

# SETTING AND OPERATING ELECTRIC PUSH-BUTTON TUNING

## MODELS TP-21, PT-45-46-47-48-57-65 and 67

### PT-49, PT-51, PT-59, TH-15, AND TH-17

Select five of your favorite nearby broadcast stations and remove their call letters from the station call letter tab sheets supplied. Place the call letters in the windows below the buttons, making sure that each respective button covers the frequency of the station for which it is to be used. The frequencies of the popular stations in your vicinity may be found by consulting any station list. The frequency range of the buttons and corresponding paddlers is as follows:

Padders (right to left from rear)	Circuit	Buttons (left to right from front)	Frequency Range	Padders (right to left from rear)	Circuit	Buttons (left to right from front)	Frequency Range
1 2	Ant. Osc.	1	540 to 1030 kilocycles	7 8	Ant. Osc.	4	900 to 1470 kilocycles
3 4	Ant. Osc.	2	650 to 1100 kilocycles	9 10	Ant. Osc.	5	1160 to 1600 kilocycles
5 6	Ant. Osc.	3	740 to 1240 kilocycles			6	Dial

The left-hand button looking at the front of the cabinet corresponds to the two right-hand padder screws looking at the rear and covers the lowest frequency range.

With the Dial button depressed, tune in the station whose call letters appear above the left-hand button. Then depressing the left-hand button, tune in this station by rotating the No. 2 "OSC" screw (next to the right end of the unit looking at the rear of the chassis.) (Note: Inherent characteristics of these paddlers may cause some of them to cover a lower range than required to cover the broadcast band. This may cause the radio to howl or flutter when a station button is depressed. To correct this, loosen the "ANT" padder corresponding to the depressed station button). Turn the "OSC" screw slowly and listen carefully or the station signal may be passed without hearing it. After the "OSC" screw has been adjusted for maximum volume, the corresponding "ANT" screw should be adjusted for maximum. For some stations, it may be necessary to re-adjust the "OSC" screw after the "ANT" screw

has been set. Switching from the "Dial" to the automatic push button will enable you to make sure you have the correct station tuned in. When the first station has been set, the same procedure should be followed for the remaining buttons, first tuning in the desired station by means of the "Dial" control, then adjust the push-button.

To tune the radio with the "Push-Buttons", simply press in the button which is under the call letters of the desired station. Your station will be received instantly. The volume of the program may be controlled with the manual volume control.

While the above procedure is satisfactory in setting up push-buttons for stations, a very accurate adjustment can be obtained with a vacuum tube voltmeter. The instructions for using a vacuum tube voltmeter will be found below under "Using Vacuum Tube Voltmeter for Aligning Compensators and Adjusting Push-Buttons".

## USING VACUUM TUBE VOLTMETER FOR ALIGNING COMPENSATORS AND ADJUSTING PUSH-BUTTONS

Precision adjustment of the compensating condensers and push buttons on automatic tuning models is obtained by the use of a vacuum tube voltmeter in the A.V.C. circuit. To set up stations or adjust compensator for best reception, a signal generator such as Philco Model 077 and vacuum tube voltmeter such as Philco Model 028 or 027 should be used. With this equipment proceed as follows:

1. Attach the negative (—) terminal of the vacuum tube voltmeter through a 2 megohm resistor to any point in the circuit where the A.V.C. voltage can be obtained, such as the grid of the I.F. tube, R.F. tube, or diode circuit of the A.V.C. tube. Connect the positive (+) terminal to the ground connection or chassis of the receiver. In AC-DC sets the positive (+) terminal of the vacuum tube voltmeter should be connected to (B—) of the receiver.

For aligning receivers with loktal type tubes, an aligning adaptor, Philco Part No. 45-2767 may be used with the vacuum tube voltmeter. To use the adaptor, remove the second detector tube from its socket and insert the aligning adaptor in the socket then replace the tube in the adaptor. Connect the negative (—) terminal of the vacuum tube voltmeter to the light colored wire which protrudes from the side of the adaptor. Attach the positive (+) terminal of the vacuum tube voltmeter to the black wire of the adaptor.

2. With the vacuum tube voltmeter connected to the receiver, the signal generator is connected to the antenna and ground terminals of the receiver.

3. Manually tune in the first station to be set up on push button. After doing this, set the indicator of the signal generator to the frequency of the station to be received. As the indicator approaches the frequency of the station, a whistle will be heard; leave the indicator at this point. Press in the push button being set up. With a padding stick, turn the push button oscillator screw until the broadcast station identified by the signal generator is heard. At this point, turn the indicator of the signal generator away from the frequency of the station. Re-adjust the push button oscillator and antenna padders for maximum deflection on the vacuum tube voltmeter. When this point is obtained, the push button is adjusted for maximum signal strength. After setting up the first station, the same procedure as outlined above is used for the remaining stations.

4. When aligning the R.F. and I.F. compensating condensers of the receiver, the procedure as outlined in paragraphs 1, 2, and 3 is followed with the exception that the push buttons are not depressed. The signal generator and receiver dials are set to the frequency desired or specified in the aligning procedures given for the various radios in this manual. The R.F. and I.F. padders of the set can then be adjusted for maximum signal strength, with the vacuum tube voltmeter connected to the A.V.C. circuit.