



Figure 3-2. Tuning (A) a Conventional Receiver; (B) and (C) the 51J-4 using the 3KC Mechanical Filter

circuit, the selectivity being increased as position 4 is approached. Position 4 gives a bandwidth of about 200 cps at 6 db down.

PHASING. - The PHASING control is used to reject unwanted heterodynes. When positioned on the panel mark, the control is properly set for crystal phasing with no rejection notch. If a high frequency heterodyne is interfering with reception, move the control back and forth near the panel mark until the heterodyne is attenuated. If the heterodyne is of lower frequency, move the control farther to left or right of the panel mark. This control will attenuate heterodynes ranging from 1 to 3 kc.

(o) **METER.** - The tuning meter is calibrated in 20, 40, 60, 80 and 100 db above AVC threshold when reading r-f input. When reading audio output, the meter is calibrated from -10 to +6 db, zero reference being 6 milliwatts into a 500 ohm load.

(p) **CAL.** - If supreme accuracy is desired, the frequency of the 100 kc oscillator should be checked against WWV or some other station whose frequency is known to be extremely accurate. This oscillator frequency may be varied through small limits by turning the CAL control with a screw driver. Additional range can be obtained by turning C169, located just behind the 100 kc crystal.

(q) **FILTER SELECTOR.** - If the receiver is equipped with the complete complement of three mechanical filters, position 1 selects the 1.4 kc filter, position 3 selects the 3.1 kc filter and position 6 selects the 6 kc filter.

3.2.2. TUNING AM SIGNALS.

Conventional tuning is employed when using the 6 kc mechanical filter, however, when using the 3 kc filter, the tuning techniques differ somewhat. Because of the flat top and almost vertical sides of the pass band of the 3 kc filter it is possible to tune either sideband of an AM station and reject the opposite sideband. Tuning "on the nose" results in loss of the high frequency audio components with, in most cases, a loss of intelligibility. Select the sideband that contains the least objectionable adjacent channel interference. See figure 3-2(B). When the 3 kc filter is employed, use the following procedure to tune AM signals:

(a) Set up for AM reception: Power ON; operate BAND CHANGE switch to desired band; BFO to OFF; LIMITER to OUT; selectivity to 0; AVC to ON; select 3 kc mechanical filter; RF GAIN maximum-use AUDIO GAIN for volume control.

(b) Tune in AM station - move dial slowly.

(c) Adjust ANT. TRIM for maximum "S" meter reading - (one setting for each new band usually sufficient).

(d) Tune toward one side of the carrier being received until "S" meter reading drops sharply. Then carefully tune into the signal again until the "S" meter reading increases to its former value and the modulation is readable. The receiver is now tuned to one sideband plus the carrier of the AM station. If heterodyne interference is strong, tune to the other side of the signal and listen to the opposite sideband.

(e) If noise is severe, turn the LIMITER switch to IN.

(f) If heterodyne interference is bad on both sidebands, tune to the better sideband and turn the SELECTIVITY control to 1. Operate the CRYSTAL FILTER PHASING control over its entire range (90° either side of center position) to find the position at which the heterodyne is weakest. With any crystal filter there are some frequencies that cannot be phased out. In the 51J-4 these occur at between 800 and 1200 cps. Generally speaking, turning the SELECTIVITY control any higher in AM reception