Air conditioning is COOL

AIR CONDITIONING GUIDE

Australian Government

Department of the Environment

Contents

Keep a cool head

An air conditioned environment is very pleasant and an increasing necessity in modern life. Air conditioners are also a significant household investment.

The refrigerant in most air conditioners is a potent greenhouse gas and often an ozone deleting substance and its use is regulated by the Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995. If refrigerant leaks from an air conditioner, it contributes to global warming and it depletes the ozone layer. Leaking air conditioners also have greater power demands, as the unit has to work harder with less refrigerant, which results in higher power bills.

If your air conditioner selection is inappropriate and is not installed correctly or maintained properly, it can cost you financially and have a negative impact on the environment.

This guide offers advice to assist you in selecting the right air conditioner to suit your needs. It also provides details on licensing requirements so you can make informed decisions with regards to the installation and maintenance of your air conditioner. Making the right choices about your air conditioner also means you are making the right choice for the environment in minimising avoidable emissions of ozone depleting substances and synthetic greenhouse gases, such as fluorocarbon refrigerants which are used in air conditioners.

This guide has been produced by the Australian Refrigeration Council (ARC). The ARC is contracted by the Australian Government and is responsible for granting licences nationally to individuals and businesses who handle fluorocarbon refrigerants.

Businesses or individuals who handle fluorocarbon refrigerants, as used in air conditioners, must hold a licence issued by the ARC.

For further information go to
www.lookforthetick.com.au

Buying

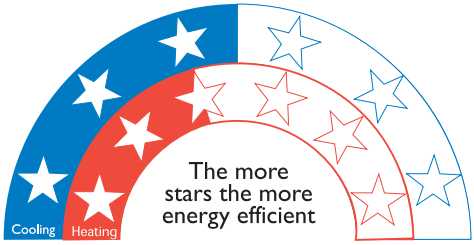
BE A COOL CUSTOMER.

Before you buy an air conditioner consider the following:

Think about how you can optimise the efficiency of your home before you buy an air conditioner. For instance:

Look for the star (or energy) rating label on the air conditioner:

- More stars mean more energy efficiency.
- More stars mean less cost in power bills.
- More stars mean less damage to our environment.



Example of Energy Efficient Star Rating for a Reverse Cycle Air Conditioner

Compare the energy efficiency of units you are considering at www.energyrating.gov.au or look at the Energy Rating Label on the product.

Before purchasing an air conditioner you should also consider the following factors about your home:

- Is your home insulated? Insulated homes retain cool or heat for longer periods than homes without insulation.
- Is the insulation located in the ceiling and walls? Be aware of the type and location of the insulation in your home as it will help with your air conditioner selection.
- Are all the windows and doors draught proof? If not, cooled air can escape and the air conditioner has to work harder to maintain a constant room temperature.
- Are your windows tinted, double glazed or clear? Consider how effectively the windows might reflect or absorb heat from sunlight.
- What direction do the majority of your windows face? If the windows are exposed to direct sunlight, heat can be rapidly transferred through the window into the room.

- Is your roof flat or pitched? Metal or tiles? Pitched roofs can reflect heat more easily than flat roofs and metal roofs tend to absorb heat more easily than tiles.
- Are your floors carpeted, tiled, concrete or timber? Heat and cold air can penetrate through floor surfaces and impact on the insulation of the external "envelope" of your home.
- How high is your ceiling? The higher the ceiling, the greater the room volume and the more internal area to cool or heat.
- Is your house weatherboard, brick, double brick or concrete? The exterior surface of your house affects the temperature inside your house. For example, weatherboards would absorb and transfer heat into the house faster than bricks or cement but, once brick and cement heat up they retain the heat for a longer period.
- How many rooms do you want to cool? For multiple rooms, a multi-split or ducted system might be more suitable than a single head air conditioner which is more suitable for a single room.
- Do you have a plan or drawing of the room or areas of your home you want the air conditioner to service? This provides vital information to the salesperson in determining the appropriate air conditioner for your needs.

Make note of the size and orientation of rooms and windows within your house where the air conditioner is to be used. Remember that drapes, blinds and shady trees are all barriers to the elements.

This is the sort of information a salesperson should be asking you in order to determine the type of air conditioner you need and the capacity in kilowatts (kW) the air conditioner should be to meet the physical requirements of your home.

The actual size of the air conditioner in kW is a vital consideration. If the kW capacity is too small the air conditioner will not cool the space adequately, if the kW capacity is too high, it may cause the air conditioner to cycle on and off more than it should increasing wear and tear of your air conditioner's components.

Get the kW size right and you will receive optimal cooling from your air conditioner.

The salesperson should have the knowledge to recommend the right kW capacity. Alternatively, you can take your details to an air conditioning specialist who is properly qualified to advise you on the size of unit that is suitable for your needs.

You can locate a licensed air conditioning business in your area on lookforthetick.com.au The website provides a listing of all businesses with the tick of approval and identifies businesses and licensed individuals who are authorised under the Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995, to install, service and repair fridges, freezers and air conditioners, in your home, office or car.

For more information on appropriate sizing visit www.fairair.com.au or www.choice.com.au

These websites offer programs to enable you to make your own calculations.

Please use the handy checklist at the back of this booklet to write down all your measurements and details.

Installation

FOR A LICENSED TECHNICIAN, INSTALLATION IS A BREEZE.

No matter how good the selection of your air conditioning is, or how accurately it has been sized to suit the room, it will not operate efficiently if it is poorly installed.

The first priority with any installation is to ensure that the refrigerant does not escape into the atmosphere during or after the installation.

Licensed technicians and authorised businesses must operate to mandated standards to ensure that the emissions of fluorocarbon refrigerants in air conditioners are minimised. Individuals licensed under the Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 are qualified to legally install air conditioners, including installation and connection of the pipes that carry refrigerant through the air conditioner.

If your air conditioner is incorrectly installed refrigerant may leak during or after installation. A leaking system is not only damaging to the environment, it will also result in greater power consumption as the air conditioner tries to deliver the level of cooling and heating with less than normal refrigerant.

This not only increases your electricity bill, it also shortens the life of your air conditioner.

Reduce your environmental footprint and protect your investment by having your new unit installed by a licensed technician.

Always look for the tick and use a licensed technician to install your air conditioner.

You can find an authorised businesses which use licensed technicians with the tick of approval at lookforthetick.com.au

Select 'Split Systems A/C Installation' from the 'Authorised Business' dropdown menu and enter your postcode. If no business is located within your postcode, tick the 'Include surrounding areas' box to find a business in nearby areas.

Maintenance

IF IT'S NOT COOL, IT'S PROBABLY OUT OF REFRIGERANT.

As with installation, all servicing and repairs must be carried out by a licensed technician. Licensed technicians hold a full refrigeration and air conditioning qualification and are authorised to identify problems and undertake any maintenance work required, including work involving the handling of refrigerant.

Your air conditioner may need servicing or repairing if there is an issue with the components that hold and/or circulate the refrigerant within the unit. This could cause it to leak out of the system. If a leak exists, all affected parts must be repaired or replaced before the unit can be refilled with refrigerant.

Correct and regular maintenance of your air conditioner, by licensed technicians, will ensure that it is operating at its optimal performance which will also prolong its life. By servicing your air conditioner you will also reduce your power usage.

To find an authorised business to service or repair your air conditioner visit lookforthetick.com.au

Select 'Stationary Refrigeration & Air Conditioning' from the 'Authorised Business' dropdown menu and enter your postcode. If no business is located within your postcode, tick the 'Include surrounding areas' box to find a business in nearby areas.

VERY HARD RUBBISH

If your existing air conditioner is broken or not operating properly and you are considering getting rid of it, don't remove it yourself.

There may be refrigerant left inside the unit which will escape into the atmosphere during removal or later at the disposal site.

You will need to have the refrigerant 'recovered' from the air conditioner by a licensed technician. Licensed technicians are appropriately trained in the recovery of refrigerant, and using an approved technician will ensure that refrigerant will be removed without venting it into the atmosphere. The recovered refrigerant will be forwarded by the licensed technician to **Refrigerant Reclaim Australia (RRA)**, which is the sole facility in Australia approved to destroy fluorocarbon refrigerants in an environmentally friendly manner.

The cold hard facts

A GUIDE TO TERMINOLOGY:

Refrigerant

Fluorocarbon refrigerant is used in most modern air conditioners and is what cools the air. Fluorocarbon refrigerants are potent greenhouse gases. One kilogram of the most common refrigerant gas, R410a, has the same global warming impact as two tonnes of carbon dioxide. In older air conditioning units, the refrigerant is both a synthetic greenhouse gas and an ozone depleting substance. If leaked into the atmosphere, it has the same effect as driving a four-cylinder car for six months.

Split-System Air Conditioner

An air conditioner is made up of two main components – an outdoor unit which is known as the condenser and an indoor unit or a fan coil, also referred to as the 'wall hung head unit'. The two units are connected by pipes which carry the fluorocarbon refrigerant.

An alternative to the standard unit is the multi-split system, which has multiple indoor outlets connected to a single outdoor unit. A split-system can be used for cooling and heating.

Licences and air conditioning

The ARC issues two licences for technicians who work with split system air conditioners. The licences are identified as;

Splits; this is a restricted licence permitting a technician to install and decommission a single head split system air conditioning system to 18kW only. This licence does not permit the technician to service or repair an air conditioner.

RAC; for all Refrigeration & Air Conditioning.
This licence identifies fully qualified tradespersons who are permitted to install, service or repair and decommission **all** types of air conditioning.

'Brown Outs'

Refrigeration and air conditioning equipment consumes about 10 per cent of all the electricity generated in Australia. Domestic air conditioning is considered to be largely responsible for peak power demands on the hottest days in summer which sometimes leads to brown outs. Brown outs are considerable depletions of available power in the grid. If you do not choose an air conditioner that is appropriately sized for your needs and do not have it correctly installed, you could be contributing to the problem of peak power demand.

Checklist for air conditioning

MAKING THE RIGHT CHOICE

You want a system that…?

☐ Cools only
☐ Cools and heats (Reverse-cycle)

What features are important to you?

☐ Warranty
☐ Price
☐ Energy Efficiency
☐ Sleep settings/Timer
☐ Quality of Air Filters

Have you considered energy rating/ efficiency? ☐

How many rooms do you wish to cool?

☐ Multiple ☐ Single

Have you measured the area (m^2) of rooms you wish cool? ☐

_____ m^2
_____ m^2
_____ m^2
_____ m^2
_____ m^2
_____ m^2

Is your home insulated?

☐ Ceilings ☐ Walls

Is your house…?

☐ Weatherboard ☐ Brick
☐ Double Brick ☐ Concrete

Do you have high ceilings? ☐

_____ (height)
_____ (height)

Are your floors…?

☐ Carpeted ☐ Tiled
☐ Concrete ☐ Timber

Are all windows and doors draught-proof? ☐

What direction do the majority of windows face?

☐ North ☐ South
☐ East ☐ West

Are your windows…?

☐ Tinted ☐ Clear
☐ Double glazed or energy efficient

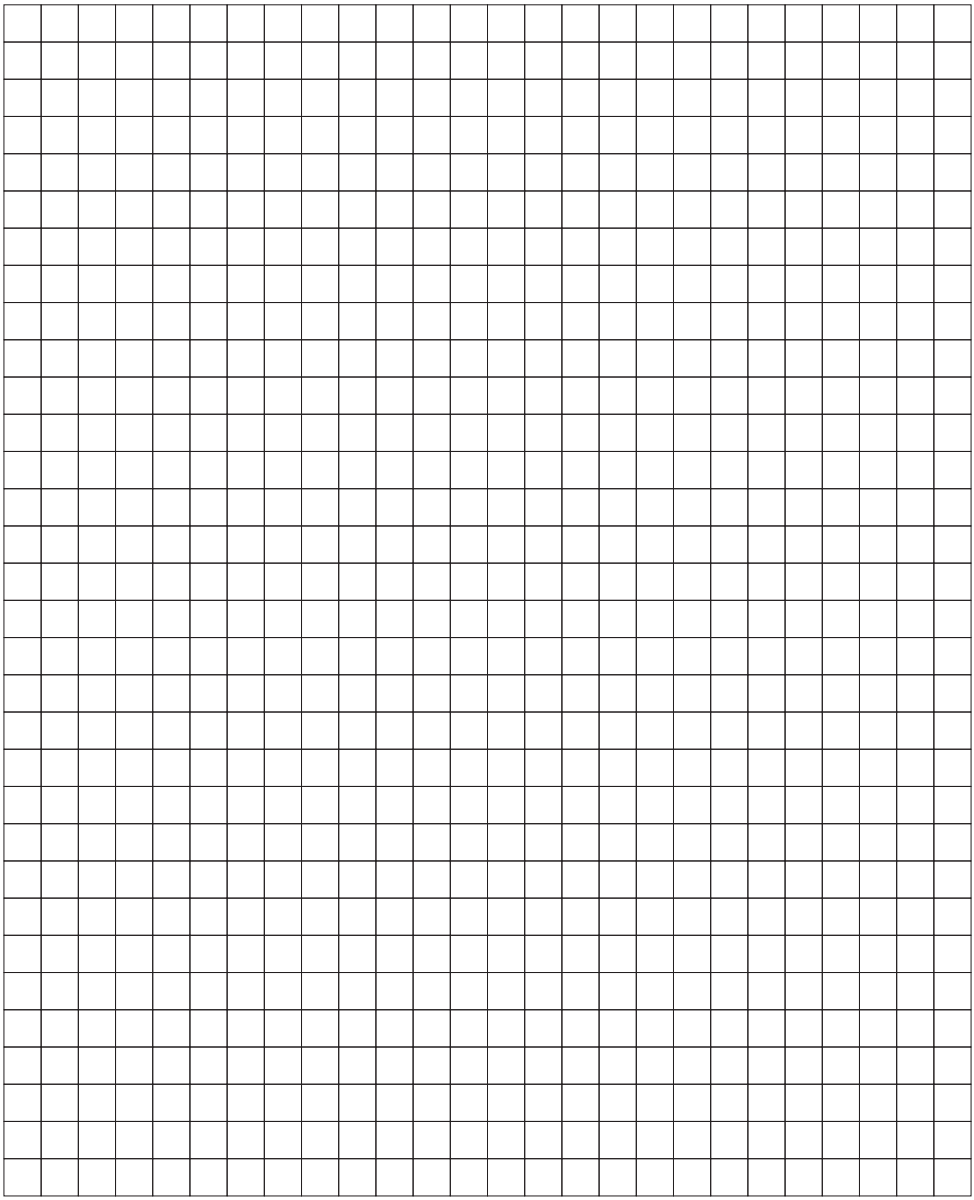
Do you have external shading i.e. blinds, canopies, trees etc? ☐

Is your roof…?

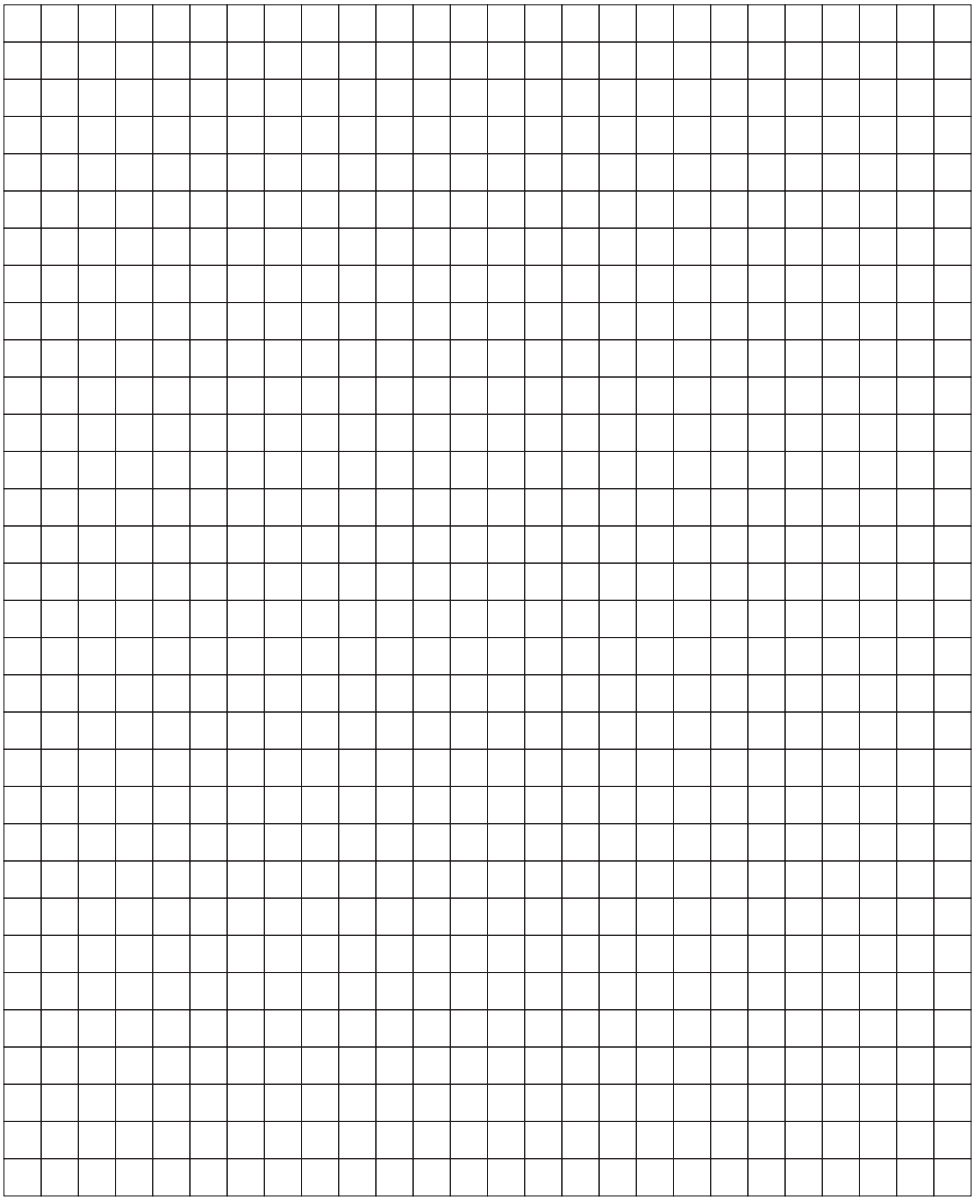
☐ Flat ☐ Pitched
☐ Metal ☐ Tiles

Remember to ensure an ARC licensed business or technician carries out the installation, servicing and maintenance of your air conditioner.

House or room plan



House or room plan



ARC AUSTRALIAN REFRIGERATION COUNCIL

Further information

Contact ARC Customer Service on **1300 884 483**
or go to **www.arctick.org**

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