Special April project has no special use

The Kingswood carpenter's level

This versatile project is so devilishly simple that you'll wonder why no one thought of it years ago. Using readily available components, you can build the EA Kingswood carpenter's level. A valuable piece of test gear that looks deceptively like a lump of four-be-two, the Kingswood has performance which meets or exceeds the rigorous TABSA* standards.

by DOUGLAS FIR
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Amongst other functions, the Kingswood can be used as a spirit level although it doesn't use anything as unscientific as spirit. Instead, it has two mercury switches driving LED indicators. In this way, the level can provide precision measurements of better than ±45°. In addition to a multitude of measurement applications, the Kingswood – with its genuine woodgrain finish – will complement any decor. In fact, it will look so good, your friends will never believe you built it yourself!

Whereas a normal spirit level is difficult to use when the light fails, the LED indicators of the Kingswood electronic level enable it to be used in total darkness. What a boon this will prove to handymen and tradesmen who will now be able to finish their jobs without even being able to see the work!

A LED is mounted at each end of the device and, in the event of an imbalance, one of these will be illuminated. It is placed on the item to be tested in the same way as a conventional level. When a LED is lit, that end is high.

The mercury switches are fixed to adjustable mounting plates and this facilitates calibration. Once the device is in a known level attitude, the mounting plate for each switch is adjusted to the point where the LEDs are just extinguished. This can be checked with a spirit level.

A problem which quickly became apparent with the prototype level was that the mercury switches have a large amount of hysteresis. Irrespective of our efforts to critically adjust the device, the LEDs would remain extinguished over a large range of angles. In practice, this can be partially overcome by taking measurements at the point where the LED just extinguishes rather than the point where it just illuminates. This may require that one end of the level be lifted manually to trigger one of the LEDs. If the LED extinguishes when the level is lowered, the item under test is very nearly level.

The Kingswood – not quite on the level! Don't forget the greasy handprint.

Even if you have no interest in building, the Kingswood may still prove a worthwhile project. For example, if you are concerned with the safety of crawling insect repellents, it is definitely for you. Totally effective against dirty, disease carrying insects, it is entirely safe for humans and is also available in a range of low irritant fragrances.

An integral handle provides the Kingswood with easy portability so that you need never be without it. Hence you can enjoy the prestige and security of your own lump of four-be-two wherever you go. Imagine the advantages – a guaranteed seat on the train every day, no approaches from religious cults seeking donations, immediate attention in busy banks and stores and many others. Of course, to derive the maximum advantage from the Kingswood, it must be used with the correct facial expression; the mouth must be set into a vicious sneer and the whites of the eyes must be prominently displayed.

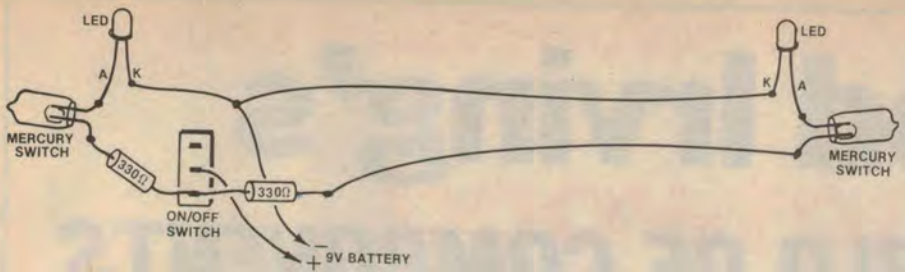
Profuse salivation tends to improve the results.

You may well ask how such a project came about. It all started when one of our staff members spotted a damaged cargo pallet in the Magazine Promotions basement. To most people, this would have looked like nothing more than a

We estimate that the current cost of this project is more than it is worth.

$?

This includes sales tacks.



Wiring diagram for the Kingswood carpenter's level. At least one component can be eliminated – no prizes for guessing which one.

pile of broken timber. With an uncharacteristic burst of perception (he's still recovering) the said staff member recognized the basis of a project. Working with the kind of inspired dedication that usually only punctuates his pay day, the timber was miraculously transformed. Hence, in a fit of demented enthusiasm, the EA Kingswood was born and, of course, you reap the benefit!

The most difficult aspect of construction is transforming a normal lump of four-be-two into a genuine Kingswood. Note that only four-be-two is suitable for this application – we understand that some kit sellers intend to supply 100 x 50mm, but don't be conned. Proper four-be-two it must be. The length of the finished item must be 1023.75mm on the bottom and a bit shorter on the top.

It is essential that all the splits, dents and other forms of damage be installed properly. For an expert job, send the Kingswood for a long trip on a NSW freight train. Interstate or NZ readers should air freight their Kingswood to NSW to take advantage of our excellent service in this respect. The greasy hand prints can be obtained free of charge at most garages.

The switch mounting plates can be cut from a sheet of timber approximately 5mm thick using a hole saw of about 35mm. As you can see from the accompanying photograph, most of the components are recessed into the timber. The mounting plate recesses can also be cut with the 35mm saw and a slightly larger one can be used to cut cover plates if they are required. As far as the battery compartment is concerned, the best method is probably to use a sharp chisel. This is likely to be a time-consuming process, so any intelligent constructor will probably give up at this stage.

What, still persevering? Well then, glue the mercury switches to their mounting plates. They should form a complementary pair, ie, a mirror image of each other. A point to watch is the orientation of the switch contacts. With the plate lying on a horizontal surface, the contacts should be side by side – not one above the other. This seemingly minor detail makes a significant difference to the amount of hysteresis.

Most of the foregoing components can be regarded as optional, but we have now come to the one accessory which can be regarded as essential to the Kingswood – namely, the handle. Our handle was borrowed from an EA high power inverter. Inverter kits are available for about $200, and as an added advantage, they have two handles. Why not build two Kingswoods!

Wiring for this project is really quite simple. You'll need two bits of wire whose length is determined by the ratio of the Kingswood to the speed of light in a glass of milk divided by the suplementary number of three or four other bits which are shorter by the square of the number you first thought of. Solder them to any parts which look as though they ought to have something soldered to them and which might otherwise be inclined to fall out when the device is processed by a garbage compactor.

If all this leaves you feeling a little confused, refer to the wiring diagram but whatever you do, don't refer to me. I'll be on leave or completing my psychiatric treatment.