



OPERATION & INSTALLATION INSTRUCTION MANUAL FOR WALL SPLIT-MOUNTED AIR CONDITIONERS

■ APPLICABLE TO THE FOLLOWING MODELS:
KFR-32GW/X1c

Please fully read these instructions before calling for any support or advice.

This equipment must be installed by a qualified Air Conditioning Installer, please give this guide to your installer. This equipment should be installed correctly by professionally qualified technicians according to the manufacturer's specifications and requirements. Please read the entire instructions before commencing, so you can understand the full process before you begin. Failure to install correctly as set out in these instructions may render your 12 month parts warranty null & void.

If the system is installed incorrectly, and as a result is not operating correctly or is damaged, it is the responsibility of the purchaser / installer. The supplier / manufacturer accept no responsibility for sub-standard or incorrect installations.

Guide to the customer

- The customer should make provision for a suitable power supply source; the voltage should be in the range of 90-110% of the rated voltage of the system.
- The power supply circuit should have MCB leakage protection. The power supply capacity should be no less than 13 Amps.
- You are advised to use an independent circuit and a suitably earthed socket / outlet, although a single system can normally run from a standard domestic ring main.
- The wiring must be installed by a qualified electrician according to the latest electrical safety requirements.
- The air-conditioner must be well earthed; the switch of the main power of the air-conditioner must be reliably earthed, it is recommended that there is a mains isolator on the outdoor unit.
- The power supply should be connected by a qualified electrician.

Your packages contain:

1 x Outdoor Condenser Unit

1 x Indoor Evaporator Unit

2 x 4 Metre Insulated copper connecting pipes

Interconnecting electrical flex

Remote control with batteries

Plastic tube for hole in wall

Plastic round trim for hole in wall

Putty to seal hole in wall

Tape to wrap pipes after installation

Water drain extension pipe (translucent ribbed pipe)

Right angled black plastic hose connector for fitting to base of outdoor unit to pipe away any drips if fitting above a pathway, attach standard garden hosepipe to the required length

User Manual

This Installation Guide

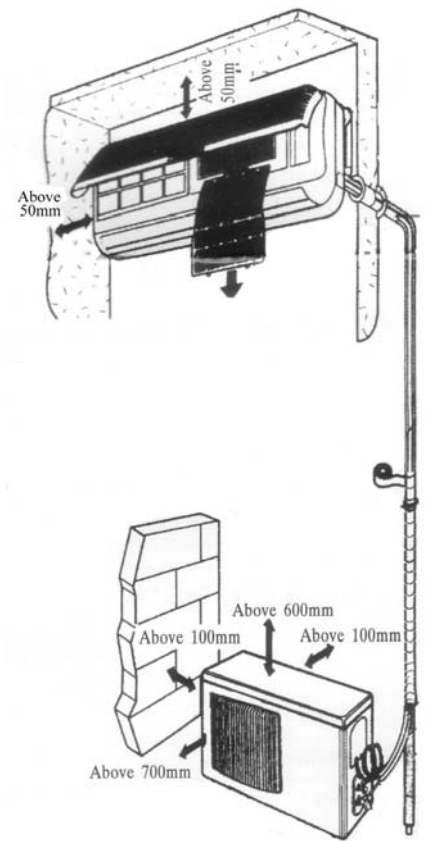
Installation Steps.

- 1.** Select the most suitable installation position.
- 2.** How to bend the 2 copper pipes correctly by hand.
- 3.** Installing the air-conditioner.
- 4.** Connecting & correctly bending the pipes.
- 5.** Expelling the air in the pipes and the indoor unit.
- 6.** Electrical Connection.
- 7.** Testing.
- 8.** Service & Maintenance.
- 9.** Error Codes.
- 10.** Circuit Diagrams.

1 Selecting the most suitable installation position

Indoor Unit

- Ensure there is no heating or steam source nearby.
- No obstacles are in the way of the pipes or wiring.
- There is good air circulation all round.
- It is convenient to adopt measures to reduce noises.
- Don't install them near the doorway.
- Make sure you have the distance specified in the picture between the ceiling, walls, furniture and other obstacles.
- Install 2 metres high above the floor (for best performance).
- The system can be fitted at the top of a dwarf wall, but you will lose some efficiency. The front vents must not be obscured by furniture etc. If in doubt you should opt for the next size system up when fitting to a dwarf wall.
- The picture to the right shows just one possible option for routing of the pipes/wires from the indoor unit to the outdoor unit. Although, you can exit the copper pipes at the left hand or right hand ends, or from the bottom of the indoor unit, as well as at ninety degrees straight through the wall to the rear of the unit. You will find there are 'cut-out sections' in the plastic, which can be removed to accommodate the pipes exiting from different positions.
- The 2 copper pipes attached to the rear of the indoor unit are designed to be 'swivelled' through 90 or 180 degrees to give these other positioning options, but care must be taken not to kink or crush the pipes. You need to hold them at the point where they are attached to the back of the indoor unit, then gently move them in small stages of 2cm at a time with a 3 second rest between each. It is also recommended that the foam insulation be cut carefully with a knife and rolled back at the point of swivel so that you can see the copper pipes and make certain that you are not compressing them or kinking them during this pipe alignment process. Once finished, the foam insulation should be put back and re-taped in place with a good quality waterproof tape.



Outdoor Unit

- The outdoor unit can be positioned higher or lower than the indoor unit.
- The unit is designed to be weather-proof; however, ideally the unit should be sited in the shade to avoid the heat of the midday sun as this can affect cooling performance. You can shade with a 'porch' type canopy if you wish. If you put up a canopy to protect it from rain and sun, pay attention not to cause any obstruction to the dissipation of heat from the condenser.
- There must be at least 100mm of space to the rear and sides and 600mm to the front of the outdoor unit. Make sure any excess copper pipe-work that may be 'coiled' up behind the condenser is not obstructing it from drawing air through the rear of the unit.
- Don't keep animals or plants near the installation location as the hot air from the outdoor unit will affect them. Also do not allow any foliage to grow into the unit, check it often to ensure it is free from all obstructions.
- In the wintertime, check that the large fan can rotate freely and that it is not blocked with leaves, snow or ice.
- Make sure you have the distances specified above between walls and other obstacles.
- Keep away from heat sources or flammable gases.
- The installation base and supporting frame should be strong and secure. The machine should be on a horizontally level surface.
- You can obtain a wall bracket mounting kit from your reseller, or directly from us.
- If you are mounting the unit on a flat roof it is recommended that you fix it to 2 external grade timbers of 100mm x 50mm x 1000mm, like 'skis' so that it cannot blow over in high winds. It is recommended to use countersunk galvanised bolts fitted from underneath so as not to damage any felt roof. Then secure on top of the outdoor unit's 'feet' with nylock nuts. Check the installation periodically to ensure it is stable and secure.

2 How to bend the copper pipes correctly by hand

DO NOT use a 15mm pipe bender as the pipes are $\frac{1}{2}$ " and this will crush them as they will spread and be flattened! Do not use any internal bending springs as you will damage the pipe internally by chafing the copper.

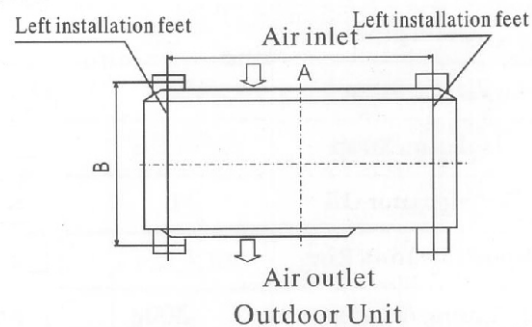
Follow the instructions below.

The copper pipes take a little patience and care to bend suitable curves without crushing or kinking. There are 2 pipes, one is $\frac{1}{4}$ " and the other is $\frac{1}{2}$ ". The quarter inch is fairly soft and will bend easily to a gentle curve, be careful not to kink though as it is very soft! Be gentle and patient and you will have perfect bends!

The $\frac{1}{2}$ " pipe requires a bit more patience; you will be able to achieve a radius of 5" or perhaps even 4" if you are careful. First of all, cut round the foam insulation (do not cut into the copper) and slide apart the insulation at the point you want to bend or curve the pipe, so that you can see the copper pipe itself. Then, working from the centre position of your required curve, placing your thumbs together, press them up into the copper pipe and gently draw down with your fingertips on either side (rather like snapping a stick), be careful to 'feel' the pipe bending and stop as it starts to depress. Move along an inch, left or right and make another tiny impression with your thumbs and pull down slightly with your fingertips. Continue in this way, making perhaps 30 or so tiny indents, until you have a perfect curve. Observe the pipe and check it is not depressed more than 1mm in any place. Then slide back the foam insulation until it meets, then tape the joint with some good waterproof tape. Make all required curves in the same way.

3a Installation of the Outdoor Unit

- The outdoor unit must be fitted HORIZONTALLY so that the 4 metal 'feet' are flat on the mounting surface in a horizontal position.
- The outdoor unit must be firmly fixed to avoid falling over in strong winds (see notes above).
- The large fan with grille over must be facing outwards from any wall; this is the front of the unit.
- Install on a cement base as in the drawing or use our wall brackets (available separately).
- If it is installed near coastal areas or high above the ground where strong winds are likely, the unit should be installed close to a wall to ensure the normal operation of the fan and a wind blocking construction (like an open planked shelter, 'picket fence style') should be made.
- If it is an overhanging installation (using wall mounting brackets), the structure of the mounting wall should be made of a solid brick, concrete, or materials with equivalent strength, and of sufficient support capacity. Otherwise, measures such as reinforcement, support or vibration damping should be adopted.
- Always check the fastness and security of all wall mounted installation bolts every few months to ensure safety.

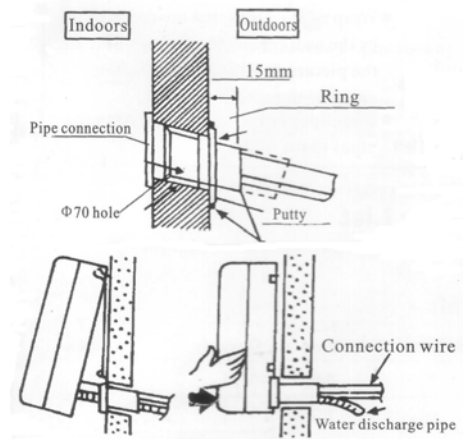


3b Installation of the Indoor Unit

PLEASE NOTE: when removing the *first* copper end plug pipe (either one, as it does not matter which is removed first) from the back of the indoor unit (these are the short pieces of pipe with crimped and soldered ends, or end caps) you should hear a rush of air escaping at high pressure, this is completely normal, the units are pressurised at the factory to ensure it is leak free when you receive it. If you do not hear any air escape as the first of these pipes are undone, please contact us BEFORE FITTING as your unit may be faulty.

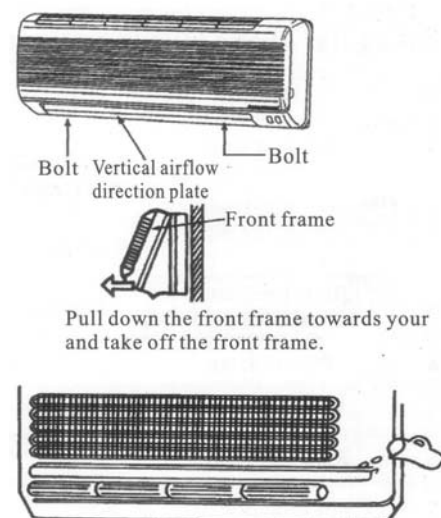
Installation Procedure

- First check the wall and make sure that it is firm and secure. Use four suitable screws with suitable wall plugs to fasten the installation bracket onto the wall. Keep it level and completely flat to the wall otherwise it might cause water droplets to form on the plate when the air-conditioner is running in cooling mode. Make sure the top is well fixed at the highest points, or the bracket may flex.
- Decide where you are going to position your pipe-work for exiting through the wall.
- See 'selection of the installation position' in section 1 above for notes on different ways to position the copper pipes.
- The water drain pipe attached to the back of the indoor unit may be positioned at either end of the drip tray. There is a rubber 'bung' at the opposite end. Simply remove the 'bung' and swap it with the water drain pipe. Make sure that both are re-fitted securely so they do not leak any water. Use some PTFE plumbers tape if required to form a tight seal.
- Drill a 65mm diameter hole where you are going to exit your pipe-work through the wall of the building. **Alternatively** (if you have visible bricks on your building) remove a quarter of a brick by 'chain' drilling a series of small holes joined together vertically down through a brick, then drill the same round the end of the mortar and knock through the quarter piece of brick. The hole should slant downward slightly so that your water drain pipe will have a sufficient 'run-off' to use gravity to drain the condensate water from the indoor unit to the outside of the building. (The indoor unit can produce over 2 litres per hour in the summer). There is a 2 metre ribbed extension pipe which may be used if necessary to extend the condensate drain pipe, please use a good tape to join the 2 pipes. The extension fits on one way round only.
- Once you have decided where you will be placing your copper pipes, water drain pipe and electrical wires, and drilled the suitable holes for each (or combined all together into 1 hole), you are ready to mount the indoor unit. Depending on your pipe directions you may need to attach your copper pipes to the pipes on the back of the indoor unit first (refer to the section on attaching pipes if necessary).
- 'Hang' the indoor unit on the 2 'lugs' at the top of the mounting bracket and make sure the unit is in the middle of the bracket. Push the lower part of the casing against the mounting bracket until the 2 bottom 'latches' on the mounting plate click into place on the rear of the plastic casing.



3c Checking the water discharge

Only attempt this procedure if you are confident you will be able to remove/replace the front plastic casing without damaging the clips at the top of the unit. If you have fitted the water drain pipe correctly, slightly downwards then it will most likely be OK anyway!



If you wish to check it though, proceed as follows:

- Taking off the front plastic casing from the unit cover.
Take off the front plastic casing for maintenance according to the following steps:
- As shown in the picture above, take off two screw covers from the front plastic casing and then unfasten two fixture screws, and 1 screw by central LED display (model dependant).
- Pull the front casing towards you from the bottom, slipping it over the oscillator fins and then ease it off the 3 plastic clips at the top of the casing. To put the front casing back, reverse the steps above.
You should check whether the front casing is firmly aligned into the groove on the top before re-fitting the screws.

To check the water discharge:-

Pour a cup of water into the narrow drip tray.

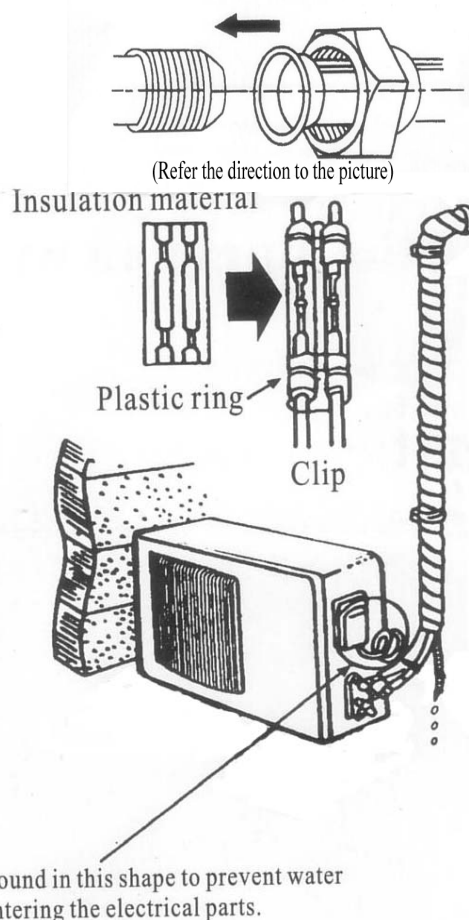
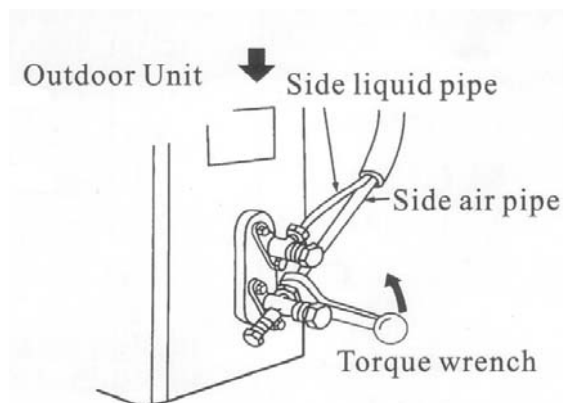
Check whether the water flows through the water discharge hole and out of the pipe correctly.

4a Pipe Connection – Special Care Required

- Connect the pipes to the units: Apply a few drops of '3 in 1 oil' (with no additives, available from DIY and hardware stores) to each face of the joints. First place the taper of the pipe over the brass cone and fasten the connection nut carefully at first by hand until tight and then with 2 spanners that fit correctly until it is tightly fastened. The pipes must be tight to avoid refrigerant leaks, but be careful not to damage the fittings, DO NOT OVERTIGHTEN, a single full pull on the spanners to the extent of your arms should be sufficient. The fastening direction is shown in the picture. (Clockwise threads).
- Repeat the same process for both ends of both pipes.

4b Fixing the pipes

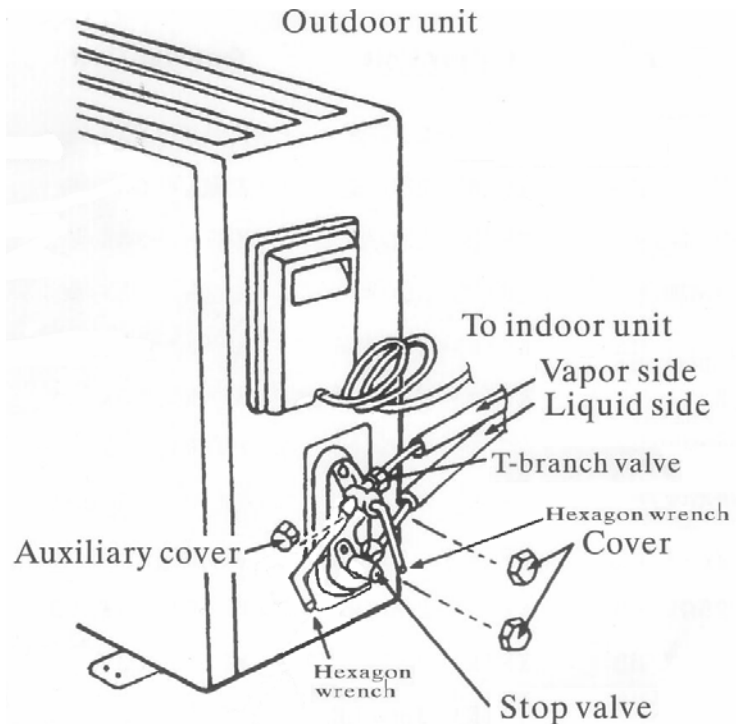
- Wrap up all copper pipes with insulating foam, fitted.
- Cover the connection parts with insulation material and fix them with cable ties at each end.
- Wrap up the pipes with tape alongside the wall and fix them to the wall with clips or 'knock-ins'. These steps are usually adopted when outdoor unit is installed below the indoor unit, although they can be above or below each other.
- In case that you want to add an extension water discharge pipe, the end of pipe should be above the floor (to prevent water from draining back into the pipe). Fix it onto the wall so it won't be swayed by wind.
- Wrap the pipes and connection wires well from bottom to top with tape.
- Wrap up the pipes that are grouped together in the way shown in the picture as it may prevent water from entering the room.
- Use clips, 'knock-ins' or other fixings to fasten the pipes to the walls.



5 Expelling the air in the pipes and the indoor unit – Pay attention to exact timings – use a digital watch!

You must expel all the air from the system: moisture or damp air in the refrigerating system will cause 'sludging' problems with the compressor.

Please use a stop watch or digital watch and an assistant to accurately time procedures c) and e) below.



- Take off the brass covers from the stop valve and T-branch valve.
- Take off the auxiliary cover from the T-branch valve.
- Turn the stop valve (BOTTOM VALVE) using a hexagon wrench (Allen key), anti clock-wise to an angle of 90 degrees (QUARTER OF A TURN), keep it open for 4 - 5 seconds and then CLOSE the valve fully - for now.
- Check whether there is any refrigerant leakage from the pipe connections, at all pipe joints, using a mixture of washing up liquid & water in a plastic sprayer bottle, to see if any air bubbles form (you are looking for tiny bubbles forming) on the pipe joints, tighten the nuts further if necessary, and then recheck. Once there are no leaks, you can continue. It is extremely important that there are no tiny leaks, otherwise you will need to have your refrigerant topped up within a short time, and your system may be damaged!
- Next, push in the 'tyre inflator' style valve on the T-branch valve (SIDE OF TOP VALVE) for 3 - 4 seconds using a screwdriver or similar, to expel the air in the pipe-work. CAUTION: use a long enough implement as the refrigerant gas *may* be COLD in winter (not normally in summer). You may possibly notice a slight oily residue on the tip of the screwdriver, this is normal. BUT, do not worry, and do not release for longer than 5 seconds even if no oil is present, oil is not always seen as it may have been very settled in your system, so none may be released from the valve.
- VERY IMPORTANT - Finally, open the stop and T-branch (TOP and BOTTOM VALVES) valves with a hexagon wrench (Allen key) fully anti-clockwise until they stop (they are designed to be sealed in the fully opened position) to allow the gas / refrigerant to freely circulate around the system. They may be stiff, so be sure to open them fully. Then replace the 3 brass covers on all the valves TIGHTLY, some PTFE tape on the threads of the brass covers can be used if desired, but not on the pipe joints, only 3 in 1 oil.

Failure to open the 2 Hexagon Key valves fully may result in failure of the Compressor.

- There must be no gas / refrigerant leaks, please check all the piping connections parts again. You must test for leaks in all joints; generally, this can be tested with washing up liquid in water. A small plant / window sprayer is ideal for this.

6 Electrical connection

- Unscrew the screws, and take off the electrical panel cover (RH handle) from the outdoor unit.
- Your system is pre-wired to the indoor unit, but you need to connect the wires correctly to the outdoor unit.
- The interconnecting wires are numbered using round sleeves at the end of each terminal; connect each numbered wire to the corresponding number on the terminal block on the outdoor unit.
- Fasten securely the wires to the connection panel.

Screw up the connection panel cover to its original place.

7 **Test running - FIRST TIME OPERATION**

- Make sure that all the pipes and wires are connected.
- Make sure that both the liquid valve and gas valve on the side of the outdoor unit are COMPLETELY OPEN. (Top & Bottom Hex Valves)

Connect the indoor unit to the power source

Connect the mains wires to an independent power source socket of the correct rating.

Fit batteries in the remote control.

When operating for the first time - run the air-conditioner in cooling mode (SNOW FLAKE on wall unit display) for 30 minutes on the lowest temperature setting. Then turn off using the remote control. Wait for 3 minutes to allow the refrigerant to settle. Then run in heating mode (RED SUN on wall unit display) for 20 minutes on highest temperature. Then switch off for 3 minutes before setting to your desired temperature on cooling or heating modes.

- **Performance & Evaluation** Test the outdoor / indoor air temperatures.
Make sure that the temperature difference between the outdoor and indoor air is greater than 8°C. The unit may not heat or cool if the selected temperature is not more than 8 degrees difference from the outdoor temperature.

8 **Service & Maintenance**

Check the indoor dust filters every 3 months, wash in warm water with washing up liquid only, dry naturally.

Check the outdoor unit and ensure no plants or leaves/sticks etc can obstruct the fan operating, and that air can flow freely through the rear cooling fins.

Your system should be serviced and refrigerant levels checked every 1 – 2 years, please contact us to arrange this.

If you ever notice a reduction in cooling or heating efficiency, first check the filters, if they are clear, please contact us.

9 **Error Codes**

Your system can display different error codes. There are too many to list here but the most common codes are:

E4 generally means a lack of refrigerant or too low pressure.

E5 can mean too high pressure, caused by a kinked pipe or defective valve.

Switch off if any error codes occur and contact us immediately, otherwise further damage may occur.

dF is not an error code, it means your system is simply defrosting itself and will resume to normal operation in a few minutes time. This is a standard feature and should be left to complete the defrost, no action is necessary.

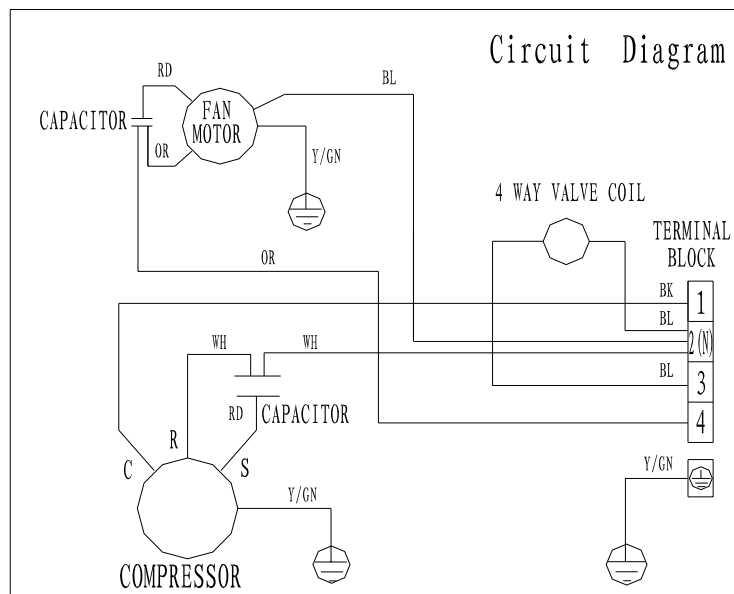
In wintertime you may notice steam rising from the outdoor unit during defrost, this is normal. It is also common for the outdoor unit to drip water in the winter; this is the moisture condensing on the cold copper coils.

Please contact us if you have any doubts about the correct operation of your system.

IMPORTANT - Items to note:

- Fix the machine firmly; otherwise it may produce noise and vibration.
- If using wall brackets for the outdoor unit, bolt the unit to the brackets securely.
- Install the outdoor unit where it will not disturb your neighbours.
- **IMPORTANT** When switching between heating and cooling modes, switch off system for 3 minutes before changing the mode to allow the refrigerant to settle.
- When using heating mode, the indoor unit fan will not operate until sufficient heat has been generated by the outdoor unit, this may take several minutes initially each time heating is selected. Please be patient and wait for the indoor unit fan to operate and blow warm air.
- **AUTO MODE** is designed to keep the room at a rough ambient temperature using heating and cooling. This is more useful if you are leaving the room unattended and just want to keep it at an average temperature as it is not that precise for temperature accuracy. The idea is to use minimal electricity so the temperature range is +/- 5 degrees either way from where you have set it, this avoids the machine heating and cooling all day and 'fighting' itself using lots of power unnecessarily. **You will find that if you are occupying the room then either cooling mode or heating mode will give a more accurate temperature.**

Indoor Unit Circuit Diagram



support@airconditioningcentre.com
Customer Help Line Tel: 08703 344 345