

INDOOR LIGHTING

SKILL LEVEL



Basic DIY skills are needed to install the new wiring. Connecting things up takes electrical skills and technical knowledge, so if you are in any doubt, employ an electrician.

SAFETY FIRST

Always ensure that the power supply is switched off before starting any work on your home's lighting circuits. It is not sufficient to turn off individual light switches. These instructions comply with the requirements of the current IEE wiring regulations.

INTRODUCTION

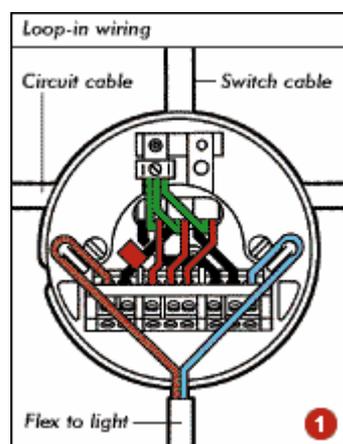
Get more from your indoor lighting by replacing old lights, installing some extra ones and putting in a dimmer switch or two.

Many homes still have only the most basic indoor lighting, with a central pendant lamp-holder or some other type of ceiling-mounted light fitting in each room, plus a plugged-in table lamp or two for extra task or background lighting.

Putting up new light fittings in place of what you have can make a big difference to the way a room looks. So can adding extra lights and replacing existing on-off switches with dimmer switches.

2 - Check out your system

Before you start changing the light fittings you already have, or planning where to install new ones, take a little time to examine your lighting-circuit wiring so you are aware of what is involved in working on it. Turn off the power to each circuit at the fuse box or consumer unit, then unscrew the cover on one or two ceiling roses.



Modern ceiling roses have a bank of terminals on their baseplates, and there will be at least two and probably three cables present (1). The circuit cable loops into and out of each rose in turn, terminating at the last rose of the circuit. A switch cable is wired into each rose and runs down to the switch that controls it. This is known as loop-in wiring.

Older roses have just one cable present, and are supplied from a junction box close by in the ceiling void into which

the switch cable is also connected. This is known as junction-box wiring.

You may find that some modern roses have only one cable present; they are also supplied from a junction box, usually to save on long cable runs if the rose and its switch are a long way apart.

Make sure that the lighting circuit cable has an earth core. The circuits in older houses were wired up using cable with no earth core, and one will have to be added if this is found to be the case - a job for a professional electrician. If you find old cable with rubber sheathing, do not touch it. It is probably brittle and dangerous, and needs replacing - again by an electrician.

3 - Replace a ceiling rose

Ceiling roses and their pendant lampholders discolour in time, as does the flex linking them. It is a simple job to replace an old rose with a smart new one.

You can buy complete pendant sets with the flex and lampholder already connected up. Alternatively, you could consider fitting a plug-in rose (called a luminaire support coupler or LSC). With this type, you can unplug the flex and lampholder from the rose for cleaning or when you are redecorating the room.

With the power off, unscrew the cover of the rose you want to replace. If you have loop-in wiring and more than one cable is present, identify the switch cable; it is the one with its black core running to the same terminal as the brown flex core. Mark its sheath with an S and wrap some red PVC tape round its black core to show that it is live. Then disconnect the pendant flex from the rose terminals and set it aside.

Disconnect the cable cores from their terminals. Undo the screws securing the rose to the ceiling and take it down. Press out one of the weakened areas (called knockouts) from the baseplate of the new rose or LSC, feed the cables through it and screw it to the ceiling.

Reconnect the cable cores to the terminals on the new baseplate. These will probably be labelled for identification. Connect all the red cores to the terminal marked LOOP. Connect the switch cable's black core to the terminal marked LINE, and the other black cores to the terminal marked N. All the earth cores, which should be covered with green/yellow PVC sleeving, go to the earth terminal.

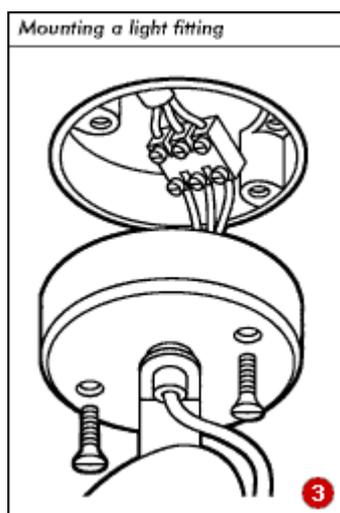
The pendant flex will already be connected to the baseplate of a pendant set, so screw up the rose cover. Insert the LSC plug in its baseplate and fit its cover.

4 - Install a new light fitting

You may want to put up a new light fitting in place of a ceiling rose. What this involves depends on whether you have loop-in or junction-box wiring, and on whether the new light fitting has an internal terminal block or is connected to the circuit wiring with a short flex tail.

Turn off the power and disconnect the old rose, as described previously. Label the switch cable.

If you have junction-box wiring and the new light fitting has a terminal block (most fluorescent fittings, for example), feed the cable through the entry point in the baseplate and screw the baseplate to the ceiling. Then connect the cable to the terminal block and fit the bulb or tube. Add the diffuser and restore the power.



If the new light fitting has a flex tail, you have to use insulated strip connectors to link this to the circuit wiring. The connection must be made inside an enclosure which is formed by recessing a round conduit box into the ceiling and then mounting the light fitting immediately below it (3). You will need access to the ceiling void to do this - easy if there is a loft above, but involving lifting floorboards otherwise.

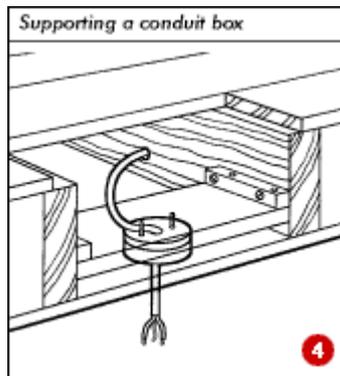
Draw the cable(s) that supplied the old rose up into the ceiling void, out of harm's way. The rose was probably screwed to a joist, so push a bradawl through the ceiling from above to indicate where it is.

Then hold the conduit box (you need the type with rear knockouts but no spout) against the ceiling from below, clear of the joist position, and draw a line round it. Insert the tip of your padsaw in the cable hole, cut out to the line and then saw carefully round it. Remove the waste.

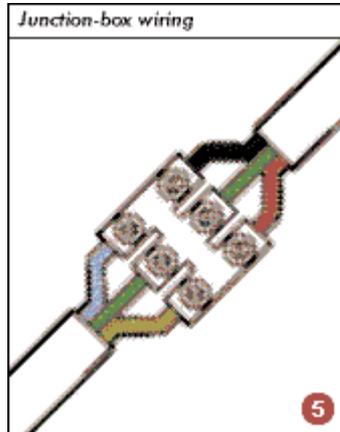
Remove a knockout from the base of the conduit box, and

push it up into the hole so its rim is flush with the ceiling. If it is a loose fit, hold it temporarily in place with masking tape. Then gain access to the ceiling void. Cut a piece of wood or board to length to fit between the joists above the conduit box, and screw batten scraps to each end of it. Rest it on top of the conduit box and drive screws through the battens into the joist sides.

Go downstairs and screw the box to the underside of the board from below. Then drill a 18mm diameter hole up through the knockout you removed earlier to create an entry point for the cable(s).

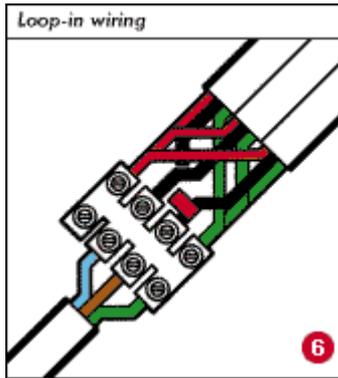


Feed the cable(s) down through the hole and into the conduit box (4).



If only one cable is present, you need three strip connectors to link it to the flex tail from the light fitting. Connect the red cable core to the brown flex core, black to blue and earth (green-and-yellow) to earth (5).

If more than one cable is present, indicating loop-in wiring, then four connectors will be needed to allow the connections in the original rose to be reproduced.



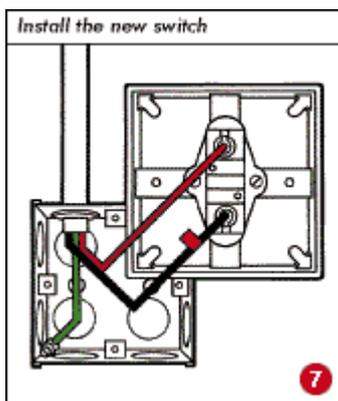
(6). Start by connecting all the cable earth cores to connector 1, the black core of the switch cable to connector 2, the other black cores to connector 3 and all the red cores to connector 4. Connect in the flex next, taking the earth core to connector 1, the brown to connector 2 and the blue to connector 3.

With the connections made, all that remains is to attach the light fitting to the ceiling. If it has a baseplate with screw holes at 51mm centres, you can secure it to the threaded lugs at each side of the conduit box with M4 (4mm) machine screws. Otherwise, use woodscrews long enough to pass through the ceiling and into the board that supports the conduit box.

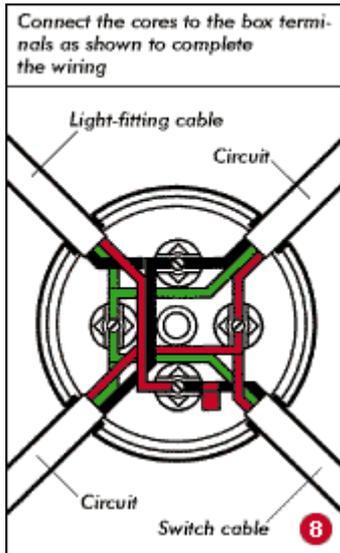
5 - Extend a lighting circuit

If you want a ceiling light at a new position, you will have to extend the lighting circuit with a spur cable to supply it, so once again you will need access to the ceiling void. That will enable you to decide where to make the connection into the existing circuit. You can connect your spur to the circuit in several ways, but the most straightforward is to use a four-terminal junction box connected into the circuit cable at a convenient point.

Turn the power off, locate the lighting-circuit cable and cut it. Remove some sheath from each cut cable end, strip the cores and reconnect them to the new junction box.



Install the new light fitting and its switch (7). Then run a cable back from each component to the new junction box.



Connect the cores to the box terminals as shown to complete the wiring (8), screw the box to a joist and fit its cover. Restore the power and test the operation of the light.

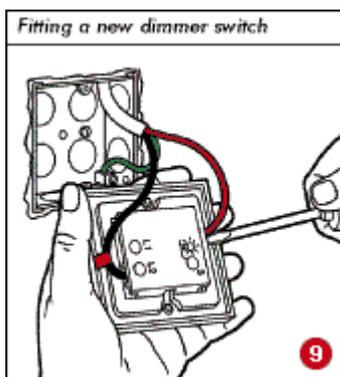
6 - Fit a dimmer switch

Dimmer switches allow you to control the brightness of your lights, from full on down to the barest glimmer, so they offer you the chance to create subtle mood-lighting effects. You can fit them in place of the existing plateswitches, but there are a couple of points you must check before you buy.

First find out the wattage of the light (or lights) the dimmer switch will be controlling. Each switch has a maximum and minimum wattage rating, so you need to choose one that can handle your wattage.

Next check whether the plateswitch you are replacing has one or two switches (called gangs in the trade), so you can buy a one-gang or two-gang dimmer as required.

Lastly, with the power off, undo the fixing screws holding the plateswitch you are replacing to its mounting box. Lift the switch away gently so you can measure its depth. Some dimmers need a box 25mm deep, while many plateswitches fit on shallower boxes. Buy a dimmer to suit the box depth.



To fit the new dimmer switch, disconnect the switch cable cores from the terminals on the old plateswitch. Then follow the instructions with the dimmer switch to reconnect them to the correct terminals (9).

If the dimmer switch has a metallic faceplate and is on a flush metal mounting box, you must link the earth terminals on each component with a so-called flying earth. Take a short length of earth core from a cable offcut, cover it with PVC sleeving and connect it to the two terminals. Then fold the cable neatly back into the mounting box and attach the faceplate to it.