

ALIGNMENT ON THE AIR

The following alignment procedure can be used if a signal generator and meter are not available.

IF ALIGNMENT

Set the receiver controls for standard broadcast reception: OFF-STBY-RCV-CAL in RCV; BFO-MVC-AVC-ANTL in AVC; AF and RF GAIN, fully clockwise; A-B-BAND-C-D in A; PEAK-OFF-NULL in OFF. Tune in a strong station near 1.6 mc on the MAIN TUNING dial.

Now use the IF alignment tool supplied to adjust the IF transformers for loudest signal. Start with Z-3 (top and bottom). Then adjust Z-2 (top and bottom) and Z-1 (top and bottom). Repeat in the same order until no further increase in signal is heard. During this procedure, reduce the AF GAIN setting whenever necessary.

HIGH-FREQUENCY OSCILLATOR, MIXER AND RF ALIGNMENT

Use the same control positions as for IF alignment, except: **TURN THE BANDSPREAD CAPACITOR FULLY CLOCKWISE. THIS IS ESSENTIAL FOR CORRECT CALIBRATION.**

Refer to the table given under instrument alignment of these stages for each band. The same adjustments can be made by ear, listening for maximum signal. The check for image frequencies can be made as described on page 28, except the image will be found by turning the receiver dial 910 kc from the setting to be checked. On bands B and C the image will come in 910 kc below the fundamental; on band D 910 kc above the fundamental.

NOTE: The order given must be followed exactly, with the capacitor adjustment made at the *beginning* of each step, and the coil adjustment at the end of each step. Usually only slight coil adjustments are needed.

Select stations as close as possible to those frequencies listed in the table. Actual stations will be used, instead of a signal generator, to supply the alignment signals. In each case use a station of known frequency only, preferably a station whose frequency is marked on the dial. Set the dial exactly at the station frequency actually used, not at the frequencies listed in the table.

After the adjustments specified in the table are completed, test your calibration by tuning in WWV on Band C at 5 and 10 mc, and on Band D at 15 and 20 mc.

BFO ALIGNMENT

Start with the same control settings as for RF alignment. Turn your receiver to the strongest signal available from WWV. Reduce the RF gain to a comfortable level. Set the BFO control in a midway position (white dot pointing to the middle reference line). Turn BFO-MVC-AVC-ANTL to BFO.

Adjust the BFO coil, L-15, for zero beat, using the IF alignment tool supplied. Now turn the BFO control to either side of the center setting. The tone should vary in pitch, from low to high, on either side of center setting.

Q-MULTIPLIER ALIGNMENT

Tune your receiver to the strongest available signal from WWV. Set the QX TUNE control in the halfway position and the QX SELECTIVITY turned about $\frac{2}{3}$ of the way to the right. Switch PEAK-OFF-NULL to PEAK. There will be an apparent loss of gain because of the increased selectivity. Adjust L-14 until there is a noticeable change of pitch, with high notes decreasing, until a low, flat sound is heard. If you go past the required point, the tone will again become higher in pitch. This procedure is somewhat similar to zero-beating.

You are now ready to align the NULL circuit. Set R-25, the QX NULL control at the half-way position. Turn the PEAK-OFF-NULL switch to NULL. There will be a noticeable decrease in signal. "Rock" the QX TUNE control slightly until the signal reaches its faintest point. Now adjust R-25 very slowly, counterclockwise, until the greatest nulling effect has been achieved. Repeat these adjustments until no further nulling effect takes place.

☐ Install the receiver in the cabinet. Use six 6-32 x $\frac{5}{16}$ " screws.

INSTALLING AN ANTENNA

A good antenna will enable you to obtain maximum performance from your receiver. On the rear of the chassis, two antenna inputs are provided, one for coaxial lead-in wire, the other for open-wire lead-in. A half-wave dipole is recommended for top performance on a particular band of frequencies, such as an Amateur band. An Amateur transmitting antenna is ideal for this purpose. A single wire antenna of between 30 to 50 feet provides the best all-around reception for short-wave listening.

If you prefer to use a single-wire antenna, see Figure 25 for suggested installation. For the exact specifications for a half-wave dipole antenna, see the antenna section in the "Amateur Handbook", published by the ARRL.