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SIXER to the Nth



Receiver

The Heathkit Sixers and Twoers are well known as fine and flexible pieces of gear. With a few additions and modifications, however, a good deal more operating ease and efficiency can be obtained from these rigs.

Power Supply

Going first to the power supply, I found that the trouble-free operation enjoyed at the home QTH had a habit of literally going up in smoke in the mobile. The problem is quickly and permanently solved by replacing the diodes with International Rectifier type SD-92.

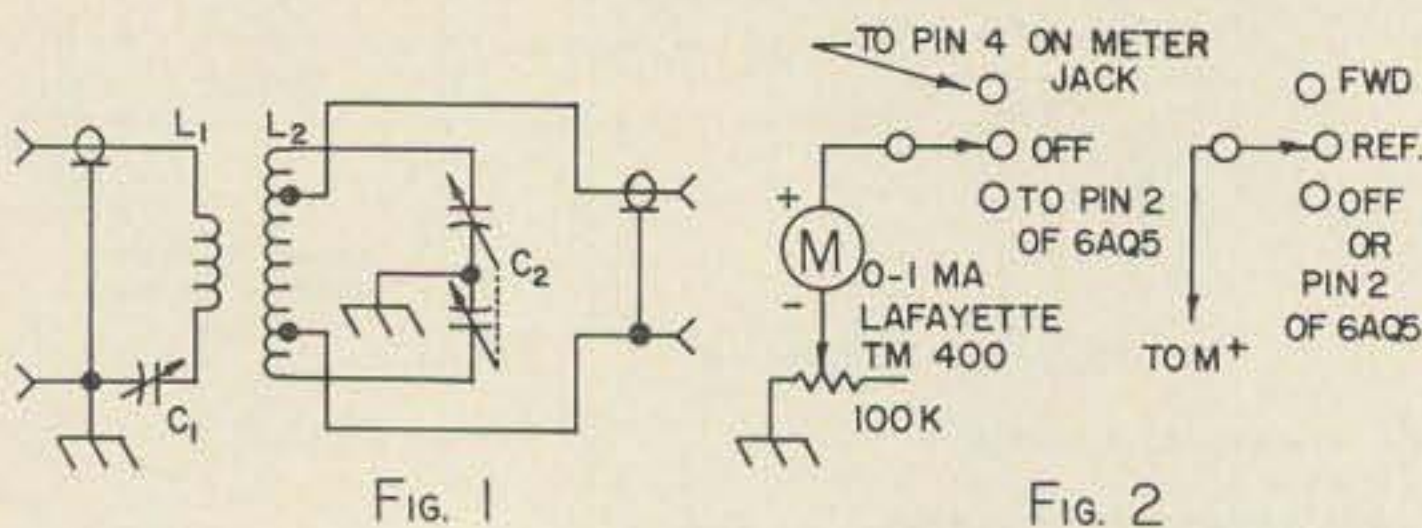


Fig. 1. Coupler diagram.

Fig. 2. Two of the possible switch combinations, using three position rotary. If spdt toggle switch is used instead, an off position is recommended.

C1-100 mmfd variable for 50 mc, 50 mmfd for 144 mc (Hammarlund MC100, MC50)
C2-35 mmfd per-section split stator variable, .07" spacing (MCD-35SX). Reduce to 4 stator and 4 rotor plates per section in 144 mc coupler for easier tuning.

L1-50 mc: 4 turns, #18 tinned, 1" diameter, 1/8" spacing. (Air-Dux #808T)
144 mc: 2 turns #14 enam., 1" dia., 1/8" spacing. Slip over L2 before mounting.

L2-50 mc: 7 turns #14 tinned, 1 1/2" diameter, 1/4" spacing (Air-Dux #1204). Tap 1 1/2 turns from each end.

144 mc: 5 turns #12 tinned, 1/2" diameter, 7/8" long. Tap 1 1/2 turns from each end.

The Sixer receiver, as known to anyone who has ever used a super-regen, is not the epitome in receiving excellence. More than one normally timid soul has been moved to acts of violence during a band opening thanks to its lack of selectivity. Efforts to relieve this situation electrically did not bear enough fruit to merit mention. Mechanically, however, I have found that a 2" vernier dial (Lafayette F-347) (99c) is of considerable help to the poor OM with coffee nerves who can't tune the ungeared dial onto the best side of the squealing signal. Two months of tinkering convinced me that the tuning condenser should not be pushed back into the rig. Success was finally achieved by cutting the condenser shaft, leaving only about 1/8" protruding from the panel surface, and cutting the vernier dial shaft through the set-screw hole. Mount the dial without the top mounting screw or set screw and you're set. The pressure of the dial on the condenser has held everything in place perfectly for me, but if any slipping is experienced, a drop of glue (or chewing gum maybe?) will hold it tight. Due to different design, this mounting system is not applicable to the Twoer.

The only other addition to the receiver was a closed-circuit phone jack mounted in the upper left-hand corner of the panel and wired in series with the hot lead to the speaker.

Transmitter

The transmitter was attacked next, and, if you'll pardon my Caesar, *utrimque acriter pugnatum est*.¹ Having become fed up with futile attempts to tune the tank without removing the rig from the case, I first devised an external tuning method. Start by soldering the threaded sleeve from an H. H. Smith type 105 phone tip to the screw head on the ceramic trimmer. Next scrounge for a screw (approximately 3/4" in length) that will fit the sleeve and replace

¹ Translation: "It was fought fiercely on both sides."

Just a Piece of Wire?



One hundred feet of Saxton economy twinlead sells for just a dollar. To make that twinlead we first have to melt copper ingots and extrude coarse copper wire. This then is drawn finer and finer to the finished size we need. Next this wire is wound into seven strand wire and then this is fed into a sickeningly expensive machine that forms the polyethelene and exactly spaces the wires in it, exactly gauges the thickness of the polyethelene, and automatically inspects the twinlead for any possible defect. You buy this for a penny a foot. We won't even try to tell you about the months we worked designing this twinlead, the lab tests, the pilot runs, the unbelievable stuff that came out of the first machines we tried to build, and the months we spent making sure that our twinlead was a product we could be proud of.

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its head with a small knob. Finally, mount a rubber grommet in one of the air holes opposite the trimmer. Simply push the "screw-knob" through the grommet, and screw it into the sleeve. All this nonsense will give continuous clockwise and limited counterclockwise rotation of the condenser.

Undoubtedly the smartest thing I did all week was to add an antenna coupler to the Sixer. For the benefit of anyone too cheap to own a *Handbook*, the schematic, adapted for coaxial output, is reproduced here. This innocent looking gadget, built into a 3" x 4" x 5" grey hammertone box, will load into practically anything; in fact K2LLC used it to load his Poly-Comm 62B into a window screen with a 1:1 swr. You should find it particularly useful in the mobile, where standing waves often run amuck. If used in conjunction with a low pass filter, it should be mounted on the left side of the rig with the filter screwed onto the case at one end and onto the coupler (with a spacer) at the other.

Naturally, some method was needed for adjusting the coupler. No problem. Mount a 0-1 ma meter, a 100,000 ohm pot, and a spdt toggle or three position rotary switch as shown in the photo. The popular little "Monimatch" swr bridge should fit nicely inside the coupler

box, with phone tips coming from the switch, through the air holes near the coupler, and into jacks on the box. Or, if you're as lazy as I am, you can do what I did: monitor the so-called "power output" device in the Sixer or Twoer (tuning C1 on the coupler for maximum and C2 for minimum), and use the other switch position to monitor the "kick" in your modulation. Or you can monitor the filament current and pilot-lamp voltage and say the heck with the coupler.

Operating convenience was jacked up one last notch with the addition of a crystal socket on the front panel (see photo). Simply run shielded leads from the panel socket and plug them into the chassis socket.

When the smoke cleared, I decided to rewire the transmitter section with shielded grid wire. The apparent increases in harmonic suppression and circuit efficiency were more than worth the effort (the neighbors got off my back and the dummy load burned out).

Finally, I replaced the Sixer's 6CL6 final with a 5763, which squeezed another watt or two of rf out of my Benton Harbor Kilowatt. Don't forget to rewire the tube socket.

That about sums it up. By now, your Sixer or Twoer should be operating more efficiently than ever.

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