



## **INSTALLATION AND OPERATION MANUAL**

# **URV** System air conditioner

FXYBP20K7V1 FXYBP25K7V1 **CE - DECLARATION-OF-CONFORMITY** CE - KONFORMITÄTSERKI ÄRLING

**CE-CONFORMITEITSVERKLARING** CE - DECLARACION-DE-CONFORMIDAD

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## FXYBP20K7V1, FXYBP25K7V1.

are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions: der/den folgenden Norm(en) oder einem anderen Normdokument oder -dokumenten entspricht/entsprechen, unter der Voraussetzung, daß sie gemäß unseren Anweisungen eingesetzt werden: sont conformes à la/aux norme(s) ou autre(s) document(s) normatif(s), pour autant qu'ils soient utilisés conformément à nos instructions:

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## EN60335-2-40.

following the provisions of: gemäß den Vorschriften der: conformément aux stipulations des:

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Richtlijnen, zoals geamendeerd. Directivas, según lo enmendado. Direttive, come da modifica.

Οδηγιών, όπως έχουν τροποποιηθεί. Directivas, conforme alteração em. Direktiver, med senere ændringer.

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Information Merk

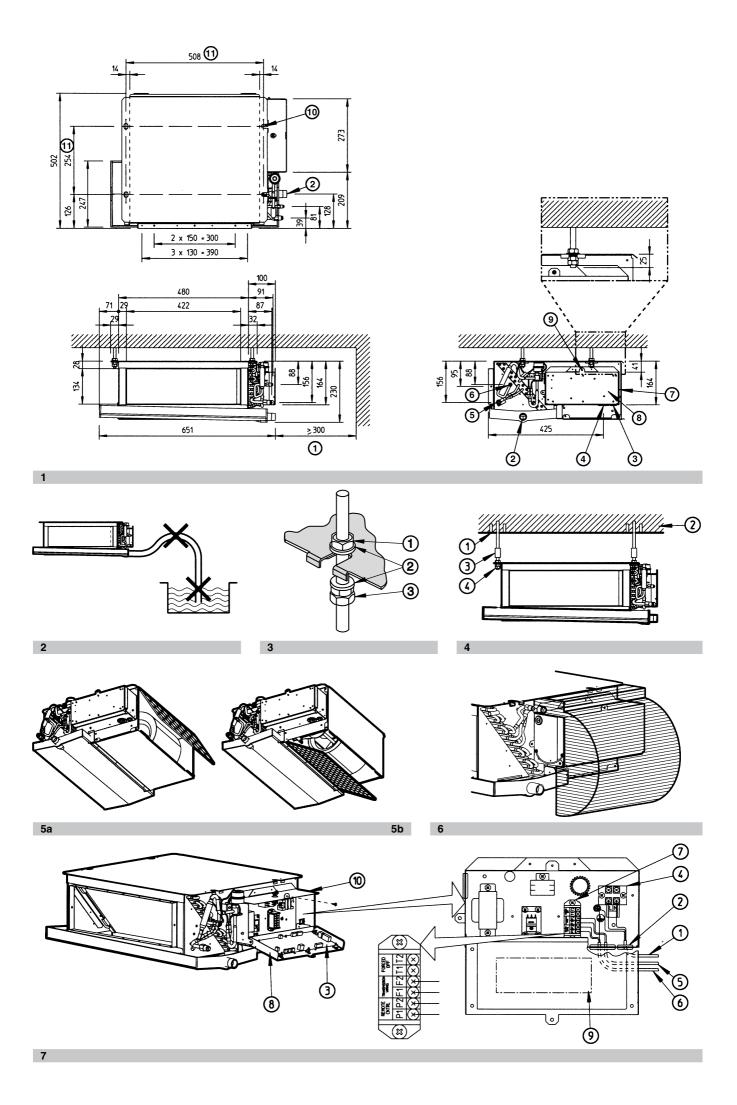
utrustningen är utförd i enlighet med den Tekniska Konstruktionsfilen DAIKIN.TCF.014 som positivt intygas av NMI vilket också framgår av Certifikat 9110074503. som det fremkommer i den Tekniske Konstruksjonsfilen DAIKIN.TCF.014 og gjennom positiv bedømmelse av NMI ifølge Sertifikat 9110074503.

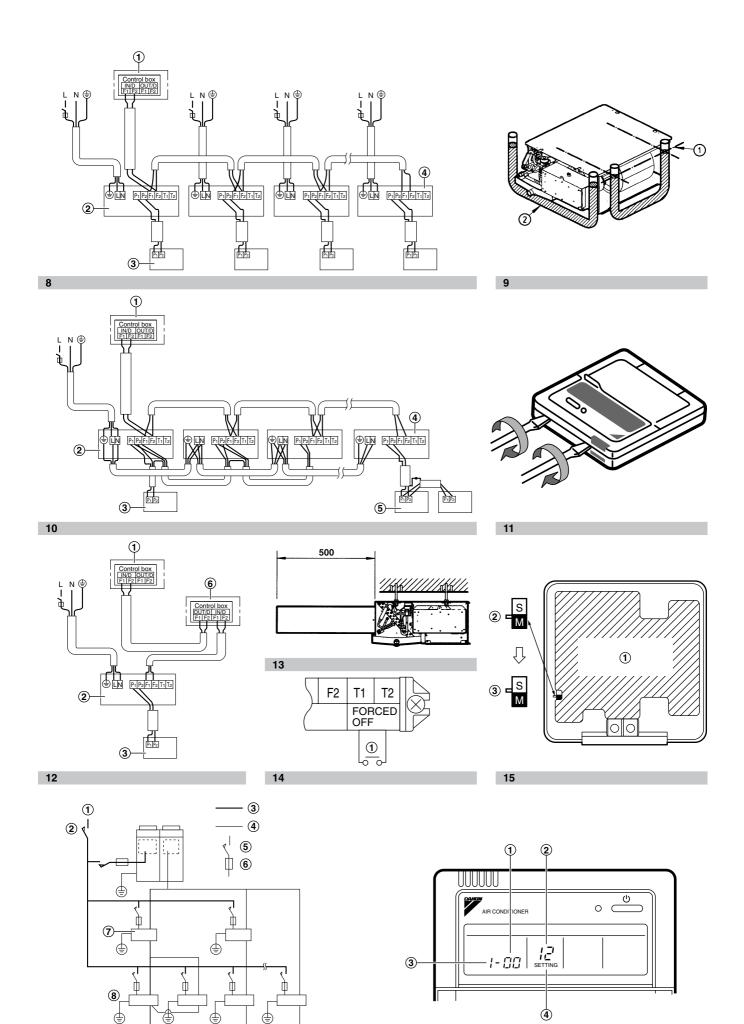
Huom jotka on esitetty Teknisessä Asiakirjassa DAIKIN.TCF.014 ja jotka NMI on hyväksynyt Sertifikaatin 9110074503 mukaisesti.

**Dany Chalmet Director Quality Assurance** Ostend, 5th of June 2000

DAIKIN EUROPE I

Zandvoordestraat 300, B-8400 Oostende, Belgium





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READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. KEEP THIS MANUAL IN A HANDY PLACE FOR FUTURE REFERENCE.

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRIC SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. BE SURE ONLY TO USE ACCESSORIES MADE BY DAIKIN WHICH ARE SPECIFICALLY DESIGNED FOR USE WITH THE EQUIPMENT AND HAVE THEM INSTALLED BY A PROFESSIONAL.

IF UNSURE OF INSTALLATION PROCEDURES OR USE, ALWAYS CONTACT YOUR DAIKIN DEALER FOR ADVICE AND INFORMATION.

### **BEFORE INSTALLATION**

- Leave the unit inside its packaging until you reach the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, this to avoid damage or scratches to the unit.
- Refer to the installation manual of the outdoor unit for items not described in this manual.
- Caution concerning new refrigerant series:
  - The connectable outdoor units must be RSX(Y)P-K or RSEYP-K, the outdoor units designed exclusively for R407C
  - If outdoor units for R22 are connected, the system will not work properly.

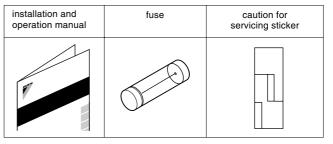
#### **PRECAUTIONS**

Do not install or operate the unit in rooms mentioned below:

- Places with mineral oil, or filled with oil vapour or spray like in kitchens. (Plastic parts may deteriorate.)
- Where corrosive gas like sulphurous gas exists. (Copper tubing and brazed spots may corrode.)
- Where volatile flammable gas like thinner or gasoline is used.
- Where machines generating electromagnetic waves exist. (Control system may malfunction.)
- Where the air contains high levels of salt such as air near the ocean and where voltage fluctuates a lot (e.g. in factories). Also in vehicles or vessels.

#### Accessories

Check if the following accessories are included with your unit.



#### Optional accessories

- There are two types of remote controllers: wired and wireless.
   Select a remote controller according to customer request and install in an appropriate place.
  - Refer to catalogs and technical literature for selecting a suitable remote controller.
- · Suction air filter.
- · Wiring adaptor for electrical heater.

## For the following items, take special care during construction and check after installation is finished

Tick **w** when checked

- ☐ Is the indoor unit fixed firmly?
  - The unit may drop, vibrate or make noise.
- ☐ Is the gas leak test finished?

It may result in insufficient cooling.

☐ Is the unit fully insulated?

Condensate water may drip.

☐ Does drainage flow smoothly?

Condensate water may drip.

☐ Does the power supply voltage correspond to that shown on the name plate?

The unit may malfunction or components may burn out.

☐ Are wiring and piping correct?

The unit may malfunction or components may burn out.

☐ Is the unit safely grounded?

Dangerous at electric leakage.

☐ Is the wiring size according to specifications?

The unit may malfunction or components may burn out.

Is nothing blocking the air outlet or inlet of either the indoor or outdoor units?

It may result in insufficient cooling.

Are refrigerant piping length and additional refrigerant charge noted down?

The refrigerant charge in the system might not be clear.

#### Notes to the installer

- Read this manual carefully to ensure correct installation. Be sure to instruct the customer how to properly operate the system and show him/her the enclosed operation manual.
- Explain to the customer what system is installed on the site.
   Be sure to fill out the appropriate installation specifications in the chapter "What to do before operation" of the outdoor unit operation manual.

## SELECTING INSTALLATION SITE (SEE FIG. 1)

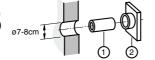
- 1. Select an installation site where the following conditions are fulfilled and that meets your customer's approval.
  - The units are designed for ceiling concealed installation with an air discharge duct of 500 mm (see fig. 13).
  - · Where optimum air distribution can be ensured.
  - Where nothing blocks air passage.
  - Where condensate water can be properly drained.
  - · Where the false ceiling is not noticeably on an incline.
  - Where sufficient clearance for maintenance and service can be ensured.
  - Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual of the outdoor unit.)
  - Make sure that no piping is passing through the hatched area (fig. 6). Condensation can drip on the switch box and pipes can prevent you from opening the switch box smoothly.
  - Keep indoor unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances.
    - (Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)
- Use suspension bolts for installation. Check whether the ceiling is strong enough to support the weight of the indoor unit. If there is a risk, reinforce the ceiling before installing the unit (see fig. 1).
  - 1 Service space ≥300
  - 2 Drain pipe
  - 3 Power supply wiring port
  - 4 Transmission wiring port
  - 5 Gas pipe
  - 6 Liquid pipe
  - 7 Switch box
  - 8 Switch box cover
  - 9 Screw for opening the switch box cover
  - 10 Suspension bolt pitch (x4)
  - 11 Suspension bolt pitch distance

## PREPARATIONS BEFORE INSTALLATION

1. Relation of ceiling opening to unit and suspension bolt position. (see figure 1)

## NOTE

- For other installation than standard installation, contact your Daikin dealer for details.
- 2. Make the wall hole to the outdoor side for the electric wiring, the refrigerant and drain piping.
  - The hole must slope down toward the outdoor side.
  - The hole size must be just as large as to hold the protective pipe (Ø7-8cm) (field supply).
  - Use a wall hole cover (field supply) to hide the wall hole as much as possible.
    - 1 protective pipe (field supply)
    - 2 wall hole cover (field supply)



## 3. The fan speed for this indoor unit is preset to provide standard external static pressure.

If higher or lower external static pressure is required, reset the external static pressure by changing the initial setting from the remote controller.

## 4. Install the suspension bolts (see fig. 4).

(Use M10 size bolt for the suspension bolt.) Use anchors for existing ceilings, and a sunken insert, sunken anchors or other field supplied parts for new ceilings to reinforce the ceiling in order to bear the weight of the unit.

- 1 Anchor
- 2 Ceiling slab
- 3 Long nut or turn-buckle
- 4 Suspension bolt

## NOTE TE

· All the above parts are field supplied.

## INDOOR UNIT INSTALLATION

When installing optional accessories, read also the installation manual of the optional accessories. Depending on the field conditions, it may be easier to install optional accessories before the indoor unit is installed.

### 1. Install the indoor unit temporarily.

- Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket (see figure 3).
  - 1 Field procurement
  - 2 Washer for hanger bracket
- 3 Tighten (double nut)

#### 2. Check if the unit is horizontally levelled.

- Do not install the unit tilted.
- Check if the unit is levelled at all four corners with a water level or a water-filled vinyl tube as shown in figure 9.
  - 1 Water level
- 2 Vinyl tube
- 3. Tighten the upper nut.

## REFRIGERANT PIPING WORK

For refrigerant piping of outdoor unit, refer to the installation manual supplied with the outdoor unit.

Before rigging tubes, check which type of refrigerant is used. (This unit uses R407C.)

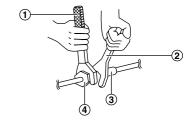


All field piping must be provided by a licensed refrigeration technician and must comply with the relevant local and national codes.

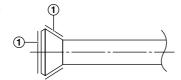
- Use a pipe cutter and flare suitable for R407C.
- Apply ether oil or ester oil around the flare portions before connecting.
- To prevent dust, moisture or other foreign matter from infiltrating the tube, either pinch the end, or cover it with tape.
- The outdoor unit is charged with refrigerant.
- Be sure to use both a spanner and torque wrench together when connecting or disconnecting pipes to/from the unit.



4 Flare nut



- Refer to Table 1 for the dimensions of flare nut spaces and the appropriate tightening torque. (Overtightening may damage the flare and cause leaks.)
- When connecting the flare nut, coat the flare both inside and outside with ether oil or ester oil and initially tighten by hand 3 or 4 turns before tightening firmly.
  - Coat here with ether oil or ester oil



- Check the pipe connector for gas leaks.
- Be sure to insulate the gas pipe and the liquid pipe separately with polyethylene foam insulation material (thermal conductivity =  $0.041 \sim 0.052 \text{ kW/mK}$ ).

	inside diameter	wall thickness
gas pipe insulation	12-15mm	8-10mm
liquid pipe insulation	8–10mm	7–10mm

## NOTE I

For the gas pipe, use a polyethylene foam resistant to a temperature of 110°C.

## CAUTION A



When inserting the refrigerant piping in the wall hole, take care not to let dust or moisture come into the piping. Protect the pipes with a cap or seal the pipe end completely with tape.



- dust
- 2 moisture
- 3 tape
- 4 cap

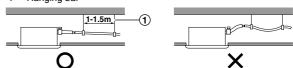
#### Table 1

Pipe gauge	Tightening torque	Flare dimension A (mm)	Flare shape
Ø 6.4	1420~1720 N•cm (144~176 kgf•cm)	8.3~8.7	90°±4
Ø 12.7	4950~6030 N•cm (504~616 kgf•cm)	15.4~15.8	R=0.4~0.8

### **DRAIN PIPING WORK**

Rig the drain piping as shown in figure and take measures against condensation. Improperly rigged piping could lead to leaks and eventually wet furniture and belongings.

Hanging bar



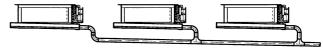
## 1. Install the drain pipes.

- Keep piping as short as possible and slope it downwards so that air may not remain trapped inside the pipe.
- Keep pipe size equal to or greater than that of the connecting pipe (Vinyl pipe of 25mm nominal diameter and 32mm outer diameter).
- Do not use a trap in the drain piping and never put the end of the hose into water (see fig. 2).
- If you extend the drain hose, always insulate it up to the outdoor side with polyethylene foam insulation material (field supply).
  - drain hose fixed to the indoor unit
  - the indoor side extension drain hose

  - polyethylene foam



- To ensure a downward slope of 1:100, install hanging bars every 1 to 1.5m.
- If unifying multiple drain pipes, install the pipes as shown.



### 2. After piping work is finished, check if drainage flows smoothly.

- Make sure that the drain hose is firmly connected.
- Pour some water into the drain pan to check if the water flows smoothly.

## WHEN ELECTRIC WIRING WORK IS FINISHED

Check drainage flow during COOL running, explained in chapter "TEST OPERATION".

## WHEN ELECTRIC WIRING WORK IS NOT FINISHED

- Remove the switch box lid and connect the single-phase power supply and the remote controller to the terminals. (Refer to Fig. 7)
  - Power supply wiring
  - Wiring port Indoor PC board
  - 3
  - Power supply terminal board
  - Transmission wiring between units
  - Remote controller wiring
  - Terminal board for unit transmission wiring
  - 8 Electric parts box lid
  - Wiring diagram
  - Electric parts box 10

Next, press the inspection/test operation button  $\left|\frac{36}{11857}\right|$  on the remote controller. The unit will engage the test operation mode. Press the operation mode selector button [ \* until selecting fan operation **2**. Then, press the on/off button (1). The indoor unit fan and drain pump will start up. Check that the water has drained from the unit. Press with to go back to the first mode.

### **ELECTRIC WIRING WORK**

### General instructions

- All field supplied parts and materials and electric works must conform to local codes.
- · Use copper wire only.
- Follow the "Wiring diagram" attached to the switch box cover to wire the outdoor unit, indoor units and the remote controller. For details on hooking up the remote controller, refer to the "Installation manual of the remote controller".
- All wiring must be performed by an authorized electrician.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.
- This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and BS unit are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may cause a malfunction.

#### **Electrical characteristics**

Model	Hz	Volts	Voltage range
FXYBP20,25	50	230	min.198-max.264

	powe	r supply	Fanı	motor	
Model	MCA	MFA	KW	FLA	
FXYBP20,25	0.2	16A	0.01	0.1	

MCA: Min. circuit Amps (A) MFA: Max. Fuse Amps (A)

KW: Fan Motor Rated Output (kW)

FLA: Full Load Amps (A)

## NOTE TE

· For details, refer to "Electrical data".

## Specifications for field supplied fuses and wire

	Р	Power supply wiring		
Model	Field fuses	Wire	Size	
FXYBP20,25	16A	H05VV-U3G	Local codes	

Model	Wire	Size
FXYBP20,25	Sheathed wire (2)	0.75-1.25mm <sup>2</sup>

#### NOTE T

- · For details, refer to the chapter "Wiring example".
- Allowable length of transmission wiring between indoor and outdoor units, and between the indoor unit and the remote controller is as follows:
  - 1 Outdoor unit indoor unit: max. 1000m (total wiring length: 2000m)
  - 2 Indoor unit remote controller: max 500m

## WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER

#### How to connect wiring

 Open the switch box cover, as shown in figure 7, to make connections.

#### **PRECAUTIONS**

- Observe the notes mentioned below when wiring to the power supply terminal board.
  - Do not connect wires of different gauge to the same power supply terminal. (Looseness in the connection may cause overheating.)
  - When connecting wires of the same gauge, connect them according to the figure.







- Keep total current of crossover wiring between indoor units less than 12A. Branch the line outside the terminal board of the unit in accordance with electrical equipment standards, when using two power wiring of a gauge greater than 2mm² (Ø1.6).
  - The branch must be sheathed in order to provide an equal or greater degree of insulation as power supply wiring itself.
- Do not connect wires of different gauge to the same grounding terminal. Looseness in the connection may deteriorate the protection.
- Remote controller cords and wires connecting the units should be located at least 50mm away from power supply wiring. Not following this guideline may result in malfunction due to electrical noise.
- For the remote controller wiring, refer to the "Installation manual of the remote controller" supplied with the remote controller.
- 6. Never connect the power supply wiring to the terminal board for transmission wiring. This mistake could damage the entire system.
- 7. Use only specified wires and tightly connect wires to the terminals. Be careful that wires do not place external stress on the terminals. Keep wiring in neat order so that they do not obstruct other equipment such as popping open the service cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in the worse case, electric shock or fire.

## WIRING EXAMPLE

- Fit the power supply wiring of each unit with a switch and fuse as shown in figure 16.
  - 1 Power supply
  - 2 Main switch
  - 3 Power supply wiring
  - 4 Transmission wiring
  - 5 Switch
  - 5 Fuse
  - BS unit RSEYP only
  - 8 Indoor unit
  - 9 Remote controller

COMPLETE SYSTEM EXAMPLE (3 systems)

When using 1 remote controller for 1 indoor unit. (Normal operation) (see figure 8)

For group control or use with 2 remote controllers. (see figure 10)

### When including BS unit (see figure 12)

- Outdoor unit
- 2 Indoor unit
- 3 Remote controller (Optional accessories)
- 4 Most downstream indoor unit
- 5 For use with 2 remote controllers
- 6 BS unit

## NOTE TE

 It is not necessary to designate indoor unit address when using group control. The address is automatically set when the power is activated.

#### **PRECAUTIONS**

- A single switch can be used to supply power to units on the same system. However, branch switches and branch circuit breakers must be selected carefully.
- For a group control remote controller, choose the remote controller that suits the indoor unit which has the most functions.
- Do not ground the equipment on gas pipes, water pipes, lightning rods or crossground with telephones. Improper grounding could result in electric shock.

## Control by 2 Remote Controllers (Controlling 1 indoor unit by 2 remote controllers)

 When using 2 remote controllers, one must be set to "MAIN" and the other to "SUB".

### MAIN/SUB changeover

- Insert a wedge-head screwdriver into the recess between the upper and lower part of the remote controller and, working from the 2 positions, pry off the upper part. (see figure 11) (The remote controller PC board is attached to the upper part of the remote controller.)
- Turn the main/sub changeover switch on one of the two remote controller PC boards to "S". (see figure 15) (Leave the switch of the other remote controller set to "M".)
  - 1 Remote controller PC board
  - 2 Factory setting
  - 3 Only one remote controller needs to be changed

## Computerised control (forced off and on/off operation)

- 1. Wire specifications and how to perform wiring.
  - Connect input from outside to terminals T1 and T2 of the terminal board (remote controller to transmission wiring).

Wire specification	Sheathed vinyl cord or cable (2 wire)
Gauge	0.75-1.25mm²
Length	Max. 100m
External terminal	Contact that can ensure the minimum applicable load of 15V DC, 10mA

See figure 14
1 Input A

0 4-4---4:---

2. Actuation

 The following table explains "forced off" and "on/off operations" in response to input A.

Forced off	on/off operation
Input "on" stops operation	input off → on: turns on the unit (impossible by remote controllers)
Input "off" enables control	input on → off: turns off the unit by remote controller

- 3. How to select forced off and on/off operation
  - Turn the power on and then use the remote controller to select operation.
  - Set the remote controller to the field set mode. For details, refer to the chapter "How to set in the field", in the remote controller manual.
  - When in the field set mode, select mode No. 12, then set the first code No. to '1'. Then set second code (position) No. to '01' for forced off and to '02' for on/off operation. (forced off at factory set)(see figure 17)
    - 1 Second code No.
    - 2 Mode No.
    - 3 First code No.
    - 4 Field set mode

#### Centralized control

 For centralized control, it is necessary to designate the group No. For details, refer to the manual of each optional controller for centralized control.

## **TEST OPERATION**

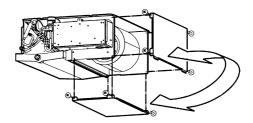
Refer to the installation manual of the outdoor unit.

 The operation lamp of the remote controller will flash when an error occurs. Check the error code on the liquid crystal display to identify the trouble. An explanation of error codes and the corresponding trouble is provided on "Caution for servicing" sticker included in the accessory bag.

## **SPECIAL FEATURES**

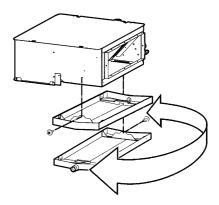
#### AIR SUCTION DIRECTION

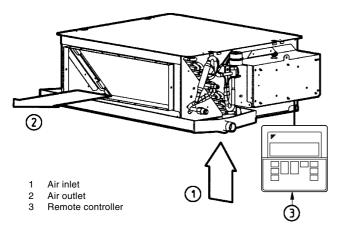
 This feature allows the user to choose the air suction direction. By switching the plate from bottom to rear, the air suction direction can be changed from the rear to the bottom side.



## **DRAIN PAN OUTLET**

 The customer has the possibility to select either right or left sided water drain outlet.





## **MAINTENANCE**

#### **IMPORTANT**

- ONLY A QUALIFIED SERVICE PERSON IS ALLOWED TO PERFORM MAINTENANCE.
- BEFORE OBTAINING ACCESS TO TERMINAL DEVICES, ALL POWER SUPPLY CIRCUITS MUST BE INTERRUPTED.
- DO NOT USE WATER OR AIR OF 50°C OR HIGHER FOR CLEANING AIR FILTERS AND OUTSIDE PANELS.

#### **HOW TO CLEAN THE AIR FILTER**

Clean the air filter when the display shows " (TIME TO CLEAN AIR FILTER).

Increase the frequency of cleaning if the unit is installed in a room where the air is extremely contaminated.

(As a yardstick for yourself, consider cleaning the filter once a half year.)

If dirt becomes impossible to clean, change the air filter. (Air filter for exchange is optional.)

#### NOTE -

Do not operate the air conditioner without filters, this to avoid dust accummulation inside the unit.

## 1. Removing the air filter

- Rear suction (see figure 5a):
   Pull the bottom side of the air filter backwards, over the 2 bends
- Bottom suction (see figure 5b):
   Pull the filter over the two bends situated at the backside of
  the unit.

## 2. Cleaning the air filter

 Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning dry them in the shade.





#### 3. Replacing the air filter

- Rear suction (see figure 5a):
  - Hook the filter behind the flap situated at the top of the unit and push the other side gently over the 2 bends.
- Bottom suction (see figure 5b):
   Hook the filter behind the flap situated at the middle of the unit and push the other side gently over the 2 bends.

## 4. After turning power on, press the FILTER SIGN RESET button.

 The "TIME TO CLEAN AIR FILTER" display disappears. (For details, refer to the operation manual of the outdoor unit.)

## NOTE

- Do not remove the air filter except when cleaning.
   Unnecessary handling may damage the filter.
- Do not use gasoline, benzene, thinner, polishing powder nor liquid insecticide. It may cause discolouring or warping.
- Do not let the indoor unit get wet. It may cause electric shock or fire.

### **DISPOSAL REQUIREMENTS**

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

