



DAIKIN INDUSTRIES, LTD. AFTER SALES SERVICE DIV.

SM – 21

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1-2) Problem of storage of copper tubes!!

Piping materials are casually kept on the floor at a construction site. No seal plugs are placed on the ends of the tubes.

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What is the problem?

①No seal plugs are found on the ends of tubes.②The tubes are directly laid on the floor.

What problems will take place?

- ©Since moisture, dust, sand, and rubbish could go into the tubes, these circulate in a refrigerant circuit during operation of the unit and are blocked at an expansion valve or a capillary tube, and also at a filter in the worst case, resulting in insufficient capacity and finally a malfunction will occur.
- ⁽²⁾Using the tube deformed on which a worker stepped may cause an insufficient capacity of the unit or an offensive noise due to the refrigerant passes through the narrow section of the tube.

What action should be taken?

The best way is to store the tubes on a stand to prevent them from rolling. Put caps on both tube ends or wrap the ends with vinyl tape securely so that moisture, dust, rubbish and sand will not enter the tubes.

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1-3) Trouble caused by using thin wall tubes!!

An actual example of too thin wall tubes

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Even little stress can damage and deform the tube walls due to weakness.



What is the problem?

These tubes have less thickness in the wall than Daikin's recommended tubes.

What problems will take place?

①Accordingly high pressure during operation can cause the tubes to deform and crack resulting in gas leakage.

⁽²⁾As you see in the photo, since the tubes can easily hollow, the unit will operate with insufficient capacity.

Also, sometimes, as the refrigerant passes through the narrow area, an offensive noise can be heard.

What action should be taken?

Be sure to use copper tubes mentioned below.

Tube OD [mm]	Wall thickness of copper tubes						
	specified by DAIKIN[mm]						
6.35	0.8						
9.52	0.8						
12.7	0.8						
15.9	1.0						
19.1	1.0						
22.2	1.2						
1							

1-4) Trouble that the tubes are left without proper care!!

An actual example of tubes which are stored without proper care after the connected component was removed, during repaire of the unit.



< Key point >



What is the problem?

The tubes are left without proper care after the component was removed.

What problems will take place?

Moisture caused by rainwater or condensation, dust, rubbish and sand enter the tubes resulting in a block in the expansion valve, capillary tube or filter. This may cause a compressor failure or insufficient operation.

What action should be taken?

When tubes are removed and stored even for a short time, be sure to provide care on the end of the tubes with blind cap. If blind caps are not available, it is recommended to wrap the tube ends including flare nut with vinyl tapes. (see the left picture)

* Pay attention so that dust, rubbish, or moisture on the tubes or flare will not enter the tubes when making care them.



1-5) Trouble caused by mixing foreign substances into tubes!!

In the outdoor unit, icing is sometimes found on the filter. This shows a typical filer choking phenomenon in which the upstream side is hot while the downstream side is frozen.

Actual example of frosting caused by filter choke



Frozen choke has occured in the distributor on the outdoor unit heat exchanger.



What is the problem?

During the piping work, moisture, dust, rubbish or sand entered the circuit.

What problems will take place?

- The refrigerant in the downstream side is shorted and pressure decreases to reduce the capacity due to the filter choke.
- ②Extreme super heated operation could take place if such an abnormal operation continues. Censequently, the safety switch will actuate to stop the operation.
- This will finally result in compressor failure.

What action should be taken?

- •Be careful that moisture will not remain in tubes.
- a. Perfect care for tubing
- b. Remove moisture in tubes by the flashing work
- c. Pay attention to the potential of moisture mixing into tubes when piping work is done on rainy day (especially in outdoor work).
- d. Be sure to perform vacuum drying process before the test run.

1-6) Problem due to using REFNET JOINTS not recommended by DAIKIN!! REFNET JOINTS NOT recommended by DAIKIN What is the problem? The Refnet joints other than DAIKIN's recommendation were used. What problems will take place? Olinadequate operation due to inaccurate distribution

- of refrigerant. ②Air conditioner will maifunction because oxidized film in a tube chokes the expansion valve, etc.
- ③Inadequate quality of REFNET JOINT not recommended by DAIKIN may cause gas leakage at brazed part.
- ^(a)Due to lack of insulation pad for REFNET JOINT, water condensation may occur causing water drops.

What action should be taken?

Be sure to use genuine parts. (If non-genuine parts are used, the warranty shall not be applied).

1-7) Trouble due to REFNET JOINT connection fault!!

An actual example in which the Refnet Joint is not positioned correctly as shown in the picture below.



What is the problem?

Fault positioning of Refnet Joint in terms of direction . (Gravity influences to create drifting).

What problems will take place?

①Excessive noise by refrigerant passing will arise.②Capacity shortage will occur which is caused by refrigerant drift.

What action should be taken?

When the Refnet Joint is installed, be sure to install it in correct direction within the specified range as illustrated below.



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Horizontal in level position.



Horizontal in perpendicular position.

2-1) Problem caused by faulty selection of drain pipe size!!



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What is the problem?

A smaller sized pipe is used than the pipe size specified by DAIKIN.

How did the problem occur?

"VP25" (inside diameter) is used in Japan while "PVC25" (outside diameter) is normally used in China.

This is likely to cause incorrect selection of pipe size.

What problems will take place?

As the size is too small to drain sufficiently:

The unit will display a malfunction and then stop, and it will become impossible to operate.

²Water leak will occur.

What action should be taken?

Refer to the table below and use the pipe size specified.

Since the pipe size suitable for every type of model is listed in the DAIKIN Engineering Data books, make sure the correct pipe size is choosen prior to installation.

Pay particular attention for reading the outside diameter and the inside diameter correctly. Be sure to use the size specified.

2-2) Table of specified drain pipes (for your reference)

 \cdot P V C 32;O utside diameter=32m m,Inside diameter=27m m \cdot V P 25;O utside diameter=32mm,Inside diameter=25m m

PV C 2 5;O utside dia meter=2 5m m ,Inside dia meter=19 m m VP 2 0;O utside dia meter=2 6 m m ,Inside dia meter=20 m m

Туре		Drain piping
Ceiling Mounted Cassette Type (Double Flow)	FXYC	PVC32(VP25)
Ceiling Mounted Cassette Type (Multi Flow)	FXYF	PVC32(VP25)
Ceiling Mounted Cassette Corner Type	FXYK	PVC32(VP25)
Ceiling Mounted Built-in Type	FXYS	PVC32(VP25)
Ceiling Mounted Duct Type	FXYM	PVC32(VP25)
		(FXYM200/250KJ should be referred to
		the separate Engineering Data book).
Ceiling Suspended Type	FXYH	PVC25(VP20)
Wall Mounted Type	FXYA	PVC25(VP20)

2-3) Problem of choke inside a drain pipe!!



H1:50mm or more

H2:1/2×H1

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What is the problem?

A drain trap is provided(a bend as shown left).

What problems will take place?

Due to water remaining in the bend and dust or rubbish accumulating inside the drain piping, the pipe is blocked and water will not flow out, and---

^①The unit will display malfunction and stop, and then will become impossible to operate.

②Water leak will occur.

What action should be taken?

It is a basic policy not to provide a trap.

- ①If a trap is to be installed, it should be made so as to be able to clean up inside the drain pipe.
- Take notice that H₁ should have at least 50mm or more in order to cope with reverse flow caused by negative pressure generated in the indoor unit.

2-4) Problem of reverse gradient of drain piping!!

An actual example of the bend with an excessive long pitch of the suspension.

Blind cap



What is the problem?

Excessive long pitch of the suspension for drain piping

What problems will take place?

It becomes impossible for the drain to flow out due to the reverse gradient with the bent at the center as shown in the picture left.

^①The unit will display malfunction and stop, and then will become impossible to operate.

^②Water leakage will occur.

What action should be taken?

The pitch of suspension must be set at an interval of $0.8 \sim 1.0$ m and pay attention so that piping will not bend (take 1/100 or more for the gradient!!)

2-5) Trouble by faulty selection of piping size for collective drain piping!!



What is the problem?

Smaller sized piping is used at the collective part.

What problems will take place?

As the water flow decreases at the collective part, a protection device actuates to stop the operation.

What action should be taken?

- ①At least 30mm (ID) or more should be used for collective piping.
- ⁽²⁾Check the table below and make sure the correct size pipe is selected and used.

2-6) Suitable collective piping sizes for central drain system.

Selection of drain piping

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①Calculation for drain exhaust

Figure it out as 2[l/hr]drain per 1HP will be expected.

(Calculation example of collective drain water)

- In case of 3 units \times 3HP and 2 units \times 3HP
- $[(3 units \times 2HP) + (2 units \times 3HP)] \times 2[l/hr] = 24[l/hr]$

[©]Selection of drain piping

Select proper size to suit the drainage through the table below. (Selection example)

When referring to the table below through the calculation result above, the collective piping must be selected PVC 40 or more in accordance with 24[l/hr].

3 Suitable	size	table	of	collective	drain	piping	(relations	between	а	diameter	of	horizontal	line	and
permissit	ole dra	inage c	apa	<u>city).</u>										

	- 1000
Gradient Gradient 1:50 1:100	Impossible for collective piping
\times	(Deference date)
\times	(Reference data)
125 88	Used for collective
247 175	piping
	Gradient Gradient 1:50 1:100 1:100 1:100 125 88 247 175

Note:Large sized piping with PVC40 or more should be used for downstream line from the collective point and for the subsequent line.



3-2) Problem of seizure on power supply wiring!! (2)

The power supply wiring has been burnt out due to poor tightening of the wire and subsequent continuous over-current.

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What is the problem?

Because it was tightened over the insulation part, the screw was loosened.

What problems will take place?

- ^①The safety device will actuate to stop the unit due to the poor contact of the wiring.
- ②In the worst case, the over-current keeps flowing and results in a seizure.

What action should be taken?

- OFix the wire securely using a crimp terminal (round type).
- ⁽²⁾If it is not possible to use a crimp terminal, make the tip of wiring to a round shape and put it behind a washer of the terminal, securely tightening.

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