Microphone Repeater Reverse for the Azden PCS-4000

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A simple modification for the Azden PCS-4000 which provides repeater reverse control from the microphone.

One useful way of doing this without actually modifying the rig is to store the input frequency of your favourite repeater in the VFO with the output in memory 1. Selecting reverse is then a matter of pressing the DOWN button and returning to VFO mode. To get back again, M1 CALL on the PTT is pressed. The problem with this is that you are limited to one reverse repeater operation at a time. Also, the VFO is likely to contain a random value left over from previous band scanning or the like.

By adding an extra switch on the microphone connected to one of the scan lines all sorts of extra possibilities can be realised. Since this switch needs an extra wire the PTT return wire was used with PTT now returning through the microphone braid. Although this mixing of a low level signal with other things is frowned upon, no problems were observed.

There are two interesting possibilities. This extra switch can select between scan lines R2 and R3 providing REV, H/L and SHIFT with a two button access or it can connect via a diode to scan line K3 providing single button repeater reverse. See the table in Figure 1. Since I use repeater reverse frequently when mobile this was considered to be more important than remembering which two buttons to press and so only this is described.

First, the PTT return line has to be re-defined. Remove the top and bottom covers and the front panel. The wire we require is the black one in the centre of the microphone socket. Move this wire from where it terminates on the microprocessor PCB on the grey wire near the corner — see Figure 2. This is the R3 scan line. It is also a good idea to take this opportunity to tighten all the screws attaching the PCB's to the frame. Loose screws can cause a variety of problems such as hum on receive and transmit, etc.

Now we turn our attention to the microphone. Pull it apart. Try not to lose the little PTT return spring. Remove the black wire from the PTT switch. Terminate this switch onto the microphone braid with a short length of wire inside the sleeve.

Attach a miniature momentary action switch to a convenient place. I used the place between the two buttons on the top! In this case, a lug has to be removed from the other microphone half. The wire recently removed from the PTT switch is now extended to this new switch. Use plastic sleeving over the extension joint to insulate it. The other side of the switch goes via a diode, 1N914, to the grey wire on the UP button. This is the K3 line. The cathode connects to the new switch. Note that the UP/DOWN buttons are two- pole switches hence a spare lug can be used. See Figure 3.

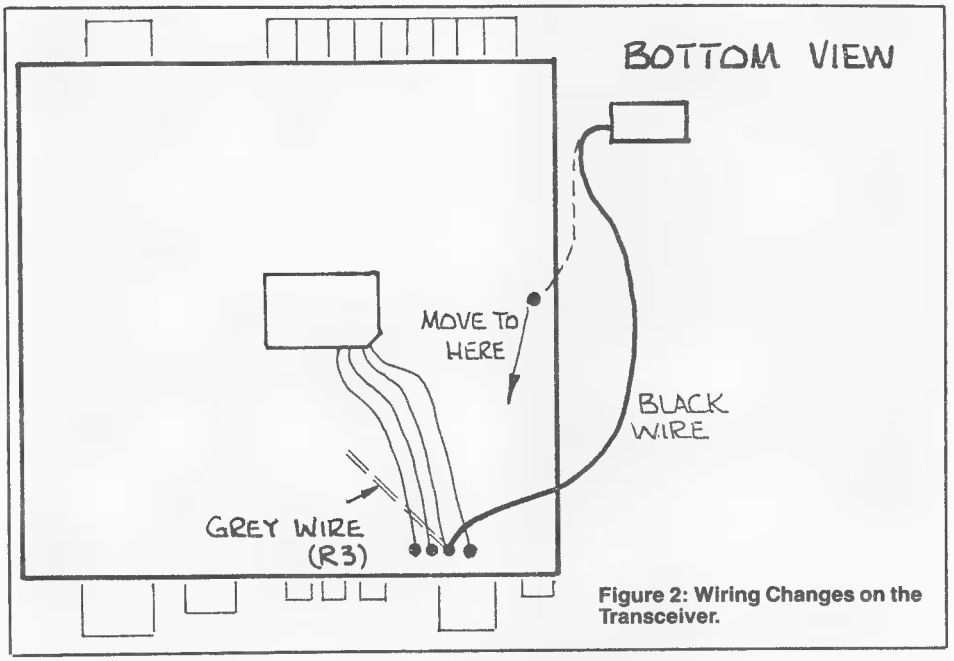

Figure 2: Wiring Changes on the Transceiver.

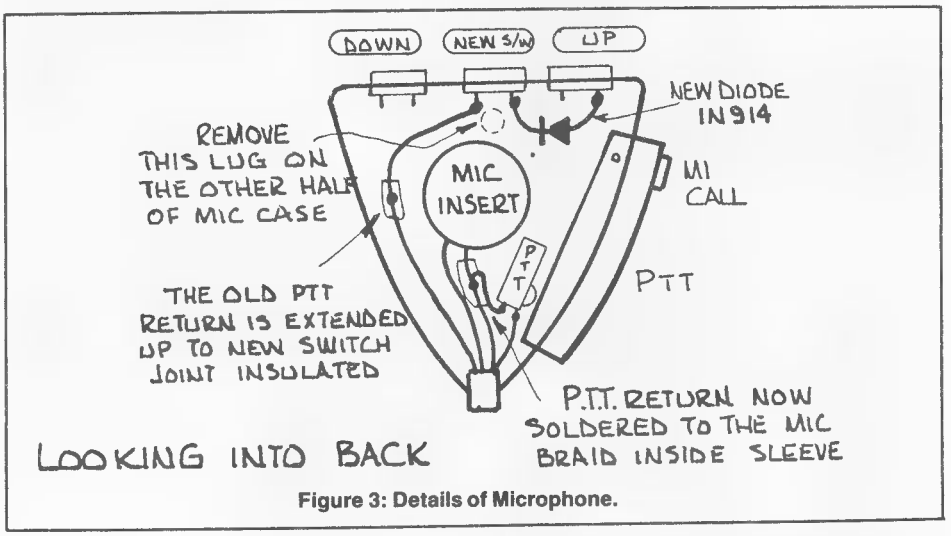

Figure 3: Details of Microphone.

	R0	R1	R2	R3
K3	MHz up	100 kHz up	*kHz up*	REV
K2	MHz on	100 kHz on	*kHz on*	H/L
K1	M scan	M addr	*M1A call*	Shift
K0	P scan	M call	M1B call	M write

The italic area is available on MIC.

Figure 1: Disposition of Scan Lines.

Everything can now be reassembled and tested although perhaps this is better performed in the reverse order. As usual take care to not lose any screws inside the rig. Seeing small sparks on the back of the microphone socket is a dead giveaway that something has gone astray! Note that decoupling may be necessary on the R3 line especially since it will be noted that the microphone socket is sprinkled with small capacitors that do not appear on the circuit diagram.

Finally, enjoy the convenience of repeater reverse from the microphone, as you drive around suburbia. It goes without saying of course that the microphone plug and socket are now incompatible with the rest of the world and that funny things will happen should a standard microphone be plugged in. One way to allay any fears is to re-wire anything that plugs into this socket, RTTY kits, etc, so that PTT return goes to MIC return.

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