







## Alignment of Compensators

**EQUIPMENT REQUIRED:** (1) Signal Generator, using a fundamental frequency covering the intermediate frequency and tuning ranges of the receivers. Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36000 K. C. is the correct instrument for this purpose; (2) Output meter, Philco Model 026 circuit tester incorporates a sensitive output meter and is recommended; (3) Philco Fibre Handle Screw Driver, part No. 27-7059 and Fibre Wrench Part No. 3164; (4) Philco Set Transformer, Part No. 32-2763.

**OUTPUT METER:** The 026 Output Meter is connected to the plate and cathode terminals of one of the 25L6G tubes. Adjust the meter to use the (0-30) volt scale and advance the attenuator control of the generator until a readable indication is noted on the output meter.

**DIAL CALIBRATION:** In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial of each model proceed as follows:

### Model 38-22:

1. Loosen the shaft coupling set screws, using Wrench, Part No. 45-2481; then turn the tuning condenser to the maximum capacity position (plate fully meshed). Now turn the selector knob until the dial pointer is on the small black dot at the low frequency end of the Range One scale. With condenser and pointer set in this position, tighten set screws.

2. Now turn the selector knob (clockwise) until the dial pointer moves  $\frac{1}{16}$  of an inch from the small black dot (clockwise). See Fig. 5. Leave pointer in this position and loosen coupling set screws.

3. After loosening set screws, turn the selector knob until pointer is again on the small black dot at the low frequency end of Range One scale. Be careful when turning the selector knob that the position of tuning condenser is not disturbed. Tighten coupling set screws with condenser and dial pointer in this position.



Fig. 5—Dial Calibration  
Model 38-22

### Model 38-23:

1. Turn the tuning condenser to maximum capacity position (plates fully meshed).

2. Loosen the clamp of dial, then turn the dial—being careful that position of tuning condenser is not disturbed—until the glowing indicator is centered on the middle index line at the low frequency end of Range One scale. See Fig. 6. Tighten the dial clamp in this position.

### INTERMEDIATE FREQUENCY CIRCUIT

**Note:** Before the following adjustments are performed, the receiver must be turned on and allowed to heat for 15 minutes.

When adjusting the following compensators, a Philco Set Transformer Part No. 32-2763 must be connected in the signal generator output circuit as follows: Insert the signal generator output lead into the "Med" jack and the ground lead into the "Gnd" jack of the signal generator. Connect the other end of the output lead to

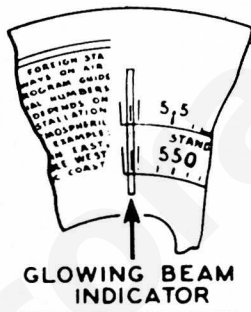


Fig. 6—Dial Calibration  
Model 38-23

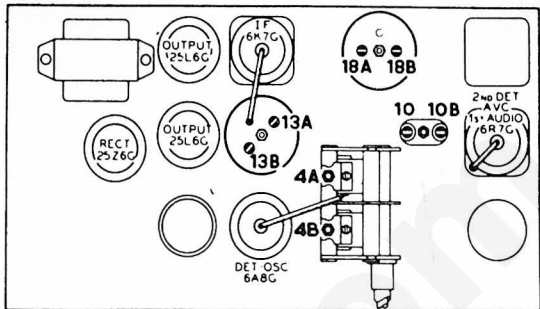


Fig. 7—Locations of Compensators

terminal No. 1 on the Set Transformer and the cable ground to terminal No. 2. Terminals No. 3 and 4 of the Set Transformer are then connected to the chassis ground terminal and 6A8G grid respectively of the receiver with short pieces of wire. Insert a 0.1 mfd. in series with the No. 4 lead which connects to the grid.

1. Set Signal Generator at 470 K. C. Turn "Multiplier" Control to 1000 and the "Attenuator" for maximum output.

2. Turn the receiver dial to 580 K. C.

3. Receiver Volume Control maximum.

4. Range Switch Broadcast Position.

5. Adjust compensators (18B), (18A), (13B) and (13A) for maximum output.

If the output meter goes off scale when adjusting the compensators retard signal generator attenuator.

### RADIO FREQUENCY CIRCUIT

**Tuning Range: 5.7 to 18 M. C.**

1. Remove terminal No. 4 lead of set transformer from the 6A8G grid and connect to the red terminal of the aerial panel of the receiver through a .1 mfd. condenser.

2. Leave the receiver volume control at maximum. Then set the controls and adjust the R. F. compensators as follows:

Range Switch	Signal Generator and Receiver Dial	Compensators in Order
2	18 M. C.	(4B) See Note A

**Tuning Range: 530 to 1720 K. C.**

Set the controls and adjust the R. F. compensators as follows:

Range Switch	Signal Generator and Receiver Dial	Compensators in Order
1	1550 K. C.	(10B), (4A)
1	580 K. C.	(10)
1	1550 K. C.	(10B)

**NOTE A**—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator to the maximum capacity position (clockwise). Now, slowly turn compensator counter-clockwise until a second maximum peak is obtained on the output meter. The second peak is the fundamental signal, and must be used in adjusting the receiver for maximum output. The first peak from maximum capacity position of the compensator is the image signal and must not be used in adjusting this compensator.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the receiver dial 940 K. C. below the frequency being used on any high frequency range.

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