

# Readers' tips

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## Flat tool battery?

I have found that the trouble with battery-operated tools is that they always run down at the worst times – that's bound to be 'Someone's Law'. I have tried

having two batteries, but all this meant was that I had two flat batteries at the same time. Now for most of my work at the bench I plug straight into the ship's battery.

One advantage of using the ship's supply is that there is no voltage drop when the drill is on heavy load. This gives the drill quite a lot more power than it has on its own battery.

Rather than wire the drill straight into the ship's supply, as is commonly done, I use an adaptor, which plugs into the drill in place of the battery. The

advantage of this is that the drill can still be used on its own battery.

This can, of course, only be done with a 12volt or 24volt drill, depending on the ship's supply.

To make an adaptor, cut a piece of wood to the size and shape of the battery (see left). Some drills have a lug to

ensure the batteries are fitted into the charger the correct way round and if this is the case a recess will have to be cut in the wood to allow for it. Next, cut two strips of copper about 10mm x 50mm. I used a piece of an old hot water tank for this. The ends should be bent over about 5mm. Check that the piece of wood fits neatly into the drill base and then cut two grooves – one each side of the wood – the same thickness as the copper strips. These must line up with the electrical contacts in the drill.

Screw the copper strips into these grooves. This is best done by drilling the holes in the copper then countersinking the wood and punching the

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copper into the holes using a centre punch. The screws will then fit flush with the surface of the copper strip without loss of strength. Fit two wires to the copper strips and an appropriate plug and all you have to do is plug it in and drill. The adaptor can, of course, be replaced by the battery in seconds.

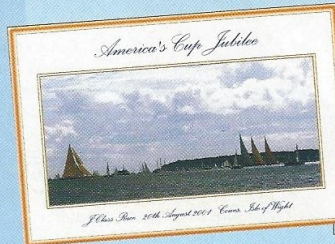
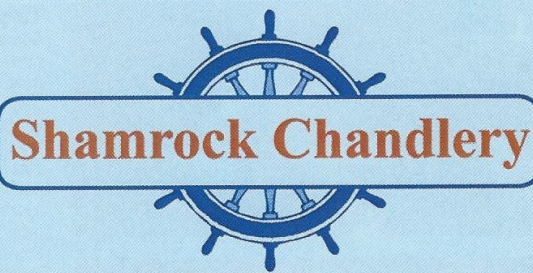
Although this looks a frighteningly crude and exposed piece of adaptive wiring, it is running off 12V DC with no threat of killing you. However,

should a short circuit occur, which is quite likely around rotating machinery, the cable and its insulation could vaporise leaving the operator with a very nasty electrical burn. Therefore, as a safety issue, the cabling must be fused or protected by a circuit breaker (CB) on the positive lead at the 'battery end'. Size the fuse or CB correctly by dividing the power rating of the tool by the applied voltage. An 80W hand drill, for example, will need, say, a 7amp fuse.

**J Cossey, Falmouth**

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