

VRV SYSTEM

INVERTER K Series PLUS Series

The Compiled Sheets of Installation Work Inspection



Большая библиотека технической документации
<http://splitoff.ru/tehn-doc.html>
 каталоги, инструкции, сервисные мануалы, схемы.

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

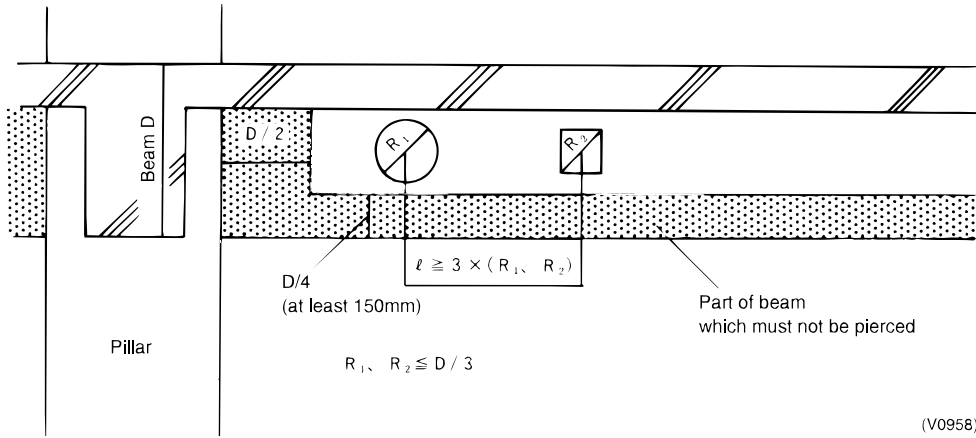
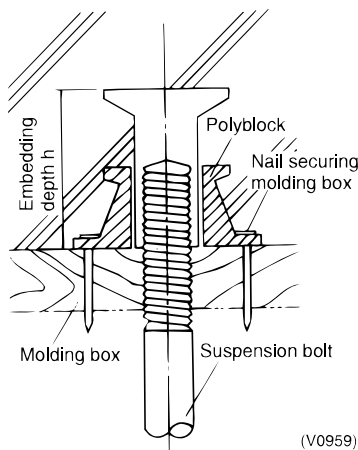
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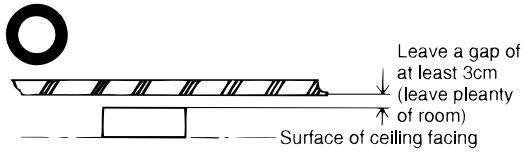
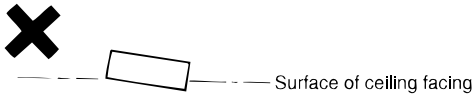
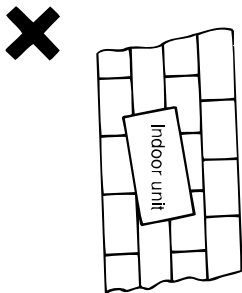
(A) Arrangement with constructor

(A-1) Sleeve & insert work

No.	Check Items	OK/NG	Checked by
1	<p>Is the position of sleeve confirmed and is it examined to require providing any reinforcement?</p> <ul style="list-style-type: none"> ● 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. 		
2	<p>Is the position of insert discussed?</p> <ul style="list-style-type: none"> ● 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. 		

(B) Indoor unit installation

(B-1) Selection of installation location

No.	Check Items	OK/NG	Checked by
1	<p>Is there any gradient or distortion with the unit installation position?</p> <ul style="list-style-type: none"> ● Leave a gap at least 3cm from the surface of ceiling facing.  ● Maintain the gradient of the horizontal surface within $\pm 1^\circ$.  ● Align to the joint line of ceiling materials.  <p>(V0961)</p>		

(B) Indoor Unit installation

(B-2) Required space around indoor unit

No.	Check Items	OK/NG	Checked by
1	<p>Is the following standard observed for each model?</p> <p>Indoor unit Service space required for indoor unit Unit (mm)</p> <ul style="list-style-type: none"> ● Ceiling mounted cassette type (Double flow) <ul style="list-style-type: none"> ● Ceiling mounted super-cassette type (Multi-flow) ● Ceiling mounted cassette corner type <ul style="list-style-type: none"> ● Ceiling mounted type ● Ceiling mounted duct type <ul style="list-style-type: none"> ● Ceiling mounted low thickness type ● Ceiling suspended type <ul style="list-style-type: none"> ● Floor mounted type ● Wall mounted type <p>Note): Dimensions in above figures show the minimum value. Ensure these dimensions for the minimum.</p>		

Is the following standard observed for each model?

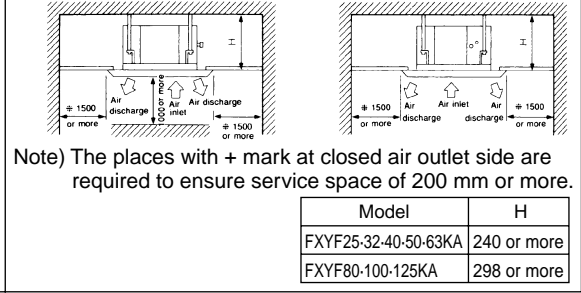
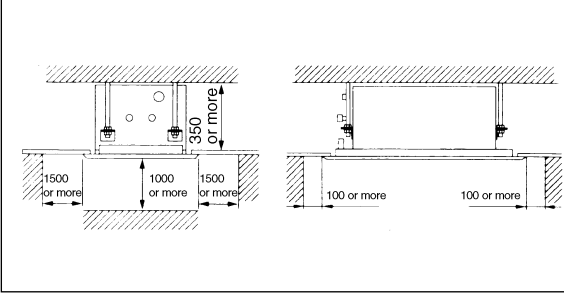
Indoor unit

Service space required for indoor unit

Unit (mm)

● Ceiling mounted cassette type (Double flow)

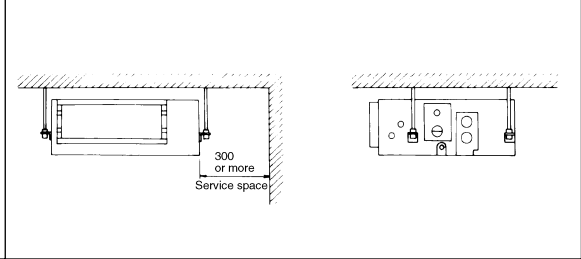
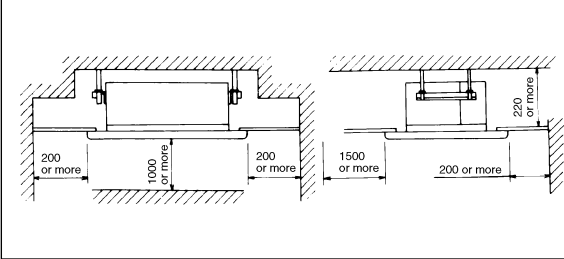
● Ceiling mounted super-cassette type (Multi-flow)



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

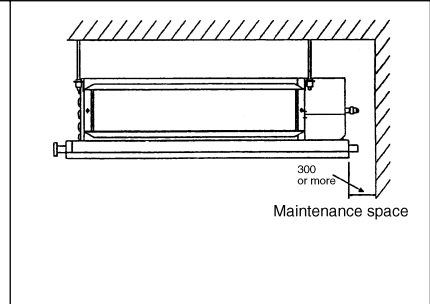
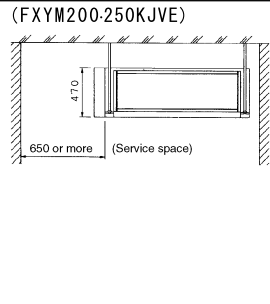
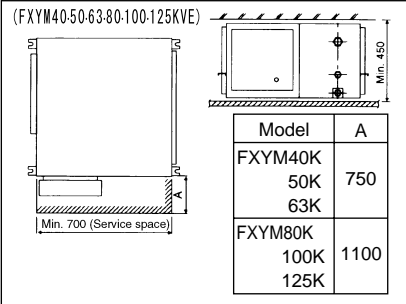
● Ceiling mounted cassette corner type

● Ceiling mounted type



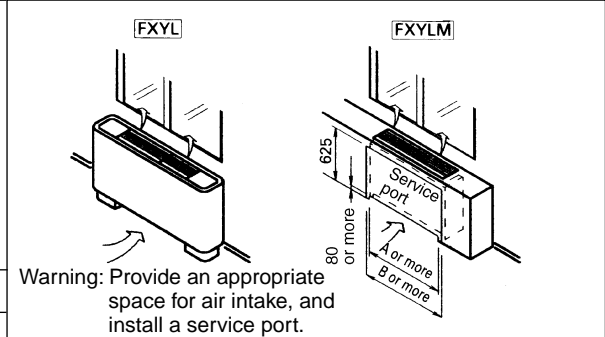
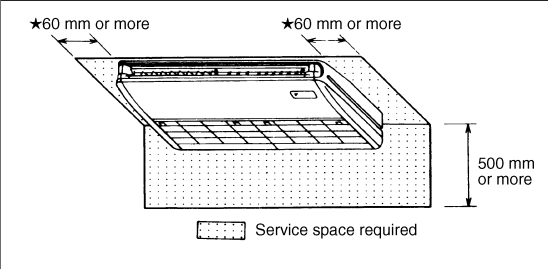
● Ceiling mounted duct type

● Ceiling mounted low thickness type

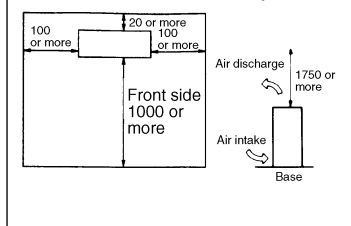
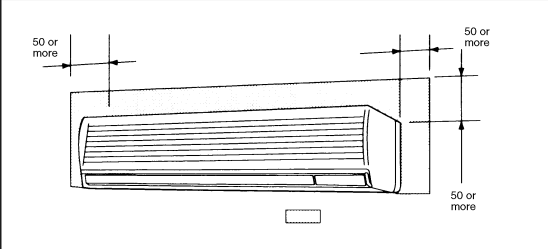


● Ceiling suspended type

● Floor mounted type



● Wall mounted type

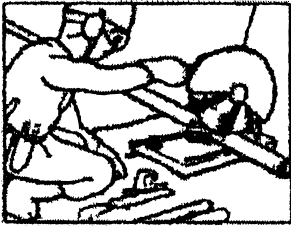
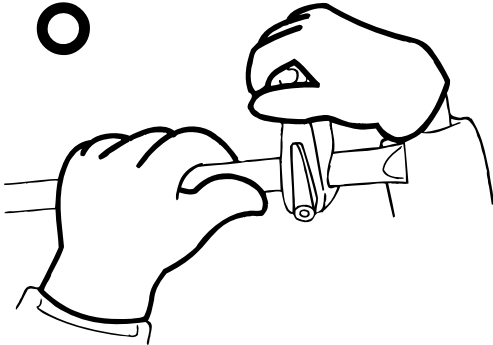
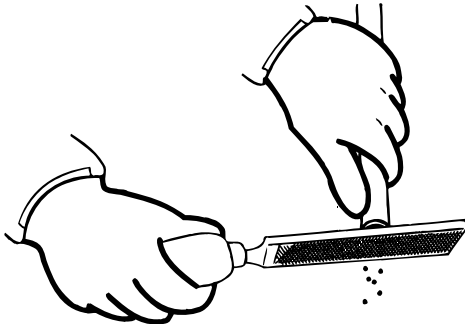
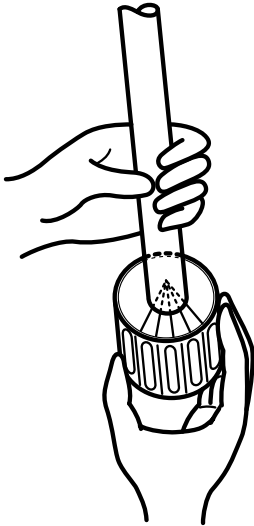


Model	A	B
FXYL20KJ	570	1,030
FXYL25KJ	570	1,030
FXYL32KJ	710	1,170
FXYL40KJ	710	1,170
FXYL50KJ	990	1,450
FXYL63KJ	990	1,450

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

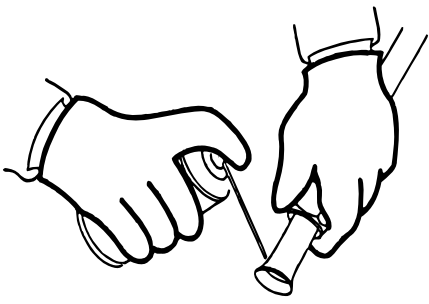
(C) Refrigerant piping work

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

No.	Check Items	OK/NG	Checked by
1	<p data-bbox="256 367 807 416">Is the pipe cutter used correctly?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p data-bbox="384 488 435 539">✘</p>  <p data-bbox="261 824 544 887">Do not use high speed motor driven cutter, etc.</p> </div> <div style="text-align: center;"> <p data-bbox="748 488 799 539">○</p>  </div> </div>		
2	<p data-bbox="256 956 831 1005">Is the cut face deburred with a file?</p> <ul style="list-style-type: none"> <li data-bbox="325 1099 612 1162">● Deburr and flatten the cut face with a file. <li data-bbox="325 1205 644 1301">● In this work, make the cut face down to prevent chips from entering. <div style="text-align: right;">  </div>		
3	<p data-bbox="256 1489 938 1538">Is the inside burr removed with reamer?</p> <ul style="list-style-type: none"> <li data-bbox="325 1682 612 1778">● Check if chips remain inside pipe after removing inside burrs. <div style="text-align: right;">  </div>		

(C) Refrigerant piping work

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

No.	Check Items	OK/NG	Checked by
1	<p>Is the lubricant applied after finishing of cut surface?</p> <ul style="list-style-type: none"> ● Apply refrigerating machine oil on <u>both surfaces</u> of flare. <p>R-22 ----- SUNISO R-407C --- Synthetic oil</p> 		

(C) Refrigerant piping work

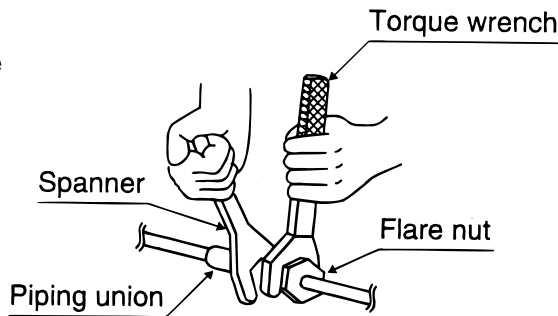
(C-2) Flare connection

No.	Check Items	OK/NG	Checked by
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1

Is the flare connection tightened with proper tightening torque by using torque wrench?

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



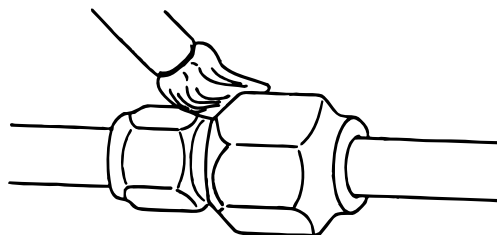
Pipe gauge	Tightening torque
φ 9.5	3270 – 3990 N · cm (333 – 407 kgf · cm)
φ 12.7	4950 – 6030 N · cm (504 – 616 kgf · cm)
φ 19.1	9720 – 11860 N · cm (990 – 1210 kgf · cm)

2

Is gas leakage checked?

After piping is filled with N₂ gas at the pressure of 2.8 MPa[★], apply

- Soap water
- Foaming spray on the market onto the joint sections.

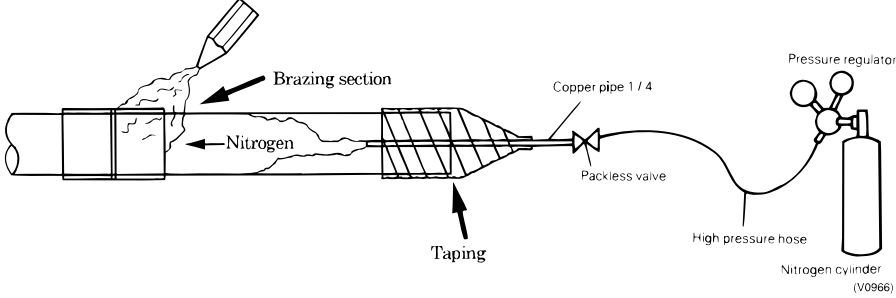
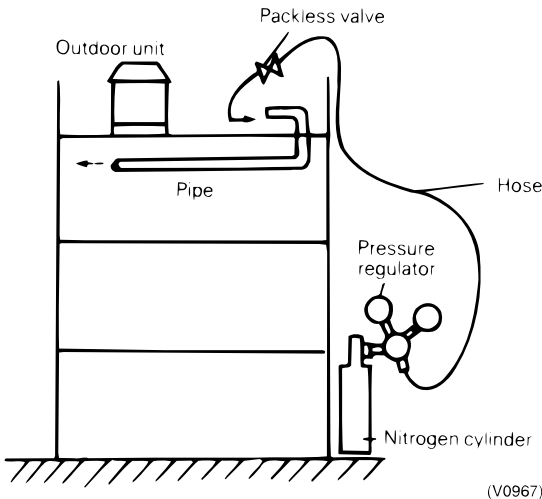


The connection is OK'd if any bubble will not be generated.

★ See Appendix for the unit conversion.

(C) Refrigerant piping work

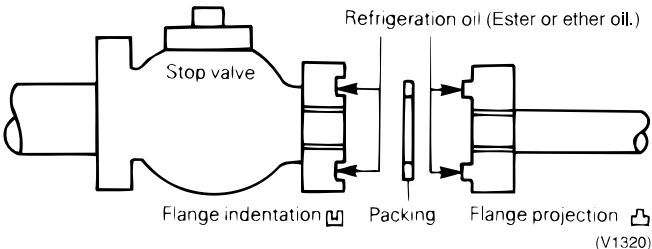
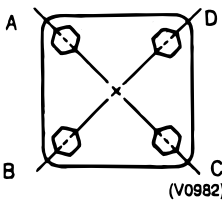
(C-3) Brazing and Nitrogen gas replacement method

No.	Check Items	OK/NG	Checked by
1	<div data-bbox="256 367 1043 461" style="border: 1px solid black; padding: 5px;"> <p>Is the Nitrogen gas replacement method used for brazing work?</p> </div> <ul style="list-style-type: none"> ● The air inside pipe should be replaced with N₂ gas before brazing, otherwise, oxide film may be generated inside the pipe.  <ul style="list-style-type: none"> ● Be sure to have a gas pressure regulator. (Set gas pressure at approx. 20 KPa* during brazing work.) ● N₂ gas replacement method can be conducted even for high rise building so long as the N₂ gas hose reaches the piping of the system. 		

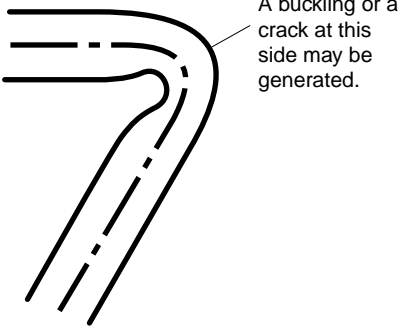
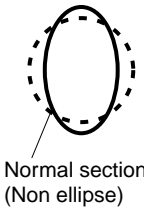
★ See Appendix for the unit conversion.

(C) Refrigerant piping work

(C-4) Flange connecting work

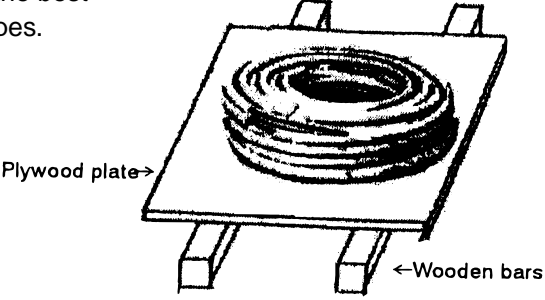
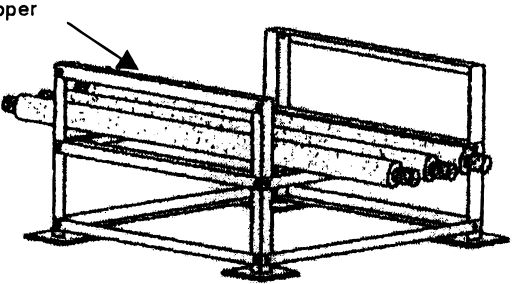
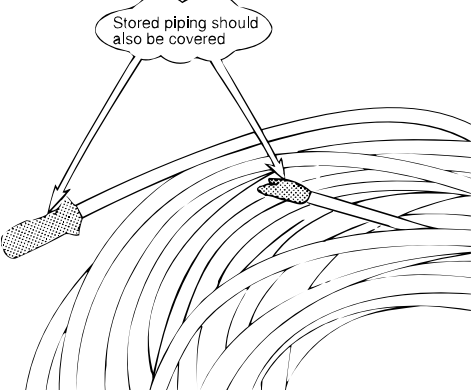
No.	Check Items	OK/NG	Checked by																																								
1	<p>Is flange used correctly?</p> <ul style="list-style-type: none"> ● Clean the flange surface, apply refrigerating machine oil*, and insert packing. <ul style="list-style-type: none"> ★ R-22-----SUNISO(mineral oil) R-407c-----Synthetic oil  <ul style="list-style-type: none"> ● Tighten the flange bolts in diagonal with specified torque. <p>[Example] Order:A→C→B→D</p>  <p>ISO hexagonal bolt</p> <table border="1" data-bbox="311 1265 1181 1467"> <thead> <tr> <th rowspan="2">Size</th> <th rowspan="2">Class</th> <th colspan="2">5.8(5T)</th> <th colspan="2">10.9(10T)</th> </tr> <tr> <th>kgf-cm ±15%</th> <th>N-m ±15%</th> <th>kgf-cm ±15%</th> <th>N-m ±15%</th> </tr> </thead> <tbody> <tr> <td>M8</td> <td></td> <td>125</td> <td>1230</td> <td>302</td> <td>2960</td> </tr> <tr> <td>M10</td> <td></td> <td>257</td> <td>2520</td> <td>620</td> <td>6080</td> </tr> <tr> <td>M12</td> <td></td> <td>436</td> <td>4280</td> <td>1,050</td> <td>10,300</td> </tr> <tr> <td>M16</td> <td></td> <td>1,030</td> <td>10,100</td> <td>2,480</td> <td>24,300</td> </tr> <tr> <td>M20</td> <td></td> <td>2,050</td> <td>20,100</td> <td>4,950</td> <td>48,500</td> </tr> </tbody> </table>	Size	Class	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		
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M16		1,030	10,100	2,480	24,300																																						
M20		2,050	20,100	4,950	48,500																																						

(C-5) Pipe bending work

1	<p>Is not the pipe section deformed?</p> <ul style="list-style-type: none"> ● Be careful not to deform pipe due to bending work.  <p>Pipe may be deformed even it doesn't buckle.</p> 		
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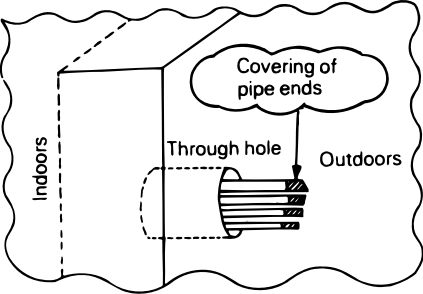
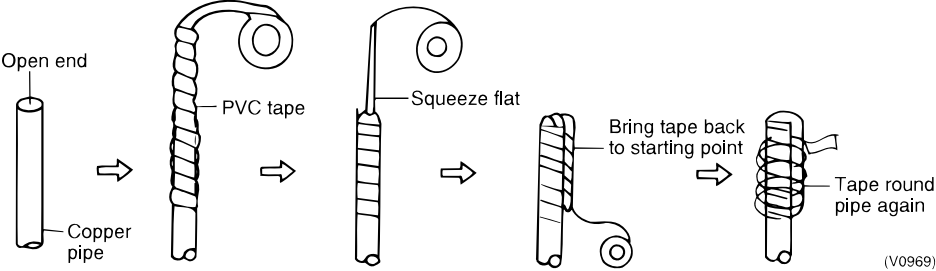
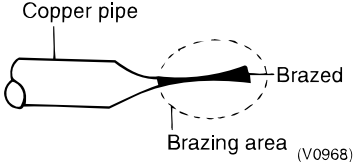
(D) Refrigerant pipe connection

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

No.	Check Items	OK/NG	Checked by
1	<p>Is pipes stored properly? (For coiled pipe)</p> <ul style="list-style-type: none"> ● Making a table with plywood is the best way for storage of refrigerant pipes. ● 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.  <p>Plywood plate →</p> <p>← Wooden bars</p>		
2	<p>Is pipes stored properly? (For straight pipe)</p> <ul style="list-style-type: none"> ● Install stop bars at both sides of the pipe rack to prevent pipe from falling down.  <p>Stopper</p> <p>Assembly rack</p>		
3	<p>Are pipe ends put protection covers?</p> <ul style="list-style-type: none"> ● 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.  <p>Stored piping should also be covered</p> <p>(V0970)</p>		

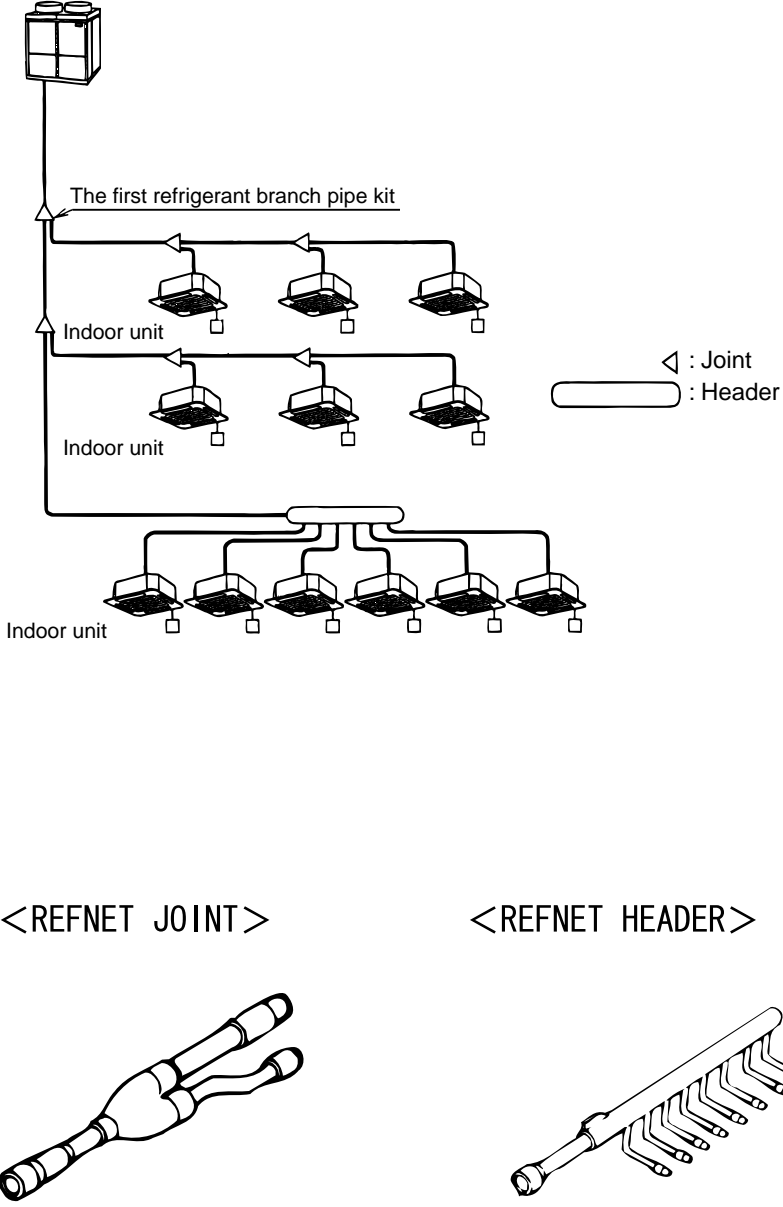
(D) Refrigerant pipe connection

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

No.	Check Items	OK/NG	Checked by
1	<p>Are pipe ends put protection covers when installing pipes through wall?</p> <ul style="list-style-type: none"> ● 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.  <ul style="list-style-type: none"> ● Pipe end protection with vinyl tape 		
2	<p>Is protection to close pipe end during piping work conducted?</p> <ul style="list-style-type: none"> ● 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. 		

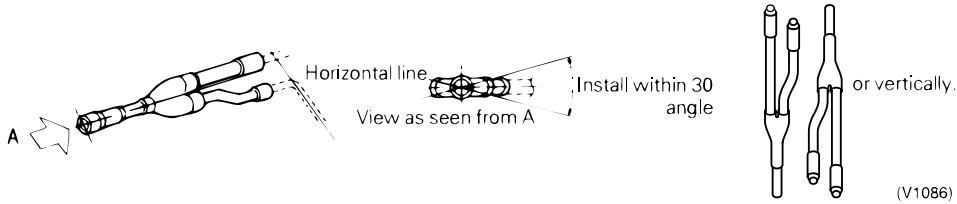
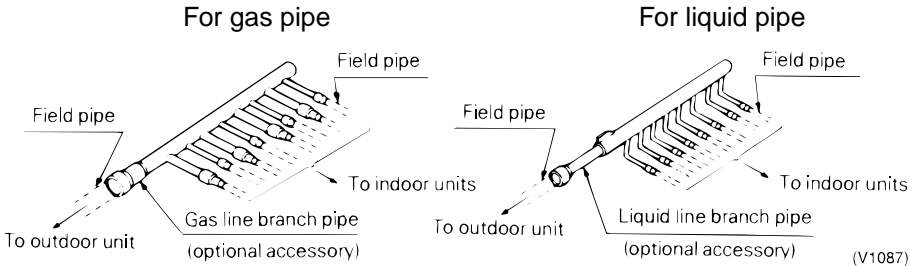
(D) Refrigerant pipe connection

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

No.	Check Items	OK/NG	Checked by
1	<p>Is REFNET joint or header used correctly?</p> <ul style="list-style-type: none"> REFNET joint can not be installed in the down stream of the header.  <p><REFNET JOINT></p> <p><REFNET HEADER></p>		

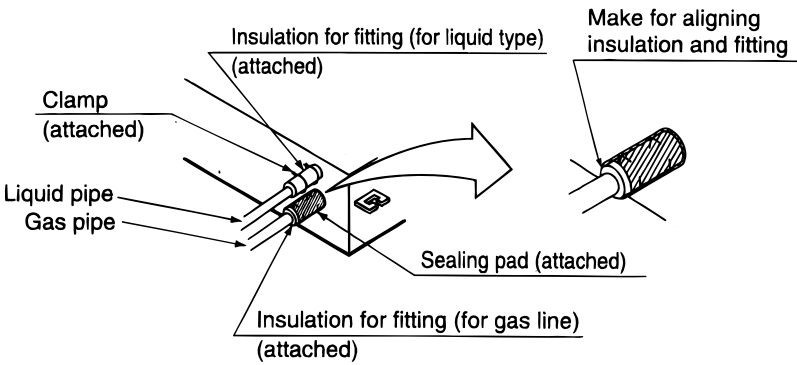
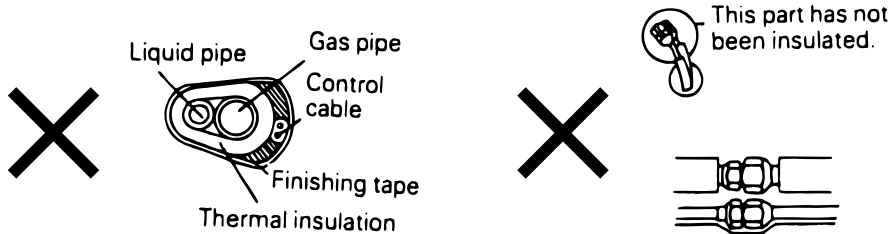
(D) Refrigerant pipe connection

(D-3) Installing REFNET joint and header

No.	Check Items	OK/NG	Checked by
1	<p>Is the position of joint connection is proper?</p> <ul style="list-style-type: none"> ● When installing refrigerant pipes horizontally, the refrigerant pipes can be inclined within 30° up and down. ● When installing refrigerant pipes vertically, the refrigerant pipes should not be inclined, and must be installed vertically. 		
2	<p>Is the position of header connection proper?</p> <ul style="list-style-type: none"> ● Install REFNET header horizontally. Do not allow installing vertically. 		

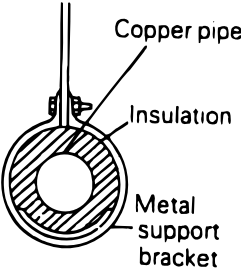
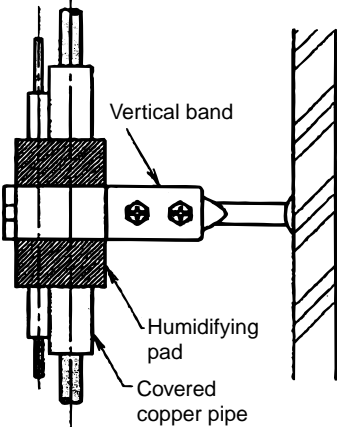
(D) Refrigerant pipe connection

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

No.	Check Items	OK/NG	Checked by						
1	<p>Is heat insulation properly installed just after the equipment are connected?</p> <ul style="list-style-type: none"> ● Sealing pad is provided with the unit as standard accessory. Install the sealing pad properly. 								
2	<p>Are the specifications and thickness of heat insulation materials appropriate?</p> <ul style="list-style-type: none"> ● When applying polyurethane foam to the insulation materials, the thickness shown in the following table is required. <table border="1" data-bbox="368 1373 1120 1498"> <thead> <tr> <th>Pipe size</th> <th>Thickness of insulation material</th> </tr> </thead> <tbody> <tr> <td>6.4mm~25.4mm</td> <td>10mm or more</td> </tr> <tr> <td>28.6mm~38.1mm</td> <td>15mm or more</td> </tr> </tbody> </table>	Pipe size	Thickness of insulation material	6.4mm~25.4mm	10mm or more	28.6mm~38.1mm	15mm or more		
Pipe size	Thickness of insulation material								
6.4mm~25.4mm	10mm or more								
28.6mm~38.1mm	15mm or more								
3	<p>Is not the following imperfection conducted?</p> <ul style="list-style-type: none"> ● Both liquid and gas pipes without heat insulation themselves installed with bundle by insulation materials. ● Pipe joint section has not been insulated. 								

(D) Refrigerant pipe connection

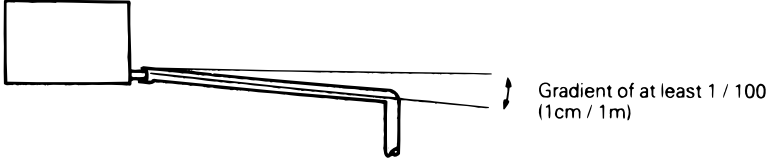
(D-4-(2)) Heat insulation for refrigerant pipes (2)

No.	Check Items	OK/NG	Checked by
1	<p>Is insulated refrigerant pipe supported properly?</p> <ul style="list-style-type: none"> <p><u>Horizontal pipe</u> Pipe outside diameter 6.35 - 9.52mm 12.7mm or more Pitch of pipe support 1.2m or less 1.5m or less</p>  <p><u>Example of vertical pipe support</u> Provide 1 or 2 supports on each floor module</p>  		

Check Date / /

(E) Drain piping

(E-1) Basic items

No.	Check Items	OK/NG	Checked by
1	<p data-bbox="256 371 922 416">Does drain pipe have sufficient gradient?</p> 		

(E) Drain piping

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

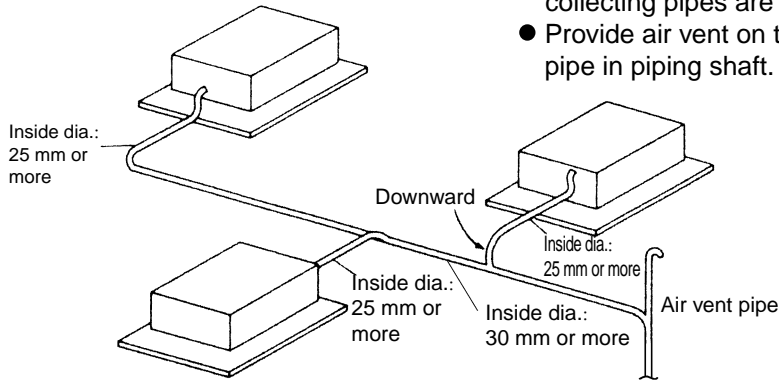
No.	Check Items	OK/NG	Checked by
-----	-------------	-------	------------

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.



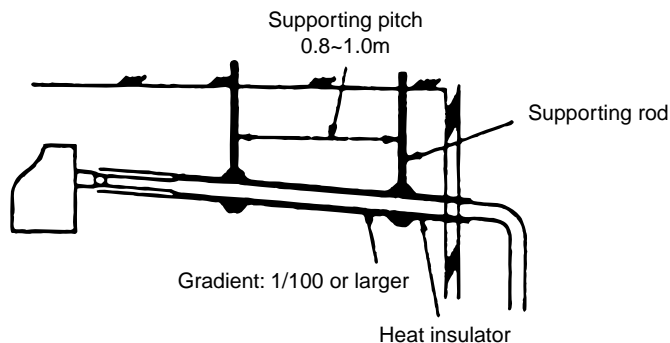
List of proper pipe size
(Relation between horizontal drain pipe diameter and allowable drain volume)

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.

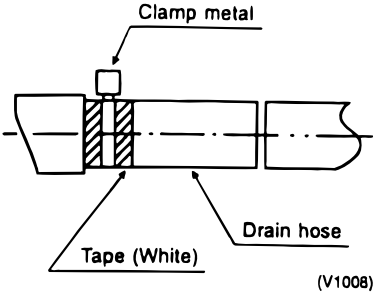
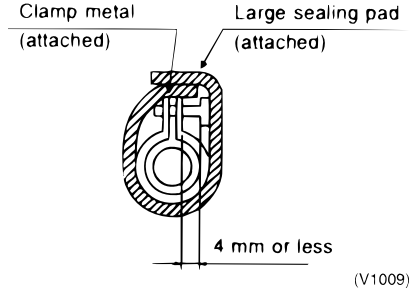
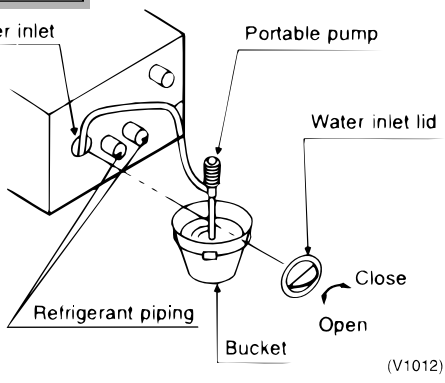
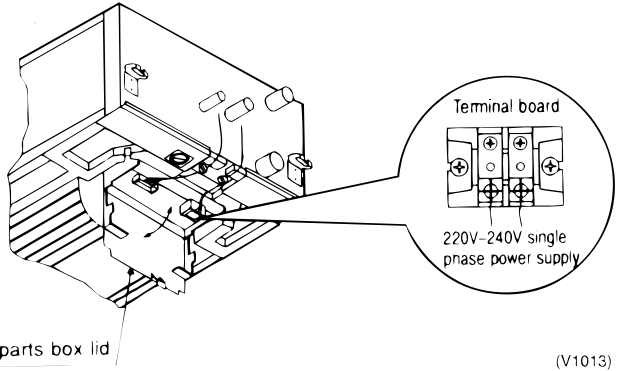
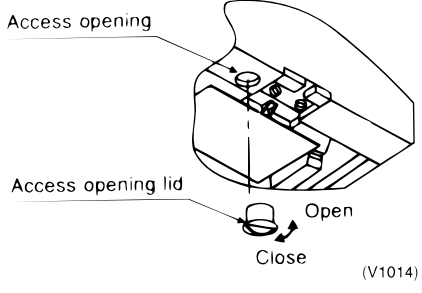
2

Is the pipe support provided in the proper pitch?



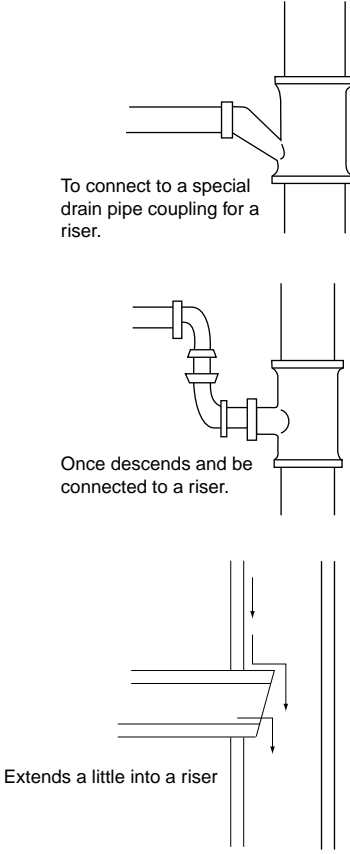
(E) Drain piping

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

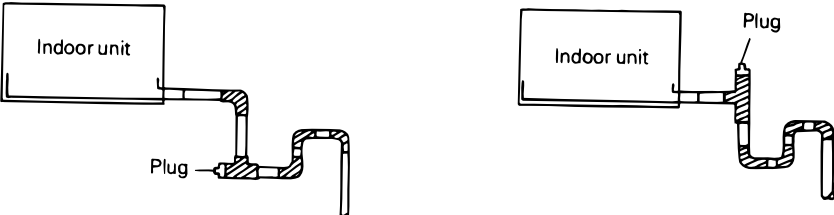
No.	Check Items	OK/NG	Checked by
1	<p>Are the attached covering materials and clamp metal applied in good manner?</p> <ul style="list-style-type: none"> ● Mount clamp metal after taping the pipe. ● Tighten the clamp metal so that the screw head protrudes by 4 mm.   <ul style="list-style-type: none"> ● Cover the clamped section with covering materials. 		
2	<p>Is the drainage conducted properly?</p> <ul style="list-style-type: none"> ● Fill 2500 cc water from the water inlet with a portable pump. ● Turn on power supply and set to the test run mode. Selecting "FAN" and pressing ON button, the fan and drain pump will ✓   <p>↙ start to operate. Open an access panel and make sure if the drain water reduces.</p> 		

(E) Drain piping

(E-4) Connection to vertical pipe

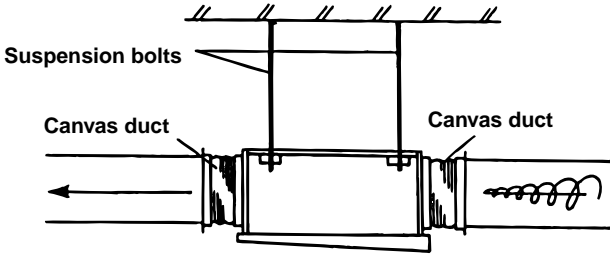
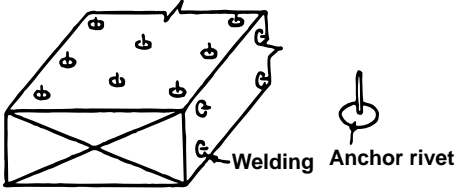
No.	Check Items	OK/NG	Checked by
1	<p>Is the connection to vertical pipe inside the pipe shaft proper?</p> <ul style="list-style-type: none"> ● A horizontal drain pipe should be connected to a riser in the pipe shaft after it is connected to a drain flange or once descends, or extended somewhat into the riser as shown in the figures below, instead of connecting horizontally to the riser without extension.  <p>To connect to a special drain pipe coupling for a riser.</p> <p>Once descends and be connected to a riser.</p> <p>Extends a little into a riser</p>		

(E-5) Mounting blind plug

1	<p>Is a drain trap installed in a manner to prevent the drain trap from clogging?</p> <ul style="list-style-type: none"> ● When installing a drain trap, mount blind plugs in places in the drain piping for ease of cleaning. 		
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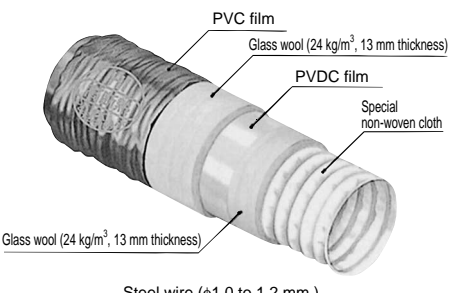
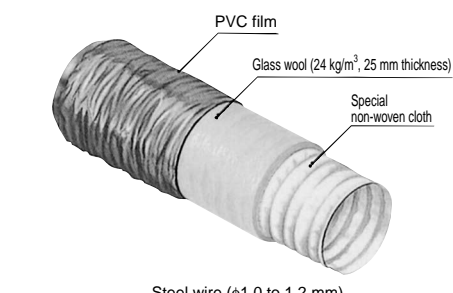
(F) Duct installation

(F-1) Sound attenuation and heat insulation

No.	Check Items	OK/NG	Checked by
1	<p>When installing steel plate ducts, are canvas ducts provided on the both sides to prevent vibration?</p> 		
2	<p>Is the heat insulation for steel plate ducts installed properly?</p> <ul style="list-style-type: none"> ● 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. 		

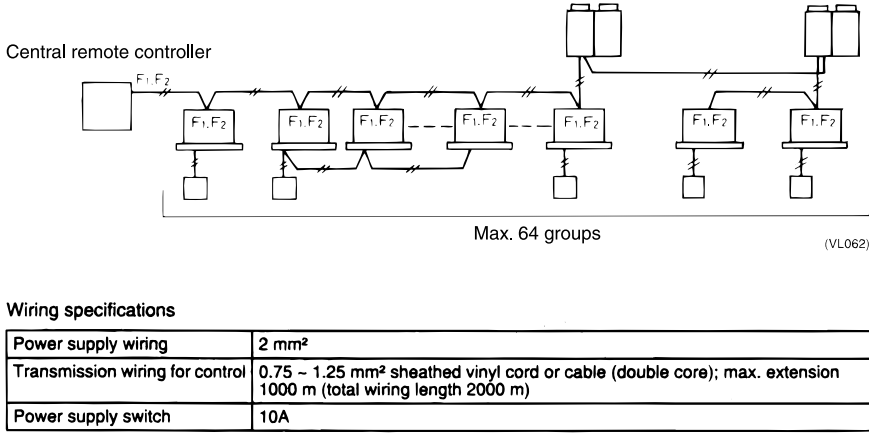
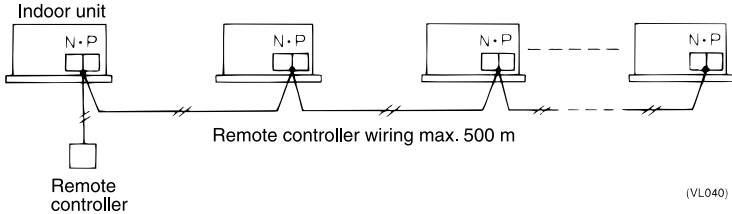
(F) Duct installation

(F-2) Flexible duct installation

No.	Check Items	OK/NG	Checked by
1	<p>Are the materials of ducts selected properly?</p> <ul style="list-style-type: none"> ● High heat insulation duct must be used on the air supply side. Standard duct can be used on the air suction side. <div style="display: flex; justify-content: space-around;"> <div data-bbox="256 622 727 1191" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">High heat insulation type</p> <p>■ Structure</p>  <p>■ Application</p> <ul style="list-style-type: none"> ● 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) </div> <div data-bbox="754 622 1225 1191" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Standard type</p> <p>■ Structure</p>  <p>■ Application</p> <ul style="list-style-type: none"> ● Applies mainly when installing the unit inside the ceiling of middle floor in houses and buildings. ● Applies to ventilation system. </div> </div>		
2	<p>Is the connection work to apparatus conducted properly?</p> <div data-bbox="349 1406 1137 2040" style="border: 1px solid black; padding: 5px;"> <p>Flexible duct, straight, 10 meters long (standard) K-FDS Finishing procedure for cut surface</p> <p>■ Cutting method Cut the outer film and glass wool using a cutter knife. Use a cutting pliers or the like to cut wires.</p> <p>■ Finishing cut surface (Use cut surface finishing kit K-FDSKP shown on Page 79.)</p> <p>Step I ① Fold back from the cut section. Labels: Glass wool, Flexible duct, Duct flange, Special non-woven cloth</p> <p>Step II ② Push the duct into flange.</p> <p>Step III ③ Securely wind with adhesive tape Reset the folded cut section and tighten with a plate band (K-FDQP).</p> <p>Step IV ⑤ Finally wind on the band with heat insulator (K-FDSKP) to finish.</p> </div>		

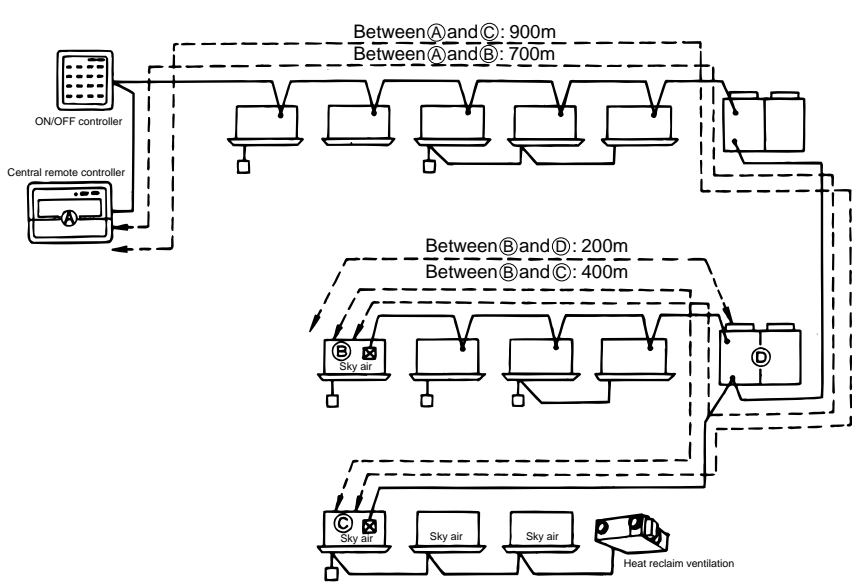
(G) Electric wiring

(G-1) Checking control wiring

No.	Check Items	OK/NG	Checked by						
1	<p>When centralized control wiring is conducted, is the wiring conducted properly as shown on the following diagram?</p>  <p>Central remote controller</p> <p>Max. 64 groups (VL062)</p> <p>Wiring specifications</p> <table border="1" data-bbox="352 831 1220 936"> <tr> <td>Power supply wiring</td> <td>2 mm²</td> </tr> <tr> <td>Transmission wiring for control</td> <td>0.75 ~ 1.25 mm² sheathed vinyl cord or cable (double core); max. extension 1000 m (total wiring length 2000 m)</td> </tr> <tr> <td>Power supply switch</td> <td>10A</td> </tr> </table>	Power supply wiring	2 mm ²	Transmission wiring for control	0.75 ~ 1.25 mm ² sheathed vinyl cord or cable (double core); max. extension 1000 m (total wiring length 2000 m)	Power supply switch	10A		
Power supply wiring	2 mm ²								
Transmission wiring for control	0.75 ~ 1.25 mm ² sheathed vinyl cord or cable (double core); max. extension 1000 m (total wiring length 2000 m)								
Power supply switch	10A								
2	<p>When one remote controller controls multiple indoor units consisted in one group, is the wiring conducted properly for this application?</p>  <p>Indoor unit</p> <p>Remote controller wiring max. 500 m (VL040)</p> <p>Remote controller</p>								

(G) Electric wiring

(G-2) Restriction on distance of control wiring

No.	Check Items	OK/NG	Checked by
1	<p>Is the extension distance of control wiring kept within the following standard?</p> <p>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.)</p> <p>■ Example of system</p>  <p>• 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.</p>		

(G) Electric wiring

(G-3) Restriction on control wiring

No.

Check Items

OK/NG

Checked by

1

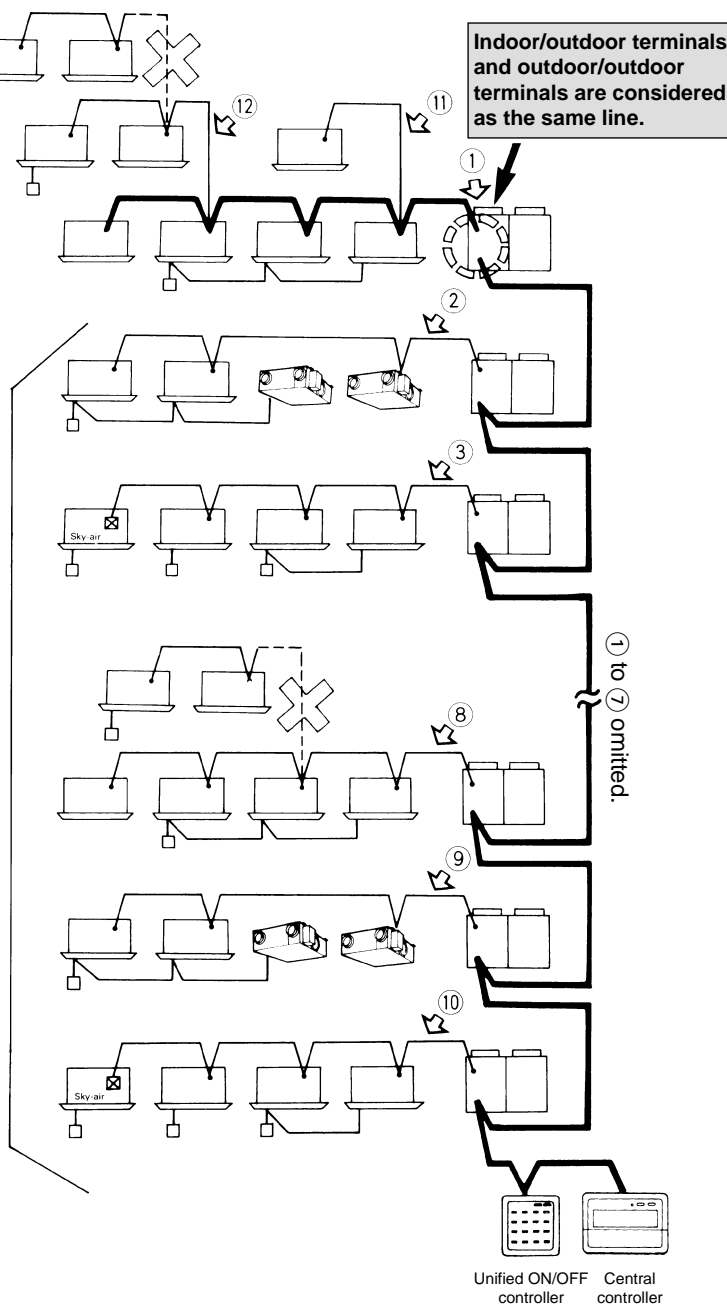
Do the branch wires come from the main control wires, not from the branch control wires?

Here we define as branch line, 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 ⑫ 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.



(G) Electric wiring work

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

No.	Check Items	OK/NG	Checked by																																
1	<div style="border: 1px solid black; padding: 5px; margin-bottom: 20px;"> <p>Is the number of connected device with one control system within the specified number shown in the below table?</p> </div> <p style="text-align: center;">HANDLING EQUIPMENT NUMBER</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Device</th> <th style="text-align: center;">Numbers connectable</th> <th style="text-align: center;">Numbers (Groups)</th> <th style="text-align: center;">controllable (Units)</th> </tr> </thead> <tbody> <tr> <td>Remote controller </td> <td style="text-align: center;">64</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">16</td> </tr> <tr> <td>Central remote controller </td> <td style="text-align: center;">2</td> <td style="text-align: center;">64×2 (128)</td> <td style="text-align: center;">128</td> </tr> <tr> <td>Unified ON/OFF controller </td> <td style="text-align: center;">8</td> <td style="text-align: center;">16×8 (128)</td> <td style="text-align: center;">128</td> </tr> <tr> <td>Schedule timer </td> <td style="text-align: center;">1</td> <td style="text-align: center;">64</td> <td style="text-align: center;">128</td> </tr> <tr> <td>Parallel interface </td> <td style="text-align: center;">4</td> <td style="text-align: center;">16×4 (64)</td> <td style="text-align: center;">128</td> </tr> <tr> <td>Data station </td> <td style="text-align: center;">1</td> <td style="text-align: center;">64</td> <td style="text-align: center;">128</td> </tr> <tr> <td>Master station </td> <td style="text-align: center;">1</td> <td style="text-align: center;">64×4 (256)</td> <td style="text-align: center;">128×4 (512)</td> </tr> </tbody> </table>	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)		
Device	Numbers connectable	Numbers (Groups)	controllable (Units)																																
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Parallel interface 	4	16×4 (64)	128																																
Data station 	1	64	128																																
Master station 	1	64×4 (256)	128×4 (512)																																

(G) Electric wiring work

(G-5) Mismatching connection of control wiring

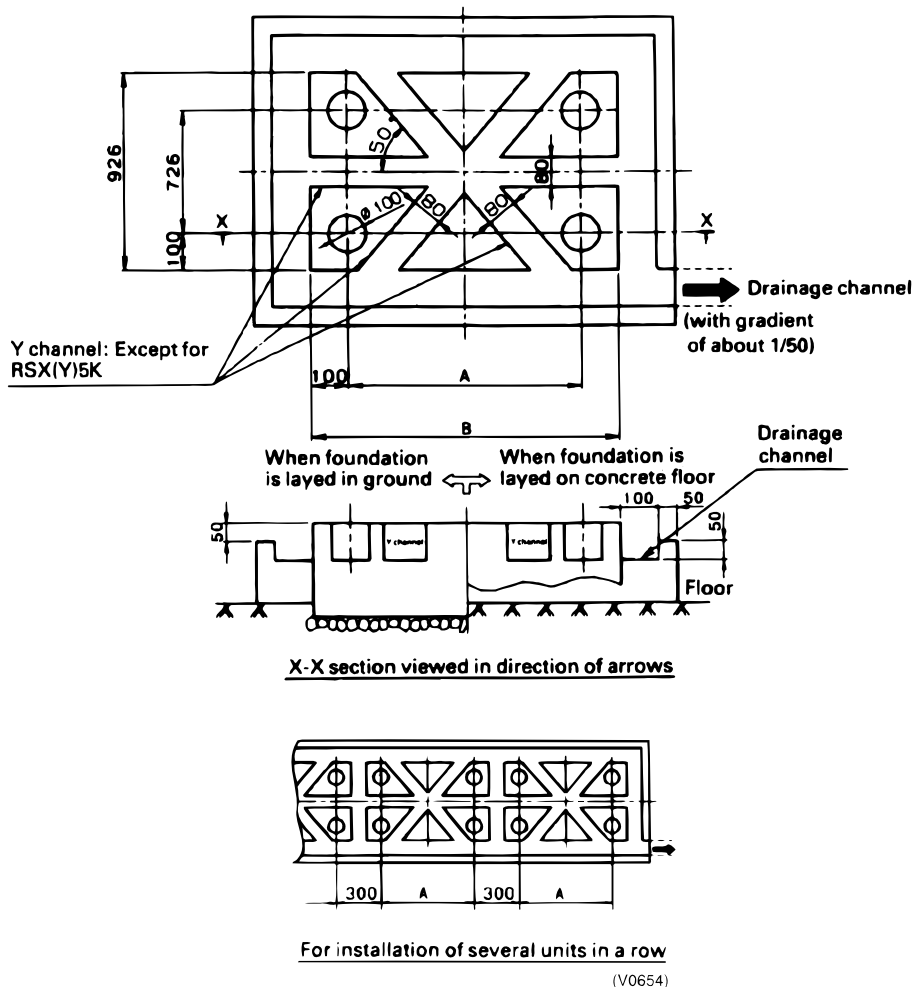
No.	Check Items	OK/NG	Checked by
1	<div data-bbox="255 365 970 454" style="border: 1px solid black; padding: 5px;"> <p>Does the refrigerant piping system coincide with the control system?</p> </div> <ul style="list-style-type: none"> ● An example of faultily exchanged piping connection Faulty connection of the control wiring to another system's circuit. <div data-bbox="343 683 1157 1131"> </div> <p>An example of checking mismatching wiring</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="287 1332 550 1366"> <p>[1] Conduction = OK!</p> </div> <div data-bbox="766 1332 1236 1433"> <p>[2] No conduction = NG Piping and wiring are not coincident possibly!</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div data-bbox="279 1411 558 2004"> </div> <div data-bbox="718 1411 1189 2004"> </div> </div>		

(H) Outdoor unit installation
(H-1) Making concrete foundation

No.	Check Items	OK/NG	Checked by
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1

Is the concrete foundation going to be laid properly?

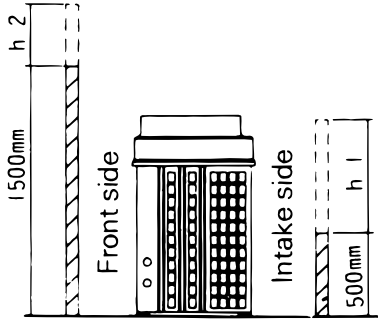
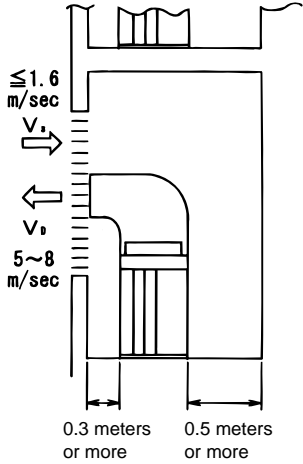


Model	A	B
RSX(Y)5K(A)	355	555
RSX6KA	355	555
RSX(Y)8K(A)·10K(A)	1000	1200

- 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.

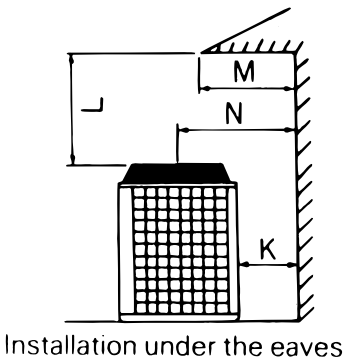
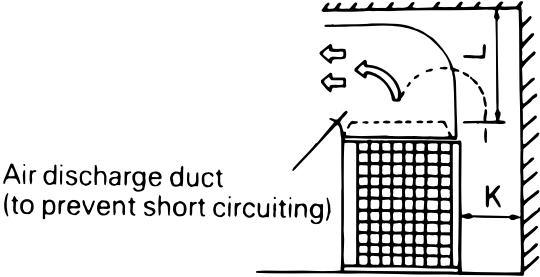
(H) Outdoor unit installation

(H-2) Selection of installation location

No.	Check Items	OK/NG	Checked by
1	<p>When installing outdoor unit on rooftop, is enough space provided around the unit?</p> <ul style="list-style-type: none"> ● 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. ● 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. 		
2	<p>When installing outdoor unit on terrace, is any measure taken for the confined area?</p> <ul style="list-style-type: none"> ● 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 mmH₂O or less.) ● 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. 		

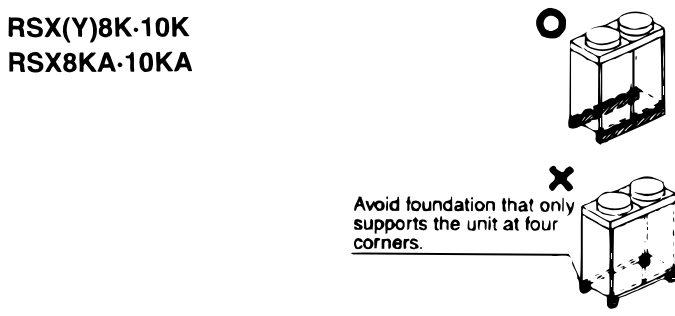
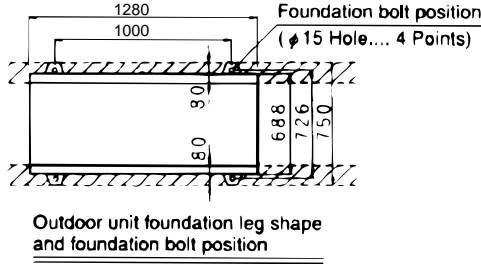
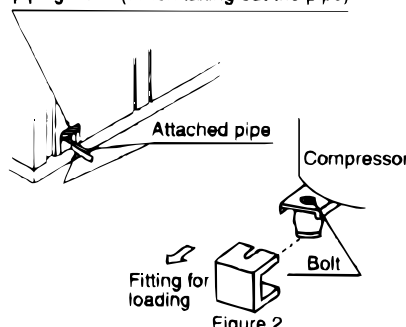
(H) Outdoor unit installation

(H-3) Installation on terrace or ground

No.	Check Items	OK/NG	Checked by
1	<p>Is the standard for mounting on ground observed?</p> <ul style="list-style-type: none"> When $L \geq 1$ m, $N \geq M$ When $L < 1$ m, $K \leq M$  <p>Installation under the eaves</p>		
2	<p>Is the standard for mounting on terrace observed?</p> <ul style="list-style-type: none"> No restriction when $L \geq 3$ m When $L < 3$ m, an air discharge duct is required. (The head-loss of the duct should be 3 m/mH₂O or less.)  <p>Air discharge duct (to prevent short circuiting)</p>		

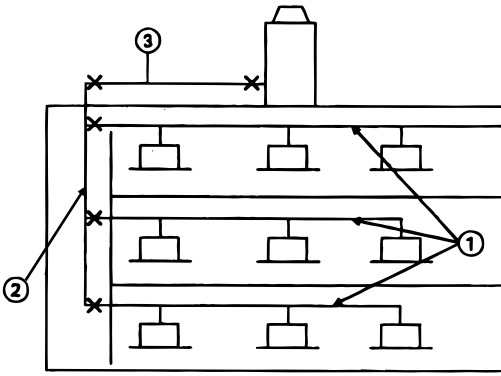
(H) Outdoor unit installation

(H-4) Types of foundation

No.	Check Items	OK/NG	Checked by
1	<p>Is not the foundation such as only putting concrete blocks at four corners?</p> <p>RSX(Y)8K·10K RSX8KA·10KA</p>  <p>Avoid foundation that only supports the unit at four corners.</p> <ul style="list-style-type: none"> ● A continuous footing as shown in the above figure is applicable while a mat foundation is recommendable.  <p>Outdoor unit foundation leg shape and foundation bolt position</p> <p>Figure 1</p> <ul style="list-style-type: none"> ● In the above mentioned case, the anchor bolts should be located inside the shaded area. 		
2	<p>Have the fixtures for transportation removed from compressor legs?</p> <p>If wild birds, etc. may enter the unit, block up the space (▨ portion) above the accessory pipe after refrigerant piping work. (When taking out the pipe)</p>  <p>Figure 2 (V0657)</p> <ul style="list-style-type: none"> ● It is recommendable to close the connection port with proper material to prevent wild birds from entering and nesting inside the unit. 		

(I) Air-tight test

(I-1) Flushing

No.	Check Items	OK/NG	Checked by
1	<p>Has the entire system been flushed using a nitrogen gas?</p> <ul style="list-style-type: none"> ● Conduct flushing at the final stage of piping work to remove foreign particles and moisture that remained in the pipes.  <ul style="list-style-type: none"> ● Work flow <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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.) <p>★ See Appendix for the unit conversion.</p>		

(I) Air-tight test

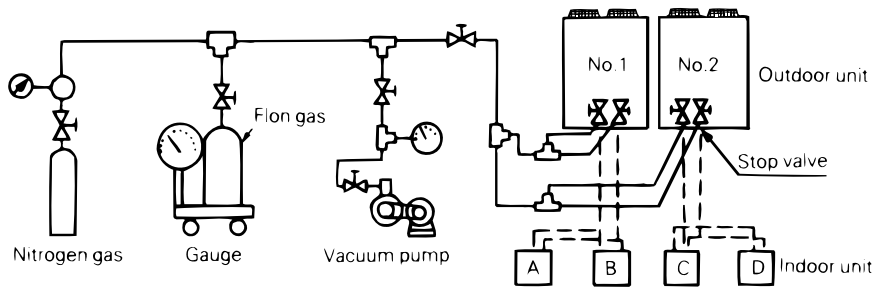
(I-2) Conducting of air-tight test

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

1 **Has the air tight test as leakage test for entire system been conducted?**

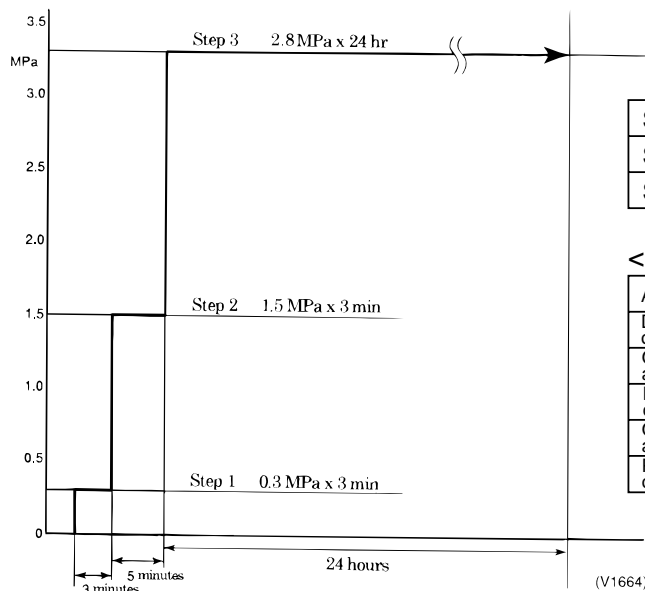
Assemble the test equipment as shown in the below figure.

- STEP 1. For 3 minutes at pressure of 0.3 MPa*
 - STEP 2. Maintain for 3 minutes at pressure of 1.5 MPa*
 - STEP 3. For 24 hours at pressure of 2.8 MPa* ⇒ Including slight leakage, any leakage is detected completely.
- } Remarkable leakage can be detected in these steps.



(V1322)

- 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

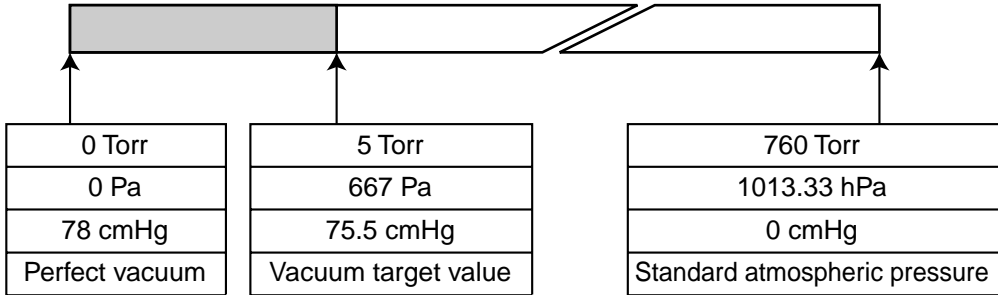
- How to detect leakage: By oral inspection, by touching inspection and by applying foaming agent.

★ The unit conversion table is in the Appendix.

(V1664)

(J) Vacuum drying

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

No.	Check Items	OK/NG	Checked by																																												
1	<p data-bbox="256 365 874 450">Is the achievable degree of vacuum of pump selected correctly?</p> <p data-bbox="320 551 1142 582">● Degree of vacuum should be in the shadowed area of below figure.</p> <table border="1" data-bbox="250 645 1233 943"> <thead> <tr> <th></th> <th>Unit</th> <th>Standard atmospheric pressure</th> <th>Perfect vacuum</th> </tr> </thead> <tbody> <tr> <td>Gauge Pressure</td> <td>kg/cm²</td> <td>0</td> <td>-1.033</td> </tr> <tr> <td>Absolute Pressure</td> <td>kg/cm²abs</td> <td>1.033</td> <td>0</td> </tr> <tr> <td>Torr</td> <td>Torr</td> <td>760</td> <td>0</td> </tr> <tr> <td>Micron</td> <td>Micron</td> <td>760000</td> <td>0</td> </tr> <tr> <td>cmHg</td> <td>cmHg</td> <td>0</td> <td>076</td> </tr> <tr> <td>Pa</td> <td>hPa</td> <td>1013.33</td> <td>0</td> </tr> </tbody> </table> <p data-bbox="339 1001 1123 1032">Degree of vacuum must be within the range expressed by </p> <table border="1" data-bbox="240 1160 466 1330"> <tr><td>0 Torr</td></tr> <tr><td>0 Pa</td></tr> <tr><td>78 cmHg</td></tr> <tr><td>Perfect vacuum</td></tr> </table> <table border="1" data-bbox="489 1160 774 1330"> <tr><td>5 Torr</td></tr> <tr><td>667 Pa</td></tr> <tr><td>75.5 cmHg</td></tr> <tr><td>Vacuum target value</td></tr> </table> <table border="1" data-bbox="868 1160 1243 1330"> <tr><td>760 Torr</td></tr> <tr><td>1013.33 hPa</td></tr> <tr><td>0 cmHg</td></tr> <tr><td>Standard atmospheric pressure</td></tr> </table> <p data-bbox="247 1503 616 1534">[Vacuum drying actual data]</p> <table border="1" data-bbox="250 1545 1233 1715"> <tr> <td data-bbox="250 1545 1010 1630">Is the degree of vacuum after 3 hours or more pump operation -755 mmHg or lower?</td> <td data-bbox="1010 1545 1233 1630">OK · NG</td> </tr> <tr> <td data-bbox="250 1630 1010 1715">Is the degree of vacuum kept without change for 1 hour or more after pump stopped?</td> <td data-bbox="1010 1630 1233 1715">OK · NG</td> </tr> </table>		Unit	Standard atmospheric pressure	Perfect vacuum	Gauge Pressure	kg/cm ²	0	-1.033	Absolute Pressure	kg/cm ² abs	1.033	0	Torr	Torr	760	0	Micron	Micron	760000	0	cmHg	cmHg	0	076	Pa	hPa	1013.33	0	0 Torr	0 Pa	78 cmHg	Perfect vacuum	5 Torr	667 Pa	75.5 cmHg	Vacuum target value	760 Torr	1013.33 hPa	0 cmHg	Standard atmospheric pressure	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		
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Is the degree of vacuum kept without change for 1 hour or more after pump stopped?	OK · NG																																														

(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

φ 12.7		φ 9.5		φ 6.4	
#	Length (m)	#	Length (m)	#	Length (m)
total	m	total	m	total	m

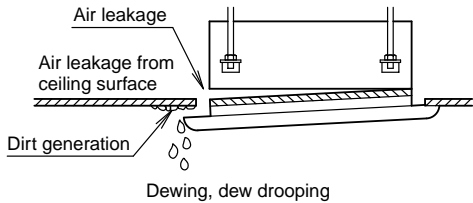
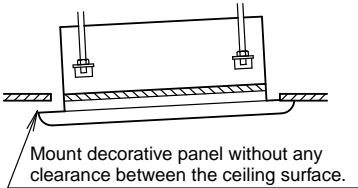
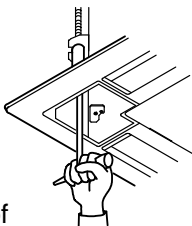
Comparing with the examples shown below, are the adopted figures correct?

<p style="text-align: center; font-size: small;">Example of refrigerant branch with REFNET joint</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>a: φ 12.7 × 30m</td><td>i: φ 6.4 × 5m</td></tr> <tr><td>b: φ 12.7 × 5m</td><td>j: φ 6.4 × 5m</td></tr> <tr><td>c: φ 12.7 × 5m</td><td>k: φ 6.4 × 5m</td></tr> <tr><td>d: φ 12.7 × 5m</td><td>l: φ 9.5 × 5m</td></tr> <tr><td>e: φ 9.5 × 3m</td><td>m: φ 6.4 × 5m</td></tr> <tr><td>f: φ 9.5 × 2m</td><td>n: φ 6.4 × 5m</td></tr> <tr><td>g: φ 9.5 × 5m</td><td>p: φ 6.4 × 5m</td></tr> <tr><td>h: φ 9.5 × 5m</td><td> </td></tr> </table> <p style="font-size: x-small;"> R = $45 \times 0.1 + 20 \times 0.05$ $+ 30 \times 0.025 - 2 = 4.25$ i+j+k+m+n+p 4.3kg </p>	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	
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g: φ 9.5 × 5m	p: φ 6.4 × 5m																
h: φ 9.5 × 5m																	
<p style="text-align: center; font-size: small;">Example of refrigerant branch with REFNET joint and REFNET header</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>a: φ 12.7 × 30m</td><td>g: φ 6.4 × 10m</td></tr> <tr><td>b: φ 12.7 × 10m</td><td>h: φ 6.4 × 20m</td></tr> <tr><td>c: φ 9.5 × 10m</td><td>i: φ 9.5 × 10m</td></tr> <tr><td>d: φ 6.4 × 10m</td><td>j: φ 9.5 × 10m</td></tr> <tr><td>e: φ 6.4 × 10m</td><td>k: φ 6.4 × 9m</td></tr> <tr><td>f: φ 6.4 × 10m</td><td> </td></tr> </table> <p style="font-size: x-small;"> R = $40 \times 0.1 + 30 \times 0.05$ $+ 69 \times 0.025 - 2 = 5.225$ d+e+f+g+h+i 5.2kg </p>	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					
a: φ 12.7 × 30m	g: φ 6.4 × 10m																
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e: φ 6.4 × 10m	k: φ 6.4 × 9m																
f: φ 6.4 × 10m																	
<p style="text-align: center; font-size: small;">Example of refrigerant branch with REFNET header</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>a: φ 12.7 × 40m</td><td>f: φ 6.4 × 23m</td></tr> <tr><td>b: φ 9.5 × 20m</td><td>g: φ 6.4 × 20m</td></tr> <tr><td>c: φ 9.5 × 10m</td><td>h: φ 6.4 × 20m</td></tr> <tr><td>d: φ 6.4 × 10m</td><td>i: φ 6.4 × 30m</td></tr> <tr><td>e: φ 6.4 × 20m</td><td> </td></tr> </table> <p style="font-size: x-small;"> R = $40 \times 0.1 + 30 \times 0.05$ $+ 123 \times 0.025 - 2 = 6.575$ d+e+f+g+h+i 6.6kg </p>	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							
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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																	

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

(L) Decorative panel installation

(L-1) Maintaining levelness of decorative panel

No.	Check Items	OK/NG	Checked by
1	<p>Is decorative panel installed horizontally?</p> <ul style="list-style-type: none"> ● Since insufficient tightening of screws causes poor workmanship shown below, securely tighten the screws.  <p>Air leakage Air leakage from ceiling surface Dirt generation Dewing, dew drooping</p>		
2	<p>Is there any clearance left between the ceiling surface and decorative panel?</p> <ul style="list-style-type: none"> ● 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.  <p>Mount decorative panel without any clearance between the ceiling surface.</p> <p>Advice on a single point ↴</p> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <ul style="list-style-type: none"> ● 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.  </div>		

(M) Air-conditioning system diagram

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

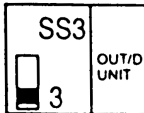
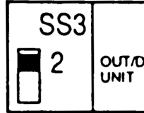
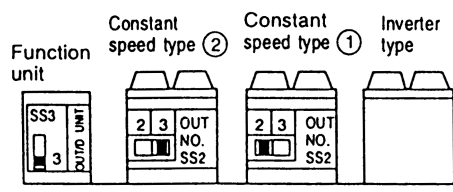
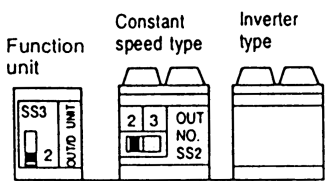
No.	Check Items	OK/NG	Checked by																																																																										
1	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Have the following “System List” and “Control Wiring System Diagram” been organized?</p> </div> <p>[Example] System List</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2" style="width: 15%;">① Outdoor unit</th> <th colspan="6">② ③ ④ ⑤ ⑥ ⑦ ⑧ Indoor unit</th> </tr> <tr> <th style="width: 10%;">Model name (symbol)</th> <th style="width: 10%;">Local setting</th> <th style="width: 10%;">Model name</th> <th style="width: 10%;">System name</th> <th style="width: 10%;">Location to install</th> <th style="width: 10%;">Remote control grouping</th> <th style="width: 10%;">Centralized control group No.</th> <th style="width: 10%;">Option Field setting, etc.</th> </tr> </thead> <tbody> <tr> <td rowspan="5">RSXY10K (PAC1)</td> <td rowspan="5">Cooling/Heating change over Indoor Low noise mode Individual Sequential startup Provided Defrosting Early Sequential startup No.</td> <td>FXYC32K</td> <td>2F01</td> <td>Office on 2nd floor</td> <td>A</td> <td>1-00</td> <td></td> </tr> <tr> <td>FXYC63K</td> <td>2F02</td> <td>Office on 2nd floor</td> <td>A</td> <td>(1-00)</td> <td></td> </tr> <tr> <td>FXYC40K</td> <td>2F03</td> <td>Office on 2nd floor</td> <td>A</td> <td>(1-00)</td> <td></td> </tr> <tr> <td>FXYC63K</td> <td>2F04</td> <td>Reception on 2nd floor</td> <td>B</td> <td>1-01</td> <td></td> </tr> <tr> <td>FXYC50K</td> <td>2F05</td> <td>Reception on 2nd floor</td> <td>B</td> <td>(1-01)</td> <td></td> </tr> <tr> <td rowspan="4">RSXY10K (PAC2)</td> <td rowspan="4">Cooling/Heating change over Indoor Low noise mode Individual Sequential startup Provided Defrosting Early</td> <td>FXYC32K</td> <td>3F01</td> <td>Design room on 3rd floor</td> <td>C</td> <td>1-02</td> <td></td> </tr> <tr> <td>FXYC40K</td> <td>3F02</td> <td>Design room on 3rd floor</td> <td>C</td> <td>(1-02)</td> <td></td> </tr> <tr> <td>FXYC40K</td> <td>3F03</td> <td>Design room on 3rd floor</td> <td>C</td> <td>(1-02)</td> <td></td> </tr> <tr> <td>FXYC50K</td> <td>3F04</td> <td>Design room on 3rd floor</td> <td>D</td> <td>1-03</td> <td></td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 20px;">[Example] Control Wiring System Diagram</p> <p>⑦ Centralized group No. 1-00 1-00 1-00 1-01 1-01 1-02 1-02 1-02 1-03 1-04 1-05 ④ System name 2F01 2F02 2F03 2F04 2F05 3F01 3F02 3F03 3F04 4F01 4F02 ③ Model name C32K S63K C40K H63K C50K S32K C40K S40K C50K S50K H40K</p> <p style="text-align: right;">To central control panel</p>	① Outdoor unit		② ③ ④ ⑤ ⑥ ⑦ ⑧ 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 Low noise mode Individual Sequential startup Provided Defrosting Early Sequential startup No.	FXYC32K	2F01	Office on 2 nd floor	A	1-00		FXYC63K	2F02	Office on 2 nd floor	A	(1-00)		FXYC40K	2F03	Office on 2 nd floor	A	(1-00)		FXYC63K	2F04	Reception on 2 nd floor	B	1-01		FXYC50K	2F05	Reception on 2 nd floor	B	(1-01)		RSXY10K (PAC2)	Cooling/Heating change over Indoor Low noise mode Individual Sequential startup Provided Defrosting Early	FXYC32K	3F01	Design room on 3 rd floor	C	1-02		FXYC40K	3F02	Design room on 3 rd floor	C	(1-02)		FXYC40K	3F03	Design room on 3 rd floor	C	(1-02)		FXYC50K	3F04	Design room on 3 rd floor	D	1-03			
① Outdoor unit		② ③ ④ ⑤ ⑥ ⑦ ⑧ 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.																																																																						
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		FXYC50K	3F04	Design room on 3 rd floor	D	1-03																																																																							

***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.

(N) Switch setting for outdoor units

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

No.	Check Items	OK/NG	Checked by
1	<div data-bbox="255 369 1236 459" style="border: 1px solid black; padding: 5px; margin-bottom: 20px;"> <p>When the outdoor unit is equipped with function unit, has the number of outdoor units set through a switch in advance?</p> </div> <ul style="list-style-type: none"> ● 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. <div style="display: flex; justify-content: space-around; margin: 20px 0;"> <div data-bbox="383 784 574 963"> <p>3-unit setting</p>  </div> <div data-bbox="805 784 997 963"> <p>2-unit setting</p>  </div> </div> <ul style="list-style-type: none"> ● Setting on outdoor unit Constant speed unit is equipped with switch SS2. Set to "3" or "2" using the SS2. <div style="text-align: center; margin: 20px 0;"> <p>3-unit setting</p>  </div> <ul style="list-style-type: none"> ● The capacity of constant speed unit ① should be larger than that of ② <div style="text-align: center; margin: 20px 0;"> <p>2-unit setting</p>  </div>		

(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
	<div data-bbox="255 369 1101 459" style="border: 1px solid black; padding: 5px;"> <p>Are installation order and piping connection with function unit of inverter unit and constant speed unit correct?</p> </div> <p data-bbox="351 504 1053 571">The inverter unit should be installed at the furthest position from the function unit.</p> <div data-bbox="295 672 1045 1131" style="text-align: center;"> <p data-bbox="446 672 606 705">Function unit</p> <p data-bbox="558 728 718 784">Constant speed outdoor unit 2</p> <p data-bbox="734 728 893 784">Constant speed outdoor unit 1</p> <p data-bbox="909 728 1029 784">Inverter outdoor unit</p> <p data-bbox="574 996 869 1030">Pipes do not cross each other</p> <p data-bbox="446 1097 590 1131">To indoor unit</p> </div> <div data-bbox="295 1276 1061 1736" style="text-align: center;"> <p data-bbox="462 1276 606 1310">Function unit</p> <p data-bbox="582 1355 710 1411">Inverter outdoor unit</p> <p data-bbox="726 1355 885 1411">Constant speed outdoor unit 1</p> <p data-bbox="901 1355 1061 1411">Constant speed outdoor unit 2</p> <p data-bbox="518 1612 965 1668">Example where pipes cross each other Pipes cross each other</p> <p data-bbox="454 1702 598 1736">To indoor unit</p> </div> <p data-bbox="351 1870 1029 1982">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.</p>			

(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	<p>Is the calculation formula based on individual model and series taken?</p> <p>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)</p> <p style="text-align: center;">"G XL" Calculation Table</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Pipe diameter (Outside diameter)</th> <th>G (kg/m)</th> <th>L (m)</th> <th>G × L (kg)</th> </tr> </thead> <tbody> <tr><td>22.2</td><td>0.360</td><td></td><td></td></tr> <tr><td>19.1</td><td>0.270</td><td></td><td></td></tr> <tr><td>15.9</td><td>0.170</td><td></td><td></td></tr> <tr><td>12.7</td><td>0.100</td><td></td><td></td></tr> <tr><td>9.5</td><td>0.050</td><td></td><td></td></tr> <tr><td>6.4</td><td>0.025</td><td></td><td></td></tr> </tbody> </table> <p>(★Fill out blank columns to calculate the refrigerant amount.) (Sub total) _____ (kg)</p> <p style="text-align: center;">α Calculation Table</p> <table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> α value of model with function unit <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Function unit</th> <th>α (kg/m)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Heat pump</td> <td>BL2K</td> <td>2</td> </tr> <tr> <td>BL3K</td> <td>3</td> </tr> <tr> <td rowspan="2">Cooling only</td> <td>BC2K</td> <td>2</td> </tr> <tr> <td>BC3K</td> <td>3</td> </tr> <tr> <td rowspan="2">Heat recovery</td> <td>BR2K</td> <td>6</td> </tr> <tr> <td>BR3K</td> <td>8</td> </tr> </tbody> </table> </td> <td style="width: 50%; vertical-align: top;"> α value of model without function unit <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Model</th> <th>α (kg)</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Heat pump</td> <td rowspan="6">RSXY</td> <td>16</td> <td>0</td> </tr> <tr> <td>18</td> <td>0</td> </tr> <tr> <td>20</td> <td>0.8</td> </tr> <tr> <td>24</td> <td>0</td> </tr> <tr> <td>26</td> <td>0.6</td> </tr> <tr> <td>28</td> <td>0</td> </tr> <tr> <td></td> <td>30</td> <td>0.3</td> </tr> </tbody> </table> </td> </tr> </table> <p>Therefore, Additional refrigerant charge amount = $\sum (GXL)$: _____ (kg) + α: _____ (kg) = _____ (kg)</p>	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			α value of model with function unit <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Function unit</th> <th>α (kg/m)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Heat pump</td> <td>BL2K</td> <td>2</td> </tr> <tr> <td>BL3K</td> <td>3</td> </tr> <tr> <td rowspan="2">Cooling only</td> <td>BC2K</td> <td>2</td> </tr> <tr> <td>BC3K</td> <td>3</td> </tr> <tr> <td rowspan="2">Heat recovery</td> <td>BR2K</td> <td>6</td> </tr> <tr> <td>BR3K</td> <td>8</td> </tr> </tbody> </table>	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 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Model</th> <th>α (kg)</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Heat pump</td> <td rowspan="6">RSXY</td> <td>16</td> <td>0</td> </tr> <tr> <td>18</td> <td>0</td> </tr> <tr> <td>20</td> <td>0.8</td> </tr> <tr> <td>24</td> <td>0</td> </tr> <tr> <td>26</td> <td>0.6</td> </tr> <tr> <td>28</td> <td>0</td> </tr> <tr> <td></td> <td>30</td> <td>0.3</td> </tr> </tbody> </table>	Series	Model	α (kg)	Heat pump	RSXY	16	0	18	0	20	0.8	24	0	26	0.6	28	0		30	0.3			
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3	Is not the pipe connection method wrong? Has the additional refrigerant amount measured with a scale?																																																																							

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 $1 \text{ kg/cm}^2 = 0.0981 \text{ MPa}$ 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				
		2					
	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					
P L U S	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			
Function unit		Breaker capacity	Visual check	Specified capacity	OK/NG									
		Refrigerant piping line	With gas leakage detector	No leakage	OK/NG									
INV outdoor unit		Terminal connection section	With driver, etc.	No loosening	OK/NG									
		Refrigerant piping line	With gas leakage detector	No leakage	OK/NG									
		Heat exchanger	Visual check	No clogging, no damage	OK/NG									
		Terminal connection section	With driver, etc.	No loosening	OK/NG									
		Insulation of fan motor	with 500 V megger	1 MΩ or more	MΩ									
		Insulation of compressor	with 500 V megger	1 MΩ or more	MΩ						MΩ			
		Installation condition	Visual check	No air short circuit, etc.	OK/NG									
	① STD outdoor unit		Refrigerant piping line	With gas leakage detector	No leakage	OK/NG								
			Heat exchanger	Visual check	No clogging, no damage	OK/NG								
			Terminal connection section	With driver, etc.	No loosening	OK/NG								
		Insulation of fan motor	with 500 V megger	1 MΩ or more	MΩ									
		Insulation of compressor	with 500 V megger	1 MΩ or more	MΩ						MΩ			
		Installation condition	Visual check	No air short circuit, etc.	OK/NG									
② STD outdoor unit		Refrigerant piping line	With gas leakage detector	No leakage	OK/NG									
		Heat exchanger	Visual check	No clogging, no damage	OK/NG									
		Terminal connection section	With driver, etc.	No loosening	OK/NG									
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		Insulation of compressor	with 500 V megger	1 MΩ or more	MΩ						MΩ			
		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
					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
					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				
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	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				
	Room 1	MΩ	Room 2	MΩ	Room 3	MΩ	Room 4	MΩ	Room 5	MΩ				
	Room 6	MΩ	Room 7	MΩ	Room 8	MΩ	Room 9	MΩ	Room 10	MΩ				
	Room 11	MΩ	Room 12	MΩ	Room 13	MΩ	Room 14	MΩ	Room 15	MΩ				
	Room 16	MΩ	Room 17	MΩ	Room 18	MΩ	Room 19	MΩ	Room 20	MΩ				
	Room 21	MΩ	Room 22	MΩ	Room 23	MΩ	Room 24	MΩ	Room 25	MΩ				
	Room 26	MΩ	Room 27	MΩ	Room 28	MΩ	Room 29	MΩ	Room 30	MΩ				
	Room 1	MΩ	Room 2	MΩ	Room 3	MΩ	Room 4	MΩ	Room 5	MΩ				
	Room 6	MΩ	Room 7	MΩ	Room 8	MΩ	Room 9	MΩ	Room 10	MΩ				
	Room 11	MΩ	Room 12	MΩ	Room 13	MΩ	Room 14	MΩ	Room 15	MΩ				
	Room 16	MΩ	Room 17	MΩ	Room 18	MΩ	Room 19	MΩ	Room 20	MΩ				
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	Room 26	MΩ	Room 27	MΩ	Room 28	MΩ	Room 29	MΩ	Room 30	MΩ				
	Room 1	OK/NG	Room 20	K/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				
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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 $\pm 10\%$	V						
	Main power voltage	With tester	Rated voltage $\pm 10\%$	R-S	V	S-T	V	R-T	V	
INV outdoor unit	Operation circuit voltage	With tester	Rated voltage $\pm 10\%$	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 $\pm 10\%$	R-S	V	S-T	V	R-T	V
Operation circuit voltage		With tester	Rated voltage $\pm 10\%$	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 $\pm 10\%$	R-S	V	S-T	V	R-T	V
	Operation circuit voltage	With tester	Rated voltage $\pm 10\%$	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					
				Room 1	Room 2	Room 3	Room 4	Room 5	Room 6						
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			

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