other wires to prevent noise.
5. For remote control wiring, refer to the "INSTALLATION MANUAL OF REMOTE CONTROL".

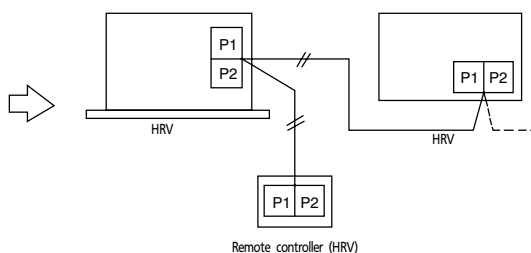
8

Wiring Example



Following items are figured as shown below

— transmission wiring

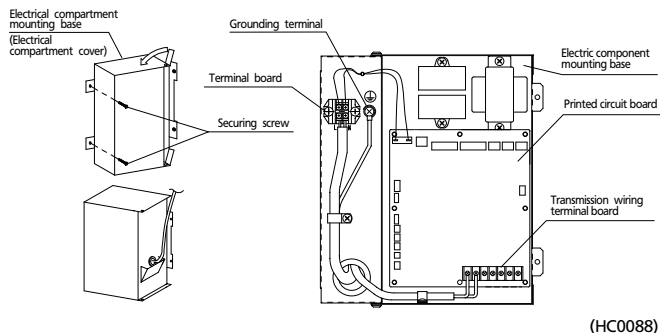


(HC0085)

- All transmission wiring except for the remote control wires is polarized and must match the terminal symbol.
 - Use screened wire in transmission wiring. Ground the shield of the shield wire to "⏏", at the grounding screw, with the C-cup washer.
 - Sheathed wire materials may be used for transmission wiring, but they are not suitable for EMC (Electromagnetic Compatibility) (European Directive).
 - When using sheathed wire, electromagnetic compatibility must conform to Japanese standards stipulated in the Electric Appliance Regulatory Act.
- Transmission wiring need not be grounded when using sheathed wire.

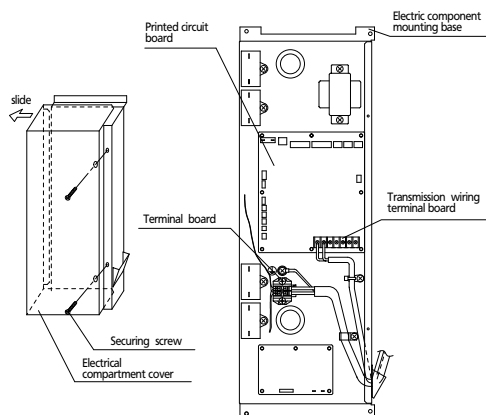
4.8.1 Opening the switch box

VAM150FAVE, VAM250FAVE, VAM350FAVE
VAM500FAVE, VAM650FAVE, VAM800FA5VE, VAM1000FA5VE



(HC0088)

VAM1500FA5VE, VAM2000FA5VE



(HC0089)

▲ Before opening the cover, be sure to turn off the power switches of the main units and other devices connected with the main units.

- Remove the screw securing the cover and open the switch box.
- Secure the power cord control wires with the clamp, as shown above.

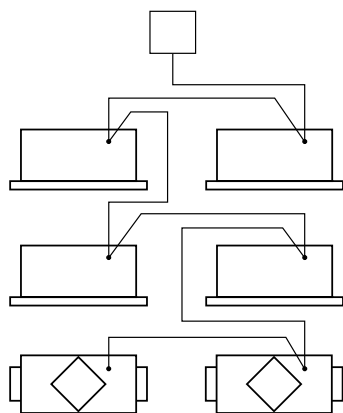
4.8.2 How to install the optional adapter circuit board

1. Open the electrical compartment cover by following the procedure described in the "Opening the switch box" section.
2. Remove the securing screw, and install the adapter circuit board.
3. After the wires are connected, fasten the electrical compartment cover.
(For detail, refer to 6. Optional accessories.)

4.8.3 Wiring system of centralized transmission control wiring

Total length of wiring should not exceed 1000 m.

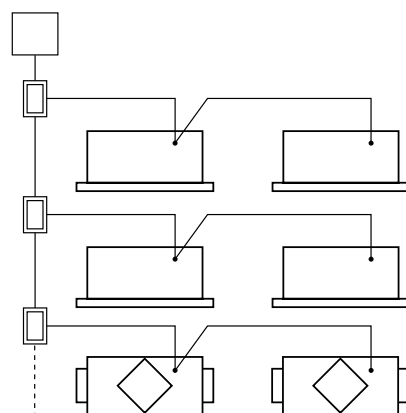
Series wiring



(HC0090)

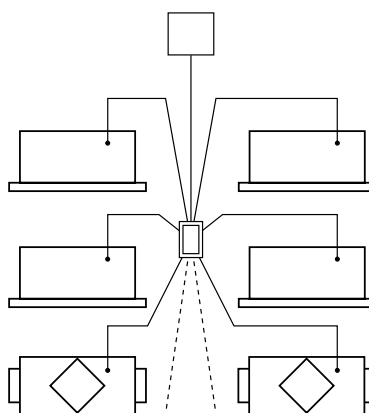
(Can be connected up to 8 branches)

Bus type wiring



(HC0091)

Star type wiring



(HC0092)

(Can be connected up to 8 branches)

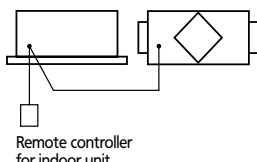
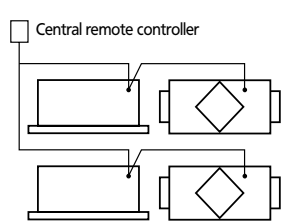
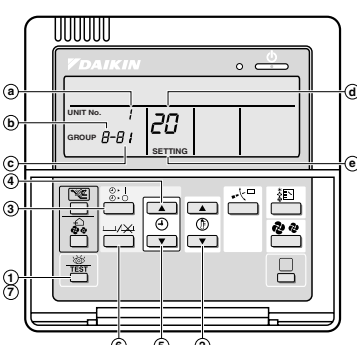
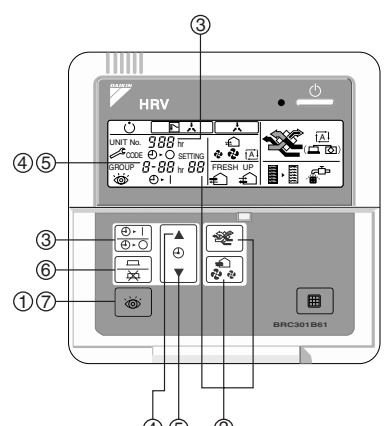
Cautions:

The bus type wiring and the star type wiring cannot be used at the same time.
Do not connect more than 3 wires to the same terminal.
If necessary, use a relay terminal (field supply).

In this technical manual, all the schematic drawings is shown by the series wiring, which do not require relay terminals.

4.9 Initial setting

4.9.1 Initial setting by the remote control for indoor unit

Purpose	Controller	Operating procedure for initial setting
<ul style="list-style-type: none"> Interlocked operation  <p>Remote controller for indoor unit</p> <ul style="list-style-type: none"> When only the centralized controller is used.  <p>Central remote controller</p>	<ul style="list-style-type: none"> Remote control for indoor unit 	<p>The following describes the operating procedure and settings.</p> <ol style="list-style-type: none"> When in the normal mode, press the "TEST" button for a minimum of four seconds, and the FIELD SET MODE is entered. Select the desired MODE NO. with the "MODE" button. During group control, when setting by each indoor unit (mode No. 20, 21, 22 and 23 have been selected), push the "UNIT NO." button and select the INDOOR UNIT NO. to be set. (This operation is unnecessary when setting by group.) Push the "UP" upper button and select FIRST CODE NO. Push the "DOWN" lower button and select the SECOND CODE NO. Push the "SET" button once and the present settings are SET. Push the "TEST" button to return to the NORMAL MODE.
	<ul style="list-style-type: none"> BRC301B61 	<p>The following describes the operating procedure and settings.</p> <ol style="list-style-type: none"> Press the INSPECTION button for more than four seconds to enter the local setting mode when the unit is in the normal mode. Use the VENTILATION MODE, AIR FLOW RATE button to select the desired "mode number". (The code display will blink.) To make setting for individual unit under group control (when mode no. 27, 28 or 29 is selected), press TIMER SETTING ON / OFF button to select the "unit No." for which the settings are to be made. (This process is not necessary when settings are made collectively for the group.) Press the top section of the TIMER button to select the "setting switch No.". Press the lower section of the TIMER button to select the "setting position No.". Press the PROGRAM / CANCEL button once to enter the settings. (The code display will stop blinking and light up.) Press the INSPECTION button to return to normal mode.

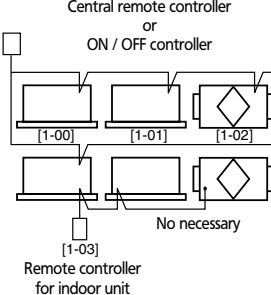
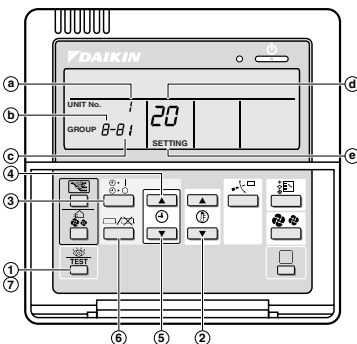
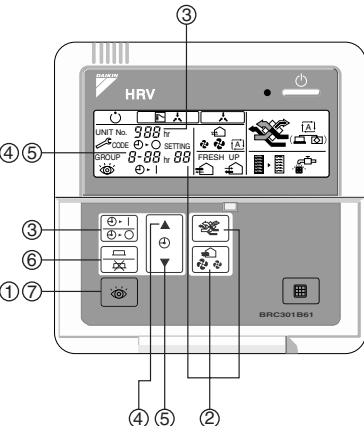
Notes:

When you make several field settings to one (or one group of) indoor unit(s), the item ② to ⑥ of the above setting procedure should be repeated and it should be terminated to the "normal display" by the procedure of item ⑦ as last.

(HC0093)

4.9.2 Setting procedure of group no. for centralized control

The following shows the procedure how to set the group number for the centralized control by the remote control for indoor unit

Purpose	Control	Operating procedure
<p>When you use the central remote controller and the unified On / Off controller, you have to set the each unit connected to the central transmission line.</p> <p><Example></p> 	<p>• Remote control for indoor unit</p> 	<p>The following describes the operating procedure and settings.</p> <ol style="list-style-type: none"> When in the normal mode, press the "TEST" button for a minimum of four seconds, and the FIELD SET MODE is entered. Select the desired MODE NO. with the "MODE" button. During group control, when setting by each indoor unit (mode No. 20, 21, 22 and 23 have been selected), push the "GROUP" button and select the INDOOR UNIT NO. to be set. (This operation is unnecessary when setting by group.) Push the "UP" upper button and select FIRST CODE NO. Push the "DOWN" lower button and select the SECOND CODE NO. Push the "FRESH UP" button once and the present settings are SET. Push the "TEST" button to return to the NORMAL MODE.
	<p>• BRC301B61</p> 	<p>The units in [] do not require the group no. setting for the centralized controller connected to the central transmission line. (Auto-address setting)</p> <ol style="list-style-type: none"> Press the INSPECTION button for more than four seconds. Use the VENTILATION MODE, AIR FLOW RATE to select the mode no. "00". Use the top or lower section of the TIMER button to set the group no. for the centralized controller. (When you use the unified ON / OFF controller, it displays only the group no. selected by the setting switch for zone control.) Press the PROGRAM / CANCEL button to enter the setting group no. shown on the display. Press INSPECTION button to return to normal mode.

Notes:

- Do not duplicate the group number.
- Be sure to supply the power to the remote controller side.
- (It cannot be set without the power supply.)

(HC0094)

4.9.3 Initial setting for "Central zone control"

When HRV unit is connected to the central transmission line (terminal connector no. (F1) and (F2)), it is necessary to make an initial setting of "collective zone interlock" by the remote control for indoor unit. (Factory set "OFF".)
Make initial setting as follows.

Combination with central control

Central control ○: Possible ×: Impossible

Central control				Operation · function		Initial setting for "central zone control"
Multi-function centralized control	Unified ON / OFF control	Schedule timer	Adapter PCB for remote control	Interlocked operation (Automatic selection)	Independent operation / stop (By central control)	
1 unit	—	—	—	○	×	ON
				×	×	OFF
1 unit	1 – 4 units	—	—	○	×	ON
				×	○	OFF
1 unit	—	1 unit	—	○	×	ON
				×	×	OFF
1 unit	1 – 4 units	1 unit	—	○	×	ON
				×	○	OFF
—	1 – 4 units	—	—	It is impossible to operate.		ON
				×	○	OFF
—	—	1 unit	—	It is impossible to operate.		ON
				×	○	OFF
—	—	1 unit	—	○	×	ON
				×	X (Only collective operation)	OFF
—	—	—	1 unit	○	×	ON
				×	X (Only collective operation)	OFF

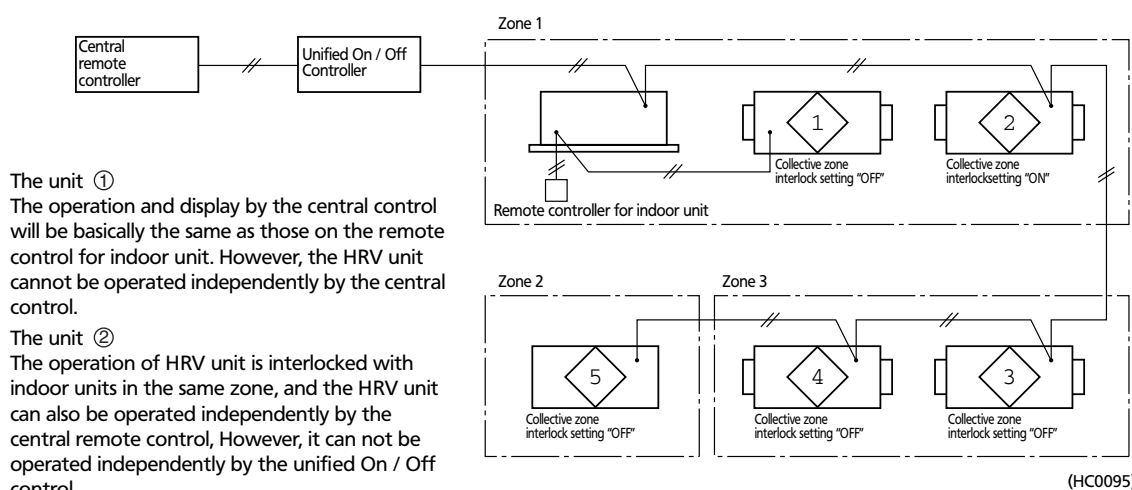
Cautions

When you make an initial setting "ON", the interlocked operation has a priority, and it is impossible to operate / stop HRV unit independently by the central remote control or the unified On / Off control. If there is no indoor unit for interlocked operation in the same zone, make an initial setting "OFF".

When you make an initial setting "OFF", the independent operation of HRV unit has a priority, and the interlocked operation is not possible.

When the HRV unit is operated independently by the central control, the HRV unit will not operate until the preset time elapses if the precool / preheat time setting is set. Therefore, please do not set the precool / preheat time setting in normal operation.

Example of system



The unit ①

The operation and display by the central control will be basically the same as those on the remote control for indoor unit. However, the HRV unit cannot be operated independently by the central control.

The unit ②

The operation of HRV unit is interlocked with indoor units in the same zone, and the HRV unit can also be operated independently by the central remote control. However, it can not be operated independently by the unified On / Off control.

The unit ⑤

When the central remote control is used, each unit will be one zone, unless you set the zone for plural units.

3

Heat Recovery Ventilation



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.

VRV products are not within the scope of the Eurovent certification programme.

Specifications are subject to change without prior notice

DAIKIN EUROPE N.V.

Zandvoordestraat 300
B-8400 Ostend - Belgium
Internet: <http://www.daikineurope.com>