

**Jim Watney** shows how loose wire and conduit can be used to make an economical easy-to-install wiring installation for your workshop

# 1st class cabin

## Part 8: Conduit and wiring

Once the route and entry point for the supply to the shed has been planned it's time to consider the workshop wiring. An important consideration here is mechanical protection. In the house this is usually achieved by keeping the wiring embedded within the fabric of the building and only having the outlets and switches exposed. This method of protection can be used in a workshop if you have a cavity wall building. However, any alterations to the layout after installation can mean access problems. It's far more practical to install the wiring on the surface of the workshop walls.

In a commercial situation, it's likely that there would be several circuits with differing power requirements, switching and fusing. There may be 'hard wired' equipment (wired in - not plugged in), or special connections (non-fused) for machines with high current requirements that would exceed the standard square pin plug's 13 Amp maximum fuse size. This mass of wiring is usually run in trunking at a convenient level, usually high up to avoid impact damage. Outlets are then dropped down in conduit to the specific outlet or switch.

All the wiring is accessible by removing covers and installing, modifying or removing various circuits independently. The mass of wires inside a length of trunking of a large installation can make spaghetti look neat! It is, nevertheless, much easier to install and maintain than it appears to the untrained eye and some of this industrial practice can be employed in the small home workshop.

The consumer unit case is installed first



**Power and protection**  
This is not an industrial installation nor is it a kitchen or shower room or the entire floor of a house. Unless you are running several machines at once, the power consumption of the average home workshop is fairly small. A single ring circuit for the power protected by a 32Amp MCB and a separate lighting circuit protected by a 6 Amp MCB will take care of most workshop needs.

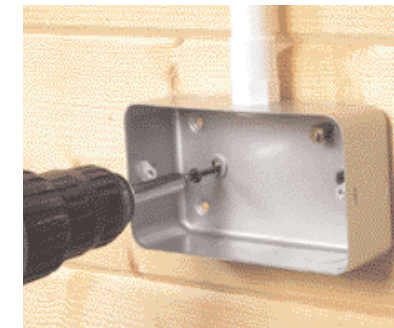
Run all the conduit before installing any wiring



Cutting the conduit with pipe shears makes a neat job



Access plates should always face outwards



Use a washer behind a countersunk screw. Carcase screws are used on this solid wood wall to fix the boxes in place



Run the wire from the furthest socket back to the consumer unit. Tape ends to make it easier to push through conduit

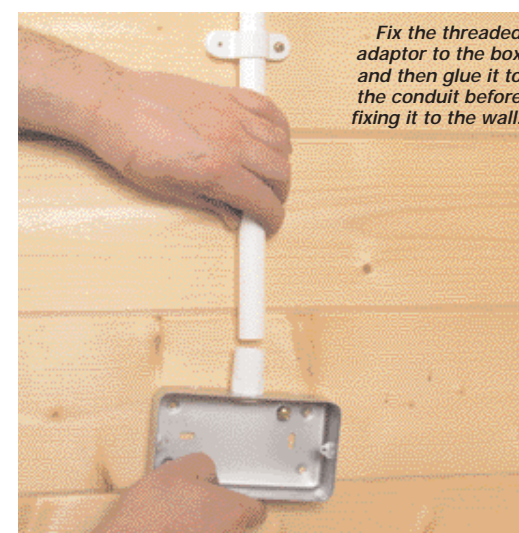
### Installation

All wiring is single core cable running in plastic conduit feeding metal clad outlets and switches. The connection to the workshop is via an armoured cable which will be terminated at a waterproof box on the outside wall (more on this next time). This box is connected, through the wall, to the consumer unit via a short piece of conduit and threaded adaptors. These are cemented together in order to prevent the ingress of moisture. The consumer unit case is stripped out



Work around the installation leaving loops at junctions to be pulled through once the end of the wiring has made it to the consumer unit

The workshop circuits are protected by an RCD installed into the consumer unit in the workshop. The supply to the workshop is not protected by the RCD in the consumer unit in the house. This arrangement will isolate the workshop from the house, as far as RCD protection is concerned, and eliminate any risk of the workshop tripping the domestic supply half way through 'little Johnny's' homework. If the power supply from the house is connected to the unprotected side of the domestic consumer unit or there is no RCD present (older installation) there must be no power outlets installed prior to the connection to the consumer unit in the workshop. Any outdoor outlets or outlets that can be used for outdoor equipment must be protected by an RCD. If you have any doubts on this, seek the advice of an electrician.



Fix the threaded adaptor to the box and then glue it to the conduit before fixing it to the wall.



**EXPRESS DELIVERY**

## MASSIVE SAVINGS on Everything Electrical!

Below Trade Prices and an incredible range for the Builder, Plumber and Electrician. Phone NOW for your FREE Catalogue!

Branches at: BASILDON, BRIGHTON, BROMLEY, CAMBRIDGE, COULSDON, HORLEY, HUNTINGDON, ORPINGTON & TONBRIDGE.

**Get Your FREE Catalogue NOW!**

**+ NATIONAL SALESLINE**

# 0800-197-65-65

Buy Now @ [www.qvsdirect.co.uk](http://www.qvsdirect.co.uk)

## How to use conduit

Plastic conduit is easy to install and can be bent over the knee with the aid of a bending spring. Always bend the conduit much further than required and ease it back to the desired position. This will make the bend more stable and make removal of the bending spring easier. It can be cut with a saw, but by far the quickest and cleanest cuts are made using a pair of pipe shears. When using elbows, bends and tees, make sure that the removable plates are accessible once the conduit has been fully installed.

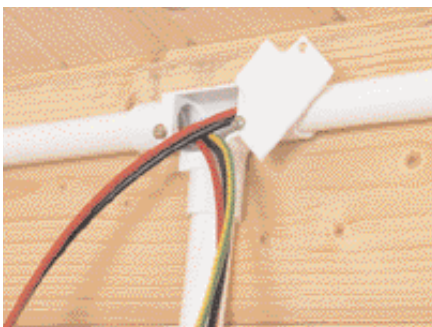
and screwed to the wall. From here, mark all the conduit runs, socket and switch positions. Install all the conduit before any wiring is installed.

**“When using elbows, bends and tees, make sure that the removable plates are accessible once the conduit has been fully installed”**

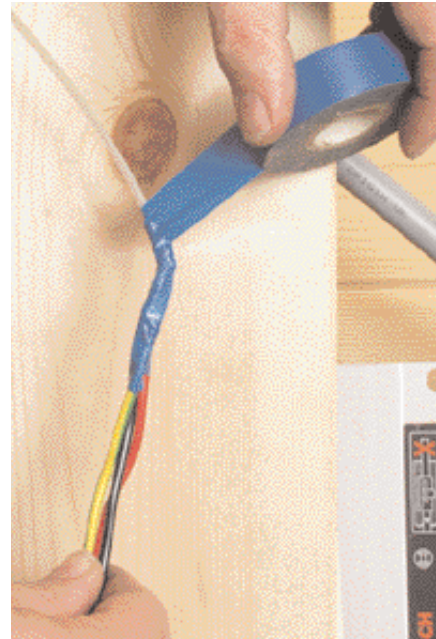
The metal clad boxes are fixed to the wall and joined to the conduit using threaded adaptors as used with the consumer unit. When fixing the boxes to the wall either use roundhead screws or, as here, use a washer under the head of a countersunk head screw to prevent the screw from distorting the box or pulling through.

Once the conduit has been installed the wiring can be fed through. The three cable reels red, black and green/yellow are set up on a piece of conduit so that they will run freely and the three ends are taped together using insulating tape. Start from the furthest outlet and feed the wires back to the consumer unit via each socket position in turn. Do not cut the wire, just leave a large enough loop to allow the wiring to be connected to

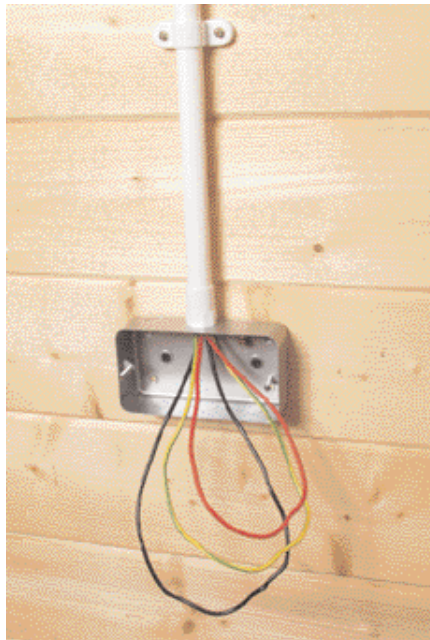
*Pulling a loop out at a 'T'*



*When it gets too hard to push the wire through it can be pulled through with a draw wire. Attach the wire and...*



*...tape it over to make a smooth connection*



*Wires looped into socket box and ready to wire up*



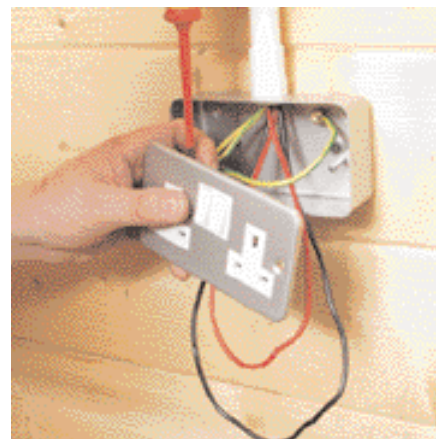
*Back to the consumer unit and looped around to stop it being pulled back accidentally*

the faceplate. In awkward areas it may not be possible to push the cables through the conduit. In such cases a nylon draw cable can be used to pull the wiring through.

Once all the wiring has been installed the face plates can be connected to the circuit. An additional earth connection must be made from the earth terminal on the box to the faceplate earth of each outlet and switch.

## NEXT MONTH

The final connection to the house and burying the armoured cable.



*Connecting the face plate. Note the earth connection to the box. The loops of red (phase) and black (neutral) will be cut and stripped prior to connection*