# SPLIT TYPE AIR CONDITIONER INSTALLATION INSTRUCTION SHEET

# (PART NO. 9374995011)

# For authorized service personnel only.

the indoor unit.	,				
	This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel.				
	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.				
	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.				
Never touch electri	Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur After				

turning off the power, always wait 5 minutes or more before touching electrical components.

#### This air conditioner uses new refrigerant HFC (R410A).

The basic installation work procedures are the same as conventional refrigerant models. However, pay careful attention to the following points:

- Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.)
   Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the
- conventional piping and flare nuts with the R410A piping and flare nuts.
   2 Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is
- 1/2 UNF 20 threads per inch.]

   ③ Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when
- storing the piping, securely seal the openings by pinching, taping, etc.

   ④ When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and
- always charge from the liquid phase side whose composition is stable.

#### Special tools for R410A

Tool name	Contents of change
	Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other
Course menifold	refrigerants, the diameter of each port has been changed.
Gauge manifold	It is recommended the gauge with seals -0.1 to 5.3 MPa (-76 cmHg to 53 kgf/cm <sup>2</sup> ) for high pressure0.1 to
	3.8 MPa (-76 cmHg to 38 kgf/cm <sup>2</sup> ) for low pressure.
Charge hose	To increase pressure resistance, the hose material and base size were changed.
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter.
Gas leakage detector	Special gas leakage detector for HFC refrigerant R410A.

Copper pipes

It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 40 mg/10 m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants. As an air conditioner using R410A incurs pressure higher than when using conventional refrigerant, it is necessary to choose adequate materials. Thicknesses of copper pipes used with R410A are as shown in the table. Never use copper pipes thinner than that in the table even when it is available on the market.

Thicknesses of Annealed Copper Pipes (R410A)				
Pipe outside diameter	Thickness			
6.35 mm (1/4 in.)	0.80 mm			
9.52 mm (3/8 in.)	0.80 mm			
12.70 mm (1/2 in.)	0.80 mm			
15.88 mm (5/8 in.)	1.00 mm			
19.05 mm (3/4 in.)	1.20 mm			

REFRIGERANT

THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.

Refer to Commonwealth, State, Territory and local legislat regulations, codes, installation & operation manuals, befo the installation, maintenance and/or service of this produc

	WARNING				
1	For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.				
2	Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.				
3	Installation work must be performed in accordance with national wiring standards by authorized personnel only.				
4	Also, do not use an extension cord.				
(5)	Do not turn on the power until all installation work is complete.				
6	Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.				
7	There is not extra refrigerant in the outdoor unit for air purging.				
8	Use a vacuum pump for R410A exclusively.				
9	Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.				
10	Use a clean gauge manifold and charging hose for R410A exclusively.				
1	If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.				

- Be careful not to scratch the air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
  Let the customer keep this installation instruction sheet because it is used when the air conditioner is serviced or moved.

#### **STANDARD PARTS**

The following installation parts are furnished. Use them as required.

Name and Shape	Q'ty	Application		
Drain pipe	1	For outdoor unit drain piping work (May not be		
Drain cap	2	supplied, depending on the model.)		
Insulation (seal)	1	For filling in a gap at the entrance of connection cords		

# **CONNECTION PIPE REQUIREMENT**

CAUTION The maximum lengths of this product are shown in the following table. If the units are further apart than this, correct operation can not be guaranteed.						
Model Type	Diameter		Pipe length		Maximum height (between indoor	
	Liquid	Gas	MAX.	MIN.	and outdoor)	
30,000 BTU/h class		15.88 mm (5/8 in.) -	50 m	- 5 m	30 m	
36,000 BTU/h class	0.50 mm (0/0 in )					
45,000 BTU/h class	9.52 mm (3/8 in.)		70 m			
54 000 BTU/h class						

CAUTION
Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks.
Use heat insulation with heat resistance above 120 °C. (Reverse cycle model only)
In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat
insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 15 mm or thicker
and if the expected humidity exceeds 80%, use heat insulation that is 20 mm or thicker.
If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation.

In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 20 °C).

## **ELECTRICAL REQUIREMENT**

• Electric wire size and breaker capacity:

Model Type	Power supply cord (mm <sup>2</sup> )		Connection	Broaker canacity (A)		
Model Type	MAX.	MIN.	MAX.	MIN.	- Dieakei Capacity (A	
30,000 BTU/h class	10	25	0.5	1.5	20	
36,000 BTU/h class	4.0	3.5	2.5	1.5		
45,000 BTU/h class	6.0	5.3	3.5	2.5	30	
54,000 BTU/h class						

Always use H07RN-F or equivalent to the connection cord.Install all electrical works in accordance to the standard.

Install the disconnect device with a contact gap of at least 3 mm in all poles nearby the units. (Both indoor unit and outdoor unit)
Install the circuit breaker nearby the units.

# SELECTING THE MOUNTING POSITION

Decide the m	ounting position with the customer as follows:
	A WARNING
Select ins that they	tallation locations that can properly support the weight of the indoor and outdoor uni do not topple or fall.
① Do no	t install where there is the danger of combustible gas leakage.
② Do no	t install the unit near heat source of heat, steam, or flammable gas.
③ If child	Iren under 10 years old may approach the unit, take preventive measures so that they o
	A WARNING
<ol> <li>Install contai</li> </ol>	the unit where it will not be tilted by more than 3°. However, do not install the unit ning the compressor.
② When	installing the outdoor unit where it may exposed to strong wind, fasten it securely.
1) Install th	e outdoor unit in a location which can withstand the weight of the unit and vibration, and which can install

(2) Provide the indicated space to ensure good airflow.

- (3) If possible, do not install the unit where it will be exposed to direct sunlight (If necessary, install a blind that does not interfere with the airflow.)
- (4) Do not install the unit near a source of heat, steam, or flammable gas.
- (5) During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where the drain water flow will not be obstructed. (Reverse cycle model only)
- (6) Do not install the unit where strong wind blows or where it is very dusty.
  (7) Do not install the unit where people pass.
  (8) Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- (9) Install the unit where connection to the indoor unit is easy.

#### • 30,000 BTU/h class • 36,000 BTU/h class

#### When there are obstacles at the back side.







#### When there are obstacles at the back and front sides.



When there are obstacles at the back, side(s), and top.





When there are obstacles at the back side with the installation of more than one unit.



\* If the space is larger than that is stated, the condition will be the same as that there are no obstacles.



(4) When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.



Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.					
Flare nut Tightening torque					
6.35 mm (1/4 in.) dia.	14 to 18 N·m (140 to 180 kgf·cm)				
6.35 mm (1/4 in.) dia. 9.52 mm (3/8 in.) dia.	14 to 18 N·m (140 to 180 kgf·cm) 33 to 42 N·m (330 to 420 kgf·cm)				
6.35 mm (1/4 in.) dia. 9.52 mm (3/8 in.) dia. 12.70 mm (1/2 in.) dia.	14 to 18 N·m (140 to 180 kgf·cm)           33 to 42 N·m (330 to 420 kgf·cm)           50 to 62 N·m (500 to 620 kgf·cm)				

19.05 mm (3/4 in.) dia. 100 to 110 N·m (1000 to 1100 kgf·cm)

(Continued	to t	he r	next	page
(00.1000				p~90





Valve cove

Control box

Power supply cord

Power supply cord



Always turn on the power 12 hours prior to the start of the

1. Make a TEST RUN in accordance with the in-

stallation instruction sheet for the indoor unit.

operation in order to ensure compressor protection

2. OUTDOOR UNIT LEDS

5

# **TEST RUN**

### SPECIAL INSTALLATION SETTING

PUMP DOWN (Refrigerant collecting operation) Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

(1) Press the push-button switch (SW2) on the circuit board once. The LED on the circuit board starts flashing (one second ON/one se-

6

cond OFF). This indicates the start of PUMP DOWN operation. When the switch is pressed while the compressor is in operation, PUMP DOWN operation starts automatically. When the switch is pressed while the compressor is in stop, the compressor starts to operate automatically, and then move on to PUMP DOWN operation.

) PUMP DOWN operation continues for about 1 minute. When PUMF DOWN operation is completed, the compressor stops automatically. Then close the 2-way valve and 3-way valve immediately.



