

Part 6: The electrics



Our project workshop is built but to fit it out we need power. It's time to sit down and plan the electrics...

Taking a wire from your home to your new workshop may sound easy but as with all electrical tasks, if you are in any doubt about tackling the job yourself call in an experienced electrician. Professional electricians are required to be competent in design, installation and testing. Expect to pay between £20-30 per hour.

Although the same regulations are not applied to the home owner, who is putting in an electrical installation for his own use, it is wise to follow the recognised procedure.

The first thing to do is to determine the 'design current'. This is NOT just a case of working out the power consumption of the intended equipment. There are other calculations that must be taken into account. Luckily, there are plenty of inexpensive books available which explain the mathematics behind the calculations, but you will need a copy of the latest wiring regulations (BS 7671) in order to obtain the various multiples used within the calculations. These are available at libraries. Alternatively, you may find an electrician willing to design the installation for you to install.

Residual Current Device (RCD)
The RCD is a vital part of the protection system of your shed's power supply. It's essential that it is working properly as

incorrect installation of RCD protected circuits can cause nuisance 'tripping' problems that can be time consuming and expensive to trace. Sheds and out buildings are notorious for being the source of tripping due to condensation and moisture problems. Although the RCD in a modern split load consumer unit will protect the shed supply, if there is any problem within the workshop the RCD will trip and will not reset until the fault is rectified. It is far better to protect the workshop with an independent RCD not used by other parts of your house.

Remember, just because this is an outbuilding, and not part of the household circuit, doesn't mean that the standard of the installation can be lower. In fact greater protection is required because of the increased risk of ingress by water or 'mechanical means'.

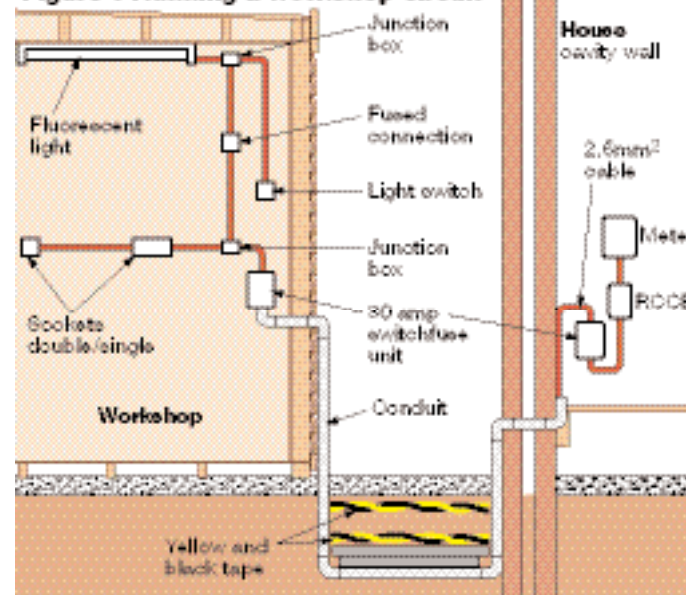
THE LAYOUT

At the house end
Connect to the supply by means of a separate Miniature Circuit Breaker (MCB). An Isolator (switch) inside the house will enable the workshop to be disconnected from the supply, independently of the supply to the house.

Within the house, the circuit can be run using the normal twin and earth cable, and protected as the rest of the internal installation. This internal wiring is part of the new installation and should have the same size conductors as the external supply cable to the workshop.



Figure 1 Running a workshop circuit



At the point of exit the cable can be terminated and joined to the armoured cable, it is most important that the armour of the cable is earthed. This may require a separate earth wire being run back to the earthing point at the consumer unit.

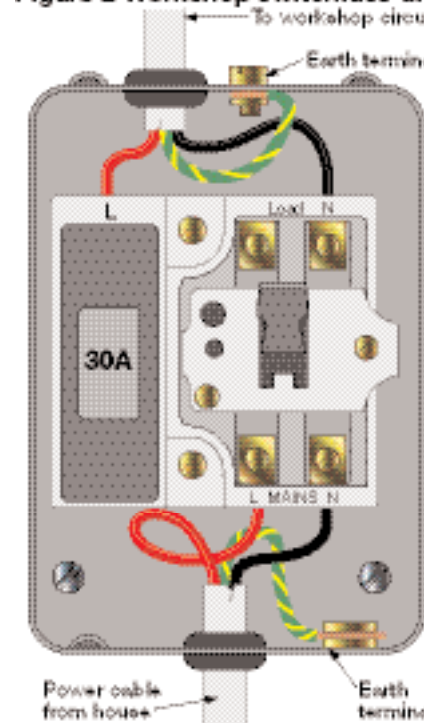
At the workshop end

At the workshop end, take the cable into the building and waterproof the entrance hole. Connect the cable to a consumer unit containing an RCD and at least two MCBs, one will be used for the power circuit and the other for the lighting.

Apart from the fact that these circuits have vastly different power requirements the other more practical advantage of this is that if the power circuit is overloaded and trips the MCB, the lights will stay on enabling inspection of the problem.

It's a good idea to install an earth rod, at the workshop, connect it to an earthing block, adjacent to the consumer unit. Connect the block to the earth bus bar of the consumer unit. The block can also be used for bonding any metal parts of the structure or fittings e.g. a metal bench and vice. The bonding cable must be at least as thick as the phase (live) conductor.

Figure 2 Workshop switchfuse unit



Workshop cabling

All exposed cabling, inside the workshop should be run in conduit and metal clad sockets and switches employed throughout. Plastic faceplates and surface boxes do not stand up to impact from stray boards or machines. Go for industrial grade products for durability.

Ring or radial circuits can be employed depending on the design and load expected. Static machines requiring hard wiring must have an isolator provided so that the machine can be disconnected from the supply independently.

One final point to consider is the positioning of power outlets. Trailing leads are a nuisance and potentially dangerous. Floor or hanging sockets are useful, but remember a hanging socket must not be supported by its supply cable alone. Jack chain, as used for hanging fluorescent lights, can be bolted

WORKSHOP

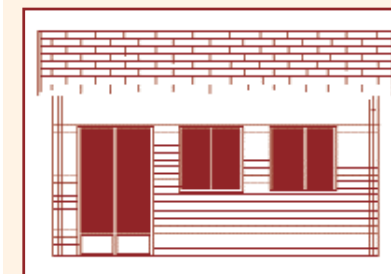
Book offer

WW readers can buy *Workshop Electrics* by Alex Weiss for the discount price of £6.95, including P&P. Offer closes June 16th 2004.

Please contact the Customer Services Department, HIGHBURY LEISURE, Berwick House, 8-10 Knoll Rise, Orpington, Kent, BR6 OPS Tel: 01689 886 660 or 01689 886 661 Fax: 01689 886 666 Email: customerservices@highburyleisure.co.uk



WW EXCLUSIVE DISCOUNT OFFER!



We have got together with Garden Affairs, the suppliers of our log cabin, to offer WW readers the chance to buy their own workshop at a discount price. These buildings come in three sizes and are all made from 44mm planed softwood with 19mm T&G roofs and floors, double glazed doors and windows, felt shingle packs and all fixings. Delivery is direct to your door.

Option 1	4 x 5m cabin	£4200
Option 2	4 x 4 cabin	£3450
Option 3	4 x 3 cabin	£3150

Please contact Garden Affairs direct for more information:
☎ 01225 470372,
fax: 01225 442855,
www.gardenaffairs.co.uk

Useful information

Greenbrook Electrical can supply kits of armoured cable to supply gardens and workshops.

☎ 0800 389 9446

Eb@greenbrook.co.uk

Cabling options

- Cables can be run above or below ground. If the workshop is close to the building, then an overhead connection is probably the easiest to install but not the most attractive

feature of a domestic garden, and an independent earthing rod must be used to ensure good earth continuity.

- Cable can be run along a garden wall or sound fence. However, it must be protected by steel conduit or,

alternatively, steel wire armoured cable can be used. In either case it must be secured at regular intervals.

- The neatest way to run the power to the workshop is underground. The cable must be protected. It can be run in plastic conduit with solvent welded joints. However this must be laid in its entirety and the cables pulled through in one go. With a long run and a variety of twists and turns this option is not viable. Steel wire armoured cable is the most practical solution for underground installations.

If the armoured cable is to be buried, it must be buried deep enough so that it does not become a hazard. It must also be identified with a purpose-made 'Warning' tape buried on top of the cable. In practise, this means burying the cable to a depth of 450mm (18 inches) under grass and up to as much as 750mm (30 inches) under flower beds.

What lighting should I use?

- Fluorescent overhead strip lights are inexpensive, energy efficient and provide plenty of fairly even light as long as they are overhead and not fixed to walls.
- Portable floodlights offer high power directional lighting when you need it e.g. for checking a finish or working inside a cabinet.
- Undercabinet lighting can be used for fine bench work.
- Low voltage track lights can be fitted with a combination of flood or spotlight bulbs that can give some overall lighting and more illumination in certain parts of the workshop. As they can be swivelled, they can be adjusted if you change the workshop lay-out. Take care, high wattage bulbs can blow the transformer. Only use the recommended wattage.

Installing a kit

Greenbrook can supply armoured cable, metal sockets, warning tape and most of the other items needed for outdoor wiring. There's even a range of kits on offer



1 Drill a 10mm hole through your house wall at a convenient point



2 The exterior waterproof junction box is fitted to the wall



3 The box is ready wired to armoured cable. Feed other cable into the wall



4 The unit must be connected to the power supply with an RCD



5 Dig a trench at least 450mm deep and lay the cable to the workshop



6 Warning tape is laid over the top as an extra safety device

COMING UP

In the coming months we'll be showing step-by-step how our project workshop is going live.