

Ceiling/Floor Split Type Air Conditioner

KCM-18R1A / KPC-1818IH0
 KCM-24R1S / KPC-24IH0S
 KCM-36R1A / KPC-36IH0A/JA
 KCM-60R1A { KPC-60IH0A/JA
 KPC-60IV0A/JA



1. SAFETY PRECAUTION

- Please read the "Safety Precaution" carefully before installing the unit.
- Pay special attention to signs of "WARNING" and "CAUTION". The "Warning" section contains matters, which, if not observed strictly, may cause death or serious injury. The "Caution" section contains matter, which may result in serious consequences if not observed properly.
- Please follow all instructions strictly to help ensure your safety.

⚠ WARNING

- We recommend that you ask a qualified technician to install your air conditioner in accordance with this Installation Manual.
- Read this manual carefully before using your Split Type Air Conditioner.
- All wiring must conform to local and national electrical codes.
- To avoid possible electrical shock, you must ground your air conditioner.
- This air conditioner requires a separate power supply on a separately fused circuit.
- Do not insert your finger, a stick or any other object into the air inlet and air outlet.
- Do not use any heating apparatus near the air conditioner.

⚠ CAUTION

- Keep this manual for future reference as it contains important installation and safety instruction.
- Do not install the outdoor condensing unit near flammable gas. The condensing unit may catch fire if flammable gas leaks.

2. PARTS LIST

A number of small parts have been packed with the indoor unit. Please check the contents of the box with the list below.

PART	ILLUSTRATION	QUANTITY
Angle support Left and Right (Pair)		1
Remote control		1
AAA batteries		2
Remoter control holder		1
Remote control holder mounting screws		2
Footings (Optional part) Can be bought separately from Koppel Service Department		2

3. PREPARATION OF PIPING

Pipe Length, Elevation And Refrigerant Charge

- Each outdoor unit comes with a refrigerant charge that is sufficient for use with interconnecting tubing up to 5 meters connecting tubing up to 5 meters.
- If the required interconnecting tube exceeds 5 meters for each additional meter, add refrigerant based in the ff table:

Model	Liquid/Gas Pipe Size	Additional Refrigerant
18,000	for 5 - 10m	1/2" / 1/4" 40 g/m
	for 11 - 20m	1/2" / 1/4" 200 grams
24,000	(up to 15m)	1/2" / 1/4" 60 g/m
36,000	SP / LP	3/8" / 3/4" 20g/m / 25g/m
60,000	Horizontal SP / LP	7/8" / 1/2" 40g/m / 50g/m
	Vertical SP / LP	7/8" / 1/2" 100g/m / 60g/m

- The recommended maximum allowable tubing length between indoor and outdoor for SP is 30m, for LP is 50m.
- The recommended maximum allowable between indoor and outdoor is 8 meters.
- During installation wherein the outdoor unit is installed above the indoor unit, an oil trap is required along the suction line.

Cutting The Pipe And The Cables

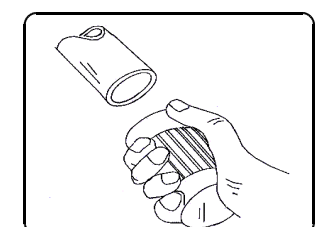
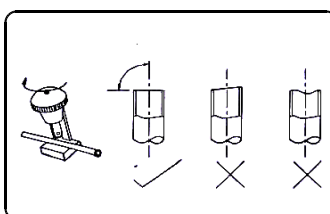
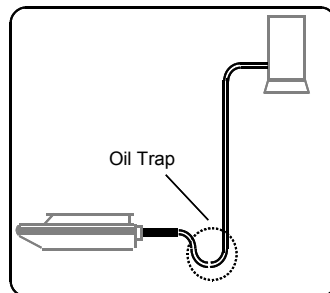
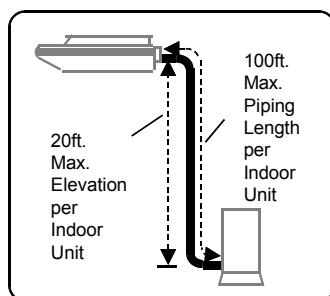
- Measure the distance between the indoor and the outdoor units.
- Cut the pipe length about 10% more than the measured distance.
- Cut the electrical cable with about 2 meters more than the measured distance.

Removing Burrs

- Remove the burrs while the pipe end is pointing downward to prevent metal powder from entering the pipe.

CAUTION:

If burrs are not removed, they may cause gas leakage or restriction in the system when in operation.



Flaring The Pipe

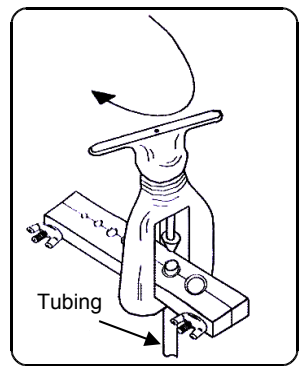
- Insert the flare nut or coupling nut over the tubing with the threaded end facing the end of the tubing.
- Clamp the tube in the flaring block, adjust the tube so that it is slightly above the block (about 1/3 of the total height of the flare).
- Place the yoke on the block with the taper cone over the end of the tube.
- Turn the handle until the flare is completed.
- Check for proper flaring of the tube. A properly flared tube should be of even thickness.

⚠ CAUTION:

Any bend in the tubing must have a minimum radius of 100mm to prevent leakage.

Do not bend any section of the tube repeatedly.

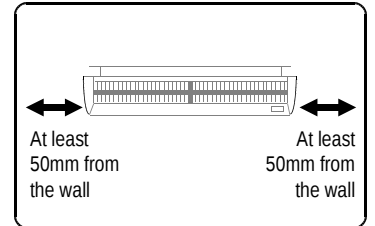
Do not remove the flare nut from the tubing in the indoor unit until you are ready to connect it to the outdoor unit.



4. INDOOR UNIT INSTALLATION

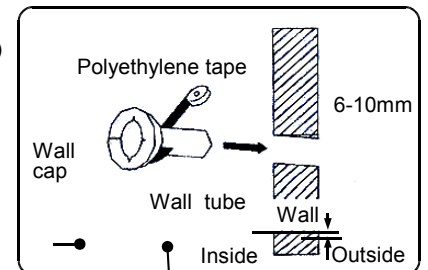
Locating The Indoor Unit

- Do not install the unit near any heat source, steam source or flammable gas source.
- Locate the unit in a place where it will provide cool air throughout the room.
- Make sure the minimum distances from the walls and obstructions are maintained as shown on the right.
- Ensure that the airflow from the unit is not obstructed.
- Place the unit so that the air filter can be removed easily and maintenance work can be carried out w/o obstructions.



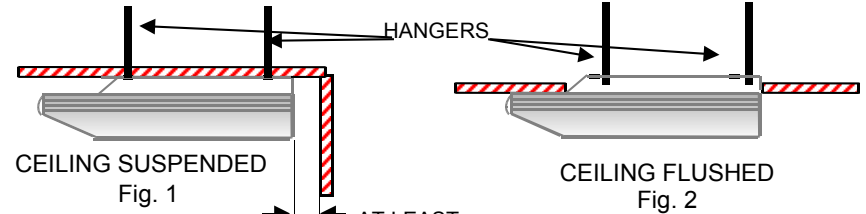
Installing The Angle Support & Drilling The Piping Hole

- Mount the angle support in a level angle. Secure the angle support directly on the ceiling/wall. (Fig 1 - 3)
- For floor mounted indoor unit: Do not place the angle support at the sides of the indoor unit. (Fig 4)
- Cut the wall tube (not provided) to fit the wall thickness.
- Connect the wall cap (not provided) to the wall tube with polyethylene tape and insert tube in the wall.

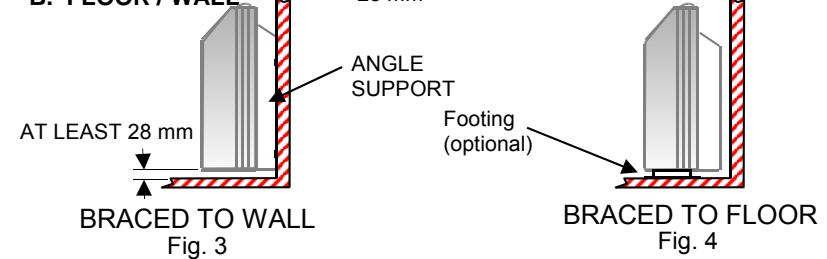


The Unit Can Be Installed as follows:

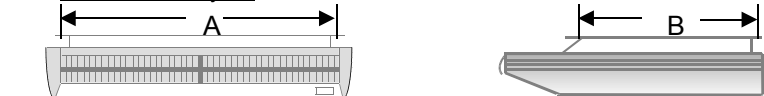
A. CEILING



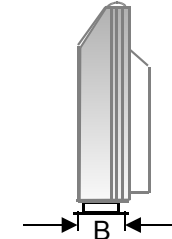
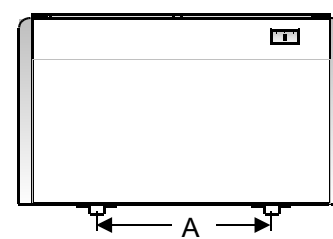
B. FLOOR / WALL



Installation Layout



	C - C	18,000/24,000 BTU/hr	36,000 BTU/hr	60,000 BTU/hr
A		939mm	1334mm	1726mm
B		403mm	403mm	403mm

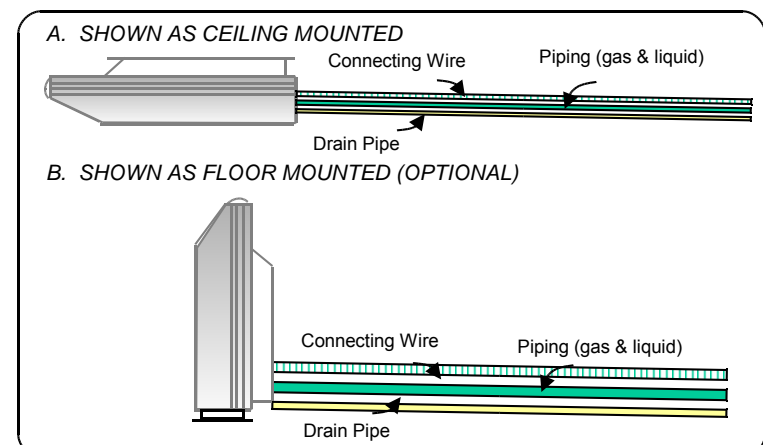


- Optional Installation - Punch out the eight-8mm diameter "knock-out" holes located on the bottom part of the unit. Use 1/4" x 1/2" bolt and nuts to mount the footing on these holes.

	C - C	18,000/24,000 BTU/hr	36,000 BTU/hr
A		570mm	965mm
B		216mm	216mm

Sealing The Drain Hose And Tubing

- Wrap the drain hose, tubing and electric wire together with polyethylene tape.
- Wrap all exposed tubing with tape except tubing which will rest inside the unit.

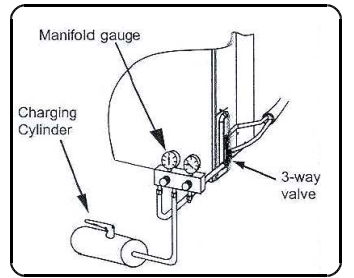


- Make sure the tubing, hose and wire angle downwards as they pass through or exit the wall tube.

6. VACUUMING THE PIPING & THE INDOOR UNIT

Checking For Gas Leakage

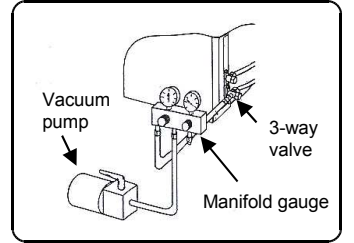
- Connect the Manifold gauge to the outdoor unit suction line port as shown on the right.
- Connect the charging cylinder to the Manifold gauge and open the valve of the Cylinder.
- Open the low pressure valve of the Manifold gauge until the meter reads steady at about 150-200 psig.
- Check for gas leakage especially around the tubing connector with a gas-leak detector.
- If leakage is found, fix it accordingly. Re-tighten the connector with Torque wrench and repeat the gas leakage check again.
- Upon completion of the leak test, close the valve of the charging cylinder and low side valve of the manifold gauge. Remove charging cylinder. Recover refrigerant from indoor unit and piping through the manifold gauge to an empty refrigerant cylinder.



Removing Air From The Tubing And Indoor Unit

It is necessary to remove all air from the Refrigeration Cycle, as this air contains moisture, which may cause a malfunction or ineffectiveness of the compressor.

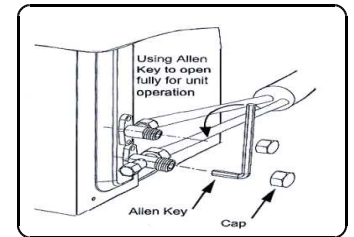
- Connect the center hose of the Manifold gauge to the vacuum pump.
- Connect the Manifold gauge to the outdoor unit suction line port as shown.
- Turn the vacuum pump on for about 10 – 15 minutes in order to evacuate the air.
- Close the manifold valve, then turn off the vacuum pump and disconnect the hose.



NOTE

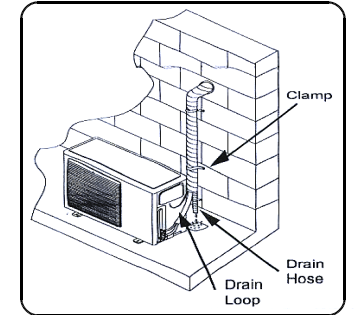
If the tubes will be joined by brazing the ends, use the Triple Evacuation Procedure.

- Unscrew the cap on the 2-way and 3-way valve.
- After all lines are installed and leak tested, set both the liquid and gas line valves to fully open position with the Allen Key for the unit operation, as shown.
- Reinstall and tighten the cap.
- Do not remove the gauge manifold from the suction line to check the operating pressure during start-up.



Restraining The Piping

- Wrap the tubing connection to the unit with the insulation and seal it with polyethylene tape.
- Connect an additional drain hose if necessary. The end of the drain outlet should be kept at a distance from the ground.
- Tape the connecting piping, drain hose and wires with polyethylene tape from bottom upwards to the top, and secure them to the wall.
- Fill any gap in the wall that has been core drilled.
- Form a drain loop on the electrical cable to prevent water from entering the electrical compartment.



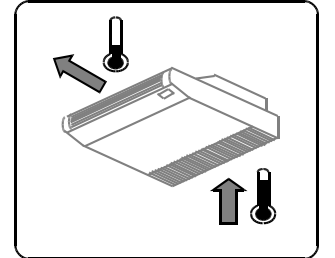
7. TEST RUN & CHECK

Switch On The Power Supply

CAUTION:

Ensure that all the piping and wiring are connected properly and securely, before turning the power on.

- Turn on the circuit breaker and switch ON the unit using the remote control.
- Operate the indoor unit at Cooling mode for fifteen minutes or more.
- Measure the temperature of the intake and the discharge air, the temperature difference should be at least 9°C.



8. NOTICE TO THE CONSUMER

Checking The Unit

- Check all the control functions.
- Check all the indicator lights.
- Check that the drain hose is draining properly.
- Ensure all the units are fastened properly and free from vibrations.

Upon Completion Of Installation And Checking Of The Unit, the installer should make sure of the following:

- Hand-over the Operating Instruction Manual to the consumer.
- Demonstrate the functions of the remote control.
- Demonstrate how to remove and clean the air filters.
- Explain the 3 minute time delay function.

Koppel, Inc.

Severina Industrial Estate

Km. 16, West Service Road

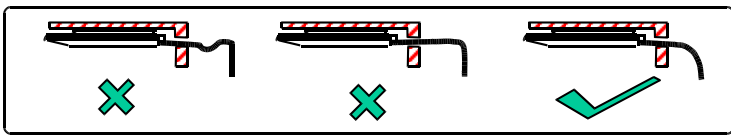
South Superhighway Parañaque City,

Metro Manila, Philippines

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring any obligation.

PN: F30032

Rev. 02

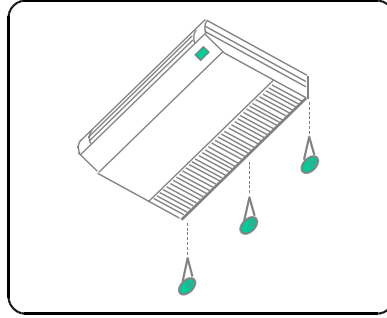


Removing The Return Grille

CAUTION:

Support the Return Grille when removing it.

- Loosen the 3 screws that hold the Return Grille as shown on the right.
- (FOR CEILING MOUNTED UNIT) : Move the Return Grille towards the wall and pull down the rear part of the grille.
- (FOR FLOOR MOUNTED UNIT) : Push the Return Grille towards the floor and pull the lower part of the grille.



Wiring The Indoor Unit

You may connect the wires to the indoor unit by opening the Return Grille and removing the Protective Screen.

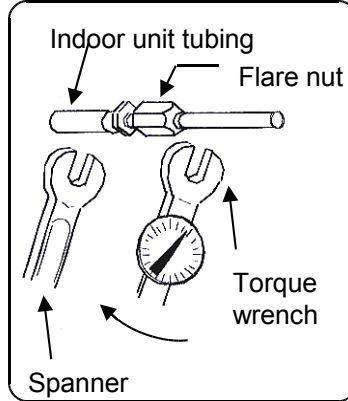
- Connect as shown in the wiring diagram located on the control box cover.

Connecting The Piping To The Indoor Unit

- Align the center of the piping and then sufficiently tighten the flare nut with fingers, tighten the flare nut with torque wrench according to the table as shown below.

Torque Table

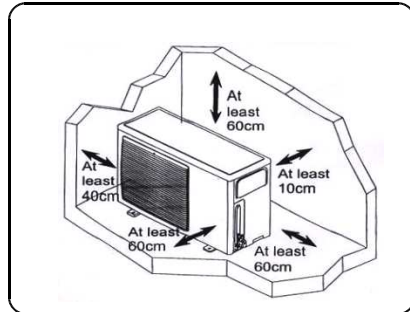
Pipe Size Diameter	Torque (N.m)
6.35 mm (1/4")	31.0 - 35.0
9.52 mm (3/8")	35.6 - 44.4
12.7 mm (1/2")	50.0 - 61.0
15.87 mm (5/8")	58.7 - 73.2
19.05 mm (3/4")	75.0 - 80.0
22.22 mm (7/8")	90.0 - 95.0



5. OUTDOOR UNIT INSTALLATION

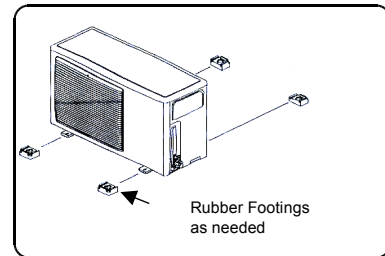
Locating The Outdoor Unit

- Locate the outdoor unit where the airflow around the unit is not obstructed.
- Ensure that the base is level and does not exceed the maximum slope of 5 degrees.
- Secure the unit to a base with anchor bolts to reduce vibrations and noise.
- Place the unit with access space for servicing and maintenance.
- Do not install the unit near a heat source, steam source and flammable gas.
- Ensure that the minimum distances around the unit are maintained as shown on the right.



Installing The Outdoor Unit

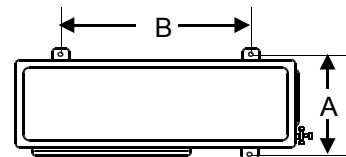
- Attach the Base Leg Damper by sliding the slot into the base of the outdoor unit.
- Attach the drain gasket and drain adapter to the base pan of the unit before you secure the unit.
- Fasten the unit down, refer to the mounting dimensions as shown here.



Mounting Dimensions

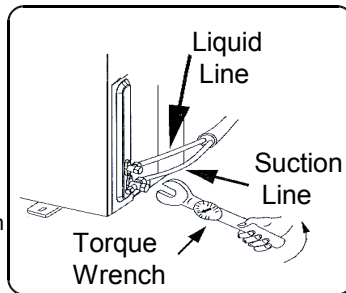
- Fasten the unit down, refer to the mounting dimensions as shown in the table below:

	18,000 / 24,000 Btu/hr	36,000 / 60,000H Btu/hr
A	394.5mm	394.5mm
B	672.5mm	672.5mm



Connecting The Pipe To The Outdoor Unit

- Align the center of the piping and sufficiently tighten the flare nut with fingers.
- Finally, tighten the flare nut with torque wrench according to the Table shown here.
- Use brazing rod with 5% minimum silver content in any soldering operation on copper tubes.
- During soldering operation, use dry nitrogen with minimum vented pressure of 5 psig to avoid oxidation inside the copper tubes.

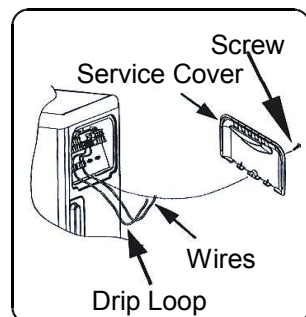


Torque Table

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9.52 mm (3/8")	35.6 - 44.4	19.05 mm (3/4")	75.0 - 80.0
12.7 mm (1/2")	50.0 - 61.0	22.22 mm (7/8")	90.0 - 95.0

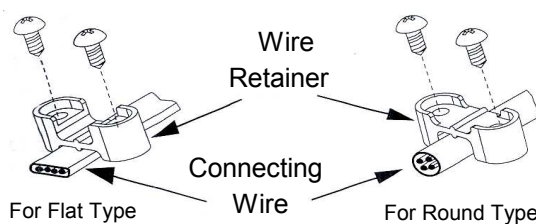
Connecting The Wires To The Outdoor Unit

- Remove the Service Cover from the unit.
- Connect the wires to the terminals according to the wiring diagram shown at the back of the Service Cover.
- Clamp the wire to the unit with the wire retainer.
- Form a drip loop in the wire to prevent water from entering the unit along the cord.



CAUTION:

This air conditioner must be disconnected from the supply by a switch having a 3mm contact separation in all poles.



- The same Wire Retainer can be used on two types of wires by changing the orientation as shown above.