

Installation Manual for Strainer Kit (for Indoor Unit)

This manual is for the strainer kit installation. Read this manual together with the “Installation and Maintenance Manual” for the outdoor unit and indoor unit.

Be sure to read this manual carefully for correct performance before installation work.

When connecting the wall mount type indoor unit to the VRF system, make sure to attach the strainer kit to the refrigerant piping close to the wall mount type indoor unit. This prevents solid particles from entering into the electronic expansion valve inside the unit.

Model	MSF-NP63A, MSF-NP112A
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NOTE:

Forward this information to the building owner and request that they maintain all the equipment manuals.

IMPORTANT NOTICE:

- Johnson Controls pursues a policy of continuous improvement in design and performance of products. We reserve the right to vary specifications without notice.
- Johnson Controls cannot anticipate every possible circumstance that might involve a potential hazard.
- This kit is designed for a combination of Johnson Controls air conditioners. Do not use this kit itself or in combination with other companies' air conditioners.
- No part of this manual may be reproduced without Johnson Controls' written permission.
- Signal words are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.

▲ DANGER

: Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

▲ WARNING

: Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

▲ CAUTION

: Indicates a hazardous situation that, if not avoided could result in minor or moderate injury.

NOTICE

: Indicates information considered important, but not hazard-related (such as messages relating to property damage).

NOTE

: Indicates useful information for operation and/or maintenance.

- Do not install the unit in the following places. Doing so may cause ignition, fire, deformation, corrosion, or damage.
 - * Places where oil (including machinery oil) may be present
 - * Places where sulfide gas can generate, such as hot springs
- Do not install the unit in the following places. It may cause corrosion.
 - * Places with dense, salt-laden airflow such as coastal regions
 - * Regions where the air quality is of high acidity

⚠ WARNING

- Utilize this manual when performing installation work. If the installation is not performed correctly and completely, there may be water leakage, electric shock, fire or even injury as a result of the indoor unit falling.
- Select an appropriate place to support the strainer kit weight for installation. If not, it may cause injury if the strainer kit falls.
- When this strainer kit is installed in a small room, make sure to take proactive measures to prevent the refrigerant from exceeding the maximum allowable concentration should a refrigerant gas leakage should occur. If refrigerant gas leakage occurs in a small room, refrigerant concentration exceeds the allowable limit and may lead to asphyxiation. Contact your distributor or contractor for countermeasures (ventilation system and so forth) in such a case.
- Do not install the strainer kit in a location where flammable gas generation or inflow may occur. It may lead to fire.
- Do not step on the strainer kit or put any materials on it. It may lead to an injury because of a fall.
- Be sure to wear leather gloves for handling refrigerant gas. If refrigerant gas directly contacts skin, it may cause frostbite.
- Be sure to check for refrigerant leakage. Noncombustible, nontoxic, odorless fluorocarbon is used for this unit, but if fluorocarbon is leaked and ignites, toxic gas may generate. Also, since specific gravity of fluorocarbon is heavier than that of air, gas will spread over the floor surface and may lead to oxygen deficiency.
- Use the specified non-flammable refrigerant (R410A) to the refrigerant cycle. Do not mix other substances with R410A at installation, maintenance or relocation. If combustible substances such as different refrigerant, air, oxygen, propane or alcohol are mixed, it may lead to explosion, fire or injury.
- Refrigerant oil is sensitive to the influence of moisture, oxide film or grease and oil. Take good care to prevent moisture, dirt and dust, or remaining refrigerant/refrigerant oil used before from entering into the refrigeration cycle when installing. If not, such impurities accumulate at other parts, such as the expansion valve, and may lead to operational malfunction.
- Install the refrigerant piping securely before starting compressor operation. For maintenance, relocation or disposal, be sure to stop compressor operation before removing the refrigerant piping. If the compressor is operated without refrigerant piping and the stop valve is opened, abnormal high pressure is generated in the refrigerating cycle because of suctioned air, and it may lead to explosion, fire or injury.
- Existing Refrigerant Pipe Cleaning
 - (1) A noncombustible and nontoxic cleaning agent should be used. If a combustible cleaning agent is used, it may lead to explosion or fire.
 - (2) Enough ventilation is required for cleaning in a close space to avoid suffocation. Toxic gas may generate when the cleaning agent is under a high temperature condition.
 - (3) Be sure to collect and clean up the cleaning agent after cleaning. It is against the law to emit CFCs in the atmosphere intentionally.
- Do not install the unit where oil, steam/organic solvent/corrosive gas (such as ammonia, sulfur compound, acid), or acid/alkali atmosphere is present. It may lead to refrigerant leakage due to corrosion, electric shock, or malfunction.

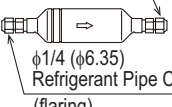
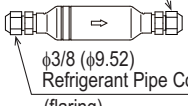

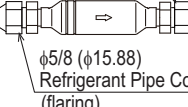

⚠ CAUTION

- Do not apply excessive force to the flare nut when tightening. If excessive force is applied, the flare nut may crack refrigerant leakage may occur. Tighten with the specified torque.

1. Factory-Supplied Accessories

Check to ensure the correct number of the following accessories are packed with the unit.

Unit: inch (mm)

No.	Accessory	Figure	Qty.		Remarks
			MSF-NP63A	MSF-NP112A	
1	$\phi 1/4$ ($\phi 6.35$) Strainer	$\phi 1/4$ ($\phi 6.35$) Refrigerant Pipe Connection (flaring)  $\phi 1/4$ ($\phi 6.35$) Refrigerant Pipe Connection (flaring)	1	-	Attach the strainer close to the indoor unit at the liquid side refrigerant piping to facilitate any replacement work.
2	$\phi 3/8$ ($\phi 9.52$) Strainer	$\phi 3/8$ ($\phi 9.52$) Refrigerant Pipe Connection (flaring)  $\phi 3/8$ ($\phi 9.52$) Refrigerant Pipe Connection (flaring)	-	1	
3	$\phi 1/2$ ($\phi 12.7$) Strainer	$\phi 1/2$ ($\phi 12.7$) Refrigerant Pipe Connection (flaring)  $\phi 1/2$ ($\phi 12.7$) Refrigerant Pipe Connection (flaring)	1	-	
4	$\phi 5/8$ ($\phi 15.88$) Strainer	$\phi 5/8$ ($\phi 15.88$) Refrigerant Pipe Connection (flaring)  $\phi 5/8$ ($\phi 15.88$) Refrigerant Pipe Connection (flaring)	-	1	
5	Piping Insulation	 (common use for liquid and gas piping)	2	2	For strainer insulation

2. Installation

- (1) Attach the strainer close to the indoor unit to facilitate replacement work.
- (2) When the strainer is attached to an inside wall or roof space, provide a service access door for maintenance.
- (3) When on-site piping with a joint such as an elbow socket is buried, provide a service access door to facilitate the check for connecting parts.

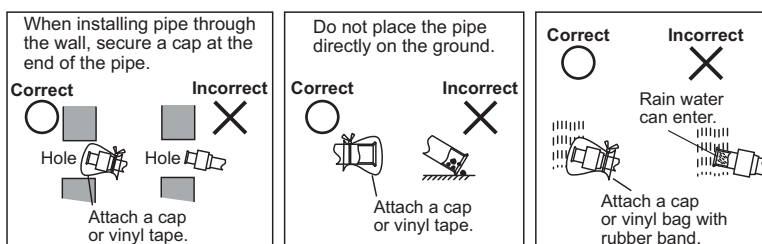
3. Refrigerant Piping Work

Refer to the "Installation and Maintenance Manual" attached with the outdoor unit for details on refrigerant piping, vacuuming and refrigerant charging work.

3.1 Piping

- (1) Prepare field-supplied copper pipes.
- (2) Select clean copper pipes. Make sure there is no dust or moisture inside
- (3) The refrigerant oil for the refrigerant R410A is susceptible to moisture, an oxide film, oil and grease. Take special care during the installation so that moisture, contaminants or old refrigerant oil will not enter the refrigerant cycle. Otherwise, impurities may adhere to the expansion valve and it may prevent proper operation.
- (4) When cutting the pipes, use a pipe cutter to avoid a grind swarf generation for the pipe cutting work. Blow the inside of the pipes with nitrogen or dry air to remove any dust or foreign materials before connecting pipes. Do not use any tools which produce a lot of swarf such as a saw or a grinder.

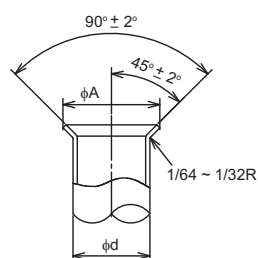
< Caution for Refrigerant Piping >



3.2 Piping Connection

3.2.1 Flare Nut and Flaring Work

- (1) Perform the flaring work as shown on the right.



inch (mm)

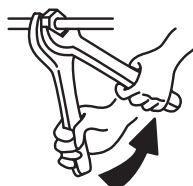
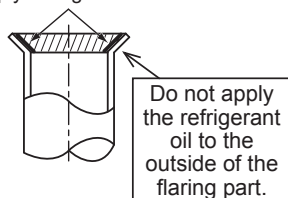
Diameter (φd)	φA ⁰ -1/64 (-0.4)
1/4 (6.35)	11/32 (9.1)
3/8 (9.52)	17/32 (13.2)
1/2 (12.7)	21/32 (16.6)
5/8 (15.88)	25/32 (19.7)

- (2) Use specific flare nuts attached with the unit. (The flare nut is based on JIS B 8607.)
- (3) Check that there are no scratches, adhered grinding swarf, deformation or surface unevenness at the flaring part.
- (4) Before tightening the flare nut, apply refrigerant oil (field-supplied) in a thin layer over the flaring part. (Do not apply the oil on other parts.) Tighten the flare nut for the liquid pipe to the specified torque with two wrenches. Then, tighten the flare nut for the gas pipe in the same way. After the tightening work has been completed, check that no refrigerant leakage occurs.

NOTES:

1. Refrigerant oil is field-supplied.
[Polyvinyl ether Oil FVC68D (Idemitsu Lubricants America)]
2. If the refrigerant oil attaches to the decorative panel, it may cause a crack.
Be careful not to let that happen.

Apply Refrigerant Oil.



Use two wrenches for tightening the flare nut.

Required Tightening Torque

(JIS B 8607)

Pipe Size	Tightening Torque
φ1/4 inch (6.35 mm)	10.3 - 13.3 lbf-ft (14 - 18 N-m)
φ3/8 inch (9.52 mm)	25.1 - 31.0 lbf-ft (34 - 42 N-m)
φ1/2 inch (12.7 mm)	36.1 - 45.0 lbf-ft (49 - 61 N-m)
φ5/8 inch (15.88 mm)	50.2 - 60.5 lbf-ft (68 - 82 N-m)

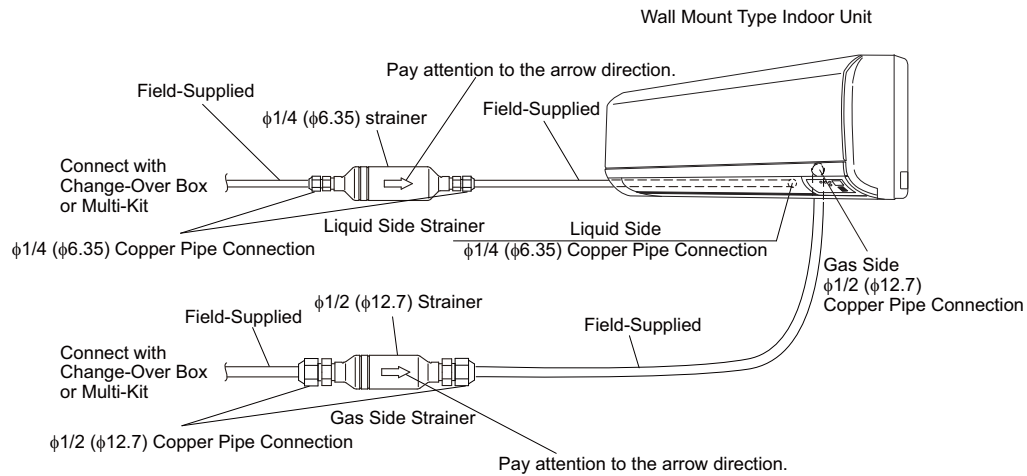
3.2.2 Strainer Kit Installation

- (1) Attach the strainer kit with the point of the arrow directing toward the indoor unit side. If it is installed in the opposite direction, foreign material is not collected.
- (2) Provide anti-vibration support with piping to avoid damages by an external force such as earthquake.
- (3) Piping (gas/liquid) will stretch because of refrigerant temperature changes. Provide clearance in an axial direction to prevent thermal stress.
- (4) When installing piping, fix the pipes and prevent the pipes from contacting areas such as walls or ceilings. Otherwise, abnormal sounds may be heard due to vibrating pipes.

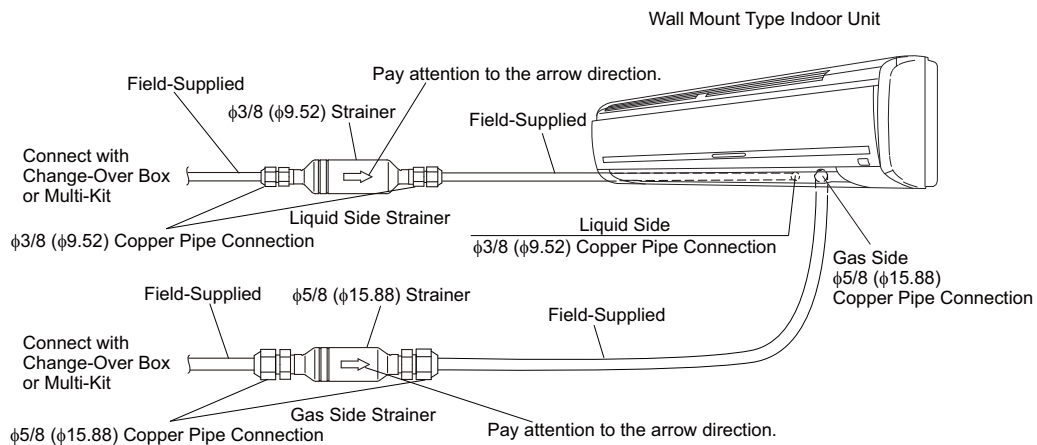
Example

< MSF-NP63A >

Unit: inch (mm)



< MSF-NP112A >

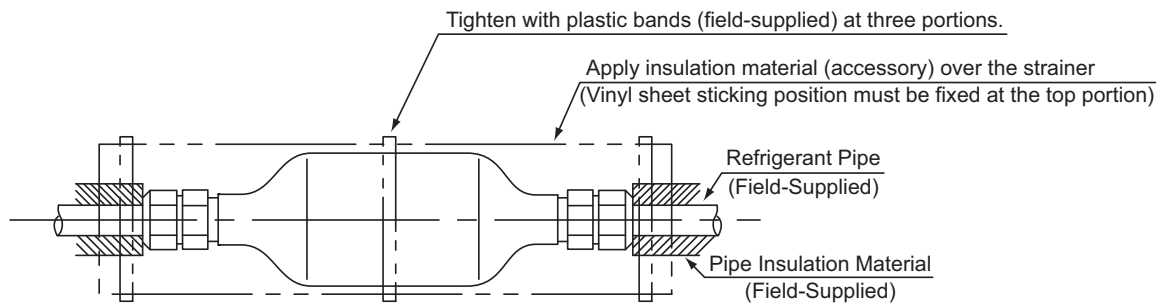


- Insulate all the refrigerant piping to prevent condensation. If piping is exposed to the ambient atmosphere, dew condenses over the piping surface and water drips.
- In an instance where the piping size does not correspond with the strainer kit, use a reducer (field-supplied).

- (5) Perform airtight test according to the "Installation and Maintenance Manual" attached with the outdoor unit.
- (6) Be sure to apply the insulation material (accessory) around the gas side strainer and the liquid side strainer.
If atmospheric conditions seem to exceed approx. 80.6°F (27°C), 80%RH, condensation may generate over the insulation material surface which is applied to the strainer. Additionally apply the insulation material (7/32 to 13/32 in. (5 to 10 mm thickness)) over the strainer insulation material to prevent condensation.
- (7) Apply tapes over the insulation material surface to prevent water splash.

CAUTION

- Do not apply excessive force to the flare nut when tightening. If excessive force is applied, the flare nut may crack because of aged deterioration and refrigerant leakage may occur. Tighten with the specified torque.



In order to prevent condensation, apply tapes over the insulation material (accessory) and secure them with plastic bands.

Forward this information to the building owner and request that they maintain all the equipment manuals.