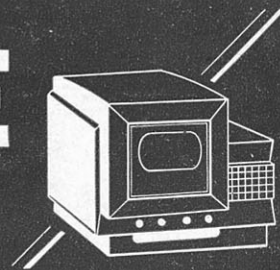


PHILCO SERVICE



INSTALLATION INSTRUCTIONS FOR PHILCO PROJECTION TELEVISION RECEIVER MODEL 48-2500

General

A Philco Television aerial installation is necessary for the best operation of the Receiver. Complete details for installing the aerial are given in "Philco Television Aerials", Part No. 39-8409.

Before the owner decides upon the location and position of the Receiver in the room, it is important that he be informed of the requirements for best reception.

The Receiver should be placed so that the viewer does not face any direct light source either from windows or from interior lighting. The Philco Micro-Lens Projection Screen is so designed that for best viewing the audi-

ence must be seated. The screen will accommodate a wide viewing angle; however, for good viewing, no one should be permitted to sit closer to the screen than 10 feet.

Unpacking the Receiver

1. Remove the side of the crate marked "OPEN THIS SIDE".
2. Slide the Receiver out of the crate, and be careful not to mar the high-luster finish.
3. Remove the screws and take off the back cover, placing it to one side. See figure 1.

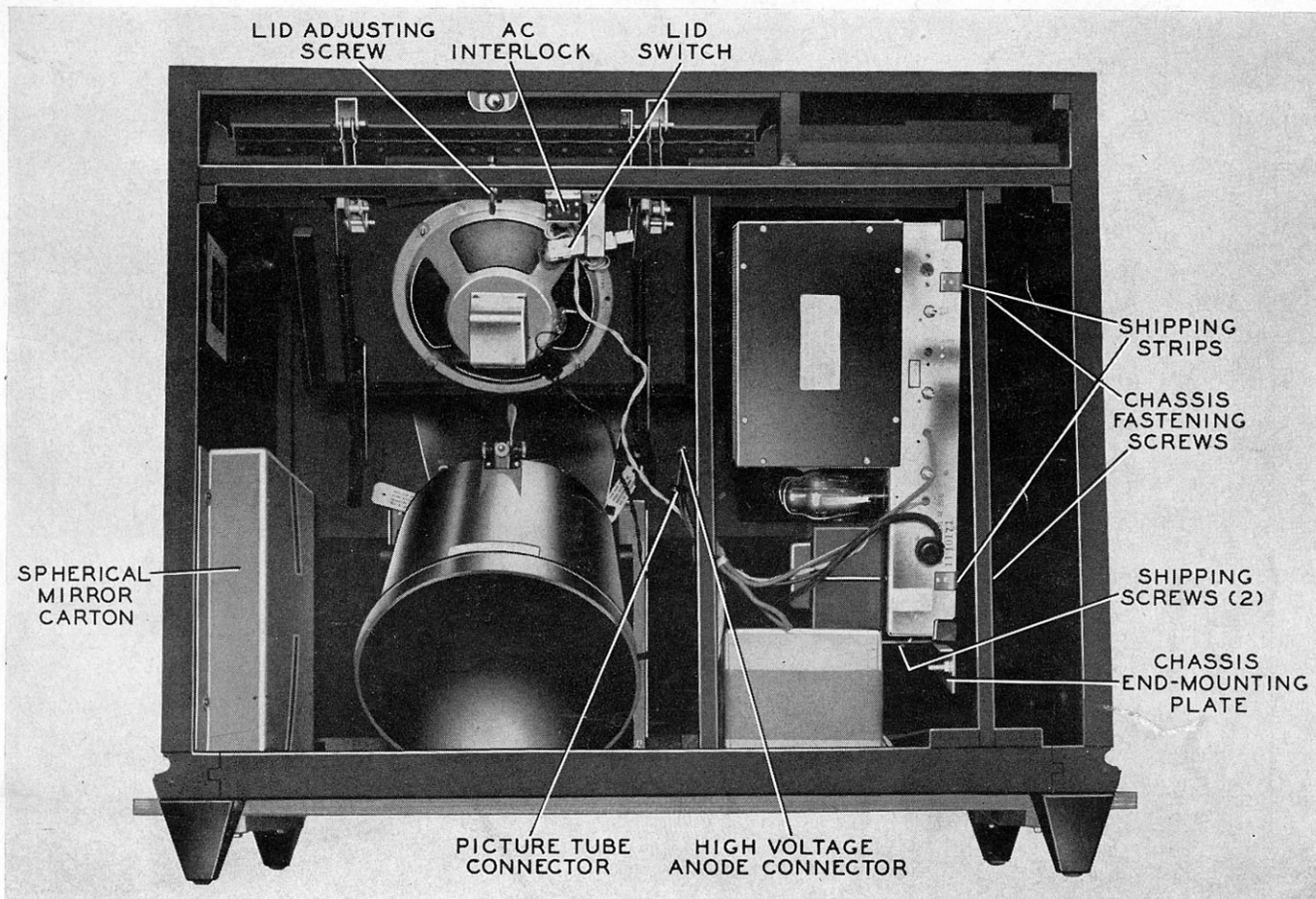


FIGURE 1. Back Cover Removed

TP-3658

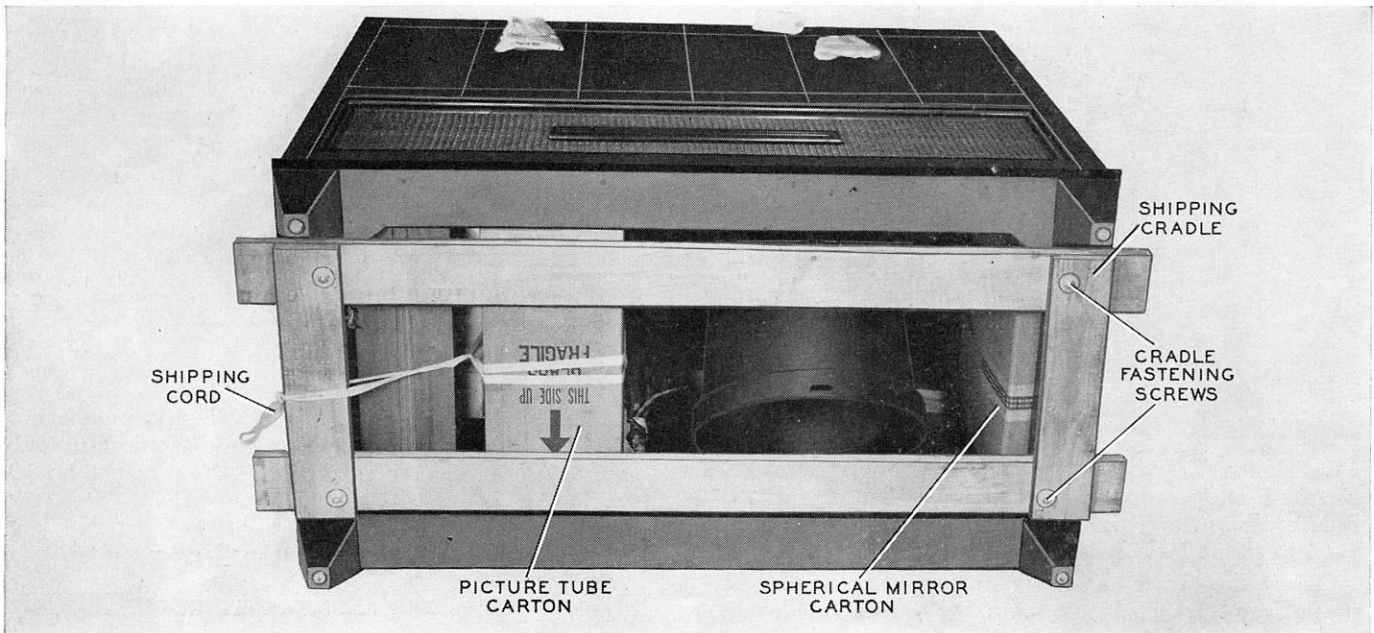


FIGURE 2. Bottom View

TP-3657

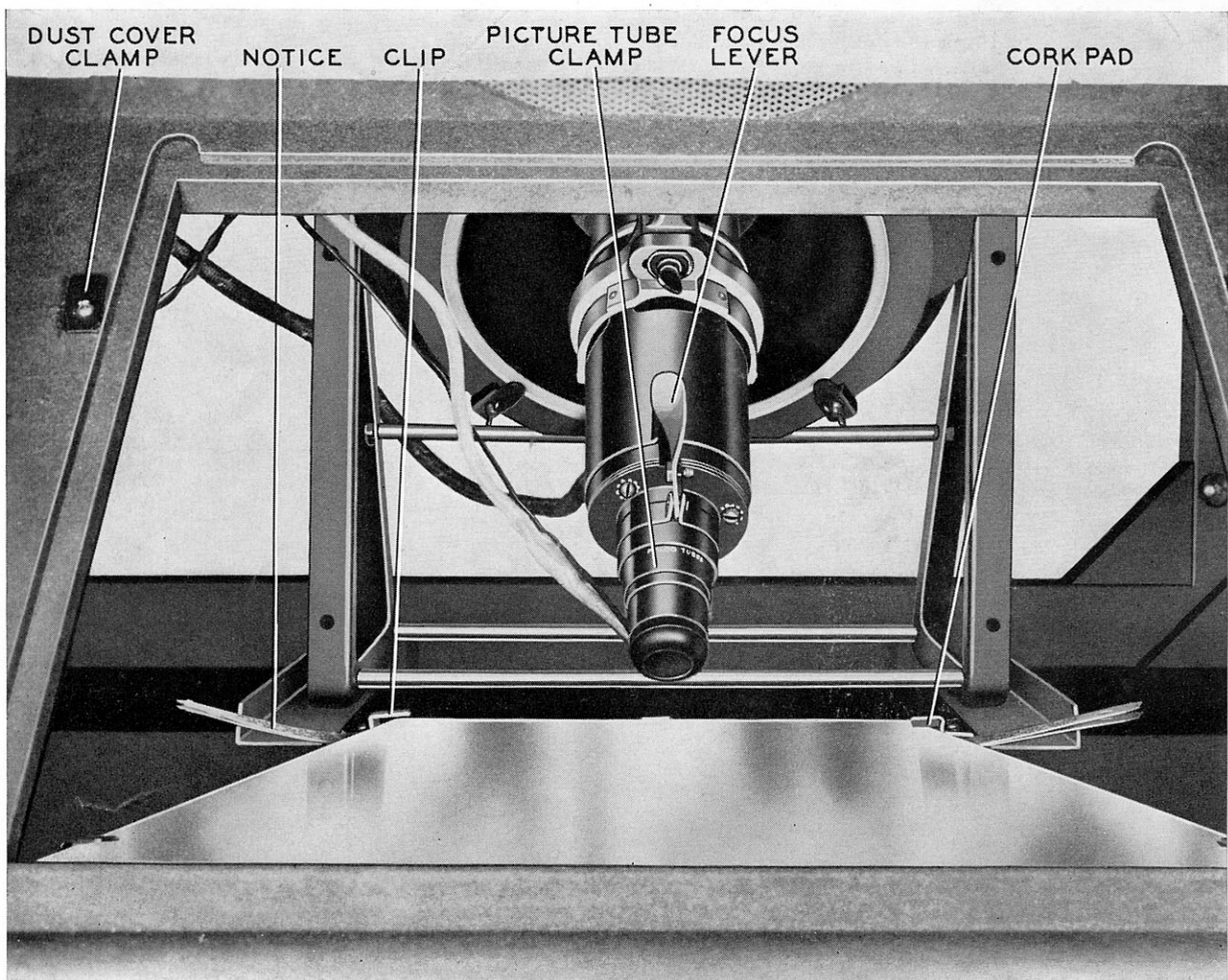


FIGURE 3. Glass Dust Cover Removed

TP-3667

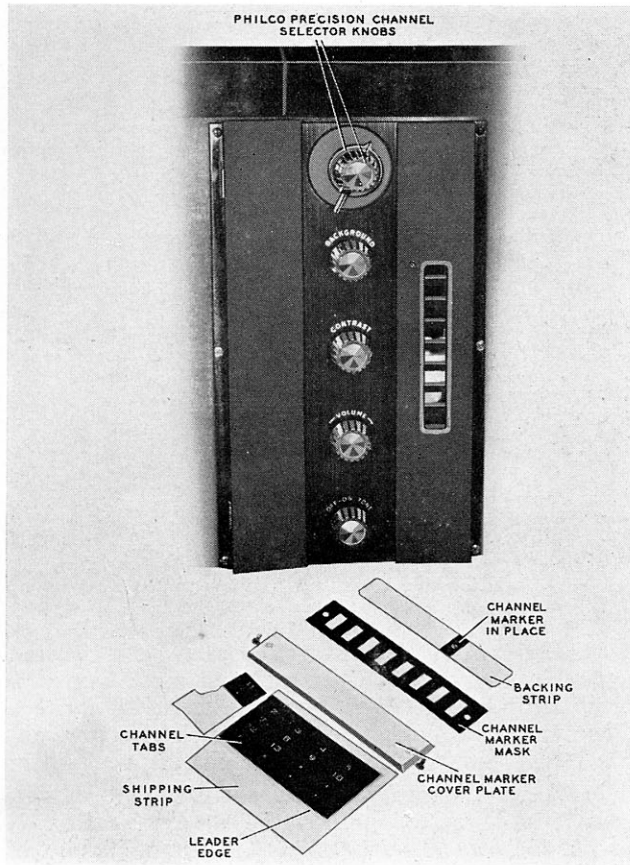


FIGURE 4. Channel-Marker Assembly TP-3651

4. Turn the Receiver over on its back, WHILE HOLDING THE LID CLOSED.

5. Untie the shipping cord which fastens the picture-tube carton to the shipping cradle, and then remove the shipping cradle and carton. See figure 2.

6. Remove the carton containing the spherical mirror, and place it to one side; this carton (see figure 1) is fastened to the cabinet by four screws.

7. Referring to figure 1, remove the two slotted-head shipping screws from the chassis end-mounting plate, and take out the two wooden shipping blocks between the chassis and the end-mounting plate.

8. Place the cabinet upright, loosen the four chassis-fastening screws, and slide out the two shipping strips between the chassis and the cabinet.

9. Open the lid which contains the Philco Micro-Lens Screen. The lid should make a 67.5 degree angle with the top of the cabinet; if not, reset the adjusting screw on the top rear rail. See figure 1. The spring action should keep the lid at rest against the stop nut; if not, reset the springs. Be careful not to mar the special finish on the Philco Micro-Lens Screen.

10. Remove the users' instructions and station channel tabs from the speaker well, and place them to one side.

11. Loosen the two dust-cover clamps, and turn them free of the glass. Insert a finger in each cut-out and pull the glass upward. When the glass is free of the frame, move it toward the back of the cabinet, and when free of the top molding, lift it out and place to one side.

12. Remove the two clips, cork pads, and notices from the flat mirror. See figure 3.

13. Open the control panel door, remove the two screws, and take off the channel-marker assembly. See figure 4.

14. Remove the channel tabs from the envelope. Pick up the tab leader strip and lift the tabs from their shipping strip; select the desired channel numbers and stars. Replace the remaining tabs on the shipping strip. They can be used when additional stations are available.

15. Place the numbered tabs in position on the backing strip, using the stars for the unused channels.

16. Reassemble the channel-marker assembly and fasten it in place.

17. Open the end of the picture-tube shipping carton marked "OPEN THIS END" and remove the tube. Do not touch the high-voltage anode, nor disturb the positioning of the magnets. The magnets have been factory-adjusted to an angle of approximately 45° with the axis of the tube, with both magnets in the same plane (figure 5).

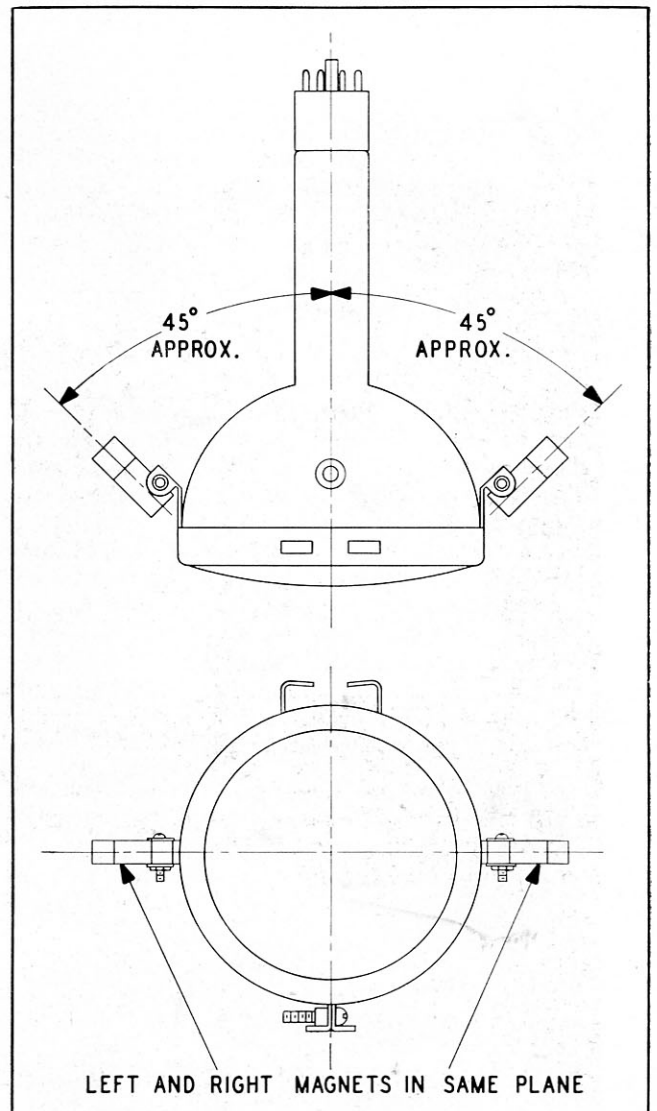


FIGURE 5. Proper Magnet Alignment TP-4002

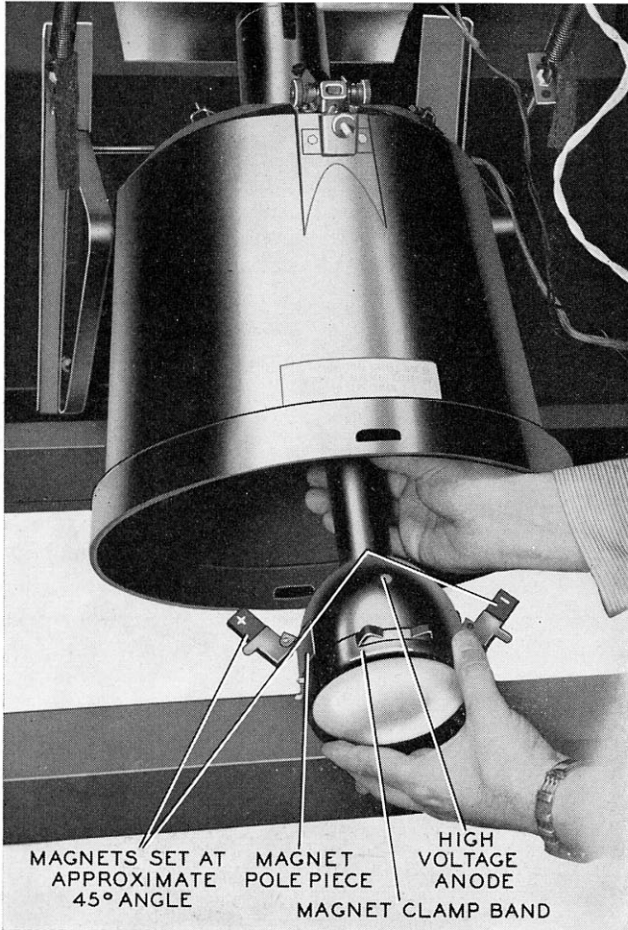


FIGURE 6. Inserting the Picture Tube TP-3659

18. The brass tube-centering ring must be in place in the front end of the deflection yoke. Loosen the picture-tube clamp screw (see figure 3), and install the picture tube through the deflection yoke. Do not foul the deflection-coil cable leads inside the yoke when inserting the tube. See figure 6. Push the tube upward, rotating it slightly from side to side until the bell of the tube is firmly seated and touches the deflection coil. Align the high-voltage anode of the picture tube vertically.

19. Tighten the picture-tube clamp screw. Touch the high-voltage anode connector to the light-shield assembly to discharge it. Insert it through the hole in the assembly and snap it in place on the tube.

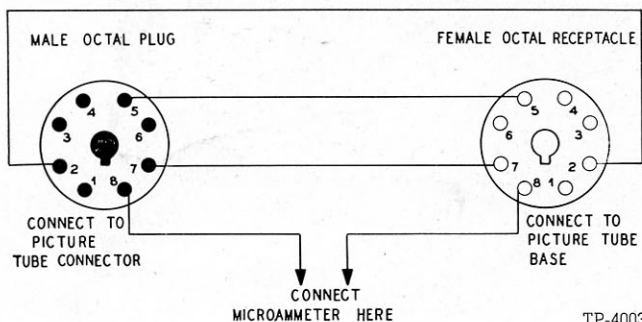


FIGURE 7. Test-Cable Connections TP-4003

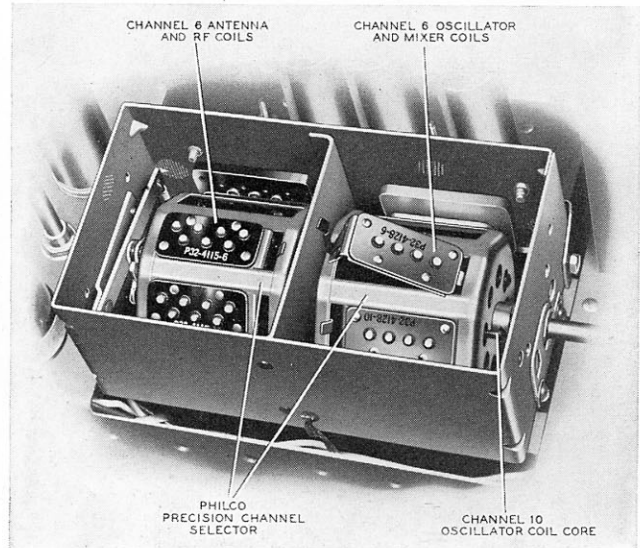


FIGURE 8. Proper Coil Insertion TP-3668

20. Unwrap the deflection-yoke cable, and connect a test cable, about 10 inches long, between the base of the picture tube and the deflection-yoke cable connector (see figure 7). Connect a 250-microampere meter to the test leads. See that all tubes and shields are in place.

21. Refer to figure 8. The antenna and oscillator coils must be seated properly in the Philco Precision Channel Selector compartments. The oscillator coil, which is slug-tuned, should be in the front; the antenna coil, which is fixed tuned, should be in the rear. The coil part numbers should both end with same suffix numeral. The suffix indicates the television broadcast channel number. (For example, 32-4115-3 and 32-4128-3 are the oscillator and antenna coils for channel 3.)

Adjusting the Receiver

1. Use a line cord with a special female connector on the receiver end to connect the Receiver to a 110-volt, 60-cycle, a-c power receptacle.

2. With the Receiver properly located, connect the aerial, and plug the line cord into the nearest receptacle.

3. Set the Philco Precision Channel Selector (figure 9) to the station channel to be used for adjustments. Turn the OFF-ON-TONE control to ON, and adjust the VOLUME control for a desirable level. Allow the Receiver to warm up for about 20 minutes.

4. Attach a 20,000-ohms-per-volt meter to the "a-f-c" test jack, and complete the following adjustment.

5. Remove the "Philco Precision Channel Selector" knobs, and turn the core of the oscillator coil (figure 9) in a clockwise direction for a positive voltage indication; then turn it in a counterclockwise direction for a negative indication, noting the zero or cross-over point. Then adjust it for a .5 volt indication in the positive direction.

6. When other television station signals are available, complete the adjustment made in step 5 for each station, and then replace the "Philco Precision Channel Selector" knobs.

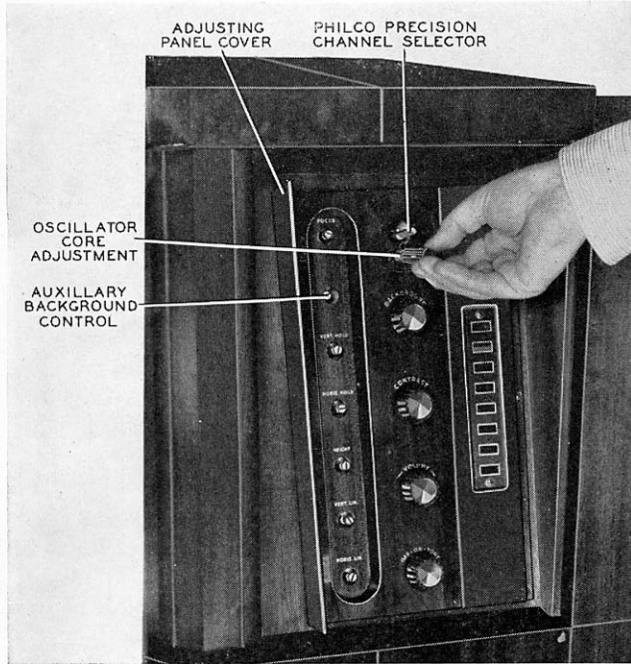


FIGURE 9. Front Controls TP-3660

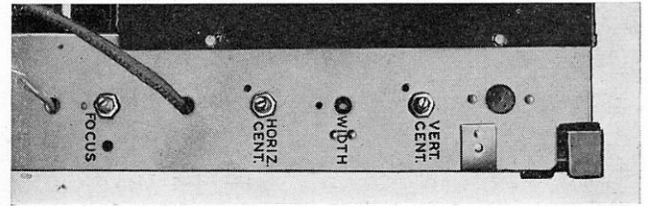


FIGURE 10. Rear Controls TP-3806

7. Observe the picture-tube face and set the VERT. HOLD control to the center of the range through which the picture is vertically stationary. See figure 12.

8. Set the HORIZ. HOLD control to the center of the range through which the picture is horizontally stationary. See figure 13.

9. Remove the voltmeter from the "a-f-c" test jack, and connect a calibrated oscilloscope to the "align" test jack (figure 11). A 2-volt peak-to-peak signal should be observed. If the correct indication is not obtained, adjust the "Automatic Level Control of Picture and Sound" (top of chassis, shown in figure 11) for the 2-volt indication.

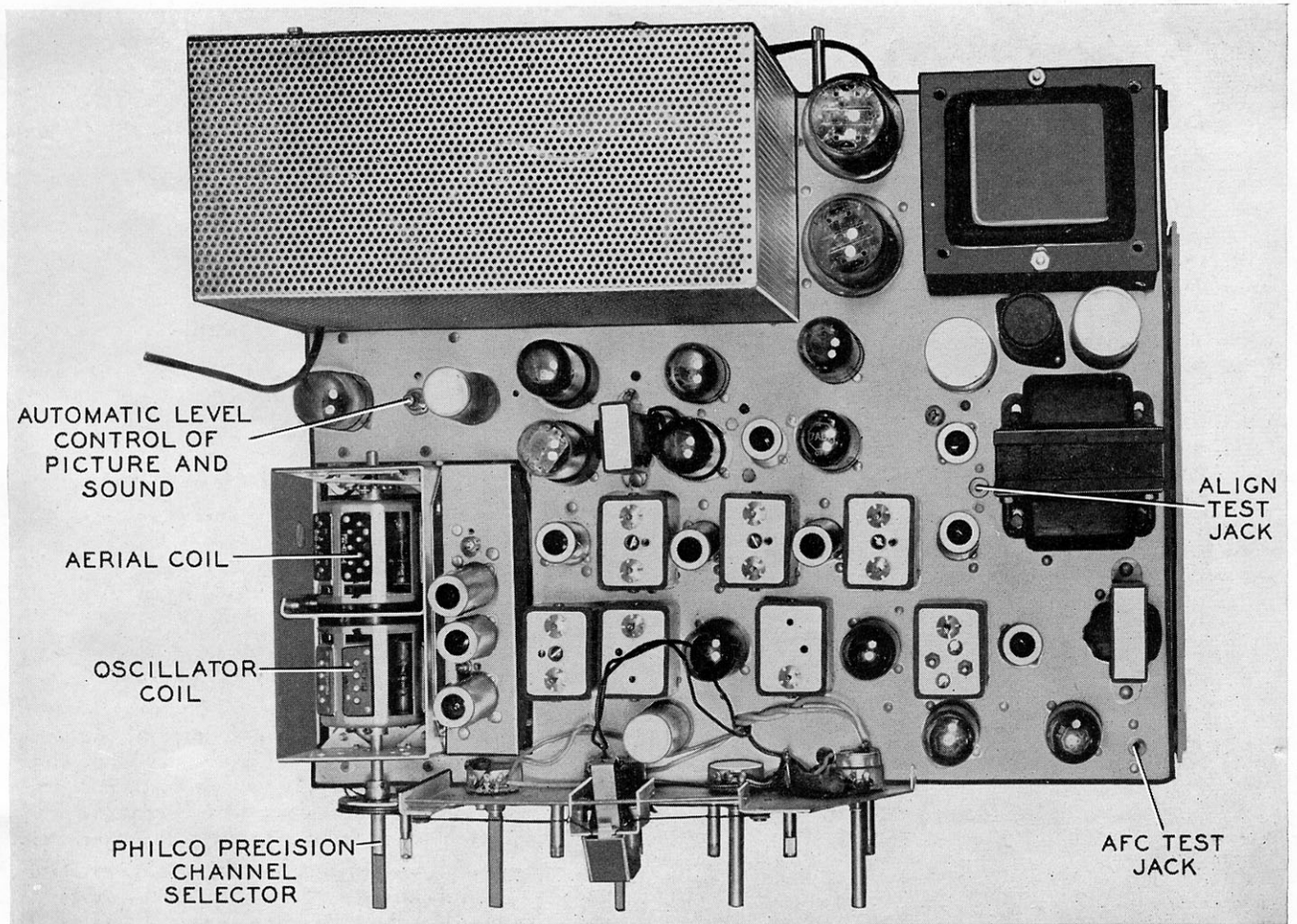
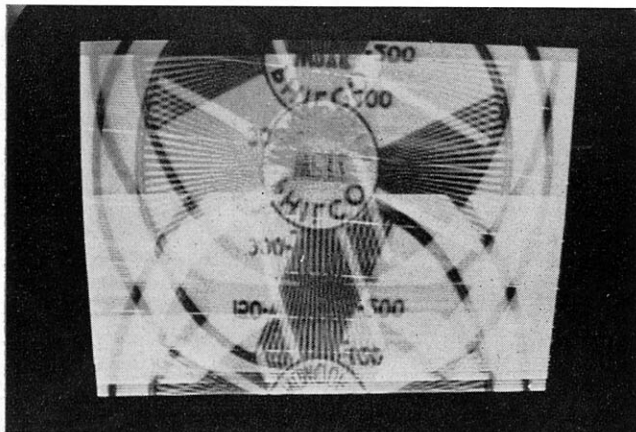
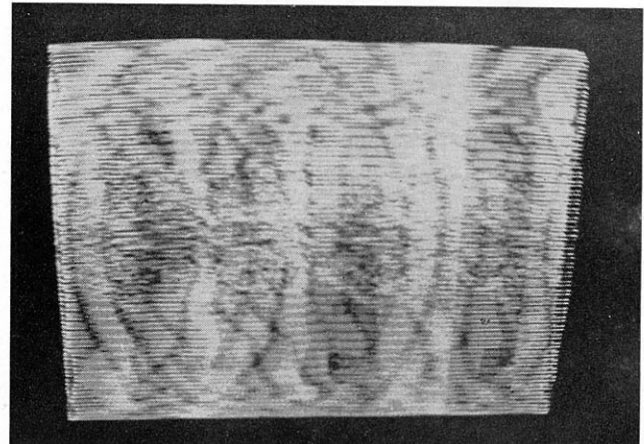


FIGURE 11. Test Points on Top of Chassis TP-3679



TP-3828

FIGURE 12. Adjustment of VERT. HOLD Control Required



TP-3809

FIGURE 13. Adjustment of HORIZ. HOLD Control Required

10. Remove the oscilloscope from the "align" test jack and connect it to the picture-tube grid test point underneath the chassis (figure 14). With the CONTRAST control in the maximum clockwise position, a peak-to-peak voltage of 140 to 160 volts should be obtained, indicating a gain of 70 to 80 in the video amplifier stages.

11. Connect a 20,000-ohms-per-volt meter between the picture-tube grid test point and chassis. The voltage measured at this point should be from +35 to +50 volts.

12. Turn the BACKGROUND, FOCUS and CONTRAST controls to $\frac{3}{4}$ of their maximum clockwise rotation.

13. Adjust the "auxiliary background" control (location shown in figure 9) for a beam current of 70 to 80 microamperes.

14. Use a mirror to observe the face of the picture tube, and adjust the auxiliary "focus" control on the rear of the chassis (shown in figure 10) for sharp, clear sweep lines in the picture.

15. Turn the OFF-ON-TONE control to OFF. Remove the test leads and the 10-inch test cable, and connect the picture-tube connector to the base of the tube. Turn the OFF-ON-TONE control to ON, and observe that a keystone pattern similar in outline to figure 15 appears on the face of the tube.

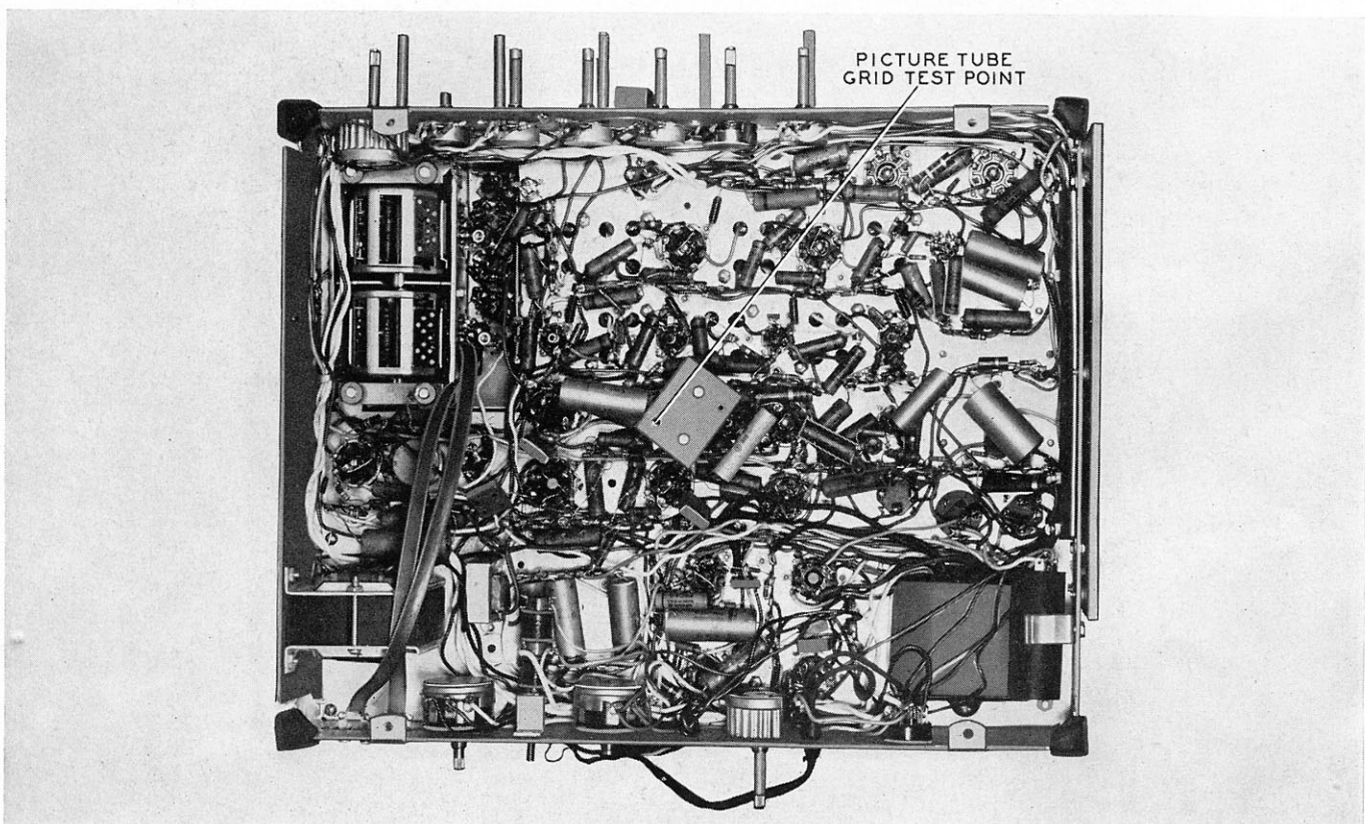


FIGURE 14. Picture-Tube Grid Test Point

TP-3680

16. Adjust the CONTRAST control for black, white and a pleasing range of gray shades, and then set the BACKGROUND control for best clarity (focus). The user should be informed that longer tube life can be obtained by following this focusing procedure.

17. Remove the spherical reflector and metal strap from the shipping carton. Insert the metal strap in the bottom slot of the light-shield assembly, as shown in figure 16. Hold the reflector in the palm of the hand as shown in figure 17, place it in the light shield, and slide the metal strap through the top slot to securely fasten the reflector.

18. Adjust the HEIGHT and WIDTH controls until the picture is approximately a half-inch smaller than the Micro-Lens Screen.

19. The top and bottom edges of the picture should be parallel with each other. If not parallel (as shown in figure 18) loosen picture-tube clamp and turn the tube slowly until the top and bottom edges are parallel with each other. If parallel with each other but tilted with respect to the screen (as shown in figure 19), loosen nuts A and B and the focus-lever clamp screw sufficiently to turn the tube and yoke. See figure 16. Set the yoke so that the top edge of the picture is parallel with the screen, and then tighten the thumb screws and clamp.

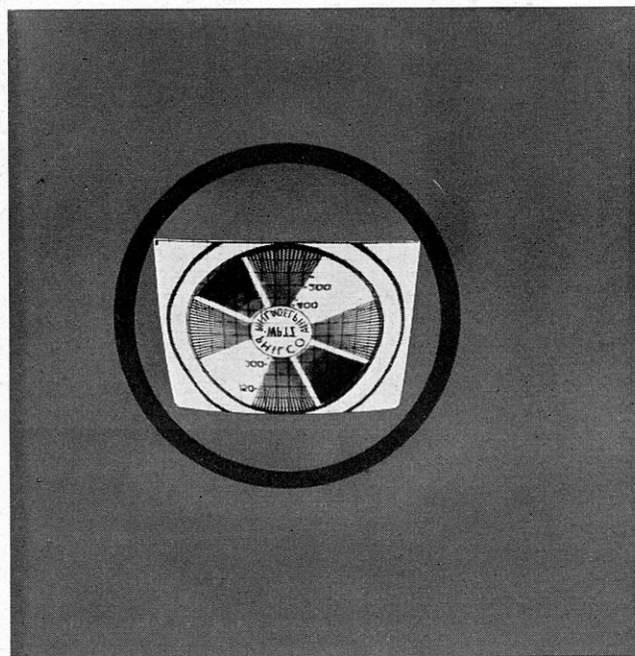


FIGURE 15. Keystone Pattern

TP-3663

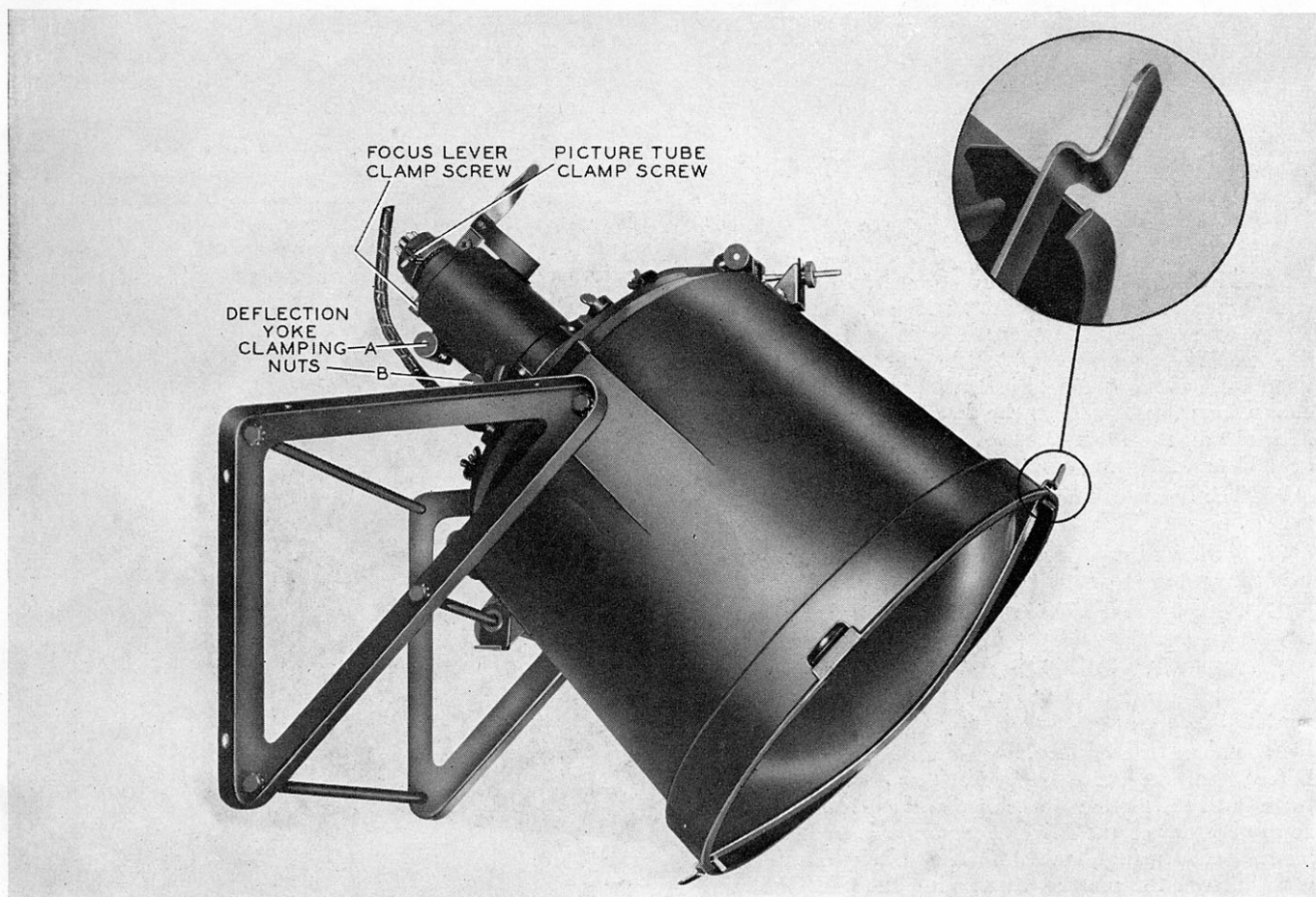


FIGURE 16. Method of Inserting Reflector Strap

TP-3656

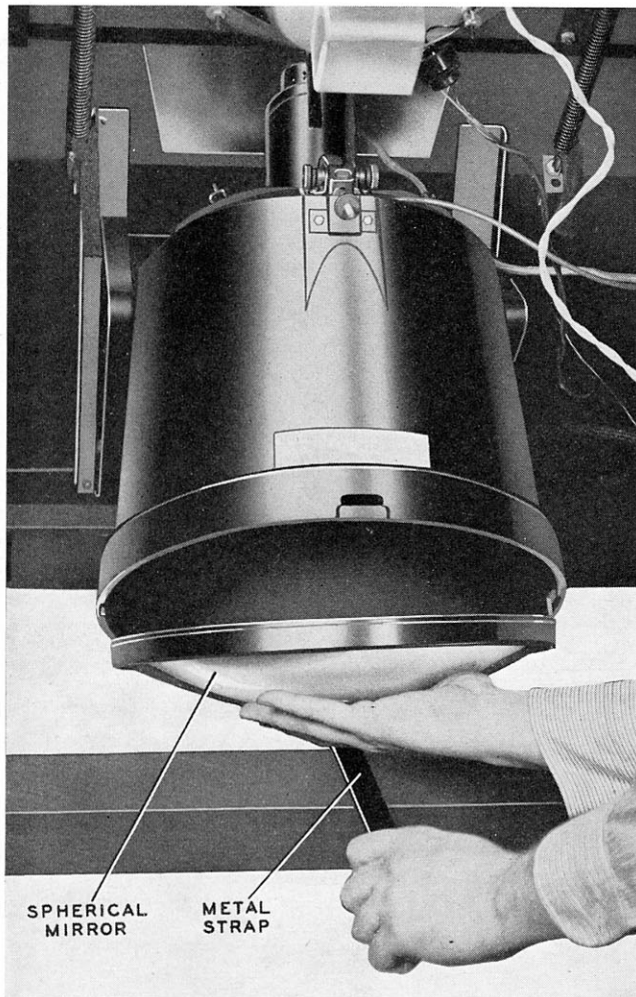


FIGURE 17. Inserting Spherical Mirror TP-3652

20. The sides of the picture should be parallel with each other and with the frame; if not, the picture is either over-keystoned or under-keystoned. To correct this condition, remove the reflector, connect a ground strap from the light-shield assembly to the magnet-band clamp screw, and position the magnets properly. Figure 20 indicates the method of adjusting the magnets. Figures 21 and 22 show under and over-keystoning.

NOTE: Before finally replacing the spherical reflector, be certain to remove the ground cable.

21. Adjust the VERT. CENT. control for perfect vertical centering of the picture. See figure 23.

22. Adjust the HORIZ. CENT. control for perfect horizontal centering of the picture. See figure 24.

23. Adjust the HEIGHT and WIDTH controls until the picture covers the screen both vertically and horizontally. See figures 25 and 26.

24. Loosen the deflection-yoke clamping nuts A and B (see figure 28), and move the focus lever C back and forth until the picture is as sharp and as clear as possible at the bottom of the Micro-Lens Screen. A convenient method of securing detail sufficient for accurate focusing is to enlarge the picture, by turning the HEIGHT and VERT. LIN. controls, until the sweep lines are clearly visible. See figure 27.

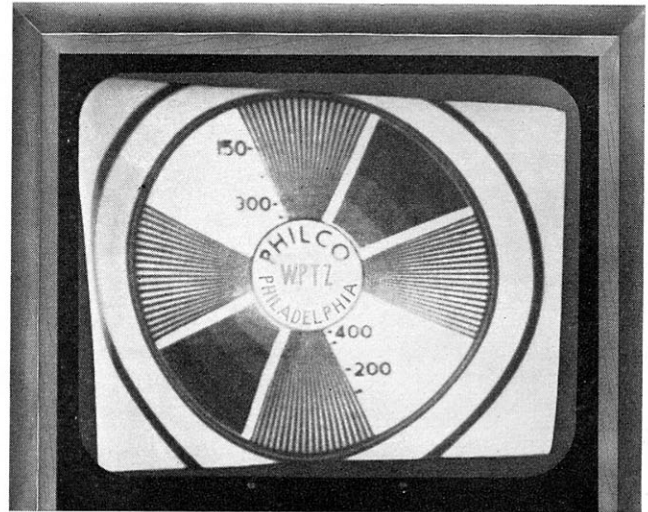


FIGURE 18. Adjustment of Picture Tube Required TP-3830

25. Tilt the Micro-Lens Screen forward slowly, and if the sweep lines on the top of the picture improve, loosen the locking nuts D and E (figure 28). Rotate adjusting nut F in a clockwise direction, with the Micro-Lens Screen resting in normal position, until the top of the picture is in best focus. Turn nut F in a counter-clockwise direction for best focus if the picture does not improve as the Screen is tipped forward.

26. Readjust the focus lever for best clarity of both top and bottom of the picture, readjusting nut F slightly if necessary. Tighten nuts D and E.

27. Move the lid forward slowly while observing the right and left central portions of the Micro-Lens Screen. If neither side improves in focus no further adjustment is required. If only one side improves in focus, loosen nuts G and H, and move the deflection-coil-and-tube support from side to side until both sides of the picture are equally in focus on the Screen. Recheck the focus-lever setting and, after all parts of the picture are in focus, tighten locking nuts A, B, D, E, G, and H.

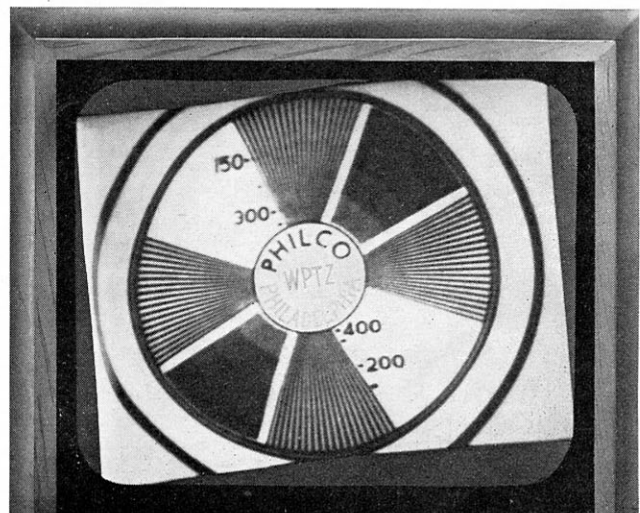


FIGURE 19. Adjustment of Deflection Yoke Required TP-3819

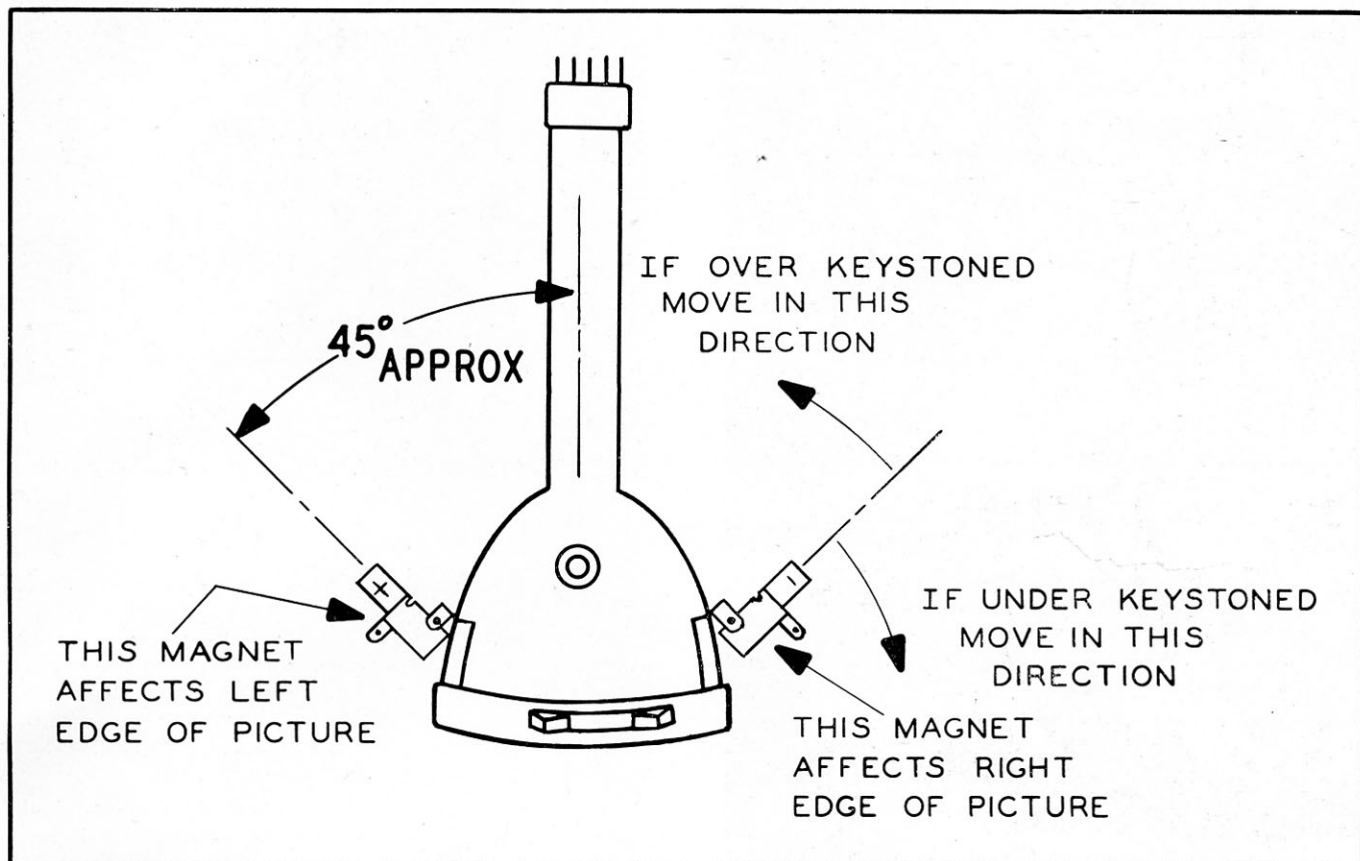
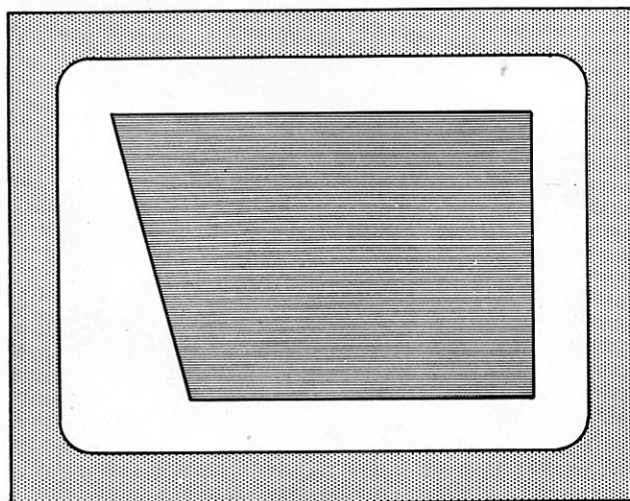
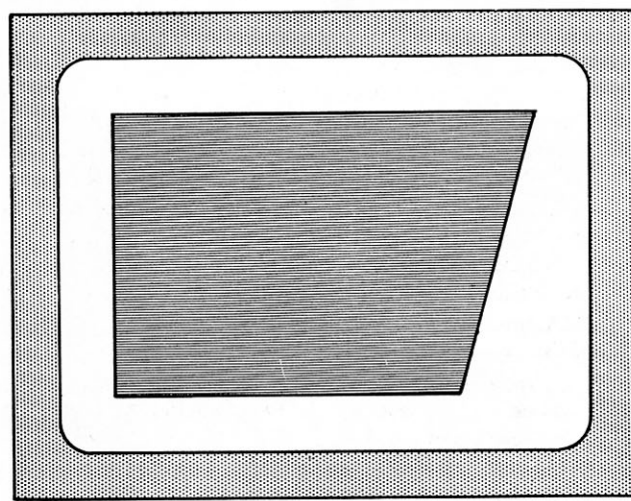


FIGURE 20. Magnet Positioning

TP-4004



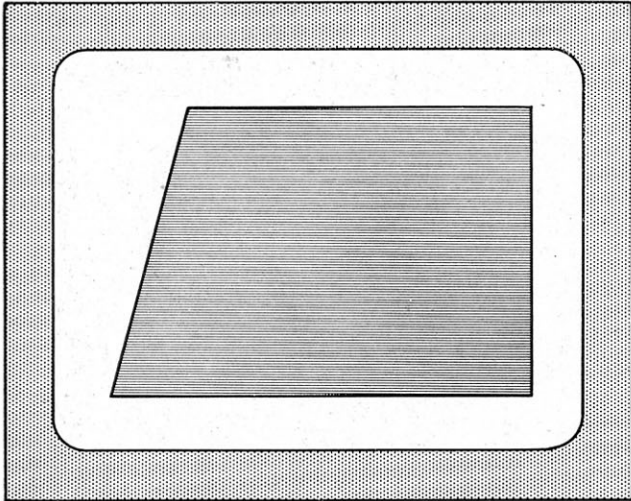
LEFT MAGNET



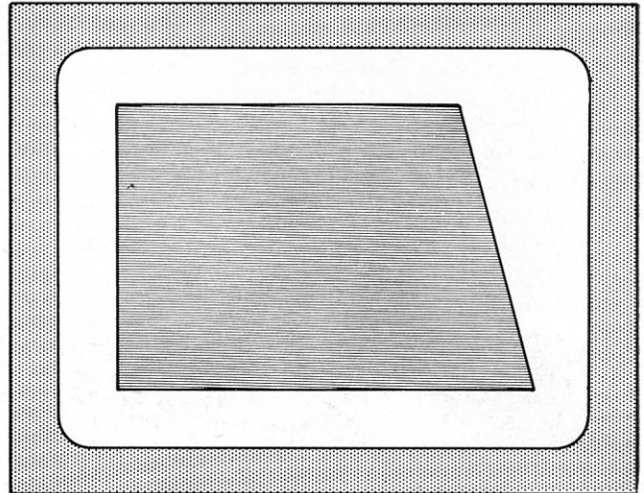
RIGHT MAGNET

FIGURE 21. Under-keystoning

TP-4005A



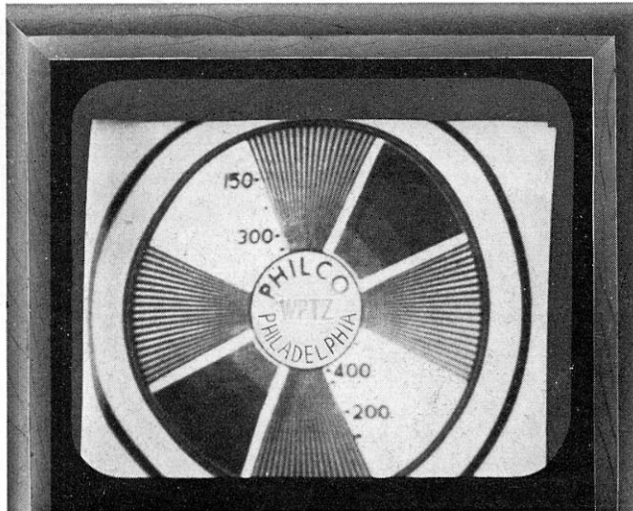
LEFT MAGNET



RIGHT MAGNET

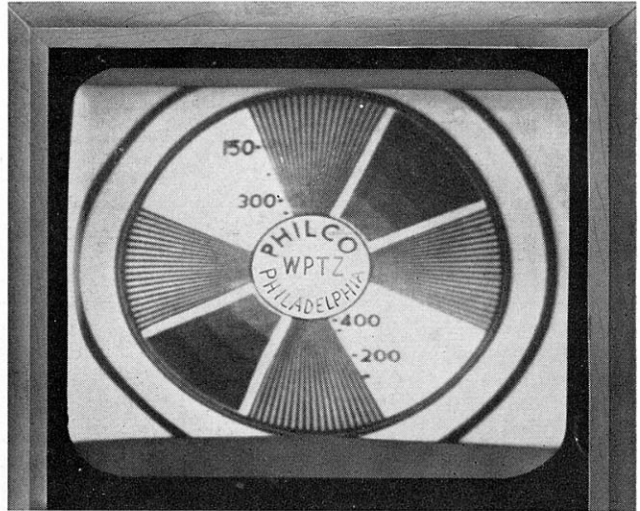
TP-4005B

FIGURE 22. Over-keystoning



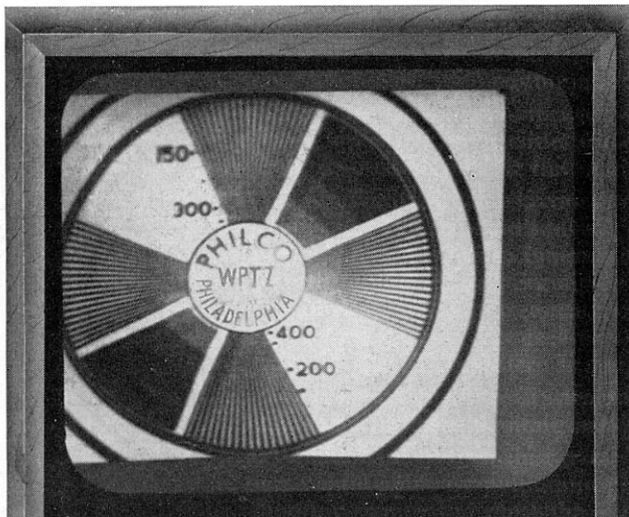
TP-3815

FIGURE 23. Adjustment of VERT. CENT. Control Required



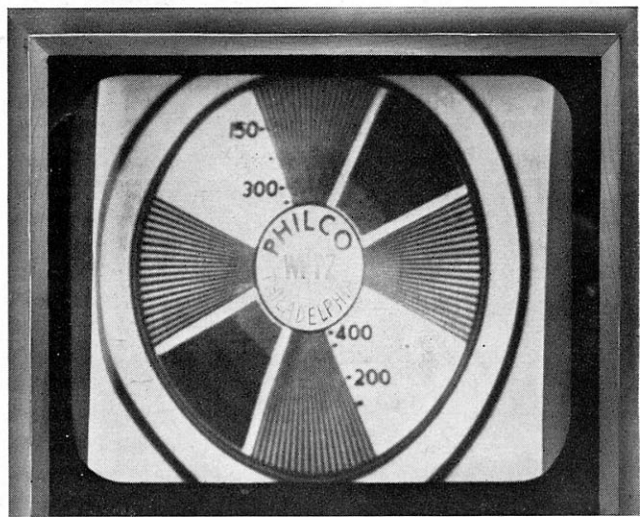
TP-3813

FIGURE 25. Adjustment of HEIGHT Control Required



TP-3818

FIGURE 24. Adjustment of HORIZ. CENT. Control Required



TP-3814

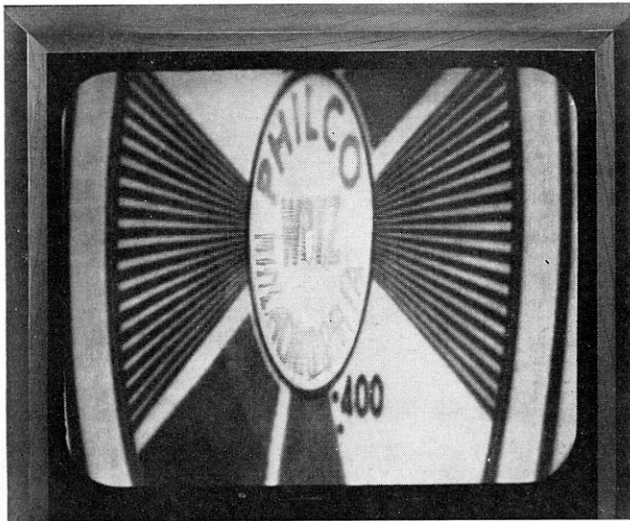
FIGURE 26. Adjustment of WIDTH Control Required

28. Clean both sides and replace the glass dust cover in the speaker well. Tighten the two clamps.

29. Using a test pattern signal, adjust the VERT. LIN. control for a vertically symmetrical picture.

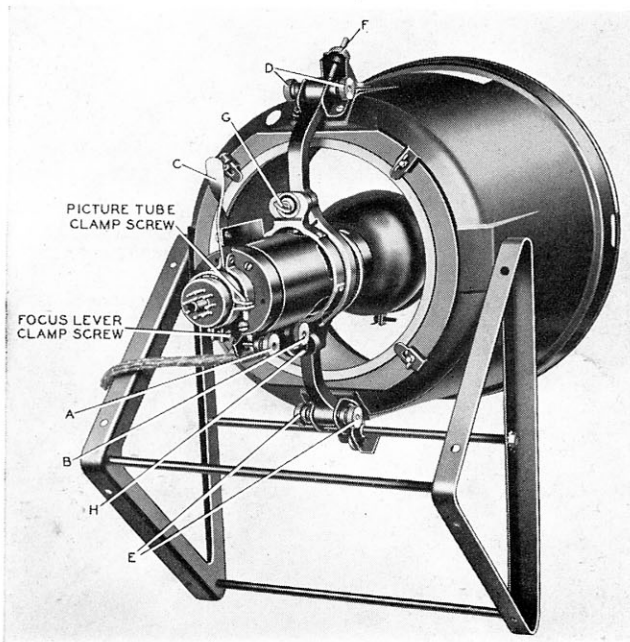
30. Using a test pattern signal, adjust the HORIZ. LIN. control for a symmetrical horizontal pattern.

31. Make certain that the VERT. HOLD and HORIZ. HOLD controls are set properly on the weakest signal to be used, and recheck the settings of all controls.



TP-3826

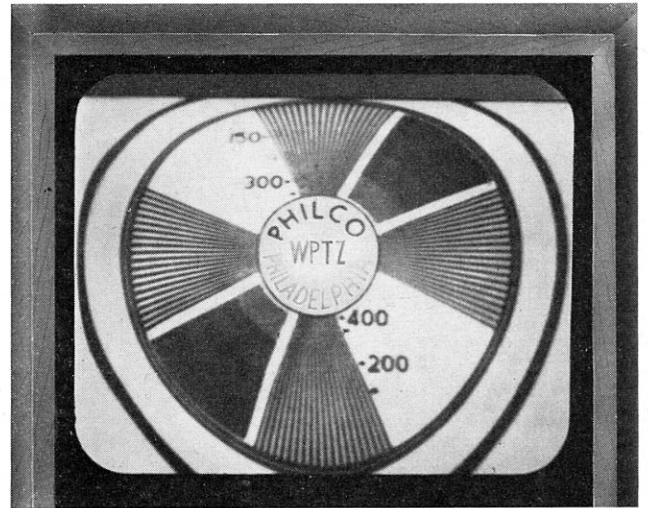
FIGURE 27. Picture "Blown-Up" to Show Sweep Lines



TP-3655

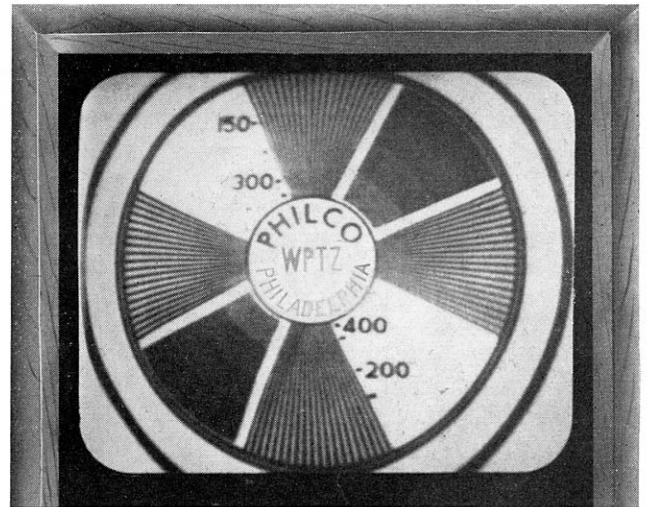
FIGURE 28. Optical Adjustments

32. Close the lid containing the Micro-Lens Screen and observe that the Receiver is OFF; if not, readjust the lid switch and mechanism.



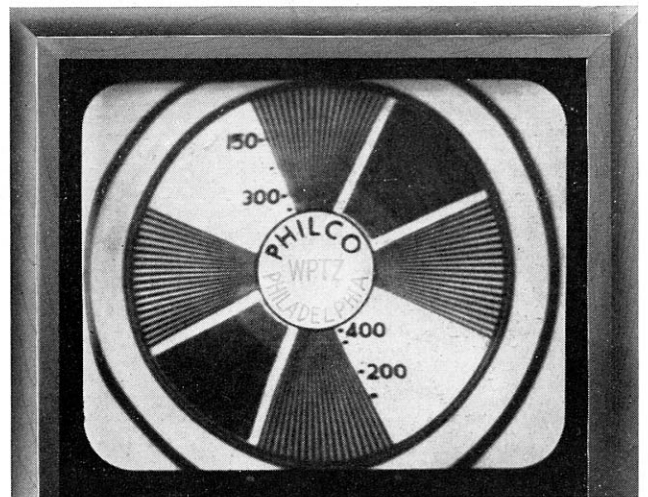
TP-3822

FIGURE 29. Adjustment of VERT. LIN. Control Required



TP-3817

FIGURE 30. Adjustment of HORIZ. LIN. Control Required



TP-3808

FIGURE 31. Properly Adjusted Picture



FIGURE 32. Replacing Back Cover

TP-3677

33. Turn the OFF-ON-TONE control to the OFF position. Remove the antenna plug and replace the back cover on the cabinet, dressing the leads around the parti-

tion as shown in figure 32; be careful not to pull the high-voltage cable loose when doing this. Replace the antenna plug. The Receiver is now ready for operation.



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