

## A TRAP FOR YOUNG PLAYERS

A couple of years ago my wife and I bought a second hand campervan with the intent of driving to Perth, doing some site seeing and driving back to Sydney. Obviously, amateur radio had to be a part of this adventure. Because of the vast distances and relatively few major towns, VHF was not a viable option. We had to have a good HF system.

Time was limited for preparation so I attached a piece of galvanized pipe on the bull-bar with hose clamps and erected the Outbacker antenna on top of the piece of pipe. This system worked adequately for the trip across to Perth and some travelling around in Western Australia. However, the problem was that I like to listen on round on forty metres and log in on the travellers nets on 21.185MHz and on 14.116MHz which meant changing frequency. With the Outbacker, one has to stop, change the lead plug position and then retune the stub. Although I got quite good at it, my wife soon tired of having to stop just so I could play radios. Accordingly, some other system had to be developed.

I attempted to overcome the tuning problem by reducing the stopping time to simply changing the lead position and then using a manual tuner in the cabin to effect a better tune. This system did not work very well at all and was soon abandoned.

The next step was to purchase and install a SG237 auto tuner which was installed near the top of the pipe, just below the antenna mount. This was far more convenient but for some reason or other did not seem to work very well. In particular, there were difficulties in obtaining and maintaining a satisfactory tune. I removed the Outbacker and installed a 2.7 metre stainless steel whip and again, there were continuing problems of the tuner hunting or being unable to find a satisfactory tune. The output of the auto tuner was connected to the base of the whip, above the support spring, using a piece of insulated copper wire. The S0239 connector on the bottom of the plastic antenna mount was left unused. To investigate, I did a whole lot of things. I used several different HF rigs to see if there was a problem with the original rig. However, all replacement rigs seemed to be subject to the same tuning problem. I then took the auto tuner off the campervan and tried it out on the boat where it tuned perfectly. I tried it on a dipole strung up to a tree where it tuned beautifully. Accordingly, there appeared to be no problem with the rig or the tuner so I came back to looking at the antenna installation.

Experience with HF antennas on sailing yachts led me to suspect that I may have a ground problem. Accordingly,

I set about bonding the antenna base to the vehicle chassis, as well as the bull-bar to the chassis as some sort of attempt to ensure that I had a satisfactory ground system from the tuner. However, the tuning problems persisted. I tried a manual tuner but the metal whip waving in the wind caused major changes in tune. I guess this is why the auto tuner kept hunting for a better tune from time to time.

I moved the auto tuner off the antenna mast because it was obscuring portion of the view from the driver's seat and may have been seen as a bit of a hazard to pedestrians. I mounted the tuner on the plastic grille behind the bull-bar and fed the antenna with a piece of wire from the tuner to the plastic antenna base with the S0239. I installed heavy grounding cables from the tuner to the chassis and the vehicle body. It seemed to work a little better but I couldn't tune forty metres and eighty metres had never been a possibility. The signal output was very poor and the radio appeared deaf. I had the radio checked for receive sensitivity and it appeared satisfactory.

There had to be something very basic and very wrong and so close to the end of my nose that I couldn't see it.

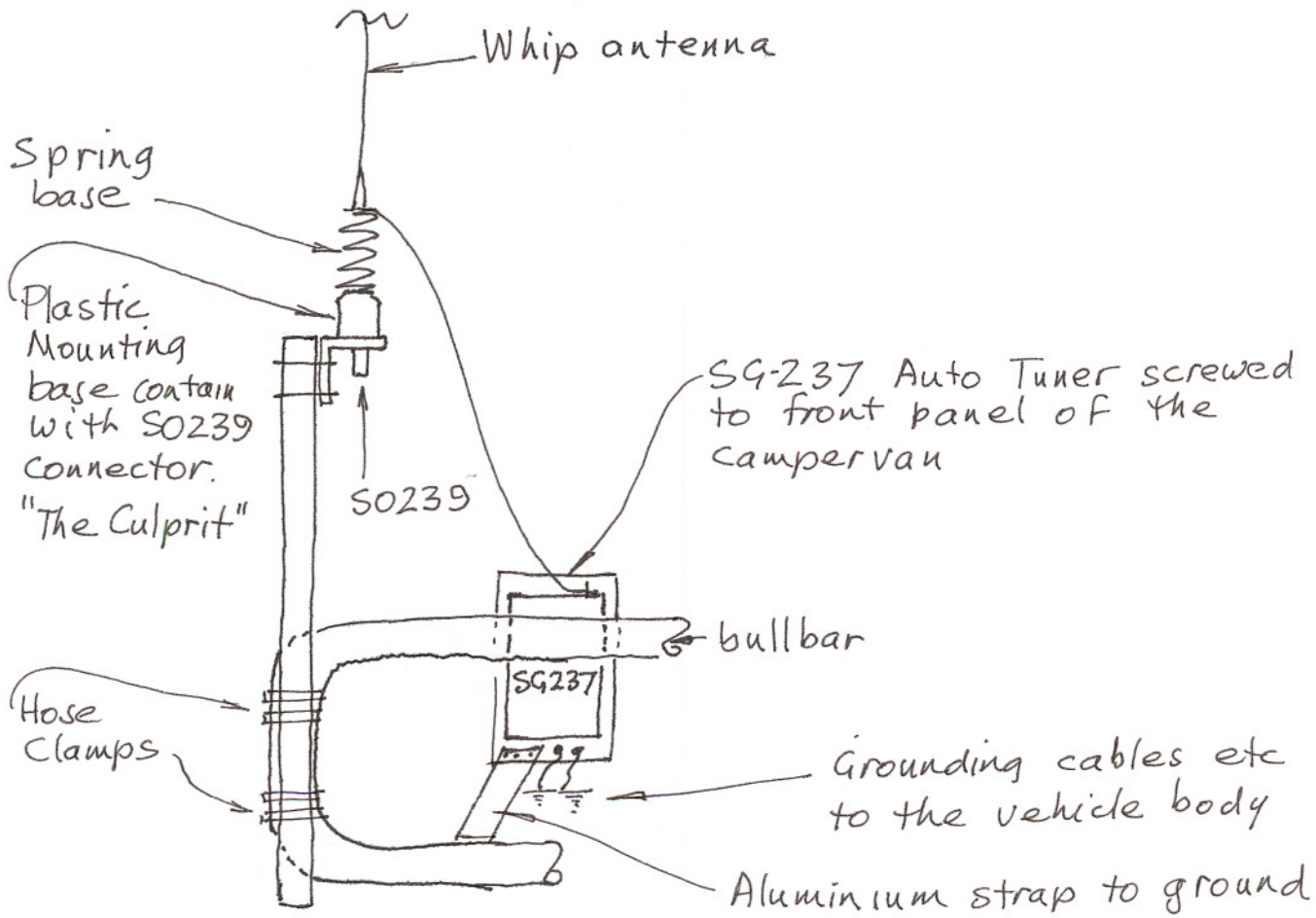
Then one day I was fiddling around doing some maintenance and it occurred to me that the heavy plastic antenna base with the S0239 connector may act as a capacitor. Particularly, I had gone to significant effort to ensure the outside of the S0239 connector was well connected to ground. In comic books and cartoons, there are pictures of people with light bulbs above their heads flashing on and off when they have a bright idea. I felt a bit like this when I realized that the heavy plastic antenna base for the whip antenna may be acting as a capacitor with the capacitor providing an RF path from the antenna to ground. Hence not much energy got radiated and the antenna system was as deaf as a post. Was this antenna base a real trap for young players? Literally.

I immediately removed the stainless steel whip antenna from the plastic base on the pipe on the bull-bar and connected the wire from the antenna tuner direct to the base of the stainless steel whip, tied the whole lot to a piece of wood leaning against the bull-bar and then fired up the HF. It tuned immediately on forty metres, twenty metres, then fifteen metres and then eighty metres. Instant tuning with the auto tuner just like it was supposed to happen. The moral of this story is that there are traps for young players in attempting to use seemingly convenient and appropriate hardware for simple

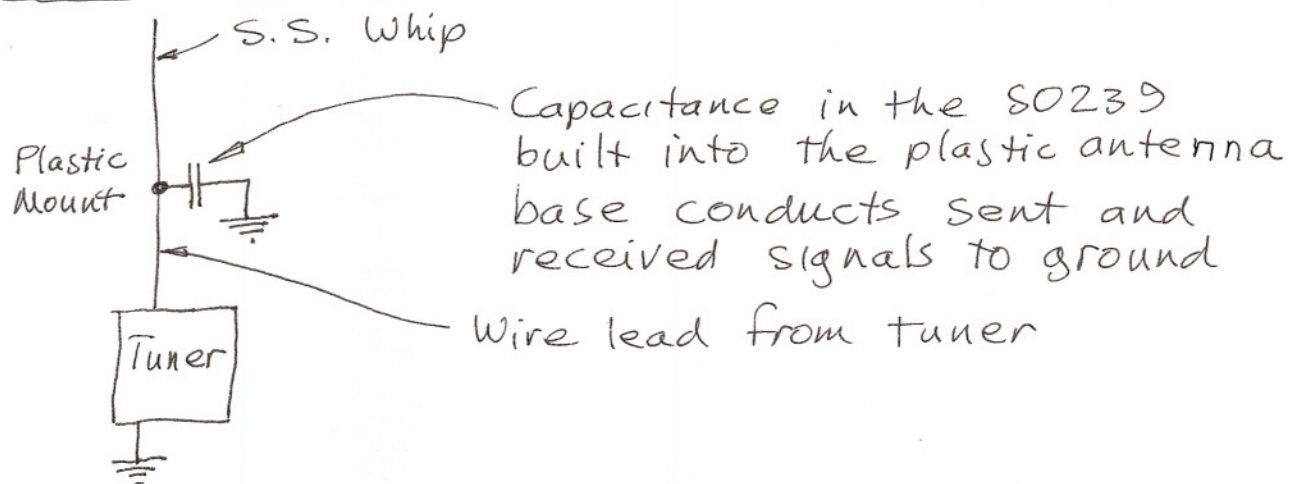
tasks. I have now eliminated the plastic antenna base containing the S0239 and I have now semi-permanently attached the lead wire from the tuner to the base of the stainless steel whip antenna, all neatly tied to a piece of wood, tied up with electric ties and wrapped with insulation tape. The piece of wood is jammed into the top of the pipe on the bull-bar. There is a five centimetre gap between the bottom of the antenna and the top of the pipe which should reduce capacitance. The wretched thing now works perfectly. Why did it take me so long? Well, it was that trap for young players where I used the convenient and seemingly appropriate hardware not realising that it contained a nasty RF path to ground.

On our next trip away, I expect to be able to be heard on the travellers' nets without the need for several repeats of name, call sign, current location and destination. My thanks go to the very patient operators of the travellers' nets who have taken time and effort to communicate with me despite my dreadful signals. It will be better in the future.

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INDICATIVE DIAGRAM OF ANTENNA MOUNTING CONTAINING A TRAP TO SHORT CIRCUIT SIGNALS TO GROUND - NOT TO SCALE



ELECTRICAL SCHEMATIC OF THE "TRAP FOR YOUNG PLAYERS" ANTENNA. - Not to Scale