2.8 Air Tight Test and Vacuum Drying

Note:
- Always use nitrogen gas for the airtightness test.
- Absolutely do not open the shutoff valve until the main power circuit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

2.8.1 Preparations

<Needed tools>

Gauge manifold Charge hose valve	■ To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R-410A. ■ Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.
Vacuum pump	■ The vacuum pump for vacuum drying should be able to lower the pressure to –100.7kPa (5 Torr –755mm Hg). ■ Take care the pump oil never flow backward into the refrigerant pipe during the pump stops.

<The system for air tight test and vacuum drying>

- Referring to figure 28, connect an nitrogen tank, refrigerant tank, and a vacuum pump to the outdoor unit.
  The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A, C in figure 28 are needed in “2-11 Additional Refrigerant Charge and Check Operation”.
- The shutoff valve and valve A~C in figure 28 should be open or closed as shown in the table below.

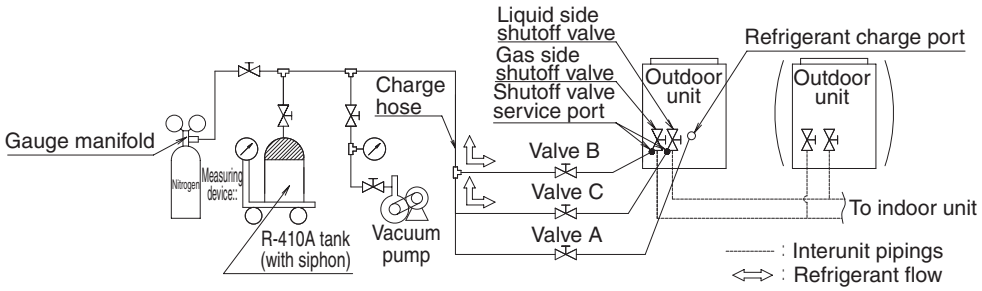
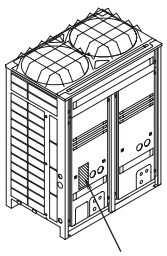


figure 28

State of valve A, B and C and shutoff valves	Valve			shutoff valve	
	A	B	C	Liquid side	Gas side
Air tight test, Vacuum drying (Close valve A and shutoff valves certainly. Otherwise the refrigerant in the unit are released.)	Close	Open	Open	Close	Close

Note:
- The airtightness test and vacuum drying should be done using the liquid side and gas side shutoff valve service ports.
  See the [R-410A] Label attached to the front plate of the outdoor unit for details on the location of the service port (see figure at right).
- See **[Shutoff valve operation procedure]** in “2-11-1 Before working” for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe.
  When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.


[R-410A] Label

2.8.2 Air tight test and vacuum drying method

After finished piping work, carry out air tight test and vacuum drying.

<Air tight test>

Pressurize the liquid and gas pipes to 4.0MPa (40bar) (do not pressurize more than 4.0MPa (40bar)). If the pressure does not drop within 24 hours, the system passes the test.
If there is a pressure drop, check for leaks, make repairs and perform the airtight test again.

<Vacuum drying>

Evacuate the system from the liquid and gas pipes by using a vacuum pump for more than 2 hours and bring the system to
–100.7kPa or less. After keeping the system under that condition for more than 1 hour, check if the vacuum gauge rises or not. If it rises, the system may either contain moisture inside or have leaks.

Note: **If moisture might enter the piping, follow below.**
(I.e., if doing work during the rainy season, if the actual work takes long enough that condensation may form on the inside of the pipes, if rain might enter the pipes during work, etc.)

(1) After performing the vacuum drying for two hours, pressurize to
0.05 MPa (i.e., vacuum breakdown) with nitrogen gas, then depressurize down to –100.7 kPa for an hour using the vacuum pump (vacuum drying).
(2) If the pressure does not reach –100.7 kPa even after depressurizing for at least two hours, repeat the vacuum breakdown - vacuum drying process.

After vacuum drying, maintain the vacuum for an hour and make sure the pressure does not rise by monitoring with a vacuum gauge.

2.9 Pipe Insulation

- Insulation of pipes should be done after performing **"2-8 Air Tight Test and Vacuum Drying"**.
- Always insulate the liquid side piping and gas side piping in the interunit piping and refrigerant branching kit. Failing to insulate the pipes could cause leaking or burns. (The gas side piping can reach temperatures of 120°C. Be sure the insulation used can withstand such temperatures.)
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation.
  - Ambient temperature: 30°C, humidity: 75% to 80% RH: min. thickness: 15 mm.
  - If the ambient temperature exceeds 30°C and the humidity 80% RH, then the min. thickness is 20 mm.
- If there is a possibility that condensation on the shutoff valve might drip down into the indoor unit through gaps in the insulation and piping because the outdoor unit is located higher than the indoor unit, etc., this must be prevented by caulking the connections, etc. **(Refer to figure 29)**
- The piping lead-out hole lid should be attached after opening a knock hole. **(Refer to figure 30)**
- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of **"2-11 Additional Refrigerant Charge and Check Operation". (Refer to figure 30)**

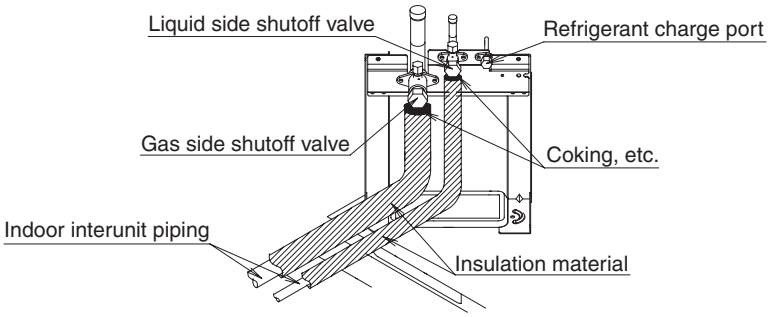


figure 29

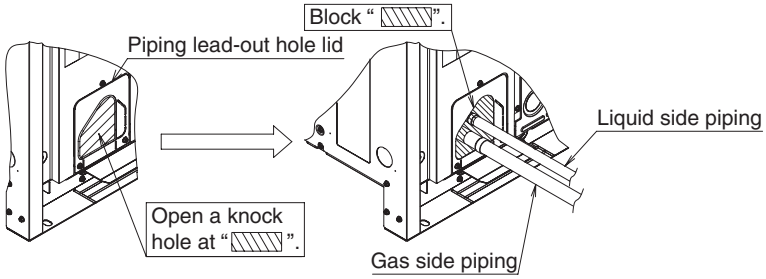


figure 30

Note:
- After knocking out the holes, we recommend you remove burrs in the knock holes (see figure 30) and paint the edges and areas around the edges using the repair paint.

2.10 Checking of Device and Installation Conditions

Be sure to check the followings.

For those doing electrical work

1. Make sure there is no faulty transmission wiring or loosen a nut.
   See **"2-7-4 Transmission Wiring Connection Procedure"**.
2. Make sure there is no faulty power wiring or loosen a nut.
   See **"2-7-5 Power Wiring Connection Procedure"**.
3. Has the insulation of the main power circuit deteriorated?
   Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

For those doing pipe work

1. Make sure piping size is correct.
   See **"2-6-1 Selection of piping material and Refrigerant branching kit"**.
2. Make sure insulation work is done.
   See **"2-9 Pipe Insulation"**.
3. Make sure there is no faulty refrigerant piping.
   See **"2-6 Refrigerant Piping"**.

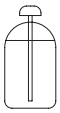
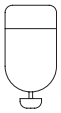
2.11 Additional Refrigerant Charge and Check Operation

The outdoor unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.
For charging the additional refrigerant, follow the procedure in this chapter.
And then carry out the check operation.

2.11.1 Before working

[About the refrigerant tank]

Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form. (See the figure below.)

With siphon pipe
 Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need be put upside-down charge in liquid form.)
Other tanks
 Stand the tank upside-down and charge.

Caution:

- Always use the proper refrigerant (R-410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R-410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

[Shutoff valve operation procedure]

When operating the shutoff valve, follow the procedure instructed below.

Note:

- Do not open the shutoff valve until “2-10 Checking of Device and Installation Conditions” are completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools.
  The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

[Tightening torque]

The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

<Size of Shutoff Valve>

<table>
<tr><th></th><th>5HP type</th><th>8HP type</th><th>10HP type</th><th>12HP type</th><th>14HP type</th><th>16HP type</th><th>18HP type</th></tr>
<tr><td>Liquid side shutoff valve</td><td colspan="4">ϕ 9.5
The 12HP type corresponds to the 12.7-diameter onsite piping using the included piping.</td><td colspan="3">ϕ 12.7
The 18HP type corresponds to the 15.9-diameter onsite piping using the accessory pipe.</td></tr>
<tr><td>Gas side shutoff valve</td><td>ϕ 15.9</td><td>ϕ 19.1</td><td colspan="5">ϕ 25.4
The 10HP type corresponds to the 22.2-diameter onsite piping using the accessory pipe.
The 12 ~ 18HP type corresponds to the 28.6-diameter onsite piping using the accessory pipe.</td></tr>
</table>

<Tightening torque>

<table>
<tr><td rowspan="2">Shutoff valve size</td><td colspan="3">Tightening torque N·m (Turn clockwise to close)</td></tr>
<tr><td colspan="2">Shaft (valve body)</td><td>Cap (valve lid)</td><td>Service port</td></tr>
<tr><td>ϕ 9.5</td><td>5.4 - 6.6</td><td rowspan="2">Hexagonal wrench 4 mm</td><td>13.5 - 16.5</td><td rowspan="5">11.5 - 13.9</td></tr>
<tr><td>ϕ 12.7</td><td>8.1 - 9.9</td><td>18.0 - 22.0</td></tr>
<tr><td>ϕ 15.9</td><td>13.5 - 16.5</td><td>Hexagonal wrench 6 mm</td><td rowspan="3">22.5 - 27.5</td></tr>
<tr><td>ϕ 19.1</td><td rowspan="2">27.0 - 33.0</td><td rowspan="2">Hexagonal wrench 8 mm</td></tr>
<tr><td>ϕ 25.4</td></tr>
</table>

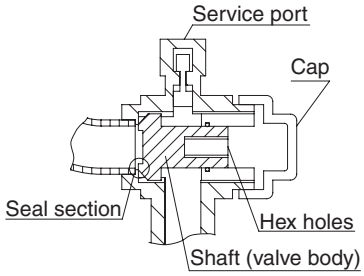


figure 34

[To open]

1. Remove the cap and turn the shaft counterclockwise with the hexagon wrench (JISB4648).
2. Turn it until the shaft stops.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

[To close]

1. Remove the cap and turn the shaft clockwise with the hexagon wrench (JISB4648).
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

[How to Check How Many Units are Connected]

It is possible to find out how many indoor or outdoor unit in the system are turned on by operating the push button on the PC-board (A1P) of outdoor unit (In case of multi system master unit).

Follow the procedure below to check how many indoor or outdoor units are turned on.

(LED display: ● ...OFF ☼ ...ON ◑ ...Blinking ＊...Uncertain)		LED display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once, and set the MONITOR MODE (H1P: Blinking).		◑	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	For checking the number of outdoor units: eight times	◑	●	●	☼	●	●	●
	For checking the number of indoor units: five times	◑	●	●	●	☼	●	☼
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ◑ standing for "1" and ● standing for "0".		◑	＊	＊	＊	＊	＊	＊
Ex: For the LED display at right, this would be "0 1 0 1 1 0", which would mean 22 units are connected. 32 × **0** + 16 × **1** + 8 × **0** + 4 × **1** + 2 × **1** + 1 × **0** = 22 units Note: "000000" indicates 64 units.		◑	●	◑	●	◑	◑	●
(4) Press the MODE button (BS1) once. This returns to **Setting Mode 1** (default).		●	●	☼	●	●	●	●

Note: Press the "MODE button" (BS1) if you get confused while operating. This returns to **Setting Mode 1** (default).

2.11.2 Procedure of Adding Refrigerant Charging and Check Operation

Warning **Electric Shock Warning:**

- Make sure to close the EL. COMPO. BOX lid before turning on the power when performing the refrigerant charging operation.
- Perform the setting on the PC-board (A1P) of the outdoor unit and check the LED display after the power is on via the inspection door which is in the EL. COMPO. BOX lid.
- Use an insulated rod to operate the push buttons via the EL. COMPO. BOX's inspection door.
  There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

Caution:

- Make sure to use the protect tool (protective groves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the indoor unit.
- When opening the front panel, make sure to take caution to the fan rotation during the working.
  After the outdoor unit stops operating, the fan may keep rotation for a while.

Note:

- If operation is performed within 12 minutes after the indoor and outdoor units are turned on, H2P will be lit on and the compressor will not operate.
- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.

<About refrigerant charging>

- The refrigerant charge port is connected to the piping inside the unit.
  When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.
  The tightening torque for the lid is 11.5 to 13.9 Nm.
- See [Shutoff valve operation procedure] in chapter 2-11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately. If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point. More refrigerant may be charged by any remaining pressure after the machine is stopped.

<About check operation>

- Make sure to perform the check operation after installation. Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.
  And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.
  Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.
  About these problems check by test run after the check operation is completed. (See chapter 2-13)
- The check operation cannot be performed in recovery or other service modes.

1. Make sure the following works are complete in accordance with the installation manual.
   - Piping work
   - Wiring work
   - Air tight test
   - Vacuum drying
   - Installation work for indoor unit
2. Calculate the "additional charging amount" using "How to calculate the additional refrigerant to be charged" in "2-6-5 Example of connection".
3. Open the valve C (See the figure 31. The valve A, B and the liquid and gas side shutout valve must be left closed), and charge the refrigerant of the "additional charging amount" from the liquid side shutout valve service port.
   If the "additional charging amount" was charged fully, close the valve C and go to step 5.
   If the "additional charging amount" was not charged fully, go to step 4.

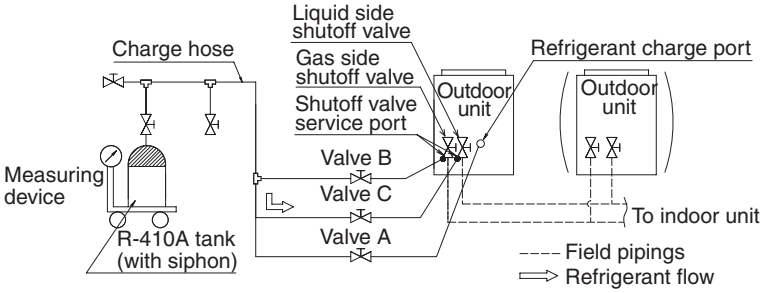


figure 31

4. Perform the refrigerant charging operation following [Refrigerant charging operation procedure] as shown below, and charge the remaining refrigerant of the “additional charging amount”. For performing the refrigerant charging operation the push button on the PC-board (A1P) of outdoor unit (Incase of multi system master unit) are use. (See the figure 32) In addition, the refrigerant are charged from the refrigerant charge port via the valve A. (See the figure 33)
   For operating the push button and opening and closing the valve, follow the work procedure.

Note: The refrigerant will be charged about 22kg in one hour at outdoor temp. 30°C DB (6kg at 0°C DB).
If you need to speedup in case of multi system, connect the refrigerant tanks to each outdoor unit as shown in the figure 33.

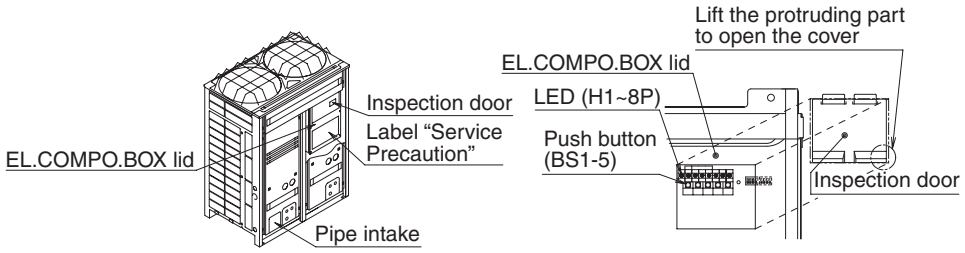


figure 32

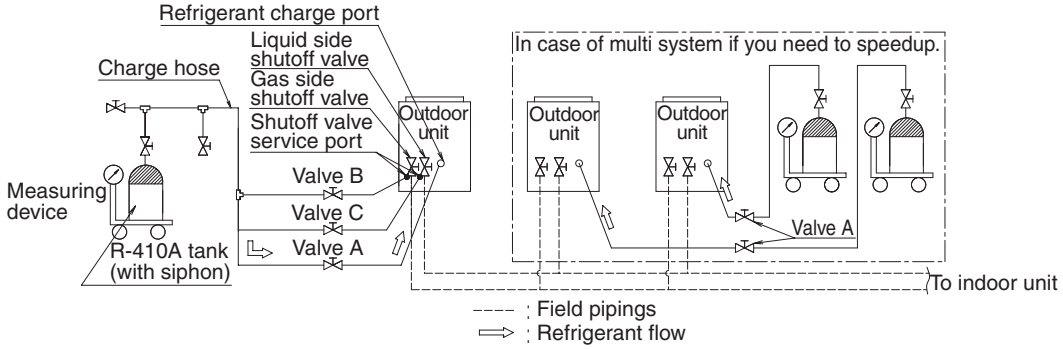


figure 33

[Refrigerant Charging Operation Procedure]

(1) Open the liquid and gas side shutoff valves (The valve A~C must be closed. The valve A~C means the valves in the figure 33.)

[Display of normal system]

LED display (Default status of shipped)		SERV. MONITOR	MODE	TEST/ HWL	C/H SELECTOR			L.N.O.P	DEMA-ND	MULTI
					IND	MASTER	SLAVE			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Single system		◑	●	●	☼	●	●	●	●	●
Multi system (*)	Master unit	◑	●	●	☼	●	●	●	●	☼
	Sub unit 1	◑	●	●	●	●	●	●	●	◑
	Sub unit 2	◑	●	●	●	●	●	●	●	●

LED display: ●...OFF, ☼...ON, ◑...Blinking
(*)How to distinguish the master unit, sub unit 1, and sub unit 2 in the multi system.

Method 1: By the H8P (MULTI) LED display

☼ (ON): Master unit	◑ (Blinking): Sub unit 1	● (OFF): Sub unit 2

Method 2: By the transmission wiring to indoor unit

Transmission wiring is connected: Master unit
Transmission wiring is not connected : Sub unit 1 or Sub unit 2

(2) If necessary, set the field setting by using the dip switch on the outdoor unit PC-board (A1P). (For how to set, see "2-12-1 Onsite Settings With the Power Off")

(3) • Close the EL. COMPO. BOX lid and all front panel except on the side of the EL. COMPO. BOX (*1) and turn the power to the outdoor unit and all connected indoor units. (*2)
• After H2P stop blinking (about 12 minutes after turning on the power), check LED displays as shown in the table [Display of normal system] and the system is normal state.
If H2P is blinking, check the malfunction code in the remote control, and correct the malfunction in accordance with [remote control display malfunction code] in step 5.

(*1)Lead the refrigerant charge hose etc., from the pipe intake. All front panels must be closed at the procedure (9).

(*2)• If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly.
For confirming the number of the outdoor and indoor units with the power on, see [How to check how many units are connected] in chapter 2-11-1. In case of a multi system, turn on the power to all outdoor units in the refrigerant system.
• To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.

(4) Start the additional refrigerant charge operation.
(About the system settings for additional refrigerant charge operation, refer to the [Service Precaution] label attached on the EL. COMPO. BOX lid in the outdoor unit.)
Open valve A immediately after starting the compressor.

(5) Close the valve A if the "additional charging amount" of refrigerant was charged, and push the RETURN button (BS3) once.

(6) Record the charging amount on the accessory "REQUEST FOR THE INDICATION" label and attach it to the back side of the front panel.

5. After completing the additional refrigerant charging perform the check operation following below.

Note:
- For check operation, the following work will be performed.
  - ◆ Check of shutoff valve opening
  - ◆ Check of miswiring
  - ◆ Judgment of piping length
  - ◆ Check of refrigerant overcharge
- It takes about 40 minutes to complete the check operation.

[Check Operation Procedure]

(1) Make the onsite setting as needed using the dip switches on the outdoor unit PC-board (A1P) with the power off (See "2-12-1 Onsite Settings With the Power Off")

(2) Close the EL. COMPO. BOX lid and all front panels except as the side of the EL. COMPO. BOX and turn on the power to the outdoor unit and all connected indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)

(3) Check the LED display on the outdoor unit PC-board (A1P) is as shown in the table below and transmission is normal.

LED display (Default status of shipped)		SERV. MONITOR	MODE	TEST/ HWL	C/H SELECTOR			L.N.O.P	DEMA-ND	MULTI
					IND	MASTER	SLAVE			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Single system		◑	●	●	☼	●	●	●	●	●
Multi system (*)	Master unit	◑	●	●	☼	●	●	●	●	☼
	Sub unit 1	◑	●	●	●	●	●	●	●	◑
	Sub unit 2	◑	●	●	●	●	●	●	●	●

LED display: ●...OFF, ☼...ON, ◑...Blinking

(*)How to distinguish the master unit, sub unit 1, and sub unit 2 in the multi system.

Method 1: By the H8P (MULTI) LED display

☼ (ON): Master unit	◑ (Blinking): Sub unit 1	● (OFF): Sub unit 2

Method 2: By the transmission wiring to indoor unit

Transmission wiring is connected: Master unit
Transmission wiring is not connected : Sub unit 1 or Sub unit 2

(4) Make the onsite settings as needed using the push button (BS1-BS5) on the outdoor unit PC-board (A1P) with the power on. (See “2-12-2 Onsite Settings With the Power On”)

(5) Perform the check operation following the Check Operation Method of the [Service Precautions] label on the EL. COMPO. BOX lid. The system operation for about 40 minutes and automatically stops the check operation.
If the malfunction code is not displayed in the remote control after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote control, correct the malfunction following [remote control displays malfunction code] and perform the check operation again.

[remote control displays malfunction code]

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outdoor unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outdoor unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outdoor or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outdoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	■ Check if the additional refrigerant charge has been finished correctly. ■ Recalculate the additional amount refrigerant from the piping length and add the adequate amount.
U7, U4 UF, UH	If the outdoor unit terminal is connected when there is one outdoor unit installed.	Remove the line from the outdoor multi terminals (Q1 and Q2).

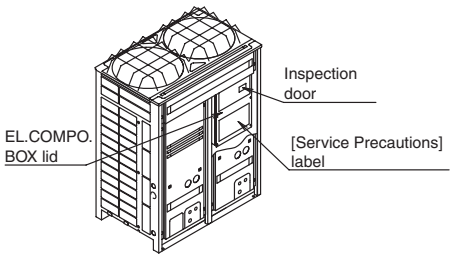
If any malfunction codes other than the above are displayed, check the service manual for how to respond.

2.12 Onsite Settings

Note: In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid.
The outdoor unit to which the indoor unit transmission wire are connected is the master unit, and all other units are sub units.

2.12.1 Onsite Settings with the Power Off

If the COOL/HEAT selector was connected to the outdoor unit in "2-7. Field Wiring", set the dip switch (DS1) on the outdoor unit PC-board (A1P) to "ON" (it is set to "OFF" when shipped from the factory).



For the position of the dip switch (DS1), see the "Service Precautions" label (see at right) which is attached to the EL. COMPO. BOX lid.

Warning **Electric Shock Warning:**
Never perform with the power on.
There is a serious risk of electric shock if any live part is touched.

2.12.2 Onsite Settings with the Power On

Use the push button switches (BS1 through BS5) on the outdoor unit PC-board (A1P) to make the necessary onsite settings.
See the "Service Precautions" label on the EL. CONPO. BOX lid for details on the positions and operating method of the push button switches and on the onsite setting.
Make sure to record the setting on the accessory "REQUEST FOR THE INDICATION" label.

Warning **Electric Shock Warning:**
Use an insulated rod to operate the push buttons via the inspection door of EL. COMPO. BOX lid.
There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

2.13 Test Run

2.13.1 Before Test Run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
- Check that all work for the indoor unit are finished and there are no danger to operate.

2.13.2 Test Run

After check operation is completed, operate the unit normally and check the following.

1. Make sure the indoor and outdoor units are operating normally.
2. Operate each indoor unit one by one and make sure the corresponding outdoor unit is also operating.
3. Check to see if cold (or hot) air is coming out from the indoor unit.
4. Push the fan direction and strength buttons on the remote control to see if they operate properly.

Note:

- Heating is not possible if the outdoor temperature is 24°C or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote control is pushed.
- When the system operation is stopped by the remote control, the outdoor units may continue operating for further 5 minutes at maximum.
- The outdoor unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.

2.13.3 Checks after Test Run

Perform the following checks after the test run is complete.

- Record the contents of field setting.
  → Record them on the accessory “REQUEST FOR THE INDICATION” label.
  And attach the label on the back side of the front panel.
- Record the installation date.
  → Record the installation date on the accessory “REQUEST FOR THE INDICATION” label in accordance with the IEC60335-2-40.
  And attach the label on the back side of the front panel.

Note: After the test run, when handing the unit over to the customer, make sure the EL.COMPO.BOX lid, the inspection door, and the unit casing are all attached.

2.14 Caution for Refrigerant Leaks

(Points to note in connection with refrigerant leaks)

Introduction

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A itself is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

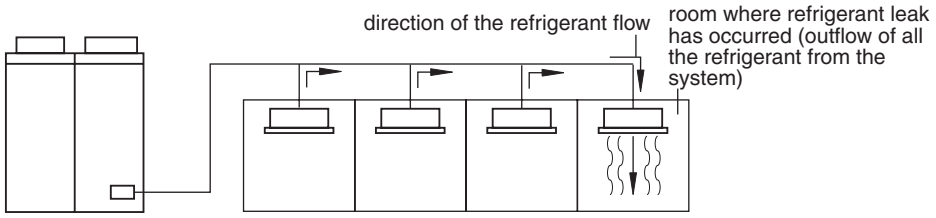
Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is kg/m^3 (the weight in kg of the refrigerant gas in 1m3 volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.

In Australia the maximum allowed concentration level of refrigerant to a humanly space is limited to 0.35kg/m^3 for R-407C and 0.44kg/m^3 for R-410A.



Pay a special attention to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1 to 4 below and take whatever action is necessary to comply.

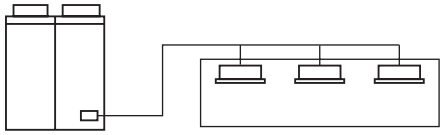
1. Calculate the amount of refrigerant (kg) charged to each system separately.

amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (kg) in the system

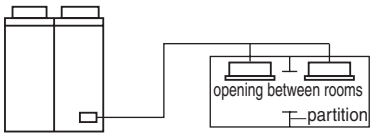
Note:

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Calculate the smallest room volume (m^3)
   Incase like the following, calculate the volume of (A), (B) as a single room or as the smallest room.
   A. Where there are no smaller room divisions



   B. Where there is a room division but there is an opening between the rooms sufficiently large to permit a free flow of air back and forth.



   (Where there is an opening without a door or where there are openings above and below the door which are each equivalent in size to 0.15% or more of the floor area.)

3. Calculating the refrigerant density using the results of the calculations in steps 1 and 2 above.

$$\frac{\text{total volume of refrigerant in the refrigerant system}}{\text{size } (m^3) \text{ of smallest room in which there is an indoor unit installed}} \leq \text{maximum concentration level } (kg/m^3)$$

   If the result of the above calculation exceeds the maximum concentration level then make similar calculations for the second then third smallest room and so until the result falls short of the maximum concentration.

4. Dealing with the situations where the result exceeds the maximum concentration level.
   Where the installation of a facility results in a concentration in excess of the maximum concentration level then it will be necessary to revise the system. Please consult your Daikin supplier.

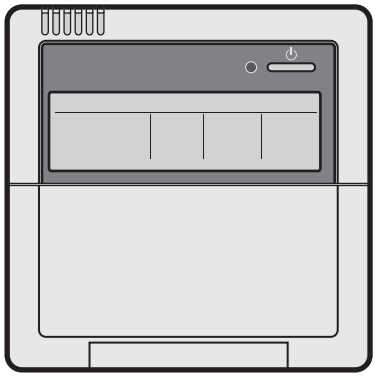
Part 3
Operation Manual

1. Heat Pump / Cooling Only 50Hz (RX(Y)Q5~54P)

DAIKIN

OPERATION MANUAL

VRV III System air conditioner



RXYQ5PY1	RXQ5PY1
RXYQ8PY1	RXQ8PY1
RXYQ10PY1	RXQ10PY1
RXYQ12PY1	RXQ12PY1
RXYQ14PY1	RXQ14PY1
RXYQ16PY1	RXQ16PY1
RXYQ18PY1	RXQ18PY1
RXYQ20PY1	RXQ20PY1
RXYQ22PY1	RXQ22PY1
RXYQ24PY1	RXQ24PY1
RXYQ26PY1	RXQ26PY1
RXYQ28PY1	RXQ28PY1
RXYQ30PY1	RXQ30PY1
RXYQ32PY1	RXQ32PY1
RXYQ34PY1	RXQ34PY1
RXYQ36PY1	RXQ36PY1
RXYQ38PY1	RXQ38PY1
RXYQ40PY1	RXQ40PY1
RXYQ42PY1	RXQ42PY1
RXYQ44PY1	RXQ44PY1
RXYQ46PY1	RXQ46PY1
RXYQ48PY1	RXQ48PY1
RXYQ50PY1	RXQ50PY1
RXYQ52PY1	RXQ52PY1
RXYQ54PY1	RXQ54PY1

3PN08043-1 EM06A044 (0611) HT

1-1 Safety Cautions

Read the following cautions carefully and use your equipment properly.
There are two kinds of safety cautions and tips listed here as follows:

⚠ **Warning** ..... Improper handling can lead to such serious consequences as death or severe injury.

⚠ **Caution**..... Improper handling can lead to injury or damage. It could also have serious consequences under certain conditions.

Note
Keep this operation manual handy so that you can refer to them if needed.
Also, if this equipment is transferred to a new user, make sure to hand over this operation manual to the new user.

⚠ Warning

It is not good for your health to expose your body to the air flow for a long time.

In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off power and call your dealer for instructions.

Ask your dealer for installation of the air conditioner.
Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.

Ask your dealer for improvement, repair, and maintenance.
Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.

Do not put a finger, a rod or other objects into the air inlet or outlet. As the fan is rotating at high speed, it will cause injury. Never touch the air outlet or the horizontal blades while the swing flap is in operation.
Fingers may become caught or the unit may break down.

The refrigerant in the air conditioner is safe and normally does not leak. If the refrigerant leaks inside the room, the contact with a fire of a burner, a heater or a cooker may result in a harmful gas.
Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.
Do not use the air conditioner until when a service person confirms to finish repairing the portion where the refrigerant leaks.

For refrigerant leakage, consult your dealer.
When the air conditioner is to be installed in a small room, it is necessary to take proper measures so that the amount of any leaked refrigerant does not exceed the limiting concentration even when it leaks. If the refrigerant leaks exceeding the level of limiting concentration, an oxygen deficiency accident may happen.

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.

Ask your dealer to move and reinstall the air conditioner.
Incomplete installation may result in a water leakage, electric shock, and fire.

In order to avoid electric shock, fire, injury or damaging the unit, do not use improper ampere fuses or do not use copper nor steel wires instead.

Be sure to establish an earth.
Do not earth the unit to a utility pipe, arrester, or telephone earth.
Incomplete earth may cause electrical shock, or fire.
A high surge current from lightning or other sources may cause damage to the air conditioner.

Be sure to install an earth leakage breaker.
Failure to install an earth leakage breaker may result in electric shocks, or fire.

⚠ Caution

Do not use the air conditioner for other purposes.
In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.

In order to avoid injury, do not remove the fan guard of outdoor unit.

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.

After a long use, check the unit stand and fitting for damage.
If they are left in a damaged condition, the unit may fall and result in injury.

Neither place a flammable spray bottle near the air conditioner nor perform spraying.
Doing so may result in a fire.

Before cleaning, be sure to stop the operation, turn the breaker off.
Otherwise, an electric shock and injury may result.

Do not operate the air conditioner with a wet hand.
An electric shock may result.

Do not place items which might be damaged by moisture under the indoor unit which may be damaged by water.
Condensation may form if the humidity is above 80%, if the drain outlet gets blocked or the filter is polluted.

Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.

Do not mount on the outdoor unit or avoid placing any object on it.
Falling or tumbling may result in injury.

Never expose little children, plants or animals directly to the air flow.
Adverse influence to little children, animals and plants may result.

Do not wash the air conditioner with water.
Electric shock or fire may result.

Do not install the air conditioner at any place where flammable gas may leak out.
If the gas leaks out and stays around the air conditioner, a fire may break out.

Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause wetting of the building, furniture etc.

Do not let children play on and around the outdoor unit.
If they touch the unit carelessly, it may result in injury.

Do not place a flower vase or anything containing water on the indoor unit.
Water may enter the unit, causing an electric shock or fire.

Do not place the controller exposed to direct sunlight.
The LCD display may get discolored, failing to display the data.

Do not wipe the controller operation panel with benzine, thinner, chemical dustcloth, etc.
The panel may get discolored or the coating peeled off. If it is heavily dirty, soak a cloth in water-diluted neutral detergent, squeeze it well and wipe the panel clean. And wipe it with another dry cloth.

Never touch the internal parts of the controller.
Do not remove the front panel. Some parts inside are dangerous to touch, and a machine trouble may happen. For checking and adjusting the internal parts, contact your dealer.

Avoid placing the controller in a spot splashed with water.
Water coming inside the machine may cause an electric leak or may damage the internal electronic parts.

Never press the button of the remote control with a hard, pointed object.
The remote control may be damaged.

Never pull or twist the electric wire of a remote control.
It may cause the unit to malfunction.

Do not operate the air conditioner when using a room fumigation - type insecticide.
Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.

The appliance is not intended for use by young children or infirm persons without supervision.

Young children should be supervised to ensure that they do not play with the appliance.

Consult with installation contractor for cleaning the inside of the air conditioner.

Wrong cleaning may make the plastics parts broken or cause failure of water leakage or electric shock.

Do not touch the air inlet or aluminium fin of the air conditioner.
Otherwise, injury may be caused.

Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit.
Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

1-2 Specifications

[Single unit]

Model		RXYQ5PY1	RXYQ8PY1	RXYQ10PY1
Power supply				
Phase	-	3N~	3N~	3N~
Frequency	(Hz)	50	50	50
Voltage	(V)	380-415	380-415	380-415
Nominal cooling capacity	(kW)	14.0	22.4	28.0
Nominal heating capacity	(kW)	16.0	25.0	31.5
Dimensions H×W×D	(mm)	1680×635×765	1680×930×765	1680×930×765
Mass	(kg)	160	205	249
Refrigerant type	-	R-410A	R-410A	R-410A
Refrigerant charge (*1)	(kg)	6.2	7.7	8.4
Design pressure				
High pressure side	(bar)	40	40	40
	(MPa)	4.0	4.0	4.0
Low pressure side	(bar)	33	33	33
	(MPa)	3.3	3.3	3.3

Model		RXYQ12PY1	RXYQ14PY1	RXYQ16PY1
Power supply				
Phase	-	3N~	3N~	3N~
Frequency	(Hz)	50	50	50
Voltage	(V)	380-415	380-415	380-415
Nominal cooling capacity	(kW)	33.5	40.0	45.0
Nominal heating capacity	(kW)	37.5	45.0	50.0
Dimensions H×W×D	(mm)	1680×1240×765	1680×1240×765	1680×1240×765
Mass	(kg)	285	329	329
Refrigerant type	-	R-410A	R-410A	R-410A
Refrigerant charge (*1)	(kg)	10.0	12.3	12.5
Design pressure				
High pressure side	(bar)	40	40	40
	(MPa)	4.0	4.0	4.0
Low pressure side	(bar)	33	33	33
	(MPa)	3.3	3.3	3.3

Model		RXYQ18PY1
Power supply		
Phase	-	3N~
Frequency	(Hz)	50
Voltage	(V)	380-415
Nominal cooling capacity	(kW)	49.0
Nominal heating capacity	(kW)	56.5
Dimensions H×W×D	(mm)	1680×1240×765
Mass	(kg)	341
Refrigerant type	-	R-410A
Refrigerant charge (*1)	(kg)	12.7
Design pressure		
High pressure side	(bar)	40
	(MPa)	4.0
Low pressure side	(bar)	33
	(MPa)	3.3

Model		RXQ5PY1	RXQ8PY1	RXQ10PY1
Power supply				
Phase	-	3N~	3N~	3N~
Frequency	(Hz)	50	50	50
Voltage	(V)	380-415	380-415	380-415
Nominal cooling capacity	(kW)	14.0	22.4	28.0
Dimensions H×W×D	(mm)	1680×635×765	1680×930×765	1680×930×765
Mass	(kg)	160	205	249
Refrigerant type	-	R-410A	R-410A	R-410A
Refrigerant charge (*1)	(kg)	6.2	7.7	8.4
Design pressure				
High pressure side	(bar)	40	40	40
	(MPa)	4.0	4.0	4.0
Low pressure side	(bar)	33	33	33
	(MPa)	3.3	3.3	3.3

Model		RXQ12PY1	RXQ14PY1	RXQ16PY1
Power supply				
Phase	-	3N~	3N~	3N~
Frequency	(Hz)	50	50	50
Voltage	(V)	380-415	380-415	380-415
Nominal cooling capacity	(kW)	33.5	40.0	45.0
Dimensions H×W×D	(mm)	1680×1240×765	1680×1240×765	1680×1240×765
Mass	(kg)	285	329	329
Refrigerant type	-	R-410A	R-410A	R-410A
Refrigerant charge (*1)	(kg)	10.0	12.3	12.5
Design pressure				
High pressure side	(bar)	40	40	40
	(MPa)	4.0	4.0	4.0
Low pressure side	(bar)	33	33	33
	(MPa)	3.3	3.3	3.3

Model		RXQ18PY1
Power supply		
Phase	-	3N~
Frequency	(Hz)	50
Voltage	(V)	380-415
Nominal cooling capacity	(kW)	49.0
Dimensions H×W×D	(mm)	1680×1240×765
Mass	(kg)	341
Refrigerant type	-	R-410A
Refrigerant charge (*1)	(kg)	12.7
Design pressure		
High pressure side	(bar)	40
	(MPa)	4.0
Low pressure side	(bar)	33
	(MPa)	3.3

*1:Initial refrigerant charge

[Combination unit]
RXYQ20~54PY1 or RXQ20~54PY1 is the combination unit that is composed of the single units.
About the specifications see **Single unit** according to the independent unit.

1-3 What to do before Operation

This operation manual is for the following system with standard control. Before initiating operation, contact your Daikin dealer for the operation that corresponds to your system type and mark.
If your installation has a customized control system, ask your Daikin dealer for the operation that corresponds to your system.

Outdoor units **(Refer to figure 1)**

	Cool/Heat selector	Operation modes
Inverter series		
heat pumps **RXYQ** series	☐ yes ☐ no	
cooling only **RXQ** series	———	

- **Names and functions of parts (Refer to figure 1)**

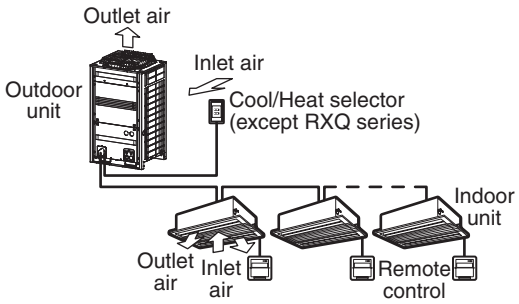


figure 1

(figure 1 shows system with Cool/Heat selector)

1-4 Remote Control and COOL/HEAT Selector: Name and Function of Each Switch and Display (Refer to figure 2 and 3)

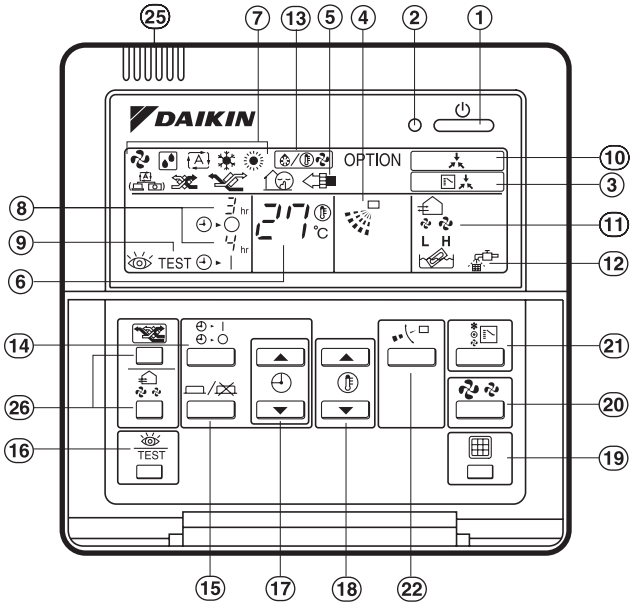


figure 2

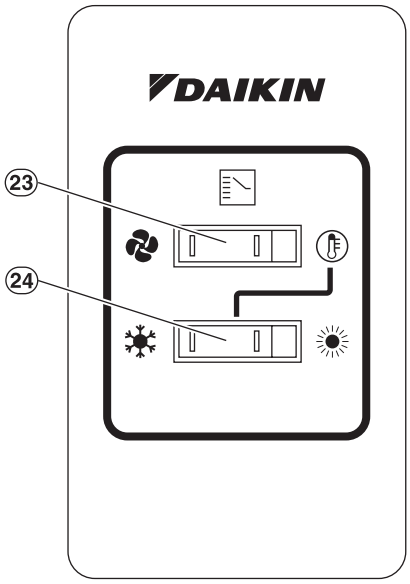


figure 3

1. **On/off button**
   Press the button and the system will start. Press the button again and the system will stop.
2. **Operation lamp (red)**
   The lamp lights up during operation.
3. **Display** " " **(changeover under control)**
   It is impossible to changeover heat/cool with the remote control which display this icon.
4. **Display** " " **(air flow flap)**
   Refer to the chapter "Operation procedure - Adjusting the air flow direction".
5. **Display** " OPTION " **(ventilation/air cleaning)**
   This display shows that the ventilation unit are in operation. (these are optional accessories)
6. **Display** " " **(set temperature)**
   This display shows the temperature you have set.
7. **Display** " " " " " " " " **(operation mode)**
   This display shows the current operation mode.
8. **Display** " " **(programmed time)**
   This display shows the programmed time of the system start or stop.
9. **Display** " TEST " **(inspection/test operation)**
   When the inspection/test operation button is pressed, the display shows the mode in which the system actually is.
10. **Display** " " **(under centralized control)**
    When this display shows, the system is under centralized control. (This is not a standard specification.)
11. **Display** " " **(fan speed)**
    This display shows the fan speed you have selected.
12. **Display** " " **(time to clean air filter)**
    Refer to the operation manual of indoor unit.
13. **Display** " " **(defrost/hot start)**
    Refer to the chapter "Operation procedure - Explanation of heating operation."
14. **Timer mode start/stop button**
    Refer to the chapter "Operation procedure - Programming start and stop of the system with timer."
15. **Timer on/off button**
    Refer to the chapter "Operation procedure - Programming start and stop of the system with timer."
16. **Inspection/test operation button**
    This button is only used by qualified service persons for maintenance purposes.
17. **Programming time button**
    Use this button for setting the programming start and/or stop time.
18. **Temperature setting button**
    Use this button for setting the desired temperature.
19. **Filter sign reset button**
    Refer to the operation manual of indoor unit.
20. **Fan speed control button**
    Press this button to select the fan speed of your preference.
21. **Operation mode selector button**
    Press this button to select the operation mode of your preference.
22. **Air flow direction adjust button**
    Refer to the chapter "Operation procedure - Adjusting the air flow direction".
23. **Fan only/air conditioning selector switch**
    Set the switch to " " for fan only operation or to " " for heating or cooling operation.
24. **Cool/heat changeover switch**
    Set the switch to " " for cooling operation or to " " for heating operation.
25. **Thermistor**
    It sense the room temperature around the remote control.
26. **These button are used when the ventilation unit are installed (These are optional accessories)**
    Refer to the operation manual of the ventilation unit.

Note

- In contradistinction to actual operating situations, the display on figure 1 shows all possible indications.
- Figure 2 shows the remote control which is opened the cover.
- For FXS, FXM, FXL and FXN, the air flow direction adjust button (22) is not available and the display (4) shows "NOT AVAILABLE" when pressed.

1-5 Operation Range

Use the system in the following temperature and humidity ranges for safe and effective operation.

	COOLING	HEATING*
outdoor temperature	–5°~43°CDB	–20°~21°CDB –20°~15.5°CWB
indoor temperature	21°~32°CDB 14°~25°CWB	15°~27°CDB
indoor humidity	≤ 80%	

*Except RXQ series

Note

To avoid condensation and water dripping out the unit.
If the temperature or the humidity is beyond these conditions, safety devices may work and the air conditioner may not operate.

1-6 Operation Procedure

- Operation procedure varies according to the combination of outdoor unit and remote control. Read the chapter “What to do before operation”.
- To protect the unit, turn on the main power switch 6 hours before operation.
  And do not turn off the power supply during the air conditioning season because of smoothly start up.
- If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.

1-6-1 Cooling, Heating and Fan only Operation

- The operation mode cannot be changed with the remote control whose display shows “ [ ] ” (changeover under control).
  Change the operation mode with the remote control whose display does not show “ [ ] ”.
- When the display “ [ ] ” (changeover under control) flashes, refer to the chapter “Operation procedure - Setting the master remote control”.
- In case of RXQ series, the displays shows “ [ ] ”. However, the operation mode can be changed between cooling operation and fan only operation.
- The fan may keep on running for about 1 minute after the heating operation stops for removing the heat in the indoor unit.
- The air flow rate may be adjusted automatically depending on the room temperature or the fan may stop immediately. This is not a malfunction.
- For machine protection the system may control the air flow rate automatically.
- It may take sometime for finishing to change the air flow rate. This is normal operation.

FOR SYSTEMS WITHOUT COOL/HEAT SELECTOR (Refer to figure 4)

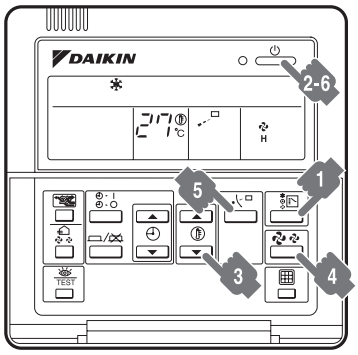


figure 4

1 Press the operation mode selector button several times and select the operation mode of your choice;
“ ✱ ” Cooling operation
“ ☼ ” Heating operation (except RXQ series)
“ ✣ ” Fan only operation

2 Press the on/off button.
The operation lamp lights up and the system starts operation.

FOR SYSTEMS WITH COOL/HEAT SELECTOR (except RXQ series) (Refer to figure 4 and 7)

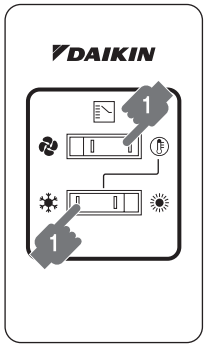


figure 7.1

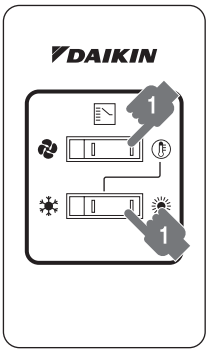


figure 7.2

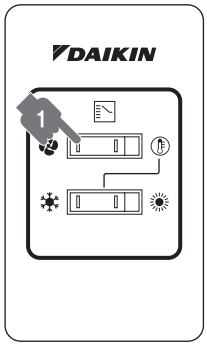


figure 7.3

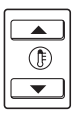
1 Select operation mode with the Cool/Heat selector as follows:
“ (F) ” “ ✱ ” Cooling operation **(Refer to figure 7.1)**
“ (F) ” “ ☼ ” Heating operation **(Refer to figure 7.2)**
“ ✣ ” Fan only operation **(Refer to figure 7.3)**

2 Press the on/off button. **(Refer to figure 4)**
The operation lamp lights up and the system starts operation.

ADJUSTMENT (Refer to figure 4)

For adjustment the desired temperature, fan speed and air flow direction (only for the remote control BRC1A51: FXC, FXF, FXH, FXK, FXA), follow the procedure shown below.

3 Press the temperature setting button and set the desired temperature.



Each time this button is pressed, the temperature setting rises or lowers 1°C.

Note

- Set the temperature within the operation range.
- The temperature setting is impossible for fan only operation.

4 Press the fan speed control button and select the fan speed of your preference.

5 Press air flow direction adjust button.
Refer to the chapter “Adjusting the air flow direction” for details.

STOPPING THE SYSTEM (Refer to figure 4)

6 Press the on/off button once again.
The operation lamp goes off and the system stops operation.

Note

- Do not turn off the power immediately after the unit stops.
- The system need at least 5 minutes for residual operation of drain pump device.
  Turning off the power immediately will cause water leak or trouble.

EXPLANATION OF HEATING OPERATION (except RXQ series)

- For general heating operation, it may take longer to reach the set temperature than in cooling operation.
  We recommend starting the operation which was used before using timer operation.
- The following operation is performed in order to prevent the heating capacity from dropping or cold air from blowing.
  Defrost operation
  - In heating operation, freezing of the outdoor unit heat exchanger increases. Heating capability decreases and the system goes into defrost operation.
  - The indoor unit fan stops and the remote control displays “ ”.
  - After maximum 10 minutes of defrost operation, the system returns to heating operation again.

  Hot start
  - In order to prevent cold air from blowing out of an indoor unit at the start of heating operation, the indoor fan is automatically stopped. The display of the remote control shows “ ”.

Note

- The heating capacity drops as the outside temperature falls. If this happens, use another heating device together with the unit. (When using the appliances which produce open fire together, ventilate a room constantly.)
  Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the unit.
- It takes some time for the room to warm up from the time the unit is started since the unit uses a hot-air circulatory system to warm the entire room.
- If the hot air rises to the ceiling, leaving the area above the floor cold, we recommend using the circulator (the indoor fan for circulating air). Contact your dealer for details.

1-6-2 Program Dry Operation

- The function of this operation is to decrease the humidity in your room with a minimum temperature decrease.
- The micro computer automatically determines temperature and fan speed.
- The system does not go into operation if the room temperature is low.
- The microcomputer automatically controls the temperature and fan speed, so these cannot be set using the remote control.
- This function is not available if the room temperature is 20°C or lower.

FOR SYSTEMS WITHOUT COOL/HEAT SELECTOR (Refer to figure 5)

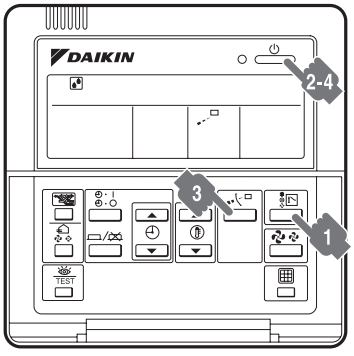


figure 5

1 Press the operation mode selector button several times and select “ ” (program dry operation).

2 Press the on/off button.
The operation lamp lights up and the system starts operation.

3 Press the air flow direction adjust button (only for FXC, FXF, FXH, FXK, FXA). Refer to the chapter “Adjusting the air flow direction” for details.

4 Press the on/off button once again.
The operation lamp goes off and the system stops operation.

Note

- Do not turn off the power immediately after the unit stops.
- The system need at least 5 minutes for residual operation of drain pump device.
  Turning off the power immediately will cause water leak or trouble.

FOR SYSTEMS WITH COOL/HEAT SELECTOR (except RXQ series) (Refer to figure 8)

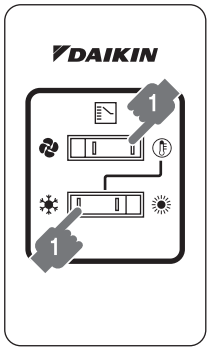


figure 8

1 Select cooling operation mode with the Cool/Heat selector.

2 Press the operation mode selector button several times and select program dry “ ”.

3 Press the on/off button.
The operation lamp lights up and the system starts operation.

4 Press the air flow direction adjust button (only for FXC, FXF, FXH, FXK, FXA). Refer to the chapter “Adjusting the air flow direction” for details.

5 Press the on/off button once again.
The operation lamp goes off and the system stops operation.

Note

- Do not turn off the power immediately after the unit stops.
- The system need at least 5 minutes for residual operation of drain pump device.
  Turning off the power immediately will cause water leak or trouble.

1-6-3 Adjusting the Air Flow Direction (Refer to figure 6) (only for Double-flow, Multi-flow, Corner, Ceiling-suspended and Wall-mounted)

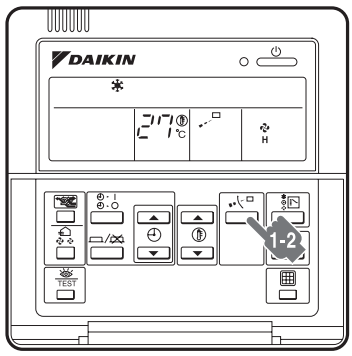


figure 6

1 Press the air flow direction button to select the air direction.
The air flow flap display swings as shown right and the air flow direction continuously varies. (Automatic swing setting)

2 Press the air flow direction adjust button to select the air direction of your choice.

The air flow flap display stops swinging and the air flow direction is fixed. (Fixed air flow direction setting)

MOVEMENT OF THE AIR FLOW FLAP

For the following conditions, a micro computer controls the air flow direction which may be different from the display.

COOLING	HEATING
———	• When starting operation. • When the room temperature is higher than the set temperature. • At defrost operation.
• When operating continuously at horizontal air flow direction. • When continuous operation with downward air flow is performed at the time of cooling with a ceiling-suspended or a wall-mounted unit, the microcomputer may control the flow direction, and then the remote control indication also will change.	

The air flow direction can be adjusted in one of the following ways.

- The air flow flap itself adjusts its position.
- The air flow direction can be fixed by the user.

  Automatic " " or desired position " ".

  (Refer to figure 13)

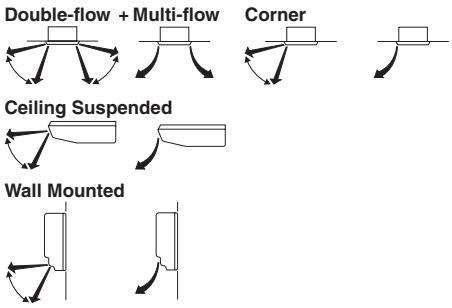


figure 13

Note

- The movable limit of the flap is changeable. Contact your Daikin dealer for details. (Only for Double-flow, Multi-flow, Corner, Ceiling-suspended and Wall-mounted.)
- Avoid operating in the horizontal direction " ". It may cause dew or dust to settle on the ceiling.

1-6-4 Programming Start and Stop of the System with Timer

(Refer to figure 9)

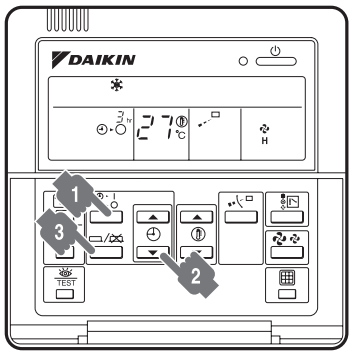


figure 9

- The timer is operated in the following two ways.

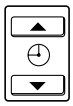
  Programming the stop time " ▸ ". The system stops operating after the set time has elapsed.

  Programming the start time " ▸ ". The system starts operating after the set time has elapsed.
- The timer can be programmed for a maximum of 72 hours.
- The start and the stop time can be simultaneously programmed.

1 Press the timer mode start/stop button several times and select the mode on the display.
The display flashes.

- For setting the timer stop " ▸ "
- For setting the timer start " ▸ "

2 Press the programming time button and set the time for stopping or starting the system.



Each time this button is pressed, the time advances or goes backward by 1 hour.

3 Press the timer on/off button.

The timer setting procedure ends. The display " ▸ " or " ▸ " changes from flashing light to constant light.

Note

- When setting the timer off and on at the same time, repeat the above procedure (from " 1 " to " 3 ") once again.
- After the timer is programmed, the display shows the remaining time.
- Press the timer on/off button once again to cancel programming. The display vanishes.

For example: (Refer to figure 11)

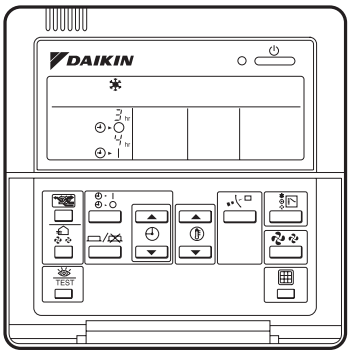


figure 11

When the timer is programmed to stop the system after 3 hours and start the system after 4 hours, the system will stop after 3 hours and start 1 hour later.

1-6-5 Setting the Master Remote Control (except RXQ series)

(Refer to figure 10)

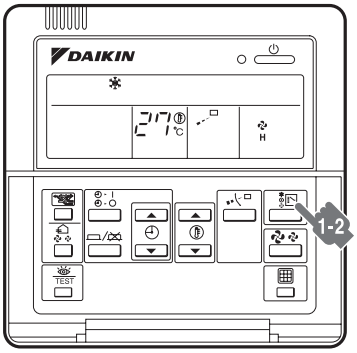


figure 10

- When one outdoor unit is connected with several indoor units as shown in figure 14, it is necessary to designate one of the remote controls as the master remote control.

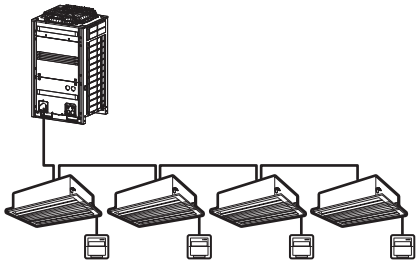


figure 14

- Only the master remote control can select heating, cooling operation.
- The displays of slave remote controls show " " (changeover under control) and they automatically follow the operation mode directed by the master remote control. However, it is possible to changeover to program dry with slave remote controls if the system is in cooling operation by setting on the master remote control and to changeover to fan only operation.

How to designate the master remote control

1. Press the operation mode selector button of the current master remote control for 4 seconds.
   The display showing " " (changeover under control) of all slave remote controls connected to the same outdoor unit flashes.
2. Press the operation mode selector button of the controller that you wish to designate as the master remote control. Then designation is completed. This remote control is designated as the master remote control and the display showing " " (changeover under control) vanishes.
   The displays of other remote controls show " " (changeover under control).

1-6-6 Precautions for Group Control System or Two Remote Control Control System

This system provides two other control systems beside individual control (one remote control controls one indoor unit) system. Confirm about your system to Daikin dealer.

- **Group control system**
  One remote control controls up to 16 indoor units. All indoor units are equally set.
- **Two remote control control system**
  Two remote controls control one indoor unit (in case of group control system, one group of indoor units). The unit is individually operated.

Note

- Contact your Daikin dealer in case of changing the combination or setting of group control and two remote control control systems.

1-7 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.
- Adjust the room temperature properly for a comfortable environment. Avoid excessive heating or cooling.
- Prevent direct sunlight from entering a room during cooling operation by using curtains or blinds.
- Ventilate often.
  Extended use requires special attention to ventilation.
- Do not keep doors and windows opened. If the doors and windows remain open, air will flow out of your room causing a decrease in the cooling or heating effect.
- Never place objects near the air inlet or the air outlet of the unit. It may cause deterioration in the effect or stop the operation.
- Turn off the main power supply switch to the unit when the unit is not used for longer periods of time. If the switch is on, it uses electricity. Before restarting the unit, turn on the main power supply switch 6 hours before operation to ensure smooth running. (Refer to the chapter "Maintenance" in the indoor unit manual.)
- When the display shows " " (time to clean the air filter), ask a qualified service person to clean the filters. (Refer to the chapter "Maintenance" in the indoor unit manual.)
- Keep the indoor unit and remote control at least 1 m away from televisions, radios, stereos, and other similar equipment. Failing to do so may cause static or distorted pictures.
- Do not use other heating devices directly beneath the indoor unit. If you do, they might get deformed by the heat.

1-8 Seasonal Maintenance

1-8-1 At the Beginning of the Season

Check

- Are the indoor and outdoor unit intake and outlet vents blocked? Remove anything that might be blocking them.

Clean the air filter and exterior.

- After cleaning the air filter, be sure to put it back in the same position.
  See the operation manual included with the indoor unit for details on how to clean it.

Turn the power on.

- When the power comes on, the characters in the remote control display appear.
  (To protect the unit, turn the power on at least 6 hours before operating it. This makes operation smoother.)

1-8-2 At the End of the Season

On a clear day, use fan operation for around half a day to thoroughly dry out the interior of the unit.

- Refer to page 5 for details on fan operation.

Turn off the power

- When the power is shut off, the characters in the remote control display disappear.
- When the power is on, the unit consumes up to several dozen Watts of power.
  Turn off the power to conserve energy.

Clean the air filter and exterior.

- After cleaning the air filter, be sure to put it back in the same position.
  See the operation manual included with the indoor unit for details on how to clean it.

1-9 Following Symptoms are not Air Conditioner Troubles

1-9-1 The System does not Operate

- **The air conditioner does not start immediately when restart the operation after stop the operation or change operation mode after set the operation mode.**
  If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 5 minutes after it is turned ON again in case it was turned OFF just before.
- **If "Centralized Control" is displayed on the remote control and pressing the operation button causes the display to blink for a few seconds.**
  This indicates that the central device is controlling the unit. The blinking display indicates that the remote control cannot be used.
- **The system does not start immediately after the power supply is turned on.**
  Wait one minute until the micro computer is prepared for operation.

1-9-2 It Stops Sometimes

- **The remote control display reads "U4" or "U5" and stops but then restarts after a few minutes.**
  This is because the remote control is intercepting noise from electrical appliances other than the air conditioner, and this prevents communication between the units, causing them to stop. Operation automatically restarts when the noise goes away.

1-9-3 COOL/HEAT cannot be Changed Over

- **When the display shows " [ ] " (changeover under control).**
  It shows that this is a slave remote control.
  Refer to "Setting the master remote control".
- **When the cool/heat selector switch is installed and the display shows " [ ] " (changeover under control).**
  This is because cool/heat changeover is controlled by the cool/heat selector. Ask your Daikin dealer where the remote control switch is installed.

1-9-4 Fan Operation is Possible, but Cooling and Heating do not Work

- **Immediately after the power is turned on.**
  The micro computer is getting ready to operate.
  Wait 10 minutes.

1-9-5 The Fan Strength does not Correspond to the Setting

- **The fan strength does no change even if the fan strength adjustment button in pressed.**
  During heating operation, when the room temperature reaches the set temperature, the outdoor unit goes off and the indoor unit changes to whisper fan strength.
  This is to prevent cold air blowing directly on occupants of the room.
  The fan strength will not change even if the button is changed, when another indoor unit is in heating operation.

1-9-6 The Fan Direction does not Correspond to the Setting

- **The fan direction does not correspond to the remote control display.**
  The fan direction does not swing.
  This is because the unit is being controlled by the micro computer.
  Refer to "Adjusting the air flow direction".

1-9-7 White Mist Comes Out of a Unit

Indoor unit

- **When humidity is high during cooling operation.**
  If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the interior of the indoor unit. Ask your Daikin dealer for details on cleaning the unit. This operation requires a qualified service person.
- **Immediately after the cooling operation stops and if the room temperature and humidity are low.**
  This is because warm refrigerant gas flows back into the indoor unit and generates steam.

Indoor unit, outdoor unit

- **When the system is changed over to heating operation after defrost operation.**
  Moisture generated by defrost becomes steam and is exhausted.

1-9-8 Noise of Air Conditioners

Indoor unit

- **A "zeen" sound is heard immediately after the power supply is turned on.**
  The electronic expansion valve inside an indoor unit starts working and makes the noise. Its volume will reduce in about one minute.
- **A continuous low "shah" sound is heard when the system is in cooling operation or at a stop.**
  When the drain pump (optional accessories) is in operation, this noise is heard.
- **A "pishi-pishi" squeaking sound is heard when the system stops after heating operation.**
  Expansion and contraction of plastic parts caused by temperature change make this noise.
- **A low "sah", "choro-choro" sound is heard while the indoor unit is stopped.**
  When the other indoor unit is in operation, this noise is heard. In order to prevent oil and refrigerant from remaining in the system, a small amount of refrigerant is kept flowing.

Outdoor unit

- **When the tone of operating noise changes.**
  This noise is caused by the change of frequency.

Indoor unit, outdoor unit

- **A continuous low hissing sound is heard when the system is in cooling or defrost operation.**
  This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- **A hissing sound which is heard at the start or immediately after stopping operation or defrost operation.**
  This is the noise of refrigerant caused by flow stop or flow change.

1-9-9 Dust Comes Out of the Unit

- **When the unit is used after stopping for a long time.**
  This is because dust has gotten into the unit.

1-9-10 The Units can Give off Odours

- **During operation.**
  The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

1-9-11 The Outdoor Unit Fan does not Spin

- **During operation.**
  The speed of the fan is controlled in order to optimize product operation.

1-9-12 The Display Shows " 88 "

- **This is the case immediately after the main power supply switch is turned on.**
  This means that the remote control is in normal condition. This continues for one minute.

1-9-13 The Compressor or Fan in the Outdoor Unit does not Stop

- **This is to prevent oil and refrigerant from remaining in the compressor. The unit will stop after 5 to 10 minutes.**

1-9-14 The Inside of an Outdoor Unit is Warm even when the Unit has Stopped

- **This is because the crankcase heater is warming the compressor so that the compressor can start smoothly.**

1-9-15 It Stops Sometimes

- **The remote control display reads "U4" and "U5" and stops but then restarts after a few minutes.**
  This is because the remote control is intercepting noise from electrical appliances other than the air conditioner, and this prevents communication between the units, causing them to stop.
  Operation automatically restarts when the noise goes away.

1-9-16 Hot Air is Emitted even though the Unit is Stopped

- **Hot air can be felt when the unit is stopped.**
  Several different indoor units are being run on the same system, so if another unit is running, some refrigerant will still flow through the unit.

1-9-17 Does not Cool very well

- **Program dry operation.**
  Program dry operation is designed to lower the room temperature as little as possible.
  Refer to page 315.

1-10 Trouble Shooting

If one of the following malfunctions occur, take the measures shown below and contact your Daikin 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, electrical shock, or fire.
Contact your dealer.

- If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates;
  Measure : Do not turn on the main power switch.
- If the ON/OFF switch does not properly work;
  Measure: Turn off the main power switch.
- If water leaks from unit;
  Measure: Stop the operation.
- The operation switch does not work well.
  Turn off the power.
- If the display " TEST ", the unit number and the operation lamp flash and the malfunction code appears; **(Refer to figure 12)**

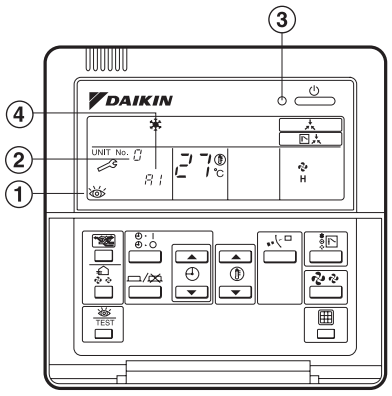


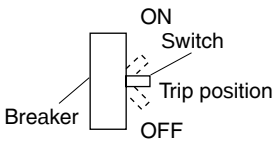
figure 12

1. Inspection display
2. Indoor unit number in which a malfunction occurs
3. Operation lamp
4. Malfunction code

Measure: Notify your Daikin dealer 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.
If it is impossible to fix the problem yourself after checking all the above items, contact your dealer.
Let him know the symptoms, system name, and model name (listed on the warranty card).

1. If the system does not operate at all;
- Check if there is no power failure.
  Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after the power supply is recovered.
- Check if no fuse has blown;
  Turn off the power supply
- Check if the breaker is blown.
  Turn the power on with the breaker switch in the off position.
  Do not turn the power on with the breaker switch in the trip position.
  (Contact your dealer.)



2. If the system stops soon after starting the operation;
- Check if air inlet or outlet of outdoor or indoor unit is not blocked by obstacles.
  Remove any obstacle and make it well-ventilated.
- Check if the remote control display shows " " (time to clean the air filter);
  Refer to the operation manual of the indoor unit. And clean the air filter.

3. The system operates but cooling or heating is insufficient;
- Check if air inlet or outlet of outdoor or indoor unit is not blocked by obstacles.
  Remove any obstacle and make it well-ventilated.
- Check if the remote control display shows " " (time to clean the air filter);
  Refer to the operation manual of the indoor unit. And clean the air filter.
- Check the temperature setting.
  Refer to “Operation procedure”.
- Check the fan speed setting on your remote control.
  Refer to “Operation procedure”.
- Check for open doors or windows.
  Shut doors and windows to prevent wind from coming in.
- Check if there are too many occupants in the room during cooling operation.
- Check if the heat source of the room is excessive during cooling operation.
- Check if direct sunlight enters the room during cooling operation.
  Use curtains or blinds.
- Check if the air flow angle is not proper.
  Refer to “Operation procedure”.

After-sales service and warranty

After-sales service:

Warning

- **Do not modify the unit.**
  This may cause electric shock or fire.
- **Do not disassemble or repair the unit.**
  This may cause electric shock or fire.
  Contact your dealer.
- **If the refrigerant leaks, keep out of fire.**
  Although the refrigerant does not usually leak, if the refrigerant leaks out into a room and comes in contact with the combustible air in the equipment such as fan heater, stove, oil (gas) cooker, etc., it will cause toxic gas to be generated.
  When a refrigerant leakage failure has been repaired, confirm a service person that the leakage point has been corrected surely before restarting operation.
- **Do not remove or reinstall the unit by yourself.**
  Incorrect installation may cause electrical shock or fire.
  Contact your dealer.

- **When asking your dealer to repair, inform related staff of the details as follows:**
  - Product No. of air conditioner:
    Refer to the warranty card.
  - Shipping date and installation date:
    Refer to the warranty card.
  - Malfunction:
    Inform the staff of the defective details.
    (Malfunction code being displayed on the remote control.)
  - Name, address, telephone number
- **Repair where the warranty term is expired**
  Contact your dealer. If necessary to repair, pay service is available.
- **Minimum storage period of important parts**
  Even after a certain type of air conditioner is discontinued, we have the related important parts in stock for 9 years at least.
  The important parts indicate parts essential to operate the air conditioner.
- **Recommendations for maintenance and inspection**
  Since dust collects after using the unit for several years, the performance will be deteriorated to some extent.
  Taking apart and cleaning inside require technical expertise, so we recommend entering a maintenance and inspection contract (at a cost) separate from normal maintenance.
- **Recommended inspection and maintenance cycles**
  [Note: The maintenance cycle is not the same as the warranty period.]
  Table 1 assumes the following usage conditions.
  1. Normal use without frequent starting and stopping of the machine.
     (Although it varies with the model, we recommend not starting and stopping the machine more than 6 times/hour for normal use.)
  2. Operation of the product is assumed to be 10 hours/day, 2500 hours/year.

• Table 1 “Inspection Cycle” and “Maintenance Cycle” Lists

Name of Main Part	Inspection Cycle	Maintenance Cycle [replacements and/or repairs]
Electric motor (fan, damper, etc.)	1 year	20,000 hours
PC boards		25,000 hours
Heat exchanger		5 years
Sensor (thermistor, etc.)		5 years
remote control and switches		25,000 hours
Drain pan		8 years
Expansion valve		20,000 hours
Electromagnetic valve		20,000 hours

Note 1
This table indicates main parts.
See the maintenance and inspection contract for details.

Note 2
This maintenance cycle indicates recommended lengths of time until the need arises for maintenance work, in order to ensure the product is operational as long as possible
Use for appropriate maintenance design (budgeting maintenance and inspection fees, etc.)
Depending on the content of the maintenance and inspection contract, the inspection and maintenance cycles may in reality be shorter than those listed here.

Shortening of “maintenance cycle” and “replacement cycle” needs to be considered in the following cases.

1. When used in hot, humid locations or locations where temperature and humidity fluctuate greatly.
2. When used in locations where power fluctuation (voltage, frequency, wave distortion, etc.) is high.
   (Cannot be used if it is outside the allowable range.)
3. When installed and used in locations where bumps and vibrations are frequent.
4. When used in bad locations where dust, salt, harmful gas or oil mist such as sulfurous acid and hydrogen sulfide may be present in the air.
5. When used in locations where the machine is started and stopped frequently or operation time is long. (Example: 24 hour air-conditioning)

■ **Recommended replacement cycle of wear-out parts**
[The cycle is not the same as the warranty period.]

• Table 2 “Replacement Cycle” Lists

Name of Main Part	Inspection Cycle	Replacement Cycle
Air filter	1 year	5 years
High efficiency filter (Optional accessory)		1 year
Fuse		10 years
Crankcase heater		8 years

Note 1
This table indicates main parts.
See the maintenance and inspection contract for details.

Note 2
This maintenance cycle indicates recommended lengths of time until the need arises for maintenance work, in order to ensure the product is operational as long as possible.
Use for appropriate maintenance design (budgeting maintenance and inspection fees, etc.).

Contact your dealer for details.
Note: Breakage due to taking apart or cleaning inside by anyone other than our authorized dealers may not be included in the warranty.

■ **Moving and discarding the unit**

• Contact your dealer for removing and reinstalling the system air conditioner since they require technical expertise.
• The system air conditioner uses fluorocarbon refrigerant. Contact your dealer for discarding the system air conditioner since it is required by law to collect, transport and discard the refrigerant in accordance with relevant local and national regulations.

■ **Where to call**

For after-sales service, etc., consult with your dealer.

■ **Warranty period:**

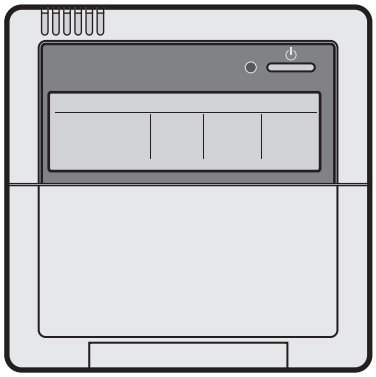
• This product includes a warranty card.
  The warranty card is given to a customer after dealer staff fills out necessary items in the card. The customer should check the entered items and store it carefully.
  Warranty period: Within one year after installation.
  For further details, refer to the warranty card.
• If it is necessary to repair the air conditioner within the warranty period, contact your dealer and show your warranty card. If the warranty card is not shown, pay-service repair may be performed even though the warranty period is not expired.

2. Heat Pump 60Hz (RXYQ5~54P)

DAIKIN

OPERATION MANUAL

VRV III System air conditioner



Operation manual
VRVIII System air conditioner — English

Manual de operación
Sistema de acondicionador de aire VRVIII — Español

Manual de funcionamento
Ar condicionado VRVIII System — Portugues

使用説明書
VRVIII係統空調機 — 中文（繁體）

RXYQ5PYL(E)
RXYQ8PYL(E)
RXYQ10PYL(E)
RXYQ12PYL(E)
RXYQ14PYL(E)
RXYQ16PYL(E)
RXYQ18PYL(E)
RXYQ20PYL(E)
RXYQ22PYL(E)
RXYQ24PYL(E)
RXYQ26PYL(E)
RXYQ28PYL(E)
RXYQ30PYL(E)
RXYQ32PYL(E)
RXYQ34PYL(E)
RXYQ36PYL(E)
RXYQ38PYL(E)
RXYQ40PYL(E)
RXYQ42PYL(E)
RXYQ44PYL(E)
RXYQ46PYL(E)
RXYQ48PYL(E)
RXYQ50PYL(E)
RXYQ52PYL(E)
RXYQ54PYL(E)

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2-1 Safety Cautions

Read the following cautions carefully and use your equipment properly.
There are two kinds of safety cautions and tips listed here as follows:

⚠ **Warning** ..... Improper handling can lead to such serious consequences as death or severe injury.

⚠ **Caution**..... Improper handling can lead to injury or damage. It could also have serious consequences under certain conditions.

Note
Keep this operation manual handy so that you can refer to them if needed.
Also, if this equipment is transferred to a new user, make sure to hand over this operation manual to the new user.

⚠ Warning

It is not good for your health to expose your body to the air flow for a long time.

In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off power and call your dealer for instructions.

Ask your dealer for installation of the air conditioner.
Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.

Ask your dealer for improvement, repair, and maintenance.
Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.

Do not put a finger, a rod or other objects into the air inlet or outlet. As the fan is rotating at high speed, it will cause injury. Never touch the air outlet or the horizontal blades while the swing flap is in operation.
Fingers may become caught or the unit may break down.

The refrigerant in the air conditioner is safe and normally does not leak. If the refrigerant leaks inside the room, the contact with a fire of a burner, a heater or a cooker may result in a harmful gas.
Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.
Do not use the air conditioner until when a service person confirms to finish repairing the portion where the refrigerant leaks.

For refrigerant leakage, consult your dealer.
When the air conditioner is to be installed in a small room, it is necessary to take proper measures so that the amount of any leaked refrigerant does not exceed the limiting concentration even when it leaks. If the refrigerant leaks exceeding the level of limiting concentration, an oxygen deficiency accident may happen.

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.

Ask your dealer to move and reinstall the air conditioner.
Incomplete installation may result in a water leakage, electric shock, and fire.

In order to avoid electric shock, fire, injury or damaging the unit, do not use improper ampere fuses or do not use copper nor steel wires instead.

Be sure to establish an earth.
Do not earth the unit to a utility pipe, arrester, or telephone earth.
Incomplete earth may cause electrical shock, or fire.
A high surge current from lightning or other sources may cause damage to the air conditioner.

Be sure to install an earth leakage breaker.
Failure to install an earth leakage breaker may result in electric shocks, or fire.

⚠ Caution

Do not use the air conditioner for other purposes.
In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.

In order to avoid injury, do not remove the fan guard of outdoor unit.

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.

After a long use, check the unit stand and fitting for damage.
If they are left in a damaged condition, the unit may fall and result in injury.

Neither place a flammable spray bottle near the air conditioner nor perform spraying.
Doing so may result in a fire.

Before cleaning, be sure to stop the operation, turn the breaker off.
Otherwise, an electric shock and injury may result.

Do not operate the air conditioner with a wet hand.
An electric shock may result.

Do not place items which might be damaged by moisture under the indoor unit which may be damaged by water.
Condensation may form if the humidity is above 80%, if the drain outlet gets blocked or the filter is polluted.

Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.

Do not mount on the outdoor unit or avoid placing any object on it.
Falling or tumbling may result in injury.

Never expose little children, plants or animals directly to the air flow.
Adverse influence to little children, animals and plants may result.

Do not wash the air conditioner with water.
Electric shock or fire may result.

Do not install the air conditioner at any place where flammable gas may leak out.
If the gas leaks out and stays around the air conditioner, a fire may break out.

Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause wetting of the building, furniture etc.

Do not let children play on and around the outdoor unit.
If they touch the unit carelessly, it may result in injury.

Do not place a flower vase or anything containing water on the indoor unit.
Water may enter the unit, causing an electric shock or fire.

Do not place the controller exposed to direct sunlight.
The LCD display may get discolored, failing to display the data.

Do not wipe the controller operation panel with benzine, thinner, chemical dustcloth, etc.
The panel may get discolored or the coating peeled off. If it is heavily dirty, soak a cloth in water-diluted neutral detergent, squeeze it well and wipe the panel clean. And wipe it with another dry cloth.

Never touch the internal parts of the controller.
Do not remove the front panel. Some parts inside are dangerous to touch, and a machine trouble may happen. For checking and adjusting the internal parts, contact your dealer.

Avoid placing the controller in a spot splashed with water.
Water coming inside the machine may cause an electric leak or may damage the internal electronic parts.

Never press the button of the remote control with a hard, pointed object.
The remote control may be damaged.

Never pull or twist the electric wire of a remote control.
It may cause the unit to malfunction.

Do not operate the air conditioner when using a room fumigation - type insecticide.
Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.

The appliance is not intended for use by young children or infirm persons without supervision.

Young children should be supervised to ensure that they do not play with the appliance.

Consult with installation contractor for cleaning the inside of the air conditioner.

Wrong cleaning may make the plastics parts broken or cause failure of water leakage or electric shock.

Do not touch the air inlet or aluminium fin of the air conditioner.
Otherwise, injury may be caused.

Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit.
Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

2-2 Specifications

[Single unit]

Model		RXYQ5PYL(E)	RXYQ8PYL(E)	RXYQ10PYL(E)
Power supply				
Phase	-	3N~	3N~	3N~
Frequency	(Hz)	60	60	60
Voltage	(V)	380	380	380
Nominal cooling capacity	(kW)	14.0	22.4	28.0
Nominal heating capacity	(kW)	16.0	25.0	31.5
Dimensions H×W×D	(mm)	1680×635×765	1680×930×765	1680×930×765
Mass	(kg)	160	205	249
Refrigerant type	-	R-410A	R-410A	R-410A
Refrigerant charge (*1)	(kg)	6.2	7.7	8.4
Design pressure				
High pressure side	(bar)	40	40	40
	(MPa)	4.0	4.0	4.0
Low pressure side	(bar)	33	33	33
	(MPa)	3.3	3.3	3.3

Model		RXYQ12PYL(E)	RXYQ14PYL(E)	RXYQ16PYL(E)
Power supply				
Phase	-	3N~	3N~	3N~
Frequency	(Hz)	60	60	60
Voltage	(V)	380	380	380
Nominal cooling capacity	(kW)	33.5	40.0	45.0
Nominal heating capacity	(kW)	37.5	45.0	50.0
Dimensions H×W×D	(mm)	1680×1240×765	1680×1240×765	1680×1240×765
Mass	(kg)	285	329	329
Refrigerant type	-	R-410A	R-410A	R-410A
Refrigerant charge (*1)	(kg)	10.0	12.3	12.5
Design pressure				
High pressure side	(bar)	40	40	40
	(MPa)	4.0	4.0	4.0
Low pressure side	(bar)	33	33	33
	(MPa)	3.3	3.3	3.3

Model		RXYQ18PYL(E)
Power supply		
Phase	-	3N~
Frequency	(Hz)	60
Voltage	(V)	380
Nominal cooling capacity	(kW)	49.0
Nominal heating capacity	(kW)	56.5
Dimensions H×W×D	(mm)	1680×1240×765
Mass	(kg)	341
Refrigerant type	-	R-410A
Refrigerant charge (*1)	(kg)	12.7
Design pressure		
High pressure side	(bar)	40
	(MPa)	4.0
Low pressure side	(bar)	33
	(MPa)	3.3

*1:Initial refrigerant charge

[Combination unit]
RXYQ20~54PYL (*2) is the combination unit that is composed of the single units.
About the specifications see **Single unit** according to the independent unit.
*2:There is the case that RXYQ16PYL or RXYQ18PYL is composed of single unit.

2-3 What to do before Operation

This operation manual is for the following system with standard control. Before initiating operation, contact your Daikin dealer for the operation that corresponds to your system type and mark.
If your installation has a customized control system, ask your Daikin dealer for the operation that corresponds to your system.

Outdoor units **(Refer to figure 1)**

	Cool/Heat selector	Operation modes
Inverter series		
heat pumps **RXYQ** series	☐ yes ☐ no	☀ ☀ ✿

- **Names and functions of parts (Refer to figure 1)**

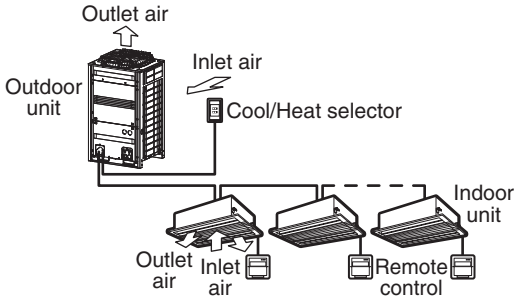


figure 1

(figure 1 shows system with Cool/Heat selector)

2-4 Remote Control and COOL/HEAT Selector: Name and Function of each Switch and Display (Refer to figure 2 and 3)

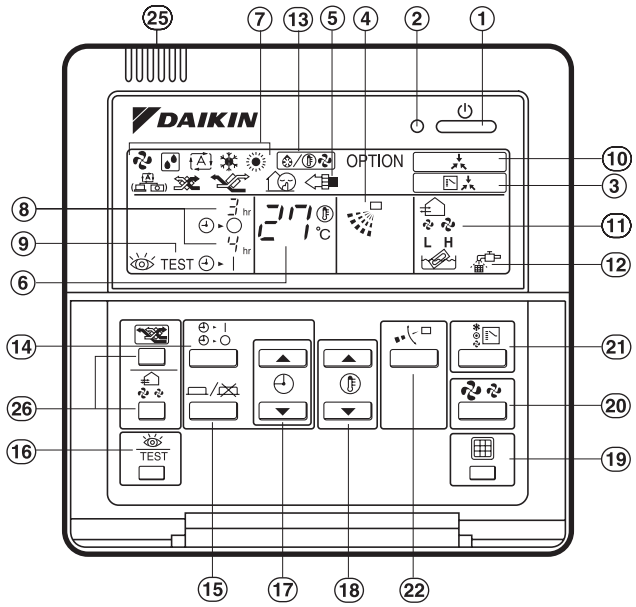


figure 2

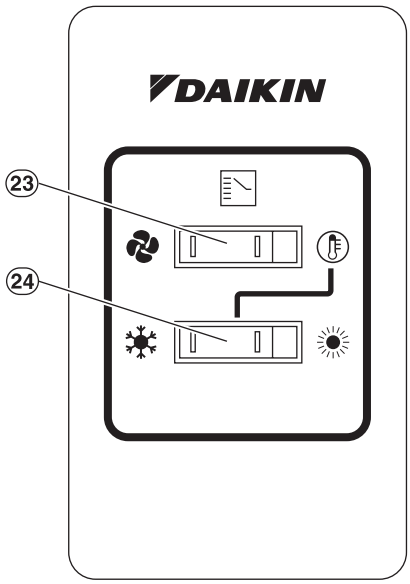


figure 3

1. **On/off button**
   Press the button and the system will start. Press the button again and the system will stop.
2. **Operation lamp (red)**
   The lamp lights up during operation.
3. **Display** " ▭ " **(changeover under control)**
   It is impossible to changeover heat/cool with the remote control which display this icon.
4. **Display** " " **(air flow flap)**
   Refer to the chapter "Operation Procedure - Adjusting the Air Flow Direction".
5. **Display** " OPTION " **(ventilation/air cleaning)**
   This display shows that the ventilation unit are in operation. (these are optional accessories)
6. **Display** " " **(set temperature)**
   This display shows the temperature you have set.
7. **Display** " " " " " " " " " " **(operation mode)**
   This display shows the current operation mode.
8. **Display** " " **(programmed time)**
   This display shows the programmed time of the system start or stop.
9. **Display** " TEST " **(inspection/test operation)**
   When the inspection/test operation button is pressed, the display shows the mode in which the system actually is.
10. **Display** " ▭ " **(under centralized control)**
    When this display shows, the system is under centralized control. (This is not a standard specification.)
11. **Display** " " **(fan speed)**
    This display shows the fan speed you have selected.
12. **Display** " " **(time to clean air filter)**
    Refer to the operation manual of indoor unit.
13. **Display** " ▭ " **(defrost/hot start)**
    Refer to the chapter "Operation Procedure - Explanation of Heating Operation."
14. **Timer mode start/stop button**
    Refer to the chapter "Operation Procedure - Programming Start and Stop of the System with Timer."
15. **Timer on/off button**
    Refer to the chapter "Operation Procedure - Programming Start and Stop of the System with Timer."
16. **Inspection/test operation button**
    This button is only used by qualified service persons for maintenance purposes.
17. **Programming time button**
    Use this button for setting the programming start and/or stop time.
18. **Temperature setting button**
    Use this button for setting the desired temperature.
19. **Filter sign reset button**
    Refer to the operation manual of indoor unit.
20. **Fan speed control button**
    Press this button to select the fan speed of your preference.
21. **Operation mode selector button**
    Press this button to select the operation mode of your preference.
22. **Air flow direction adjust button**
    Refer to the chapter "Operation Procedure - Adjusting the Air Flow Direction".
23. **Fan only/air conditioning selector switch**
    Set the switch to " " for fan only operation or to " " for heating or cooling operation.
24. **Cool/heat changeover switch**
    Set the switch to " " for cooling operation or to " " for heating operation.
25. **Thermistor**
    It sense the room temperature around the remote control.
26. **These buttons are used when the ventilation unit are installed (These are optional accessories).**
    Refer to the operation manual of the ventilation unit.

Note

- In contradistinction to actual operating situations, the display on figure 1 shows all possible indications.
- Figure 2 shows the remote control which is opened the cover.
- For FXS, FXM, FXL and FXN, the air flow direction adjust button (22) is not available and the display (4) shows "NOT AVAILABLE" when pressed.

2-5 Operation Range

Use the system in the following temperature and humidity ranges for safe and effective operation.

	COOLING	HEATING
outdoor temperature	–5°~43°CDB	–20°~21°CDB
		–20°~15.5°CWB
indoor temperature	21°~32°CDB	15°~27°CDB
	14°~25°CWB	
indoor humidity	≤ 80%	

Note

To avoid condensation and water dripping out the unit.
If the temperature or the humidity is beyond these conditions, safety devices may work and the air conditioner may not operate.

2-6 Operation Procedure

- Operation procedure varies according to the combination of outdoor unit and remote control. Read the chapter "What to do before operation".
- To protect the unit, turn on the main power switch 6 hours before operation.
  And do not turn off the power supply during the air conditioning season because of smoothly start up.
- If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.

2-6-1 Cooling, Heating and Fan only Operation

- The operation mode cannot be changed with the remote control whose display shows " ▭ " (changeover under control).
  Change the operation mode with the remote control whose display does not show " ▭ ".
- When the display " ▭ " (changeover under control) flashes, refer to the chapter "Operation Procedure - Setting the Master Remote Control".
- The fan may keep on running for about 1 minute after the heating operation stops for removing the heat in the indoor unit.
- The air flow rate may be adjusted automatically depending on the room temperature or the fan may stop immediately. This is not a malfunction.
- For machine protection the system may control the air flow rate automatically.
- It may take sometime for finishing to change the air flow rate.
- This is normal operation.

FOR SYSTEMS WITHOUT COOL/HEAT SELECTOR (Refer to figure 4)

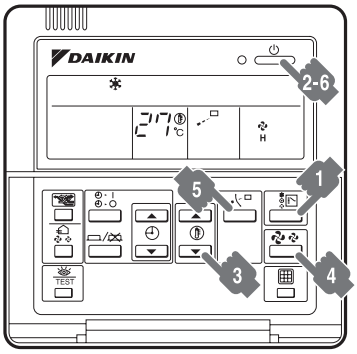


figure 4

1 Press the operation mode selector button several times and select the operation mode of your choice;
" ☼ " Cooling operation
" ☀ " Heating operation
" ❖ " Fan only operation

2 Press the on/off button.
The operation lamp lights up and the system starts operation.

FOR SYSTEMS WITH COOL/HEAT SELECTOR (Refer to figures 4 and 7)

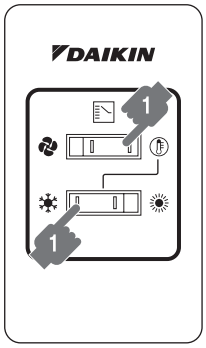


figure 7.1

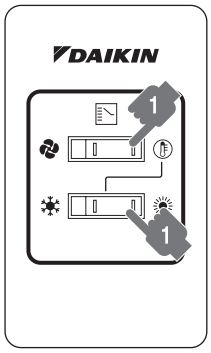


figure 7.2

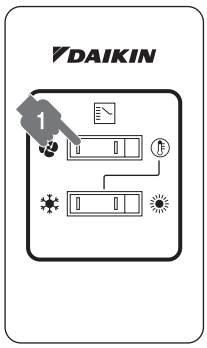


figure 7.3

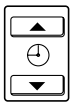
1 Select operation mode with the Cool/Heat selector as follows:
" ⏻ " " ☼ " Cooling operation **(Refer to figure 7.1)**
" ⏻ " " ☀ " Heating operation **(Refer to figure 7.2)**
" ❖ " Fan only operation **(Refer to figure 7.3)**

2 Press the on/off button. **(Refer to figure 4)**
The operation lamp lights up and the system starts operation.

ADJUSTMENT (Refer to figure 4)

For adjusting the desired temperature, fan speed and air flow direction (only for FXC, FXF, FXH, FXK, FXA), follow the procedure shown below.

3 Press the temperature setting button and set the desired temperature.



Each time this button is pressed, the temperature setting rises or lowers 1°C.

Note
- Set the temperature within the operation range.
- The temperature setting is impossible for fan only operation.

4 Press the fan speed control button and select the fan speed of your preference.

5 Press air flow direction adjust button.
Refer to the chapter “Adjusting the Air Flow Direction” for details.

STOPPING THE SYSTEM (Refer to figure 4)

6 Press the on/off button once again.
The operation lamp goes off and the system stops operation.

Note
- Do not turn off the power immediately after the unit stops.
- The system need at least 5 minutes for residual operation of drain pump device.
  Turning off the power immediately will cause water leak or trouble.

EXPLANATION OF HEATING OPERATION
- For general heating operation, it may take longer to reach the set temperature than in cooling operation.
  We recommend starting the operation which was used before using timer operation.
- The following operation is performed in order to prevent the heating capacity from dropping or cold air from blowing.

Defrost operation
- In heating operation, freezing of the outdoor unit heat exchanger increases. Heating capability decreases and the system goes into defrost operation.
- The indoor unit fan stops and the remote control displays " ❄/⏻❖ ".
- After maximum 10 minutes of defrost operation, the system returns to heating operation again.

Hot start
- In order to prevent cold air from blowing out of an indoor unit at the start of heating operation, the indoor fan is automatically stopped. The display of the remote control shows " ❄/⏻❖ ".

Note

- The heating capacity drops as the outside temperature falls. If this happens, use another heating device together with the unit. (When using the appliances which produce open fire together, ventilate a room constantly.)
  Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the unit.
- It takes some time for the room to warm up from the time the unit is started since the unit uses a hot-air circulatory system to warm the entire room.
- If the hot air rises to the ceiling, leaving the area above the floor cold, we recommend using the circulator (the indoor fan for circulating air). Contact your dealer for details.

2-6-2 Program Dry Operation

- The function of this operation is to decrease the humidity in your room with a minimum temperature decrease.
- The micro computer automatically determines temperature and fan speed.
- The system does not go into operation if the room temperature is low.
- The microcomputer automatically controls the temperature and fan speed, so these cannot be set using the remote control.
- This function is not available if the room temperature is 20°C or lower.

FOR SYSTEMS WITHOUT COOL/HEAT SELECTOR (Refer to figure 5)

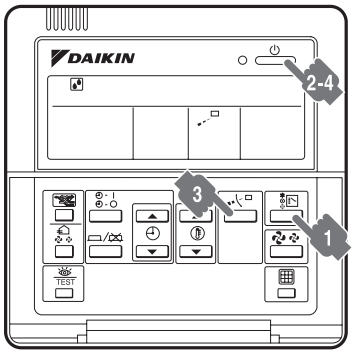


figure 5

1. Press the operation mode selector button several times and select " " (program dry operation).
2. Press the on/off button.
   The operation lamp lights up and the system starts operation.
3. Press the air flow direction adjust button (only for FXC, FXF, FXH, FXK, FXA). Refer to the chapter "Adjusting the Air Flow Direction" for details.
4. Press the on/off button once again.
   The operation lamp goes off and the system stops operation.

Note

- Do not turn off the power immediately after the unit stops.
- The system need at least 5 minutes for residual operation of drain pump device.
  Turning off the power immediately will cause water leak or trouble.

FOR SYSTEMS WITH COOL/HEAT SELECTOR (Refer to figure 8)

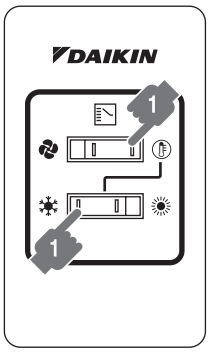


figure 8.1

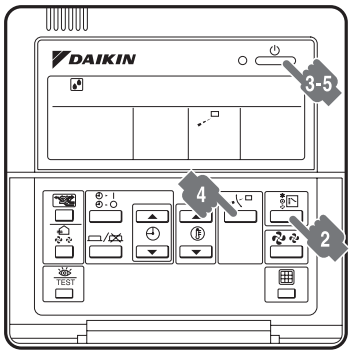


figure 8

1. Select cooling operation mode with the Cool/Heat selector.
2. Press the operation mode selector button several times and select program dry " ".
3. Press the on/off button.
   The operation lamp lights up and the system starts operation.
4. Press the air flow direction adjust button (only for FXC, FXF, FXH, FXK, FXA). Refer to the chapter "Adjusting the Air Flow Direction" for details.
5. Press the on/off button once again.
   The operation lamp goes off and the system stops operation.

Note

- Do not turn off the power immediately after the unit stops.
- The system need at least 5 minutes for residual operation of drain pump device.
  Turning off the power immediately will cause water leak or trouble.

2-6-3 Adjusting the Air Flow Direction

(Refer to figure 6) (only for FXC, FXF, FXH, FXK, FXA)

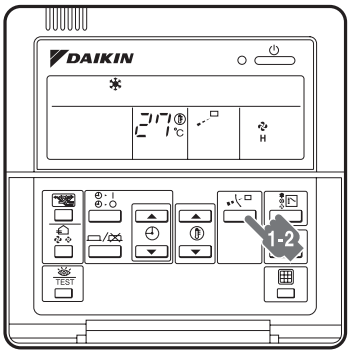


figure 6

1. Press the air flow direction button to select the air direction.
   The air flow flap display swings as shown right and the air flow direction continuously varies. (Automatic swing setting)

2. Press the air flow direction adjust button to select the air direction of your choice.

   The air flow flap display stops swinging and the air flow direction is fixed. (Fixed air flow direction setting)

MOVEMENT OF THE AIR FLOW FLAP
For the following conditions, a micro computer controls the air flow direction which may be different from the display.

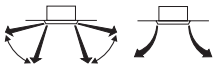
COOLING	HEATING
———	• When starting operation. • When the room temperature is higher than the set temperature. • At defrost operation.
• When operating continuously at horizontal air flow direction. • When continuous operation with downward air flow is performed at the time of cooling with a ceiling-suspended or a wall-mounted unit, the microcomputer may control the flow direction, and then the remote control indication also will change.	

The air flow direction can be adjusted in one of the following ways.
- The air flow flap itself adjusts its position.
- The air flow direction can be fixed by the user.

  Automatic " " or desired position " ".

  (Refer to figure 13)

Double-flow (FXC) + Multi-flow (FXF)



Corner (FXK)

Ceiling Suspended (FXH)

Wall Mounted (FXA)

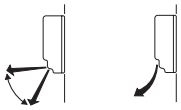


figure 13

Note
- The movable limit of the flap is changeable. Contact your Daikin dealer for details. (Only for FXC, FXF, FXH, FXK, FXA)
- Avoid operating in the horizontal direction " ". It may cause dew or dust to settle on the ceiling.

2-6-4 Programming Start and Stop of the System with Timer (Refer to figure 9)

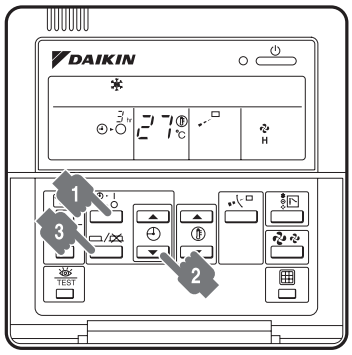


figure 9

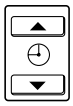
- The timer is operated in the following two ways.

  Programming the stop time " ▸ ". The system stops operating after the set time has elapsed.

  Programming the start time " ▸ ". The system starts operating after the set time has elapsed.
- The timer can be programmed for a maximum of 72 hours.
- The start and the stop time can be simultaneously programmed.

1 Press the timer mode start/stop button several times and select the mode on the display.
The display flashes.
- For setting the timer stop " ▸ "
- For setting the timer start " ▸ "

2 Press the programming time button and set the time for stopping or starting the system.



Each time this button is pressed, the time advances or goes backward by 1 hour.

3 Press the timer on/off button.
The timer setting procedure ends. The display " ▸ " or " ▸ " changes from flashing light to constant light.

Note
- When setting the timer off and on at the same time, repeat the above procedure (from " 1 " to " 3 ") once again.
- After the timer is programmed, the display shows the remaining time.
- Press the timer on/off button once again to cancel programming. The display vanishes.

For example: (Refer to figure 11)

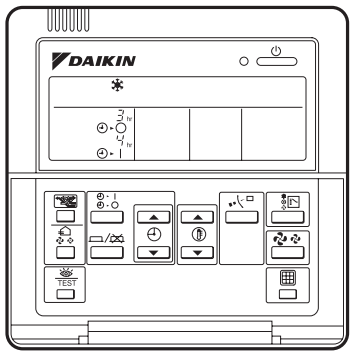


figure 11

When the timer is programmed to stop the system after 3 hours and start the system after 4 hours, the system will stop after 3 hours and start 1 hour later.

2-6-5 Setting the Master Remote Control (Refer to figure 10)

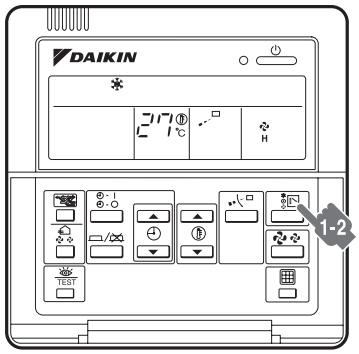


figure 10

- When one outdoor unit is connected with several indoor units as shown in figure 14, it is necessary to designate one of the remote controls as the master remote control.

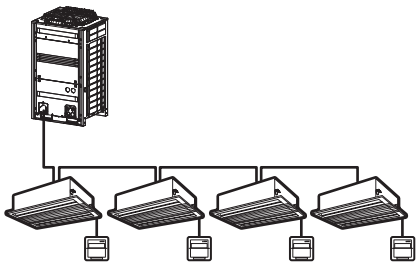


figure 14

- Only the master remote control can select heating, cooling operation.
- The displays of slave remote controls show " " (changeover under control) and they automatically follow the operation mode directed by the master remote control. However, it is possible to changeover to program dry with slave remote controls if the system is in cooling operation by setting on the master remote control and to changeover to fan only operation.

How to designate the master remote control

1. Press the operation mode selector button of the current master remote control for 4 seconds.

   The display showing " " (changeover under control) of all slave remote controls connected to the same outdoor unit flashes.

2. Press the operation mode selector button of the controller that you wish to designate as the master remote control. Then designation is completed. This remote control is designated as the master remote control and the display showing " " (changeover under control) vanishes.

   The displays of other remote controls show " " (changeover under control).

2-6-6 Precautions for Group Control System or Two Remote Control Control System

This system provides two other control systems beside individual control (one remote control controls one indoor unit) system. Confirm about your system to Daikin dealer.

- **Group control system**
  One remote control controls up to 16 indoor units. All indoor units are equally set.
- **Two remote control control system**
  Two remote controls control one indoor unit (in case of group control system, one group of indoor units). The unit is individually operated.

Note

- Contact your Daikin dealer in case of changing the combination or setting of group control and two remote control control systems.

2-7 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.
- Adjust the room temperature properly for a comfortable environment. Avoid excessive heating or cooling.
- Prevent direct sunlight from entering a room during cooling operation by using curtains or blinds.
- Ventilate often.
  Extended use requires special attention to ventilation.
- Do not keep doors and windows opened. If the doors and windows remain open, air will flow out of your room causing a decrease in the cooling or heating effect.
- Never place objects near the air inlet or the air outlet of the unit. It may cause deterioration in the effect or stop the operation.
- Turn off the main power supply switch to the unit when the unit is not used for longer periods of time. If the switch is on, it uses electricity. Before restarting the unit, turn on the main power supply switch 6 hours before operation to ensure smooth running. (Refer to the chapter "Maintenance" in the indoor unit manual.)
- When the display shows " " (time to clean the air filter), ask a qualified service person to clean the filters. (Refer to the chapter "Maintenance" in the indoor unit manual.)
- Keep the indoor unit and remote control at least 1 m away from televisions, radios, stereos, and other similar equipment. Failing to do so may cause static or distorted pictures.
- Do not use other heating devices directly beneath the indoor unit. If you do, they might get deformed by the heat.

2-8 Seasonal Maintenance

2-8-1 At the Beginning of the Season

Check

- Are the indoor and outdoor unit intake and outlet vents blocked? Remove anything that might be blocking them.

Clean the air filter and exterior.

- After cleaning the air filter, be sure to put it back in the same position.
  See the operation manual included with the indoor unit for details on how to clean it.

Turn the power on.

- When the power comes on, the characters in the remote control display appear.
  (To protect the unit, turn the power on at least 6 hours before operating it. This makes operation smoother.)

2-8-2 At the End of the Season

On a clear day, use fan operation for around half a day to thoroughly dry out the interior of the unit.

- Refer to page 4 for details on fan operation.

Turn off the power

- When the power is shut off, the characters in the remote control display disappear.
- When the power is on, the unit consumes up to several dozen Watts of power.
  Turn off the power to conserve energy.

Clean the air filter and exterior.

- After cleaning the air filter, be sure to put it back in the same position.
  See the operation manual included with the indoor unit for details on how to clean it.

2-9 Following Symptoms are not Air Conditioner Troubles

2-9-1 The System does not Operate

- **The air conditioner does not start immediately when restart the operation after stop the operation or change operation mode after set the operation mode.**
  If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 5 minutes after it is turned ON again in case it was turned OFF just before.
- **If " " (under centralized control) is displayed on the remote control and pressing the operation button causes the display to blink for a few seconds.**
  This indicates that the central device is controlling the unit. The blinking display indicates that the remote control cannot be used.
- **The system does not start immediately after the power supply is turned on.**
  Wait one minute until the micro computer is prepared for operation.

2-9-2 It Stops sometimes

- **The remote control display reads "U4" or "U5" and stops but then restarts after a few minutes.**
  This is because the remote control is intercepting noise from electrical appliances other than the air conditioner, and this prevents communication between the units, causing them to stop. Operation automatically restarts when the noise goes away.

2-9-3 COOL/HEAT cannot be Changed Over

- **When the display shows " [ ] " (changeover under control).**
  It shows that this is a slave remote control.
  Refer to "Setting the Master Remote Control".
- **When the cool/heat selector switch is installed and the display shows " [ ] " (changeover under control).**
  This is because cool/heat changeover is controlled by the cool/heat selector. Ask your Daikin dealer where the remote control switch is installed.

2-9-4 Fan Operation is Possible, but Cooling and Heating do not Work

- **Immediately after the power is turned on.**
  The micro computer is getting ready to operate.
  Wait 10 minutes.

2-9-5 The Fan Strength does not Correspond to the Setting

- **The fan strength does no change even if the fan strength adjustment button in pressed.**
  During heating operation, when the room temperature reaches the set temperature, the outdoor unit goes off and the indoor unit changes to whisper fan strength.
  This is to prevent cold air blowing directly on occupants of the room.
  The fan strength will not change even if the button is changed, when another indoor unit is in heating operation.

2-9-6 The Fan Direction does not Correspond to the Setting

- **The fan direction does not correspond to the remote control display.**
  The fan direction does not swing.
  This is because the unit is being controlled by the micro computer.
  Refer to "Adjusting the Air Flow Direction".

2-9-7 White Mist Comes Out of a Unit

Indoor unit

- **When humidity is high during cooling operation.**
  If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the interior of the indoor unit. Ask your Daikin dealer for details on cleaning the unit. This operation requires a qualified service person.
- **Immediately after the cooling operation stops and if the room temperature and humidity are low.**
  This is because warm refrigerant gas flows back into the indoor unit and generates steam.

Indoor unit, outdoor unit

- **When the system is changed over to heating operation after defrost operation.**
  Moisture generated by defrost becomes steam and is exhausted.

2-9-8 Noise of Air Conditioners

Indoor unit

- **A "zeen" sound is heard immediately after the power supply is turned on.**
  The electronic expansion valve inside an indoor unit starts working and makes the noise. Its volume will reduce in about one minute.
- **A continuous low "shah" sound is heard when the system is in cooling operation or at a stop.**
  When the drain pump (optional accessories) is in operation, this noise is heard.
- **A "pishi-pishi" squeaking sound is heard when the system stops after heating operation.**
  Expansion and contraction of plastic parts caused by temperature change make this noise.
- **A low "sah", "choro-choro" sound is heard while the indoor unit is stopped.**
  When the other indoor unit is in operation, this noise is heard. In order to prevent oil and refrigerant from remaining in the system, a small amount of refrigerant is kept flowing.

Outdoor unit

- **When the tone of operating noise changes.**
  This noise is caused by the change of frequency.

Indoor unit, outdoor unit

- **A continuous low hissing sound is heard when the system is in cooling or defrost operation.**
  This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- **A hissing sound which is heard at the start or immediately after stopping operation or defrost operation.**
  This is the noise of refrigerant caused by flow stop or flow change.

2-9-9 Dust Comes Out of the Unit

- **When the unit is used after stopping for a long time.**
  This is because dust has gotten into the unit.

2-9-10 The Units can Give off Odours

- **During operation.**
  The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

2-9-11 The Outdoor Unit Fan does not Spin

- **During operation.**
  The speed of the fan is controlled in order to optimize product operation.

2-9-12 The Display Shows " 88 "

- **This is the case immediately after the main power supply switch is turned on.**
  This means that the remote control is in normal condition. This continues for one minute.

2-9-13 The Compressor or Fan in the Outdoor Unit does not Stop

- **This is to prevent oil and refrigerant from remaining in the compressor. The unit will stop after 5 to 10 minutes.**

2-9-14 The Inside of an Outdoor Unit is Warm even when the Unit has Stopped

- **This is because the crankcase heater is warming the compressor so that the compressor can start smoothly.**

2-9-15 It Stops Sometimes

- **The remote control display reads "U4" and "U5" and stops but then restarts after a few minutes.**
  This is because the remote control is intercepting noise from electrical appliances other than the air conditioner, and this prevents communication between the units, causing them to stop.
  Operation automatically restarts when the noise goes away.

2-9-16 Hot Air is Emitted even though the Unit is Stopped

- **Hot air can be felt when the unit is stopped.**
  Several different indoor units are being run on the same system, so if another unit is running, some refrigerant will still flow through the unit.

2-9-17 Does not Cool very well

- **Program dry operation.**
  Program dry operation is designed to lower the room temperature as little as possible.
  Refer to page 326.

2-10 Trouble Shooting

If one of the following malfunctions occur, take the measures shown below and contact your Daikin 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, electrical shock, or fire.
Contact your dealer.

- If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates;
  Measure : Do not turn on the main power switch.
- If the ON/OFF switch does not properly work;
  Measure: Turn off the main power switch.
- If water leaks from unit;
  Measure: Stop the operation.
- The operation switch does not work well.
  Turn off the power.
- If the display " TEST ", the unit number and the operation lamp flash and the malfunction code appears; **(Refer to figure 12)**

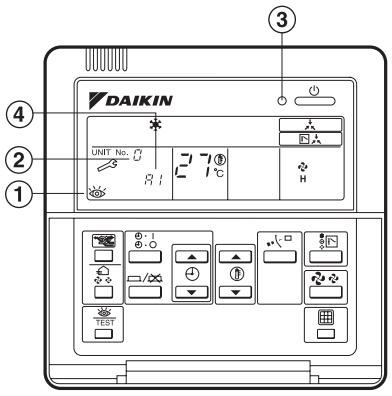


figure 12

1. Inspection display
2. Indoor unit number in which a malfunction occurs
3. Operation lamp
4. Malfunction code

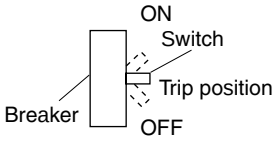
Measure: Notify your Daikin dealer and report the malfunction code.

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.

If it is impossible to fix the problem yourself after checking all the above items, contact your dealer.

Let him know the symptoms, system name, and model name (listed on the warranty card).

1. If the system does not operate at all;
- Check if there is no power failure.
  Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after the power supply is recovered.
- Check if no fuse has blown;
  Turn off the power supply
- Check if the breaker is blown.
  Turn the power on with the breaker switch in the off position.
  Do not turn the power on with the breaker switch in the trip position.
  (Contact your dealer.)



2. If the system stops soon after starting the operation;
- Check if air inlet or outlet of outdoor or indoor unit is not blocked by obstacles.
  Remove any obstacle and make it well-ventilated.
- Check if the remote control display shows " " (time to clean the air filter);
  Refer to the operation manual of the indoor unit. And clean the air filter.

3. The system operates but cooling or heating is insufficient;
- Check if air inlet or outlet of outdoor or indoor unit is not blocked by obstacles.
  Remove any obstacle and make it well-ventilated.
- Check if the remote control display shows " " (time to clean the air filter);
  Refer to the operation manual of the indoor unit. And clean the air filter.
- Check the temperature setting.
  Refer to "Operation Procedure".
- Check the fan speed setting on your remote control.
  Refer to "Operation Procedure".
- Check for open doors or windows.
  Shut doors and windows to prevent wind from coming in.
- Check if there are too many occupants in the room during cooling operation.
- Check if the heat source of the room is excessive during cooling operation.
- Check if direct sunlight enters the room during cooling operation.
  Use curtains or blinds.
- Check if the air flow angle is not proper.
  Refer to "Operation Procedure".

After-sales service and warranty

After-sales service:

Warning

- **Do not modify the unit.**
  This may cause electric shock or fire.
- **Do not disassemble or repair the unit.**
  This may cause electric shock or fire.
  Contact your dealer.
- **If the refrigerant leaks, keep out of fire.**
  Although the refrigerant does not usually leak, if the refrigerant leaks out into a room and comes in contact with the combustible air in the equipment such as fan heater, stove, oil (gas) cooker, etc., it will cause toxic gas to be generated.
  When a refrigerant leakage failure has been repaired, confirm a service person that the leakage point has been corrected surely before restarting operation.
- **Do not remove or reinstall the unit by yourself.**
  Incorrect installation may cause electrical shock or fire.
  Contact your dealer.

- **When asking your dealer to repair, inform related staff of the details as follows:**
  - Product No. of air conditioner:
    Refer to the warranty card.
  - Shipping date and installation date:
    Refer to the warranty card.
  - Malfunction:
    Inform the staff of the defective details.
    (Malfunction code being displayed on the remote control.)
  - Name, address, telephone number
- **Repair where the warranty term is expired**
  Contact your dealer. If necessary to repair, pay service is available.
- **Minimum storage period of important parts**
  Even after a certain type of air conditioner is discontinued, we have the related important parts in stock for 9 years at least.
  The important parts indicate parts essential to operate the air conditioner.
- **Recommendations for maintenance and inspection**
  Since dust collects after using the unit for several years, the performance will be deteriorated to some extent.
  Taking apart and cleaning inside require technical expertise, so we recommend entering a maintenance and inspection contract (at a cost) separate from normal maintenance.
- **Recommended inspection and maintenance cycles [Note: The maintenance cycle is not the same as the warranty period.]**
  Table 1 assumes the following usage conditions.
  1. Normal use without frequent starting and stopping of the machine. (Although it varies with the model, we recommend not starting and stopping the machine more than 6 times/hour for normal use.)
  2. Operation of the product is assumed to be 10 hours/day, 2500 hours/year.

• Table 1 “Inspection Cycle” and “Maintenance Cycle” Lists

Name of Main Part	Inspection Cycle	Maintenance Cycle [replacements and/or repairs]
Electric motor (fan, damper, etc.)	1 year	20,000 hours
PC boards		25,000 hours
Heat exchanger		5 years
Sensor (thermistor, etc.)		5 years
Remote Control and switches		25,000 hours
Drain pan		8 years
Expansion valve		20,000 hours
Electromagnetic valve		20,000 hours

Note 1
This table indicates main parts.
See the maintenance and inspection contract for details.

Note 2
This maintenance cycle indicates recommended lengths of time until the need arises for maintenance work, in order to ensure the product is operational as long as possible
Use for appropriate maintenance design (budgeting maintenance and inspection fees, etc.)
Depending on the content of the maintenance and inspection contract, the inspection and maintenance cycles may in reality be shorter than those listed here.

Shortening of “maintenance cycle” and “replacement cycle” needs to be considered in the following cases.

1. When used in hot, humid locations or locations where temperature and humidity fluctuate greatly.
2. When used in locations where power fluctuation (voltage, frequency, wave distortion, etc.) is high.
   (Cannot be used if it is outside the allowable range.)
3. When installed and used in locations where bumps and vibrations are frequent.
4. When used in bad locations where dust, salt, harmful gas or oil mist such as sulfurous acid and hydrogen sulfide may be present in the air.
5. When used in locations where the machine is started and stopped frequently or operation time is long. (Example: 24 hour air-conditioning)

■ **Recommended replacement cycle of wear-out parts [The cycle is not the same as the warranty period.]**

• Table 2 “Replacement Cycle” Lists

Name of Main Part	Inspection Cycle	Replacement Cycle
Air filter	1 year	5 years
High efficiency filter (Optional accessory)		1 year
Fuse		10 years
Crankcase heater		8 years

Note 1
This table indicates main parts.
See the maintenance and inspection contract for details.

Note 2
This maintenance cycle indicates recommended lengths of time until the need arises for maintenance work, in order to ensure the product is operational as long as possible.
Use for appropriate maintenance design (budgeting maintenance and inspection fees, etc.).

Contact your dealer for details.
Note: Breakage due to taking apart or cleaning inside by anyone other than our authorized dealers may not be included in the warranty.

■ **Moving and discarding the unit**

• Contact your dealer for removing and reinstalling the system air conditioner since they require technical expertise.
• The system air conditioner uses fluorocarbon refrigerant. Contact your dealer for discarding the system air conditioner since it is required by law to collect, transport and discard the refrigerant in accordance with relevant local and national regulations.

■ **Where to call**

For after-sales service, etc., consult with your dealer.

■ **Warranty period:**

• This product includes a warranty card.
  The warranty card is given to a customer after dealer staff fills out necessary items in the card. The customer should check the entered items and store it carefully.
  Warranty period: Within one year after installation.
  For further details, refer to the warranty card.
• If it is necessary to repair the air conditioner within the warranty period, contact your dealer and show your warranty card. If the warranty card is not shown, pay-service repair may be performed even though the warranty period is not expired.

Part 4
Precautions for New Refrigerant (R-410A)

1. Precautions for New Refrigerant (R-410A)

1.1 Outline

1.1.1 About Refrigerant R-410A

■ Characteristics of new refrigerant, R-410A

1. Performance
   Almost the same performance as R-22 and R-407C
2. Pressure
   Working pressure is approx. 1.4 times more than R-22 and R-407C.
3. Refrigerant composition
   Few problems in composition control, since it is a Quasi-azeotropic mixture refrigerant.

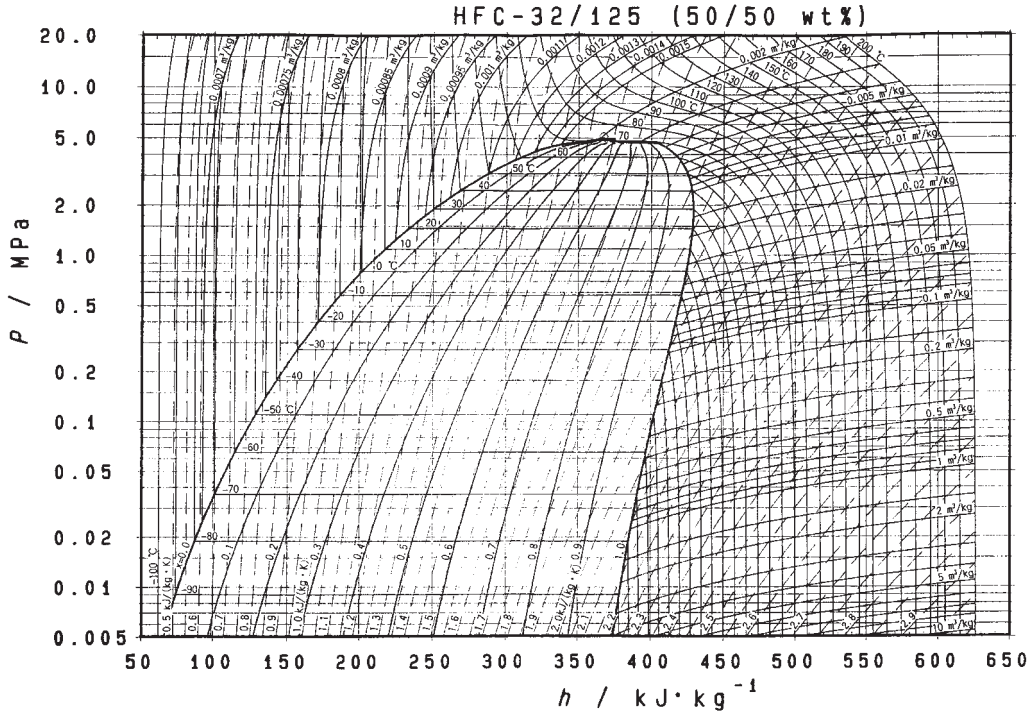
	HFC units (Units using new refrigerants)		HCFC units
Refrigerant name	R-407C	R-410A	R-22
Composing substances	Non-azeotropic mixture of HFC32, HFC125 and HFC134a (*1)	Quasi-azeotropic mixture of HFC32 and JFC125 (*1)	Single-component refrigerant
Design pressure	3.2 MPa (gauge pressure) = 32.6 kgf/cm^2	4.0 MPa (gauge pressure) = 40.8 kgf/cm^2	2.75MPa (gauge pressure) = 28.0 kgf/cm^2
Refrigerant oil	Synthetic oil (Ether)		Mineral oil (Suniso)
Ozone destruction factor (ODP)	0	0	0.05
Combustibility	None	None	None
Toxicity	None	None	None

★1. Non-azeotropic mixture refrigerant: mixture of two or more refrigerants having different boiling points.

★2. Quasi-azeotropic mixture refrigerant: mixture of two or more refrigerants having similar boiling points.

★3. The design pressure is different at each product. Please refer to the installation manual for each product.

(Reference) 1 MPa ≒ 10.19716 kgf / cm^2



Pressure-Enthalpy curves of HFC-32/125 (50/50wt%)

■ Thermodynamic characteristic of R-410A

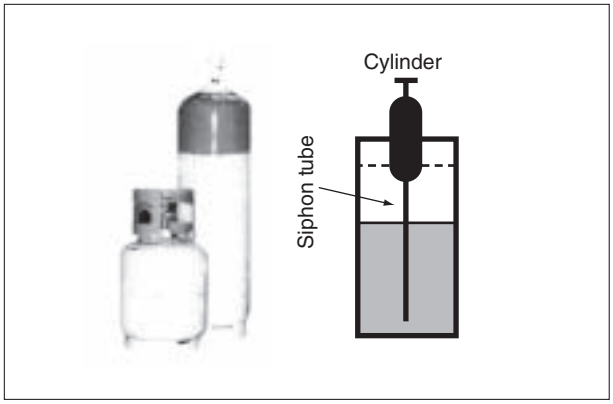
DAIREP ver2.0

Temperature (°C)	Steam pressure (kPa)		Density (kg/m³)		Specific heat at constant pressure (kJ/kgK)		Specific enthalpy (kJ/kg)		Specific entropy (kJ/KgK)	
	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-70	36.13	36.11	1410.7	1.582	1.372	0.695	100.8	390.6	0.649	2.074
-68	40.83	40.80	1404.7	1.774	1.374	0.700	103.6	391.8	0.663	2.066
-66	46.02	45.98	1398.6	1.984	1.375	0.705	106.3	393.0	0.676	2.058
-64	51.73	51.68	1392.5	2.213	1.377	0.710	109.1	394.1	0.689	2.051
-62	58.00	57.94	1386.4	2.463	1.378	0.715	111.9	395.3	0.702	2.044
-60	64.87	64.80	1380.2	2.734	1.379	0.720	114.6	396.4	0.715	2.037
-58	72.38	72.29	1374.0	3.030	1.380	0.726	117.4	397.6	0.728	2.030
-56	80.57	80.46	1367.8	3.350	1.382	0.732	120.1	398.7	0.741	2.023
-54	89.49	89.36	1361.6	3.696	1.384	0.737	122.9	399.8	0.754	2.017
-52	99.18	99.03	1355.3	4.071	1.386	0.744	125.7	400.9	0.766	2.010
-51.58	101.32	101.17	1354.0	4.153	1.386	0.745	126.3	401.1	0.769	2.009
-50	109.69	109.51	1349.0	4.474	1.388	0.750	128.5	402.0	0.779	2.004
-48	121.07	120.85	1342.7	4.909	1.391	0.756	131.2	403.1	0.791	1.998
-46	133.36	133.11	1336.3	5.377	1.394	0.763	134.0	404.1	0.803	1.992
-44	146.61	146.32	1330.0	5.880	1.397	0.770	136.8	405.2	0.816	1.987
-42	160.89	160.55	1323.5	6.419	1.401	0.777	139.6	406.2	0.828	1.981
-40	176.24	175.85	1317.0	6.996	1.405	0.785	142.4	407.3	0.840	1.976
-38	192.71	192.27	1310.5	7.614	1.409	0.792	145.3	408.3	0.852	1.970
-36	210.37	209.86	1304.0	8.275	1.414	0.800	148.1	409.3	0.864	1.965
-34	229.26	228.69	1297.3	8.980	1.419	0.809	150.9	410.2	0.875	1.960
-32	249.46	248.81	1290.6	9.732	1.424	0.817	153.8	411.2	0.887	1.955
-30	271.01	270.28	1283.9	10.53	1.430	0.826	156.6	412.1	0.899	1.950
-28	293.99	293.16	1277.1	11.39	1.436	0.835	159.5	413.1	0.911	1.946
-26	318.44	317.52	1270.2	12.29	1.442	0.844	162.4	414.0	0.922	1.941
-24	344.44	343.41	1263.3	13.26	1.448	0.854	165.3	414.9	0.934	1.936
-22	372.05	370.90	1256.3	14.28	1.455	0.864	168.2	415.7	0.945	1.932
-20	401.34	400.06	1249.2	15.37	1.461	0.875	171.1	416.6	0.957	1.927
-18	432.36	430.95	1242.0	16.52	1.468	0.886	174.1	417.4	0.968	1.923
-16	465.20	463.64	1234.8	17.74	1.476	0.897	177.0	418.2	0.980	1.919
-14	499.91	498.20	1227.5	19.04	1.483	0.909	180.0	419.0	0.991	1.914
-12	536.58	534.69	1220.0	20.41	1.491	0.921	182.9	419.8	1.003	1.910
-10	575.26	573.20	1212.5	21.86	1.499	0.933	185.9	420.5	1.014	1.906
-8	616.03	613.78	1204.9	23.39	1.507	0.947	189.0	421.2	1.025	1.902
-6	658.97	656.52	1197.2	25.01	1.516	0.960	192.0	421.9	1.036	1.898
-4	704.15	701.49	1189.4	26.72	1.524	0.975	195.0	422.6	1.048	1.894
-2	751.64	748.76	1181.4	28.53	1.533	0.990	198.1	423.2	1.059	1.890
0	801.52	798.41	1173.4	30.44	1.543	1.005	201.2	423.8	1.070	1.886
2	853.87	850.52	1165.3	32.46	1.552	1.022	204.3	424.4	1.081	1.882
4	908.77	905.16	1157.0	34.59	1.563	1.039	207.4	424.9	1.092	1.878
6	966.29	962.42	1148.6	36.83	1.573	1.057	210.5	425.5	1.103	1.874
8	1026.5	1022.4	1140.0	39.21	1.584	1.076	213.7	425.9	1.114	1.870
10	1089.5	1085.1	1131.3	41.71	1.596	1.096	216.8	426.4	1.125	1.866
12	1155.4	1150.7	1122.5	44.35	1.608	1.117	220.0	426.8	1.136	1.862
14	1224.3	1219.2	1113.5	47.14	1.621	1.139	223.2	427.2	1.147	1.859
16	1296.2	1290.8	1104.4	50.09	1.635	1.163	226.5	427.5	1.158	1.855
18	1371.2	1365.5	1095.1	53.20	1.650	1.188	229.7	427.8	1.169	1.851
20	1449.4	1443.4	1085.6	56.48	1.666	1.215	233.0	428.1	1.180	1.847
22	1530.9	1524.6	1075.9	59.96	1.683	1.243	236.4	428.3	1.191	1.843
24	1615.8	1609.2	1066.0	63.63	1.701	1.273	239.7	428.4	1.202	1.839
26	1704.2	1697.2	1055.9	67.51	1.721	1.306	243.1	428.6	1.214	1.834
28	1796.2	1788.9	1045.5	71.62	1.743	1.341	246.5	428.6	1.225	1.830
30	1891.9	1884.2	1034.9	75.97	1.767	1.379	249.9	428.6	1.236	1.826
32	1991.3	1983.2	1024.1	80.58	1.793	1.420	253.4	428.6	1.247	1.822
34	2094.5	2086.2	1012.9	85.48	1.822	1.465	256.9	428.4	1.258	1.817
36	2201.7	2193.1	1001.4	90.68	1.855	1.514	260.5	428.3	1.269	1.813
38	2313.0	2304.0	989.5	96.22	1.891	1.569	264.1	428.0	1.281	1.808
40	2428.4	2419.2	977.3	102.1	1.932	1.629	267.8	427.7	1.292	1.803
42	2548.1	2538.6	964.6	108.4	1.979	1.696	271.5	427.2	1.303	1.798
44	2672.2	2662.4	951.4	115.2	2.033	1.771	275.3	426.7	1.315	1.793
46	2800.7	2790.7	937.7	122.4	2.095	1.857	279.2	426.1	1.327	1.788
48	2933.7	2923.6	923.3	130.2	2.168	1.955	283.2	425.4	1.339	1.782
50	3071.5	3061.2	908.2	138.6	2.256	2.069	287.3	424.5	1.351	1.776
52	3214.0	3203.6	892.2	147.7	2.362	2.203	291.5	423.5	1.363	1.770
54	3361.4	3351.0	875.1	157.6	2.493	2.363	295.8	422.4	1.376	1.764
56	3513.8	3503.5	856.8	168.4	2.661	2.557	300.3	421.0	1.389	1.757
58	3671.3	3661.2	836.9	180.4	2.883	2.799	305.0	419.4	1.403	1.749
60	3834.1	3824.2	814.9	193.7	3.191	3.106	310.0	417.6	1.417	1.741
62	4002.1	3992.7	790.1	208.6	3.650	3.511	315.3	415.5	1.433	1.732
64	4175.7	4166.8	761.0	225.6	4.415	4.064	321.2	413.0	1.450	1.722

1.2 Refrigerant Cylinders

■ Cylinder specifications

- The cylinder is painted refrigerant color (pink).
- The cylinder valve is equipped with a siphon tube.



Refrigerant can be charged in liquid state with cylinder in upright position.

Caution: Do not lay cylinder on its side during charging, since it cause refrigerant in gas state to enter the system.

■ Handling of cylinders

(1) Laws and regulations

R-410A is liquefied gas, and the High-Pressure Gas Safety Law must be observed in handling them. Before using, refer to the High-Pressure Gas Safety Law.
The Law stipulates standards and regulations that must be followed to prevent accidents with high-pressure gases. Be sure to follow the regulations.

(2) Handing of vessels

Since R-410A is high-pressure gas, it is contained in high-pressure vessels.
Although those vessels are durable and strong, careless handling can cause damage that can lead to unexpected accidents. Do not drop vessels, let them fall, apply impact or roll them on the ground.

(3) Storage

Although R-410A is not flammable, it must be stored in a well-ventilated, cool, and dark place in the same way as any other high-pressure gases.
It should also be noted that high-pressure vessels are equipped with safety devices that releases gas when the ambient temperature reaches more than a certain level (fusible plug melts) and when the pressure exceeds a certain level (spring-type safety valve operates).

1.3 Service Tools

R-410A is used under higher working pressure, compared to previous refrigerants (R-22,R-407C). Furthermore, the refrigerating machine oil has been changed from Suniso oil to Ether oil, and if oil mixing is occurred, sludge results in the refrigerants and causes other problems. Therefore, gauge manifolds and charge hoses that are used with a previous refrigerant (R-22,R-407C) can not be used for products that use new refrigerants.
Be sure to use dedicated tools and devices.

■ Tool compatibility

Tool	Compatibility			Reasons for change
	HFC		HCFC	
	R-410A	R-407C	R-22	
Gauge manifold Charge hose	×			• Do not use the same tools for R-22 and R-410A. • Thread specification differs for R-410A and R-407C.
Charging cylinder	×		○	• Weighting instrument used for HFCs.
Gas detector	○		×	• The same tool can be used for HFCs.
Vacuum pump (pump with reverse flow preventive function)	○			• To use existing pump for HFCs, vacuum pump adapter must be installed.
Weighting instrument	○			
Charge mouthpiece	×			• Seal material is different between R-22 and HFCs. • Thread specification is different between R-410A and others.
Flaring tool (Clutch type)	○			• For R-410A, flare gauge is necessary.
Torque wrench	○			• Torque-up for 1/2 and 5/8
Pipe cutter	○			
Pipe expander	○			
Pipe bender	○			
Pipe assembling oil	×			• Due to refrigerating machine oil change. (No Suniso oil can be used.)
Refrigerant recovery device	Check your recovery device.			
Refrigerant piping	See the chart below.			• Only ϕ19.1 is changed to 1/2H material while the previous material is "O".

As for the charge mouthpiece and packing, 1/2UNF20 is necessary for mouthpiece size of charge hose.

■ Copper tube material and thickness

Pipe size	Ve-up		Ve-up Ⅱ	
	R-407C		R-410A	
	Material	Thickness t (mm)	Material	Thickness t (mm)
ϕ6.4	O	0.8	O	0.8
ϕ9.5	O	0.8	O	0.8
ϕ12.7	O	0.8	O	0.8
ϕ15.9	O	1.0	O	1.0
ϕ19.1	O	1.0	1/2H	1.0
ϕ22.2	1/2H	1.0	1/2H	1.0
ϕ25.4	1/2H	1.0	1/2H	1.0
ϕ28.6	1/2H	1.0	1/2H	1.0
ϕ31.8	1/2H	1.2	1/2H	1.1
ϕ38.1	1/2H	1.4	1/2H	1.4
ϕ44.5	1/2H	1.6	1/2H	1.6

* O: Soft (Annealed)
H: Hard (Drawn)

1. Flaring tool

■ Specifications

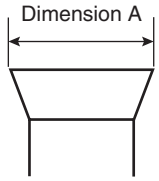
• Dimension A

Unit:mm

Nominal size	Tube O.D.	$A^{+0}_{-0.4}$	
	Do	Class-2 (R-410A)	Class-1 (Conventional)
1/4	6.35	9.1	9.0
3/8	9.52	13.2	13.0
1/2	12.70	16.6	16.2
5/8	15.88	19.7	19.4
3/4	19.05	24.0	23.3

■ Differences

• Change of dimension A



For class-1: R-407C
For class-2: R-410A

Conventional flaring tools can be used when the work process is changed.
(change of work process)
Previously, a pipe extension margin of 0 to 0.5mm was provided for flaring. For R-410A air conditioners, perform pipe flaring with a pipe extension margin of 1.0 to 1.5mm.
(For clutch type only)
Conventional tool with pipe extension margin adjustment can be used.

2. Torque wrench

■ Specifications

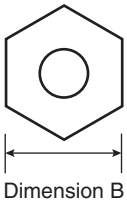
• Dimension B Unit:mm

Nominal size	Class-1	Class-2	Previous
1/2	24	26	24
5/8	27	29	27

No change in tightening torque
No change in pipes of other sizes

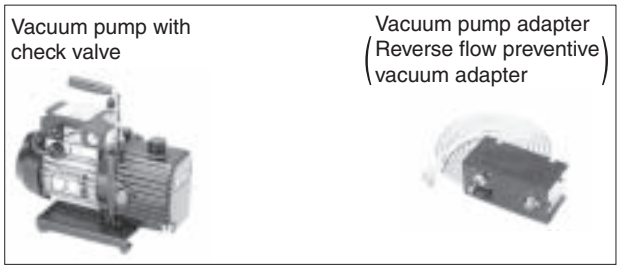
■ Differences

• Change of dimension B
Only 1/2", 5/8" are extended



For class-1: R-407C
For class-2: R-410A

3. Vacuum pump with check valve



■ Specifications

• Discharge speed
50 l/min (50Hz)
60 l/min (60Hz)
• Suction port UNF7/16-20(1/4 Flare)
UNF1/2-20(5/16 Flare) with adapter

● Maximum degree of vacuum
Select a vacuum pump which is able to keep the vacuum degree of the system in excess of –100.7 kPa (5 torr – 755 mmHg).

■ Differences

• Equipped with function to prevent reverse oil flow
• Previous vacuum pump can be used by installing adapter.

4. Leak tester

■ Specifications
- Hydrogen detecting type, etc.
- Applicable refrigerants
  R-410A, R-407C, R-404A, R-507A, R-134a, etc.

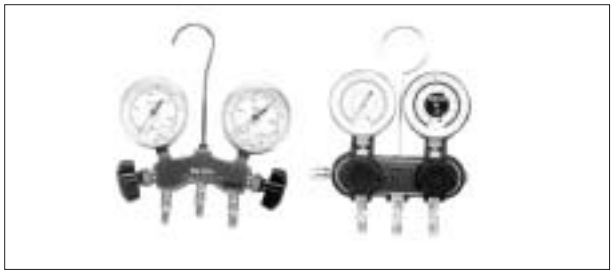
■ Differences
- Previous testers detected chlorine. Since HFCs do not contain chlorine, new tester detects hydrogen.

5. Refrigerant oil (Air compal)

■ Specifications
- Contains synthetic oil, therefore it can be used for piping work of every refrigerant cycle.
- Offers high rust resistance and stability over long period of time.

■ Differences
- Can be used for R-410A and R-22 units.

6. Gauge manifold for R-410A

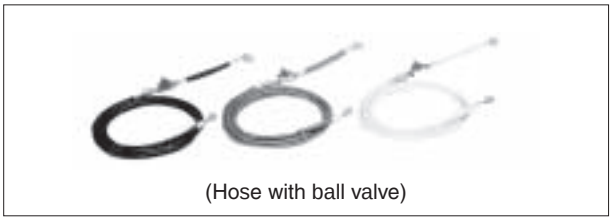


■ Specifications
- High pressure gauge
  - 0.1 to 5.3 MPa (-76 cmHg to 53 kg/cm^2)
- Low pressure gauge
  - 0.1 to 3.8 MPa (-76 cmHg to 38 kg/cm^2)
- 1/4" → 5/16" (2min → 2.5min)
- No oil is used in pressure test of gauges.
  → For prevention of contamination

- Temperature scale indicates the relationship between pressure and temperature in gas saturated state.

■ Differences
- Change in pressure
- Change in service port diameter

7. Charge hose for R-410A


(Hose with ball valve)

■ Specifications
- Working pressure 5.08 MPa (51.8 kg/cm^2)
- Rupture pressure 25.4 MPa (259 kg/cm^2)
- Available with and without hand-operate valve that prevents refrigerant from outflow.

■ Differences
- Pressure proof hose
- Change in service port diameter
- Use of nylon coated material for HFC resistance

8. Charging cylinder

■ Specifications
- Use weigher for refrigerant charge listed below to charge directly from refrigerant cylinder.

■ Differences
- The cylinder can not be used for mixed refrigerant since mixing ratio is changed during charging.

  When R-410A is charged in liquid state using charging cylinder, foaming phenomenon is generated inside charging cylinder.

9. Weigher for refrigerant charge

■ Specifications
- High accuracy
  TA101A (for 10-kg cylinder) = ± 2g
  TA101B (for 20-kg cylinder) = ± 5g
- Equipped with pressure-resistant sight glass to check liquid refrigerant charging.
- A manifold with separate ports for HFCs and previous refrigerants is equipped as standard accessories.

■ Differences
- Measurement is based on weight to prevent change of mixing ratio during charging.

10. Charge mouthpiece

■ Specifications
- For R-410A, 1/4"→ 5/16" (2min → 2.5min)
- Material is changed from CR to H-NBR.

■ Differences
- Change of thread specification on hose connection side (For the R-410A use)
- Change of sealer material for the HFCs use.

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In all of us, a green heart

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