Panasonic

Air conditioner Installation Instruction

⚠ CAUTION

REFRIGERANT

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

Refer to National, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

Required tools for Installation Works

1 Phillips screw driver

2 Level gauge3 Electric drill, hole core drill (ø70 mm) 14 Torque wrench

4 Hexagonal wrench (4 mm) 18 Nem (1.8 kgfem) 42 N•m (4.3 kgf•m) 55 N•m (5.6 kgf•m) 5 Spanner 6 Pipe cutter 65 Nem (6.6 kgfem) Reamer 100 N•m (10.2 kgf•n

15 Vacuum pump 9 Gas leak detector 16 Gauge manifold 10 Measuring tape

11 Thermometer

8 Knife

MODEL NO. :-

CS/CU-U71, U80AKR Series

SAFETY PRECAUTIONS

0 0

 Read the following "SAFETY PRECAUTIONS" carefully before installation.
 Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed. The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

This indication shows the possibility of causing death or serious injury. This indication shows the possibility of causing injury or damage to properties only The items to be followed are classified by the symbols: 0 Symbol with white background denotes item that is PROHIBITED

• Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the

♠ WARNING

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit method or using incompatible material may cause product damage, burst and serious injury.

Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current we cause electrical shock or fire.

Symbol with dark background denotes item that must be carried out.

Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen

Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.

Do not sit or step on the unit, you may fall down accidentally.

Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.

When installing or relocating air conditioner, do not let any substance other than the specified refrigerant, eg. air etc mix into refrigeration cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc. Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources of ignition

Do not pierce or burn as the application to proceed Else, it may explode and cause injury or death.

Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc

For R32/R410A model, use piping, flare nut and tools which is specified for R32/R410A refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the refrigerant. cycle (piping), and possibly result in explosion and injury.
For R32 and R410A, the same flare nut on the outdoor unit side and pipe can be used.
Since the working pressure for R32/R410A is higher than that of refrigerant R22 model, replacing conventional piping and flare nuts on the outdoor unit side are recommended.
If reuse piping is unavoidable, refer to instruction "IN CASE OF REUSING EXISTING REFRIGERANT PIPING"
Thickness for copper pipes used with R32/R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm.
It is desirable that the amount of residual oil less than 40 mg/10 m.

ngage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.

r refrigeration system work, Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire. lse the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock

nstall at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not properly done, the set will drop and cause injury

or electrical work, follow the wiring rules AS/NZS 3000, national regulation, legistration and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is nough or defect found in the electrical work, it will cause electrical shock or fire.

on tuse joint cable for indoor / outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction (s) CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly fo door/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock

his equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD), with sensitivity of 30 mA at 0.1 sec or less. Otherwise, it may cau lectrical shock and fire in case of equipment breakdown or insulation breakdown.

uring installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened position will cause suck-in of air, abnormal gh pressure in refrigeration cycle and result in explosion, injury etc.

turing pump down operation, stop the compressor before removing the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air,

ormal high pressure in refrigeration cycle and result in explosion, injury etc Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage

After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire

ntilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire

Be aware that refrigerants may not contain an odour.

This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown.

Do not install the unit in a place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire

Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres

Do not release refrigerant during piping work for installation, re-installation and during repairing refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite

Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc. Do not touch the sharp aluminium fin, sharp parts may cause injury.

(Larry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

Select an installation location which is easy for maintenance.

Incorrect installation, service or repair of this air conditioner may increase the risk of rupture and this may result in loss damage or injury and/or property

Power supply connection to the room air conditioner.

Use power supply cord 3 x 2.5 mm² (2.5HP), 3 x 4.0 mm² (3.0HP) type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to the mains using one of the following method. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited.

1) Power supply connection to the receptacle using power plug. Use an approved 20 A (2.5HP) or 25 A (3.0HP) power plug with earth pin for the connection to the socket.

2) Power supply connection to a circuit breaker for the permanent connection.

Use an approved 20 A (2.5HP) or 25 A (3.0HP) circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap. Installation work.
It may need two people to carry out the installation work.

Keep any required ventilation openings clear of obstruction.

PRECAUTION FOR USING R32 REFRIGERANT

Pay careful attention to the following precaution points and the installation work procedure:

⚠ WARNING

When connecting flare at indoor side, make sure that the flare connection is used only once, if torqued up and released, the flare must be remade. Once the flare connection was torqued up correctly and leak test was made, thoroughly clean and dry the surface to remove oil, dirt and grease by following instructions of silicone sealant. Apply neutral cure (Alkoxy type) & ammonia-free silicone sealant that is non-corrosive to copper & brass to the external of the flared connection to prevent the ingress of moisture on both the gas & liquid sides. (Moisture may cause freezing and premature failure of the connection) The appliance shall be stored, installed and operated in a well ventilated room with indoor floor area larger than A_{min} (m²) [refer Table A] and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.

e mixing of different refrigerants within a system is prohibited. Models that use refrigerant R32 and R10A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety erefore, check beforehand. [The charging port thread diameter for R32 and R410A is 12.7 mm (1/2 inch).]

Ensure that foreign matter (oil, water, etc.) does not enter the piping.

Also, when storing the piping, securely seal the opening by pinching, taping, etc. (Handling of R32 is similar to R410A.)

eration, maintenance, repairing and refrigerant recovery should be carried out by trained and certified personnel in the use of flammable refrigerants and as recommended by the manufacturer. Any personnel ducting an operation, servicing or maintenance on a system or associated parts of the equipment should be trained and certified.

Any part of refrigerating circuit (evaporators, air coolers, AHU, condensers or liquid receivers) or piping should not be located in the proximity of heat sources, open flames, operating gas appliance or an operating The user/owner or their authorized representative shall regularly check the alarms, mechanical ventilation and detectors, at least once a year, where as required by national regulations, to ensure their correct

A logbook shall be maintained. The results of these checks shall be recorded in the logbook.

Before a new refrigerating system is put into service, the person responsible for placing the system in operation should ensure that trained and certified operating personnel are instructed on the basis of the instructio nanual about the construction, supervision, operation and maintenance of the refrigerating system, as well as the safety measures to be observed, and the properties and handling of the refrigerant used. general requirement of trained and certified personnel are indicated as below:

Knowledge of legislation, regulations and standards relating to flammable refrigerants; and,

Detailed knowledge of and skills in handling flammable refrigerants, personal protective equipment, refrigerant leakage prevention, handling of cylinders, charging, leak detection, recovery and disposal; and,

Able to understand and to apply in practice the requirements in the national legislation, regulations and Standards; and,

 d) Continuously undergo regular and further training to maintain this expertise. Air-conditioner piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.

Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.

nsure protection devices, refrigerating piping and fittings are well protected against adverse environmental effects (such as the danger of water collecting and freezing in relief pipes or the

 Expansion and contraction of long runs piping in refrigerating systems shall be designed and installed securely (mounted and guarded) to minimize the likelihood hydraulic shock damaging the system Protect the refrigerating system from accidental rupture due to moving furniture or reconstruction activities.

To ensure no leaking, field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure (>1.04 MPa, max 4.15 MPa). No leak shall be detected.

1. General

Must ensure the installation of pipe-work shall be kept to a minimum. Avoid use dented pipe and do not allow acute bending.

Must ensure that pipe-work shall be protected from physical damage.

Must comply with national gas regulations, state municipal rules and legislation. Notify relevant authorities in accordance with all applicable regulations.

Must ensure mechanical connections be accessible for maintenance purposes.

In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.

When disposal of the product, do follow to the precautions in #11 and comply with national regulations.

In case of field charge, the effect on refrigerant charge caused by the different pipe length has to be quantified, measured and labelled.

Always contact to local municipal offices for proper handling.

Ensure the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed Ensure refrigerant charge not to leak.
 Wear appropriate protective equipment, including respiratory protection, as conditions warrant.
 Keep all sources of ignition and hot metal surfaces away.

2. Servicing

2-1. Qualification of workers

Any qualified person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
 Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
 Servicing shall be performed only as recommended by the manufacturer.
 The system is inspected, regularly supervised and maintained by a trained and certified service personnel who is employed by the person user or party responsible.

2-2. Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised.
 For repair to the refrigerating system, the precautions in #2-3 to #2-7 must be followed before conducting work on the system.

2-3. Work procedure Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed

2-4. General work area

· All maintenance staff and others working in the local area shall be instructed and supervised on the nature of work being carried ou

• Avoid working in confined spaces. Always ensure away from source, at least 2 meter of safety distance, or zoning of free space area of at least 2 meter in radius. 2-5. Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. nor sparking, adequately sealed or intrinsically safe.

In case of leakage/spillage happened, immediately ventilate area and stay upwind and away from spill/release.

In case of leakage/spillage happened, do notify persons down wind of the leaking/spill, isolate immediate hazard area and keep unauthorized personnel out.

2-6. Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available at hand.

Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

2-7. No ignition sources

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. He/She must not be smoking when carrying out such work.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.

"No Smoking" signs shall be displayed.

2-8. Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
A degree of ventilation shall continue during the period that the work is carried out.
The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

2-9. Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.

At all times the manufacturer's maintenance and service guidelines shall be followed.

If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants.

The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.

The ventilation machinery and outlets are operating adequately and are not obstructed.

Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.

Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the component are constructed of materials which are inherently resistant to being corroded or are properly protected against being so corroded.

2-10. Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
Initial safety checks shall include but not limit to:
That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
That there is no live electrical components and wiring are exposed while charging, recovering or purging the system.
That there is continuity of earth bonding.
At all times the manufacturer's maintenance and service guidelines shall be followed.
If in doubt consult the manufacturer's technical department for assistance.
If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
The owner of the equipment must be informed or reported so all parties are advised thereinafter.

3. Hepairs to sealed components
 During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
 If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
 Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

 Ensure that apparatus is mounted securely.
 Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
 Replacement parts shall be in accordance with the manufacturer's specifications. The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipmen
 Intrinsically safe components do not have to be isolated prior to working on them.

4. Repair to intrinsically safe components

• Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

• Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.

• The test apparatus shall be at the correct rating.

• Replace components only with parts specified by the manufacturer. Unspecified parts by manufacturer may result ignition of refrigerant in the atmosphere from a leak.

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans. 6. Detection of flammable refrigerants Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks

Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks.
 A halide torch (or any other detector using a naked flame) shall not be used.
 The following leak detection methods are deemed acceptable for all refrigerant systems.
 No leaks shall be detected when using detection equipment with a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure (>.1.04 MPA, max 4.15 MPA) for example, a universal sniffer.
 Electronic leak detectors may be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration.
 (Detection equipment shall be calibrated in a refrigerant-free area.)
 Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
 Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximu is confirmed)

Leak detection fluids are also suitable for use with most refrigerants, for example, bubble method and fluorescent method agents. The use of detergents containing chlorine shall be avoided as

the chlorine may react with the refrigerant and corrode the copper pipe-work.
If a leak is suspected, all naked flames shall be removed/extinguished.
If a leak go frefrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. The precautions in #7 must be followed to remove the refrigerant.

 When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used.
 However, it is important that best practice is followed since flammability is a consideration.
 The following procedure shall be adhered to: • remove refrigerant -> • purge the circuit with inert gas -> • evacuate -> • purge with inert gas -> • open the circuit by cutting or brazing

. The refrigerant charge shall be recovered into the correct recovery cylinders

The system shall be purged with OFN to render the appliance safe. (remark: OFN = oxygen free nitrogen, type of inert gas)
This process may need to be repeated several times.
Compressed air or oxygen shall not be used for this task.

Purpose of the process of t Oblighessed air in Not yellow that is a continuing to a continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuu This process shall be repeated until no refrigerant is within the system.

When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

 This operation is absolutely vital if brazing operations on the pipe work are to take place.
 Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and there is ventilation available. Charging procedures In addition to conventional charging procedures, the following requirements shall be followed

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them. Cylinders shall be kept in an appropriate position according to the instructions. Ensure that the refrigerating system is earthed prior to charging the system with refrigerant

Label the system when charging is complete (if not already).

Extreme care shall be taken not to over fill the refrigerating system.

Prior to recharging the system it shall be pressure tested with OFN (refer to #7).

The system shall be leak tested on completion of charging but prior to commission.

Pump down refrigerant system, if possible

A follow up leak test shall be carried out prior to leaving the site. Electrostatic charge may accumulate and create a hazardous condition when charging and discharging the refrigerant. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

 It is recommended good practice that all refrigerants are recovered safely.

 It is essential that electrical power is available before the task is commenced. a) Become familiar with the equipment and its operation.

Before attempting the procedure ensure that: mechanical handling equipment is available, if required, for handling refrigerant cylinders; all personal protective equipment is available and being used correctly;
 the recovery process is supervised at all times by a competent person; recovery equipment and cylinders conform to the appropriate standards.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of

Make sure that cylinder is situated on the scales before recovery takes place. Start the recovery machine and operate in accordance with instructions.
 Do not over fill cylinders. (No more than 80 % volume liquid charge).) Do not exceed the maximum working pressure of the cylinder, even When the cylinders have been filled correctly and the process completed, make

sure that the cylinders have been inlied context, and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked. the system. Electrostatic charge may accumulate and create a hazardous condition when charging or discharging the refrigerant.

To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant Recovery
 When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
 When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
 Ensure that the correct number of cylinders for holding the total system charge are available.
 All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
 Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be su flammable refrigerants.

flammable refrigerants.

In addition, a set of calibrated weighing scales shall be available and in good working order.

Hoses shall be complete with leak-free disconnect couplings and in good condition.

Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.

Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.

The evacuation process shall be carried out prior to returning the compressor to the suppliers.

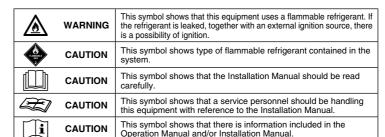
Only electric heating to the compressor body shall be employed to accelerate this process.

When oil is drained from a system, it shall be carried out safely.

/50 mm

or more

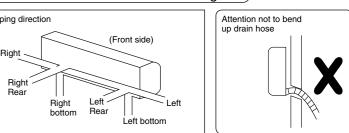
Explanation of symbols displayed on the indoor unit or outdoor unit.



Indoor/Outdoor Unit Installation Diagram

(Left and right are identical)

X Vinyl tape



Installation parts you should purchase (%)

Installation plate 1

-Bushing-Sleeve (X)

(Gum Type Sealer)

- Bend the pipe as closely

on the wall as possible. but be careful that it

Flare connection

Vinyl tape (wide) (X)

· Apply after carrying out a drainage test.

To carry out the

drainage test, remove

water into the heat

Power supply cord (※)

—Liquid side piping (※)

Gas side piping (※)

Control Board cover

Additional drain hose (X)

exchanger.

- Saddle (※)

Sleeve (※)

Putty (※)

Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.	No.	Accessories part	C
1	Installation plate	1	4	Battery ⊕	2	7	Anti-bacterial filter	
2	Installation plate fixing screw	5	5	Remote control holder	1			
3	Remote Control	1	6	Remote control holder fixing screw	2			

1 151119 3120					
Gas	Liquid				
9.52 mm (3/8")	6.35 mm (1/4")				
12.7 mm (1/2")	6.35 mm (1/4")				
15.88 mm (5/8")	6.35 mm (1/4")				
	Gas 9.52 mm (3/8") 12.7 mm (1/2")				

SELECT THE BEST LOCATION

☐ Do not install the unit in excessive oil fume area such as kitchen, workshop and etc. There should not be any heat source or steam near the unit. ☐ There should not be any obstacles blocking the air circulation.

A place where air circulation in the room is good. A place where drainage can be easily done. ☐ A place where noise prevention is taken into consideration

☐ Do not install the unit near the door way. ☐ Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.

☐ Indoor unit of this air conditioner shall be installed in a height of at least 1.8 m. OUTDOOR UNIT

 $\ensuremath{\mbox{\ \square}}$ If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed. There should not be any animal or plant which could be affected by hot air discharged. □ Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
 □ Do not place any obstacles which may cause a short circuit of the discharged air.

If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the table.

(Table A

Model	Capacity W (HP)	Piping Gas	size Liquid	Std. Length (m)	Max. Elevation (m)	Min. Piping Length (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)	Piping Length for add. gas (m)	Max. Refrigerant Charge (kg)	Indoor A _{min} (m²)
U71***	2.5HP	15.88 mm	6.35 mm		20	3	30	25	10	1.74	Not applicable (*)
U80***	3.0HP	(5/8")	(1/4")	5	20	3	30	25	10	1.76	Not applicable (*)

(*) Systems with total refrigerant charge, mc, lower than 1.84 kg are not subjected to any room area requirements. Example: For U71**

 ** The required minimum room area, $A_{\mbox{min}}$, shall also be governed by the safety factor margin formula below

If the unit is installed at 15 m distance, the quantity of additional refrigerant should be 125 g (15-10) m x 25 g/m = 125 g.

 $A_{\text{min}} = (m_c / (2.5 \text{ x (LFL})^{(5/4)} \text{ x } h_0))^2$ ** not less than safety factor margin A_{min} = Required minimum room area, in m² = Refrigerant charge in appliance, in kg

= Installation height of the appliance (1.8 m for wall mounted) SF = Safety factor with a value of 0.75

The higher value shall be taken when determining the room area.

LFL = Lower flammability limit (0.307 kg/m³)

 $\left(A_{\min} = m_c / (SF \times LFL \times h_0)\right)$

consult authorized dealer/specialist. · This illustration is for explanation purposes only The indoor unit will actually face a different way.

It is advisable to avoid more than 2

blockage directions

& multiple-outdoor

Insulation of piping connections

Attaching the remote control holder to the wall

Remote control holder

Carry out insulation after

secure with vinyl tape

checking for gas leaks and

(*) If holder at the rear of chassis (Refer column " 4 Indoor Unit nstallation") need to be used to prop up the unit, this distance

PRINTED IN MALAYSIA

OUTDOOR UNIT

CONNECT THE PIPING

Connecting The Piping to Indoor

For connection joint of all models

Please make flare after inserting flare nut (locate at joint portion of

pipe. (In case of using long piping)

sufficiently tighten the flare nut

with fingers.

• Further tighten the flare nut with

Spanner or

stated in the table.

(Step 3-4)

Tightness Test

oth Inert Gas (Step 5-7)

Evacuation (Step 3-4)

Open 2 and 3

valves (Step 14-18)

torque wrench in specified torque as stated in the table

Connecting The Piping to Outdoor

Remove burrs from cut edge.

Decide piping length and then cut by using pipe cutter

Make flare after inserting the flare nut (locate at valve)

onto the copper pipe. Align center of piping to valve and

tube assembly) onto the copper

Connect the piping
• Align the center of piping and

SELECT THE BEST LOCATION INSTALL THE OUTDOOR UNIT selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram . Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm). Make sure unit install in balance level to ensure that water flow out from unit drainage hole. 2. When installing at roof, please consider strong wind and earthquake Please fasten the installation stand firmly with bolt, screws or nails. A , B Model A B C D U71***. U80*** 613 mm | 131 mm | 24 mm | 360.5 mm CONNECT THE CABLE TO THE OUTDOOR UNIT Remove the control board cover from the unit by loosening the screw Applicable for : CU-U71*** Cable connection to the power supply through Isolating Devices (Disconnecting means). Connect approved type polychloroprene sheathed power supply core $3\times2.5~\text{mm}^2$ (2.5HP), $3\times4.0~\text{mm}^2$ (3.0HP) type designation 60245 IEC 57 or heavier cord to the terminal board, and connect the others end of the cord to Isolating Devices (Disconnecting means). Do not use joint power supply cord. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short. In unavoidable case, joining of power supply cord between isolating devices and terminal board of air conditioner shall be done by using approved socket and plug with earth pin rated 20 A (2.5HP) or 25 A Earth wire longer than (3.0HP). Wiring work to both socket and plug must follow to national others AC wires wiring standard Connection cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord. Do not use joint connection for safety

reason cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short. Allowable connection cable length of each indoor DRED (Demand response enabling devices) Indoor & P. Demand control signal transmission cable between outdoor unit and DRED (Demand response enabling devices) shall be double insulation layer, polychloroprene sheathed (>50 V) or type destination AS/NZS Connection cable 50000.2 with size 4 x (0.5 mm² to 2.0 mm²) cable, where the maximum Connect the power supply cord and connection cable between indoor unit and outdoor unit according to the diagram below. Isolating Devices Indoor unit

DRM Terminal on the outdoor unit Colour of wires (connection cable ninal on the DRED (1) (2) (3) (C) (Demand response enabling devices) Holder Attach the control board cover back to the original position with screw. 8. For wire stripping and connection requirement, refer to instruction ⑤ of Note: Isolating Devices (Disconnecting means) should have minimum

AC wires reason O PIIIIO Holder ~ ~ DRED (Demand

response

Indoor & outdoor supply cord

 Earth wire shall be Yellow/Green (Y/G) in colour and longer than other • Always ensure all above connections compliant with national wire rules. Applicable for : CU-U80*** Isolating Devices Indoor unit Remote Agent

Cap and Screw

PIPING INSULATION

Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.

If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with

)||(L)|(N)

thickness 6 mm or above.

HOW TO TAKE OUT FRONT GRILLE

unit shall be 30 m or less.

allowable length is 30 m.

Terminals on the indoor unit

Colour of wires (connection cable

Terminals on the isolating devices

Terminals on the outdoor unit

(Power supply cord)

(Disconnecting means)

3.0 mm contact gap.

AC wires for safety reason.

⚠ WARNING

This equipment must be properly earthed.

indoor unit.

Please follow the steps below to take out front grille if necessary such as when installing or servicing. Pull down 3 caps at the bottom, then remove 3 mounting screws

- Open front panel.
- . Remove 3 mounting screws on the front grille.
- Slide the 4 lock knobs on the upside of front grille to unlock position. Pull the front grille towards you to remove the front grille.
- When reinstalling the front grille, carry out above steps in the reverse order

AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. AUTO OPERATION MODE

2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 8 sec.. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation. REMOTE CONTROLLER RECEIVING SOUND ON/OFF

The ON/OFF of Remote controller receiving sound can be change over by the following steps: a) Press "AUTO" switch continuously for more than 16 sec. to below 21 sec.

A "pep", "pep", "pep" sound will occur at the sixteenth sec.

b) Press the "AC Reset" button once, "pep" sound will occur indicates that Remote controller receiving sound setting mode is activated.

c) Press "AUTO" switch again. Everytime "AUTO" switch is pressed (within 60 sec. interval), Remote controller receiving sound status will be reversed between ON and OFF.

Long "peep" sound indicates that Remote controller receiving sound is ON. Short "pep" sound indicates that Remote controller receiving sound is OFF

CHECK THE DRAINAGE

- Open front panel and remove air filters.
- (Drainage checking can be carried out without removing the front grille.)
 Pour a glass of water into the drain tray-styrofoam.
 Ensure that water flows out from drain hose of the indoor unit.
- - **EVALUATION OF THE PERFORMANCE**
- Operate the unit at cooling/heating operation mode for fifteen minutes or more. Measure the temperature of the intake and discharge air.
 Ensure the difference between the intake temperature and the discharge is more than 8 °C during Cooling operation or more than 14 °C during Heating operation

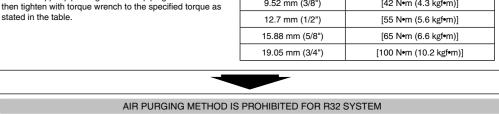
 During extremely cold winter, turn on the power supply and standby the unit for at least 15 minutes before test run. Allow sufficient time to warm up refrigerant and prevent wrong error code judgement.

INSTALLATION OF ANTI-BACTERIAL FILTER

Onen the front nanel

2. Remove the air filters 3. Put the Anti-bacterial filter into place as shown in illustration at right.





Do not overtighten, overtightening may cause gas leakage

Torque

[18 N•m (1.8 kgf•m)]

[42 N•m (4.3 kgf•m)]

Additional Precautions For R32 Models when connecting by flaring at indoor side

Ensure to do the re-flaring of pipes before connecting to units to avoid leaking.

leutral cure (Alkoxy type) & ammonia-free silicone sealant is only to be applied after pressul

testing and cleaning up by following instructions of sealant, only to the outside of the connection. The aim is to prevent moisture from entering the connection joint and possible occurrence of freezing. Curing sealant will take some time. Make sure sealant will not peel off when wrapping the insulation.

Piping size

6.35 mm (1/4")

9.52 mm (3/8")

Seal sufficiently the flare nut (both gas and liquid sides) with neutral cure (Alkoxy type) &

AIR PURGING METHOD IS PROHIBITED FOR R32 SYSTEM AIR TIGHTNESS TEST ON THE REFRIGERATING SYSTEM



0	There is no extra refrigerant in the outdoor unit for air purging.	l
Be	fore system is charged with refrigerant and before the refrigerating system is put into operation centance criteria shall be verified by the certified technicians, and/or the installer	n, below site test procedure and

 acceptance criteria shall be verified by the certif
 Be sure to check whole system for gas leakage. Preparation (Step 1-2)

Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve. Attach the gauge manifold set correctly and tightly. Make sure that both valves of the manifold gauge (low pressure and high pressure) is in close position.

Connect the center hose of the manifold gauge to a vacuum pump. Turn on the power switch of the vacuum pump, then turn open the low side manifold gauge valve and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa) or vacuum until 500 microns is achieved. This process continues for approximately ten minutes. Then close the low side manifold gauge valve.

Remove the vacuum pump from the centre hose and connect the center hose to cylinder of any applicable inert gas as Charge test gas into the system and wait until the pressure within the system to reach min. 1.04 MPa (10.4 barg).

Wait and monitor the pressure reading on the gauges. Check if there is any pressure drop. Waiting time depends on the size of the system.

) If there is any pressure drop, perform step 9-12. If there is no pressure drop, perform step 13.

9) Use Gas Leak Detector to check for leaks. Must use the detection equipment with a

sensitivity of 5 grams per year of test gas or better.

10) Move the probe along the air conditioning system to check for leaks, and mark for repair.

and repair (Step 9-12) 10) Move the prope along the all containing 1,1...

Any leak detected and marked shall be repaired.

tightness test steps 5-7 Indoor unit Liquid side Check the pressure drop as in step 8.

13) If no leak. Recover the test gas. Perform evacuation of steps 3-4 Then proceed to step 14

14) Disconnect the charging hose from the service port of the 15) Tighten the service port caps of the 3-way valve at a torque

of 18 Nem with a torque wrench 16) Remove the valve caps of both of the 2-way valve and

17) Open both of the valves, using a hexagonal wrench (4 mm)

It is recommended to allow refrigerant slowly flow into the refrigeran

system to prevent refrigerant freezing. Slightly open 2-way valve for 5 seconds then close the valve. Repeat this action for 3 cycles the

18) Mount back the valve caps onto the 2-way valve and the 3-way valve to complete this proces

Universal Sniffer leak detector Electronic halogen leak detector III) Ultrasonic Leak Detector

IN CASE OF REUSING EXISTING REFRIGERANT PIPING

□ Observe the followings to decide reusing the existing refrigerant piping.

Poor refrigerant piping could result in product failure.

In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.

Heat insulation is not provided for either liquid-side or gas-side piping or both.

The existing refrigerant pipe has been left in an open condition.

The diameter and thickness of the existing refrigerant piping does not meet the requirement.

The piping length and elevation does not meet the requirement.

Perform proper pump down before reuse piping.

In the circumstances listed below, clean it thoroughly before reuse.

Pump down operation cannot be performed for the existing air-conditioner.

The compressor has a failure history.

Oil color is darken. (ASTM 4.0 and above).

The existing air-conditioner is gas/oil heat pump type.

Do not reuse the flare to prevent gas leak. Make sure to install a new flare.

If there is a welded part on the existing refrigerant piping, conduct a gas leak check on the welded part.

Replace deteriorated heat insulating material with a new one.

Heat insulating material is required for both liquid-side and gas-side piping.

Proper Pump Down Method

① Operate air conditioner ② After 10 ~ 15 minutes of pre 3 Take out air at cooling mode for operation, close 2 way valve. After 3 minutes, close 3 way 10 ~ 15 minutes. Most Important Process Purpose: To make the oil Mixed refriger & oil will be refrigerant mix togeth hey are in separated

CHECK ITEMS
Is there any gas leakage connections?
Has the heat insulation b

Is the indoor unit properly hooked to the at flare nut een carried out at

ls the power supply voltage complied with flare nut connection? Is there any abnormal sound? Is the connection cable being fixed to terminal board firmly?

Is the cooling/heating operation normal? Is the connection cable being clamped Is the thermostat operation normal? Is the remote control's LCD operation

Is the drainage ok? (Refer to "Check the drainage" section) Is the anti-bacterial filter installed? is the earth wire connection properly done?



Close

mmended use of any of the

CLOSE

following leak detector,

ACXF60-50210 PRINTED IN MALAYSIA