FT-767GX CTCSS and Tone burst simultaneously installed

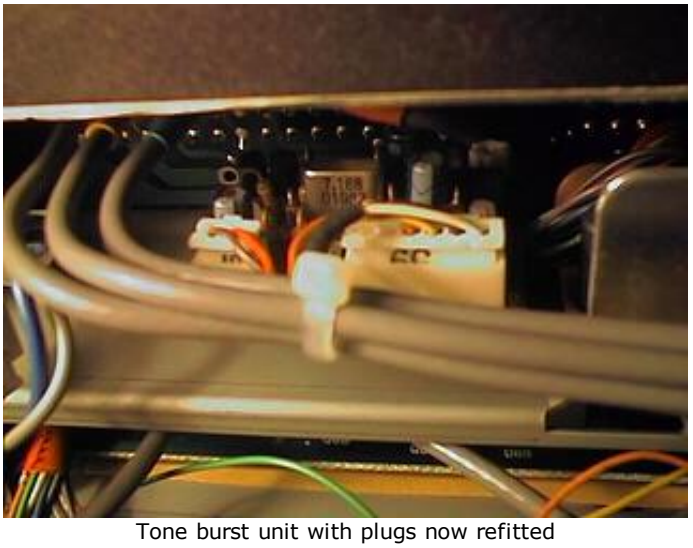
Author: Nigel Hewitt, G8JFT

I have a **Yaesu FT-767GX** amateur band radio tranceiver. It was originally HF (short wave) only but I obtained all three VHF/UHF modules for it and I'm just finding my way round things. It has the **FTS-8** CTCSS subaudible tone module fitted and this is required for many local 2m and 70cm repeaters. However some repeaters require a 1750Hz tone burst. I discovered that there was a tone burst module available when it was new but it was an option and I didn't seem to have it. So I set out to add a tone burst. This should be a quick and easy construction project for an afternoon.

On reading the **FTS-8** documentation I discover the installation instructions tell you to remove the plugs from the tone burst module (fitted as standard in European models)....

HOLD THE BUS!!
Fitted as standard? Huh? Where are my screwdrivers?
Take off the covers and release the front panel and sure enough. There it is snuggled in behind the front panel with the plugs hanging loose in front of it.

Get the service manual out and trace back the electronics....

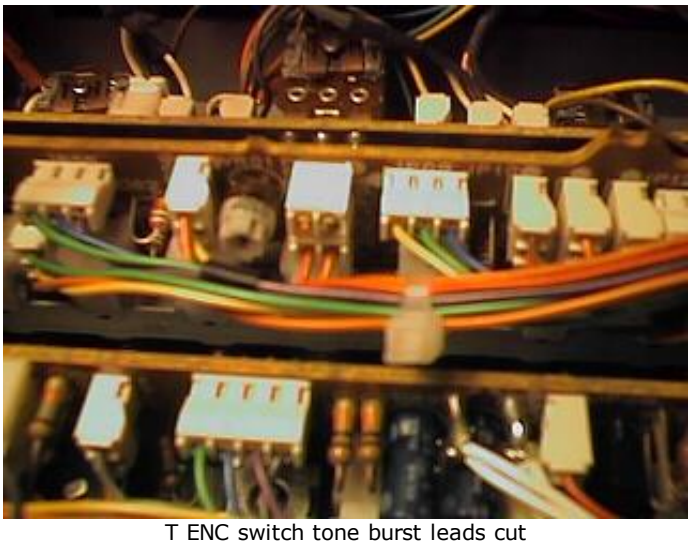

Tone burst unit with plugs now refitted

The CTCSS and tone burst modules don't seem to interact at any obvious level except that they share the same **T ENC** switch. Not that they share the same wiring but one module is switched by one half of the switch and the other module by the other half. The function of the switch depends on what module is fitted. It appears that when the '767 was designed Europe used 1750Hz tones at the start of a transmition to activate a repeater and the USA used subaudible (67 to 91.5Hz) tones running all the time. Yaesu fitted one switch for *Tones* and sold you the module to suit. So what we need is an alternative switch to control the tone burst. Now that's a problem as the '767 is just too pretty to drill a hole in the front panel and pop in a cheap toggle switch so which switch don't I need?

It has to be **Dial lock**. Why do I need to lock the dial? OK so I'm clumsy and it does come in handy some times but I can live without it. It doesn't get another mention in the manual so I hope it's not got some secret set-up function that I will need one day.

Refit the plugs to the tone burst unit. Identify the leads to the **T ENC** switch block and they

are marked P07. Cut them nice and close on the shroud thing on the switch board (it looks like a plug but it isn't one) and feed them back out of the zip lock ties and there is plenty to reach to their new destination.

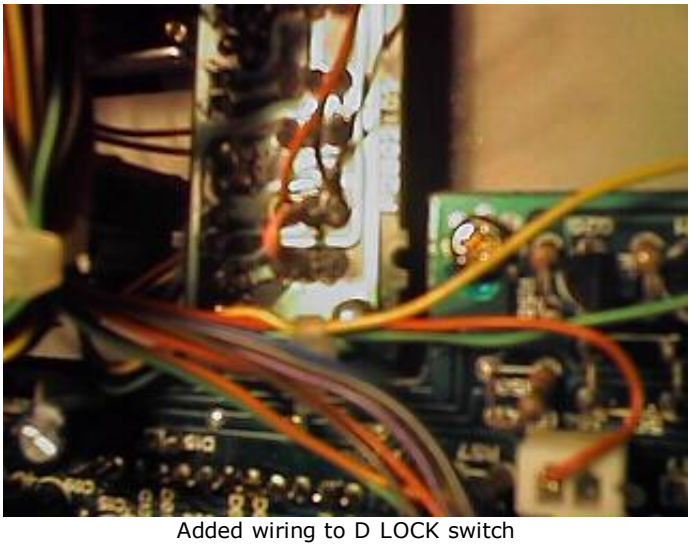

T ENC switch tone burst leads cut

Buzz them out. Red goes to ground when the switch is ON and brown when the switch is OFF so that matches the wiring diagram. The switches seem to be illustrated in the inactive state so this is negative logic.

Now the **D LOCK** switch is a change over just the same but it's more complex. You can see the higher three pins are the ones that drive the panel LED but unfortunately it has a track routed through one of the lower set that control the dial lock. The dial system is O/C to unlock so all I have to do is cut the tracks and the dial is unlocked forever.

This takes a sharp scalpel, a firm and steady hand and a pair of pointed tweezers to lift out the cut bits as I want no conductive debris in the works. Since it is a single sided board it cuts easily and I can isolate the pin and leave the track bypassing it. Then get out the multi-meter and prove that all is clear and the bits that I want left are undamaged.

The right hand contact is made in 'OFF' and the left hand in ON so right is brown and left is red. The ground connection is fortunately on the centre pin of the other side of the switch so it is just a short link between two adjacent pins.


Added wiring to D LOCK switch

Finally take some pictures and then reassemble it all. This is the point that I am pleased I colour coded all the plugs for the linear amp and the data modes and then put a picture at the back of the manual.

Fetch the handy for a quick check...
Yes, beep and no beep dependent on the **D LOCK** switch and it has a nice red light to warn me I've left the tone on.

NB: I haven't included instructions for opening the case and accessing the back of the front panel as it is all covered quite well in the maintenance manual. If you've got a rig of this complexity and you haven't bothered to get the tech manual for it don't start making track cutting/rewiring mods like this as it will all end in tears.

This article can also be found at http://www.nigelhewitt.co.uk/video/ft767mod.html.