FET Conversion of Leader LSG11 Signal Generator

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An article describing conversion of Signal Generators to all FET operation by John Beckett, VK3FE, and appearing in the Eastern and Mountain District Radio Club Bulletin (VK3) recently prompted the writers to try out their ideas on their Leader LSG11 units, and as the results were more than satisfactory on the units converted it was decided to write them up and pass them on, as the ubiquitous LSG11 seems to figure prominently in most Amateur shacks visited by the writers.

It is stressed that ideas were arrived at in a rather hit and miss approach, and doubtless there are many other modifications that can be made such as varicap fine tuning, further reduction on the dial drive, etc.; these we will leave to the individual. The mods as follow can be done with parts readily obtainable through the W.I.A. components sales department.

1. Remove all wiring and components from a.c. mains lead to R13 and C15 inclusive. Remove all heater wiring, by-passes, dial light.

2. Remove valves from sockets. Obtain a 7-pin and a 9-pin plug that will plug into the existing valve sockets. These are used to mount the FETs.

3. 12BH7 socket. Carefully solder with suitable heat sinking a 2N3819 FET. Drain to pin 6, gate pin 7, source pin 8 to the 9-pin plug (pin numbers as seen from underneath). Solder another 2N3819 or an MPF102: drain to pin 1, gate pin 2, source pin 3.

Note: The 2N3819 and MPF102 have different base connections. Incidentally, we couldn't make an MPF102 function as an oscillator in this circuit.

4. 6AR5 socket. Solder an MPF102 to the 7-pin plug: drain to pin 5 or 6, gate pin 1, source pin 2.

5. Remove R2 (5K) and replace with IK ½ watt.

6. By-pass R4 (300 ohms) with 100 μF. 3 volt electrolytic for a.f. and also 0.001 μF. for r.f.

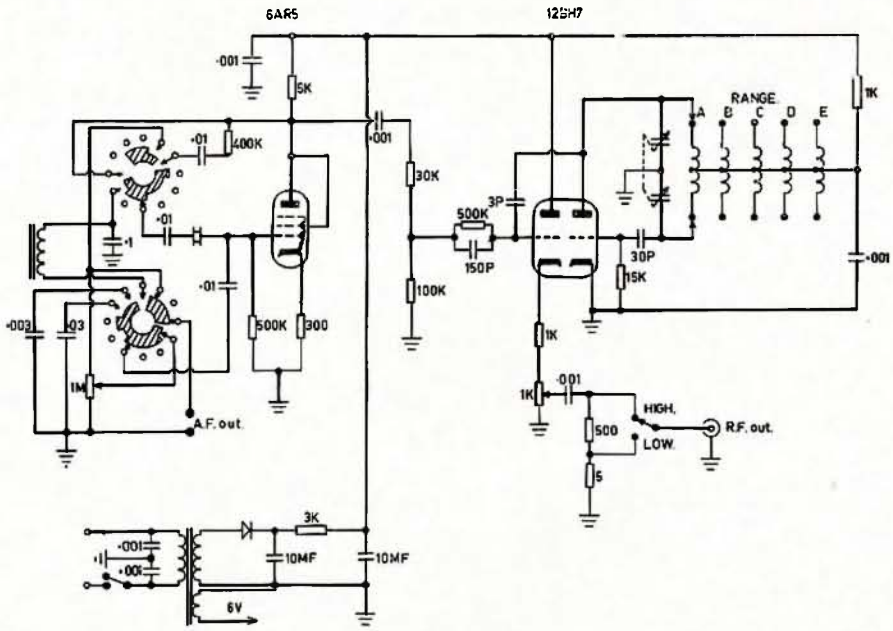
7. Reduce C14 (output coupling) to 68 or 100 pF.

8. Mount a 9 volt battery in the case, ground negative lead and wire positive to one side of the switch on VR1. Wire the other switch terminal direct to the h.t. rail.

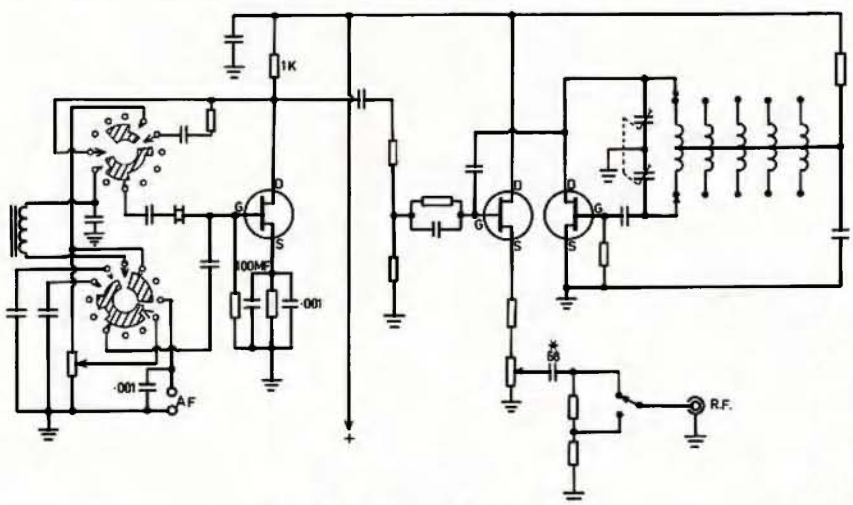
9. Wire a 0.001 μF. ceramic by-pass across audio terminals.

Without further modification you now should have a FETised signal generator capable of performing all the functions the valve version will do, but with vastly increased stability and, as a most significant improvement, the elimination of signal radiation which has been escaping by the a.c. mains lead. This leakage in the valve versions has made level attenuation almost impossible in the higher frequency bands.

We almost forgot to mention, the units are completely portable in this modified form and there is no warm-up period required. Battery current has been measured at 8½ mA., so replacement should be infrequent with intermittent use.



Original Leader LSG11 circuit.



Modified circuit of Leader LSG11.

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