

## Checking a plug



In the UK all modern appliances such as hairdryers, vacuum cleaners and microwaves use a square pin 13 amp plug. Plugs and their cables can suffer damage with use so it is a good idea to check them regularly.

**With the plug removed from the socket, check the cable from end to end and ask the following:**

1. Is the cable securely attached to the appliance and the plug?
2. Is the cable cut, nicked or damaged in any way?

There should preferably be no joints and certainly no repairs with insulating tape.

### Checking the plug:

- Remove the plug from the socket and check the plug is not damaged.
- Look for signs of overheating, such as discoloured casing or cable.
- Check that the plug meets British Standard BS 1363 - it should be marked on the back of the plug.
- Check that the cable sheath is firmly clamped in the plug and that no coloured wires are showing.

**For plugs that did not come fitted to the appliance, check that the cable is connected correctly as follows.**

- Remove the plug from the socket, and remove the cover.



Check that:

- the Brown wire goes to live (L);
- the Blue wire goes to neutral (N); and
- the Green-and-yellow wire goes to earth (E).
- Check that the cord clamp holds the cable securely and that both of the screws are tight.
- Check that the screws holding the three wires are tight.
- Check that the fuse is the correct size and meets British Standard BS 1362 - see the manufacturer's instructions if you are not sure what fuse to use. The fuse should clip securely into its holder. It should not be loose and there should be no signs of overheating.
- Replace the cover securely.

## Plug fuses

Plugs in the UK are generally fitted with a 3A or 13A fuse. For appliances up to 700w you need to use a 3A fuse. And for appliances over 700w you need to use a 13A fuse.

See below table for examples:

Fuse	Appliances	
3A	Table Lamp, Standard Lamp, Television, Video, Computer, Mixer, Blender, Refrigerator, Freezer, Power drill, Jig saw, Soldering iron.	
13A	Washing Machine, Dishwasher, Microwave, Kettle, Toaster, Iron	



For the convenience of users companies who make appliances have standardised plug fuse ratings to either 3A or 13A, however other fuse sizes are still available.

## Troubleshooting

Have the wall or ceiling lights gone out? Is a socket or appliance not working? See our advice below.

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### Wall or ceiling light not working



If your wall or ceiling light are not working it will be due to either a bulb that has blown or a problem with the circuit. To find out whether it is just a bulb that has blown check to see if the lights in other rooms are working. If it is a circuit problem then all the lights in one or more rooms will not be working.

**Blown bulb** - switch the light switch to the off position and wait for the bulb to cool down.

Take out the blown bulb from the light fitting and insert a new bulb.

**Circuit** - find and open the cover on your consumer unit (fusebox). Most homes have two lighting circuits, one for upstairs and one for downstairs. Check if one of the circuit breakers has tripped (turned off). If it has, reset it by switching it back on, the lights should now work.

Note: most modern circuit breakers are sensitive devices and a bulb blowing can easily cause them to trip.

If resetting the circuit breaker does not work, call an electrician.



## Socket not working

Check that it definitely is the socket that is not working by plugging a different appliance into the socket. Also try other sockets to see whether the problem is with one or, as will probably be the case, several sockets.

**Appliance** - if it is the appliance, check the plug and try replacing the fuse. If this does not work then the appliance may need to be repaired or replaced.

**Socket** - find and open your consumer unit (fusebox) and check the circuit breaker for the particular socket outlet circuit. You will also need to check the residual current device (RCD).

The circuit breaker and/or the RCD may have tripped (turned off) due to a faulty appliance being plugged into a socket. You will not be able to reset either of the devices until the faulty item has been unplugged from the circuit.

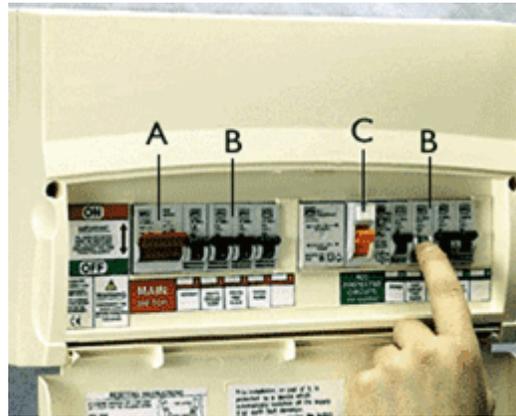


If you are not sure which appliance has caused the problem, unplug all appliances, reset the circuit breaker and/or RCD by switching back on. Plug each appliance back in, one by one, until the faulty item (which trips the circuit) is found.

If you cannot reset the circuit breaker and/or RCD even with all the appliances disconnected, call an electrician.

For large appliances that are wired into a circuit such as a cooker or immersion heater, check whether the circuit breaker has tripped and try to reset it. If this does not work, call an electrician.

## Your fusebox



A **consumer unit** or **fusebox** is used to control and distribute electricity around our homes.

They usually contain:

- A)** Mains switch
- B)** Fuses or Circuit Breakers
- C)** Residual Current Device

### **Mains Switch**

The mains switch allows you to turn off the electricity supply to your electrical installation. Some electrical installations have more than one mains switch, for example, if your home is heated by electric storage heaters, you may have a separate consumer unit (fuse box) for them. The consumer unit should be easy to get to, so find out where the mains switch is to turn the electricity off in an emergency.

### **Fuses**

Rewirable fuses have a piece of special fuse wire running between two screws. When a fault or overload current flows through the fuse wire, it will become hot, and melt when the current goes above an acceptable level. The melted fuse breaks the circuit, disconnecting the faulty circuit.

### **Circuit Breakers**



Circuit breakers are automatic protection devices fitted in the consumer unit which switch off a circuit if there is a fault. Circuit breakers are similar in size to fuse holders, but give more precise protection than fuses. When they ‘trip’, you can simply reset the switch. However, you first need to find and correct the fault.

## Residual Current Devices

An RCD is a switching device that trips a circuit under certain conditions, and disconnects the electricity supply. If your electrical installation includes one or more RCDs, test them regularly. You can do this by following the instruction label, which should be near the RCD. The label should read as follows: ‘This installation, or part of it, is protected by a device which automatically switches off the supply if an earth fault develops. Test quarterly (every three months) by pressing the button marked ‘T’ or ‘Test’.’ The device should switch off the supply. You should then switch it back on to restore the supply. If the device does not switch off the supply when you press the button, contact an electrician. Testing the button every three months is important. However, do not hold the test button for a long period if the device does not trip. If the RCD does not switch off the supply when you press the test button, get advice from a registered electrician.

*If your fusebox has a wooden back, cast iron switches, or a haphazard mixture of fuses it is likely that it dates back to before the 1960s and will need to be replaced.*

## PIRs explained

### What is a periodic inspection?



A Periodic Inspection is an inspection on the condition of an existing electrical installation, to identify (in order of priority) any deficiencies against the national safety standard for electrical installations.

A periodic inspection will:

- reveal if any of your electrical circuits or equipment is overloaded
- find any potential electrical shock risks and fire hazards in your electrical installation
- identify any defective DIY electrical work
- highlight any lack of earthing or bonding

Tests are also carried out on wiring and associated fixed electrical equipment to check that it is safe. A schedule of circuits will also be provided, which is invaluable for a property.

### **Why is a periodic inspection needed?**

Every electrical installation deteriorates with use and age. It is important for the person responsible for the maintenance of the installation to be sure that the safety of users is not put at risk, and that the installation continues to be in a safe and serviceable condition.

### **When is a periodic inspection needed?**

It is recommended that periodic inspection and testing is carried out at least every:

- 10 years for a domestic installation
- 5 years for a commercial installation
- 3 years for caravans
- 1 year for swimming pools

Other instances when a periodic inspection should be carried out are:

- when a property is being prepared to be let
- prior to selling a property or when buying a previously occupied property

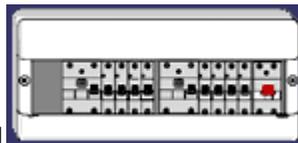
## Who should undertake a periodic inspection?

Periodic inspections should be carried out by a competent electrician.

## What happens during a periodic inspection?

The electrician will check the electrical installation against the requirements of **BS 7671** - Requirements for Electrical Installations ( IEE Wiring Regulations) - as amended, which is the national safety standard for electrical installations, and contains around 850 Regulations.

The periodic inspection will take into account all relevant circumstances including the following factors:



- adequacy of earthing and bonding
- suitability of the switchgear and controlgear e.g. consumer unit e.g. an old fusebox with a wooden back, cast iron switches, a haphazard mixture of such equipment is likely to need replacing
- serviceability of equipment e.g. switches, socket-outlets and light fittings e.g. older round pin sockets, round light switches and braided flex hanging from ceiling roses to light fittings, black switches, sockets mounted in skirting boards may



require replacing.

- type of wiring system and its condition e.g. cables coated in black- rubber, black-rubber was phased out in the 1960s or cables coated in lead or fabric are even older and may need replacing (modern cables use pvc insulation)
- provision of residual current devices for socket-outlets that may be used to plug in



electrical equipment used outdoors

- presence of adequate identification and notices
- extent of any wear and tear, damage or other deterioration



- Changes in use of the premises which have led to, or might lead to, deficiencies in the installation.

The electrician will provide a periodic inspection report (PIR) as part of the periodic inspection.

### What is a periodic inspection report?

A periodic inspection report (PIR) is a formal method of recording the findings of the periodic inspection, on at least three pages for domestic installations and six pages for larger installations.

The main purpose of a PIR is to report on the safety condition of an existing installation. Box E on page 1 should describe the overall condition as either **'satisfactory'**, in which case no immediate remedial work is required, or **'unsatisfactory'** which means remedial work is required to make the installation safe to use.

The following example is for a **satisfactory** installation:

E. DECLARATION	
<small>I hereby give my professional opinion on the inspection and safety of the electrical installation as indicated by regular regulations with the addition of stated electrical details here (i.e. being electrical, mechanical and/or installation energy and/or fire regulations and being made known to the consumer in the report, including the date when used and the date when valid. I am liable in accordance with the provisions of the law on professional responsibility and the consumer protection and the details of the law on professional liability. I am not liable for the safety of the installation if the consumer does not follow the instructions given in the report.</small>	
<b>With a satisfactory inspection report, the electrical installation is:</b>	<b>satisfactory</b>
<small>Signature of the electrician</small>	
<b>INSPECTOR'S SIGNATURE AND ASSIGNMENT BY:</b>	<b>REPORT REVIEWER'S AND COMMENT BY:</b>
Signature: <i>S. Parks</i> Name: S. PARKS Position: Electrical inspector Date: 16 May 2003	Signature: <i>E. Bond</i> Name: E. BOND Position: Regional District Supervisor for the Region of Central and Eastern Europe Date: 19 May 2003

Where a PIR describes the installation as **'unsatisfactory'**, the next thing to look at is Box F on page 2 'Observations and Recommendations for Actions to be Taken'.

The following example is for an **'unsatisfactory'** electrical installation:

F. OBSERVATIONS AND RECOMMENDATIONS FOR ACTIONS TO BE TAKEN		
<small>Referring to the attached schedule of inspection and test results, and subject to the limitations in D, there are no items adversely affecting electrical safety.</small>		
<small>or</small>		
<small>The following observations and recommendations are made:</small>		
Serial	Description	Code
1	Ground floor lighting circuit overloaded - Reg. 433-02-0116	1
2	Lighting circuits have no circuit protective conductors - Reg. 471-08-08. However there are only class II luminaires and accessories connected.	2

This is where any departures from BS 7671 are recorded, and a code to indicate the urgency of the action needed is given.

- **Code 1** Requires urgent attention
- **Code 2** Requires improvement
- **Code 3** Requires further investigation

- **Code 4** Does not comply with BS 7671

**Code 1** indicates a dangerous, or potentially dangerous, condition that requires urgent attention to make the installation safe. Once the necessary remedial work has been completed, an appropriate certificate should be issued to confirm that the remedial work has been carried out in accordance with BS 7671.

The electrician will give a summary of the inspection in the report, which will give a clear indication of the condition of the electrical installation, taking into account all relevant circumstances.

### What happens after a periodic Inspection?

If the report recommends improvements to the installation, ask for a fixed price quotation for the remedial work from at least three electrical contractors. The improvements do not necessarily have to be carried out by the electrician who provided the Periodic Inspection Report.

## What is a Residual Current Device?



**A residual current device (RCD) is a safety device that switches off electricity automatically if there is a fault.** RCDs are far more sensitive than normal fuses and circuit-breakers and provide additional protection against electric shock.



Additional protection by means of an RCD can be a lifesaver. An RCD constantly monitors the electric current flowing along a circuit. If it detects electricity flowing down an unintended path, such as through a person who has touched a live part, it will switch the circuit off very quickly, thereby significantly reducing the risk of death or serious injury.

Using electricity whilst wet significantly increases the risk of electric shock. If you are wet and in contact with the ground, it makes it easier for the electricity to flow through you. RCDs can help protect you from electric shock in areas, such as in bathrooms and gardens, where you may be wet.

It is very important to have RCD protection when using electrical equipment outdoors. Without it, a simple job like mowing the lawn could turn into a deadly disaster if you cut through the electrical lead.

## Types of RCD

**There are three main types of RCD:**

**Fixed RCDs** – are installed in the consumer unit (fusebox) and can provide protection to individual or groups of circuits. A fixed RCD provides the highest level of protection as it constantly protects all sockets on a circuit and any connected appliances.

**Socket-outlet RCDs** – are built into a special socket-outlet that replaces a standard socket-outlet. This type of RCD provides protection only to the person in contact with the equipment, including the leads, plugged into the special socket-outlet.

**Portable RCDs** – plug into any standard socket-outlet. An appliance can then be plugged into the RCD. These are useful when neither fixed nor socket-outlet RCDs are available, but again they provide protection only to the person in contact with the equipment, including the leads, plugged into the portable RCD.

## Reliability of RCDs

Our research found that fixed RCDs are about 97% reliable and that this rate improved if they were regularly tested by users. If you have fixed RCD protection, you can rely on it to not only reduce the risk of electric shock to you and your family, but also to reduce the risk of damage being caused to your property by fire caused by faulty wiring or appliances.



## Important

Although RCD protection reduces the risk of death or injury from electric shock, it does not reduce the need to protect yourself, family and property by having your electrical wiring checked at least every 10 years. If you think there is a fault with your wiring or an appliance, stop using it immediately and contact a registered electrician.



A good tip is to always test your fixed RCDs when changing to and from daylight saving, as many electric clocks and timers have to be reset anyway.

## Testing RCDs

It is strongly recommended that you test all fixed and socket-outlet RCDs regularly (about every three months) by using the 'test' button built into them. Manufacturers recommend that portable RCDs are tested every time you use them.

Do not hold the test button in for a long time if the RCD does not trip. If the RCD does not switch off the supply when you use the test button, get advice from a registered electrician.

## The UK standard for the safety of electrical installations

In July 2008 a new edition of the UK standard for the safety of electrical installations, BS 7671: 2008, came into effect. This standard now calls for virtually all circuits in new or rewired homes to be provided with additional protection by means of an RCD.



## Living in rented accommodation, safely



### Look out for these danger signs when using appliances

- Frayed, cut or damaged leads.
- Cracked or damaged cases on plugs or appliances.
- Burn marks on plugs, leads or appliances.
- Blowing fuses.
- Loose cord grips in plugs or appliances.

**If you notice any of the above danger signs, stop using the appliance and report the problem to your landlord straight away.**

### Do

- **Do** report any problems with the electrical installation or appliances to your landlord straight away.
- **Do** use appliances according to the manufacturer's instructions.
- **Do** use an RCD when using electrical equipment outdoors.
- **Do** regularly check the condition of plugs, cables and extension leads.
- **Do** check that any adaptor used complies with British Standards and is adequately rated for the connected load.
- **Do** remove plugs from sockets carefully. Pulling out a plug by the cable puts a strain on the terminations which can be dangerous.

### Don't

- **Don't** carry out DIY repairs on electrical installations or appliances.



- **Don't** bring mains powered portable appliances into the bathroom.
- **Don't** ignore worn flexes on appliances.
- **Don't** use any electrical appliance with wet hands.
- **Don't** use adaptors plugged into other adaptors.
- **Don't** overload adaptors, particularly with high current appliances such as kettles, irons and heaters.



### Tenant responsibilities

- Do not attempt to extend, repair or replace damaged or worn-out parts of the electrical installation yourself.
- Ensure all electrical appliances are used responsibly and in accordance with the manufacturer's instructions.
- Report any problems with the electrical installation or appliances to your landlord straight away.
- Allow access to the property should an electrician need to visit to carry out an inspection of the electrical installation/fix any reported problem.

If you have reported a problem to your landlord and they have refused to put the situation right or ignored your request, you should contact your local authority who will be able to assist you. Local authorities will ensure a landlord is meeting their legal obligations and can take enforcement action against them if they are found not to be.



## Portable appliance testing (PAT)

- The safety of appliances you bring into your accommodation is your responsibility. If you are in any doubt as to the safety of an appliance get it tested or replaced.

Your landlord or college should have a system for inspecting and testing the portable equipment they provide.

## What to look for in new accommodation

- An electrical report confirming that the electrical installation is safe for use (known as a Periodic Inspection Report).
- Certification confirming that any recent electrical work meets the UK national standard BS 7671 (Requirements for Electrical Installations).
- That sockets, switches and light fittings are in good condition with no signs of damage.
- That any appliances are provided with manufacturer's instructions, have up to date PAT test stickers on them (not required if appliance is new and has not been used before) and are in good working order.

## Landlord responsibilities

Your landlord is required by law to ensure:

- that the electrical installation in a rented property is safe when a tenancy begins;
- that the electrical installation is maintained in a safe condition throughout the tenancy; and
- that any appliance provided is safe and has at least the CE marking (which is the manufacturer's claim that it meets all the requirements of European law).

In order to meet the above requirements your landlord will need to carry out regular basic safety checks to ensure that the electrical installation and appliances remain in good working order.

## Energy Saving Tips



**To help you reduce your energy consumption, follow the tips below to become more energy efficient around the home.**

### **Energy Saving Light Bulbs**

An energy saving light bulb can last up to 12 times longer than your traditional bulb, and use approximately 80% less energy. So, if you use a traditional 60w bulb, an energy saving light bulb can produce the same amount of light at 13-18w. This will reduce energy costs and could save you up to £60 over the lifetime span of the energy saving light bulb.

### **Stand-by**

By turning your appliances off at the power switch instead of leaving them on stand-by, you would not only avoid emitting CO<sub>2</sub>, but also save money on your electricity bill.

### **Washing Machines**

90% of the energy that a washing machine uses goes towards heating the water. Reducing the temperature of your wash load to 30°C will save you over a third of the energy used washing at a higher temperature.

### **Tumble Driers**

Tumble driers consume much more energy than your average washing machine. Consider using a washing line in your garden, or a clothes horse indoors. If you do need to use the tumble drier, use a fast spin on your washing machine, as this will take out



more water from your clothing. When putting a load into your drier, ensure you do a full load, but do not overload the machine.

### **Dishwashers**

Only use your dishwasher when you have a full load as a half load uses the same amount of energy. If you can, stop the dishwasher's cycle when it gets to the stage of drying the load, and open the dishwasher up, letting the load dry naturally.

### **Kettles**

When filling your kettle only put in the amount of water you need, as over filling a kettle each time you use it wastes energy and money.

### **Fridges/Freezers**

When purchasing new appliances, always look for the Energy Saving Recommended logo. Energy Saving Recommended appliances are the most efficient in their category and could save you up to £37 a year



**For more information** on energy saving, please visit:

[www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)