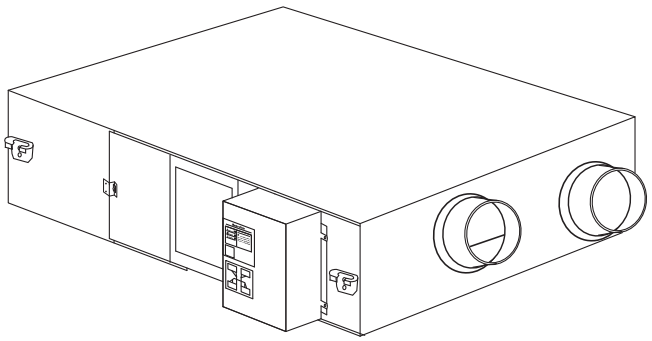
Installer and user reference guide

Heat reclaim ventilation unit



VAM350J7VEB
VAM500J7VEB
VAM650J7VEB
VAM800J7VEB
VAM1000J7VEB
VAM1500J7VEB
VAM2000J7VEB

Installer and user reference guide
Heat reclaim ventilation unit

English

Table of contents

1 General safety precautions

1.1 About the documentation

- The original documentation is written in English. All other languages are translations.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual and the installer reference guide MUST be performed by an authorised installer.

1.1.1 Meaning of warnings and symbols

DANGER

Indicates a situation that results in death or serious injury.

DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.

DANGER: RISK OF BURNING

Indicates a situation that could result in burning because of extreme hot or cold temperatures.

DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.

WARNING

Indicates a situation that could result in death or serious injury.

WARNING: FLAMMABLE MATERIAL

CAUTION

Indicates a situation that could result in minor or moderate injury.

NOTICE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

Symbol	Explanation
	Before installation, read the installation and operation manual, and the wiring instruction sheet.
	Before performing maintenance and service tasks, read the service manual.
	For more information, see the installer and user reference guide.

1.2 For the user

- If you are NOT sure how to operate the unit, contact your installer.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall NOT play with the appliance. Cleaning and user maintenance shall NOT be made by children without supervision.

WARNING

To prevent electric shocks or fire:

- Do NOT rinse the unit.
- Do NOT operate the unit with wet hands.
- Do NOT place any objects containing water on the unit.

NOTICE

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

- Units are marked with the following symbol:

This means that electrical and electronic products may NOT be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts must be done by an authorized installer and must comply with applicable legislation.
Units must be treated at a specialized treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

- Batteries are marked with the following symbol:

This means that the batteries may NOT be mixed with unsorted household waste. If a chemical symbol is printed beneath the symbol, this chemical symbol means that the battery contains a heavy metal above a certain concentration.
Possible chemical symbols are: Pb: lead (>0.004%).
Waste batteries must be treated at a specialized treatment facility for reuse. By ensuring waste batteries are disposed of correctly, you will help to prevent potential negative consequences for the environment and human health.

1.3 For the installer

1.3.1 General

If you are NOT sure how to install or operate the unit, contact your dealer.

NOTICE

Improper installation or attachment of equipment or accessories could result in electric shock, short-circuit, leaks, fire or other damage to the equipment. Only use accessories, optional equipment and spare parts made or approved by Daikin.

WARNING

Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).

CAUTION

Wear adequate personal protective equipment (protective gloves, safety glasses,…) when installing, maintaining or servicing the system.

WARNING

Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. Possible risk: suffocation.

DANGER: RISK OF BURNING

- Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you must touch it, wear protective gloves.
- Do NOT touch any accidental leaking refrigerant.

WARNING

Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.

CAUTION

Do NOT touch the air inlet or aluminium fins of the unit.

NOTICE

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

NOTICE

Works executed on the outdoor unit are best done under dry weather conditions to avoid water ingress.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least: information on maintenance, repair work, results of tests, stand-by periods,…

Also, at least, following information MUST be provided at an accessible place at the product:

- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN378 provides the necessary guidance for this logbook.

1.3.2 Installation site

- Provide sufficient space around the unit for servicing and air circulation.
- Make sure the installation site withstands the weight and vibration of the unit.
- Make sure the area is well ventilated. Do NOT block any ventilation openings.
- Make sure the unit is level.

Do NOT install the unit in the following places:

- In potentially explosive atmospheres.
- In places where there is machinery that emits electromagnetic waves. Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
- In places where there is a risk of fire due to the leakage of flammable gases (example: thinner or gasoline), carbon fibre, ignitable dust.
- In places where corrosive gas (example: sulphurous acid gas) is produced. Corrosion of copper pipes or soldered parts may cause the refrigerant to leak.

Instructions for equipment using R32 refrigerant

If applicable.

WARNING

- Do NOT pierce or burn.
- Do NOT use means to accelerate the defrosting process or to clean the equipment, other than those recommended by the manufacturer.
- Be aware that R32 refrigerant does NOT contain an odour.

WARNING

The appliance shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) and have a room size as specified below.

NOTICE

- Do NOT re-use joints which have been used already.
- Joints made in installation between parts of refrigerant system shall be accessible for maintenance purposes.

WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation (for example national gas regulation) and are executed only by authorised persons.

Installation space requirements

NOTICE

- Pipework shall be protected from physical damage.
- Installation of pipework shall be kept to a minimum.

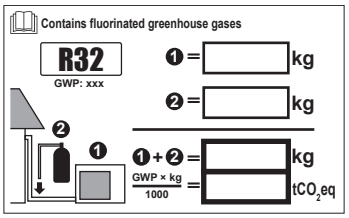
WARNING

If appliances contain R32 refrigerant, the floor area of the room in which the appliances are installed, operated and stored MUST be larger than the minimum floor area defined in table below A (m^2). This applies to:

- Indoor units **without** a refrigerant leakage sensor; in case of indoor units **with** refrigerant leakage sensor, consult the installation manual
- Outdoor units installed or stored indoors (e.g. winter garden, garage, machinery room)
- Pipework in unventilated spaces

To determine the minimum floor area

1 Determine the total refrigerant charge in the system (= factory refrigerant charge ❶ + ❷ additional refrigerant amount charged).

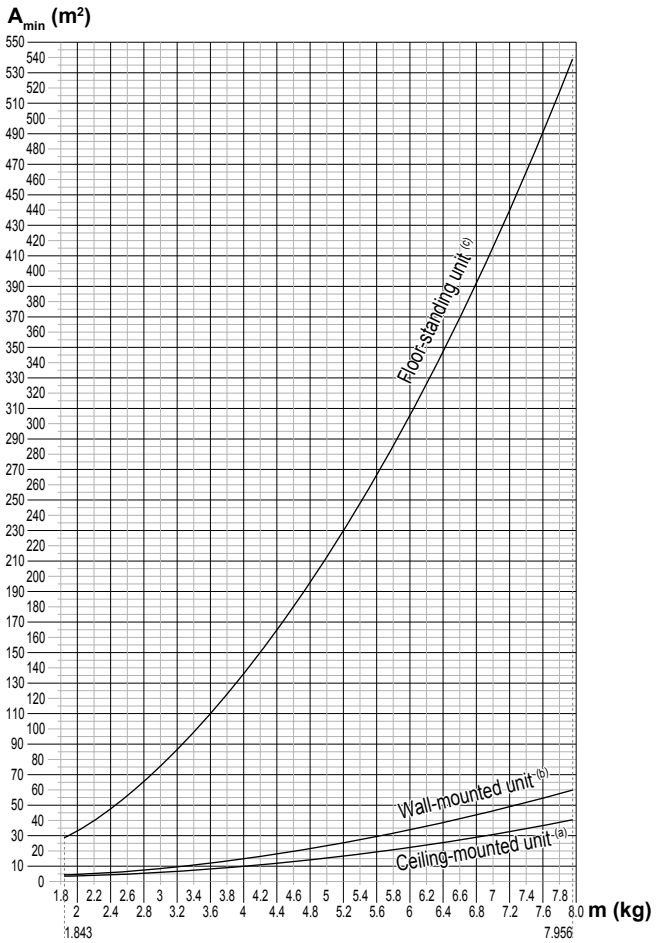


2 Determine which graph or table to use.

- For indoor units: Is the unit ceiling-mounted, wall-mounted or floor-standing?
- For outdoor units installed or stored indoors, and field piping in unventilated spaces, this depends on the installation height:

If the installation height is…	Then use the graph or table for…
<1.8 m	Floor-standing units
1.8≤x<2.2 m	Wall-mounted units
≥2.2 m	Ceiling-mounted units

3 Use the graph or table to determine the minimum floor area.



Ceiling-mounted unit(a)		Wall-mounted unit(b)		Floor-standing unit(c)	
m (kg)	A_{min} (m^2)	m (kg)	A_{min} (m^2)	m (kg)	A_{min} (m^2)
≤1.842	—	≤1.842	—	≤1.842	—
1.843	3.64	1.843	4.45	1.843	28.9
2.0	3.95	2.0	4.83	2.0	34.0
2.2	4.34	2.2	5.31	2.2	41.2
2.4	4.74	2.4	5.79	2.4	49.0
2.6	5.13	2.6	6.39	2.6	57.5
2.8	5.53	2.8	7.41	2.8	66.7
3.0	5.92	3.0	8.51	3.0	76.6
3.2	6.48	3.2	9.68	3.2	87.2
3.4	7.32	3.4	10.9	3.4	98.4
3.6	8.20	3.6	12.3	3.6	110
3.8	9.14	3.8	13.7	3.8	123
4.0	10.1	4.0	15.1	4.0	136
4.2	11.2	4.2	16.7	4.2	150
4.4	12.3	4.4	18.3	4.4	165
4.6	13.4	4.6	20.0	4.6	180
4.8	14.6	4.8	21.8	4.8	196
5.0	15.8	5.0	23.6	5.0	213
5.2	17.1	5.2	25.6	5.2	230
5.4	18.5	5.4	27.6	5.4	248
5.6	19.9	5.6	29.7	5.6	267
5.8	21.3	5.8	31.8	5.8	286
6.0	22.8	6.0	34.0	6.0	306
6.2	24.3	6.2	36.4	6.2	327
6.4	25.9	6.4	38.7	6.4	349
6.6	27.6	6.6	41.2	6.6	371
6.8	29.3	6.8	43.7	6.8	394
7.0	31.0	7.0	46.3	7.0	417
7.2	32.8	7.2	49.0	7.2	441
7.4	34.7	7.4	51.8	7.4	466
7.6	36.6	7.6	54.6	7.6	492
7.8	38.5	7.8	57.5	7.8	518
7.956	40.1	7.956	59.9	7.956	539

m Total refrigerant charge in the system
A_{min} Minimum floor area
(a) Ceiling-mounted unit (= Ceiling-mounted unit)
(b) Wall-mounted unit (= Wall-mounted unit)
(c) Floor-standing unit (= Floor-standing unit)

1.3.3 Refrigerant

If applicable. See the installation manual or installer reference guide of your application for more information.

NOTICE

Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.

NOTICE

Make sure the field piping and connections are NOT subjected to stress.

WARNING

During tests, NEVER pressurize the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).

WARNING

Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.
- Toxic gas may be produced if refrigerant gas comes into contact with fire.

DANGER: RISK OF EXPLOSION

Pump down – Refrigerant leakage. If you want to pump down the system, and there is a leak in the refrigerant circuit:

- Do NOT use the unit's automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit. **Possible consequence:** Self-combustion and explosion of the compressor because of air going into the operating compressor.
- Use a separate recovery system so that the unit's compressor does NOT have to operate.

WARNING

ALWAYS recover the refrigerant. Do NOT release them directly into the environment. Use a vacuum pump to evacuate the installation.

NOTICE

After all the piping has been connected, make sure there is no gas leak. Use nitrogen to perform a gas leak detection.

NOTICE

- To avoid compressor breakdown, do NOT charge more than the specified amount of refrigerant.
- When the refrigerant system is to be opened, refrigerant MUST be treated according to the applicable legislation.

WARNING

Make sure there is no oxygen in the system. Refrigerant may only be charged after performing the leak test and the vacuum drying.

- In case recharge is required, see the nameplate of the unit. It states the type of refrigerant and necessary amount.
- The unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Only use tools exclusively for the refrigerant type used in the system, this to ensure pressure resistance and prevent foreign materials from entering into the system.
- Charge the liquid refrigerant as follows:

If	Then
A siphon tube is present (i.e., the cylinder is marked with "Liquid filling siphon attached")	Charge with the cylinder upright. 
A siphon tube is NOT present	Charge with the cylinder upside down. 

- Open refrigerant cylinders slowly.
- Charge the refrigerant in liquid form. Adding it in gas form may prevent normal operation.

CAUTION

When the refrigerant charging procedure is done or when pausing, close the valve of the refrigerant tank immediately. If the valve is NOT closed immediately, remaining pressure might charge additional refrigerant. **Possible consequence:** Incorrect refrigerant amount.

1.3.4 Brine

If applicable. See the installation manual or installer reference guide of your application for more information.

WARNING

The selection of the brine MUST be in accordance with the applicable legislation.

WARNING

Take sufficient precautions in case of brine leakage. If brine leaks, ventilate the area immediately and contact your local dealer.

WARNING

The ambient temperature inside the unit can get much higher than that of the room, e.g. 70°C. In case of a brine leak, hot parts inside the unit can create a hazardous situation.

WARNING

The use and installation of the application MUST comply with the safety and environmental precautions specified in the applicable legislation.

1.3.5 Water

If applicable. See the installation manual or installer reference guide of your application for more information.

NOTICE

Make sure water quality complies with EU directive 98/83 EC.

1.3.6 Electrical

DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Disconnect the power supply for more than 1 minute, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.

WARNING

If NOT factory installed, a main switch or other means for disconnection, having a contact separation in all poles providing full disconnection under overvoltage category III condition, MUST be installed in the fixed wiring.

WARNING

- ONLY use copper wires.
- Make sure the field wiring complies with the applicable legislation.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electric shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

CAUTION

When connecting the power supply, the earth connection must be made before the current-carrying connections are established. When disconnecting the power supply, the current-carrying connections must be separated before the earth connection is. The length of the conductors between the power supply stress relief and the terminal block itself must be as such that the current-carrying wires are tautened before the earth wire is in case the power supply is pulled loose from the stress relief.

NOTICE

Precautions when laying power wiring:

- Do NOT connect wiring of different thicknesses to the power terminal block (slack in the power wiring may cause abnormal heat).
- When connecting wiring which is the same thickness, do as shown in the figure above.
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will damage the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.

WARNING

- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.

NOTICE

Only applicable if the power supply is three-phase, and the compressor has an ON/OFF starting method.

If there exists the possibility of reversed phase after a momentary black out and the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase can break the compressor and other parts.

2 About the documentation

2.1 About this document

INFORMATION

Make sure that the user has the printed documentation and ask him/her to keep it for future reference.

Target audience

Authorised installers + end users

INFORMATION

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

Documentation set

This document is part of a documentation set. The complete set consists of:

- **General safety precautions:**
  - Safety instructions that you MUST read before installing
  - Format: Paper (in the accessory bag of the heat reclaim ventilation unit)
- **Heat reclaim ventilation unit installation and operation manual:**
  - Installation and operation instructions
  - Format: Paper (in the accessory bag of the heat reclaim ventilation unit)
- **Installer and user reference guide:**
  - Preparation of the installation, good practices, reference data,…
  - Detailed step-by-step instructions and background information for basic and advanced usage
  - Format: Digital files on http://www.daikineurope.com/support-and-manuals/product-information/

Latest revisions of the supplied documentation may be available on the regional Daikin website or via your dealer.

The original documentation is written in English. All other languages are translations.

Technical engineering data

- A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible).
- The **full set** of latest technical data is available on the Daikin extranet (authentication required).

For the installer

3 About the box

3.1 Overview: About the box

This chapter describes what you have to do after the box with the heat reclaim ventilation unit is delivered on-site.

Keep the following in mind:

- At delivery, the unit MUST be checked for damage. Any damage MUST be reported immediately to the claims agent of the carrier.
- Bring the packed unit as close as possible to its final installation position to prevent damage during transport.
- When handling the unit, take into account the following:

  Fragile, handle the unit with care.

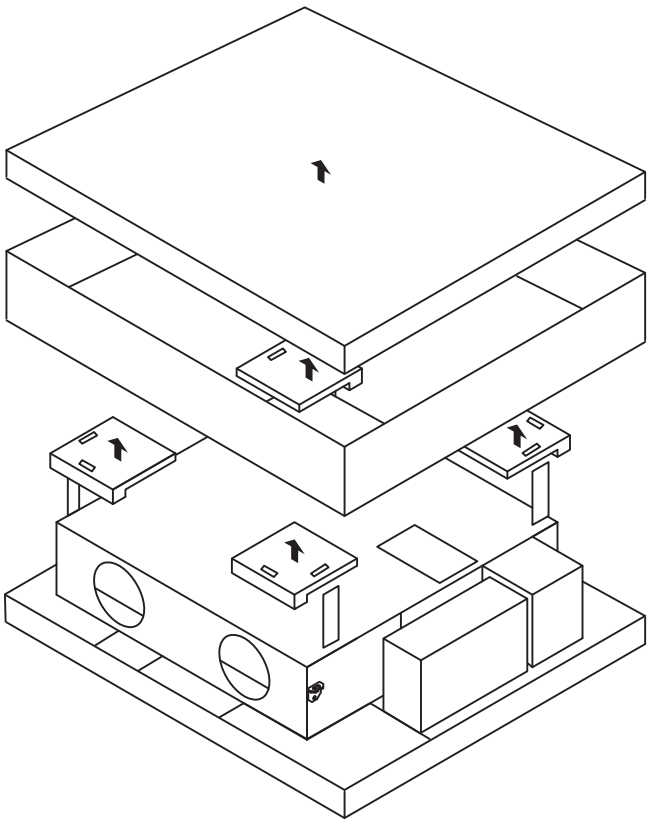
  Keep the unit upright in order to avoid damage.

- Prepare the path along which you want to bring the unit inside in advance.

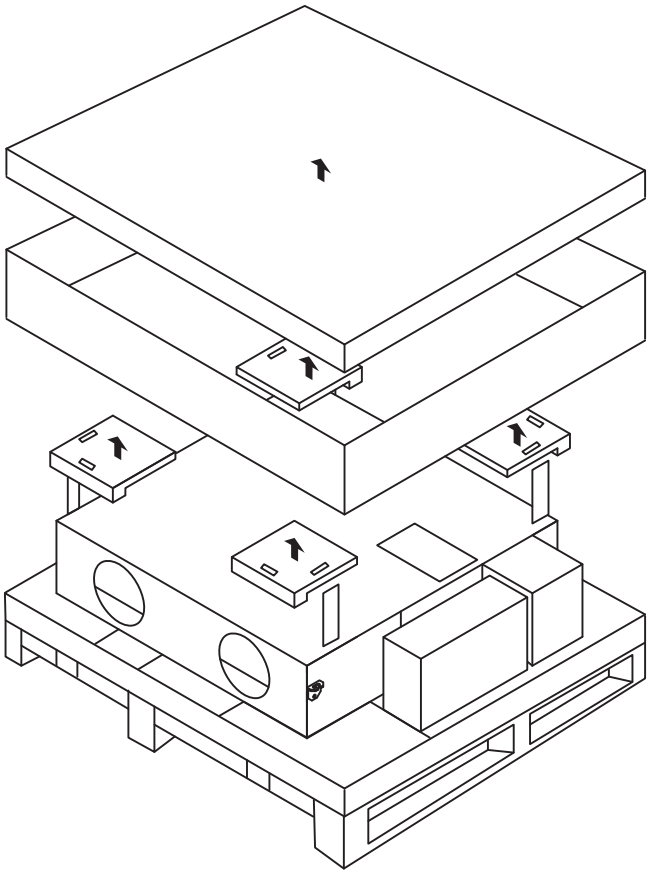
3.2 Heat reclaim ventilation unit

3.2.1 To unpack the heat reclaim ventilation unit

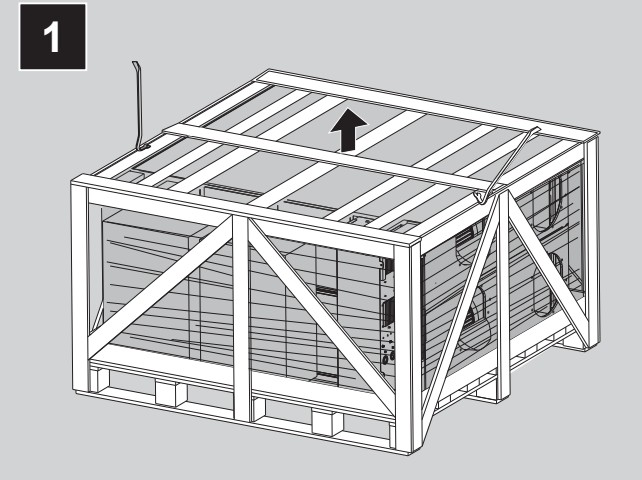
Models 350+500

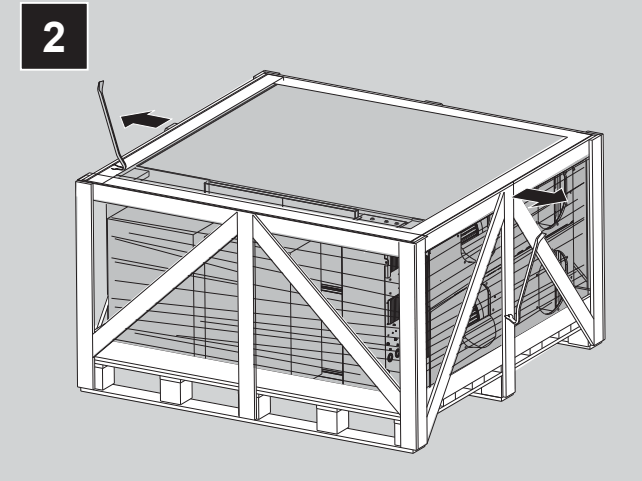


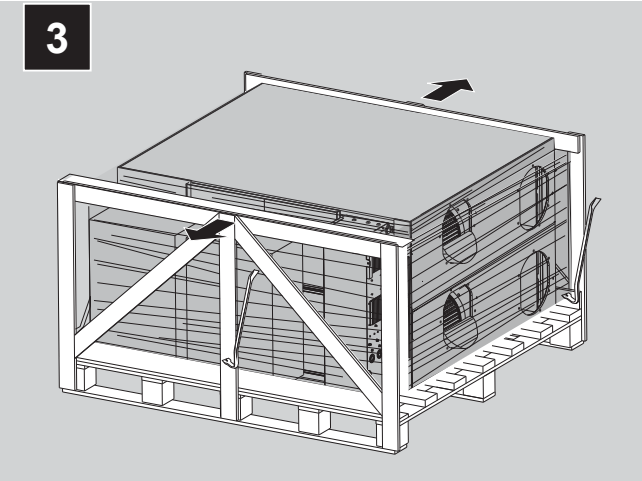
Models 650~1000



Models 1500+2000

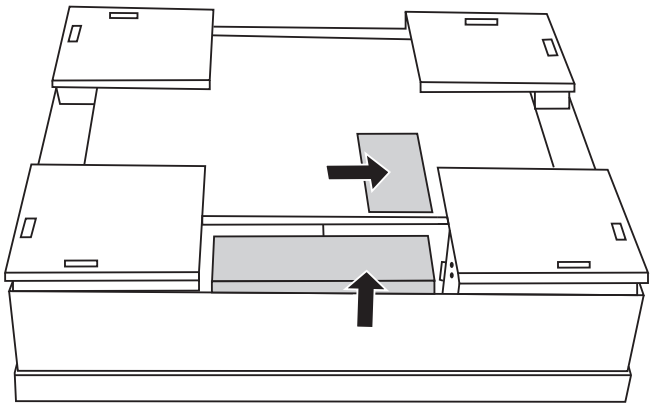




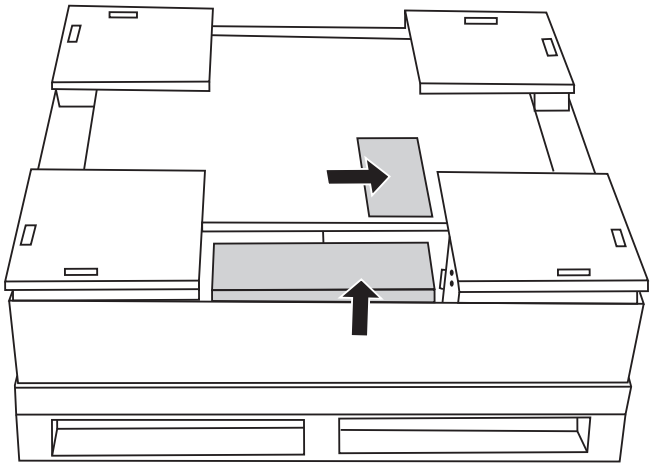


3.2.2 To remove the accessories

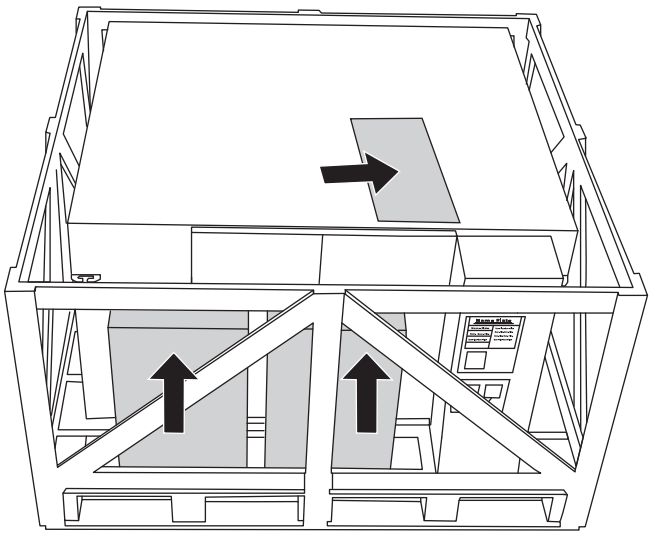
Models 350+500

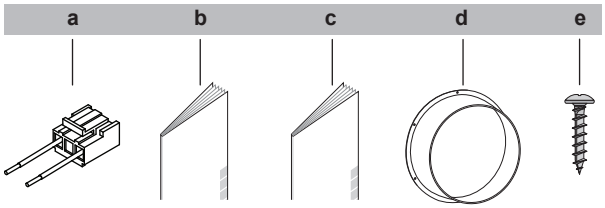


Models 650~1000



Models 1500+2000





a Connector for additional external damper
b General safety precautions
c Installation and operation manual
d Duct joints (models 350~1000 4×,models 1500+2000 8×)

e Screws (models 350+500 16×, models 650~1000 24×, models 1500+2000 48×)

3.2.3 To handle the heat reclaim ventilation unit

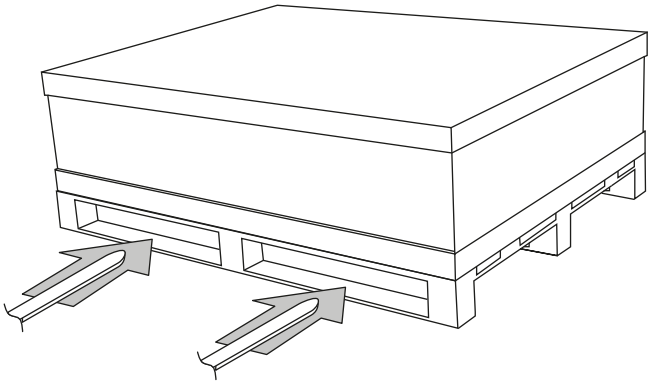
NOTICE

When removing the heat reclaim ventilation unit from the packaging, do NOT place the suction or discharge side of the unit on the floor. **Possible consequence:** Deformation of the suction or discharge openings and damaged expanded polystyrene parts of the unit.

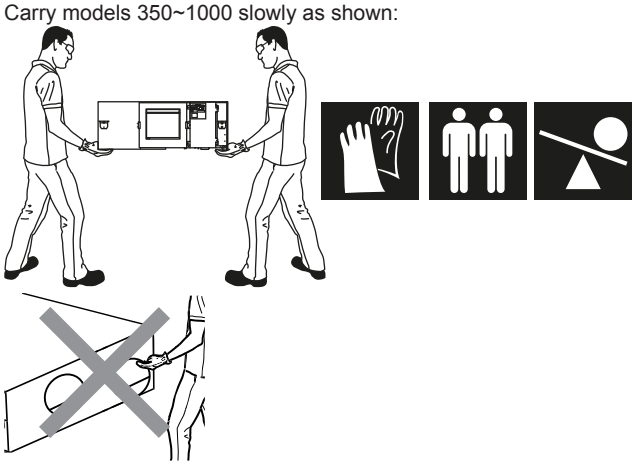
CAUTION

To avoid injury, do NOT touch the air inlet, the air outlet, or the fans of the unit.

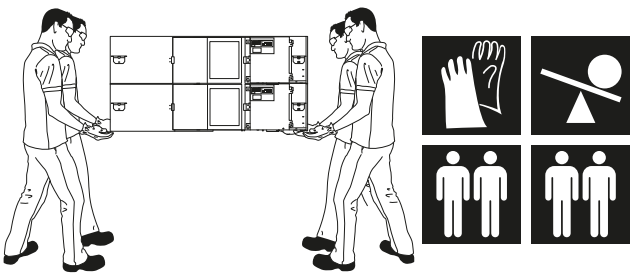
- **With packaging.**
  In case of models 350+500, do NOT use slings or a forklift.
  In case of models 650~2000, use a forklift.



- **Without packaging.**
  Carry models 350~1000 slowly as shown:



Carry models 1500+2000 slowly as shown:



4 About the units and options

4.1 Overview: About the units and options

This chapter contains information about:

- Identifying the unit
- Combining the unit with options

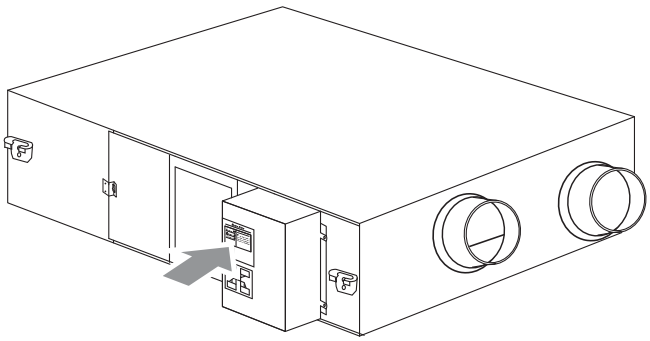
4.2 Identification

NOTICE

When installing or servicing several units at the same time, make sure NOT to switch the service panels between different models.

4.2.1 Identification label: Heat reclaim ventilation unit

Location



Model identification

Example: V A M 500 J 7 VE B [*]

Code	Explanation
V	Ventilation
A	Air
M	Mounted type
500	Nominal air flow rate (m³/h)
J	Major design category (Design category for EC application)
7	Minor design category
VE	Power supply: 1~, 50 Hz 220~240 V Power supply: 1~, 60 Hz 220 V
B	European market
[*]	Minor model change indication

4.3 About the heat reclaim ventilation unit

The heat reclaim ventilation unit is intended for indoor installation.

NOTICE

ALWAYS use the air filters. If the air filters are NOT used, the heat exchange elements can get clogged, possibly causing poor performance and subsequent failure.

Operation range	Temperature	–10°C DB~46°C DB
Outdoor air + room air	Relative humidity	≤80%
Operation range	Temperature	0°C DB~40°C DB
Unit location	Relative humidity	≤80%

It is possible that, due to condensation, the paper heat exchanger deteriorates when the unit operates in conditions with high indoor humidity combined with low outdoor temperature. If such combined conditions occur for an extended period of time, the necessary precautions must be taken to prevent condensation. Example: install a preheater to heat up outdoor air.

When the heat reclaim ventilation unit is installed upside down, the minimum allowed outdoor air temperature is 5°C. If this cannot be guaranteed, you MUST install a heater to heat up the outdoor air to 5°C.

4.4 Combining units and options

4.4.1 Possible options for the heat reclaim ventilation unit

Adapter PCB

Options BRP4A50A and KRP2A51.

At temperatures below –10°C, it is mandatory to use an electrical pre-heater. This heater is connected with option PCB BRP4A50A.

CAUTION

If an electrical heater is installed, use non-flammable duct. For safety reasons, be sure to keep a distance of at least 2 m between the heater and the heat reclaim ventilation unit.

When installing any of these options on model 650, prepare the mounting plate (EKMP65VAM).

When installing any of these options on models 1500 or 2000, prepare the mounting plate (EKMPVAM).

When installing option KRP2A51, prepare the installation box (KRP1BA101).

Filter

When. This option may be mandatory. Check the local legislation. It is recommended in places with poor outside air quality.

Where. Install the filter behind the heat exchange element either at the supply air side or at the exhaust air side. Keep the standard filter in place. Remove the standard filter ONLY when installing an option filter both in front of and behind the heat exchange element.

How. For installation instructions, see the installation manual of the filter kit.

Pressure drop over the filter. See the databook for pressure drop curves for each capacity class of unit and each class of filter.

Model	Filter class	350+500	650	800~2000
EKAFVJ50F6	M6	O	—	—
EKAFVJ50F7	F7	O	—	—
EKAFVJ50F8	F8	O	—	—
EKAFVJ65F6	M6	—	O	—
EKAFVJ65F7	F7	—	O	—
EKAFVJ65F8	F8	—	O	—
EKAFVJ100F6	M6	—	—	O
EKAFVJ100F7	F7	—	—	O
EKAFVJ100F8	F8	—	—	O

Plenum (EKPLEN200)

When. The plenum is an option for models 1500+2000. This option can be used to ease the installation of the heat reclaim ventilation unit.

Where. Replace the 2 duct joints of Ø250 mm with the plenum and a duct joint of Ø350 mm.

How. For installation instructions, see the installation manual of the plenum kit.

CO_2 sensor (BRYMA*)

When. The CO_2 sensor is optional. This option can be used to adapt the ventilation rate to the CO_2 concentration.

Where. Install the CO_2 sensor in the heat reclaim ventilation unit. For models 1500+2000, install the CO_2 sensor in the top heat reclaim ventilation unit.

How. For installation instructions, see "8.5.4 About the CO2 sensor" on page 36.

5 Preparation

5.1 Overview: Preparation

This chapter describes what you have to do and know before going on-site.

It contains information about:

- Preparing the installation site
- Preparing the unit
- Preparing the electrical wiring
- Preparing the installation of the ducts

5.2 Preparing the installation site

Do NOT install the unit in places often used as work place. In case of construction works (e.g. grinding works) where a lot of dust is created, the unit MUST be covered.

Choose an installation location with sufficient space for carrying the unit in and out of the site.

Do NOT install a heat reclaim ventilation unit or air suction/discharge grille in the following places:

- Places, such as machinery plants and chemical plants, where noxious gases or corrosive components of materials such as acid, alkali, organic solvent and paint are present.
- Places, such as bathrooms, subject to moisture. Moisture can cause electric shock, electric leakage and other failures.
- Places subject to high temperature or direct flames.
- Places subject to much soot. Soot clings to air filter and heat exchange elements, disabling them.

5.2.1 Installation site requirements for the heat reclaim ventilation unit

INFORMATION

Also read the general installation site requirements. See the "General safety precautions" chapter.

CAUTION

- The appliance is designed to be a built-in appliance. It must NOT be accessible to the general public. Adequate measures have to be taken to prevent access by other than qualified persons.
- Check if the installation location can support the unit's weight. Poor installation is hazardous. It can also cause vibrations or unusual operating noise.
- Provide sufficient service space and inspection holes. Inspection holes are needed for the air filters, the heat exchange elements and the fans.
- Do NOT install the unit so that it is in contact with a ceiling or wall, this may cause vibration.

CAUTION

Appliance NOT accessible to the general public, install it in a secured area, protected from easy access.

This unit is suitable for installation in a commercial and light industrial environment.

For models 800~2000

NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

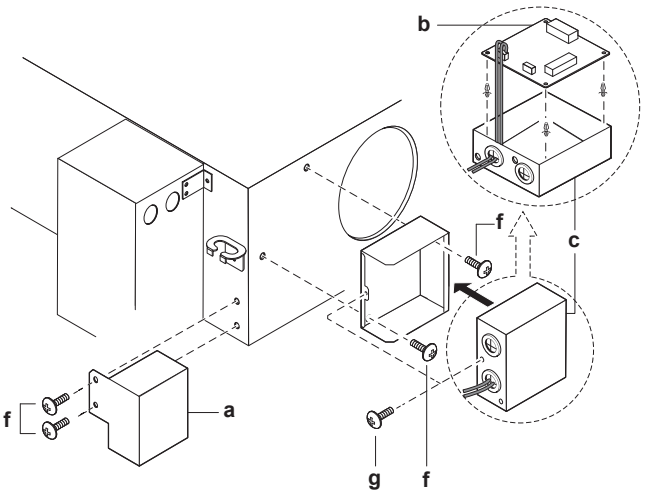
Service space

See "6.1 Service space: Heat reclaim ventilation unit" on page 15.

5.3 Preparing the unit

5.3.1 To install the optional adapter PCB

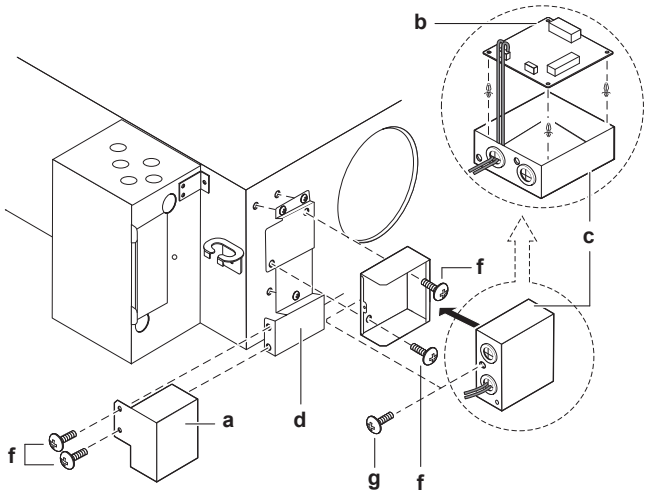
For models 350-500-800-1000



a BRP4A50A (optional accessory)
b KRP2A51 (optional accessory)
c KRP1BA101 (installation box)
f Screw
g Screw (supplied with the installation box)

1 Remove the screws from the unit.
2 Attach the optional adapter PCB (KRP2A51) in the installation box (KRP1BA101).
3 Follow the installation instructions provided with the option kits (BRP4A50A, KRP2A51 and KRP1BA101).
4 Guide the PCB wire through the dedicated holes and attach it as instructed in "6.5.2 Opening the switch box" on page 17.
5 Attach the options to the unit, as shown in the figure.
6 After the wires are connected, fasten the switch box cover.

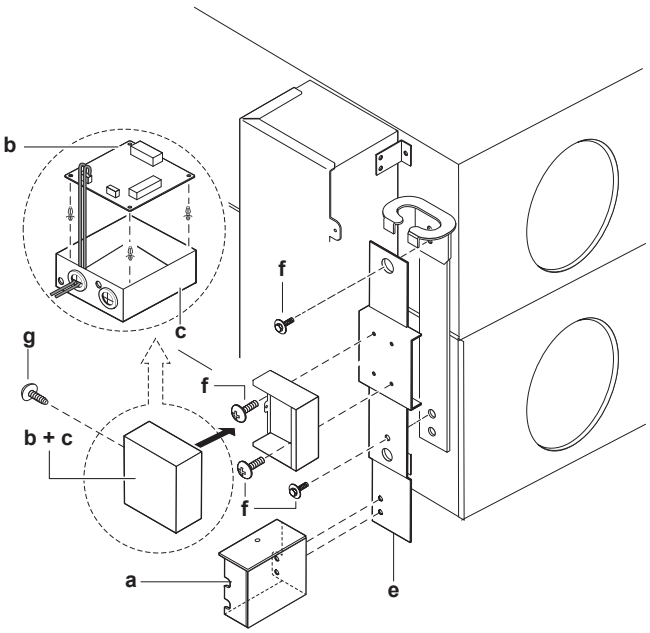
For model 650



a BRP4A50A (optional accessory)
b KRP2A51 (optional accessory)
c KRP1BA101 (installation box)
d EKMP65VAM (mounting plate)
f Screw
g Screw (supplied with the installation box)

1 Remove the screws from the unit.
2 Attach the optional mounting plate (EKMP65VAM) to the unit.
3 Attach the optional adapter PCB (KRP2A51) in the installation box (KRP1BA101).
4 Follow the installation instructions provided with the option kits (BRP4A50A, KRP2A51 and KRP1BA101).
5 Guide the PCB wire through the dedicated holes and attach it as instructed in "6.5.2 Opening the switch box" on page 17.
6 Attach the options to the optional mounting plate, as shown in the figure.
7 After the wires are connected, fasten the switch box cover.

For models 1500+2000

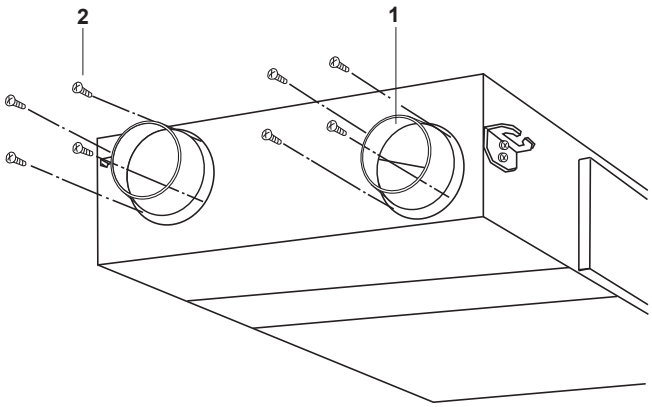


a BRP4A50A (optional accessory)
b KRP2A51 (optional accessory)
c KRP1BA101 (installation box)
e EKMPVAM (mounting plate)
f Screw
g Screw (supplied with the installation box)

1 Remove the screws from the middle of the plate connecting the 2 units.
2 Attach the optional mounting plate (EKMPVAM) on top of the plate connecting the 2 units.
3 Attach the optional adapter PCB (KRP2A51) in the installation box (KRP1BA101).
4 Follow the installation instructions provided with the option kits (BRP4A50A, KRP2A51 and KRP1BA101).
5 Guide the PCB wire through the dedicated holes and attach it as instructed in "6.5.2 Opening the switch box" on page 17.
6 Attach the options to the optional mounting plate, as shown in the figure.
7 After the wires are connected, fasten the switch box cover.

5.3.2 To install the duct joints

1 Position the duct joints over the duct holes.
2 Secure the duct joints with the provided screws (accessories).



Model	Number of provided screws	Number of provided duct joints
350	16	4× Ø200 mm
500	16	4× Ø200 mm
650	24	4× Ø250 mm
800	24	4× Ø250 mm
1000	24	4× Ø250 mm
1500	48	8× Ø250 mm
2000	48	8× Ø250 mm

5.4 Preparing electrical wiring

5.4.1 Wiring connection

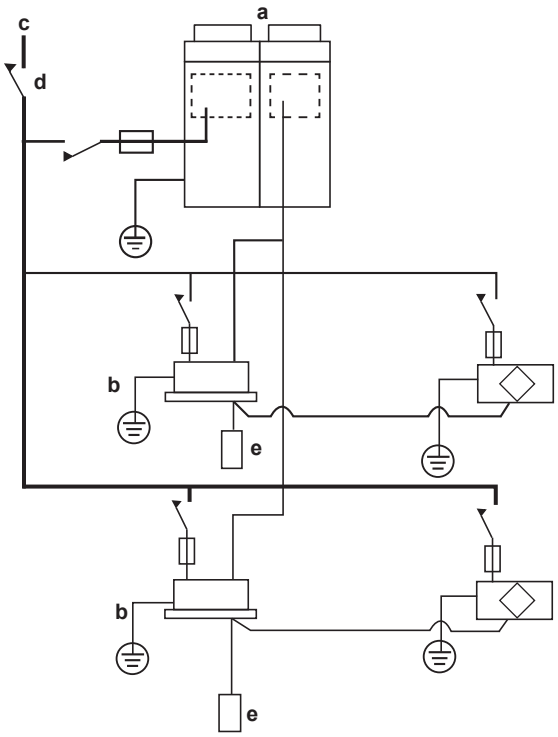
WARNING

A main switch or other means for disconnection, having a contact separation in all poles, MUST be incorporated in the fixed wiring in accordance with the applicable legislation.

You can use a single switch 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 below.

Complete system example



a VRV outdoor unit
b VRV indoor unit
c Power supply
d Main switch
e Controller

5.4.2 Component electrical specifications

Model	350	500	650	800	1000	1500	2000
Power supply							
50 Hz	198~264 V						
60 Hz	198~242 V						
MCA (A)	1.56	2.08	2.80	4.39	4.90	8.78	9.80
MFA (A)	16	16	16	16	16	16	16
Fan motor							
P (kW)	0.08×2	0.08×2	0.106×2	0.21×2	0.21×2	0.21×4	0.21×4
FLA (A)	0.62×2	0.83×2	1.12×2	1.76×2	1.96×2	1.76×4	1.96×4

MCA Minimum Circuit Amps
MFA Maximum Fuse Amps
P Motor Rated Load
FLA Full Load Amps

NOTICE

When using residual current operated circuit breakers, make sure to use a high speed type 300 mA rated residual operating current.

NOTICE

The power supply MUST be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage protector in accordance with the applicable legislation.

NOTICE

See the engineering data book for details.

5.4.3 Specifications for field supplied fuses and wires

Power supply wiring	
Field supplied fuses	16 A

Power supply wiring	
Wire	H05VV-U3G
Size	Wire size MUST comply with the applicable legislation.
Transmission wiring	
Wiring	Shielded wire (2 wire)
Size	0.75~1.25 mm²

Precautions

When connecting more than one wire to the power supply wiring, use a 2 mm² (Ø1.6 mm) gauge wire.

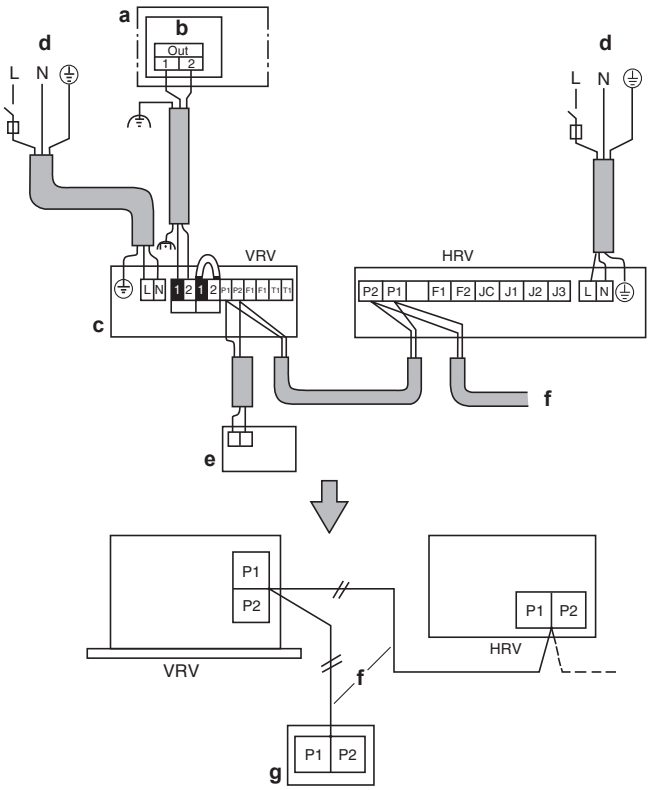
When using 2 power wires of a gauge greater than 2 mm² (Ø1.6 mm), branch the line outside the terminal board of the unit, in accordance with electrical equipment standards. The branch MUST be sheathed to provide a degree of insulation equal to or greater than the power supply wiring itself.

Keep the total current of crossover wiring between indoor units to less than 12 A.

Do NOT connect wires of different gauge to the same grounding terminal. Loose connections may reduce the protection.

For the controller wiring, refer to the installation manual of the controller delivered with the controller.

Wiring example



a Outdoor unit/BS unit
b Switch box
c Indoor unit
d Power supply 220-240 V~50 Hz
e Controller for VRV
f Transmission wiring
g Controller for heat reclaim ventilation unit

- All transmission wiring, except for the controller wires, is polarised and MUST match the terminal symbol.
- Use shielded cable for the transmission wiring. Ground the shield of the shielded cable to ⏚ at the grounding screw, with the C-cup washer.

5.5 Preparing the installation of the ducts

INFORMATION

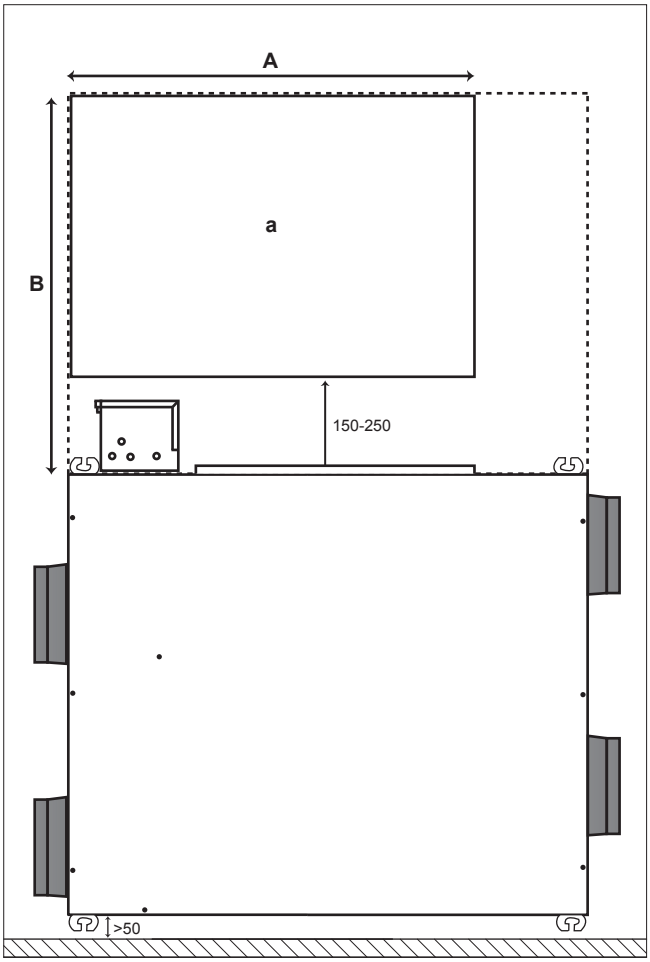
- Flexible ducting with sound insulation is effective to reduce blowing noises.
- When selecting installation materials, consider the required volume of air flow and the acceptable level of noise for that particular installation.
- When room air infiltrates into the ceiling and the temperature and humidity in the ceiling become too high, insulate the metal parts of the unit.
- ONLY use the inspection hole to access the inside of the unit.
- The sound pressure level is less than 70 dBA.

CAUTION

- For safety reasons, the required minimum length of the ducting is 1.5 m. If the ducting is shorter, or if no ducting is installed, then you MUST install grilles in the duct openings or the openings of the unit.
- Make sure no wind can blow in the ducting.

6 Installation

6.1 Service space: Heat reclaim ventilation unit



(mm)

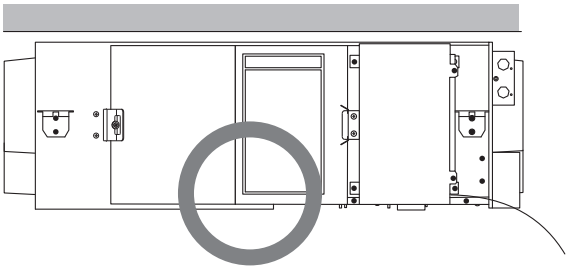
a Service space

Models	A (mm)	B (mm)
VAM350+500	900	675
VAM650	1100	700
VAM800~2000	1100	850

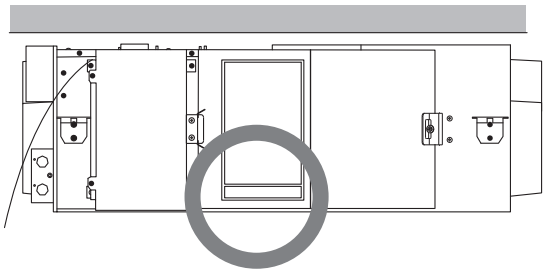
6.2 Unit orientation

The following illustration helps you to install the heat reclaim ventilation unit in the correct position:

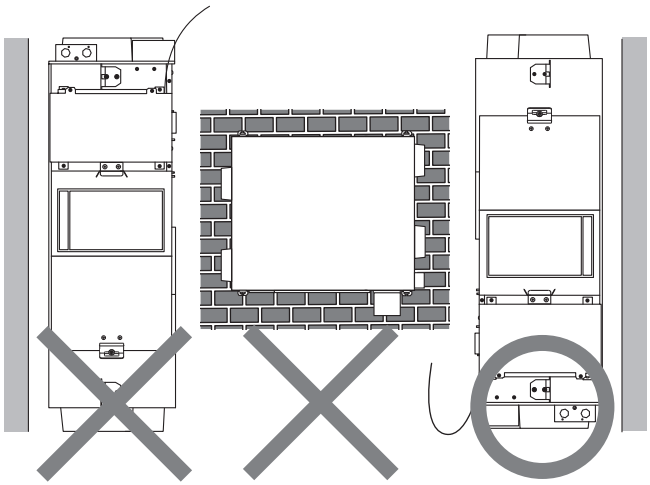
Normal installation



Upside down installation



Vertical installation



INFORMATION

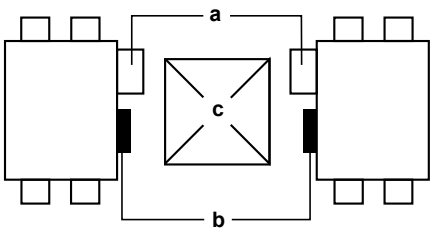
When the unit is installed vertically, the installer must provide a support under the unit to distribute the weight of the unit between the support and the installation bolts in the wall.

NOTICE

When the heat reclaim ventilation unit is installed vertically in low outdoor temperature conditions, dewing or freezing may occur. If such operating conditions are to be expected, take the appropriate precautions, e.g. install an electrical heater.

Installation tips:

- Installing the unit upside down allows for common use of the inspection hole, thus reducing the required maintenance space. For example, if 2 units are installed closely together, only 1 inspection hole is required for maintaining or replacing filters, heat exchange elements,…

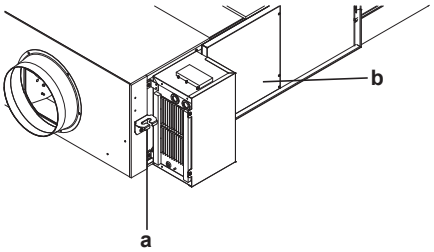


a Control box
b Service cover
c Inspection hole

NOTICE

When the heat reclaim ventilation unit is installed upside down, the minimum allowed outdoor air temperature is 5°C. If this cannot be guaranteed, you MUST install a heater to heat up the outdoor air to 5°C.

- Keep in mind that the ceiling hooks must be rotated 180° when the heat reclaim ventilation unit is installed upside down (see the figure).



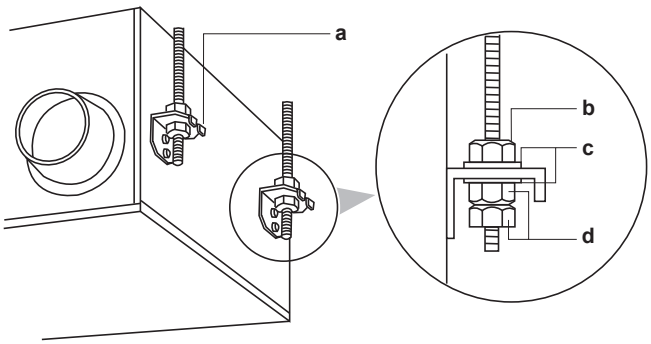
a Ceiling hook
b Service cover

6.3 To install the anchor bolts

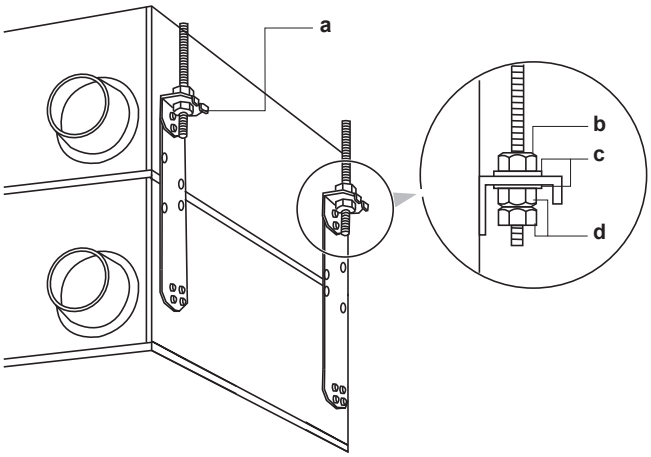
Prerequisite: Before installing the anchor bolts, remove any foreign objects, such as vinyl and paper, from the inside of the fan housing.

1. Install the anchor bolts (M10 to M12).
2. Pass the metal suspension brackets over the anchor bolts.
3. Secure the anchor bolts with washer and nut.

For models 350~1000:



For models 1500+2000:



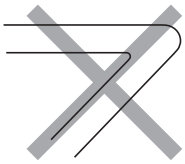
a Ceiling hook
b Nut
c Washer
d Double nut

NOTICE

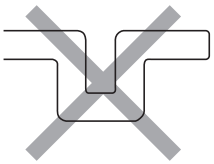
Always hang up the unit by its suspension brackets.

6.4 Duct connections

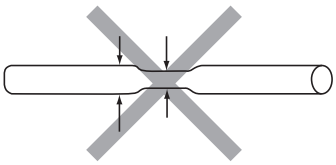
Do NOT connect the ducts as follows:



Extreme bend. Do NOT bend the duct more than 90°.



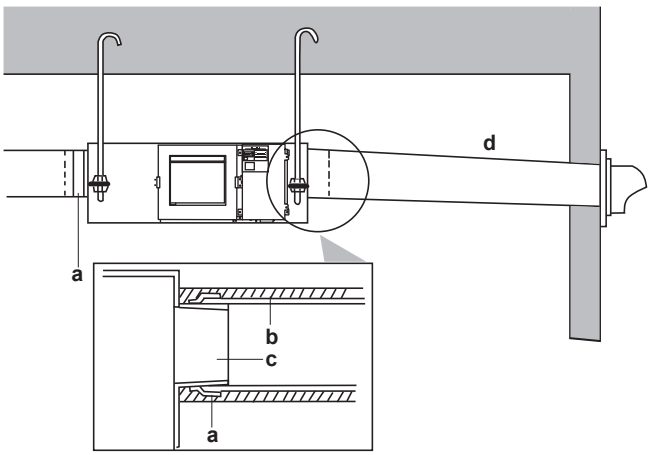
Multi bend



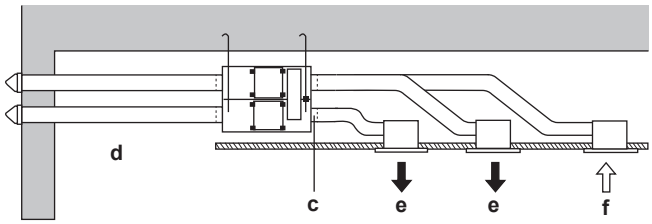
Reduced diameter. Do NOT reduce the duct diameter.

- The minimum bend radius for flexible ducts is as follows: (Øduct/2)×1.5
- To prevent air leakage, wind aluminium tape around the section where the duct joints and the ducts are connected.
- Install the opening of the supply air as far as possible from the opening of the room air.
- Use ducts with a diameter that fits the unit model. See the data book.
- Install the two outdoor ducts with a downward slope (minimum 1:50) to prevent entry of rain water. Also provide insulation for both ducts, to prevent dew formation. (Insulation material: 25 mm thick glass wool)
- If the temperature and humidity levels inside the ceiling are always high, install ventilation inside the ceiling.
- Insulate the duct and the wall electrically when a metal duct has to penetrate the metal lattice and wire lattice or the metal lining of a wooden structure wall.
- Install the ducts in such a way that the wind CANNOT blow inside the ducting.

Models 350~1000



Models 1500+2000



a Aluminium tape (field supply)
b Insulation material (field supply)
c Duct joint (accessories)
d Slope minimum 1:50
e Supply air
f Room air

6.5 Electrical wiring

INFORMATION

Also read the precautions and requirements in the "General safety precautions" chapter.

WARNING

- All wiring MUST be performed by an authorised electrician and MUST comply with the applicable legislation.
- Make electrical connections to the fixed wiring.
- All components procured on-site and all electrical construction MUST comply with the applicable legislation.

6.5.1 Precautions when connecting the electrical wiring

DANGER: RISK OF ELECTROCUTION

WARNING

If NOT factory installed, a main switch or other means for disconnection, having a contact separation in all poles providing full disconnection under overvoltage category III condition, MUST be installed in the fixed wiring.

WARNING

- ONLY use copper wires.
- Make sure the field wiring complies with the applicable legislation.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electric shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

WARNING

- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.

NOTICE

If the power supply has a missing or wrong N-phase, equipment will break down.

NOTICE

Do NOT install a phase advancing capacitor, because this unit is equipped with an inverter. A phase advancing capacitor will reduce performance and may cause accidents.

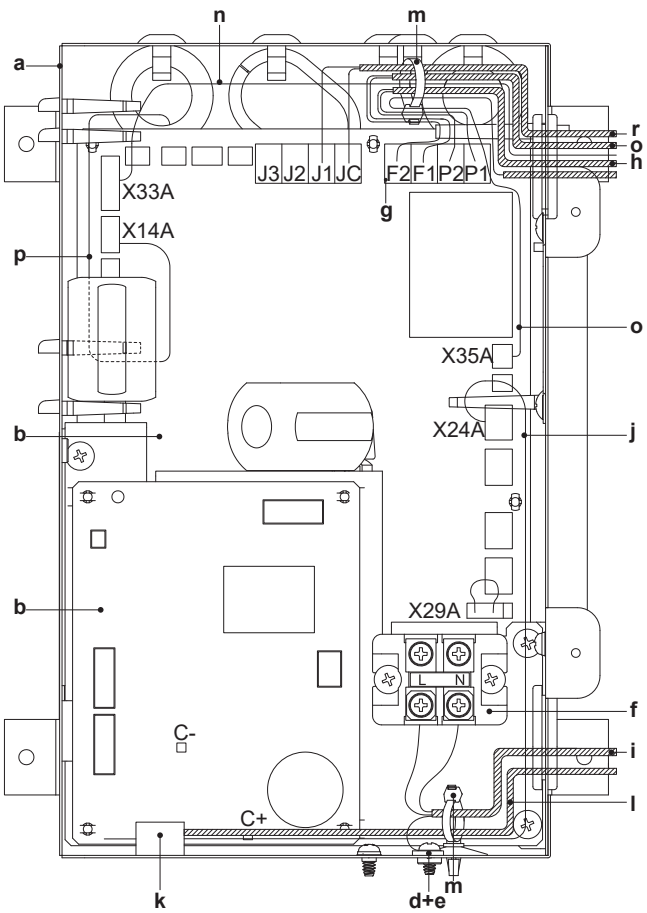
6.5.2 Opening the switch box

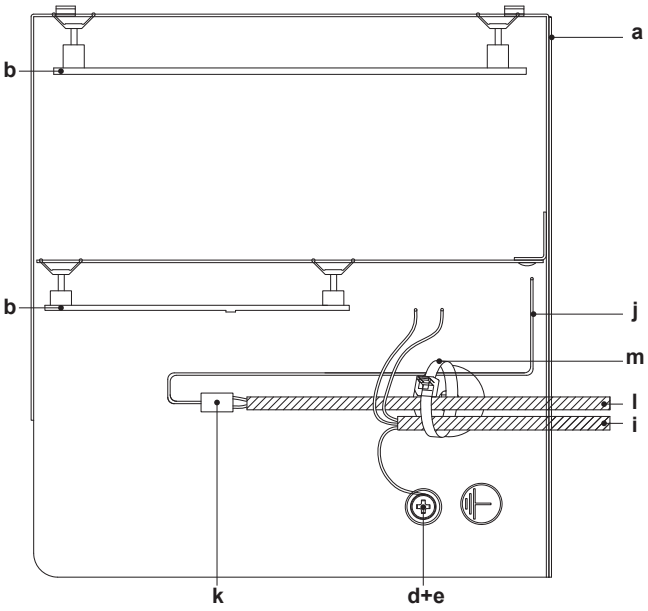
CAUTION

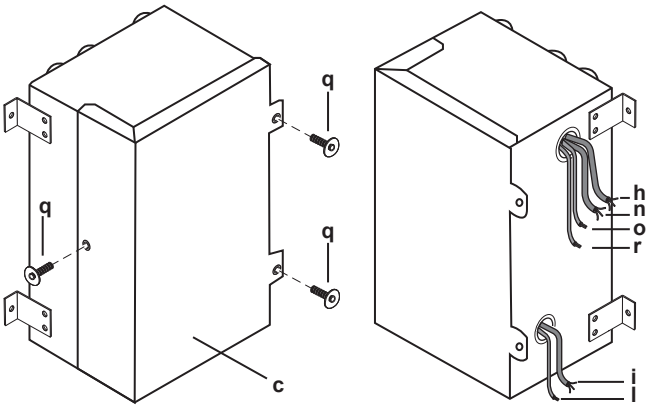
Before opening the cover, be sure to turn off the power switches of the main units and other devices connected to the main units.

- Remove the screws that secure the cover and open the switch box.
- Secure the power supply cable and the control wire with a tie wrap, as shown in the figures.

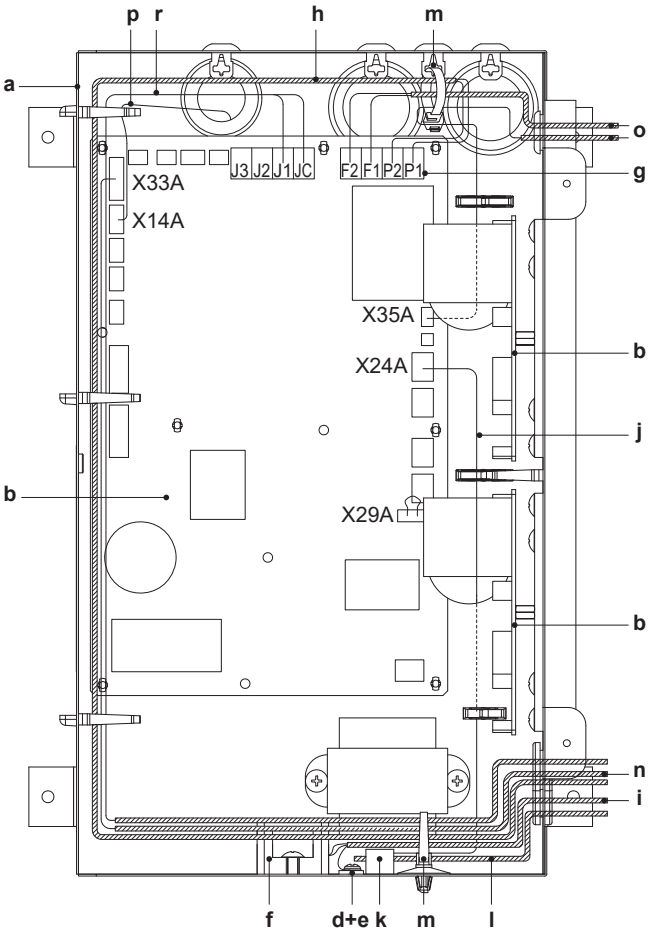
Models 350~650

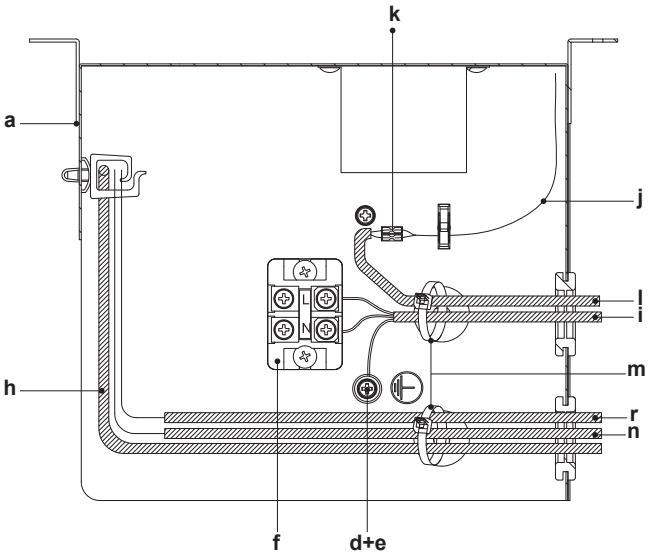




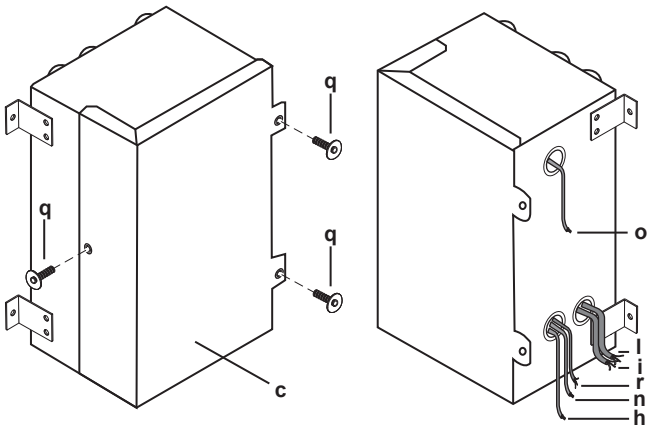


Models 800+1000





a Switch box
b PCB
c Switch box cover
d Securing screw and washer
e Grounding terminal
f Terminal board
g Transmission wiring terminal board (P1, P2, F1, F2)
h Transmission wiring (to optional controller)
i Power supply cable
j Wires for connection of additional external damper (supplied accessory)
k Insulated splices-closed barrel connector (0.75 mm²) (field supply)
l Double or reinforced insulated flexible cable (0.75 mm²) to external damper (field supply)
m Tie wrap (field supply)
n BRP4A50A (optional accessory)
o KRP2A51 (optional accessory)
p CO_2 sensor (optional accessory)
q Tapping screw
r Wires for fresh-up operation



a Switch box
b PCB
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f Terminal board
g Transmission wiring terminal board (P1, P2, F1, F2)
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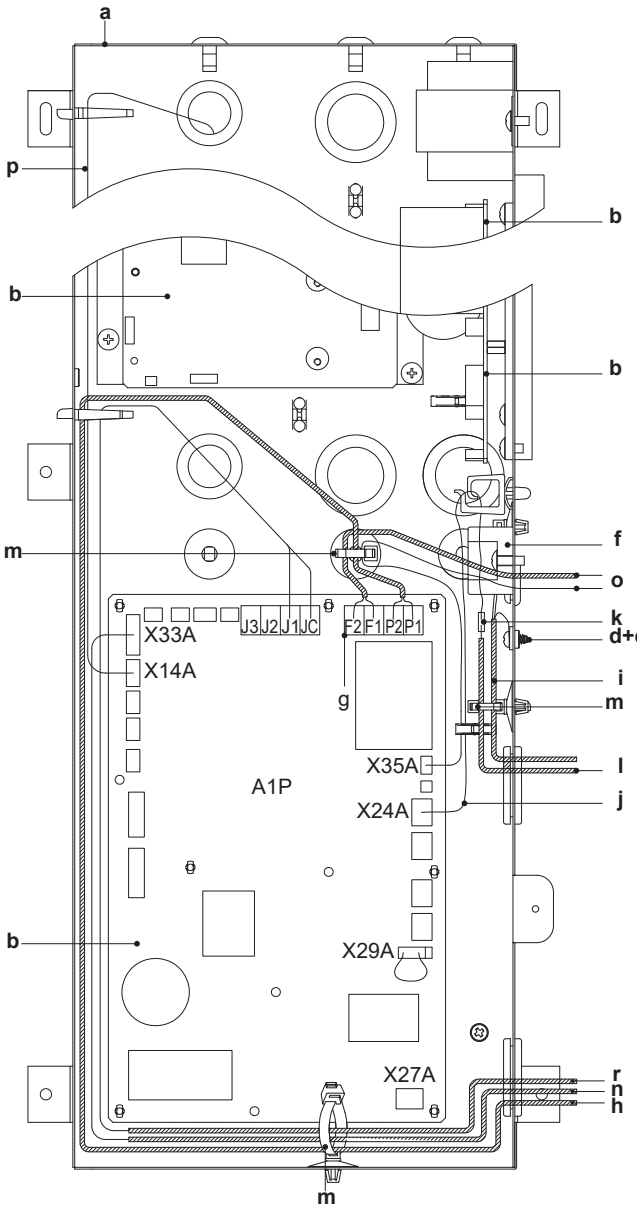
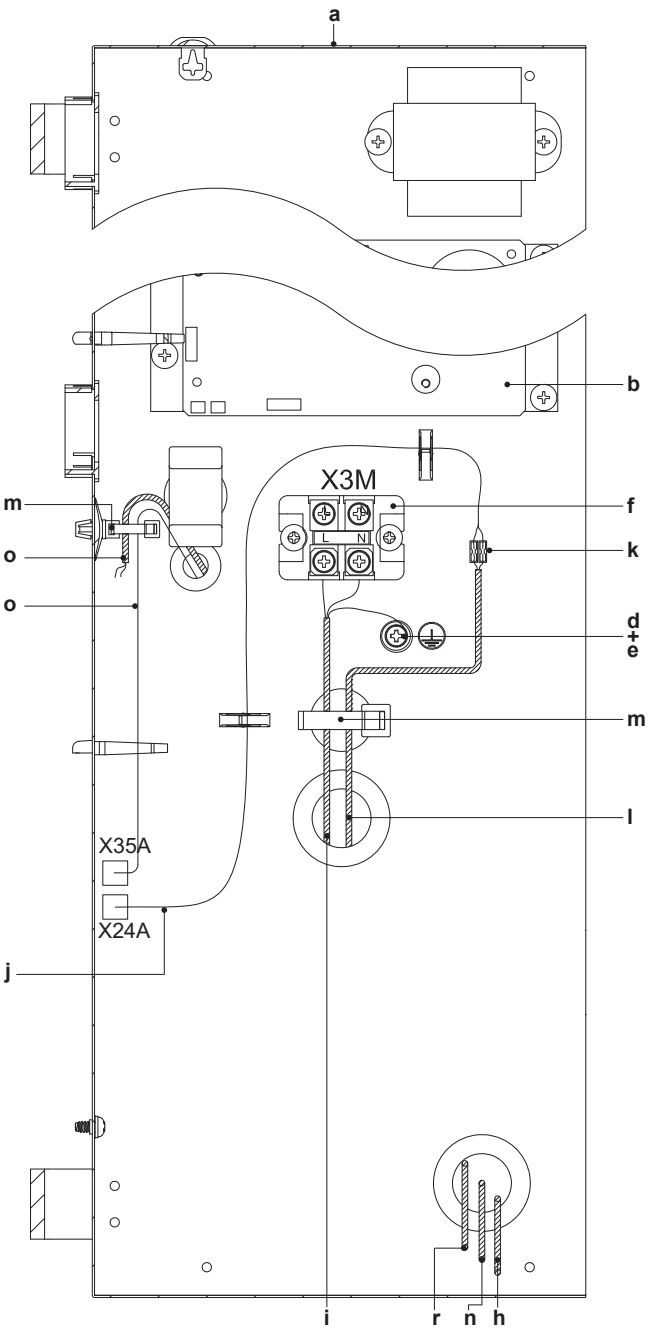
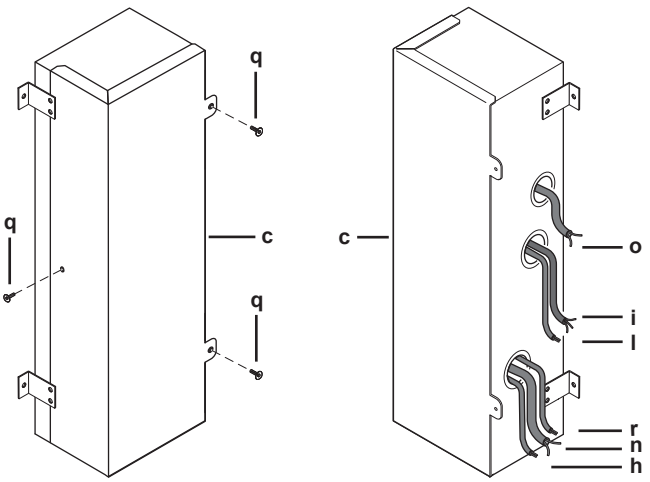
i Power supply cable
j Wires for connection of additional external damper (supplied accessory)
k Insulated splices-closed barrel connector (0.75 mm²) (field supply)
l Double or reinforced insulated flexible cable (0.75 mm²) to external damper (field supply)
m Tie wrap (field supply)
n BRP4A50A (optional accessory)
o KRP2A51 (optional accessory)
p CO_2 sensor (optional accessory)
q Tapping screw
r Wires for fresh-up operation

Models 1500+2000





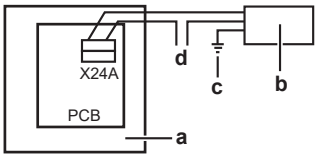


a Switch box
b PCB
c Switch box cover
d Securing screw and washer
e Grounding terminal
f Terminal board
g Transmission wiring terminal board (P1, P2, F1, F2)
h Transmission wiring (to optional controller)
i Power supply cable
j Wires for connection of additional external damper (supplied accessory)
k Insulated splices-closed barrel connector (0.75 mm²) (field supply)
l Double or reinforced insulated flexible cable (0.75 mm²) to external damper (field supply)
m Tie wrap (field supply)
n BRP4A50A (optional accessory)
o KRP2A51 (optional accessory)
p CO_2 sensor (optional accessory)
q Tapping screw
r Wires for fresh-up operation

6.5.3 Electrical connections for additional field supplied damper

An external damper prevents the intake of outdoor air when the heat reclaim ventilation unit is switched off.

The heat reclaim ventilation main unit's PCB operates the heat reclaim ventilation unit and provides a contact for an external damper.



a Heat reclaim ventilation main unit
b External damper
c External damper earthing
d Power source

CAUTION

Follow the instructions below carefully.

Required electrical connections

Connect one end of the accessory wire to the X24A connector on the PCB and the other end to the wire leading to the external damper via an insulated splices-closed barrel connector (0.75 mm²).

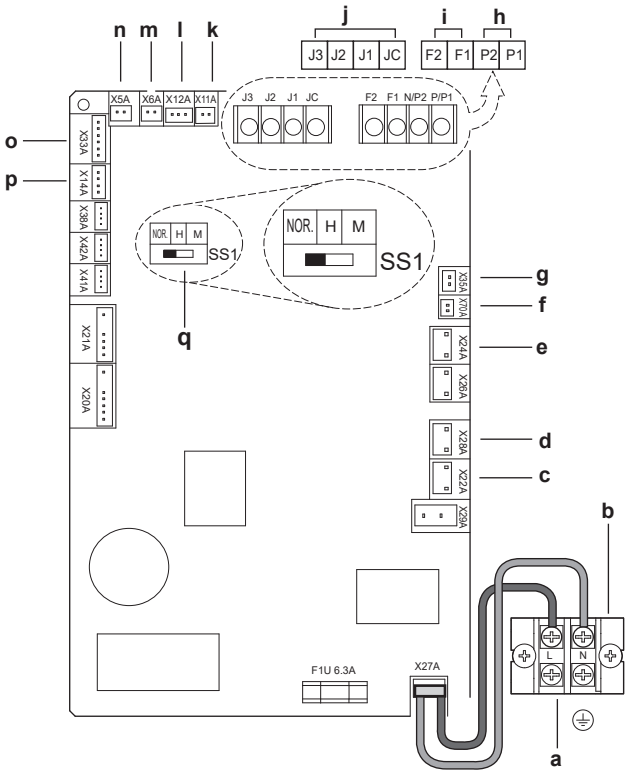
Make sure that the wire is NOT taut. The electrical circuit requires a current protection of 3 A and a maximum voltage of 250 V.

X24A will close the contact when the heat reclaim ventilation fan starts operating and it will open the contact when the fan is stopped.

6.5.4 Power supply connection, control wire terminals and switches on the PCB

To connect the power supply

1. Connect the power supply to the L and N terminals.
2. Secure the power supply with the power supply clamp, as shown in "6.5.2 Opening the switch box" on page 17.
3. Be sure to connect the earth wire.



a Power supply
b Terminals
c Bypass damper
d Bypass damper (only models 1500+2000 bottom unit)
e External damper (field supply)
f Fan communications
g KRP2A51 (option)
h Controller
i Central control
j External input
k Outdoor air thermistor
l Indoor air thermistor
m Bypass damper (only models 1500+2000 bottom unit)
n Bypass damper
o BRP4A50A (optional accessory)
p CO_2 sensor
q Factory setting (No operation if setting is changed)

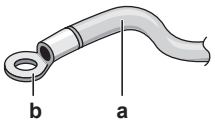
NOTICE

Factory settings: Do NOT change the switch settings when a controller is connected. SS1 is a setting switch to operate the unit without controller. Changing the switch setting when a controller is connected will stop the unit from operating normally. Keep the switch on the PCB in the factory setting position.

6.5.5 Guidelines when connecting the electrical wiring

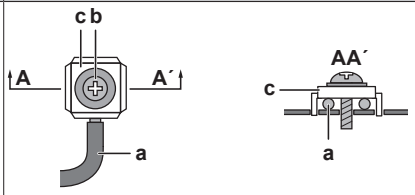
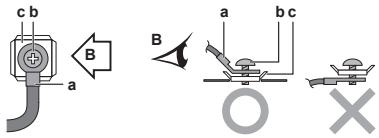
Keep the following in mind:

- If stranded conductor wires are used, install a round crimp-style terminal on the end of the wire. Place the round crimp-style terminal on the wire up to the covered part and fasten the terminal with the appropriate tool.



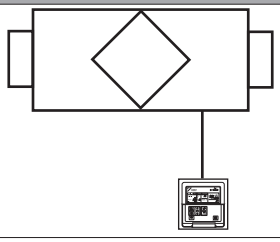
a Stranded conductor wire
b Round crimp-style terminal

- Use the following methods for installing wires:

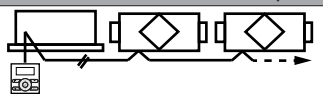
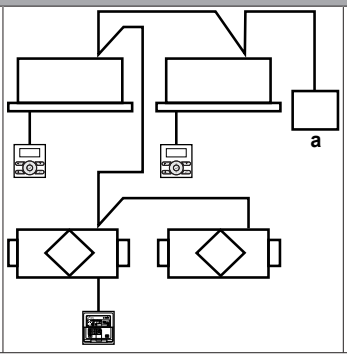
Wire type	Installation method
Single-core wire	 **a** Curled single-core wire **b** Screw **c** Flat washer
Stranded conductor wire with round crimp-style terminal	 **a** Terminal **b** Screw **c** Flat washer **O** Allowed **X** NOT allowed

7 System configuration

7.1 About control systems

Purposes and applications	Description of the system	Controller					
		Central controller	Unified ON/OFF controller	Schedule timer	Controller for heat reclaim ventilation unit	Controller for air conditioner	Operation/stop
Independent system control system							
Basic method to operate the heat reclaim ventilation unit		—	—	—	○	○	○

7 System configuration

Purposes and applications	Description of the system	Controller					
		Central controller	Unified ON/ OFF controller	Schedule timer	Controller for heat reclaim ventilation unit	Controller for air conditioner	Operation/stop
Available functions in case of an independent system control system: ▪ Ventilation mode changeover: automatic or manual ▪ Air flow rate changeover: high/low ▪ Air flow rate mode changeover: normal mode/fresh-up mode: initial setting required ▪ Malfunction display							
Linked operation control system							
▪ Linked operation with air conditioner by controller for air conditioner. Maximum 16 units. ▪ The heat reclaim ventilation unit can also be operated independently by the controller for the air conditioner, even if the air conditioner is NOT in operation. The heat reclaim ventilation unit CANNOT be operated independently when the duct is connected directly to the air conditioner.		—	—	—	—	○	○
Available functions in case of a linked operation control system: ▪ Ventilation mode changeover: automatic or manual ▪ Air flow rate changeover: high/low ▪ Air flow rate mode changeover: normal mode/fresh-up mode: initial setting required ▪ Precool/preheat operation: initial setting required ▪ Nighttime free cooling operation: initial setting required ▪ Malfunction display For an overview of settings, see "8.2 List of settings" on page 25.							
Central control system							
▪ **Unified ON/OFF controller:** Maximum 16 groups of units. ▪ **Schedule timer:** 1 schedule timer can control the weekly schedule of 128 units. ▪ **Central controller:** Up to 64 groups of units can be controlled individually by 1 central controller.		○	○	○	○	○	○
Available functions in case of a central control system: ▪ Ventilation mode changeover: automatic or manual ▪ Air flow rate changeover: high/low ▪ Air flow rate mode changeover: normal mode/fresh-up mode (field setting required when controller for heat reclaim ventilation unit is NOT used) ▪ Air flow rate mode changeover: normal mode/fresh-up mode (when controller for heat reclaim ventilation unit is installed) ▪ Precool/preheat operation: initial setting required ▪ Nighttime free cooling operation: initial setting required ▪ Malfunction display For an overview of settings, see "8.2 List of settings" on page 25.							

a Unified ON/OFF controller, Schedule timer, Central controller

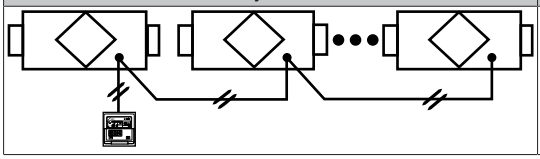
Heat reclaim ventilation unit

Air conditioner

Controller

Controller

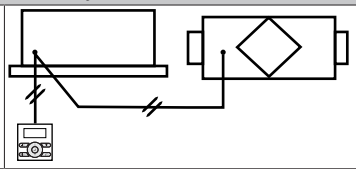
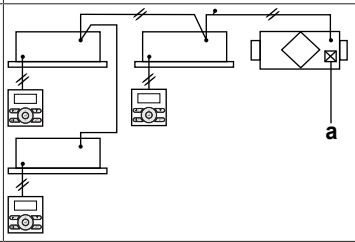
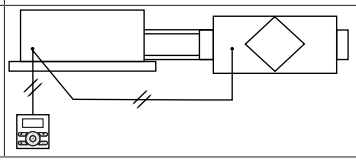
7.2 Independent system

System	Standard method	Related items in electric wiring
	▪ Up to 16 units can be controlled with the controller (a system with 2 controllers can be created using master/slave switching). ▪ All heat reclaim ventilation unit operations can be used and displayed. ▪ The controller cord should be procured locally (cord length: up to 500 m).	See "8.3.2 Independent system" on page 30

Heat reclaim ventilation unit

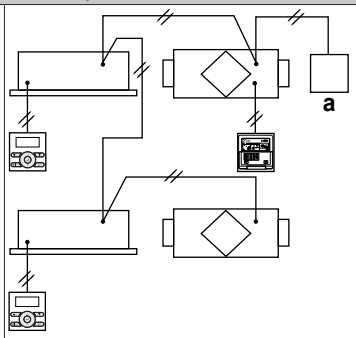
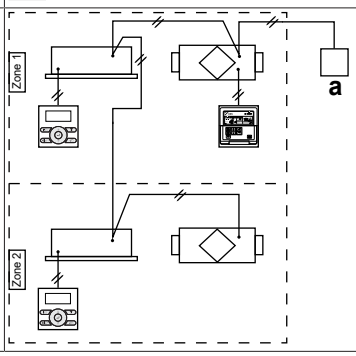
Controller

7.3 Linked operation control system

System			Standard method	Related items in electric wiring
Combined operation system with VRV systems and Sky Air series	1-group linked operation control system		▪ A total of up to 16 air conditioners and heat reclaim ventilation units can be controlled. ▪ The ventilation mode can be operated independently when air conditioners are NOT used. ▪ Using the local setting of the controller for air conditioners, various settings such as precool/preheat on/off, ventilation flow rate, ventilation mode, etc. can be selected.	See "8.3.3 1-group linked-control system" on page 30
	Multi-group linked operation control system		▪ Since all VRV units of the installation are connected to a single communication line, they will all be operated. ▪ If there are problems operating all VRV units, do NOT use this system. ▪ Up to 64 groups of units can be controlled. ▪ The controller control transmission line can be extended to up to 1000 m. ▪ A direct duct connection is NOT possible. ▪ Set ON for central zone link setting. ▪ Adapter PCB for remote control: KRP2A51 (One adapter PCB should be installed in either the heat reclaim ventilation unit or the air conditioner).	See "8.3.4 Linked control with more than 2 groups" on page 30
	Direct duct connection system		▪ The heat reclaim ventilation unit will operate ONLY when the air conditioner fan is on. ▪ Other specifications are the same as those of the standard system.	See "8.3.5 Direct duct connection" on page 31

a Adapter PCB for remote control
Heat reclaim ventilation unit
Air conditioner
Controller

7.4 Central control system

System		Standard method	Related items in electric wiring
All/individual control system		▪ Unified ON/OFF controller: DCS301B(A)51. Up to 16 groups can be controlled (ON/OFF) by 1 controller and up to 4 controllers can be installed in 1 system. ▪ Schedule timer: DST301B(A)51. One schedule timer can control the weekly schedule of up to 128 units. ▪ Adapter PCB for remote control: KRP2A51 (NOT possible to use together with another central controller). 1 adapter PCB can control up to 64 groups collectively. ▪ One of the controllers must be connected to an air conditioner. (However, ONLY KRP2A51 can be connected to a heat reclaim ventilation unit.).	See "8.3.6 Central control system" on page 31
Zone control system		▪ Use of the central controller enables zone control via the central control line (up to 64 zones). ▪ Central controller DCS302C(A)51, intelligent Touch Controller DCS601C51, or intelligent Touch Manager DCM601A51. ▪ A central controller can control independent operation of the heat reclaim ventilation units in each zone.	See "8.3.6 Central control system" on page 31

a Central controller
Heat reclaim ventilation unit
Air conditioner
Controller
Controller

8 Configuration

The settings (format: XX(XX)-X-XX), e.g. 19(29)-1-02, that are used in this chapter are composed of 3 parts, divided by "-":

- Mode number: e.g. 19(29), where 19 is the mode number for group settings and 29 is the mode number for individual settings.
- Switch number: e.g. 1
- Position number: e.g. 02

8.1 Operating procedure

The heat reclaim ventilation unit settings can be adjusted using the controller of either the heat reclaim ventilation unit or the air conditioner.

Initial settings

- Mode numbers 17, 18, and 19: group control of heat reclaim ventilation units.
- Mode numbers 27, 28, and 29: individual control.

8.1.1 To change settings

Case 1: Change settings

With BRC1E53

Make sure that the switch box lid on the heat reclaim ventilation unit is closed.

1 Briefly press a button to turn on the screen light.

2 Press and hold the Cancel button (a) for at least 4 seconds to enter the Service Settings menu.

3 Go to Field Settings with the Up/Down buttons and press the Menu/Enter button (b).

4 Press the Left/Right buttons to highlight the number under Mode.

5 Press the Up/Down buttons to select the required mode number.

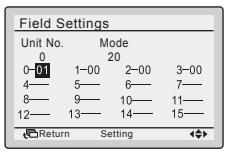
Result: From mode 20 and up, you also have to select a unit number for individual control.

6 Use the Left/Right buttons to highlight the number under Unit No..

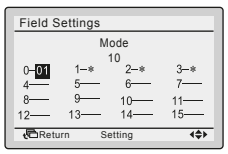
7 Use the Up/Down buttons to select an indoor unit number. Selecting a unit number is NOT necessary when configuring the entire group.

8 Use the Left/Right buttons to select a switch number (0 to 15) to change.

In case of individual settings:

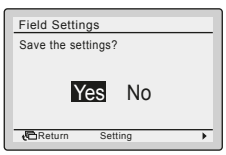


In case of group settings:

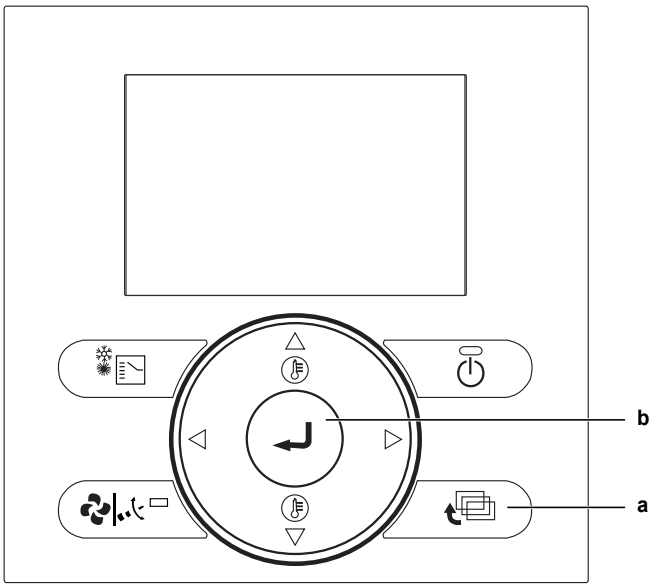


9 Use the Up/Down buttons to select the required position number.

10 Press the Menu/Enter (b) button and confirm the selection with Yes.



11 After you have completed all changes, press the Cancel button (a) twice to return to the normal mode.



Case 2: Change settings

With BRC301B61

Make sure that the switch box lid on the heat reclaim ventilation unit is closed.

1 With the unit in normal mode, press the Inspection/Trial button (a) for more than 4 seconds to enter the local setting mode.

2 Use the Ventilation mode button (up - b) and the Airflow rate button (down - b) to select a mode number.

Result: The code display is blinking.

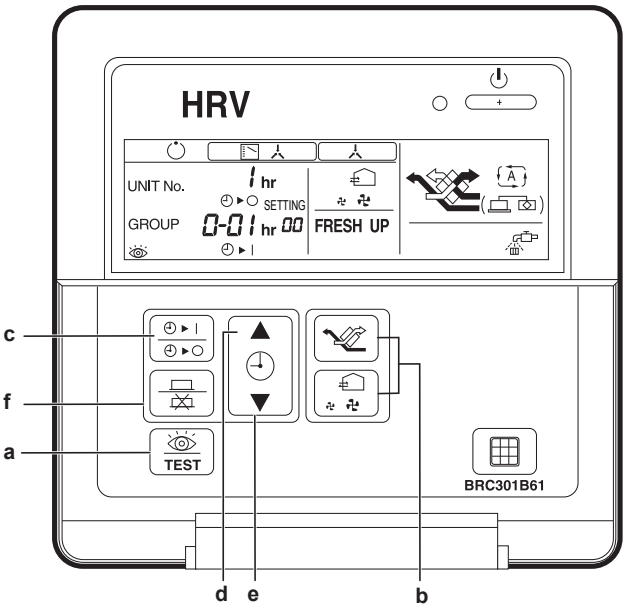
3 To configure settings for individual units under group control, press the Timer setting on/off button (c) and select the number of the unit that you want to configure.

4 To select the setting switch number, press the top section of the Timer button (d). To select the setting position number, press the lower section of the Timer button (e).

5 Press the Program/Cancel button (f) once to enter the setting.

Result: The code display stops blinking and lights up.

6 Press the Inspection/Trial button (a) to return to normal mode.



INFORMATION

Setting 18(28)-11 CANNOT be selected with this controller.

8.2 List of settings

Setting mode	Setting switch no.	Setting description	Setting position no.														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
17(27)	0	Filter cleaning time	±2500 hours	±1250 hours	—	—	—	—	—	—	—	—	—	—	—	—	—
	1	Nighttime free cooling timer (after stop)	Off	On after 2 hours	On after 4 hours	On after 6 hours	On after 8 hours	—	—	—	—	—	—	—	—	—	—
	2	Precool/ preheat	Off	On	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	Precool/ preheat duration	30 minutes	45 minutes	60 minutes	—	—	—	—	—	—	—	—	—	—	—	—
	4	Initial fan speed	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	5	Yes/No setting for duct connection with VRV system	Without duct	With duct	Without duct		With duct		—	—	—	—	—	—	—	—	—
		Setting for cold areas (draft prevention)	—	—	Stop	Low	Stop	Low	—	—	—	—	—	—	—	—	—
17(27)	6	Nighttime free cooling (fan settings)	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	7	Target temperature for independent nighttime free cooling	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	27°C	28°C	29°C	30°C	—	—
	8	Central zone link	No	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—
	9	Preheat time extension	0 minutes	30 minutes	60 minutes	90 minutes	—	—	—	—	—	—	—	—	—	—	—

Setting mode	Setting switch no.	Setting description	Setting position no.														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
18(28)	0	External signal JC/J2	Last command	Priority on external input	Priority on operation	Disable nighttime free cooling / Perform forced stop	—	24 hours ventilation On/Off	—	—	—	—	—	—	—	—	—
	1	Direct power ON	Off	On	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	Auto restart	Off	On	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	Output signal to external damper (X24A)	—	—	Damper output (fan operation)	Damper output (fan operation)	—	—	—	—	—	—	—	—	—	—	—
	4	Indication of ventilation mode	On	Off	—	—	—	—	—	—	—	—	—	—	—	—	—
18(28)	6	Automatic ventilation air flow mode	Linear	—	Fixed A	Fixed B	—	—	—	—	—	—	—	—	—	—	—
	7	Fresh-up mode	Supply – no indication	Exhaust – no indication	Supply – indication	Exhaust – indication	—	—	—	—	—	—	—	—	—	—	—
	8	External input terminal function selection (between J1 and JC)	Fresh-up	Error output	Error output and stop operation	Forced off	Fan forced off	Air-flow up	—	—	—	—	—	—	—	—	—
	9	BRP4A50A output switching selection (between X3 and X4)	Heater output	Error output	Fan output (Low/ High/ Ultra-high)	Fan output (High/ Ultra-high)	Fan output (Ultra-high)	Fan output (Low/ High/Ultra-high)		—	—	—	—	—	—	—	—
		(between X1 and X2)	Operation output	Operation output				24-hour ventilation and operation output	24-hour ventilation output	—	—	—	—	—	—	—	—
18(28)	11	Filter contamination check**	No action	Reset filter check	Force filter check	—	—	—	—	—	—	—	—	—	—	—	—

Setting mode	Setting switch no.	Setting description	Setting position no.														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
19(29)	0	Filter contamination inspection	Pressure-based check with fan step 1-15	Pressure-based check with new fan step	Timer based check	Filter contamination target detection with fan step 1-15	Auto ESP selection + filter contamination target detection with new fan step	—	—	—	—	—	—	—	—	—	—
	1	Low tap	Off	Run 1/15 (28 min. off/2 min. on)	Run 1/10 (27 min. off/3 min. on)	Run 1/6 (25 min. off/5 min. on)	Run 1/4 (22.5 min. off/7.5 min. on)	Run 1/3 (20 min. off/10 min. on)	Run 1/2 (15 min. off/15 min. on)	Continuous operation							
										Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
	2	Supply fan step*	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
	3	Exhaust fan step*	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
	4	24-hour ventilation	Off	Run 1/15 (28 min. off/2 min. on)	Run 1/10 (27 min. off/3 min. on)	Run 1/6 (25 min. off/5 min. on)	Run 1/4 (22.5 min. off/7.5 min. on)	Run 1/3 (20 min. off/10 min. on)	Run 1/2 (15 min. off/15 min. on)	Continuous operation							
										Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
19(29)	7	Reference concentration shift for ventilation air flow control (ppm)	0	+200	+400	+600	–200	–400	–600	—	—	—	—	—	—	—	—
	8	Stop ventilation by automatic ventilation air flow control	Allowed	NOT allowed	Allowed	NOT allowed	—	—	—	—	—	—	—	—	—	—	—
		Fan residual operation	Off	Off	Heater operation	Heater operation											
	9	Normal ventilation tap on automatic ventilation air flow control	—	—	—	—	Control by CO_2 sensor	—	—	—	—	—	—	—	—	—	—
1A	0	Fresh-up operation **	Off	On	—	—	—	—	—	—	—	—	—	—	—	—	—

INFORMATION

- Factory settings are marked with grey backgrounds.
- (*) See the technical data book for pressure drop curves and selection of fan curves (step 1 to 15).
- (**) This setting CANNOT be done with BRC301B61.
- The setting modes are mentioned as group settings. Between parentheses are the setting modes for individual unit control.
- Group number setting for central controller

  Mode No. 00: Group controller

  Mode No. 30: Individual controller

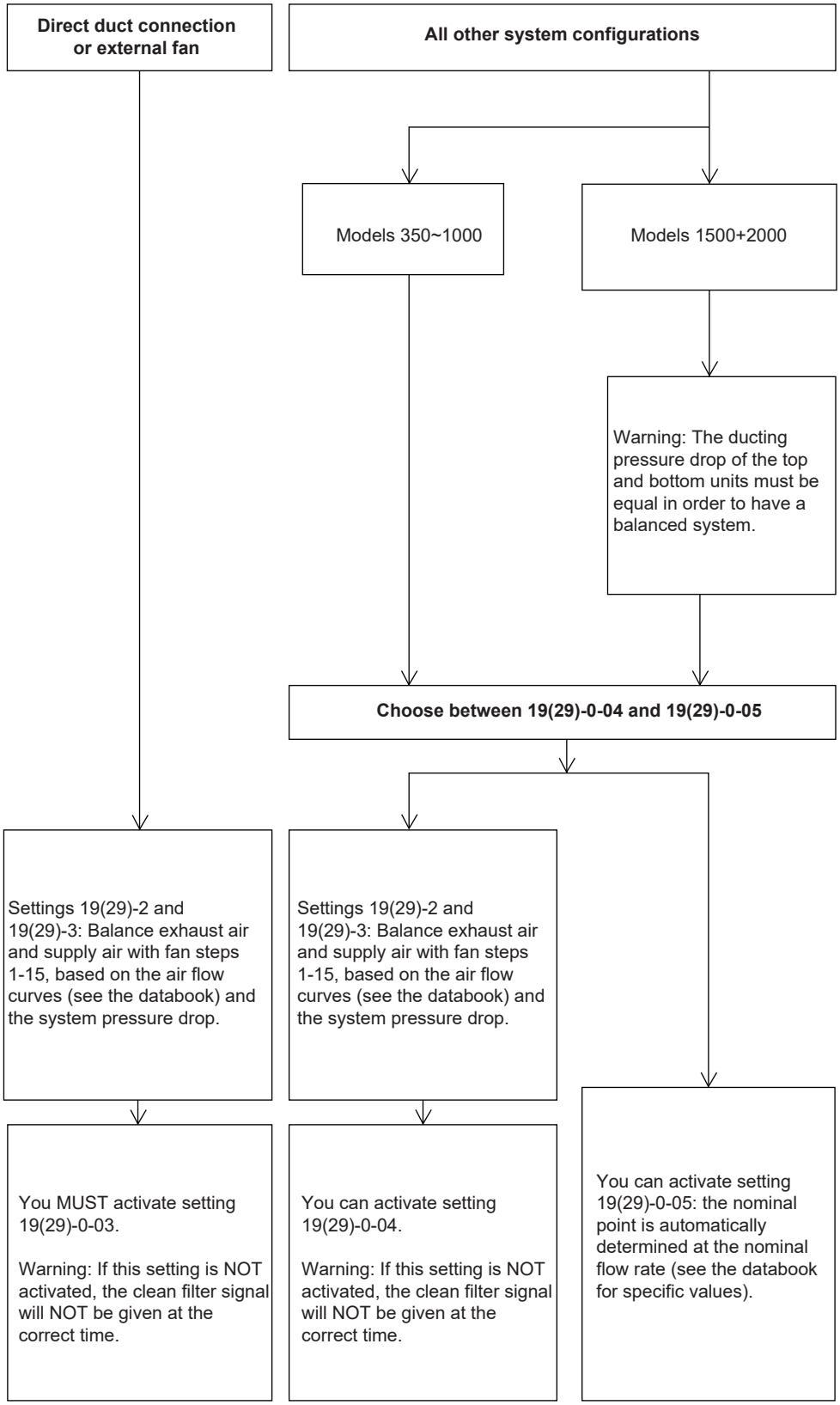
  For the setting procedure, see "Group number setting for central control" in the operation manual of either the ON/OFF controller or the central controller.

Example

To adjust the auto restart setting to 'on' in the group setting mode, enter mode No. "18", setting switch No. "2" and position No. "02".

8.3 Settings for all configurations

Setting 17(27)-4: First choose the fan speed. Set it to high or ultra-high.



8.3.1 About setting 19(29)-0-04 and 19(29)-0-05

- When you have configured setting 19(29)-0-04 successfully, the system automatically changes it to setting 19(29)-0-01.
- When you have configured setting 19(29)-0-05 successfully, the system automatically changes it to setting 19(29)-0-02.

NOTICE

If the ducting is changed, install clean filters and reconfigure setting 19(29)-0-04 or 19(29)-0-05. Otherwise the signal to clean the filters will come too soon. Do NOT adjust the dampers when setting 19(29)-0-04 or 05 is activated.

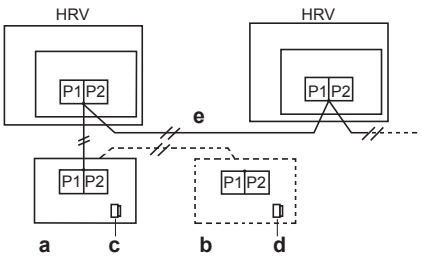
- If the controller is switched off while activating setting 19(29)-0-04 or 19(29)-0-05, configuration is aborted. When you switch the controller back on, the function starts from the beginning.
- Setting 19(29)-0-04 takes between 1 and 6 minutes to complete. You can check if the setting was completed successfully by checking if the field setting is changed to 0-01.
- Setting 19(29)-0-05 takes between 3 and 35 minutes to complete. You can check if the setting was completed successfully by checking if the field setting is changed to 0-02.

INFORMATION

While activating setting 19(29)-0-04 and 19(29)-0-05, the unit is set to heat recovery and the fan is on high or ultra high. After configuration, the settings are returned to what they were before the configuration.

- These settings can ONLY be activated with clean filters.
- For models 1500+2000, make sure that the ducting pressure drop of the top and bottom units is balanced.
- The function starts as soon as it is selected and the controller is on.
- Setting 19(29)-0-04 CANNOT be configured if the outside temperature is ≤–10°C, which is out of the operation range.
- Setting 19(29)-0-05 CANNOT be configured if the outside temperature is ≤5°C. In this case, error 65-03 is shown and the unit stops working. Change the setting to 19(29)-0-04.
- The setting CANNOT be configured if there are alerts or errors present.
- If booster fans are used, you can ONLY configure setting 19(29)-0-03.
- Settings 19(29)-0-04 and 19(29)-0-05 can be configured for multiple units with 1 controller.

8.3.2 Independent system



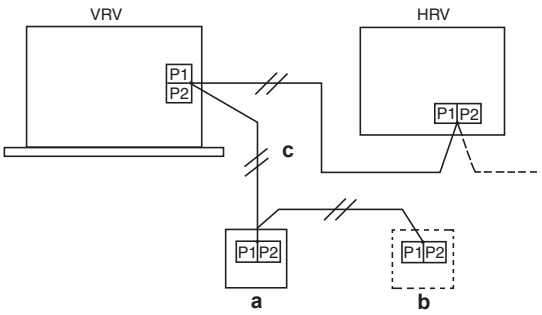
a Master controller for heat reclaim ventilation unit
b Slave controller for heat reclaim ventilation unit
c Switch position: Master
d Switch position: Slave
e Maximum length of connection line: 500 m

NOTICE

Factory settings: Do NOT change the switch settings when a controller is connected. SS1 is a setting switch to operate the unit without controller. Changing the switch setting when a controller is connected will stop the unit from operating normally. Keep the switch on the PCB in the factory setting position.

8.3.3 1-group linked-control system

- The air conditioner's controller can be used to control up to 16 units, a combination of indoor air conditioner units and heat reclaim ventilation units.
- You can configure initial settings for the functions of the heat reclaim ventilation units. These functions are precool/preheat, ventilation air flow, ventilation mode, and fresh-up. Use the air conditioner's controller to configure the initial settings for the heat reclaim ventilation units. See "8.2 List of settings" on page 25.



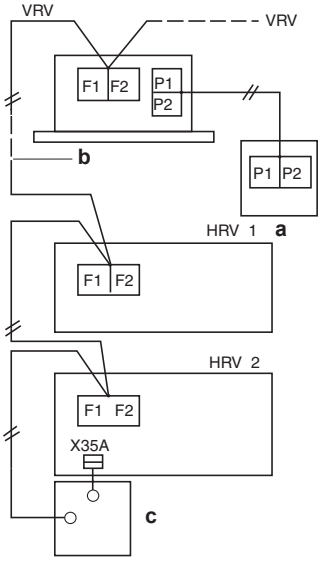
a Controller for air conditioner
b Controller for air conditioner
c Maximum length of connection line: 500 m

8.3.4 Linked control with more than 2 groups

To change the settings, P1/P2 of the controller MUST be connected to the heat reclaim ventilation units. The controller can be removed after the settings are changed.

If the unit is supposed to operate without controller, do NOT switch it on with the controller connected. Otherwise, the unit will give an error once the controller is removed, because it will keep on searching for the controller signal. To resolve the error, perform a power reset without the controller connected.

- The optional adapter PCB (KRP2A51) must be connected to 1 unit that is part of the F1/F2 loop. This unit can be an air conditioner or a heat reclaim ventilation unit.
- Up to 64 units, a combination of air conditioners and heat reclaim ventilation units, can be connected to the F1 and F2 terminals.
- KRP2A51 ONLY has ON/OFF control. If the heat reclaim ventilation units run in automatic mode, they have a fixed setpoint. If P1/P2 is NOT connected, the setpoint of the air conditioner is unknown.
- Use the air conditioner's controller to configure the initial settings.

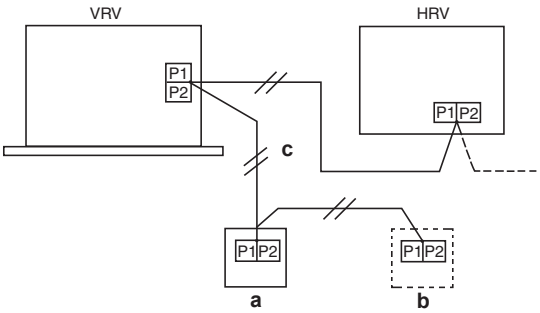


a Controller for air conditioner
b Maximum length of connection line: 1000 m
c Adapter PCB for remote control (KRP2A51)

Activate setting 17-8-02 to set the central zone link to ON. No further settings are required.

8.3.5 Direct duct connection

The line connections are the same as for the 1-group linked-control system.



a Controller for air conditioner
b Controller for air conditioner
c Maximum length of connection line: 500 m

Initial settings

Activate below setting for direct duct connection. This direct duct configuration ONLY works if P1/P2 is connected.

- Mode number: 17
- Switch number: 5
- Position number: 02

Other functions

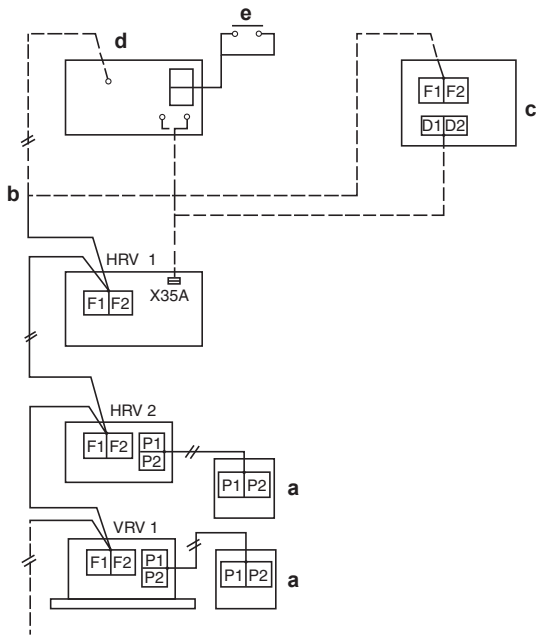
Like in a 1-group linked-control system, other heat reclaim ventilation unit functions can also be configured.

8.3.6 Central control system

To change the settings, P1/P2 of the controller MUST be connected to the heat reclaim ventilation units. The controller can be removed after the settings are changed.

If the unit is supposed to operate without controller, do NOT switch it on with the controller connected. Otherwise, the unit will give an error once the controller is removed, because it will keep on searching for the controller signal. To resolve the error, perform a power reset without the controller connected.

All control

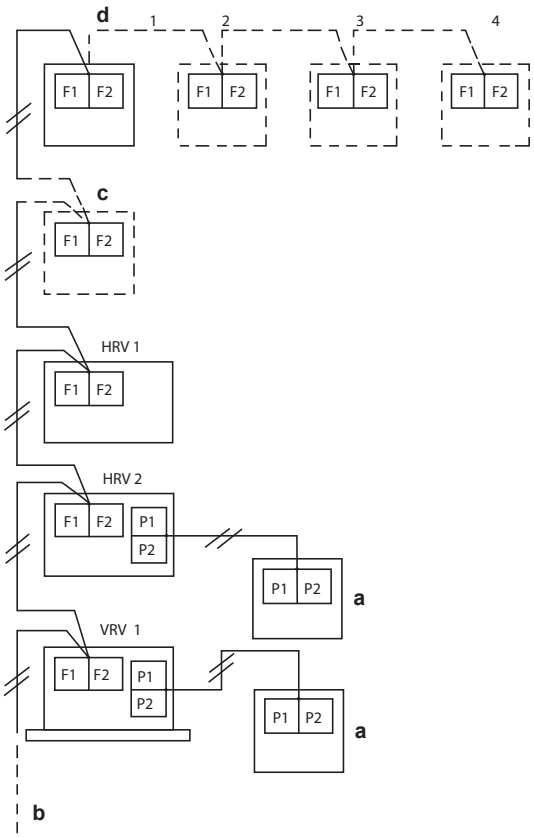


a Controller for air conditioner
b Maximum length of connection line: 1000 m
c Schedule timer (DST301B51)
d Adapter PCB for remote control (KRP2A51)
e On/Off signal

If you use the adapter PCB (KRP2A51) or schedule timer (DST301B51), the following is valid:

- Up to 64 units, a combination of air conditioners and heat reclaim ventilation units, can be connected to the F1 and F2 terminals.
- This system does NOT require group number setting for central control (auto-address system). The central control group number is automatically assigned if the adapter PCB (KRP2A51) or schedule timer (DST301B51) is connected.
- The adapter PCB and the schedule timer CANNOT be used together. The adapter PCB allows on/off control. The schedule timer allows on/off control with a weekly schedule.
- The adapter PCB can be connected to the electric component mounting base of either the heat reclaim ventilation unit or the air conditioner.

All/individual control



a Controller for air conditioner
b Maximum length of connection line: 1000 m
c Schedule timer
d ON/OFF controller

If the ON/OFF controller (DCS301B51) is used, the following is valid:

- Up to 64 units, a combination of air conditioners and heat reclaim ventilation units, can be connected to the F1 and F2 terminals.
- Up to 4 ON/OFF controllers can be connected.
- A central control group number must be assigned to each heat reclaim ventilation unit and air conditioner. See "The central control group number setting" in the operation manual of the ON/OFF controller for information about setting the group number.
- Use the air conditioner's controller to configure the initial settings.

Example

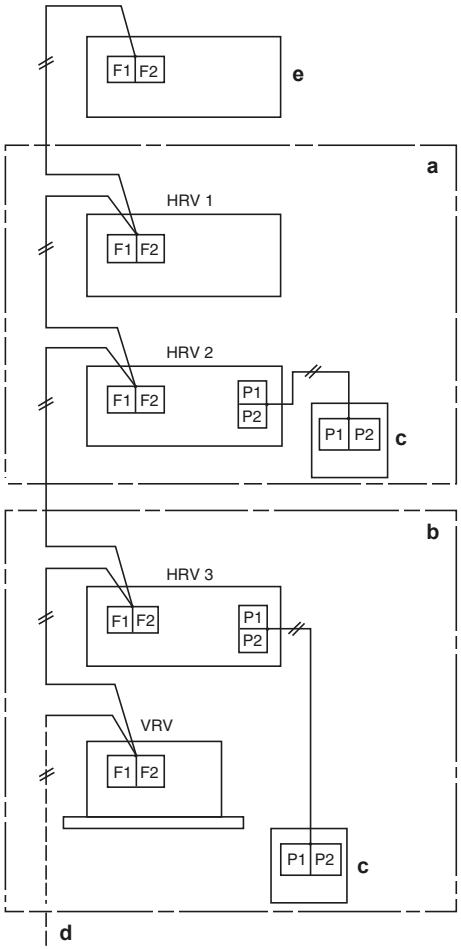
Setting the central control group number 2-05 to 1:

Use the local setting on the controller to set the central control group number.

Mode number: 00

Central control group number: 2-05

Zone control



a Zone 1
b Zone 2
c Controller for air conditioner
d Maximum length of connection line: 1000 m
e Central controller (DCS302C51 or DCS601C51 or DCM601A51)

- Up to 64 units, a combination of air conditioners and heat reclaim ventilation units, can be connected to the F1 and F2 terminals.
- Zone 1 and 2 can be controlled independently with the central controller.

Zone 2

The heat reclaim ventilation units operate in the zone-linked mode, as described in "8.3.4 Linked control with more than 2 groups" on page 30.

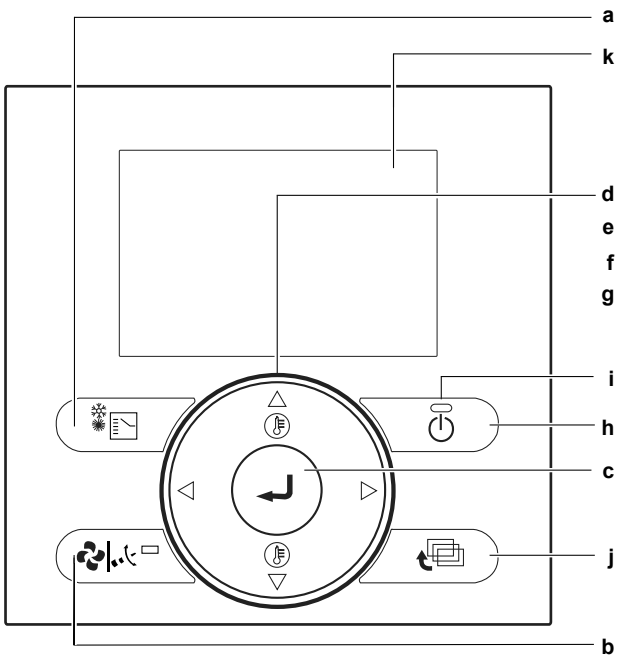
Initial settings:

- A central control group number must be assigned to each heat reclaim ventilation unit and air conditioner. See "The central control group number setting" in "All/individual control" on page 32 for information about setting the group number.
- For the ventilation air flow setting, follow the procedure described in "All control" on page 31.
- For zone setting using the central controller, see the operation manual of the central controller.
- The central controller can be used to control individual units in the zone for ventilation.

8.4 About the controller

8.4.1 Controller for VRV system air conditioner

Please read the manual supplied with the controller (BRC1E53) for more detailed instructions.

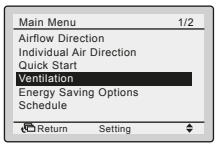


a	Operation Mode Selector button
b	Fan Speed/Airflow Direction button
c	Menu/Enter button
d	Up button
e	Down button
f	Right button
g	Left button
h	ON/OFF button
i	Operation lamp
j	Cancel button
k	LCD (with backlight)

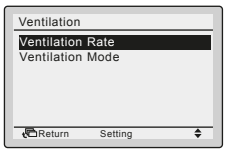
To change the ventilation rate

1 Press the Menu/Enter button to display the main menu.

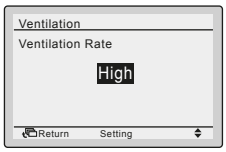
2 Press the Up/Down buttons to select Ventilation and press the Menu/Enter button.



3 Press the Up/Down buttons to select Ventilation Rate and press the Menu/Enter button.



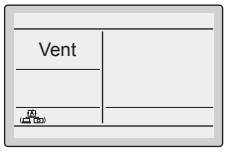
4 Press the Up/Down buttons to change the setting to Low or High and press the Menu/Enter button to confirm.



To select ventilation mode

Ventilation mode is used when cooling or heating is not necessary, so only the heat reclaim ventilation units are operating.

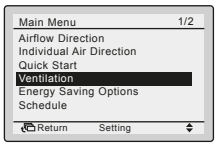
1 Press the Operation Mode Selector button several times until the ventilation mode is selected.



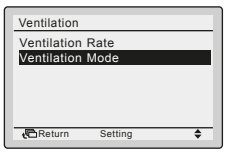
To change the ventilation mode

1 Press the Menu/Enter button to display the main menu.

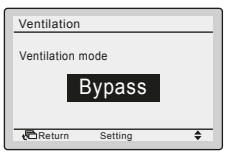
2 Press the Up/Down buttons to select Ventilation and press the Menu/Enter button.

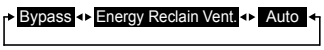


3 Press the Up/Down buttons to select Ventilation Mode and press the Menu/Enter button.



4 Press the Up/Down buttons to select the required ventilation mode. For more information about ventilation modes, see "Ventilation modes" on page 33.





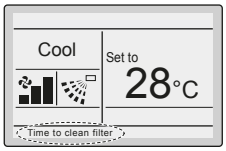
Ventilation modes

You can change the ventilation mode in the main menu.

Mode	Description
Auto mode	Using information from the air conditioner (cooling, heating, fan, and set temperature) and heat reclaim ventilation unit (indoor and outdoor temperatures), this mode automatically switches between Heat Reclaim Ventilation mode and Bypass mode.
Heat Reclaim Ventilation mode (Energy Reclaim Ventilation)	Outdoor air is supplied to the room after passing through a heat exchange element, where heat is exchanged with the room air.
Bypass mode	The outdoor air bypasses the heat exchange element. This means that outdoor air is supplied to the room without heat exchange with the room air.

Time to clean filter indication

When the filter pressure drop becomes too large, the following message or icon is displayed at the bottom of the basic screen: Time to clean filter or . Clean the filters. For more information, see "11 Maintenance and service" on page 40.



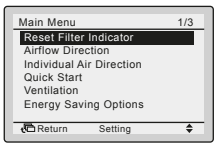
To remove the Time to clean filter indication

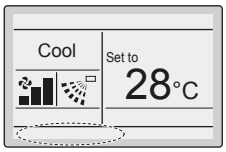
1 Press the Menu/Enter button.

2 Press the Up/Down buttons to select Reset Filter Indicator.

3 Press the Menu/Enter button.

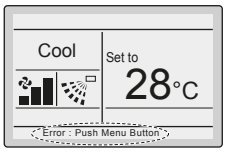
Result: You return to the basic screen. The Time to clean filter indication is no longer displayed.

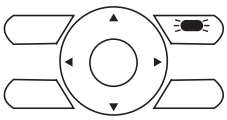




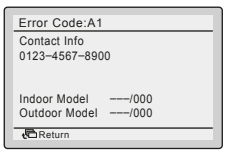
About error indications

If an error occurs, there is an error icon in the basic screen and the operation lamp blinks. If a warning occurs, ONLY the error icon blinks and the operation lamp does NOT. Press the Menu/Enter button to display the error code or warning and contact information.



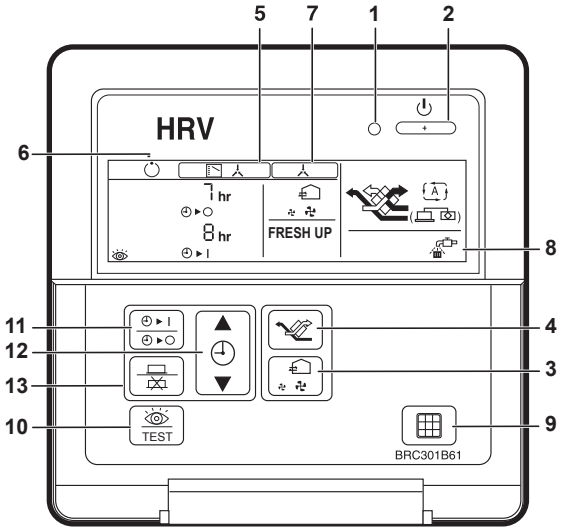


The error code blinks and the contact address and model name appear as shown below. In this case, notify your dealer about the error code.



8.4.2 Controller for heat reclaim ventilation units

For non-independent systems, starting, stopping and setting a timer is NOT possible with this controller (BRC301B61). In such cases, use the air conditioner controller (BRC1E53) or the central controller.



1 Operation lamp

This red pilot lamp lights up while the unit is in operation.

2 Operation/Stop button

Press this button once and the unit starts to operate. Press this button again and the unit stops.

3 Air flow rate changeover button

Use this button to change the air flow to "" Low, "" High, "" FRESH UP" Low Fresh-up, or "" FRESH UP" High Fresh-up mode.

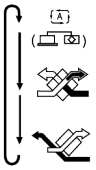
When this indication does NOT show, the volume of outdoor air supplied into the room and that of the room air exhausted outdoors is equal.

For "FRESH UP" operation

- If the Fresh-up setting is set to "Fresh up air supply": The volume of outdoor air supplied into the room is larger than that of room air exhausted outdoors. This prevents odours and moisture from kitchens and toilets from flowing into the room. This is the factory setting.
- If the Fresh-up setting is set to "Fresh up air exhaust": The volume of room air exhausted outdoors is larger than that of outdoor air supplied into the room. This prevents hospital odours and airborne micro-organisms from flowing out of the room into the corridors.

To change this setting, see "8.2 List of settings" on page 25.

4 Ventilation mode changeover button:



"" Automatic mode

The unit's temperature sensor automatically changes the operation mode of the unit to Bypass mode or Heat Reclaim Ventilation mode.

"" Heat Reclaim Ventilation mode

In this mode, the outdoor air passes through the heat exchange element to effect Heat Reclaim Ventilation.

"" Bypass mode

In this mode, the outdoor air does NOT pass through the heat exchange element, but bypasses it to effect Bypass ventilation.

5 Indication of operation control method:

When operation of the heat reclaim ventilation units is linked to the air conditioners, this indication may be displayed. While this indication is displayed, the heat reclaim ventilation units CANNOT be turned on or off with the controller of the heat reclaim ventilation units.

6 Indication of operation standby:

This icon indicates that the unit is precooling/preheating. The unit's start-up is delayed until precooling/preheating is finished.

Precooling/preheating means that the heat reclaim ventilation units are NOT started while linked air conditioners are starting up, for example, before office hours.

During this period, the cooling or heating load is reduced to bring the room temperature to the set temperature in a short time.

7 Indication of central control:

When a controller for air conditioners or devices for central control are connected to the heat reclaim ventilation units, this icon may be displayed.

While this indication is displayed, you may NOT be able to turn the heat reclaim ventilation units on or off, or use the timer function with the controller of the heat reclaim ventilation unit.

8 Indication of air filter cleaning

When the display shows "", clean the air filter.

9 Filter signal reset button

10 Inspection button

Use this button ONLY when servicing the unit.

11 Schedule timer button:

This button enables or disables the schedule timer.

12 Time adjust button:

13 Programming button:

To set the timer

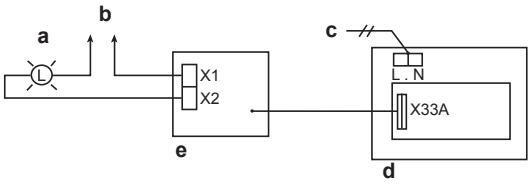
1. Press the schedule timer button.
2. Press the time adjust button to set the time.
3. Press the programming button to save the setting.

8.5 Detailed explanation of settings

8.5.1 To monitor the unit's operation

Prerequisite: Connect the adapter PCB BRP4A50A to monitor operation.

1. Plug the connector of the adapter PCB BRP4A50A into the X33A port.



a Operation lamp
b Power source
c Power source
d Heat reclaim ventilation unit's PCB
e Adapter PCB (BRP4A50A)

If X1 and X2 are connected like in the figure, then, depending on setting 18(28)-9, a signal is output when the unit is ON and/or when it is in 24-hour ventilation.

If X3 and X4 are also connected to BRP4A50A, then, depending on setting 18(28)-9, a second signal can be output about fan operation or when the unit is in error. If a heater is connected, the signal is output to the heater.

8.5.2 About fresh-up operation

Purpose

When combined with a local ventilation fan, such as the ones in bathrooms or kitchens, the air flow rate of the heat reclaim ventilation unit is balanced by either fan operation or exhaust operation. However, a circuit with voltage and low current (16 V, 10 mA) is formed between JC and J1, so you MUST use a relay with low-load contact.

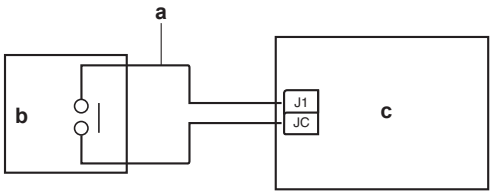
Function

The unit performs overcharged operation to prevent odour flowing back.

Necessary parts

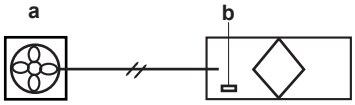
Operation contact of exhaust ventilation fan (field supply)

Example of control wiring:



a Connecting line can be extended to up to 50 m
b Fan (field supply)
c PCB

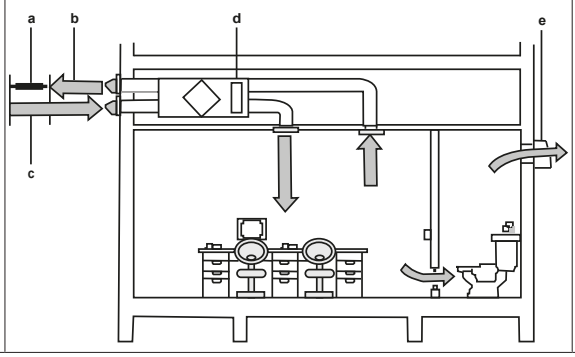
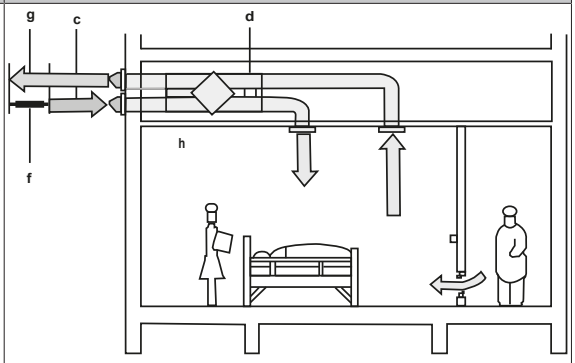
System description:



a Local ventilation fan
b Power supply

You can select either excessive supply mode or excessive exhaust mode. This function creates a more comfortable 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 controller.	Exhaust air volume can be set at a higher level than the supply air by the controller.
Main effects	▪ Prevents inflow of toilet odours. ▪ Prevents inflow of outdoor air in winter.	▪ Prevents outflow of airborne infectants from hospital rooms. ▪ Prevents outflow of odours from rooms in nursing homes.
Application	Offices, etc.	Hospitals, nursing homes, etc.

	Supply Fresh-up (Excessive outdoor air supply)	Exhaust Fresh-up (Excessive exhaust air supply)
Example		

a Part of supply fresh-up operation
b Air exhaust
c Air supply
d Heat reclaim ventilation unit
e Normal ventilation fan
f Part of exhaust fresh-up operation
g Air exhaust
h Patient room

If an external fan is connected to J1 and JC, take the following into account:

- Setting 19(29)-0-03 MUST be configured, because otherwise the filter cleaning indication will be displayed at the wrong time.
- Make sure that setting 18(28)-8 is still set to 01 (fresh-up).
- Setting 18(28)-7 selects exhaust air or supply air fresh-up and whether the controller indicates that fresh-up is active.
- The following table describes the unit's operation based on setting 1A-0 and J1, JC:

Setting	Description of setting (See "8.2 List of settings" on page 25)	"J1", "JC" Normal open	"J1", "JC" Normal closed
1A-0-01	Fresh-up "OFF" (factory setting)	Normal	Fresh-up
1A-0-02	Fresh-up "ON"	Fresh-up	Fresh-up

The unit's fresh-up operation corresponds with the following fan operation:

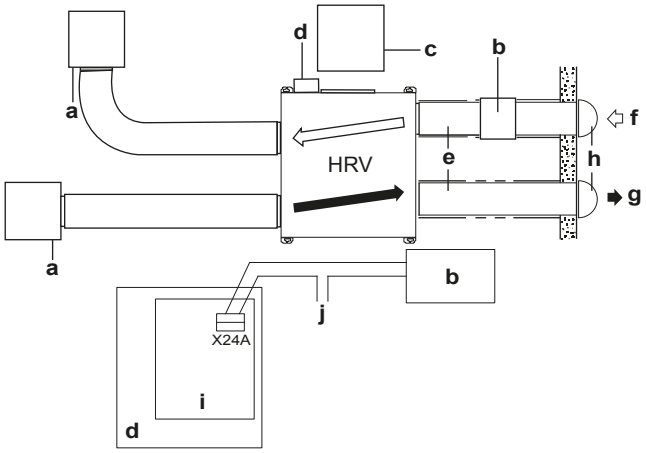
Type	Supply Fresh-up		Exhaust Fresh-up	
Ventilation amount	Supply	Exhaust	Supply	Exhaust
Weak	High	Low	Low	High
Strong	Ultra high	High	High	Ultra high

8.5.3 About the external damper operation

Function

Intake of outdoor air when the heat reclaim ventilation unit is off can be prevented if an external damper is incorporated in the system.

The heat reclaim ventilation's main unit PCB operates the heat reclaim ventilation and provides a signal for the external damper.



a Air suction/discharge grille
b External damper (field supply)
c Inspection hole
d Switch box
e Heat insulation
f Outdoor air (fresh air from outdoors)
g Exhaust air (exhaust air to outdoors)
h Round shape hood
i PCB
j Power source

Essential wiring

See "6.5.2 Opening the switch box" on page 17.

X24A outputs a signal when the supply air fan or exhaust air fan is running. Configure setting 18(28)-3 to 03 or 04.

8.5.4 About the CO2 sensor

With the CO_2 (carbon dioxide) sensor installed, you can adjust the ventilation volume in function of measured CO_2 concentration. The measured concentration value is compared to programmed trigger values. Make sure that the ventilation mode and air flow rate are set to automatic.

See "8.2 List of settings" on page 25 for the field setting overview.

- Use setting 19(29)-9-05 to give control to the CO_2 sensor.
- Use setting 19(29)-7 to shift the trigger values.
- Use setting 18(28)-6 to switch between linear and fixed control.

	Linear control	Fixed control
Initialising	20 minutes in high	20 minutes in high

	Linear control	Fixed control
Measuring	Every 5 minutes	Every 20 minutes
Evaluation	Every 30 minutes (average of 6 measurements)	Every 20 minutes

Trigger value CO_2 ppm (1)	Linear control (minutes)			Fixed control	
	UH	H	L	Mode A	Mode B
≥1450	30	—	—	UH	UH
1300~1450	20	10	—	UH	UH
1150~1300	10	20	—	H	H
1000~1150	—	30	—	H	H
850~1000	—	20	10	H	L
700~850	—	10	20	L	L
550~700	—	—	30	L	L
400~550	—	—	20	L	stop
0~400	—	—	10	L	stop

(1) CO_2 parts per million
UH Ultra high
H High
L Low

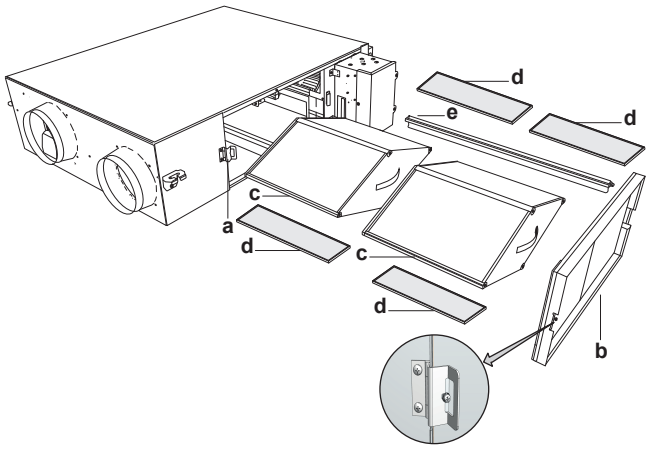
Example

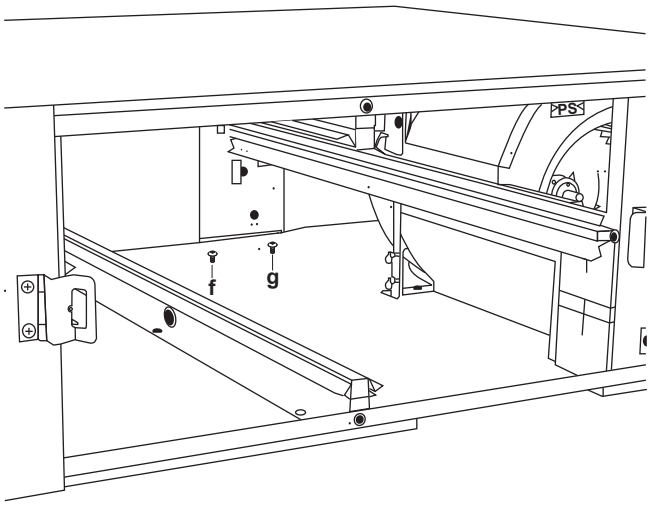
When the sensor measures 900 ppm in linear control, the unit runs in high mode for 20 minutes and the next 10 minutes in low mode, then measures again.

Essential wiring

See "6.5.2 Opening the switch box" on page 17 and the installation manual that is delivered with the CO_2 sensor.

To remove the components





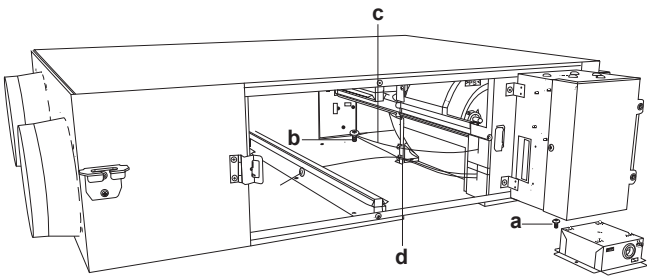
a Hinge mechanism
b Service cover
c Heat exchange element
d Air filter
e Heat exchange element rail
f Screw 1
g Screw 2

1 Open the service cover hinge by loosening the screw.
2 Remove the service cover.
3 Remove the 2 heat exchange elements and the 4 air filters.
4 Remove the screw from the right heat exchange element rail.
5 Remove the heat exchange element rail.
6 Loosen screw 2, and remove screw 1.

INFORMATION

Use a crosshead screwdriver with a shank of more than 65 mm and a total length of less than 120 mm.

To install the CO2 sensor



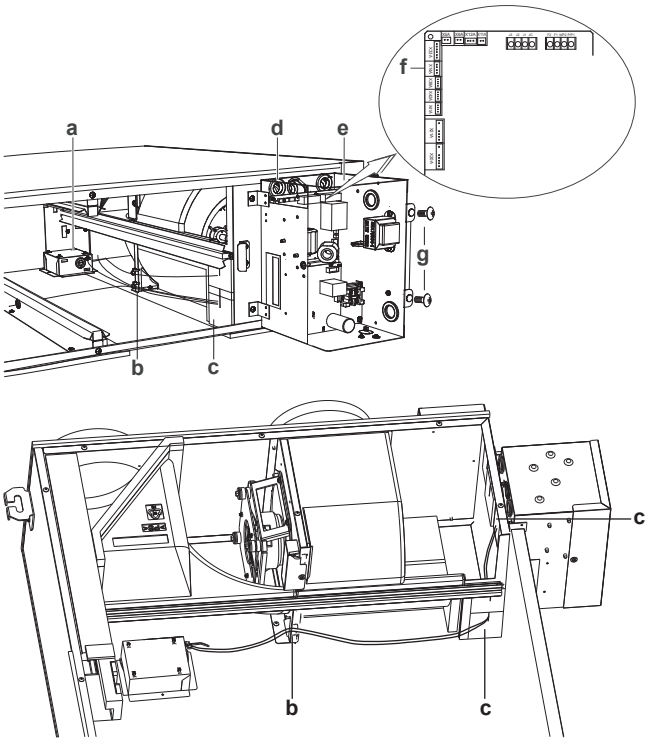
a Screw 1
b Screw 2
c Damper motor wire
d Clamp

1 Use the 2 screws to install the CO_2 sensor. See "To remove the components" on page 37 for details.

NOTICE

Make sure that the damper motor wire is NOT trapped under the kit.

To route the wiring of the CO2 sensor



a CO_2 sensor
b Clamp
c Sealing material
d Bush
e Switch box
f X14A connector
g Screw

1 Remove the screws of the switch box cover.

2 Open the switch box.

3 Follow the same path with the CO_2 sensor wire as the damper switch (red) and thermistor (black) wires: through the bush inside the unit and through the left bush in the switch box.

4 Firmly insert the CO_2 sensor wire into the X14A connector.

5 Clamp the CO_2 sensor wire together with the damper switch (red) and thermistor (black) wires inside the switch box.

6 Cut the accompanying sealing material along the slit. Stick each piece on top of the sealing material that is attached to the bushing, in order to seal the gap around the CO_2 sensor wire.

7 Bundle the excess CO_2 sensor wire together with the damper switch (red) and thermistor (black) wires from the inside of the unit with the accompanying clamp.

8 Cut off the excess part of the clamp.

NOTICE

To install the heat exchanger rail correctly, the wire MUST be clamped.

NOTICE

When bundling the wires, make sure to open the control box completely.

To install the components

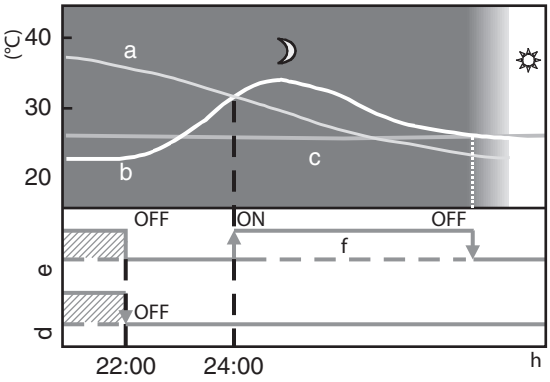
1 Close the switch box cover.

2 Install the components. Follow the reverse procedure of "To remove the components" on page 37.

8.5.5 About nighttime free cooling operation

Nighttime free cooling function

The nighttime free cooling function is an energy-conserving function that works at night, when the air conditioner is off. This reduces the cooling load in the morning, when the air conditioner is switched on. This is mainly for rooms that contain office equipment that raises the room temperature.



a Outside temperature
b Indoor temperature
c Set temperature
d Operating state of air conditioner
e Operating state of heat reclaim ventilation unit
f Nighttime free cooling operation

Explanation

The unit compares the indoor and outdoor temperatures after the air conditioning stops running for the night. If the conditions below are met, nighttime free cooling starts. When the indoor temperature reaches the air conditioning setting, nighttime free cooling stops.

Conditions

- The indoor temperature is higher than the air conditioning setting.
- The outdoor temperature is lower than the indoor temperature.

If the above conditions are NOT met, re-evaluation takes place every 60 minutes.

INFORMATION

Nighttime free cooling operation works when the heat reclaim ventilation unit is off, so it is NOT possible to stop this function.

Setting 17(27)-1 sets the number of hours that have to pass before the conditions for the free cooling function are checked.

Setting 17(27)-6 sets whether the fan runs in high or ultra high mode during the free cooling.

Setting 17(27)-7 sets the temperature.

INFORMATION

This function is NOT possible when the heat reclaim ventilation unit is NOT linked to an air conditioner.

8.5.6 About the precool and preheat function

When the precool/preheat function is set, the heat reclaim ventilation unit switches on at the configured time (30, 45, or 60 minutes) after the air conditioner starts cooling or heating. By default, this function is off. This function must be set with the controller of the air conditioner.

If the air conditioner is restarted within 2 hours after it has been stopped, this function is NOT started.

Setting 17(27)-2 enables this function.

Setting 17(27)-3 and setting 17(27)-9 set the delay for the start of the heat reclaim ventilation unit.

INFORMATION

This function is NOT possible when there is a direct duct connection.

INFORMATION

This function is NOT possible when the heat reclaim ventilation unit is NOT linked to an air conditioner.

8.5.7 About preventing a feeling of draft

When heating is on in a setup with air conditioner and the fan is turned off while the defrost operation is running, the fan of the heat reclaim ventilation unit is set to low mode or even stopped to prevent a feeling of draft.

Setting 17(27)-5 sets the fan mode.

INFORMATION

This function is NOT possible when the heat reclaim ventilation unit is NOT linked to an air conditioner.

8.5.8 About 24-hour ventilation

When the controller is switched off, 24-hour ventilation starts. Setting 19(29)-4 enables this function and sets the fan speed.

8.5.9 About the ultra-low setting

If the amount of ventilation is too high, even in low mode, you can have the fans work intermittently or at a very low speed with setting 19(29)-1.

INFORMATION

This function is NOT possible when there is a direct duct connection.

8.5.10 About the electrical heater operation

If the electrical heater is used, set setting 19(29)-8 to 03 or 04 and setting 18(28)-9 to 01. For more details, see the PCB heater manual.

8.5.11 About external linkage input

Terminals J2 and JC function as contact signal input to switch the heat reclaim ventilation unit on or off.

8.5.12 About filter contamination check

The filter contamination check can ONLY be done in the same conditions as 19(29)-0-04 or 05. E.g., if the unit is operating in bypass mode, filter contamination CANNOT be checked. In this case, a timer counts the hours. After a target value is reached, the conditions are changed for a short time to be able to perform a filter contamination check.

Setting 18(28)-11-02 resets the timer to 0.

Setting 18(28)-11-03 performs an immediate filter contamination check.

After finishing 18(28)-11-02 and 03, the setting automatically returns to 18(28)-11-01 and unit operation continues as before. Settings 18(28)-11-02 and 03 can ONLY be used when setting 19(29)-0 is set to 01 or 02.

INFORMATION

This function is not possible in case of errors.

9 Commissioning

9.1 Overview: Commissioning

After installation and once the field settings are defined, the installer is obliged to verify correct operation. Therefore a test run MUST be performed according to the procedures described below.

This chapter describes what you have to do and know to commission the system after it is configured.

Commissioning typically consists of the following stages:

1 Checking the "Checklist before commissioning".
2 Performing a test run.
3 If necessary, correcting errors after abnormal completion of the test run.
4 Operating the system.

9.2 Precautions when commissioning

DANGER: RISK OF ELECTROCUTION

CAUTION

Do NOT perform the test operation while working on the indoor units, the outdoor unit or the heat reclaim ventilation units.

When performing the test operation, NOT only the unit to which the controller is connected will operate, but all units that are linked to this one as well. Working on an indoor unit or the heat reclaim ventilation unit while performing a test operation is dangerous.

CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.

9.3 Checklist before commissioning

After the installation of the unit, first check the following items. Once all below checks are fulfilled, the unit MUST be closed, ONLY then can the unit be powered up.

☐	You read the complete installation and operation instructions, as described in the **installer and user reference guide**.
☐	**Installation** Check that the unit is properly installed, to avoid abnormal noises and vibrations when starting up the unit.
☐	**Field wiring** Be sure that the field wiring has been carried out according to the instructions described in "6.5 Electrical wiring" on page 17, according to the wiring diagrams and according to the applicable legislation.
☐	**Power supply voltage** Check the power supply voltage on the local supply panel. The voltage MUST correspond to the voltage on the identification label of the unit.
☐	**Earth wiring** Be sure that the earth wires have been connected properly and that the earth terminals are tightened.
☐	**Insulation test of the main power circuit** Using a megatester for 500 V, check that the insulation resistance of 2 MΩ or more is attained by applying a voltage of 500 V DC between power terminals and earth. NEVER use the megatester for the transmission wiring.

☐	**Fuses, circuit breakers, or protection devices** Check that the fuses, circuit breakers, or the locally installed protection devices are of the size and type specified in "5.4 Preparing electrical wiring" on page 13. Be sure that neither a fuse nor a protection device has been bypassed.
☐	**Internal wiring** Visually check the electrical component box and the inside of the unit for loose connections or damaged electrical components.
☐	**Air inlet/outlet** Check that the air inlet and outlet of the unit is NOT obstructed by paper sheets, cardboard, or any other material.
☐	**Installation date and field setting** Be sure to keep a record of the installation date on the sticker on the rear of the front panel according to EN60335-2-40 and keep record of the contents of the field setting(s).

9.4 Checklist during commissioning

☐	To perform a **test run**.

9.4.1 About the test run

After completing the installation of the system, turn on the power of the heat reclaim ventilation units. Refer to the manual of the controller of each unit (controller for air conditioner, central controller, etc.) to conduct a trial operation.

10 Hand-over to the user

Once the test run is finished and the unit operates properly, please make sure the following is clear for the user:

- Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he can find the complete documentation at the URL mentioned earlier in this manual.
- Explain the user how to properly operate the system and what to do in case of problems.
- Show the user what to do for the maintenance of the unit.
- Explain the user about energy saving tips as described in the operation manual.

11 Maintenance and service

NOTICE

Maintenance MUST be done by an authorized installer or service agent.

We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.

NOTICE

We recommend to clean at least once every 2 years (for general office use). If necessary, shorter maintenance intervals might be required.

CAUTION

Before accessing, make sure to turn off the operation switch and disconnect the power.

CAUTION

During operation, NEVER check or clean the unit. It may cause electrical shock. Do NOT touch the rotating parts, it will cause injury.

11.1 Overview: Maintenance and service

This chapter contains information about:

- Preventing electrical hazards when maintaining and servicing the system
- The maintenance of the heat reclaim ventilation unit.

11.2 Maintenance safety precautions

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

NOTICE: Risk of electrostatic discharge

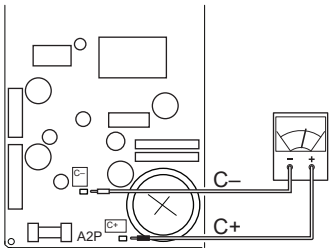
Before performing any maintenance or service work, touch a metal part of the unit in order to eliminate static electricity and to protect the PCB.

11.2.1 To prevent electrical hazards

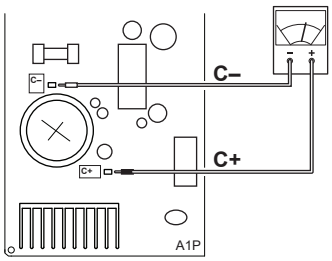
When performing service to inverter equipment:

1. Do NOT open the electrical component box cover for 10 minutes after turning off the power supply.
2. Measure the voltage between terminals on the terminal block for power supply with a tester and confirm that the power supply is shut off. In addition, measure points as shown in the figure, with a tester and confirm that the voltage of the capacitor in the main circuit is less than 50 V DC.

Models 350~650



Models 800~2000



For details, refer to the wiring diagram on the outside of the service cover.

11.3 Checklist for maintenance of the heat reclaim ventilation unit

- Check the following at least once a year: Air filters.
  The air filters can get blocked due to dust, dirt, leaves, etc. It is recommended to clean the air filters yearly. A blocked air filter can cause excessive pressure and reduced performance. See " Maintenance of the air filter" on page 43.
- Check the following at least once every 2 years: Heat exchange element.
  The heat exchange element can get blocked due to dust, dirt, etc. It is recommended to clean the heat exchange element once every 2 years. A blocked heat exchange element can cause excessive pressure and reduced performance. See " Maintenance of the heat exchange element" on page 44.

12 Troubleshooting

12.1 Overview: Troubleshooting

This chapter describes what you have to do in case of problems.

It contains information about solving problems based on error codes.

Before troubleshooting

Carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

12.2 Precautions when troubleshooting

WARNING

- When carrying out an inspection on the switch box of the unit, ALWAYS make sure that the unit is disconnected from the mains. Turn off the respective circuit breaker.
- When a safety device was activated, stop the unit and find out why the safety device was activated before resetting it. NEVER shunt safety devices or change their values to a value other than the factory default setting. If you are unable to find the cause of the problem, call your dealer.

DANGER: RISK OF ELECTROCUTION

WARNING

Prevent hazards due to inadvertent resetting of the thermal cut-out: power to this appliance MUST NOT be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly turned ON and OFF by the utility.

12.3 Solving problems based on error codes

In case a malfunction code is shown on the display, consult the dealer where the unit was purchased.

12.3.1 Error codes: Overview

Malfunction code	Specific code	Description
A1		EEPROM failure
A6		Locked rotor
A6	22	Unstable fan rpm: failure of filter contamination check or failure of function 19(29)-0-04/-05
A8		Power supply malfunction
AJ		Capacity setting malfunction
C1		Fan communication error
C6		Malfunction of fan motor sensor or fan control driver
CH		CO_2 sensor warning
U5		Transmission error between unit and controller
U8		Transmission error between master controller and slave controller
UA		Wrong controller installed
UC		Repeated central address
UE		Transmission error between unit and central controller
60		External protection device activated
64	01	Indoor air thermistor (R1T) malfunction
64	02	Indoor air thermistor (R1T) out of operation range
65	01	Outdoor air thermistor (R2T) malfunction
65	02	Outdoor air thermistor (R2T) out of operation range
65	03	Functions 19(29)-0-04/-05 not possible due to low outdoor temperature
6A		Damper-related malfunction
6A		Damper-related malfunction+thermistor

In case of malfunction with the code on grey background, the unit still operates. However, make sure to have it inspected and repaired as soon as possible.

13 Disposal

NOTICE

Do NOT try to dismantle the system yourself: the dismantling of the system MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

14 Technical data

- A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible).
- The **full set** of latest technical data is available on the Daikin extranet (authentication required).

14.1 Wiring diagram: Heat reclaim ventilation unit

The wiring diagram can be found on the outside of the service cover.

Legend for wiring diagrams:

A1P	Printed circuit board
A2P~A5P	Printed circuit board assy (fan)
C7	Capacitor (M1F)
F1U	Fuse (250 V, 6.3 A, T) (A1P)
HAP	Pilot lamp (service monitor - green)
K1R	Magnetic relay (A1P)
K2R	Magnetic relay (A1P)
L1R~L4R	Reactor
M1D	Motor (damper)
PS	Switching power supply
Q1DI	Field earth leak detector (≤300 mA)
R1T	Thermistor (indoor air)
R2T	Thermistor (outdoor air)
R3T	Thermistor (PTC)
S1C	Limit switch damper motor
V1R	Diode bridge
X1M	Terminal (A1P)
X2M	Terminal (outside input) (A1P)
X3M	Terminal (power supply)
Z1C	Noise filter (ferrite core)
Z1F	Noise filter

Controller

SS1	Selector switch

Connector for option

X14A	Connector (CO_2 sensor)
X24A	Connector (outside damper)
X33A	Connector (contact printed circuit board)
X35A	Connector (power supply printed circuit board)

For models 350~650

C1	Capacitor (A2P)
F2U	Fuse (250 V, 5 A, T) (A2P)
F4U	Fuse (250 V, 6.3 A, T) (A2P)
K1R	Magnetic relay (A2P)
M1F	Motor (supply air fan)
M2F	Motor (exhaust air fan)
Z2C	Noise filter (ferrite core)

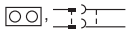
For models 800+1000

F3U	Fuse (250 V, 6.3 A, T) (A2P+A3P)
M1F	Motor (exhaust air fan)
M2F	Motor (supply air fan)

For models 1500+2000

F3U	Fuse (250 V, 6.3 A, T) (A2P~A5P)
K5R	Magnetic relay (A1P)
M2D	Motor (damper)
M1F	Motor (exhaust air fan) (bottom)
M2F	Motor (supply air fan) (bottom)
M3F	Motor (exhaust air fan) (top)
M4F	Motor (supply air fan) (top)
S2C	Limit switch damper motor

Symbols:

	Field wiring
	Terminals
	Connectors
	Protective earth
	Noiseless earth

Colours:

BLK	Black
BLU	Blue
BRN	Brown
GRN	Green
ORG	Orange
RED	Red
WHT	White
YLW	Yellow

For the user

15 Controller

CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT remove the front panel. Some parts inside are dangerous to touch and appliance problems may happen. For checking and adjusting the internal parts, contact your dealer.

This operation manual will give a non-exhaustive overview of the main functions of the system.

Detailed information on required actions to achieve certain functions can be found in the dedicated installation and operation manual of the indoor unit.

Refer to the operation manual of the installed controller.

16 Before operation

WARNING

This unit contains electrical parts.

WARNING

Before operating the unit, be sure the installation has been carried out correctly by an installer.

CAUTION

Do NOT operate the system when using a room fumigation-type insecticide. Chemicals could collect in the unit, and endanger the health of people who are hypersensitive to chemicals.

Operation modes:

- Heat reclaim ventilation mode.
- Bypass mode.

17 Energy saving and optimum operation

Observe the following precautions to ensure the system operates properly.

- Adjust the air outlet properly and avoid direct air flow to room inhabitants.
- NEVER place objects near the air inlet or the air outlet of the unit. Doing so may cause a reduced heating/cooling effect or stop operation.
- When the display shows  (time to clean the air filter), ask a qualified service person to clean the filters. Refer to "18 Maintenance and service" on page 43.
- Keep the heat reclaim ventilation unit and controller at least 1 m away from televisions, radios, stereos, and other similar equipment. Failure to do so may cause static or distorted pictures.
- Do NOT place items under the indoor unit, as they may be damaged by water.
- Condensation may form if the humidity is above 80%.

If the heat reclaim ventilation unit is used in a linked or a central control system, then energy saving functionality is available. Refer to "8.5 Detailed explanation of settings" on page 35.

Contact your installer or dealer for advice or to modify the parameters to the needs of your building.

Detailed information is given for the installer in the installation manual.

18 Maintenance and service

NOTICE

Maintenance MUST be done by an authorized installer or service agent.

We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.

NOTICE

We recommend to clean at least once every 2 years (for general office use). If necessary, shorter maintenance intervals might be required.

CAUTION

Before accessing, make sure to turn off the operation switch and disconnect the power.

CAUTION

During operation, NEVER check or clean the unit. It may cause electrical shock. Do NOT touch the rotating parts, it will cause injury.

18.1 Maintenance of the air filter

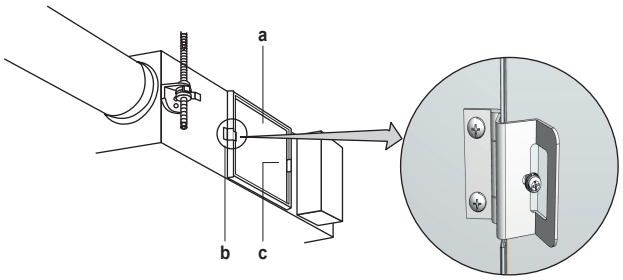
NOTICE

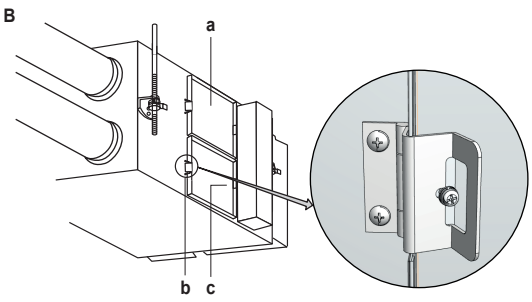
- Do NOT wash the air filter in hot water.
- Do NOT dry the air filter over a fire.
- Do NOT subject the air filter to direct sunlight.
- Do NOT use organic solvents, such as gasoline or thinner, on the air filter.
- Make sure to install the air filter after servicing (missing air filter causes clogged heat exchange element). Replacement air filters are available.

To clean the air filters

1 Go into the ceiling through the inspection hole, loosen the screw of the hinge mechanism (on the left side) to open the service cover. Take the service cover off by rotating it around the vertical axis of the hanging metal.

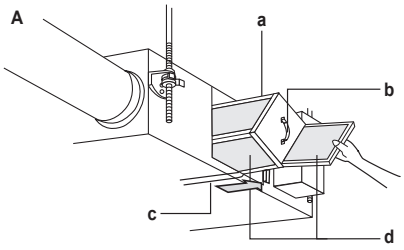
A

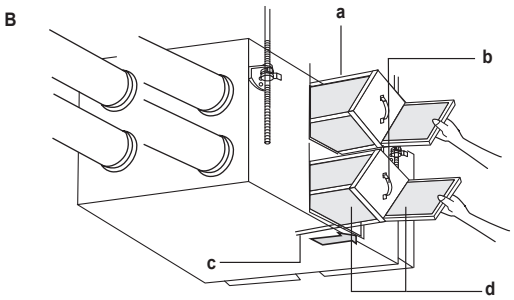




a Service cover
b Hinge mechanism
c Hanging metal
A Models 350~1000
B Models 1500+2000

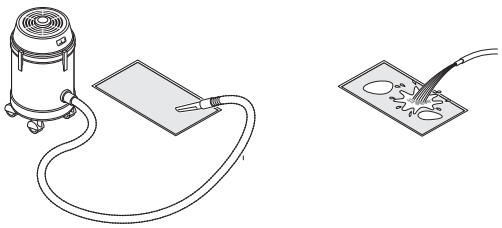
2 Take out the air filters from the unit body.





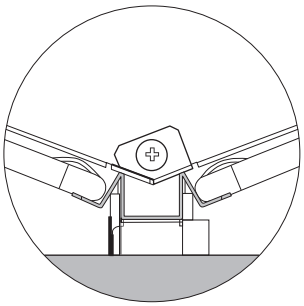
a Heat exchange element
b Handle
c Rail
d Air filter
A Models 350~1000
B Models 1500+2000

3 To clean the air filter, lightly pat it with your hand or remove dust with a vacuum cleaner. If excessively dirty, wash it in water.



4 If the air filter is washed, remove water completely and allow to dry for 20 to 30 minutes in the shade.

5 When dried completely, install the air filter back in place after the installation of the heat exchange element. Make sure the air filter is orientated correctly, as shown in the figure.



6 Install the service cover securely in place.

18.2 Maintenance of the heat exchange element

NOTICE

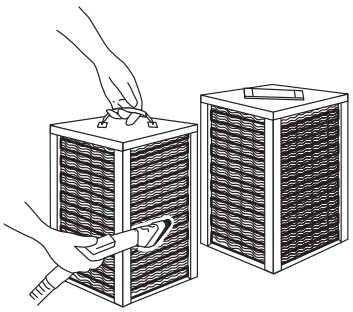
- NEVER wash the heat exchange element with water.
- NEVER touch the heat exchange element paper because it can be damaged if it is forced.
- Do NOT crush the heat exchange element.

To clean the heat exchange element

1 Take out the heat exchange elements. Refer to "18.1 Maintenance of the air filter" on page 43.

2 Equip a vacuum cleaner with a brush on the end of the suction nozzle.

3 Use the vacuum cleaner and lightly apply the brush to the surface of the heat exchange element to remove dust.



4 Place the heat exchange element on the rail and insert it in the unit.

5 Install the air filters in the unit.

6 Install the service cover.

19 Troubleshooting

If one of the following malfunctions occur, take the measures shown below and contact your dealer.

WARNING

Stop operation and shut off the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electric shock or fire. Contact your dealer.

The system MUST be repaired by a qualified service person.

Malfunction	Measure
If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates or the ON/OFF switch does NOT properly work.	Turn OFF the main power switch.
If water leaks from the unit.	Stop the operation.

Malfunction	Measure
The operation switch does NOT work well.	Turn OFF the power supply.
If the controller display indicates the unit number, the operation lamp flashes and the malfunction code appears.	Notify your installer and report the malfunction code.

If the system does NOT properly operate except for the above mentioned cases and none of the above mentioned malfunctions is evident, investigate the system according to the following procedures.

Malfunction	Measure
If the system does NOT operate at all.	▪ Check if there is no power failure. Wait until power is restored and restart operation. ▪ Check if no fuse has blown or breaker is activated. Change the fuse or reset the breaker if necessary. ▪ Check if the indication of the operation control method on the controller is shown. This is normal. Operate the unit using the air conditioner remote control or the central controller. Refer to "8 Configuration" on page 23. ▪ Check if the indication of operation standby is displayed on the controller, indicating that the unit is precooling/ preheating. The unit is at stop and will start operation after the precooling/ preheating operation is completed. Refer to "8 Configuration" on page 23.
The amount of discharged air is small and the discharging sound is high.	▪ Check if the air filter and heat exchange element are NOT clogged. Refer to "18 Maintenance and service" on page 43.
The amount of discharged air is large and the discharging sound is high.	▪ Check if the air filter and heat exchange element are installed. Refer to "18 Maintenance and service" on page 43.

INFORMATION

The unit may not operate as requested due to a filter contamination check.

In case a malfunction code appears on the indoor unit controller display, contact your installer and inform the malfunction code, the unit type, and serial number (you can find this information on the nameplate of the unit).

For your reference, a list with malfunction codes is provided. Refer to "12.3.1 Error codes: Overview" on page 41. Depending on the level of the malfunction code, the code can be reset by pushing the ON/ OFF button. If NOT, ask your installer for advice.

If after checking all above items, it is impossible to fix the problem yourself, contact your installer and state the symptoms, the complete model name of the unit (with manufacturing number if possible) and the installation date (possibly listed on the warranty card).

20 Relocation

Contact your dealer for removing and reinstalling the total unit. Moving units requires technical expertise.

21 Disposal

NOTICE

Do NOT try to dismantle the system yourself: the dismantling of the system MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

22 Glossary

Dealer
Sales distributor for the product.

Authorized installer
Technical skilled person who is qualified to install the product.

User
Person who is owner of the product and/or operates the product.

Applicable legislation
All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company
Qualified company which can perform or coordinate the required service to the product.

Installation manual
Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual
Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions
Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories
Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment
Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supply
Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

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