

This modification to the Goldwing 1500 audio unit (model number RM-G30P) is an alternative to the 'dummy tape' modification, particularly useful when the cassette player doesn't work. If you're not able, or prefer not to attempt this yourself, Sierra Electronics in Ohio, USA can carry out this modification. <https://www.sierra-mc.com/gl1500aux.asp>. They're a professional electronics company specializing in electronic repairs etc...

So here we go.....

This modifications to add an auxiliary input using a miniature DPDT (Double Pole Double Throw) 12V relay together with a SPST (Single Pole Single Throw) miniature switch to operate the relay, whilst maintaining the full functionality of the CB Radio, AM/FM Radio & Cassette (if working) with muting.

Providing you're reasonably adept at soldering you will be able do this. Items required are:

-) Small tipped pencil style soldering iron
-) Assortment of coloured small gauge electrical wire
-) 12V 5A PCB Miniature relay 8 Pin DPDT (This must be totally sealed!)
Available on Ebay: <https://www.ebay.co.uk/itm/122186796979>
-) Miniature toggle switch + Waterproof cover
Available on Ebay: <https://www.ebay.co.uk/itm/282672614623>
-) Silicon sealer
-) Double sided tape
-) Heat shrink tubing (Insulation tape will suffice)
-) 1/8 Male stereo to RCA cable

Here's how to do it.....

The capacitors (Caps).

Firstly, remove the radio from bike. It's very easy to remove, but if you haven't done it before, there are plenty of online posts on how to do this.

You will then need to remove the PCB (Printed Circuit Board). It's very straightforward. Place the unit upside down on something like a towel, to prevent scratching, and then remove all the screws from the base plate and remove it. Just remember where all the screws go. Next, remove all the little brass coloured screws from the PCB. There are six in total, one in each corner and two in the middle.

The centre one holds a small bracket for attaching the base plate. Be careful not to lose this. Carefully unplug all connectors and remove the harnesses from the little white hold down clips then lift the board out. Locate the long blue chip with the two capacitors (C49 & C50) beside it. (Fig 1)

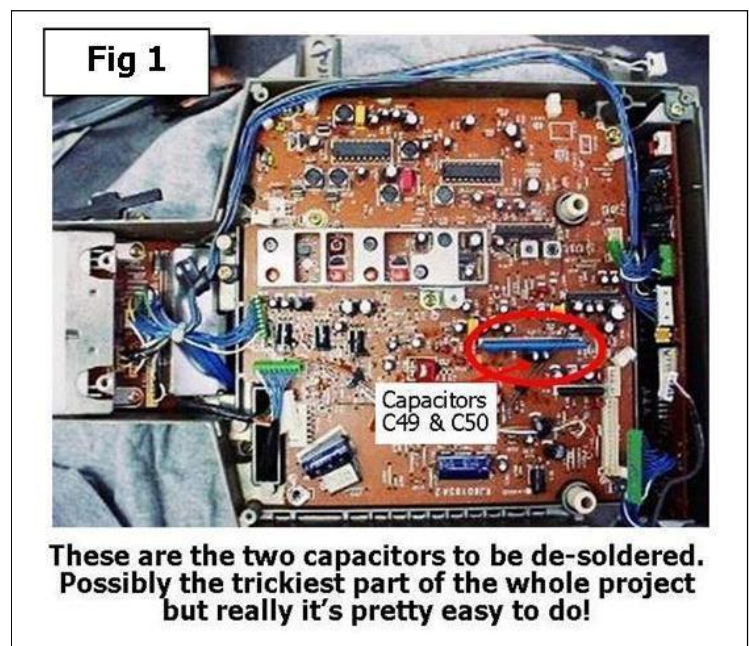


Fig 2



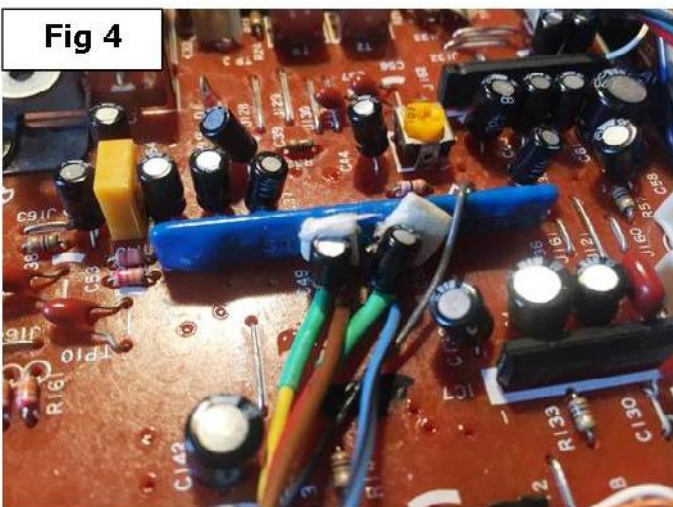
Turn PCB over, locate and de-solder capacitors C49 & C50. Shown in red circle.

Fig 3



The positive legs are shown here de-soldered, pulled through to front of PCB and bent at an angle ready to accept the new wiring.

Fig 4



Use double-sided tape to stick the capacitors to the blue chip for stability

Turn the PCB over and locate the capacitors C49 and C50 on the rear. (Fig 2)

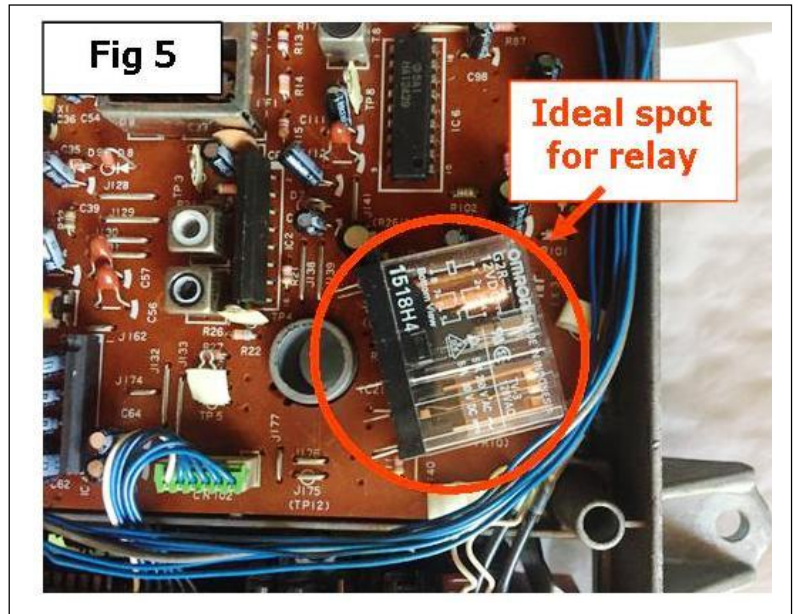
Only the positive legs of these two capacitors need to be de-soldered. A little fiddly but pretty easy if a bit of patience is applied. De-solder them using a hot, clean solder gun tip. First of all ensure the soldering iron is up to heat and then 'tin' the tip. Clean off any excess solder before using. Heat the spot to be de-soldered and the solder should just flow onto the tip of the iron. Wipe it clean and repeat as many times as necessary. When the solder gets hot try to get the leg of the capacitor loose. If it's stubborn you may need to use de-soldering tape or a de-soldering bulb to suck away any hot molten solder.

Very carefully pull the legs back through the PCB from the other side. (Fig 3) Use a small pair of tweezers to aid removal. If it's proving difficult to remove one leg, try de-soldering both legs of each capacitor and then re-solder the negative legs back in after removal. Another method is to snip the leads close to the capacitors and then just solder new capacitors to the leads sticking out. In this case make a note of the details shown on the capacitor and replace only with exactly the same type!

The wiring.....
Connect the positive legs of the two capacitors to their respective terminals on the relay and also connect the two holes in the PCB to their respective terminals on the relay.

Full details for this are shown on the schematic diagram.

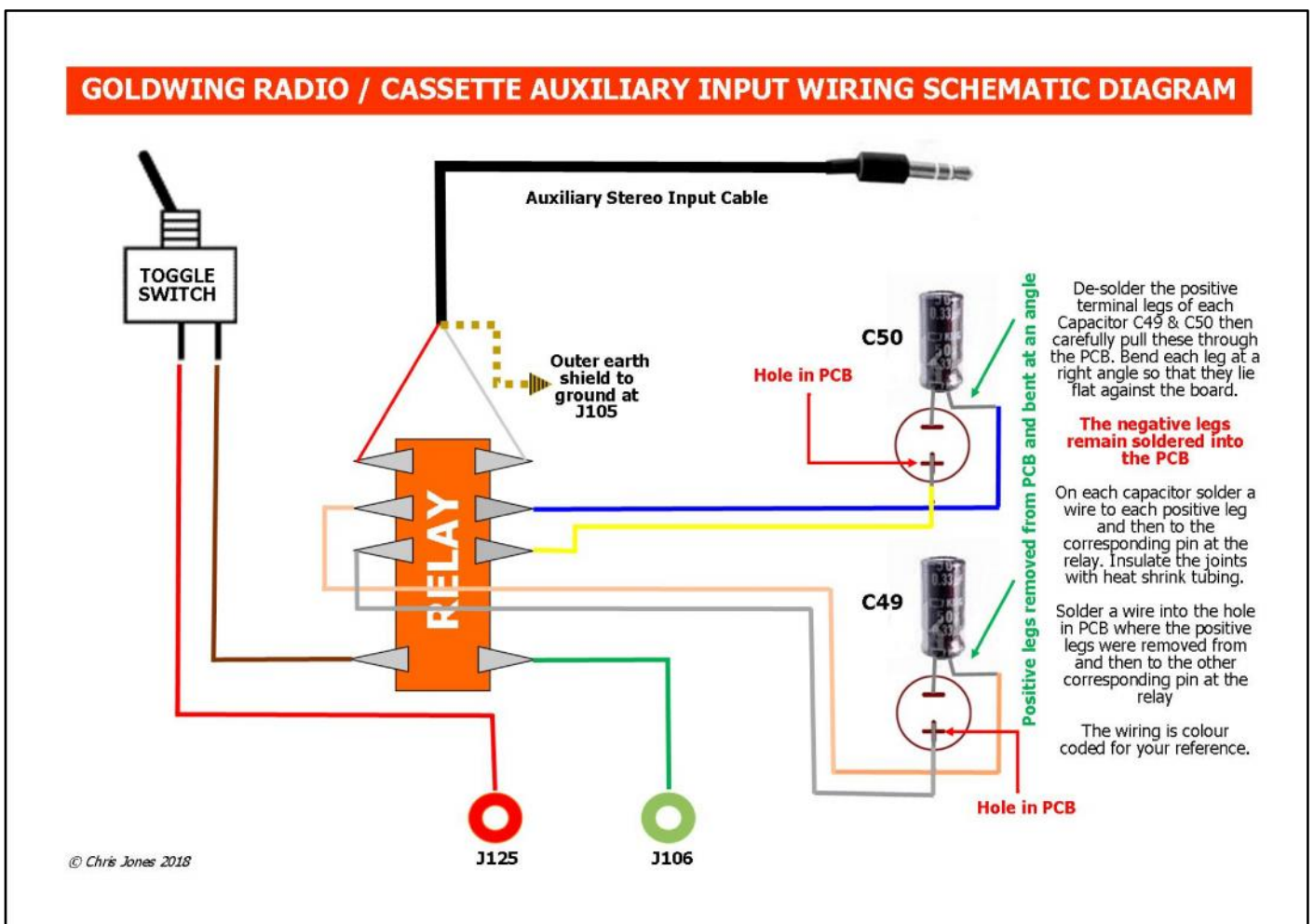
Use double-sided tape to stick the capacitors to the FM (blue) chip for stability should you prefer? You can clearly also see the heat shrink tubing on the two positive legs of the capacitors. (Fig 4) Also, you could use double-sided tape to hold the wire down to the board to secure it. The relay can be attached in the uppermost left corner of the PCB. Secure the relay to the board with double-sided tape, ideally after soldering all the connections to it. There is nothing else here so it's an ideal spot! (Fig 5)

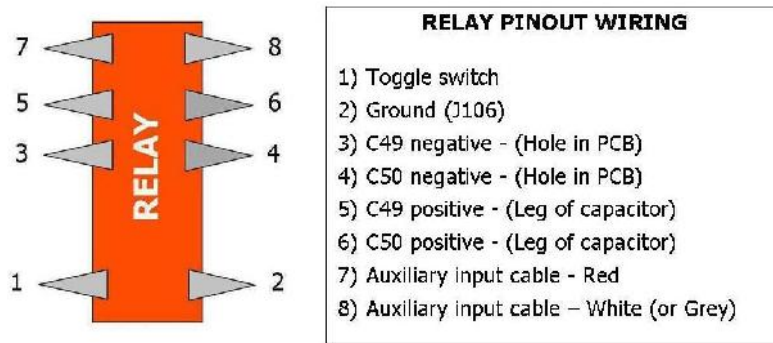


Wiring the Relay.....

PLEASE NOTE

Follow the schematic diagram with colour coded wiring for ease of use. The colours of the wiring shown in the photos will be different to those shown in the schematic diagram, so any reference to wire colouring will relate to the schematic diagram NOT the photos.





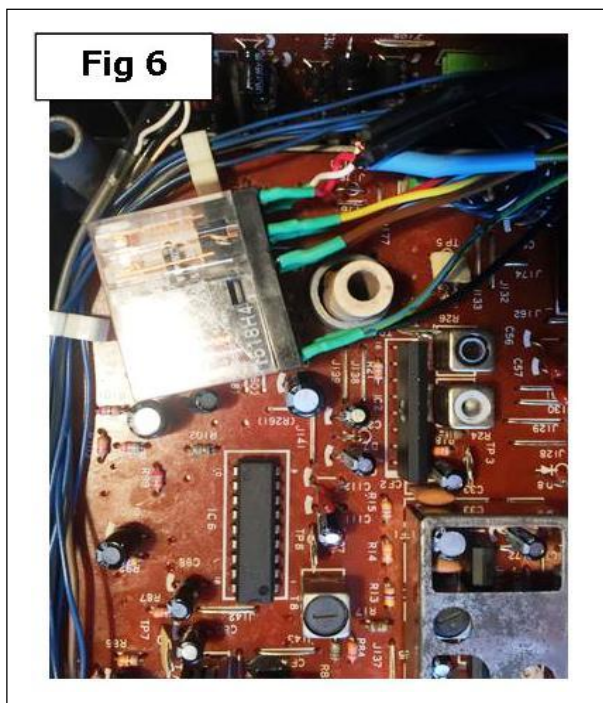
Input wires (1/8 male auxiliary stereo cable) are soldered to one end of the relay (Pins 7 & 8). Schematic diagram – Red wire (pin 7) and White wire (pin 8). The outer shield wires RT and LT should be twisted together and connected to ground at J105

The two centre pins are connected to the positive legs of capacitors. Schematic diagram - Pink wire (pin 5) to C49 and Blue wire (pin 6) to C50.

The two pins closest to the relay coil pins are connected to the holes in the board where the positive legs were de-soldered. Schematic diagram - Grey wire (pin 3) to C49 and Yellow wire (pin 4) to C50.

The remaining two pins are the relay coil pins. One is connected to the switch the other to ground. Schematic diagram - Brown wire (pin1) connects to toggle switch and the Green wire (pin 2) connects to ground at J106.

The other switch wire is power. Schematic diagram - Red wire connects to J125



The schematic diagram is colour coded but any colour wiring of your preference can be used. The wiring in the pictures (Fig 6) and (Fig 7) clearly shows Yellow and Brown wires from one capacitor going to the one side of the relay and Blue and Red wires from the other capacitor going to the other side of the relay.

The relay coils are the two bottom pins in the picture. The two wires connected to this are Green/Blue and Black. The Green/Blue wire connects to the toggle switch and the Black wire connects to ground at J106.

The two wires at the top of the relay are for the Auxiliary input wire. (1/8 male stereo plug that goes to the Ipod or Iphone). If necessary, cut the RCA plugs off a pre-manufactured cable or make your own. Trim back the outer covering to expose the wires. Be careful when doing this has the shield wire can easily be cut into. The white wire is the left channel and the red wire is the right channel.

Twist the ground shield wires RT & LT together, solder a short length of wire to this, insulate with a small piece of heat shrink tubing if necessary, then connect to ground at J106. (By the large blue capacitor lying on its side).

To attach just scrape the bar, tin and solder. The ground connections can be taken from J106 and the 12v positive power supply from J125 which is located in the middle of the PCB (Fig 7)

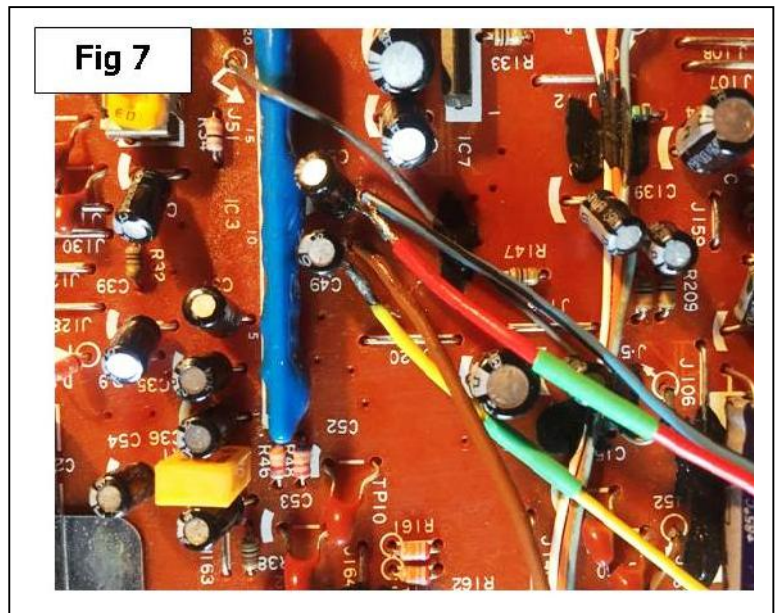


Fig 7

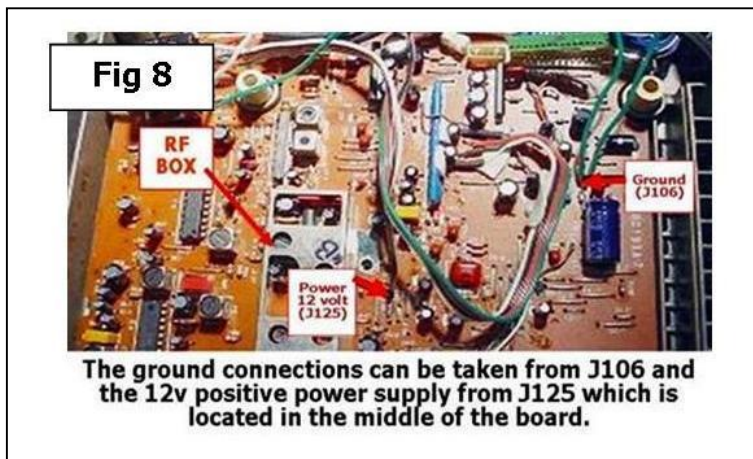


Fig 8

The ground connections can be taken from J106 and the 12v positive power supply from J125 which is located in the middle of the board.

Note:

If you are attempting this modification to an earlier type radio, RM1500 radio, Bob Anderson has discovered that the ground for the relay should be taken from a different location, and recommends taking it from the RF box in the centre of board.

Alternatively, ground the relay at one of the board mounting screws. Whichever is most suitable?

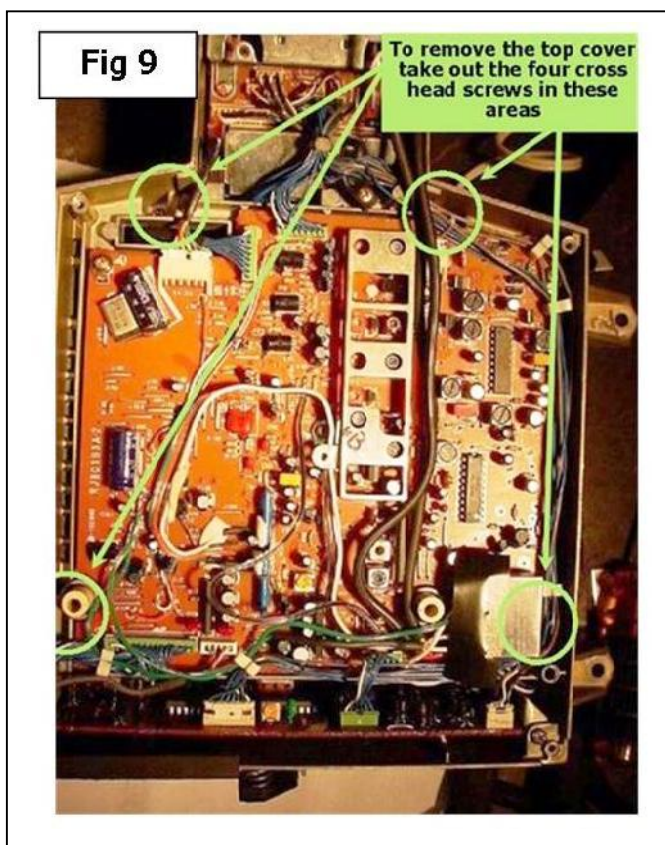


Fig 9

To remove the top cover take out the four cross head screws in these areas

Installing the Switch.....

To install the switch the top cover needs to be removed first. To remove this, first take off the knobs from the front of the radio then remove the four screws from the back of the radio (Fig 9) and lift off the top cover.

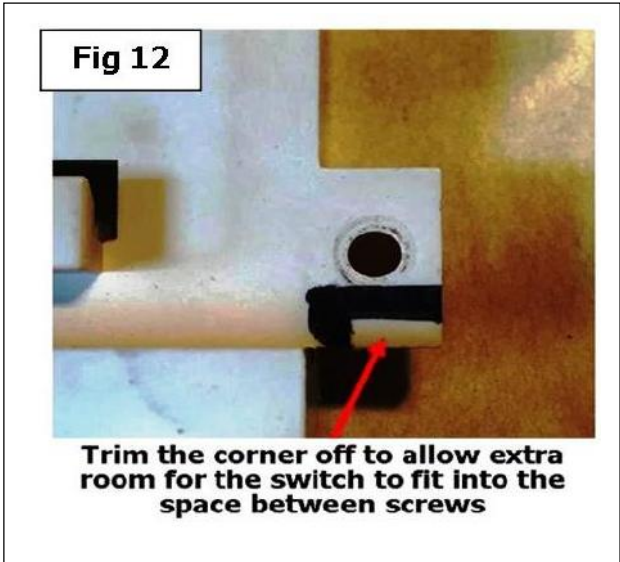
The green wiring block DOES NOT disconnect from the top control panel. **If you pull on this it will damage the wiring.** Should you need to disconnect this wiring you MUST do so from the main PCB itself. (Fig 11)

The switch itself can go anywhere that's suitable. One of the best places is just above the On/Off switch & IC Volume controls. When installing the switch in this position it's has to fit into a tight little factory cut out between two screws, as indicated by the green circle (Fig 10)



Measure exactly where this will fit then drill out the opening. There's not a great deal of room for error so it may be a good idea to use a very small drill bit as a 'pilot' then drill, or file out to the required size afterwards. It may also be necessary to trim the corner off the internal plastic panel that holds the control switches to allow extra room for the new switch to fit between the two screws. (Fig 12)

Apply a copious amount of silicon sealer and install switch. (Fig 10) Solder two wires to this then route them around the board, one long enough to reach the relay and the other to the 12 volt power supply at J125.



Pictures of the completed installation clearly showing the position of the switch.



Replace the radio top cover feeding any wiring through the corner. Ensure all connections are securely made and all screws are replaced respectively. Replace the knobs and fit the rubber boot to the switch (If yours came with one of these) to waterproof it.



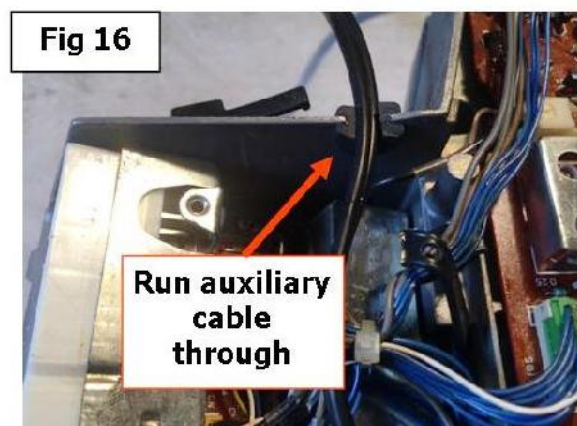
Finally.....

Tidy all wiring. If not already done so use double-sided tape to hold the relay in place. Tuck wires into the harness holders as much as possible, unless a different route has been chosen? Either use heat shrink tubing or cover all connections of the relay with electrical tape for added protection. The auxiliary input wire can be routed through one of the two holes that have screws to hold the cover down in the neck area. (Fig 13)

Ideally the best one is on the left side when the radio is installed onto the bike. The one closest to the left pocket of the fairing. If necessary, bend the screw tab back a little to increase the opening space, which will allow the auxiliary plug to be pulled through. Better still. Route the cable through the hole before soldering.

Alternatively, it may be better to file a small hole in the side of the radio unit (Fig 14), cut a small rubber grommet in half and insert in the hole (Fig 15) and run the auxiliary input cable through there (Fig 16).

If not already done so, ensure the PCB is refitted in its correct position, all connections are made and secure and that all six screws are replaced. Pay particular attention to the small bracket that must be secured with the centre screw. Replace the base plate ensuring all screws are secured in their appropriate positions. Install the unit back on the bike.



That's it.

You're now ready to go with an auxiliary input incorporating all the normal features of the original audio unit.

This is an updated version with extra information which should make it easier to follow. This is how I did the modification which works perfectly. Big thank you to Bob Anderson for the original version.

Top Tip

When dismantling the unit take photos at every stage with your phone before proceeding. You'll then know exactly where screws, wiring connections and any components all go on re-assembly.

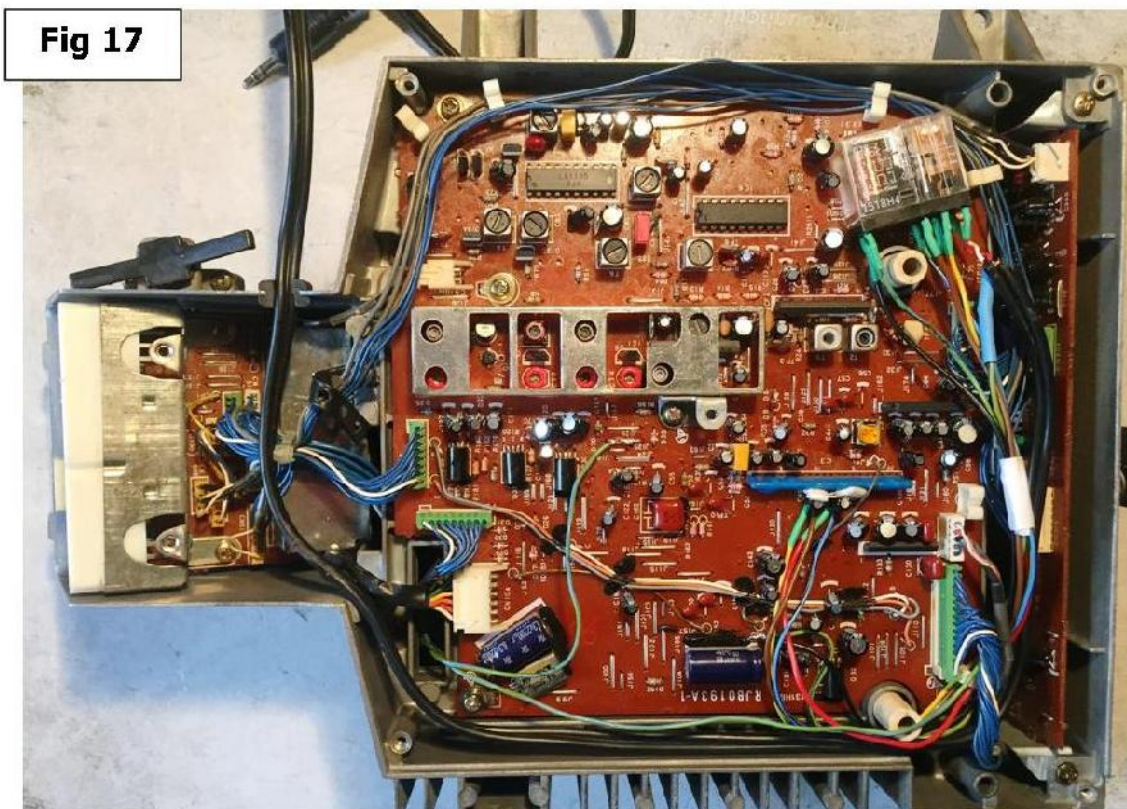
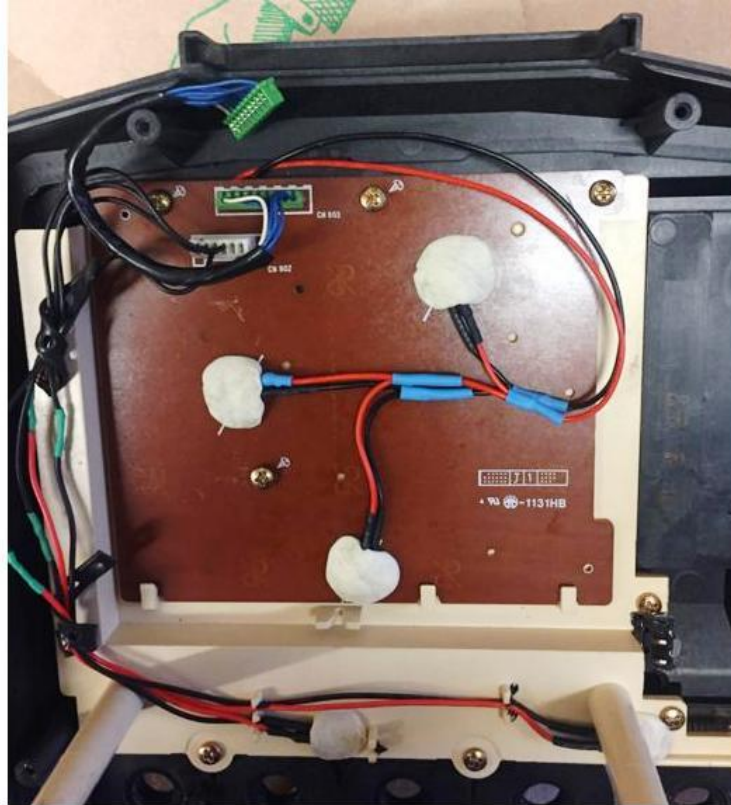


Fig 17

Here is the completed project showing the relay, connections to the capacitors, wiring layout and the auxiliary cable routed through the side of the casing

Updated instructions provided by Chris Jones 2018

Here's an extra thought
Whilst the top cover is removed why not
take the opportunity to replace the
control switch bulbs with LED's?



**Whilst the top cover was removed the
bulbs were replaced with 3mm blue LED's**

**Plasticine is ideal for holding them in
place**