

2CV Tech: Protecting the Ignition

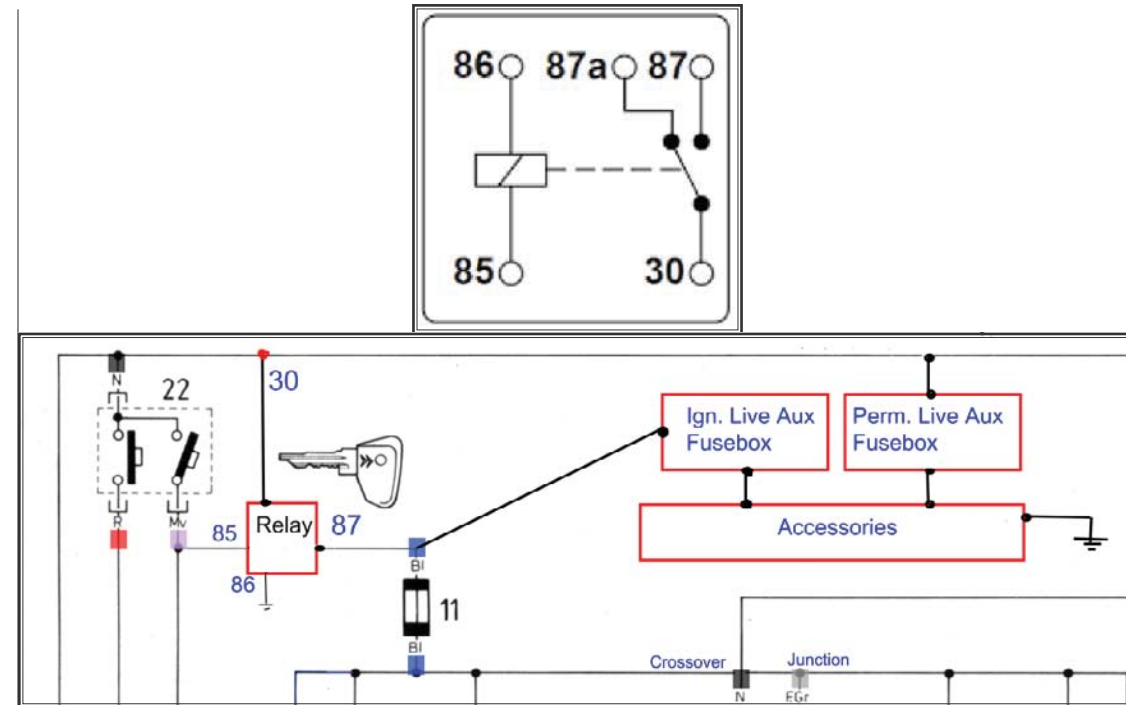
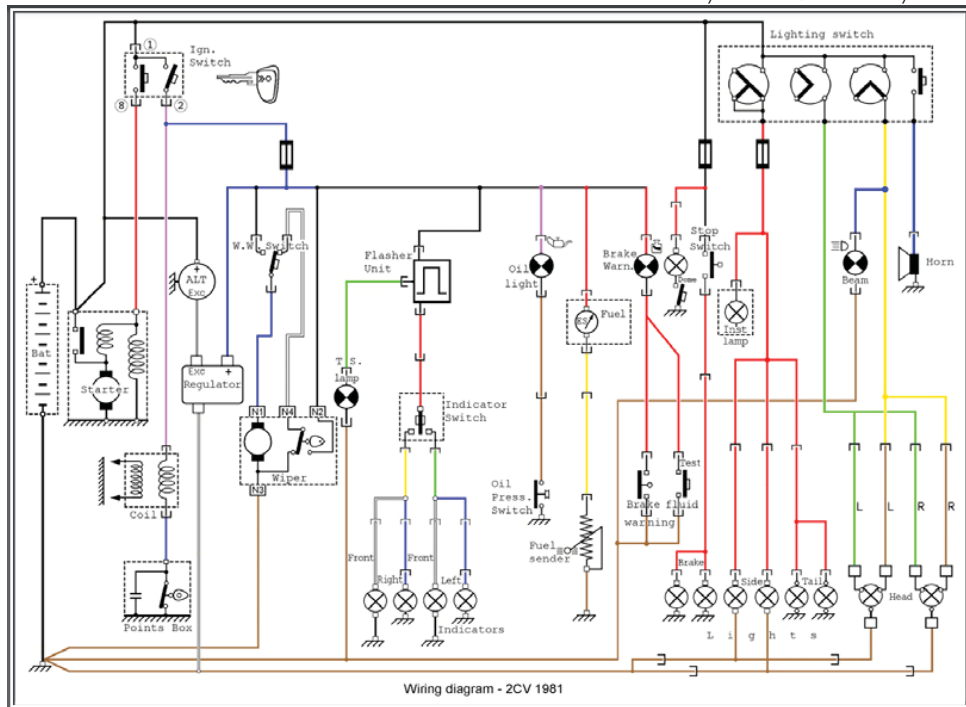
Protecting the Ignition Switch with a Relay & Adding Accessories Fuse Boxes

When I look at the 2CV wiring diagram, I'm often struck by how all of the key-switched circuits are fed by a single fuse. Worse, that they all draw their current via that, by now quite elderly, key switch.

If you wish to add any key-switched accessories, you further increase the load on the key switch. So I inserted a relay into the key-switched circuits, to do all the heavy lifting.

If you're not familiar with these handy little items, a relay is a two-part electrical switch. If the first part is fed a low current, it turns on the secondary part: a high current switch. It works by energising an electromagnet, which then opens or closes a set of points. Typically the trigger current for the electromagnet is about 0.25amps, whilst the points switch may handle 30 or 40amps. So we can reduce the ignition switch current drastically, if it now merely turns on the relay, whilst safely increasing the switched current available, indirectly.

As well as taking the strain off the key switch, the relay can



also supply switched power to an extra fuse box. Which can in turn easily and safely power all your accessories, via suitable fuses.

The main addition to the existing wiring is a new positive feed wire, from the battery or from the terminal post on the rear of the starter motor. This needs to be routed with safety in mind, as that stretch is unfused. So a short run to the new relay location is best. But an in-line fuse can be fitted.

If you have fitted, or will fit, headlight relays, then it pays to mount all the relays together. Then a single battery/starter

feed wire can be daisy-chained from the first relay to the second, and so on. Neatest to use relay sockets, which can clip together. These make changing relays quick and foolproof, as all the connections are in the socket and the relay simply plugs in.

The feed wire[s] need to be able to handle the total expected current, if all devices are in use simultaneously. The formula for this is

Current [in Amps] = Power [in Watts] divided by Volts.
e.g. 120W [main beam lights] divided by 12V = 10A current draw.

A feed wire powering the

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Above: Piggyback connectors.
Right: Relay fuse boxes and airhose.
Facing page: Auxiliary fuse box.



original switched circuits, and all accessories, may need a lot more. Err on the side of caution. The same formula can be used to determine the fuse ratings to be used e.g. 15A for the main beams [my headlights now run on fused relays].

You need to obtain a normally-open or crossover relay [not a normally-closed type].

To insert the relay into the whole key-switched side of the system, you first need to identify the positive feed wire coming from the switch to the existing fuse box. Post-'81 wiring has this as the blue-tagged wire at the fuse box.

Disconnect the ignition coil [to avoid burn out whilst test-

ing], then use a test light to identify which side of the fuse box is the input side: remove the fuse, turn the key to on, test which side of the fuse holder will light the test lamp, when linking the fuse holder to earth. Then disconnect the battery.

Step by Step Wiring Changes

These may sound complicated, but are not really. The wiring diagram before and after pictures [on previous page] may be easier to follow, if your mind prefers visuals.

1 Remove the switch input wire from the fuse box and attach it to terminal 85 of the new relay ~ you may need to put a different terminal connector on the wire for this.

2 Run an earth wire from the 86 relay terminal to a suitable earth point. This wire carries very little current, maybe

250mA, so can be light.

3 The new battery positive feed wire is run to relay terminal 30, directly from the battery, or the starter motor post, or from an existing adjacent wire.

4 The switched power output can now be taken from the relay terminal 87. Note there may be more than one 87 terminal, or terminals labelled 87a, 87b etc. You want one that is turned on when the relay is energised, which is normally 87 or 87b, but see the diagram on the relay body to confirm this [see picture]. If still unsure, use a test lamp to see which 87 terminal does what, when the key switch is on [reconnect the battery for this]. A power wire of suitable dimensions [probably the same as terminal 30 wire] is

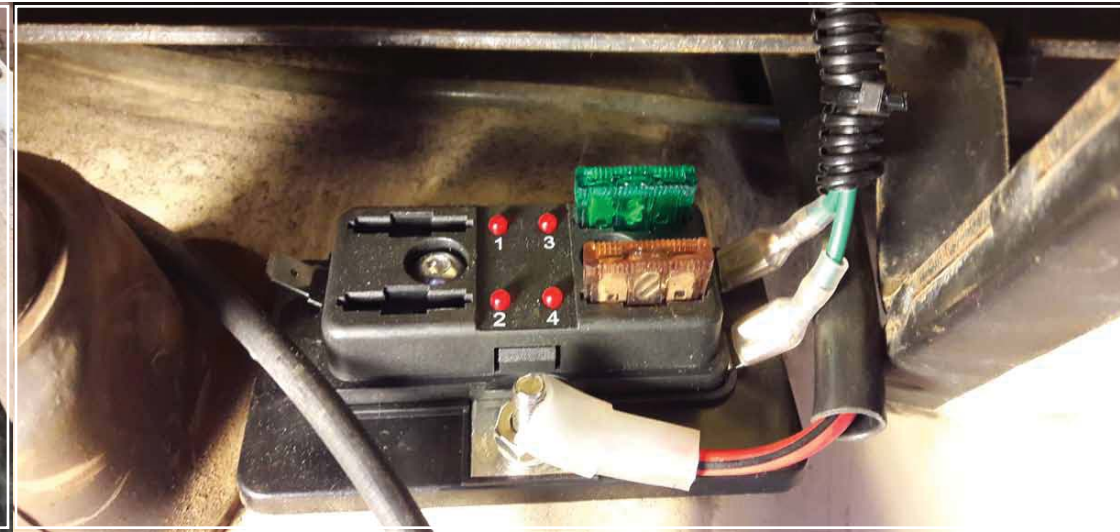
run from terminal 87 to the missing bluetagged fuse connector on the fuse box. This completes the key-switched relay wiring.

To Power an Auxiliary Key-switched Fuse Box, for Accessories

A modern fuse box, with a single positive input [aka a busbar], blade fuses, and LED blown fuse tell-tales, is best.

Run a relay-switched positive feed wire to the new fuse box. Either from relay 87 terminal, or from the blue-tagged input on the original fuse box. So the auxiliary box only receives power when the key is on. To double up wire connectors at the relay or fuse box, piggyback connectors are useful. [See photo top left]

Then you can simply hook up your new toys to the auxiliary



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fuse box, using suitable fuses.

Before and after wiring diagrams.[see pages 46 and 47] The before shows the feed from the key switch [top left corner] going directly to the blue-tagged fuse.

The after shows that same wire now going to relay terminal 85. With terminal 86 earthed.

The new positive feed wire is taken from the positive 'bus' and attached to relay terminal 30

The new switched output

runs from relay terminal 87 to the original fuse.

Another new wire, connected at the fuse input, takes switched power to a new auxiliary fuse box.

This diagram also shows a permanently live auxiliary fuse box, fed directly from the positive bus.

This article was written by Joolz Smith and first appeared in the June 2022 edition of '2CVGB News' the magazine of the Deux Chevaux Club of Great Britain.