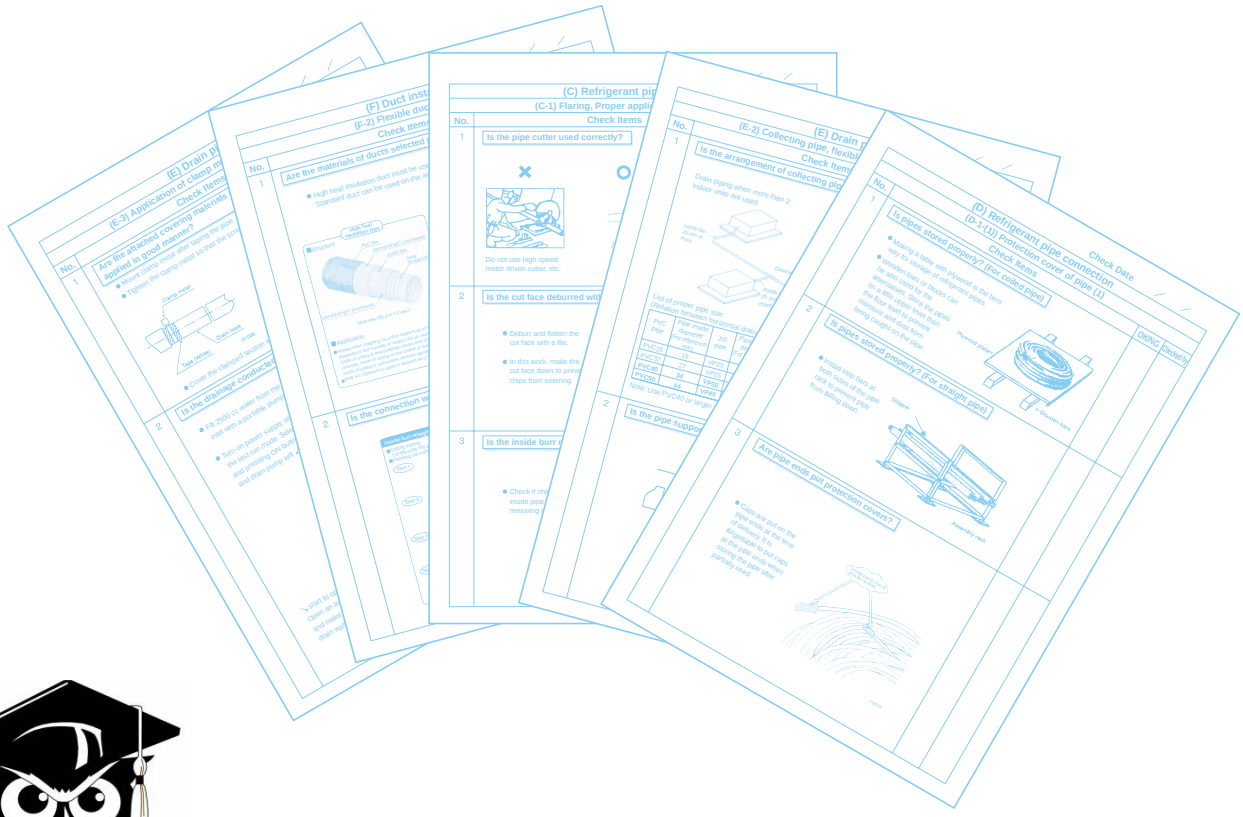
DAIKIN

SM-22

# VRV SYSTEM

## INVERTER K Series
## PLUS Series

# The Compiled Sheets of Installation Work Inspection



# How to apply this information

1) Search for an essential point to check referring to Contents first.

2) When an applicable page is found, specify OK/NG and enter the date and person checked in the respective column, copying the page to bring it to the work place.

3) If the check result is NG, correct the problem first. After correction, check and judge again entering the result.

4) Pascal is mainly applied to the pressure unit. To read the pressure in $kg/cm^2$, refer to Appendix (1) Pressure Conversion Table.

5) When the equipment is large-sized and equipped with multiple systems, apply Appendix (2) Check List, copy the list required to enter the check result in the applicable column and keep it in place.

6) When conducting test run after installation, apply Appendix (3) VRV Operation Check List to conduct a positive and effective checking.

★) Application of this check list will be able to reduce failures in operation and assure users of more reliability of equipment.

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**VRV PLUS Series**

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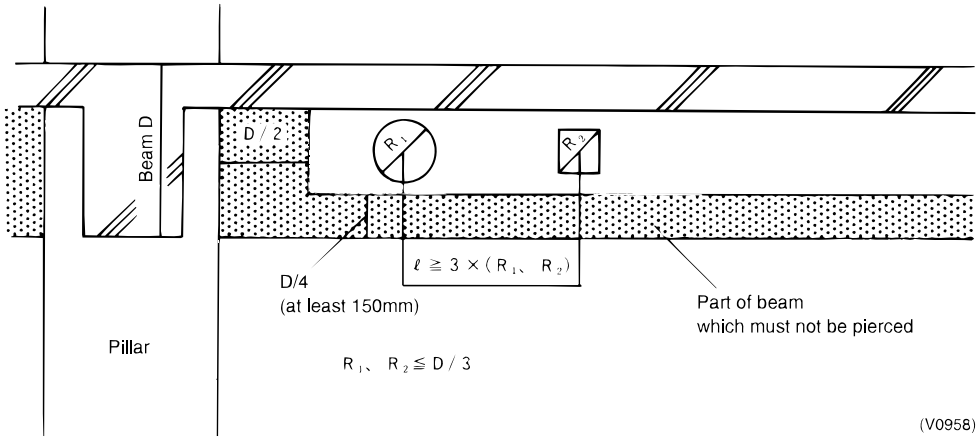
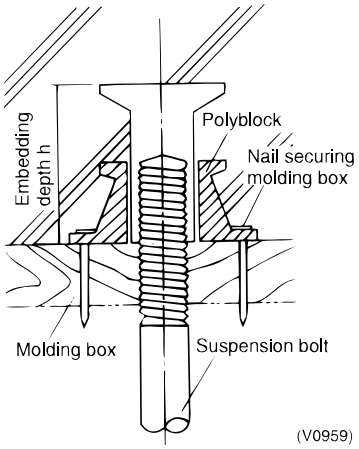
# (A) Arrangement with constructor

## (A-1) Sleeve & insert work

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the position of sleeve confirmed and is it examined to require providing any reinforcement?**<br>● Pre-arrangement with constructor can minimize the future chipping work. When making big holes, it should be considered to provide reinforcement with steel section, otherwise resulting in insufficient strength of beam and floor surface.<br>  <br> | | |
| 2 | **Is the position of insert discussed?**<br>● Buildings are equipped with a lot of apparatus including lighting, fire fighting sprinkler, etc. Since the insert considerably bites concrete on the back of ceiling, such apparatus should be shown on the drawing, otherwise an outrageous misunderstanding is caused.<br>  <br> | | |

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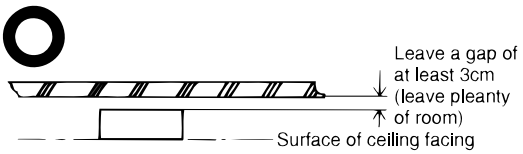
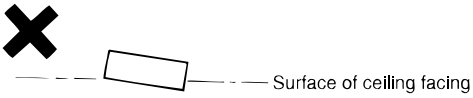
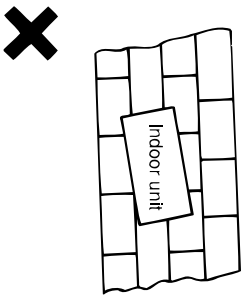
# (B) Indoor unit installation

## (B-1) Selection of installation location

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is there any gradient or distortion with the unit installation position?**<br>● Leave a gap at least 3cm from the surface of ceiling facing.<br>  <br>● Maintain the gradient of the horizontal surface within ±1˚.<br>  <br>● Align to the joint line of ceiling materials.<br>  <br>(V0961) | | |
| | | | |

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# (B) Indoor Unit installation

## (B-2) Required space around indoor unit

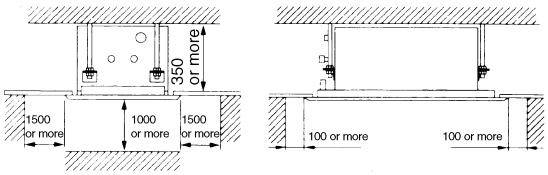
| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the following standard observed for each model?** | | |

Indoor unit

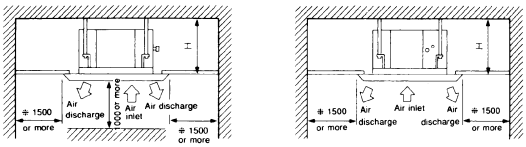
Service space required for indoor unit

Unit (mm)

● Ceiling mounted cassette type (Double flow)



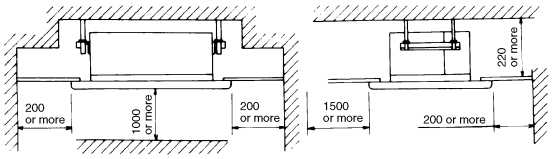

● Ceiling mounted super-cassette type (Multi-flow)



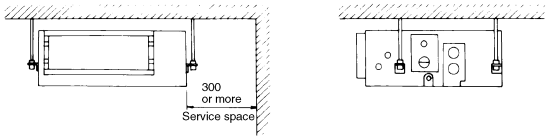

Note) The places with + mark at closed air outlet side are required to ensure service space of 200 mm or more.

| Model | H |
|---|---|
| FXYF25·32·40·50·63KA | 240 or more |
| FXYF80·100·125KA | 298 or more |

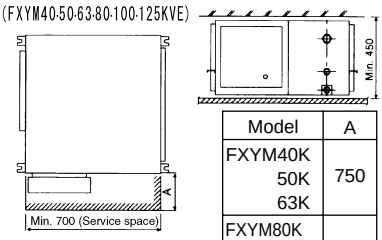
● Ceiling mounted cassette corner type



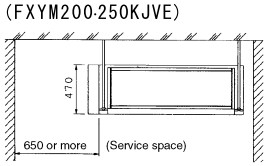

● Ceiling mounted type



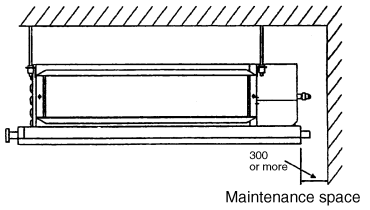

● Ceiling mounted duct type



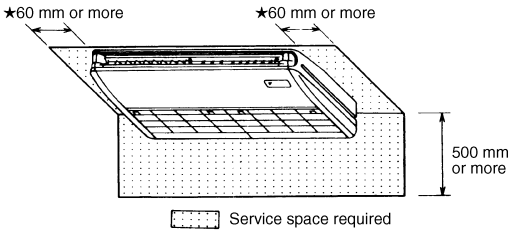

| Model | A |
|---|---|
| FXYM40K<br>50K<br>63K | 750 |
| FXYM80K<br>100K<br>125K | 1100 |



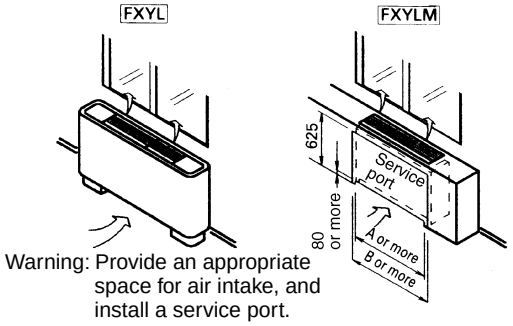

● Ceiling mounted low thickness type



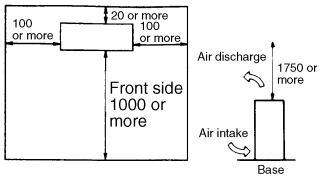

● Ceiling suspended type




● Floor mounted type

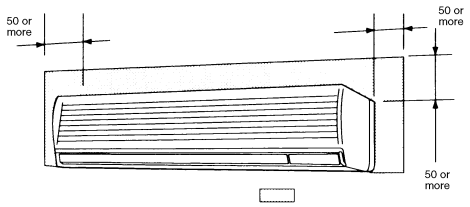



Warning: Provide an appropriate space for air intake, and install a service port.




| Model | A | B |
|---|---|---|
| FXYL20KJ | 570 | 1,030 |
| FXYL25KJ | 570 | 1,030 |
| FXYL32KJ | 710 | 1,170 |
| FXYL40KJ | 710 | 1,170 |
| FXYL50KJ | 990 | 1,450 |
| FXYL63KJ | 990 | 1,450 |

● Wall mounted type




Note): Dimensions in above figures show the minimum value. Ensure these dimensions for the minimum.

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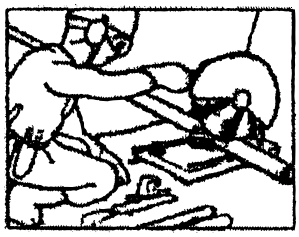
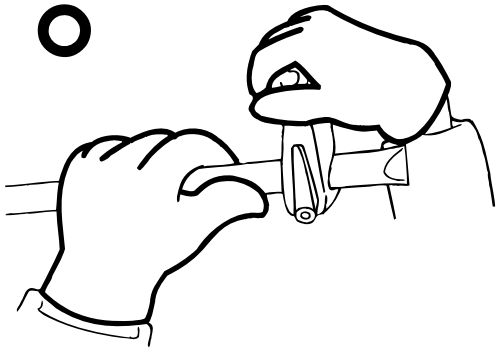
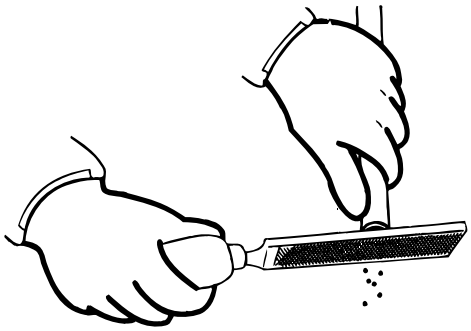
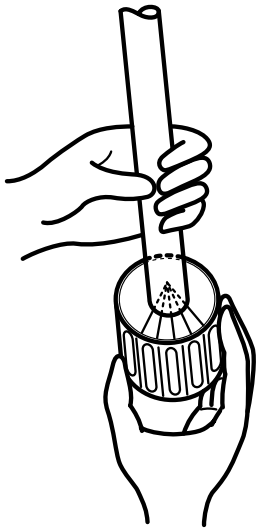
# (C) Refrigerant piping work

## (C-1-(1)) Flaring, Proper application of tools (1)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the pipe cutter used correctly?**<br><br>✕<br>  <br>Do not use high speed motor driven cutter, etc.<br><br>○<br>  | | |
| 2 | **Is the cut face deburred with a file?**<br><br>● Deburr and flatten the cut face with a file.<br>● In this work, make the cut face down to prevent chips from entering.<br>  | | |
| 3 | **Is the inside burr removed with reamer?**<br><br>● Check if chips remain inside pipe after removing inside burrs.<br>  | | |

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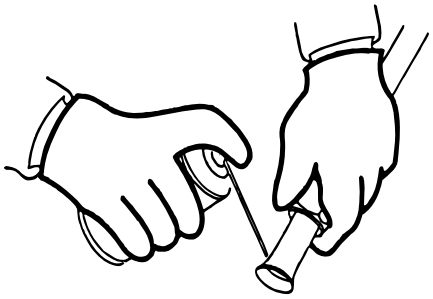
# (C) Refrigerant piping work

## (C-1-(2)) Flaring, Proper application of tools (2)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the lubricant applied after finishing of cut surface?**<br><br>● Apply refrigerating machine oil on both surfaces of flare.<br><br>R-22 ------ SUNISO<br>R-407C --- Synthetic oil<br><br>  | | |

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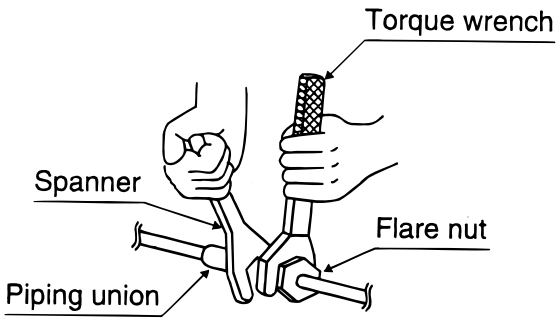
# (C) Refrigerant piping work

## (C-2) Flare connection

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the flare connection tightened with proper tightening torque by using torque wrench?** | | |
| 2 | **Is gas leakage checked?** | | |

● Do not tighten the flare connection by intuition until sufficient experience will be acquired.



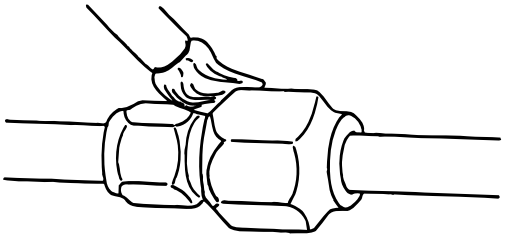

| Pipe gauge | Tightening torque |
|---|---|
| ϕ 9.5 | 3270 – 3990 N · cm (333 – 407 kgf · cm) |
| ϕ 12.7 | 4950 – 6030 N · cm (504 – 616 kgf · cm) |
| ϕ 19.1 | 9720 – 11860 N · cm (990 – 1210 kgf · cm) |

After piping is filled with $N_2$ gas at the pressure of 2.8 MPa★, apply

● Soap water

● Foaming spray on the market onto the joint sections.

The connection is OK'd if any bubble will not be generated.



★ See Appendix for the unit conversion.

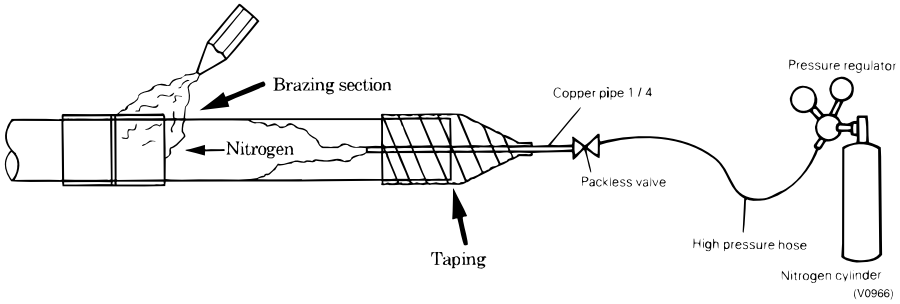
Check Date ／ ／

# (C) Refrigerant piping work

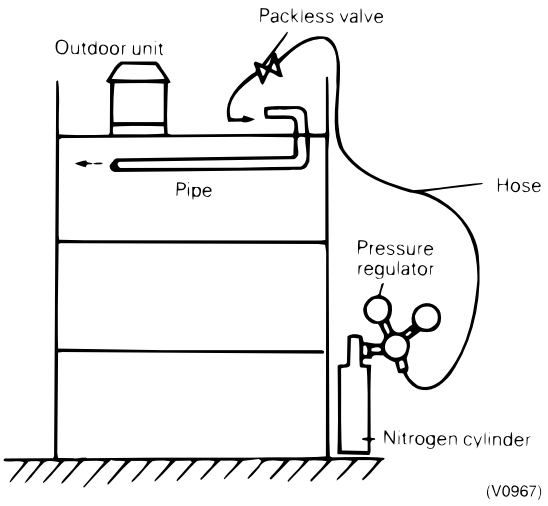
## (C-3) Brazing and Nitrogen gas replacement method

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the Nitrogen gas replacement method used for brazing work?** | | |

- The air inside pipe should be replaced with $N_2$ gas before brazing, otherwise, oxide film may be generated inside the pipe.




- Be sure to have a gas pressure regulator. (Set gas pressure at approx. 20 KPa★ during brazing work.)




- $N_2$ gas replacement method can be conducted even for high rise building so long as the $N_2$ gas hose reaches the piping of the system.

★ See Appendix for the unit conversion.

Check Date ／ ／

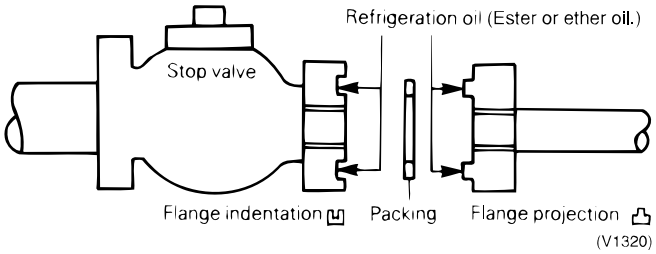
# (C) Refrigerant piping work

## (C-4) Flange connecting work

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is flange used correctly?** | | |

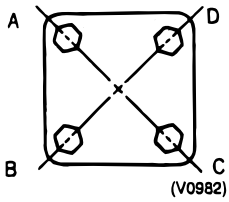
● Clean the flange surface, apply refrigerating machine oil★, and insert packing.

★ R-22-------SUNISO(mineral oil)
R-407c-------Synthetic oil




● Tighten the flange bolts in diagonal with specified torque.

[Example]
Order:A→C→B→D



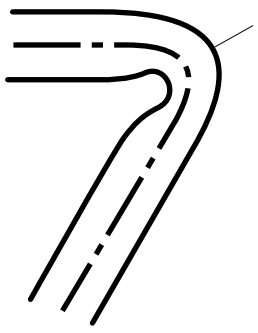

ISO hexagonal bolt

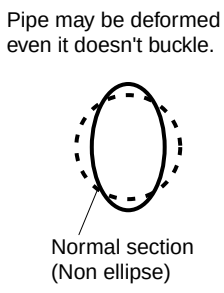
| Class / Size | 5.8(5T) | | 10.9(10T) | |
|---|---|---|---|---|
| | kgf-cm ±15% | N-m ±15% | kgf-cm ±15% | N-m ±15% |
| M8 | 125 | 1230 | 302 | 2960 |
| M10 | 257 | 2520 | 620 | 6080 |
| M12 | 436 | 4280 | 1,050 | 10,300 |
| M16 | 1,030 | 10,100 | 2,480 | 24,300 |
| M20 | 2,050 | 20,100 | 4,950 | 48,500 |

## (C-5) Pipe bending work

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is not the pipe section deformed?** | | |

● Be careful not to deform pipe due to bending work.



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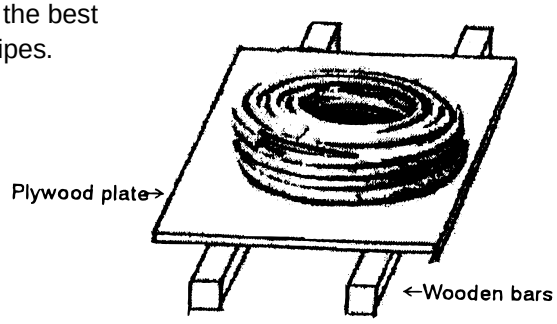
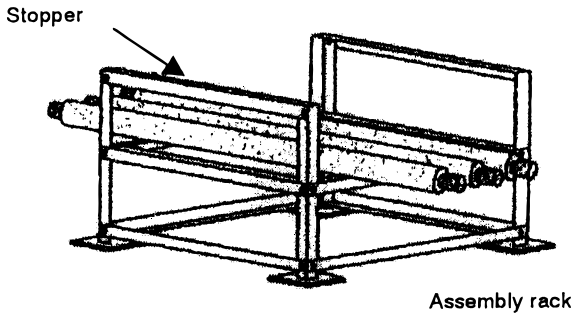
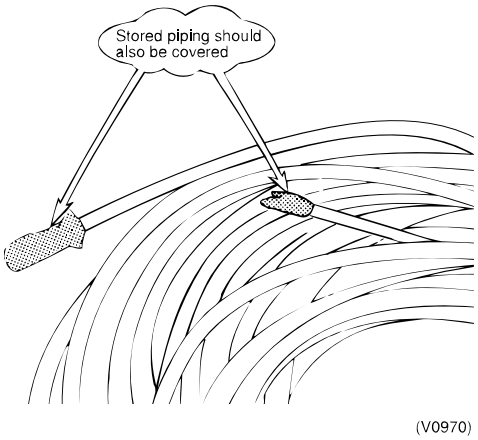
# (D) Refrigerant pipe connection

## (D-1-(1)) Protection cover of pipe (1)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is pipes stored properly? (For coiled pipe)**<br>● Making a table with plywood is the best way for storage of refrigerant pipes.<br>● Wooden bars or blocks can be also used for the alternatives. Store the pipes on a little upper level than the floor level to prevent moisture and dust from being caught on the pipe.<br>  | | |
| 2 | **Is pipes stored properly? (For straight pipe)**<br>● Install stop bars at both sides of the pipe rack to prevent pipe from falling down.<br>  | | |
| 3 | **Are pipe ends put protection covers?**<br>● Caps are put on the pipe ends at the time of delivery. It is forgettable to put caps at the pipe ends when storing the pipe after partially used.<br>  | | |

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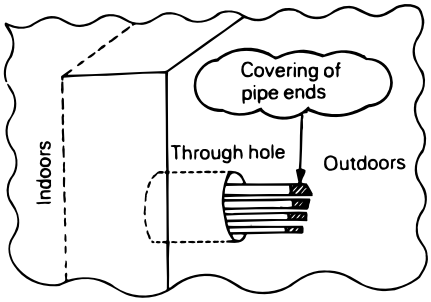
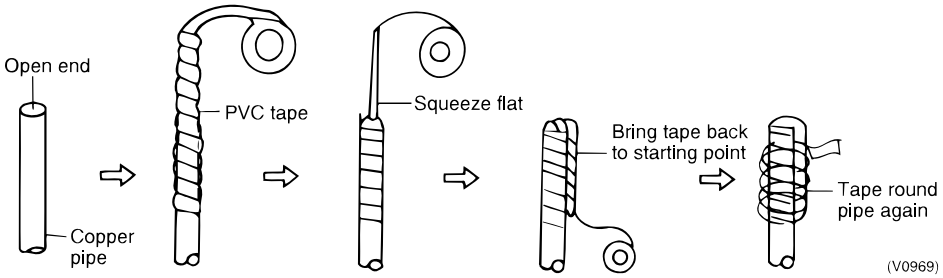
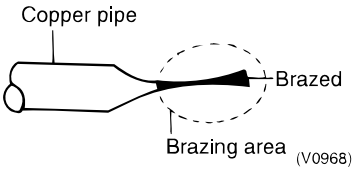
# (D) Refrigerant pipe connection

## (D-1-(2)) Protection cover of pipe (2)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Are pipe ends put protection covers when installing pipes through wall?**<br>● Since construction site is dusty with concrete powder, soil, or sand, if bare pipes are passed through the hole without protection caps, dusts enter into the pipe definitely.<br>  <br>● Pipe end protection with vinyl tape<br>  | | |
| 2 | **Is protection to close pipe end during piping work conducted?**<br>● Be sure to close pipe end to prevent foreign matters (moisture, dirt, sand or dust) from entering into the pipe even for short period of leaving the pipe in the air.<br>  | | |

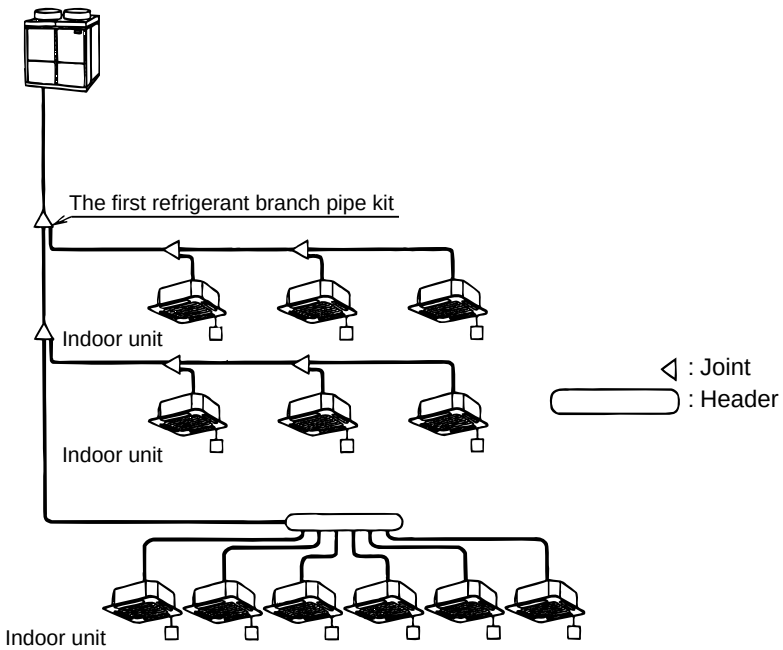
Check Date ／ ／

# (D) Refrigerant pipe connection

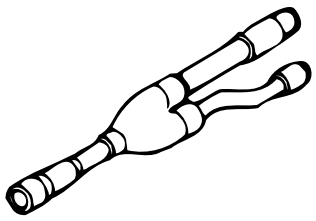
## (D-2) How to apply REFNET joint and header

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is REFNET joint or header used correctly?** | | |

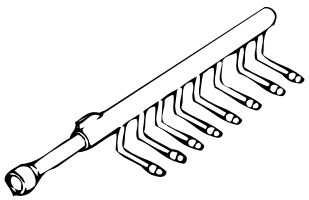
- REFNET joint can not be installed in the down stream of the header.




<REFNET JOINT>



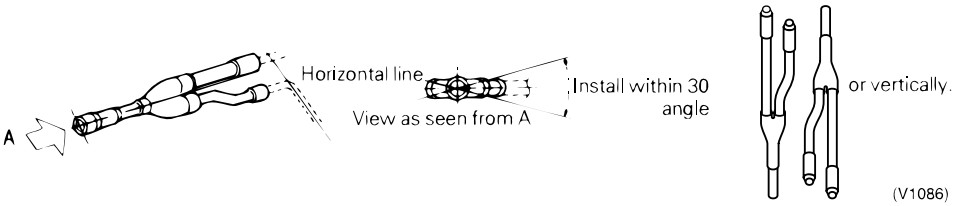
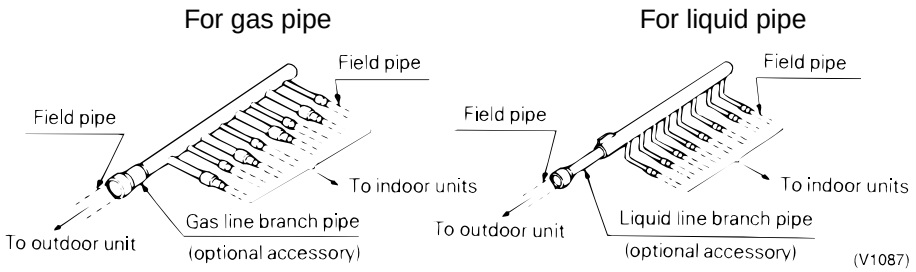
<REFNET HEADER>



Check Date ／ ／

# (D) Refrigerant pipe connection

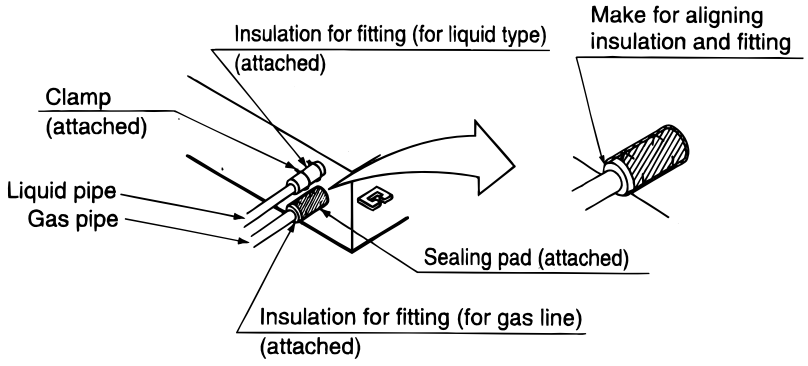
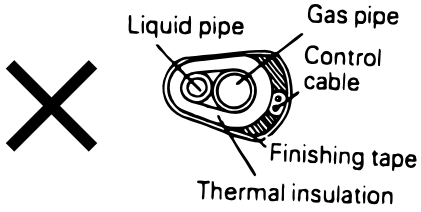
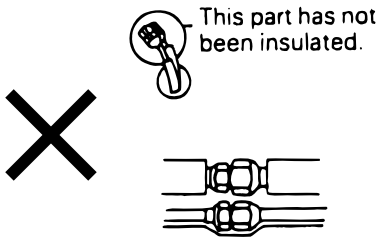
## (D-3) Installing REFNET joint and header

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the position of joint connection is proper?**<br>● When installing refrigerant pipes horizontally, the refrigerant pipes can be inclined within 30˚up and down.<br>● When installing refrigerant pipes vertically, the refrigerant pipes should not be inclined, and must be installed vertically.<br>  | | |
| 2 | **Is the position of header connection proper?**<br>● Install REFNET header horizontally. Do not allow installing vertically.<br>  | | |

Check Date ／ ／

# (D) Refrigerant pipe connection

## (D-4-(1)) Heat insulation for refrigerant pipes (1)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is heat insulation properly installed just after the equipment are connected?**<br>● Sealing pad is provided with the unit as standard accessory. Install the sealing pad properly.<br>  | | |
| 2 | **Are the specifications and thickness of heat insulation materials appropriate?**<br>● When applying polyurethane foam to the insulation materials, the thickness shown in the following table is required.<br>Pipe size: 6.4mm~25.4mm — Thickness of insulation material: 10mm or more<br>Pipe size: 28.6mm~38.1mm — Thickness of insulation material: 15mm or more | | |
| 3 | **Is not the following imperfection conducted?**<br>● Both liquid and gas pipes without heat insulation themselves installed with bundle by insulation materials.<br>  <br>● Pipe joint section has not been insulated.<br>  | | |

Check Date ／ ／

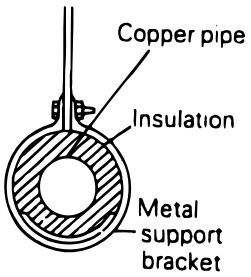
# (D) Refrigerant pipe connection

## (D-4-(2)) Heat insulation for refrigerant pipes (2)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is insulated refrigerant pipe supported properly?** | | |

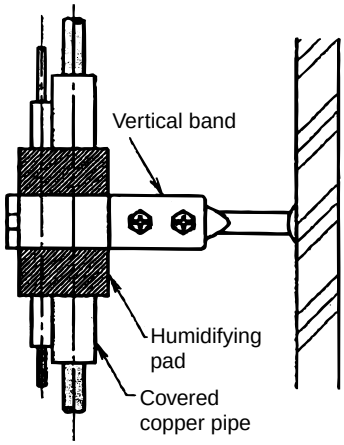
● Horizontal pipe

| | | |
|---|---|---|
| Pipe outside diameter | 6.35 - 9.52mm | 12.7mm or more |
| Pitch of pipe support | 1.2m or less | 1.5m or less |




● Example of vertical pipe support

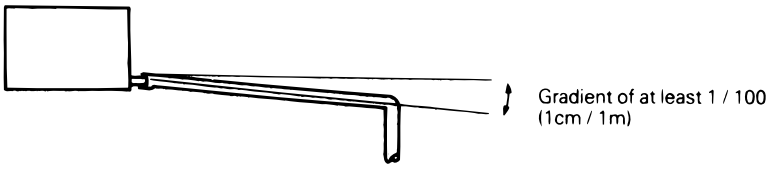
Provide 1 or 2 supports on each floor module



Check Date ／ ／

# (E) Drain piping

## (E-1) Basic items

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Does drain pipe have sufficient gradient?**   | | |

**Check Date** ／ ／

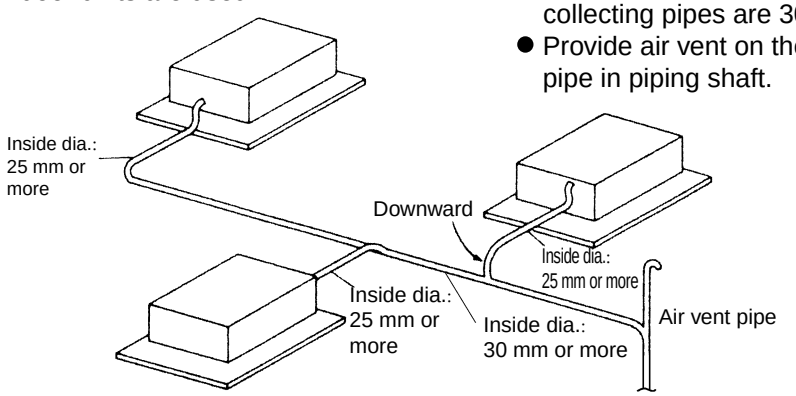
# (E) Drain piping

## (E-2) Collecting pipe, flexible pipe and pipe support

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the arrangement of collecting pipe proper?** | | |

Drain piping when more than 2 indoor units are used

- Carry out connection with indoor units based on the specified size of indoor units. The inside diameter of collecting pipes are 30 mm or more.
- Provide air vent on the top of riser pipe in piping shaft.

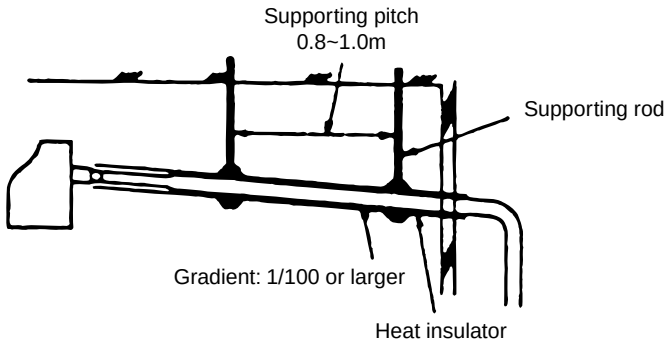



List of proper pipe size
(Relation between horizontal drain pipe diameter and allowable drain volume)

| PVC pipe | Pipe inside diameter (For reference: mm) | JIS pipe | Pipe inside diameter (For reference: mm) | Allowable flow rate [L/Hr] | | Note |
|---|---|---|---|---|---|---|
| | | | | Gradient 1 : 50 | Gradient 1 : 100 | |
| PVC25 | 19 | VP20 | 20 | 39 | 27 | Not applicable for collecting pipe (Reference data) |
| PVC32 | 27 | VP25 | 25 | 70 | 50 | |
| **PVC40** | **34** | **VP30** | **31** | **125** | **88** | **Applicable for collecting pipe** |
| **PVC50** | **44** | **VP40** | **40** | **247** | **175** | |

Note: Use PVC40 or larger pipe after junction.

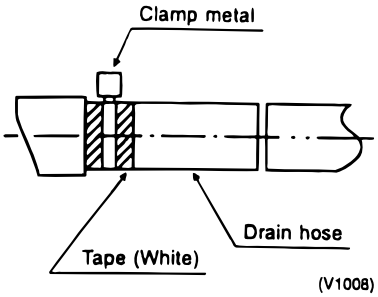
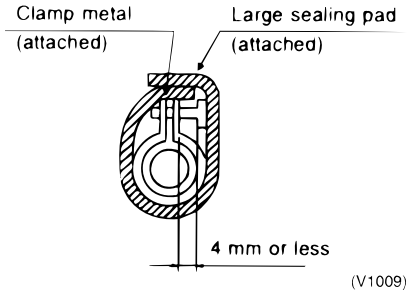
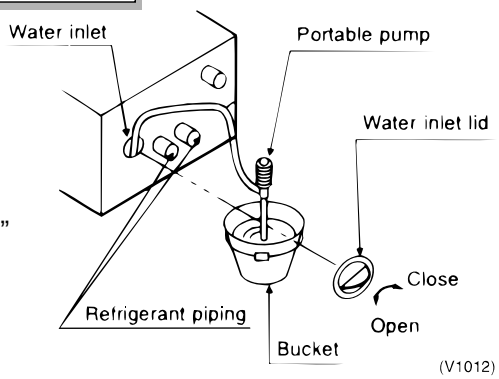
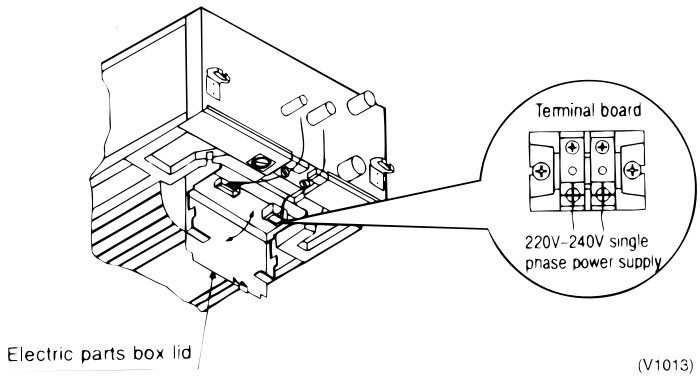
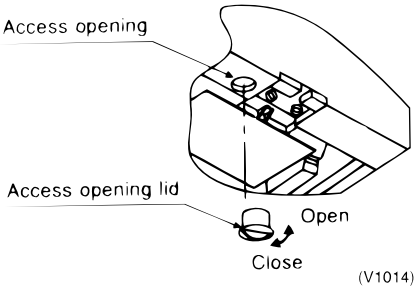
| 2 | **Is the pipe support provided in the proper pitch?** | | |
|---|---|---|---|



Check Date ／ ／

# (E) Drain piping

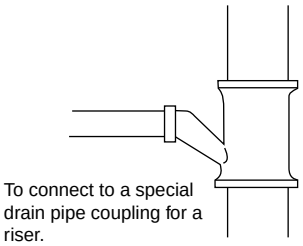
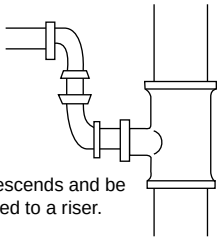
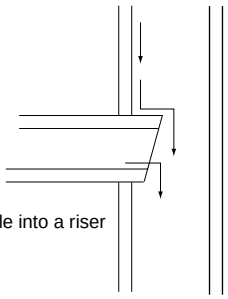
## (E-3) Application of clamp metal and final drain test

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Are the attached covering materials and clamp metal applied in good manner?**<br>● Mount clamp metal after taping the pipe.<br>● Tighten the clamp metal so that the screw head protrudes by 4 mm.<br>  <br>  <br>● Cover the clamped section with covering materials. | | |
| 2 | **Is the drainage conducted properly?**<br>● Fill 2500 cc water from the water inlet with a portable pump.<br>● Turn on power supply and set to the test run mode. Selecting “FAN” and pressing ON button, the fan and drain pump will ↙<br>  <br>  <br>↘ start to operate.<br>Open an access panel and make sure if the drain water reduces.<br>  | | |

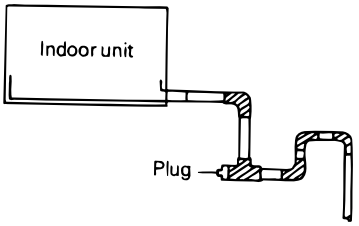
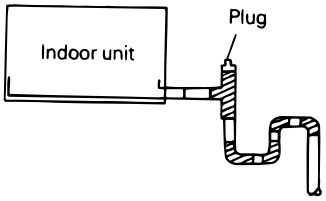
Check Date ／ ／

# (E) Drain piping

## (E-4) Connection to vertical pipe

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the connection to vertical pipe inside the pipe shaft proper?**<br>● A horizontal drain pipe should be connected to a riser in the pipe shaft after it is connected to a drain flange or once descends, or extended somewhat into the riser as shown in the figures below, instead of connecting horizontally to the riser without extension.<br>  <br>To connect to a special drain pipe coupling for a riser.<br>  <br>Once descends and be connected to a riser.<br>  <br>Extends a little into a riser | | |

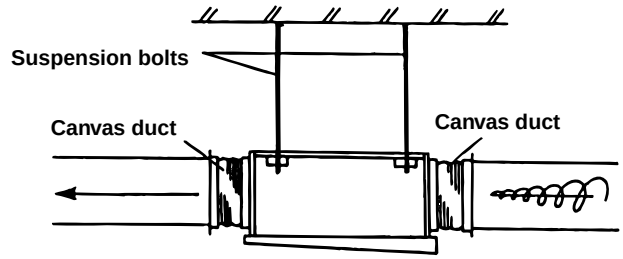
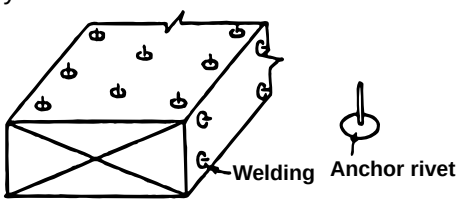
## (E-5) Mounting blind plug

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is a drain trap installed in a manner to prevent the drain trap from clogging?**<br>● When installing a drain trap, mount blind plugs in places in the drain piping for ease of cleaning.<br>  <br><br>  <br> | | |

Check Date ／ ／

# (F) Duct installation

## (F-1) Sound attenuation and heat insulation

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **When installing steel plate ducts, are canvas ducts provided on the both sides to prevent vibration?**   | | |
| 2 | **Is the heat insulation for steel plate ducts installed properly?**<br>● Glass wool of 25 m/m thickness is applied normally. When installing square ducts, the steel ducts are generally wrapped with glass wool insulation pad and bound with wire mesh.   | | |
| | | | |

Check Date ／ ／

# (F) Duct installation

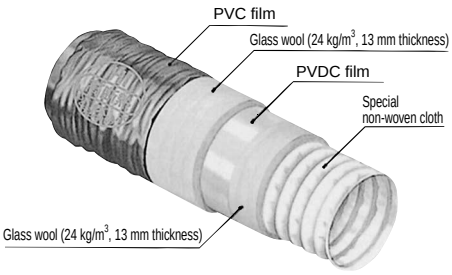
## (F-2) Flexible duct installation

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Are the materials of ducts selected properly?** | | |
| 2 | **Is the connection work to apparatus conducted properly?** | | |

● High heat insulation duct must be used on the air supply side.
Standard duct can be used on the air suction side.

**High heat insulation type**

■ Structure



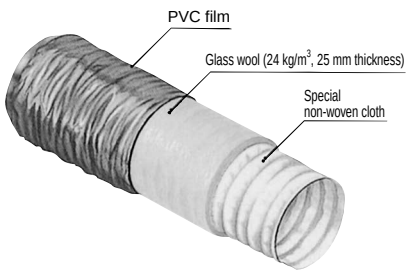

Steel wire (ϕ1.0 to 1.2 mm )

■ Application

- Applies when installing the unit in ambient air of high temperature and humidity to supply cool air, mainly to the inside of ceiling in new buildings constructed of reinforced concrete, inside of ceiling on the rooftop of existing buildings, inside of ceiling in restaurants, factories generating much heat, etc. Optimum to apply to ambient air of high humidity.
- Applies to low-temperature discharge air (10˚C)

**Standard type**

■ Structure



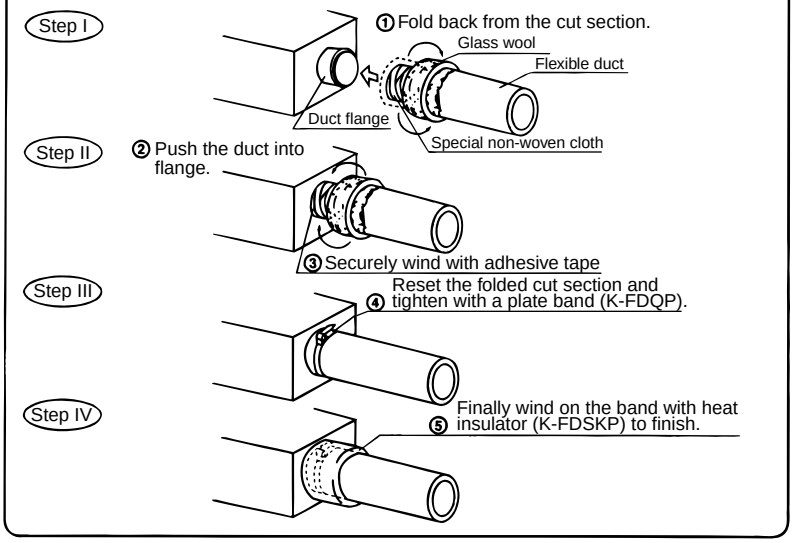

Steel wire (ϕ1.0 to 1.2 mm)

■ Application

- Applies mainly when installing the unit inside the ceiling of middle floor in houses and buildings.
- Applies to ventilation system.

**Flexible duct, straight, 10 meters long (standard)** **K-FDS** Finishing procedure for cut surface

■ Cutting method
Cut the outer film and glass wool using a cutter knife. Use a cutting pliers or the like to cut wires.
■ Finishing cut surface (Use cut surface finishing kit K-FDSKP shown on Page 79.)

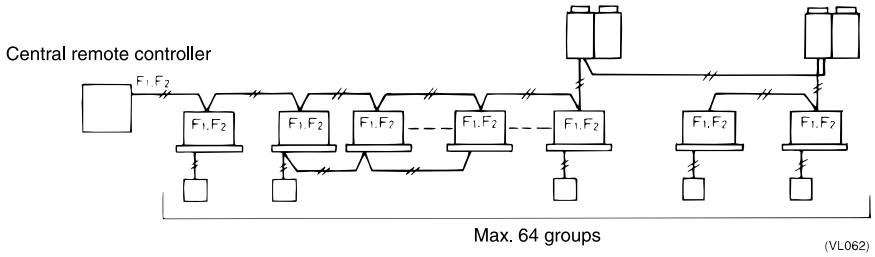


Check Date ／ ／

# (G) Electric wiring

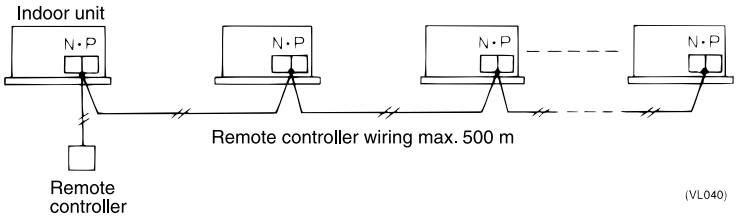
## (G-1) Checking control wiring

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **When centralized control wiring is conducted, is the wiring conducted properly as shown on the following diagram?** | | |
| 2 | **When one remote controller controls multiple indoor units consisted in one group, is the wiring conducted properly for this application?** | | |
| | | | |




Wiring specifications

| | |
|---|---|
| Power supply wiring | 2 mm² |
| Transmission wiring for control | 0.75 ~ 1.25 mm² sheathed vinyl cord or cable (double core); max. extension 1000 m (total wiring length 2000 m) |
| Power supply switch | 10A |



Check Date ／ ／

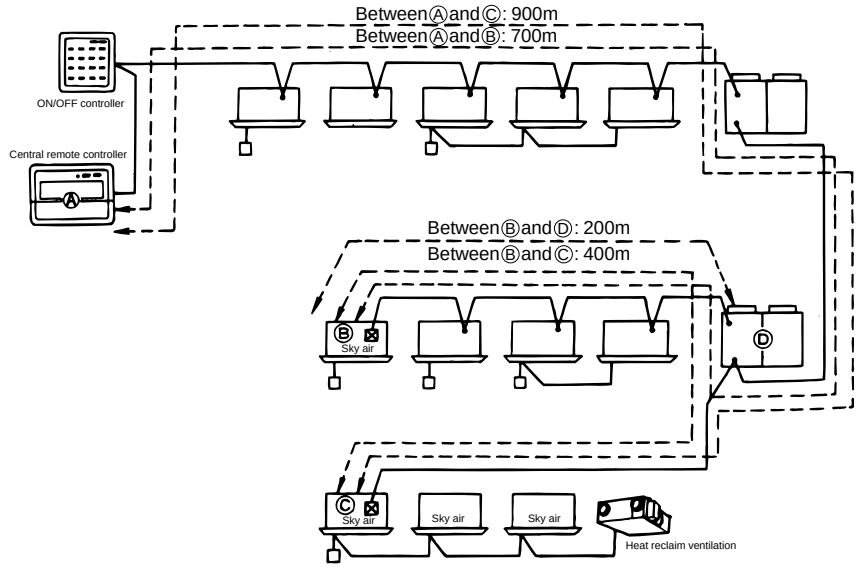
# (G) Electric wiring

## (G-2) Restriction on distance of control wiring

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the extension distance of control wiring kept within the following standard?** | | |

Remotest distance: 1000 meters or less, Total wiring distance: 2000 meters or less
(When using shielded wires, the total wiring distance should be 1500 meters or less.)

■ Example of system




- With the above system, the remotest wiring distance is 900 meters between A and C, meeting the remotest distance of 1000 meters or less. The total wiring distance comes to 1100 meters given by the addition of 900 meters between A and C and 200 meters between B and D, meeting the total wiring distance of 2000 meters or less. The system functions normally only when both of the remotest distance and total wiring distance remains within the controllable range.

Check Date ／ ／

# (G) Electric wiring

## (G-3) Restriction on control wiring

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Do the branch wires come from the main control wires, not from the branch control wires?** | | |

Here we define as branch lline, which is diverged from the main line and also call it sub-branch line, which is diverged from the branch line.

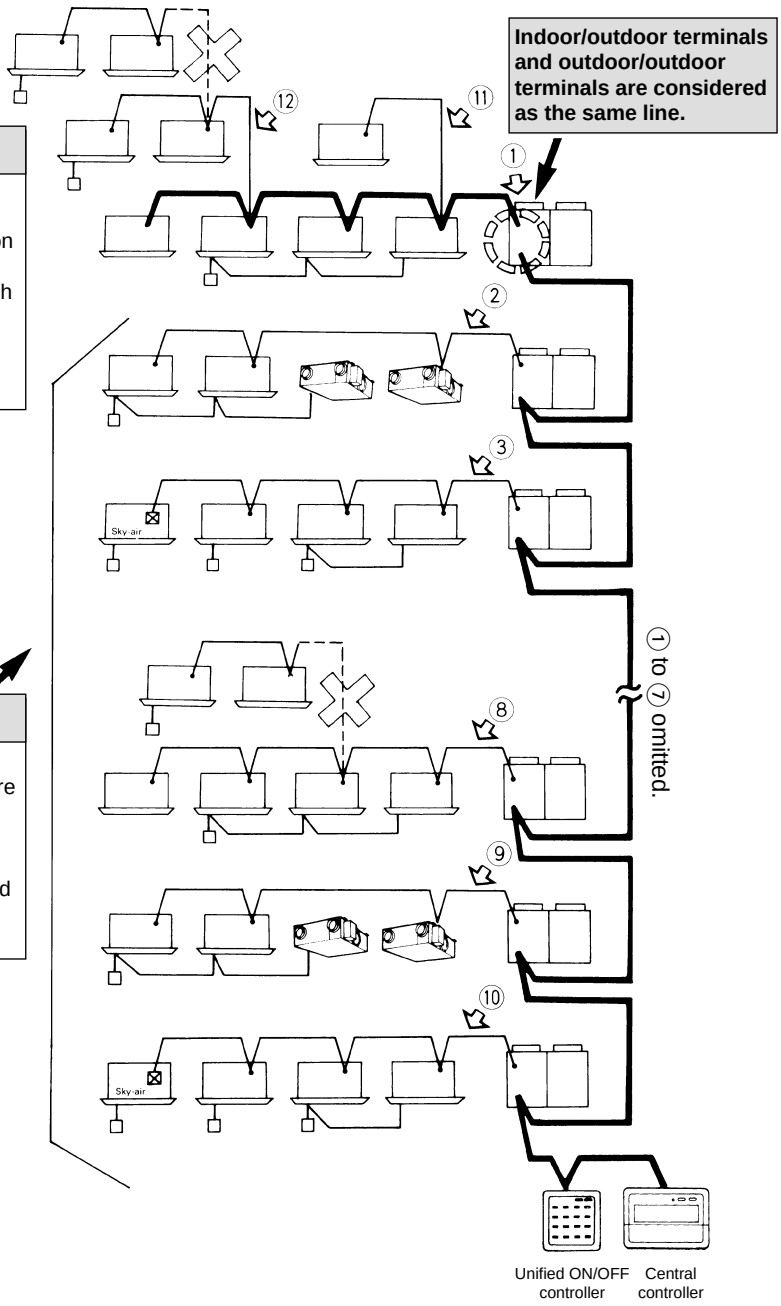
In case of the central controlling devices are connected to the outdoor-outdoor connection line;
—— : Main line, —— : Branch line, ---- : Sub-branch line, ①~⑫ : Branch No

**How to count the branch wiring**

Outdoor/outdoor connection line and indoor/outdoor connection line are designated as "main line" and ① (branch No. 1). The primary branched lines from the main line are counted as ② to ⑯ in order.

**Sub-branching is not permitted.**

Do not branch from any line of branch line. Be sure to connect units with branch line. (So called island-hop wiring.)
(Branching from branched line is not permitted.)
Transfer error may occur.



Check Date ／ ／

## (G) Electric wiring work

### (G-4) Restrictions on control wiring for connecting devices

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the number of connected device with one control system within the specified number shown in the below table?** | | |

**HANDLING EQUIPMENT NUMBER**

| Device | Numbers connectable | Numbers (Groups) | controllable (Units) |
|---|---|---|---|
| Remote controller | 64 | ------- | 16 |
| Central remote controller | 2 | 64 × 2 (128) | 128 |
| Unified ON/ OFF controller | 8 | 16 × 8 (128) | 128 |
| Schedule timer | 1 | 64 | 128 |
| Parallel interface | 4 | 16 × 4 (64) | 128 |
| Data station | 1 | 64 | 128 |
| Master station | 1 | 64 × 4 (256) | 128 × 4 (512) |

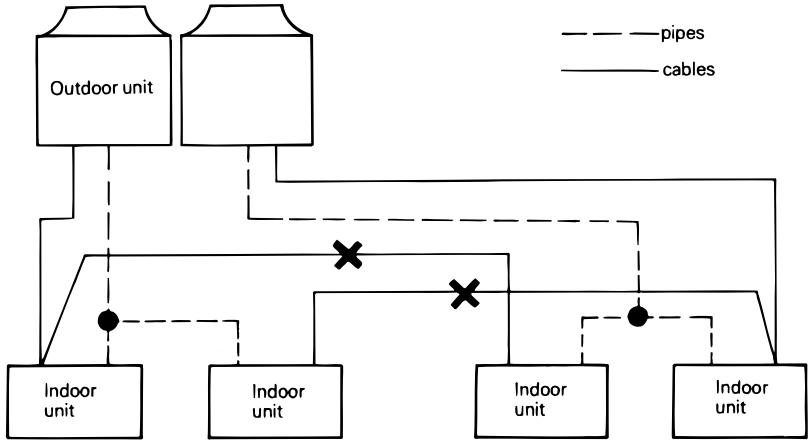
Check Date ／ ／

# (G) Electric wiring work

## (G-5) Mismatching connection of control wiring

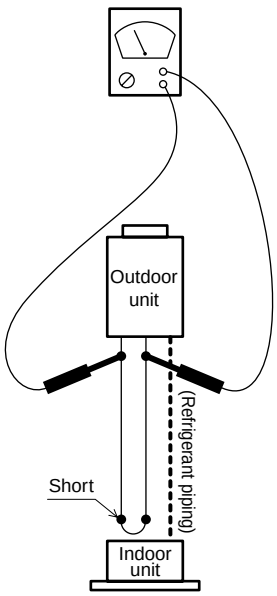
| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Does the refrigerant piping system coincide with the control system?** | | |

● An example of faultily exchanged piping connection
Faulty connection of the control wiring to another system's circuit.

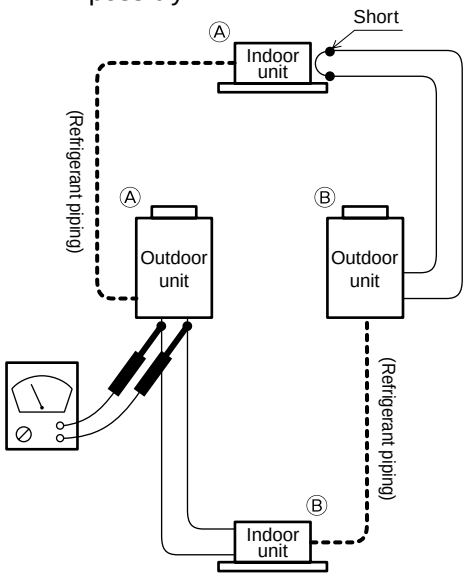



An example of checking mismatching wiring

[1] Conduction = OK!




[2] No conduction = NG
Piping and wiring are not coincident possibly!

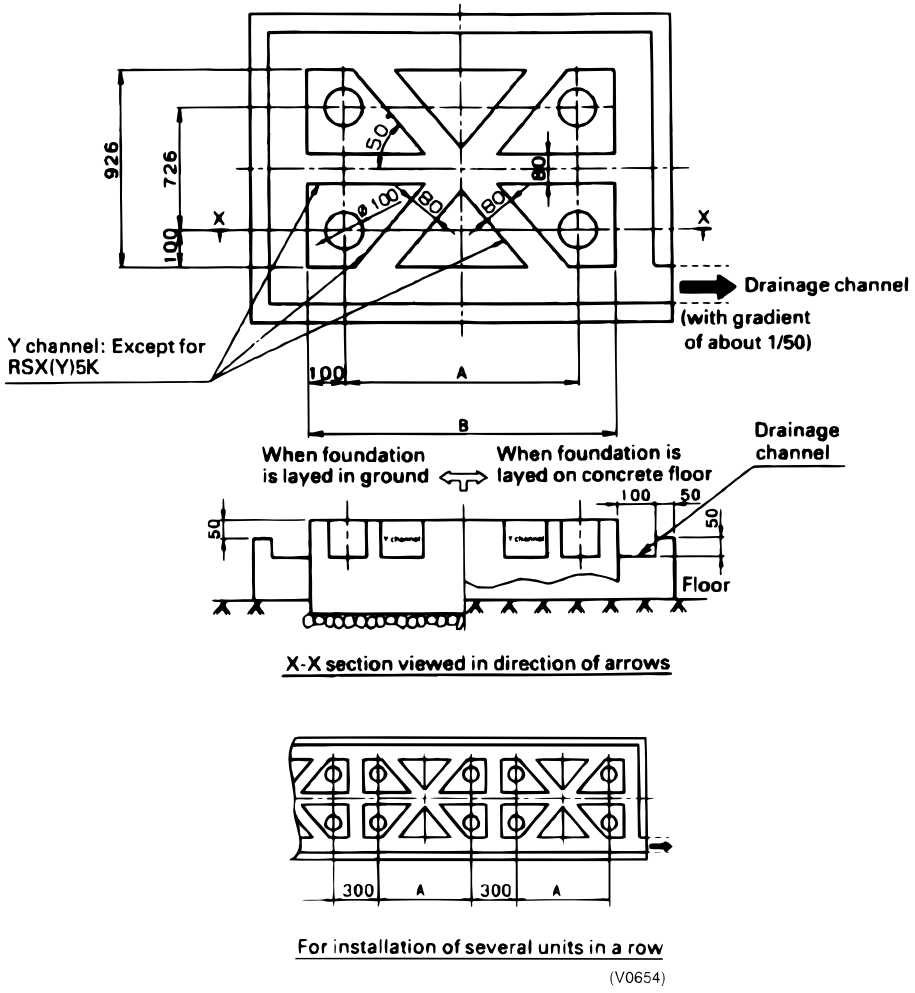


Check Date ／ ／

# (H) Outdoor unit installation

## (H-1) Making concrete foundation

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the concrete foundation going to be laid properly?** | | |




(V0654)

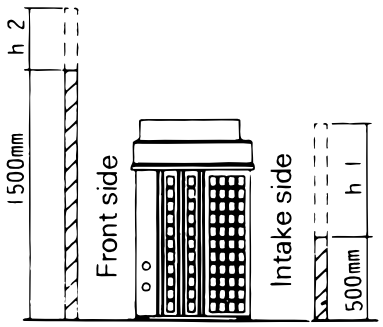
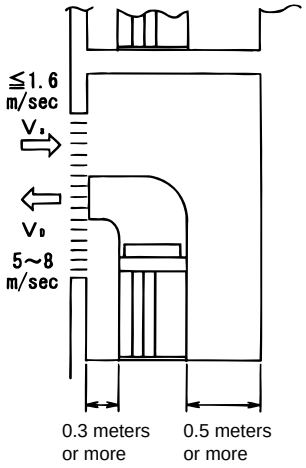
| Model | A | B |
|---|---|---|
| RSX(Y)5K(A) | 355 | 555 |
| RSX6KA | 355 | 555 |
| RSX(Y)8K(A)·10K(A) | 1000 | 1200 |

- Mixing ratio of concrete : Cement 1, Sand 2, Gravel 4.
- Provide reinforcements of 10-mm diameter at intervals of 300 mm.
- When laying foundation on concrete floor, smashed stones are not required to add. However, the surface of concrete floor should get uneven.
- Provide drainage channel around the foundation to take care of drainage around outdoor units.
- When installing units on rooftop, be careful for the strength of floor and do not fail to conduct water-proof treatment.

Check Date ／ ／

# (H) Outdoor unit installation

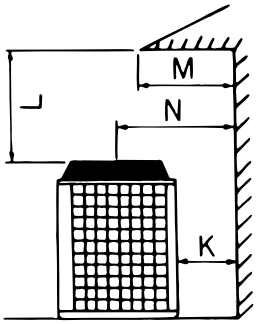
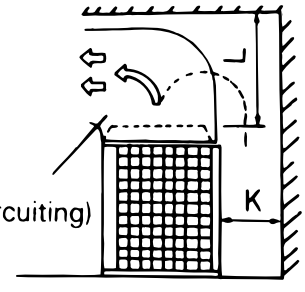
## (H-2) Selection of installation location

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **When installing outdoor unit on rooftop, is enough space provided around the unit?**<br><br>● When the height of barrier wall is 1500 mm on the front side and 500 mm on the intake side, basically leave a space of 500 mm or more apart on the front side and 300 mm or more apart on the intake side.<br><br>● When the height of barrier wall exceeds 1500 mm and 500 mm respectively, provide additional horizontal distance by 1/2 of height exceeding 1500 mm on the front side and by height exceeding 500 mm on the intake side.<br><br>  | | |
| 2 | **When installing outdoor unit on terrace, is any measure taken for the confined area?**<br><br>● When installing outdoor unit at confined terrace, it should be considered to take some measures to install ducts. (Static pressure in the ducts should be 3 mm$H_2O$ or less.)<br><br>● Adjust the air velocity discharged from the duct to 5 to 8 meters/second, and the intake air velocity coming through decorative blind to 1.6 meters/second or less.<br><br>  | | |
| | | | |

Check Date ／ ／

# (H) Outdoor unit installation

## (H-3) Installation on terrace or ground

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the standard for mounting on ground observed?**<br><br>● When L ≥ 1 m, N ≥ M<br>When L < 1 m, K ≤ M<br><br>  <br><br>Installation under the eaves | | |
| 2 | **Is the standard for mounting on terrace observed?**<br><br>● No restriction when L ≥ 3 m<br>When L < 3 m, an air discharge duct is required.<br>(The head-loss of the duct should be 3 m/m$H_2O$ or less.)<br><br>  <br><br>Air discharge duct<br>(to prevent short circuiting) | | |

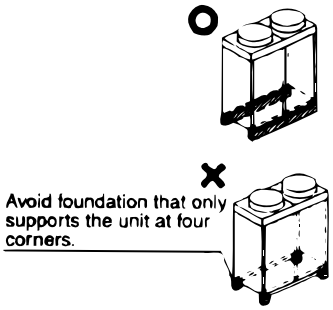
Check Date ／ ／

# (H) Outdoor unit installation

## (H-4) Types of foundation

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is not the foundation such as only putting concrete blocks at four corners?** | | |

**RSX(Y)8K·10K**
**RSX8KA·10KA**




- A continuous footing as shown in the above figure is applicable while a mat foundation is recommendable.

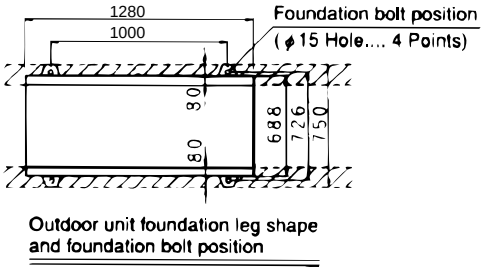



Figure 1

- In the above mentioned case, the anchor bolts should be located inside the shaded area.

| 2 | **Have the fixtures for transportation removed from compressor legs?** | | |
|---|---|---|---|

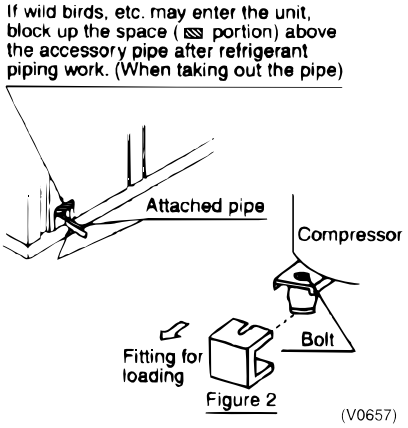



Figure 2 (V0657)

- It is recommendable to close the connection port with proper material to prevent wild birds from entering and nesting inside the unit.

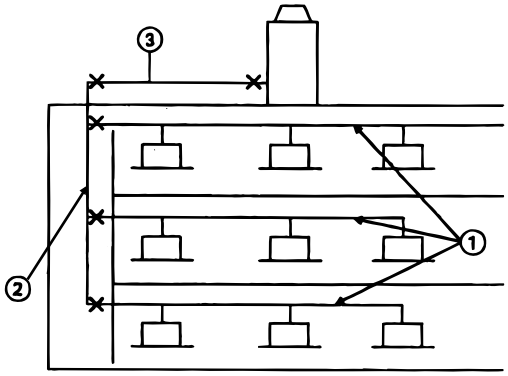
Check Date ／ ／

# (I) Air-tight test

## (I-1) Flushing

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Has the entire system been flushed using a nitrogen gas?** | | |

● Conduct flushing at the final stage of piping work to remove foreign particles and moisture that remained in the pipes.




● **Work flow**

① From indoor unit to the shaft on individual floor
② Vertical pipes inside each shaft
③ From each shaft to outdoor unit installed on rooftop

● **Procedure**

1. Increase the pressure approximately to 0.5MPa★ through a pressure reducing valve using a nitrogen gas.
2. Make sure that the nitrogen gas comes out through the joint section other than flare connection.
3. Close the flared section with the palm of the hand.
4. When the pressure becomes high, release the hand quickly.
5. Close the flared section with the palm of the hand again. When the pressure becomes high, move the hand quickly as well.
   During the flushing process, place a waste cloth at the pipe end, check the content and amount of the removed foreign particles, and repeat the flushing process until the foreign particles are released thoroughly.
6. When completing the flushing process, provide covering plug, etc. to close the pipe end .
   (if the connection and vacuum drying is not conducted immediately just after the completion of the flushing process.)

★ See Appendix for the unit conversion.

**Check Date** ／ ／

# (I) Air-tight test

## (I-2) Conducting of air-tight test

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Has the air tight test as leakage test for entire system been conducted?** | | |

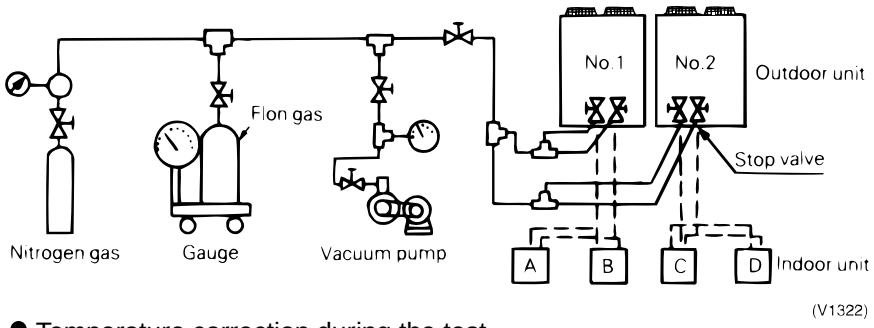
Assemble the test equipment as shown in the below figure.

STEP 1. For 3 minutes at pressure of 0.3 MPa★

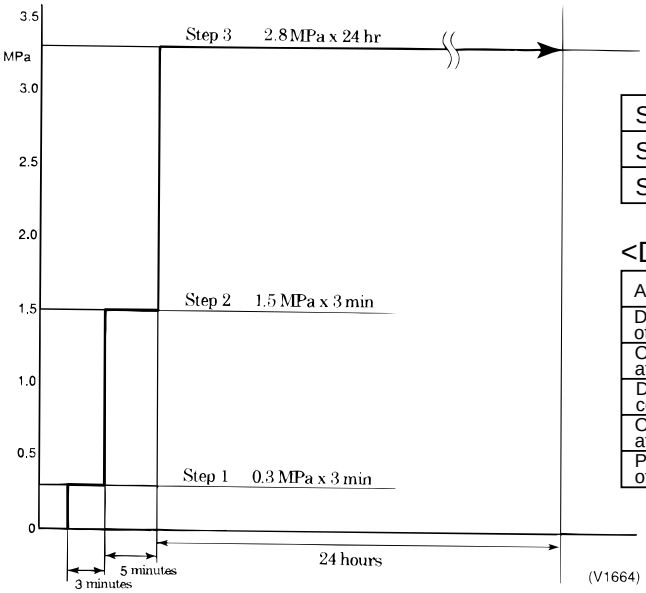
STEP 2. Maintain for 3 minutes at pressure of 1.5 MPa★

} Remarkable leakage can be detected in these steps.

STEP 3. For 24 hours at pressure of 2.8 MPa★ ⇒ Including slight leakage, any leakage is detected completely.




- Temperature correction during the test
  (Temperature when pressurizing - temperature when inspecting after 24 hours) × 0.01MPa / ˚C




[Data of air tight test]

| | |
|---|---|
| STEP 1 | OK·NG |
| STEP 2 | OK·NG |
| STEP 3 | OK·NG |

<Detailed data of STEP 3>

| | |
|---|---|
| Applied pressure | MPa★ |
| Date and time of test started | Month Day Hour |
| Outdoor temperature at starting the test | ˚C |
| Date and time completed | Month Day Hour |
| Outdoor temperature at completing the test | ˚C |
| Pressure at the time of test completed | MPa |

- How to detect leakage: By oral inspection, by touching inspection and by applying foaming agent.

★ The unit conversion table is in the Appendix.

Check Date ／ ／

# (J) Vacuum drying

## (J-1) Selection of vacuum pump and vacuum drying actual data

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is the achievable degree of vacuum of pump selected correctly?** | | |

● Degree of vacuum should be in the shadowed area of below figure.

| | Unit | Standard atmospheric pressure | Perfect vacuum |
|---|---|---|---|
| Gauge Pressure | $kg/cm^2$ | 0 | -1.033 |
| Absolute Pressure | $kg/cm^2abs$ | 1.033 | 0 |
| Torr | Torr | 760 | 0 |
| Micron | Micron | 760000 | 0 |
| cmHg | cmHg | 0 | 076 |
| Pa | hPa | 1013.33 | 0 |

Degree of vacuum must be within the range expressed by ▭

| 0 Torr | 5 Torr | 760 Torr |
|---|---|---|
| 0 Pa | 667 Pa | 1013.33 hPa |
| 78 cmHg | 75.5 cmHg | 0 cmHg |
| Perfect vacuum | Vacuum target value | Standard atmospheric pressure |

[Vacuum drying actual data]

| | |
|---|---|
| Is the degree of vacuum after 3 hours or more pump operation -755 mmHg or lower? | OK · NG |
| Is the degree of vacuum kept without change for 1 hour or more after pump stopped? | OK · NG |

Check Date ／ ／

# (K) Additional refrigerant charging

## (K-1) Calculation of additional refrigerant charging amount (For K series)

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|

**1** **Is additional charging amount calculated correctly?** (For PLUS series, the calculation formula is different.)

● **Key point** 1) The calculation is for liquid pipe

**Calculation formula**

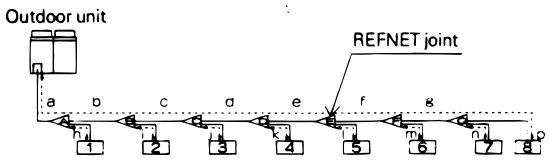
Additional charge (kg) = Total length of liquid line piping (φ12.7) × 1 (m) 0.1 + Total length of liquid line piping (φ9.5) × 0.05 (m) × 0.05 + Total length of liquid line piping (φ6.4) × 0.025 (m) × 0.025 - 2

Index 5HP : 1
8, 10HP : 2

| ø 12.7 | | ø 9.5 | | ø 6.4 | |
|---|---|---|---|---|---|
| # | Length (m) | # | Length (m) | # | Length (m) |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| total | m | total | m | total | m |

**Comparing with the examples shown below, are the adopted figures correct?**

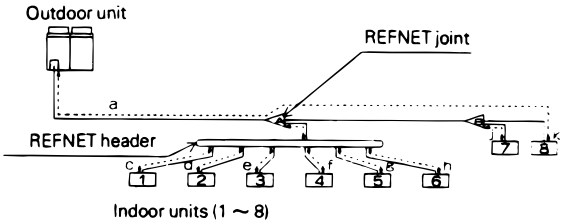
**Example of refrigerant branch with REFNET joint**




| | |
|---|---|
| a : φ 12.7 × 30m | i : φ 6.4 × 5m |
| b : φ 12.7 × 5m | j : φ 6.4 × 5m |
| c : φ 12.7 × 5m | k : φ 6.4 × 5m |
| d : φ 12.7 × 5m | l : φ 9.5 × 5m |
| e : φ 9.5 × 3m | m : φ 6.4 × 5m |
| f : φ 9.5 × 2m | n : φ 6.4 × 5m |
| g : φ 9.5 × 5m | p : φ 6.4 × 5m |
| h : φ 9.5 × 5m | |

R = [45 × 0.1] + [20 × 0.05] (a+b+c+d, e+f+g+h+i) + [30 × 0.025] − 2 = 4.25 (i+j+k+m+n+p) → 4.3kg

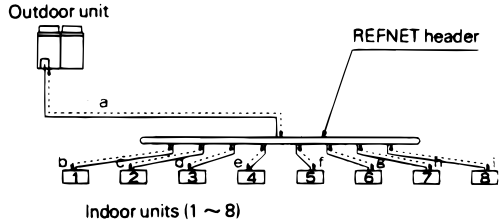
**Example of refrigerant branch with REFNET joint an REFNET header**




| | |
|---|---|
| a : φ 12.7 × 30m | g : φ 6.4 × 10m |
| b : φ 12.7 × 10m | h : φ 6.4 × 20m |
| c : φ 9.5 × 10m | i : φ 9.5 × 10m |
| d : φ 6.4 × 10m | j : φ 9.5 × 10m |
| e : φ 6.4 × 10m | k : φ 6.4 × 9m |
| f : φ 6.4 × 10m | |

R = [40 × 0.1] + [30 × 0.05] (a+b, c+i+j) + [69 × 0.025] − 2 = 5.225 (d+e+f+g+h+i) → 5.2kg

**Example of refrigerant branch with REFNET header**




| | |
|---|---|
| a : φ 12.7 × 40m | f : φ 6.4 × 23m |
| b : φ 9.5 × 20m | g : φ 6.4 × 20m |
| c : φ 9.5 × 10m | h : φ 6.4 × 20m |
| d : φ 6.4 × 10m | i : φ 6.4 × 30m |
| e : φ 6.4 × 20m | |

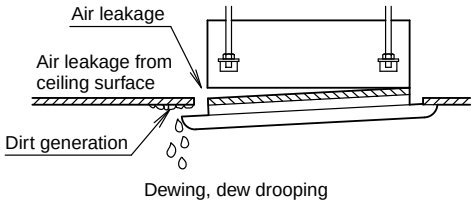
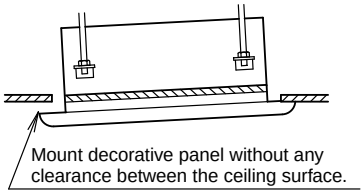
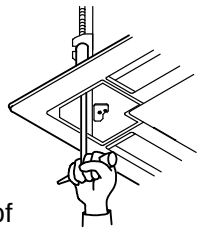
R = [40 × 0.1] + [30 × 0.05] (a, b+c) + [123 × 0.025] − 2 = 6.575 (d+e+f+g+h+i) → 6.6kg

**2** **When additional refrigerant charging, is a platform scale used?**

Check Date ／ ／

# (L) Decorative panel installation

## (L-1) Maintaining levelness of decorative panel

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Is decorative panel installed horizontally?**<br><br>● Since insufficient tightening of screws causes poor workmanship shown below, securely tighten the screws.<br><br>  <br> | | |
| 2 | **Is there any clearance left between the ceiling surface and decorative panel?**<br><br>● Should a clearance be left between the ceiling surface and decorative panel even by tightening the screws, re-adjust the installation height of the main unit of indoor unit.<br><br>  <br><br><br>**Advice on a single point**<br><br>● The installation height of the main body of indoor unit can be adjusted from a hole provided at a corner of decorative panel with decorative panel installed in a range that the adjustment does not affect the levelness of indoor unit, drain piping, etc.<br>  | | |

Check Date ／ ／

# (M) Air-conditioning system diagram

## (M-1) Organizing air-conditioning system list and control wiring system diagram

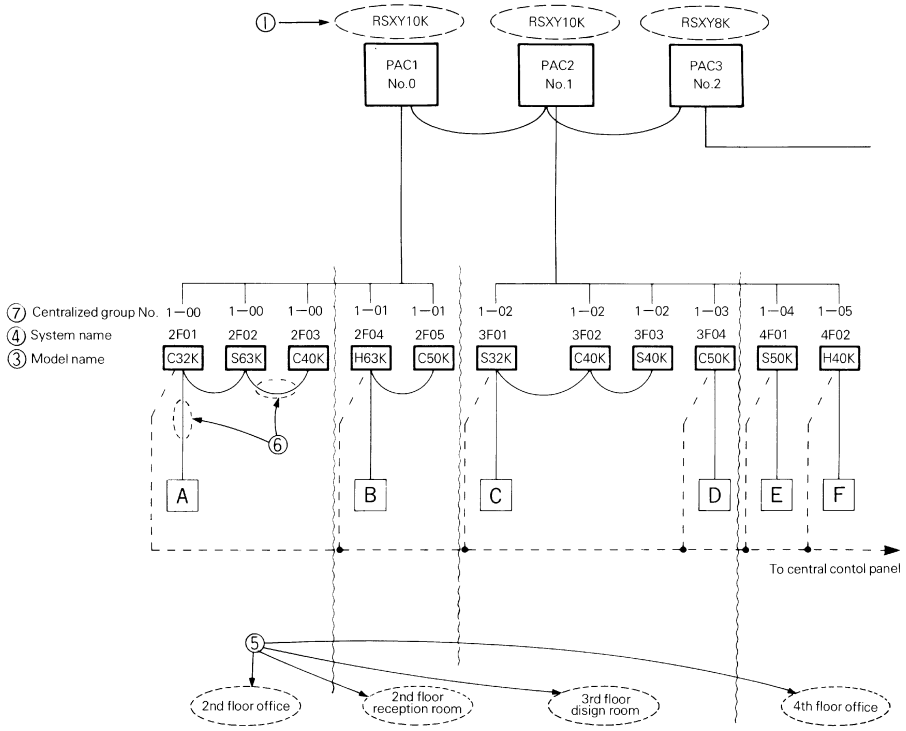
| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **Have the following "System List" and "Control Wiring System Diagram" been organized?** | | |

### [Example] System List

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

| Outdoor unit | | Indoor unit | | | | | |
|---|---|---|---|---|---|---|---|
| Model name (symbol) | Local setting | Model name | System name | Location to install | Remote control grouping | Centralized control group No. | Option Field setting, etc. |
| RSXY10K (PAC1) | Cooling/Heating change over Indoor<br>Low noise mode Individual<br>Sequential startup Provided<br>Defrosting Early<br>Sequential startup No. | FXYC32K | 2F01 | Office on 2nd floor | A | 1-00 | |
| | | FXYC63K | 2F02 | Office on 2nd floor | A | (1-00) | |
| | | FXYC40K | 2F03 | Office on 2nd floor | A | (1-00) | |
| | | FXYC63K | 2F04 | Reception on 2nd floor | B | 1-01 | |
| | | FXYC50K | 2F05 | Reception on 2nd floor | B | (1-01) | |
| RSXY10K (PAC2) | Cooling/Heating change over Indoor<br>Low noise Individual<br>Sequential startup Provided<br>Defrosting Early | FXYC32K | 3F01 | Design room on 3rd floor | C | 1-02 | |
| | | FXYC40K | 3F02 | Design room on 3rd floor | C | (1-02) | |
| | | FXYC40K | 3F03 | Design room on 3rd floor | C | (1-02) | |
| | | FXYC50K | 3F04 | Design room on 3rd floor | D | 1-03 | |
| | | | | | | | |

### [Example] Control Wiring System Diagram



# VRV PLUS Series

Only peculiar problems of Plus series are described in this chapter. As for installation of indoor unit and setting of switch, refrigerant piping and drain piping, control system relating with central remote control, etc. are the same as K series. Therefore, relevant sheet in the previous chapter can be selected and used for those of Plus series.

Check Date ／ ／

# (N) Switch setting for outdoor units

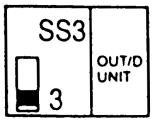
## (N-1) Switch setting meeting the number of outdoor units

| No. | Check Items | OK/NG | Checked by |
|---|---|---|---|
| 1 | **When the outdoor unit is equipped with function unit, has the number of outdoor units set through a switch in advance?** | | |

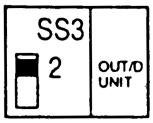
● Setting on function unit

BC3K (cooling only), BL3K (cooling and heating) and BR3K (heat recovery) are equipped with outdoor units number setting switch SS3. Set the number to the specified number using the SS3.

3-unit setting



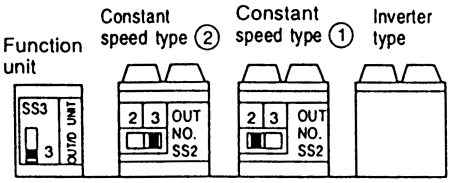

2-unit setting




● Setting on outdoor unit

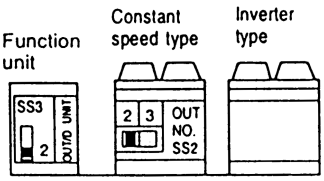
Constant speed unit is equipped with switch SS2. Set to “3” or “2” using the SS2.

3-unit setting




● The capacity of constant speed unit ① should be larger than that of ②

2-unit setting



Check Date ／ ／

# (O) Outdoor unit installation

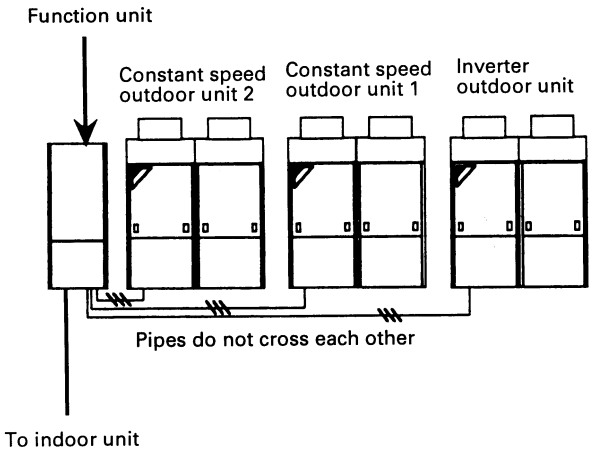
## (O-1) Installation order of individual outdoor unit (In case that a function unit is equipped)

| No. | Check Items | OK/NG | Date | Checked by |
|---|---|---|---|---|

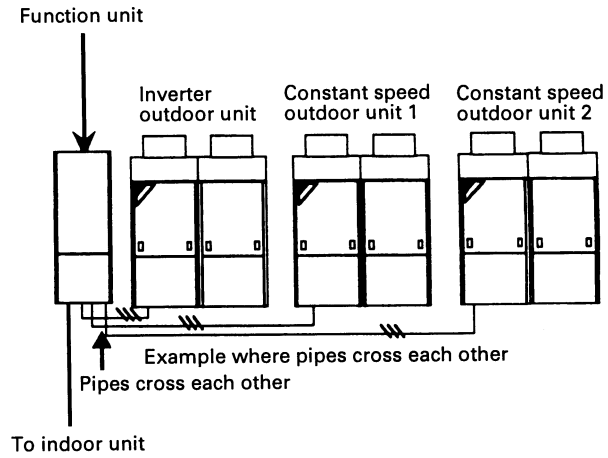
**Are installation order and piping connection with function unit of inverter unit and constant speed unit correct?**

The inverter unit should be installed at the furthest position from the function unit.

O




✕




Since the order of piping connection port in the function unit has been set, piping is forced to cross each other when the inverter unit installed close to the function unit.

Check Date ／ ／

# (P) Additional refrigerant charging

## (P-1) Calculation of additional refrigerant charging amount

| No. | Check Items | OK/NG | Date | Checked by |
|---|---|---|---|---|
| 1 | **Is the calculation conducted in terms of liquid pipes?** | | | |
| 2 | **Is the calculation formula based on individual model and series taken?** | | | |
| 3 | **Is not the pipe connection method wrong?**<br>**Has the additional refrigerant amount measured with a scale?** | | | |

Additional refrigerant charging amount “R” is calculated by the following formula.

$R = \sum (G \times L) + \alpha$

Here; R: Additional refrigerant charging amount (kg)
L : Length per each pipe diameter (m)
G: Refrigerant charging amount per 1-m pipe (kg/m)
α : Additional weight constant determined by each model (kg)

### “G XL” Calculation Table

| Pipe diameter (Outside diameter) | G (kg/m) | L (m) | G × L (kg) |
|---|---|---|---|
| 22.2 | 0.360 | | |
| 19.1 | 0.270 | | |
| 15.9 | 0.170 | | |
| 12.7 | 0.100 | | |
| 9.5 | 0.050 | | |
| 6.4 | 0.025 | | |

(★Fill out blank columns to calculate the refrigerant amount.) (Sub total) _____ (kg)

### α Calculation Table

α value of model with function unit

| Series | Function unit | α (kg/m) |
|---|---|---|
| Heat pump | BL2K | 2 |
| | BL3K | 3 |
| Cooling only | BC2K | 2 |
| | BC3K | 3 |
| Heat recovery | BR2K | 6 |
| | BR3K | 8 |

α value of model without function unit

| Series | Model | | α (kg) |
|---|---|---|---|
| Heat pump | RSXY | 16 | 0 |
| | | 18 | 0 |
| | | 20 | 0.8 |
| | | 24 | 0 |
| | | 26 | 0.6 |
| | | 28 | 0 |
| | | 30 | 0.3 |

Therefore, Additional refrigerant charge amount = ∑ (GXL): _____ (kg) + α : _____ (kg)

= _____ (kg)

# Appendix

## (1) Pressure unit conversion table

| Absolute pressure kg/cm$^2$ | Gauge pressure kg/cm$^2$G | Gauge pressure MPa (Mega Pascal) |
|---|---|---|
| 41 | 40 | 3.92 |
| 40 | 39 | 3.82 |
| 39 | 38 | 3.73 |
| 38 | 37 | 3.63 |
| 37 | 36 | 3.53 |
| 36 | 35 | 3.43 |
| 35 | 34 | 3.33 |
| 34 | 33 | 3.24 |
| 33 | 32 | 3.14 |
| 32 | 31 | 3.04 |
| 31 | 30 | 2.94 |
| 30 | 29 | 2.84 |
| 29 | 28 | 2.75 |
| 28 | 27 | 2.65 |
| 27 | 26 | 2.55 |
| 26 | 25 | 2.45 |
| 25 | 24 | 2.35 |
| 24 | 23 | 2.26 |
| 23 | 22 | 2.16 |
| 22 | 21 | 2.06 |
| 21 | 20 | 1.96 |
| 20 | 19 | 1.86 |
| 19 | 18 | 1.77 |
| 18 | 17 | 1.67 |
| 17 | 16 | 1.57 |
| 16 | 15 | 1.47 |
| 15 | 14 | 1.37 |
| 14 | 13 | 1.27 |
| 13 | 12 | 1.18 |
| 12 | 11 | 1.08 |
| 11 | 10 | 0.98 |
| 10 | 9 | 0.88 |
| 9 | 8 | 0.78 |
| 8 | 7 | 0.69 |
| 7 | 6 | 0.59 |
| 6 | 5 | 0.49 |
| 5 | 4 | 0.39 |
| 4 | 3 | 0.29 |
| 3 | 2 | 0.20 |
| 2 | 1 | 0.10 |
| 1 | 0 | 0 |
| 0 | -1 | -0.1 |

[Notes]

1)This table is prepared based on the ratio of **1** kg/cm$^2$ = **0.0981MPa** and rounded off to the second decimal place.

2)Gauge pressure originally equals to (Absolute pressure value) **- 1.033** kg/cm$^2$. However, (Absolute pressure value) **- 1.0** kg/cm$^2$ is applied for convenience's sake.

3)Further, in the air conditioning industry, the MPa is rounded off to the first decimal place for the practical use in many cases. This is not wrong in use and convenient to read since 1/10 of kg/cm$^2$ becomes equal to MPa, and does not cause any serious problem in the practical use.

4)This manual describes many examples making the kg/cm$^2$ value 1/10 to use as MPa. However, refer to this table when more accurate pressure conversion is required.

# (2) Simultaneous check list for plural-system.

| | |
|---|---|
| Project name: | |
| System name: | (Model name) Outdoor unit: Indoor unit: |
| | (Installation site) Outdoor unit: Indoor unit: |

| Item | Symbol | No. | Page | Preparation prior to operation | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | OK/NG | Date | Name | |
| A Arrangement with constructor | A-1 | 1 | 1 | | | | |
| | | 2 | | | | | |
| B Installation of indoor unit | B-1 | 1 | 2 | | | | |
| | B-2 | 1 | 3 | | | | |
| C Refrigerant piping work | C-1-(1) | 1 | 4 | | | | |
| | | 2 | | | | | |
| | | 3 | | | | | |
| | C-1-(2) | 1 | 5 | | | | |
| | C-2 | 1 | 6 | | | | |
| | | 2 | | | | | |
| | C-3 | 1 | 7 | | | | |
| | C-4 | 1 | 8 | | | | |
| | C-5 | 1 | | | | | |
| D Piping connection work | D-1-(1) | 1 | 9 | | | | |
| | | 2 | | | | | |
| | | 3 | | | | | |
| | D-1-(2) | 1 | 10 | | | | |
| | | 2 | | | | | |
| | D-2 | 1 | 11 | | | | |
| | D-3 | 1 | 12 | | | | |
| | | 2 | | | | | |
| | D-4-(1) | 1 | 13 | | | | |
| | | 2 | | | | | |
| | | 3 | | | | | |
| | D-4-(2) | 1 | 14 | | | | |
| E Drain piping | E-1 | 1 | 15 | | | | |
| | E-2 | 1 | 16 | | | | |
| | E-3 | 1 | 17 | | | | |
| | | 2 | | | | | |
| | E-4 | 1 | 18 | | | | |
| | E-5 | 1 | | | | | |
| F Duct work | F-1 | 1 | 19 | | | | |
| | | 2 | | | | | |
| | F-2 | 1 | 20 | | | | |
| | | 2 | | | | | |

| Item | Symbol | No. | Page | Preparation prior to operation | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | OK/NG | Date | Name | |
| G Electrical work | G-1 | 1 | 21 | | | | |
| | | 2 | | | | | |
| | G-2 | 1 | 22 | | | | |
| | G-3 | 1 | 23 | | | | |
| | G-4 | 1 | 24 | | | | |
| | G-5 | 1 | 25 | | | | |
| H Installation of outdoor unit | H-3 | 1 | 28 | | | | |
| | | 2 | | | | | |
| | H-4 | 1 | 29 | | | | |
| | | 2 | | | | | |
| I Air tight test | I-1 | 1 | 30 | | | | |
| | I-2 | 1 | 31 | | | | |
| J Vacuum drying | J-1 | 1 | 32 | | | | |
| K Refrigerant additional charging | K-1 | 1 | 33 | | | | |
| | | 2 | | | | | |
| L Installation of decoration panel | L-1 | 1 | 34 | | | | |
| M Air conditioning system line | M-1 | 1 | 35 | | | | |
| Plus series | | | | | | | |
| N Outdoor unit switch | N-1 | 1 | 37 | | | | |
| O Installation of outdoor unit | O-1 | 1 | 38 | | | | |
| P Refrigerant additional charging | P-1 | 1 | 39 | | | | |

# (3) VRV system operation check list

| | | | |
|---|---|---|---|
| Date of inspection | year | month | day |
| Date of supply | year | month | day |
| Date of delivery | year | month | day |

| User name | | System name | |
|---|---|---|---|

## Outdoor unit

| Series | | Division unit | Installation site | Model name | Serial No. |
|---|---|---|---|---|---|
| K, KA | | | | | |
| PLUS | No function unit (New KA series) | Master unit | | | |
| | | Slave unit | | | |
| | Function unit provided (Conventional K series) | Function unit | | | |
| | | Constant speed outdoor unit 1 | | | |
| | | Constant speed outdoor unit 2 | | | |
| | | Inverter unit | | | |

## Indoor unit

| No | Installation site | Model name | Serial No. | Group No. | No | Installation site | Model name | Serial No. | Group No. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 16 | | | | |
| 2 | | | | | 17 | | | | |
| 3 | | | | | 18 | | | | |
| 4 | | | | | 19 | | | | |
| 5 | | | | | 20 | | | | |
| 6 | | | | | 21 | | | | |
| 7 | | | | | 22 | | | | |
| 8 | | | | | 23 | | | | |
| 9 | | | | | 24 | | | | |
| 10 | | | | | 25 | | | | |
| 11 | | | | | 26 | | | | |
| 12 | | | | | 27 | | | | |
| 13 | | | | | 28 | | | | |
| 14 | | | | | 29 | | | | |
| 15 | | | | | 30 | | | | |

## Field setting

| Cool/heat mode switching (Setting mode 1) | | | Cool/heat mode switching setting (SS1) | | Low noise input | | sequential startup | |
|---|---|---|---|---|---|---|---|---|
| Individual | Unified master | Unified slave | Indoor | Outdoor | Provided | None | Provided | None |
| Tc | | | Te | | Defrost | | Refrigerant additional charging amount | |
| Normal | High | Low | Normal | High | Low | Normal | High | Low | kg |

Company name Inspector

System name

## ■ Prior to power ON

| | Check item | Check method | Standard (Guide line) | Actual measurement | Judgement |
|---|---|---|---|---|---|
| | Breaker capacity | Visual check | Specified capacity | OK/NG | |
| Function unit | Refrigerant piping line | With gas leakage detector | No leakage | OK/NG | |
| Function unit | Terminal connection section | With driver, etc. | No loosening | OK/NG | |
| INV outdoor unit | Refrigerant piping line | With gas leakage detector | No leakage | OK/NG | |
| INV outdoor unit | Heat exchanger | Visual check | No clogging, no damage | OK/NG | |
| INV outdoor unit | Terminal connection section | With driver, etc. | No loosening | OK/NG | |
| INV outdoor unit | Insulation of fan motor | with 500 V megger | 1 MΩ or more | MΩ | |
| INV outdoor unit | Insulation of compressor | with 500 V megger | 1 MΩ or more | MΩ \| MΩ | |
| INV outdoor unit | Installation condition | Visual check | No air short circuit, etc. | OK/NG | |
| STD outdoor unit ① | Refrigerant piping line | With gas leakage detector | No leakage | OK/NG | |
| STD outdoor unit ① | Heat exchanger | Visual check | No clogging, no damage | OK/NG | |
| STD outdoor unit ① | Terminal connection section | With driver, etc. | No loosening | OK/NG | |
| STD outdoor unit ① | Insulation of fan motor | with 500 V megger | 1 MΩ or more | MΩ | |
| STD outdoor unit ① | Insulation of compressor | with 500 V megger | 1 MΩ or more | MΩ \| MΩ | |
| STD outdoor unit ① | Installation condition | Visual check | No air short circuit, etc. | OK/NG | |
| STD outdoor unit ② | Refrigerant piping line | With gas leakage detector | No leakage | OK/NG | |
| STD outdoor unit ② | Heat exchanger | Visual check | No clogging, no damage | OK/NG | |
| STD outdoor unit ② | Terminal connection section | With driver, etc. | No loosening | OK/NG | |
| STD outdoor unit ② | Insulation of fan motor | with 500 V megger | 1 MΩ or more | MΩ | |
| STD outdoor unit ② | Insulation of compressor | with 500 V megger | 1 MΩ or more | MΩ \| MΩ | |
| STD outdoor unit ② | Installation condition | Visual check | No air short circuit, etc. | OK/NG | |
| Indoor unit | Refrigerant piping line | With gas leakage detector | No leakage | Room 1 OK/NG, Room 2 OK/NG, Room 3 OK/NG, Room 4 OK/NG, Room 5 OK/NG<br>Room 6 OK/NG, Room 7 OK/NG, Room 8 OK/NG, Room 9 OK/NG, Room 10 OK/NG<br>Room 11 OK/NG, Room 12 OK/NG, Room 13 OK/NG, Room 14 OK/NG, Room 15 OK/NG<br>Room 16 OK/NG, Room 17 OK/NG, Room 18 OK/NG, Room 19 OK/NG, Room 20 OK/NG<br>Room 21 OK/NG, Room 22 OK/NG, Room 23 OK/NG, Room 24 OK/NG, Room 25 OK/NG<br>Room 26 OK/NG, Room 27 OK/NG, Room 28 OK/NG, Room 29 OK/NG, Room 30 OK/NG | |
| Indoor unit | Air filter | Visual check | No clogging, no damage | Room 1 OK/NG, Room 2 OK/NG, Room 3 OK/NG, Room 4 OK/NG, Room 5 OK/NG<br>Room 6 OK/NG, Room 7 OK/NG, Room 8 OK/NG, Room 9 OK/NG, Room 10 OK/NG<br>Room 11 OK/NG, Room 12 OK/NG, Room 13 OK/NG, Room 14 OK/NG, Room 15 OK/NG<br>Room 16 OK/NG, Room 17 OK/NG, Room 18 OK/NG, Room 19 OK/NG, Room 20 OK/NG<br>Room 21 OK/NG, Room 22 OK/NG, Room 23 OK/NG, Room 24 OK/NG, Room 25 OK/NG<br>Room 26 OK/NG, Room 27 OK/NG, Room 28 OK/NG, Room 29 OK/NG, Room 30 OK/NG | |
| Indoor unit | Heat exchanger | Visual check | No clogging, no damage | Room 1 OK/NG, Room 2 OK/NG, Room 3 OK/NG, Room 4 OK/NG, Room 5 OK/NG<br>Room 6 OK/NG, Room 7 OK/NG, Room 8 OK/NG, Room 9 OK/NG, Room 10 OK/NG<br>Room 11 OK/NG, Room 12 OK/NG, Room 13 OK/NG, Room 14 OK/NG, Room 15 OK/NG<br>Room 16 OK/NG, Room 17 OK/NG, Room 18 OK/NG, Room 19 OK/NG, Room 20 OK/NG<br>Room 21 OK/NG, Room 22 OK/NG, Room 23 OK/NG, Room 24 OK/NG, Room 25 OK/NG<br>Room 26 OK/NG, Room 27 OK/NG, Room 28 OK/NG, Room 29 OK/NG, Room 30 OK/NG | |
| Indoor unit | Insulation of fan motor | With 500 V megger | 1 MΩ or more | Room 1 MΩ, Room 2 MΩ, Room 3 MΩ, Room 4 MΩ, Room 5 MΩ<br>Room 6 MΩ, Room 7 MΩ, Room 8 MΩ, Room 9 MΩ, Room 10 MΩ<br>Room 11 MΩ, Room 12 MΩ, Room 13 MΩ, Room 14 MΩ, Room 15 MΩ<br>Room 16 MΩ, Room 17 MΩ, Room 18 MΩ, Room 19 MΩ, Room 20 MΩ<br>Room 21 MΩ, Room 22 MΩ, Room 23 MΩ, Room 24 MΩ, Room 25 MΩ<br>Room 26 MΩ, Room 27 MΩ, Room 28 MΩ, Room 29 MΩ, Room 30 MΩ | |
| Indoor unit | Insulation of aux. heater | With 500 V megger | 1 MΩ or more | Room 1 MΩ, Room 2 MΩ, Room 3 MΩ, Room 4 MΩ, Room 5 MΩ<br>Room 6 MΩ, Room 7 MΩ, Room 8 MΩ, Room 9 MΩ, Room 10 MΩ<br>Room 11 MΩ, Room 12 MΩ, Room 13 MΩ, Room 14 MΩ, Room 15 MΩ<br>Room 16 MΩ, Room 17 MΩ, Room 18 MΩ, Room 19 MΩ, Room 20 MΩ<br>Room 21 MΩ, Room 22 MΩ, Room 23 MΩ, Room 24 MΩ, Room 25 MΩ<br>Room 26 MΩ, Room 27 MΩ, Room 28 MΩ, Room 29 MΩ, Room 30 MΩ | |
| Indoor unit | Installation condition | Visual check | No air short circuit, etc. | Room 1 OK/NG, Room 2O K/NG, Room 3 OK/NG, Room 4 OK/NG, Room 5 OK/NG<br>Room 6 OK/NG, Room 7 OK/NG, Room 8 OK/NG, Room 9 OK/NG, Room 10 OK/NG<br>Room 11 OK/NG, Room 12 OK/NG, Room 13 OK/NG, Room 14 OK/NG, Room 15 OK/NG<br>Room 16 OK/NG, Room 17 OK/NG, Room 18 OK/NG, Room 19 OK/NG, Room 20 OK/NG<br>Room 21 OK/NG, Room 22 OK/NG, Room 23 OK/NG, Room 24 OK/NG, Room 25 OK/NG<br>Room 26 OK/NG, Room 27 OK/NG, Room 28 OK/NG, Room 29 OK/NG, Room 30 OK/NG | |

## ■ During operation

| | Check item | Check method | Standard (Guide line) | Actual measurement | | | | | | Judgement |
|---|---|---|---|---|---|---|---|---|---|---|
| Function unit | Power supply voltage | With tester | Rated voltage ± 10 % | V | | | | | | |
| INV outdoor unit | Main power voltage | With tester | Rated voltage ± 10 % | R-S V | | S-T V | | R-T V | | |
| | Operation circuit voltage | With tester | Rated voltage ± 10 % | V | | | | | | |
| | Fan rotating direction | Visual check | Rotates in normal direction | OK/NG | | | | | | |
| | Fan noise, vibration | Acoustic check, etc. | No abnormal noise nor vibration | | | | | | | |
| | Fan operation current | With clamp meter | | A | | | | | | |
| | Suction air temperature | Thermometer | Temperature difference, when cooling: 9 to 11 ˚C | ˚C | | | | | | |
| | Discharge air temperature | Thermometer | when heating: 2 to 3.5 ˚C | ˚C | | | | | | |
| | Compressor suction pressure | Pressure gauge | | INV | MPa★ | STD | MPa★ | | | |
| | Compressor discharge pressure | Pressure gauge | | INV | MPa★ | STD | MPa★ | | | |
| | Compressor operating current | With clamp meter | Difference between phases: within 1 A | INV | A | STD | A | | | |
| | Compressor operation frequency | With clamp meter | | Hz | | | | | | |
| | Suction pipe temperature | Thermometer | 3~15˚C | INV | ˚C | STD | ˚C | | | |
| | Discharge pipe temperature | Thermometer | 85~105˚C | INV | ˚C | STD | ˚C | | | |
| | Crank case heater | Touching check | Becomes warm | INV | OK/NG | STD | OK/NG | | | |
| STD outdoor unit ① | Main power voltage | With tester | Rated voltage ± 10 % | R-S V | | S-T V | | R-T V | | |
| | Operation circuit voltage | With tester | Rated voltage ± 10 % | V | | | | | | |
| | Fan rotating direction | Visual check | Rotates in normal direction | OK/NG | | | | | | |
| | Fan noise, vibration | Acoustic check, etc. | No abnormal noise nor vibration | | | | | | | |
| | Fan operation current | With clamp meter | | A | | | | | | |
| | Suction air temperature | Thermometer | Temperature difference, when cooling: 9 to 11 ˚C | ˚C | | | | | | |
| | Discharge air temperature | Thermometer | when heating: 2 to 3.5 ˚C | ˚C | | | | | | |
| | Compressor suction pressure | Pressure gauge | | STD1 | MPa | STD2 | MPa | | | |
| | Compressor discharge pressure | Pressure gauge | | STD1 | MPa | STD2 | MPa | | | |
| | Compressor operating current | With clamp meter | Difference between phases: within 1 A | STD1 | A | STD2 | A | | | |
| | Suction pipe temperature | Thermometer | 3~15˚C | STD1 | ˚C | STD2 | ˚C | | | |
| | Discharge pipe temperature | Thermometer | 85~105˚C | STD1 | ˚C | STD2 | ˚C | | | |
| | Crank case heater | Touching check | Becomes warm | STD1 | OK/NG | STD2 | OK/NG | | | |
| STD outdoor unit ② | Main power voltage | With tester | Rated voltage ± 10 % | R-S V | | S-T V | | R-T V | | |
| | Operation circuit voltage | With tester | Rated voltage ± 10 % | V | | | | | | |
| | Fan rotating direction | Visual check | Rotates in normal direction | OK/NG | | | | | | |
| | Fan noise, vibration | Acoustic check, etc. | No abnormal noise nor vibration | | | | | | | |
| | Fan operation current | With clamp meter | | A | | | | | | |
| | Suction air temperature | Thermometer | Temperature difference, when cooling: 9 to 11 ˚C | ˚C | | | | | | |
| | Discharge air temperature | Thermometer | when heating: 2 to 3.5 ˚C | ˚C | | | | | | |
| | Compressor suction pressure | Pressure gauge | | STD1 | MPa | STD2 | MPa | | | |
| | Compressor discharge pressure | Pressure gauge | | STD1 | MPa | STD2 | MPa | | | |
| | Compressor operating current | With clamp meter | Difference between phases: within 1 A | STD1 | A | STD2 | A | | | |
| | Suction pipe temperature | Thermometer | 3~15˚C | STD1 | ˚C | STD2 | ˚C | | | |
| | Discharge pipe temperature | Thermometer | 85~105˚C | STD1 | ˚C | STD2 | ˚C | | | |
| | Crank case heater | Touching check | Becomes warm | STD1 | OK/NG | STD2 | OK/NG | | | |

★ For unit conversion of pressure, refer to the annex.

System name

## ■ During operation

| | Check item | Check method | Standard (Guide line) | Actual measurement | | | | | Judgement |
|---|---|---|---|---|---|---|---|---|---|
| Indoor unit | Power supply voltage | With tester | Rated voltage ± 10 % | Room 1 V | Room 2 V | Room 3 V | Room 4 V | Room 5 V | |
| | | | | Room 6 V | Room 7 V | Room 8 V | Room 9 V | Room 10 V | |
| | | | | Room 11 V | Room 12 V | Room 13 V | Room 14 V | Room 15 V | |
| | | | | Room 16 V | Room 17 V | Room 18 V | Room 19 V | Room 20 V | |
| | | | | Room 21 V | Room 22 V | Room 23 V | Room 24 V | Room 25 V | |
| | | | | Room 26 V | Room 27 V | Room 28 V | Room 29 V | Room 30 V | |
| | Suction air temperature | Thermometer | Temperature difference: when cooling, 9 to 13 ˚C when heating, 15 to 20 ˚C | Room 1 ˚C | Room 2 ˚C | Room 3 ˚C | Room 4 ˚C | Room 5 ˚C | |
| | | | | Room 6 ˚C | Room 7 ˚C | Room 8 ˚C | Room 9 ˚C | Room 10 ˚C | |
| | | | | Room 11 ˚C | Room 12 ˚C | Room 13 ˚C | Room 14 ˚C | Room 15 ˚C | |
| | | | | Room 16 ˚C | Room 17 ˚C | Room 18 ˚C | Room 19 ˚C | Room 20 ˚C | |
| | | | | Room 21 ˚C | Room 22 ˚C | Room 23 ˚C | Room 24 ˚C | Room 25 ˚C | |
| | | | | Room 26 ˚C | Room 27 ˚C | Room 28 ˚C | Room 29 ˚C | Room 30 ˚C | |
| | Discharge air temperature | | | Room 1 ˚C | Room 2 ˚C | Room 3 ˚C | Room 4 ˚C | Room 5 ˚C | |
| | | | | Room 6 ˚C | Room 7 ˚C | Room 8 ˚C | Room 9 ˚C | Room 10 ˚C | |
| | | | | Room 11 ˚C | Room 12 ˚C | Room 13 ˚C | Room 14 ˚C | Room 15 ˚C | |
| | | | | Room 16 ˚C | Room 17 ˚C | Room 18 ˚C | Room 19 ˚C | Room 20 ˚C | |
| | | | | Room 21 ˚C | Room 22 ˚C | Room 23 ˚C | Room 24 ˚C | Room 25 ˚C | |
| | | | | Room 26 ˚C | Room 27 ˚C | Room 28 ˚C | Room 29 ˚C | Room 30 ˚C | |
| | Fan rotation direction | Visual check | Rotates in normal direction | Room 1 OK/NG | Room 2 OK/NG | Room 3 OK/NG | Room 4 OK/NG | Room 5 OK/NG | |
| | | | | Room 6 OK/NG | Room 7 OK/NG | Room 8 OK/NG | Room 9 OK/NG | Room 10 OK/NG | |
| | | | | Room 11 OK/NG | Room 12 OK/NG | Room 13 OK/NG | Room 14 OK/NG | Room 15 OK/NG | |
| | | | | Room 16 OK/NG | Room 17 OK/NG | Room 18 OK/NG | Room 19 OK/NG | Room 20 OK/NG | |
| | | | | Room 21 OK/NG | Room 22 OK/NG | Room 23 OK/NG | Room 24 OK/NG | Room 25 OK/NG | |
| | | | | Room 26 OK/NG | Room 27 OK/NG | Room 28 OK/NG | Room 29 OK/NG | Room 30 OK/NG | |
| | Fan noise, vibration | Acoustic check, etc. | No abnormal noise nor vibration | Room 1 OK/NG | Room 2 OK/NG | Room 3 OK/NG | Room 4 OK/NG | Room 5 OK/NG | |
| | | | | Room 6 OK/NG | Room 7 OK/NG | Room 8 OK/NG | Room 9 OK/NG | Room 10 OK/NG | |
| | | | | Room 11 OK/NG | Room 12 OK/NG | Room 13 OK/NG | Room 14 OK/NG | Room 15 OK/NG | |
| | | | | Room 16 OK/NG | Room 17 OK/NG | Room 18 OK/NG | Room 19 OK/NG | Room 20 OK/NG | |
| | | | | Room 21 OK/NG | Room 22 OK/NG | Room 23 OK/NG | Room 24 OK/NG | Room 25 OK/NG | |
| | | | | Room 26 OK/NG | Room 27 OK/NG | Room 28 OK/NG | Room 29 OK/NG | Room 30 OK/NG | |
| | Fan operation current | With clamp meter | | Room 1 A | Room 2 A | Room 3 A | Room 4 A | Room 5 A | |
| | | | | Room 6 A | Room 7 A | Room 8 A | Room 9 A | Room 10 A | |
| | | | | Room 11 A | Room 12 A | Room 13 A | Room 14 A | Room 15 A | |
| | | | | Room 16 A | Room 17 A | Room 18 A | Room 19 A | Room 20 A | |
| | | | | Room 20 A | Room 22 A | Room 23 A | Room 24 A | Room 25 A | |
| | | | | Room 26 A | Room 27 A | Room 28 A | Room 29 A | Room 30 A | |