

FIT EXTRA ELECTRICAL SOCKETS

SKILL LEVEL



No special manual skills are required, but a sound knowledge of electrical work is an advantage.

Working with electricity is potentially dangerous, and you should not attempt to convert or add sockets unless you have the necessary experience and knowledge. If in doubt, enlist the help of a professional electrician.

SAFETY FIRST

Always turn off the electricity supply at the consumer unit when working on electrical installations. Wear eye protectors and gloves when using a club hammer and bolster.

INTRODUCTION

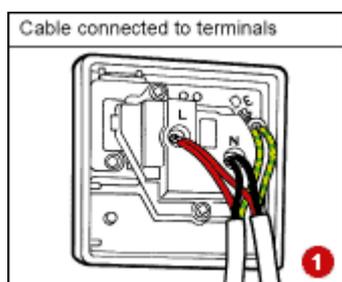
An adequate number of electrical sockets will eliminate the inconvenience and expense of extension leads.

To increase the number of sockets in your home either convert existing single-socket outlets to doubles or fit additional sockets. Single sockets will be either 'flush', i.e. they don't stick out from the wall, or 'surface-mounted', i.e. boxes that do stick out a little bit from the wall.

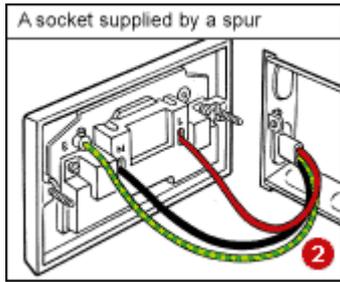
2 - Preparation

The following assumes your house is wired conventionally, using modern materials. Old round-pin sockets should be replaced by an electrician.

Most socket outlets in modern homes are connected to what is known as a ring circuit or ring main. From a 30amp fuse or 32amp miniature circuit breaker (MCB) in the consumer unit, a length of 2.5mm² two-core-and-earth cable runs from one socket to another and then back to the consumer unit where it is connected to the same set of terminals from which it originated.



There are usually two ring circuits in the average house, one supplies power to the ground floor sockets and the other to the sockets upstairs. At each socket the cable is cut and connected to terminals behind the faceplate.



Some homes have only one or two socket outlets per room, but the number can be increased with the addition of an extension known as a spur. This comprises a single 2.5mm² cable connected to the terminals of an existing socket or to a separate junction box on the ring

circuit. From there, the spur cable runs to a new socket. You can have as many spurs as there were socket outlets on the ring originally. Each original double socket counts as two.

Individual radial circuits are used to supply power to a single appliance such as a cooker or shower unit, but radial circuits can also be used to supply a number of sockets. Spurs can also be connected to this multi-outlet type of radial circuit.

A radial-circuit cable terminates at the last socket - it does not return to the consumer unit as with a ring-circuit cable. A 2.5mm² two-core-and-earth cable is used for a floor area up to 20m² (24yds²), and the circuit must be protected by a 20amp fuse or MCB. Higher-rated fuses and cable are required for larger floor areas.

Single sockets on a ring or radial circuit can be converted to doubles or even fused triple sockets. Spur sockets can also be upgraded, provided the spur cable is serving only the one socket outlet.

3 - Testing the circuit

Step 1: Before testing the circuit, turn off the electricity using the main switch on the consumer unit.

Step 2: Unscrew the socket faceplate and ease it off its mounting box. Note the number of cables feeding the socket - if three cables are connected, it is safe to upgrade the socket. If two are fitted you should test the circuit.

Step 3: Disconnect all the appliances on the circuit, then remove the red-coloured live wires from the socket terminal and separate these wires. Attach a continuity tester between the two live wires - if the tester glows, the socket can be changed.

- If the tester fails to light, get a qualified electrician to test the circuit before changing the socket.
- Similarly, if only one cable is connected to the back of your single socket, have that tested by a qualified electrician to make sure it is safe to

convert.

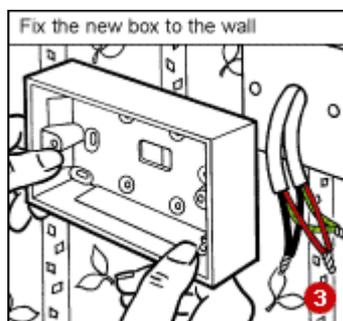
4 - Converting - Surface-mounted sockets

This is one of the easiest ways to increase the number of socket outlets in your home. No extra wiring is required and little or no redecoration afterwards. Just swap the single mounting box for a double box of the same depth, and connect the new double socket to the existing circuit cable.

Step 1: Before starting work, turn off the electricity using the main switch on the consumer unit - check that the power is off with a proprietary plug-in socket tester.

Step 2: Remove the two securing screws and pull the old faceplate away from its mounting box. Loosen the terminals securing the wires and remove the faceplate.

Check that the bare earth wires are covered with green/yellow earth sleeving - if not, cut a piece of sleeving to length and thread it over the wires, leaving about 12mm (1/2in) of each wire exposed.



Step 3: Remove the old mounting box. Break the plastic web covering the appropriate 'entry hole' for the cable in the new box. Pass the cable through the hole and screw the box to the wall.

Use a spirit level to get your mounting boxes horizontal.

Slotted holes allow you to adjust the position of each box as you drive the fixing screws into the wall.

You may be able to use the existing screws and wall plugs. If not, drill new fixing holes in the wall and insert wall plugs.

Step 4: Connect the existing wires to the terminals in the new socket - red to the L-terminal, black to N-terminal and green/yellow to E-terminal. Make sure all the wires are held securely and that no bare wire is exposed.

When two or more identical wires are connected to a single

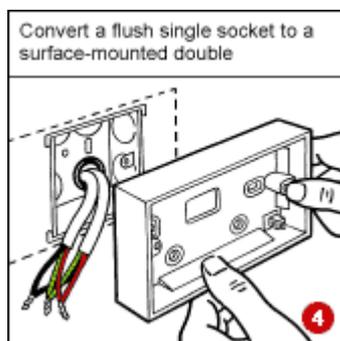
terminal, they should be twisted together with pliers to ensure a good connection.

Step 5: Push the socket faceplate into the box, taking care not to trap the wires, then tighten the faceplate screws.

Step 6: When all is secure, turn the electricity on and test the socket by plugging in a lamp or a plug-in socket tester.

5 - Converting - Flush sockets

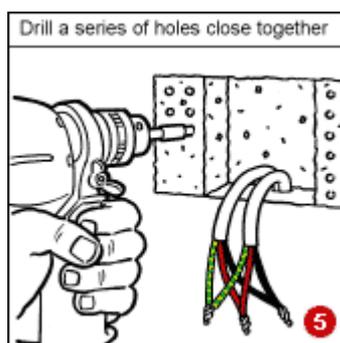
The simplest way to upgrade a flush socket is to use a special mounting box that converts it to a double surface-mounted socket. The conversion box is attached to the existing metal box, using the two short screws provided.



Converting a single flush socket to a double or triple flush socket involves more work but the result looks neater. It is probably best to leave this type of conversion until you plan to redecorate.

Step 1: Having turned off the power at the consumer unit, unscrew and remove the old faceplate and metal mounting box. You may need to cut around the old box in order to release it from the surrounding plaster.

Step 2: Hold the new metal box in the required position - this is largely determined by the original hole in the wall, but there is some leeway. Draw round the box to indicate how much masonry needs to be removed.



Step 3: Using a cordless drill fitted with a masonry bit, drill a series of closely-spaced holes in the masonry. Use a depth stop or a piece of tape wrapped around the drill to ensure the holes are all the same depth.

You can buy a drilling jig for boring out the recesses for mounting boxes - it is comprised of rows of closely packed tubes mounted on a backing plate that you attach to the wall.



Step 4: Use a bolster or cold chisel to chop out a neat rectangular recess for the new box. Drill fixing holes and fit wall plugs.

Step 5: Knock out a convenient cable-entry hole in the box and line the hole with a rubber grommet that will prevent the metal chafing the cable. Pass the cable through the hole and screw the box into its recess.

Use decorator's filler to make good any damaged plaster.

Step 6: Connect the existing wires to the terminals in the new socket - red to the L-terminal, black to N-terminal and green/yellow to E-terminal.

When two or more identical wires are connected to a single terminal, they should be twisted together with pliers to ensure a good connection.

Make sure all the wires are held securely and that no bare wire is exposed.

Dealing with a hollow wall:

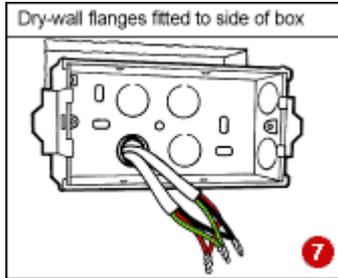
It is relatively easy to convert a flush socket that is set in a plasterboard partition wall.

Step 1: Turn off the electricity using the main switch on the consumer unit.

Step 2: Remove the old fitting and draw round the new mounting box. You may need to reposition the box to one side of the original opening to avoid cutting into wooden

studs that form the framework of the wall.

Step 3: Drill holes in the corners of the marked area and cut out the waste with a padsaw.



Step 4: Punch out the cable-entry hole and fit a grommet in the new box, then feed in the cable. Fit dry-wall flanges to the sides of the box.

Step 5: Pass the box through the hole in the wall and manoeuvre it until the flanges come up against the inside face of the plasterboard.

Step 6: Wire the socket as described in Step 6 above and screw it to the mounting box. As you tighten the screws, the flanges grip the plasterboard and hold the box in place.

Special plastic mounting boxes with hinged flanges are available for fitting sockets to hollow stud partitions.

6 - Fitting extra sockets

You can add a new socket to the circuit by connecting a length of 2.5mm² two-core-and-earth cable to the terminals of an existing socket, provided that the socket is not on a spur itself or already feeding a spur.

To avoid long cable runs, mount the new socket on the wall directly behind an existing socket in the next room.

- If you want a new socket on the opposite side of the room, run the spur cable under the floor. The new cable can rest on the floor or ceiling between joists or it can be secured to the side of a joist with plastic cable clips.

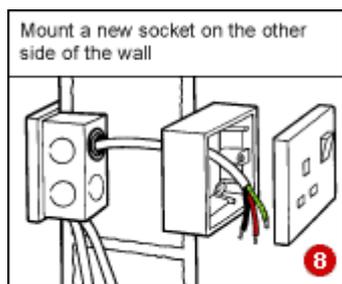


- If your new spur has to run across the line of joists, you will have to drill a series of 12mm(1/2in) holes through the joists. These holes must be 50mm (2in)

below the tops of the joists to avoid floorboard nails.

Step 1: Before starting work, turn off the electricity using the main switch on the consumer unit.

Step 2: Remove the existing socket and box, then drill a hole for a short length of cable through the wall.



Step 3: Cut a recess for a flush box or fit a surface-mounted box on the other side. Punch out the cable-entry hole for the cable (fit a rubber grommet in a metal box to prevent chafing the cable) and screw the box in place.

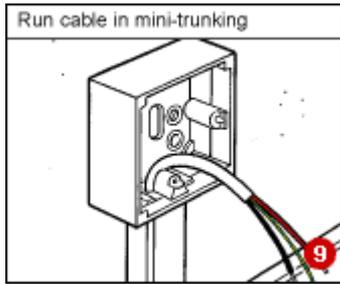
Step 4: Strip a short length of sheathing off both ends of the spur cable, check that the bare earth wires are covered with green/yellow earth sleeving - if not, cut a piece of sleeving to length and thread it over the wires leaving about 12mm (1/2in) of each wire exposed.

Step 5: Connect the existing wires to the terminals in the new socket - red to the L-terminal, black to N-terminal and green/yellow to E-terminal.

When two or more identical wires are connected to a single terminal, they should be twisted together with pliers to ensure a good connection.

Make sure all the wires are held securely and that no bare wire is exposed.

At the other end, twist the new wires together with the matching wires from the ring main, and insert them in the terminals of the original socket on the other side of the wall.



Run longer spur cables along a wall inside plastic mini-trunking and connect them to surface-mounted sockets.

Whenever you are installing new cable runs, make sure you do not cut the cable too short - instead push the excess cable back into the

wall or below the floor after you have connected the wires to their terminals.

Feeding a cable behind the skirting can be a problem. Decide where you want to mount the new socket and use a cordless drill fitted with an extra-long masonry bit to cut a channel behind the skirting board. Rake out the debris from behind the skirting with a cold chisel.