

# A Remote VFO

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## for the HW32A

*If you have an HW32A transceiver and wish to make a versatile remote vfo for it with minimum expense, read on!*

Some time ago I was fortunate enough to acquire an HW32A transceiver. This was my first introduction to SSB. The frequency range of the transceiver was changed so that the transceiver covered 14.10 to 14.25 mhz. After spending a number of enjoyable months on SSB, it was felt that a remote vfo for the transceiver would be very desirable specially for working split-frequency into the American phone band.

My friend, HB9TL, had already made some changes in the HW32A for me, for crystal-control of transmit frequency. But

this mode of operation was not very flexible and the receive and transmit frequencies had to be close together. Nevertheless the changes done by HB9TL provided the ground-work.

After some experimentation the transceiver circuit was changed as shown and an external vfo was constructed as shown in Fig. 2. The circuit of the external vfo is straight-forward and as a matter of fact, any stable (tube) vfo giving enough output and being tuneable over 1.62 to 1.92 mhz may be used.

A 9-pin socket should be installed on the back apron of the transceiver and wired up as shown in Fig. 1. Modifications are shown in bold line. The changes in the transceiver circuit board involve:

1. Interchanging the physical position of R142 with C134.
2. Cutting of the printed circuit at a point between C134 and R142. This can be done with a sharp knife and care must be taken not to damage the circuit board.

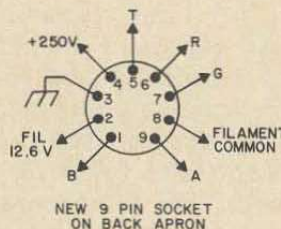
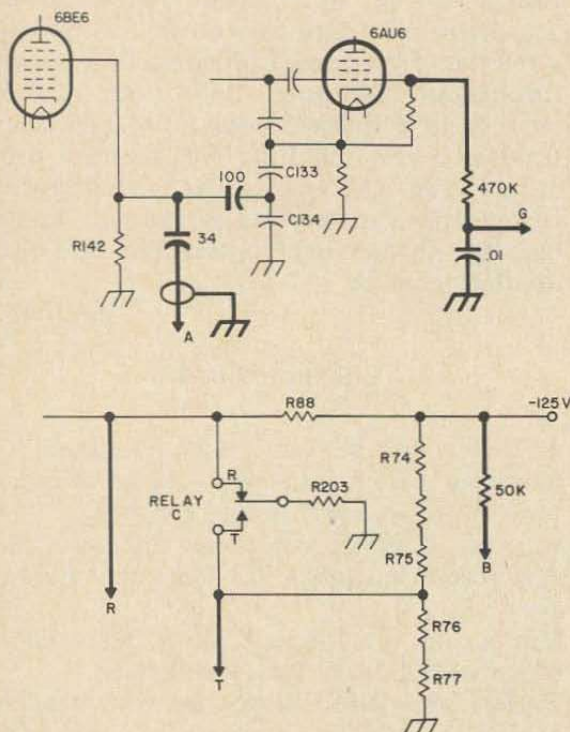


Fig. 1. Modifications to the circuit of the HW32A (shown in bold lines).

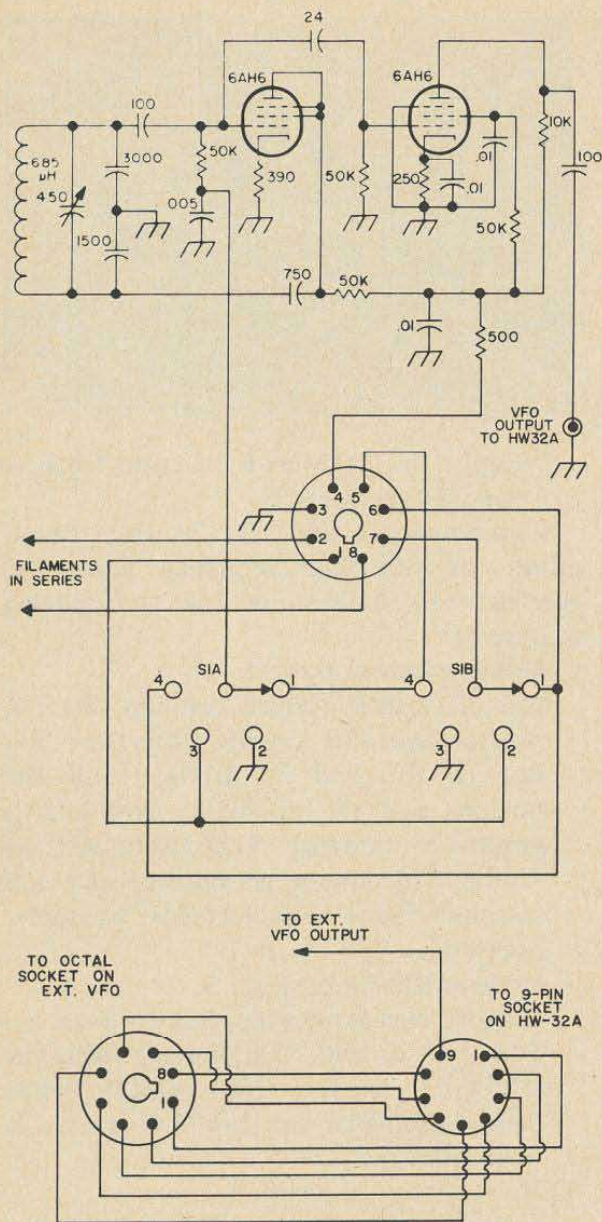


Fig. 2. External vfo and interconnecting cable.

3. Bridging the gap in the circuit board between C134 and R142 with a 100 pf mica condenser.

These changes are shown in Fig.3.

The 4 position switch in the remote vfo provides the following modes of operation:

1. Receive on HW32A vfo and transmit on remote vfo.
2. Transceive on remote vfo.
3. Transceive on HW32A vfo.
4. Receive on remote vfo and transmit on HW32A vfo.

The remote vfo has been tried out with the HW32A with a frequency differential

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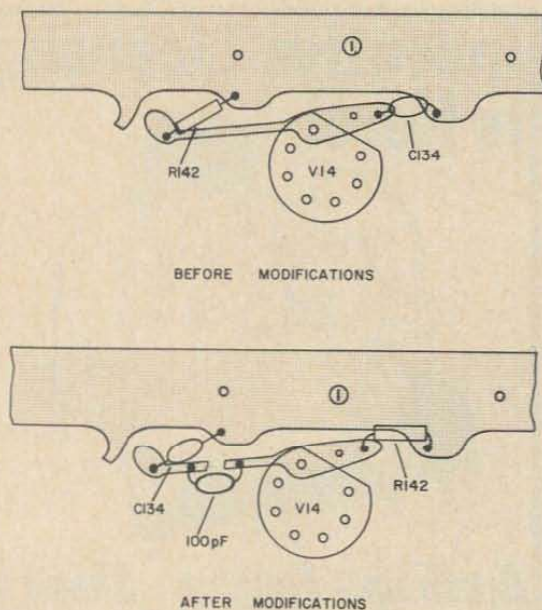


Fig. 3. Circuit board modifications.

of 150 kHz without any noticeable degradation in the signal strength. Apart from the flexibility of being able to work split frequency or transceive, the remote vfo makes it possible to use the whole band from 14.00 to 14.35 MHz as against the 150 kHz allowed by the HW32A.

It might be necessary to re-calibrate the HW32A vfo by decreasing the vfo trimmer (C1318) capacitance a little. Even if it is not done, the capacitance introduced by the remote vfo does not change the calibration appreciably.

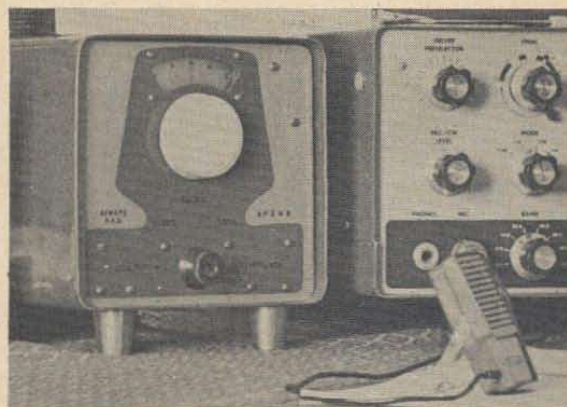
Unfortunately no photos of the inside of the remote vfo can be given as it has already been dismantled and is being converted into a companion remote vfo for the HW100, the new station rig. A photo of the outside is given showing the home-brew dial and the position of the mode switch.

Operation of the remote vfo is as follows:

1) Mode switch in position 1.

- a) While receiving approx. -50v, cut off bias is applied through relay C and S1A to the grid of the external vfo tube, 6AH6, and at the same time the cut off bias on the HW32A vfo tube, 6AU6, is removed through relay C and S1B.

- b) While transmitting cut-off bias is



applied to 6AU6 and the cut-off bias is removed from 6AH6.

Consequently the HW32A vfo determines the receiving frequency while the external vfo determines the transmitting frequency.

2) Mode switch in position 2.

Cut off bias is applied through the 50K resistor and S1B directly from the -125v line to the grid of 6AU6, while the bottom end of the 6AH6 grid leak is grounded through S1A, and so the remote vfo determines both receive and transmit frequencies (remote transceive operation).

3) Mode switch in position 3.

Cut off bias is now applied through the 50K resistor and S1A directly from the -125v line to the grid of 6AH6 while 6AU6 oscillates for HW32A transceive operation.

4) Mode switch in position 4.

- a) While receiving cut-off bias is applied through relay C and S1B to 6AU6 grid and the external vfo (6AH6) is operating.
- b) While transmitting the cut-off bias is applied to 6AH6 through relay C and S1A and the HW32A vfo (6AU6) is operating. That way HW32A vfo takes over while transmitting and external vfo while receiving.

From the above description it can be seen that all switching is done by the already existing vox relay of the HW32A. No switching of the circuits carrying rf is involved. The four position switch in the remote vfo merely selects the mode of operation.

... AP2MR