The pilot light may be simply replaced by the following procedure:

1. First set the tuning dial so that the heavy white lines line up with the pointers on the dial and the logging scale is towards the top of the panel. In this position, the tuning condensers are closed.

2. Unscrew and remove the tuning knob and dial. This will permit access to the pilot light which is a #47 bulb.

After the bulb has been replaced, use the following procedure:

1. Close the condenser plates by rotating the condenser to the extreme counter-clockwise position.

2. Replace the dial, lining up the heavy white lines of the dial with the pointers and keeping the logging scale toward the top of the front panel.

3. Replace the tuning knob.

ALIGNMENT INSTRUCTIONS

Note: No attempt should be made to align the tuner or repair it unless the person so doing has had extensive experience in tuner alignment and repair procedures and has the necessary laboratory equipment. Without proper experience or equipment, the repairman may seriously damage the tuner.

1. Equipment required: VTVM (AC), FM Signal Generator (must be of high quality), Oscilloscope, 400 cps null filter or distortion analyzer, and insulated alignment tools.

2. Equipment setup: Connect signal generator directly to the 300 ohm antenna input of the tuner using a matching impedance network if necessary. The audio output of the 310D then feeds into the 400 cps null and from the null to the oscilloscope and VTVM in parallel. If no null is available (a schematic for making one of these very simple and useful devices is available from the Engineering Dept.), the tuner can still be serviced. However, it will not be possible to measure the tuner's "Usable Sensitivity" as per IHFM standards, or align the dectector.

3. Allow tuner and test equipment to warm up fully before beginning alignment. Adjust line voltage for 117 volts. Remove bottom cover of tuner. Always tune primary and secondary of I.F. transformers at the same time, using one alignment tool in each hand.

4. Set generator and tuner for 92 mc. Generator should be modulating a 400 cps signal at 75 kc deviation. Adjust output of generator so that a barely adequate sine wave appears on the scope (on the order of 2 to 4 microvolts input to tuner). The null filter should be switched out of the setup, so the tuner is feeding directly to the VTVM and scope. Peak the IF's and the primary of the ratio detector (the bottom slug) for maximum reading on the VTVM.

5. Adjust the secondary of the ratio detector (top slug) for maximum reading on VTVM and cleanest response on the scope. There will be more than one maximum point, but only one will be "clean" on the scope.

6. Return generator output back down to 2 to 4 microvolts. Adjust antenna coil for maximum output. Tune generator and tuner to 106 mc. with same output and deviation, and adjust antenna trimmer for maximum output. Repeat this operation until best results are obtained.

7. If calibration is off, repeat "6" except adjust oscillator coils for correct tracking at 92 mc. and oscillator trimmer for correct tracking at 106 mc.