

Philco Radio & Television Corp.

Model: 38-7

Chassis:

Year: Pre October 1937

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

[Riders Volume 9 - CHANGES 9-3](#)

[Riders Volume 8 - PHILCO 8-64](#)

[Riders Volume 8 - PHILCO 8-65](#)

[Riders Volume 8 - PHILCO 8-66](#)

G.E. D-51, D-52

A switch is provided in these chassis which is used to cut in and out a series audio coupling condenser between the plate of the B7 second detector-avc-of tube and the control grid of the 41 output tube. In most cases it has been found best to allow this switch to remain closed all the time; therefore, its usefulness can be increased by making the following changes:

Disconnect the two wires connected to the switch, S2, in the schematic found on RCA page 6-9 in *Rider's Volume VI*, and after soldering them together, tape them.

Connect a wire from the control grid cap connected to the 6B7 to one terminal of the switch. To the other terminal of S2, on the one side of a 0.0015-mf condenser and connect the other side of the condenser to the case of the receiver.

This procedure provides a tone control which is extremely effective in reducing the tube hiss of weak signals. When the incoming signal is strong, the condenser may be switched out of the circuit, which gives the best fidelity. This type of tone control is more effective in reducing noise than the usual type of control connected across the output of the 41 power amplifier.

Motorola 5T-71A

The schematic for this chassis is the same as that shown on page 3-2 in *Rider's Volume III* and on page 1054 in the *Rider Combination Manual*, with the following changes:

The 0.25-megohm and 1-megohm resistors in series in the plate circuit of the third 24 tube and the 0.1-mf by-pass condenser from their junction, have been replaced with a choke having the same parts number as the one shown in the grid circuit of the 171A output tube. This choke is connected directly between the plate of the 24 tube and the +B lead.

The choke in the grid circuit of the output tube has been replaced with a 0.2-megohm resistor.

Mid-West 7-36

As was noted on page 7-2 in *Rider's Volume VII*, the tube complement of the late model of this receiver was changed, four metal tubes being employed. Below will be found the voltage data for both the early and the late models.

Early 7-36

Tube	Plate	Screen	Control	Supp.	Grid
18	R.F.	225	80	0	AVC
16	Choke	120	0	0	0
38	Mixer	215	80	0	AVC
28	1st I.F.	190	0	0	AVC
55	2nd Det.	25	0	0	0
2AS	Output	210	245	0	17.5
80	Rect.	240	0	0	0

Filament voltage, 2.5

Late 7-36

Tube	Plate	Screen	Supp.	Cathode
62B	R.F.	100	0	0
62C	Mixer	225	160	0
62D	Choke	130	0	0
63	2nd Det.-A.F.	30	0	0
42	Output	225	210	0
80	Rect.	230	A.C.	0

Filament voltage, 5.9 Volume control at maximum

Arvin Chassis 518

In order to correct the calibration of the dial, the following procedure is to be used:

Rotate the dial pointer to 30 kc. Press with the thumb on the dial face above its center. Rotate the tuning knob while preventing the dial pointer from moving. This will enable the position of the dial pointer to be varied with respect to the tuning condenser and makes it possible to readjust the calibration without removing the chassis from its cabinet.

For other servicing data see pages 8-10, 8-12, and 8-13 in *Rider's Volume VIII*.

G.E. B-40

The schematic of this receiver, which is the same as RCA M-34, is shown on RCA page 3-14 of *Rider's Volume III* and page 1854 of the *Rider Combination Manual*. The change explained below will increase the audio gain on medium and strong signals and also improve the A.V.C. action. The partial schematic shown herewith are the original and revised circuits.

Interchange the connections at the terminal board of the red and green wires from the volume control. This places the grid coupling condenser in the circuit of the movable arm of the volume control. Then disconnect the green A.V.C. lead from the terminal board. (This lead is connected to the second terminal from the end on the bottom side of the terminal strip.) Solder a small 2-megohm resistor to this lead and solder the other end of the resistor to the lug on the terminal board to which the green lead from the volume control is attached.

Lofayotto M-31 (1935)

Please make this change on the lower schematic on *Lofayotto page 8-6* in *Rider's Volume VIII*: A connection should be made where the lead from B+ crosses the lead from the plate of the 58. A jumper appears there in the schematic.

Philco 602

The tap between the voice coil and the hum bucking coil should be grounded to minimize hum. See schematic on page 7-83 of *Rider's Volume VII*.

The 133-15 ohms resistor, No. 36, has a part number 33-3235 instead of 33-3225.

Beginning with Run No. 3, the tuning condenser assembly was changed to a vernier type. The part number of this condenser, scale, and pointer remain the same.

The 1-megohm resistor, No. 40 had a rating of 1/2 watt. This should be replaced with a 1/2 watt resistor of the same resistance value; the Part No. 33-510344.

Philco 270

Please make a note in your Index to *Rider's Manuals* that the parts list of Model 270 applies to the schematic of Model 270, found on page 1-28 of the revised edition of *Rider's Volume I*; on page 406-C of the early edition; and on page 1057 of the *Rider Combination Manual*.

Philco 116

A 50-mmf. condenser has been added from the end terminal of condenser No. 63 (see schematic on page 6-11 of *Rider's Volume VI*) to ground. This addition was made to prevent oscillation.

As of Run No. 14, the 1-megohm resistor, No. 81, has been changed from Part No. 4409 to 33-510344.

A change has been made in the design of the volume control, No. 66 on the schematic, the old part number was 33-5022 and this has been replaced with Part No. 33-5153.

The Model K-17 speaker, Part No. 36-1025, is used on the new Model 116-B. The cone assembly number is 02996; the field coil and pot assembly is 36-3104.

Philco 116X

The resistance of the field coil, No. 95 on the schematic shown on page 6-13 of *Rider's Volume VI*, is shown as 1125 ohms. Change notes from the manufacturer state that this value is 1450 ohms.

The volume control No. 68 has been changed from Part No. 33-5110 to 33-5155.

Philco I-F Transformers

The i-f transformers of several models have been changed and are listed below. In each case the new part number of the first i-f transformer is 32-2296 and that of the second i-f transformer is 32-2298.

Model	Parts List on Page	Rider's Volume
37-33	7-15	VIII
37-34	8-17	VIII
37-38*	7-17	VII
37-623	7-55	VII
37-624	8-23	VIII

The second i-f transformer has a tertiary winding which is connected in series with the screen-grid circuit of the 1D5G i-f tube.

*In order to prevent oscillation in the i-f circuit of Model 37-38, a tubular condenser, Part No. 30-4020, 0.05 mf, is connected from the screens of the 1C7G detector-oscillator and the 1D5G i-f tubes to ground.

Philco 37-9, Code 121

Run No. 2. Condenser No. 35 has been changed from 16 mf to 18 mf, Part No. 30-2194.

To improve the operation of the i-f circuit, a 0.1-mf condenser, Part No. 30-4455, has been connected from the red lead of the primary of the i-f transformer, No. 53, to ground.

To prevent distortion at minimum volume, the green-white wire connecting the center lug of the volume control, No. 67, to the automatic tuning dial a-f switch, No. 93, must be kept clear of the compensator, No. 54, and the diode circuit of the 6Q7G.

Run No. 3. Condensers 70 and 70A have been replaced by 8- and 10-mf condensers respectively, Part No. 30-2201. The 8-mf condenser, No. 72, has been replaced by a 18-mf condenser, Part No. 30-2200.

The schematic of this receiver will be found on page 8-11 of *Rider's Volume VIII*. Note that the dial calibration notes of Model 37-10, see page 8-15, can be used for calibrating the dial of Model 37-9.

Philco 38-39

In order to reduce maximum volume buzz, the following parts were changed: the 11.7-ohm resistor, No. 22, was changed to 12.3 ohms; the 2-megohm resistor, No. 30, was changed to 4 megohms; and the 160,000-ohm resistor, No. 27, was changed to 240,000 ohms. See schematic on page 8-75 of *Rider's Volume VIII*.

Philco 38-A, 38-5

When either of these models are operated on 25 cycles, a power transformer, Part No. 32-7598 must be employed. Also a 0.1-mf condenser must be connected across the speaker field coil, No. 65.

In order to reduce station rumble in the Model 38-4, the following parts were changed: the 0.01-mf condenser, No. 36, was changed to 0.0015 mf, and the 40,000-ohm resistor, No. 38, changed to 32,000 ohms.

In order to reduce frequency drift at the high-frequency end of the broadcast tuning range, in Run No. 3 the compensator No. 16, 1500 kc, Part No. 31-6196, was replaced with Part No. 31-6206, and two condensers, Part No. 30-1097, are connected in parallel with the new condenser. The range 1 oscillator transformer, No. 15, was changed from Part No. 32-2631 to 32-2894.

In Run No. 4 of 38-4 and Run No. 2 of 38-5, the 70,000-ohm resistor, No. 19, was changed to 51,000 ohms to improve the performance of the oscillator circuit on the short-wave bands. For schematic see page 8-61 in *Rider's Volume VIII*.

Philco 38-7, Codes 121,124

Run No. 2. To provide uniform performance of the oscillator circuit, a 20-ohm resistor was connected in series with the cathode of the 6A8G detector-oscillator tube. See schematic on page 8-65 of *Rider's Volume VIII*.

In order to reduce bass response, the following parts were changed in the Code 124 chassis:

Condenser, No. 24, was changed from 0.01 mf to 0.001 mf, Part No. 30-4201. Resistor, No. 32, was changed from 51,000 ohms to 40,000 ohms, Part No. 33-340339. Condenser, No. 38, was changed from 0.006 mf to 0.01 mf, Part No. 30-4479.

Run No. 3. To reduce frequency drift further at the high-frequency end of the broadcast range, the compensator, No. 7A, was replaced with Part No. 31-6206. Also a new thermal compensator was connected in parallel with compensator, No. 7A and mounted near resistor No. 12. The resistor is mounted in the chassis with a mounting clamp and an asbestos insulator. The resistor must be mounted like this or else the thermal compensator will not function properly.

Run No. 4. The thermal compensator added to the chassis in Run No. 3, was replaced by two fixed condensers, Part No. 30-1097.

Run No. 5. The 20-ohm resistor added in Run No. 2 was removed.

The part numbers of Nos. 26, 39, and 48 found in the list of parts on page 8-66 are correct for Models 38-8 and 38-9. The correct part numbers for Model 38-7, both codes, follow:

No. 26, Volume Control, Part No. 33-5225; No. 39, Tone Control, Part No. 42-1347; and No. 48, Range Switch, Part No. 42-1339.

Philco 38-8, Code 121

Run No. 2. In order to increase the sensitivity of the shadowmeter, the following changes were made: Resistor, No. 12, was changed from 10,000 ohms to 13,000 ohms, Part No. 33-313639 and condenser, No. 17, was changed from 0.05 mf to 0.25 mf, Part No. 30-4134. See schematic on page 8-65 of *Rider's Volume VIII*.

Run No. 3. To provide uniform performance of the oscillator circuit, a 20-ohm resistor was connected in series with the cathode of the 6A8G detector-oscillator tube.

Run No. 4. In order to increase the a-f response in the high frequencies, condenser No. 40, was changed from 0.008 mf to 0.004 mf, Part No. 30-4456.

Run No. 5. The 20-ohm resistor added in Run No. 3, was removed.

Philco 610

We have been advised by the manufacturer that the following changes should be made in the schematic numbers of this model found on page 6-19 of *Rider's Volume VI*: the schematic number 54 should be changed to 41; No. 41 to 56; No. 56 to 54; No. 39 to 40; and No. 40 to 39. This will make the numbers of the wiring diagram, the base view, and the parts list agree.

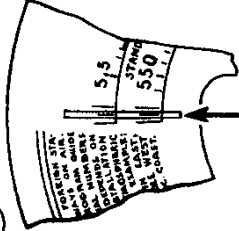
Beginning with Run No. 15, the oscillator circuit of the second type of this chassis (see page 7-87 of *Rider's Volume VII*) was changed to improve the oscillator action at 6.0 mc. Resistors No. 17 and No. 18 (51,000 ohms and 25,000 ohms) were removed. A 32,000-ohm resistor (Part No. 33-332133) was added from the switch terminal side of condenser No. 7 in the antenna circuit to ground. A 20-ohm resistor, Part No. 33-020133 was connected between the 6A7 cathode and ground.

MODELS 38-7(121,124)
38-8(121),38-9(121) PHILCO RADIO & TELEV. CORP.
Voltage, Trimmers, Chassis

PHILCO TUBES USED: Six—one 6A8G, det. osc.; one 6K7G, I. F. amp.; one 6J5G, 2nd Det. A. V. C.; one 6K5G 1st audio; one 6F6G, output; one 5Y4G rectifier.

CABINETS AND SPEAKERS:

	Cabinet	Speaker
38-7 Code 121	XX	H31
38-7 Code 121	T	K41
38-7 Code 124	CS	K41
38-8 Code 121	X	HS
38-9 Code 121	K	HS
38-9 Code 121	T	S7
38-9 Code 121	X	HS



GLOWING BEAM INDICATOR
Fig. 6 Dial Calibration
Models 38-8; 38-9

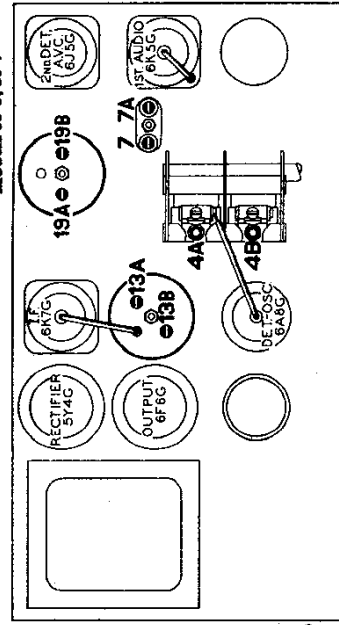
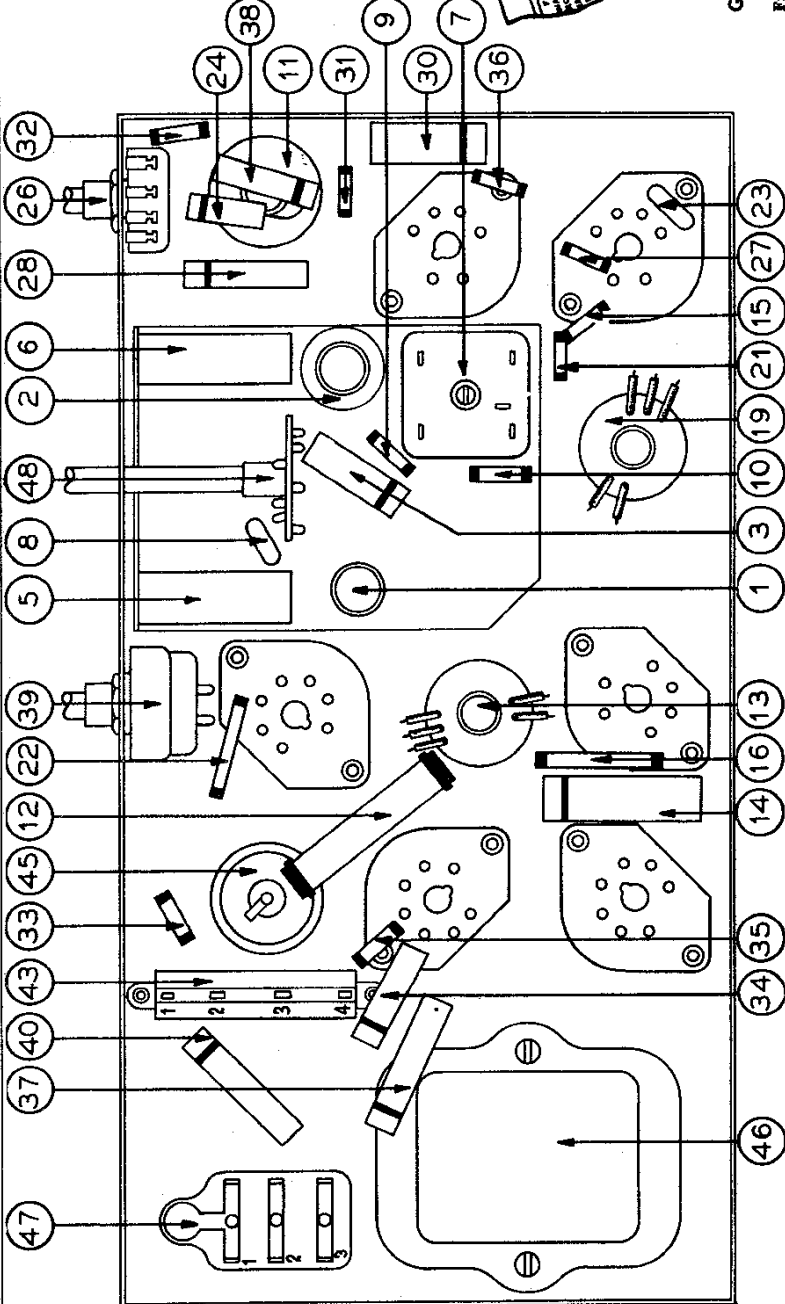


Fig. 4—Locations of Compensators—Top of Chassis

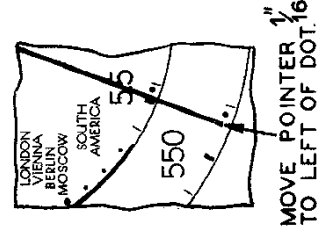


Fig. 5 Dial Calibration
Model 38-7
MOVE POINTER $\frac{1}{16}$ TO LEFT OF DOT.

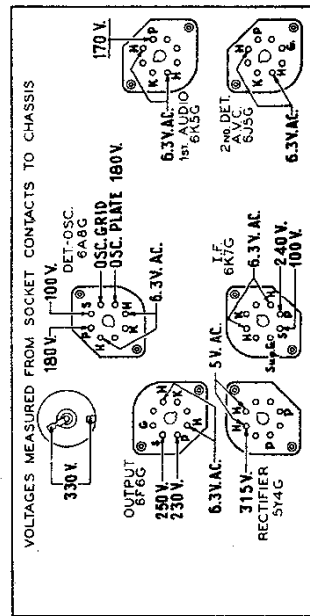


Fig. 1—Socket Voltages—Underside of Chassis View
The Voltages indicated by arrows were measured with a Philco 026 Circuit Tester which contains a sensitive voltmeter. Volume Control at minimum, range switch in broadcast position, line voltage 115 A. C.

MODELS 38-7(121,124) 38-8(121),38-9(121) Alignment,Parts

PHILCO RADIO & TELEV. CORP.

REPLACEMENT PARTS

Table with columns: Schem. No., Description, Part No., List Price. Includes parts for Models 38-7, 8, 9 and Model 37-8. Categories include Antenna Transformer, Tuning Condensers, Compensator, Resistor, Capacitor, Power Transformer, Pilot Lamp, and Cabinet Parts.

NOTE A.—To accurately adjust the high frequency oscillator 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 KC. below the frequency being used on any high frequency range.

needed: (3) Philco Fibre Handle Screw Driver, part No. 27-7059 and Fibre Wrench No. 3164.

OUTPUT METER: The 026 output meter is connected to the plate and cathode terminals of the 6FG tube. 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 38-7: 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 circle 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 1/16 of an inch from the small circle (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 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.

Models 8 and 9: 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. Tighten the dial clamp in this position.

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

INTERMEDIATE FREQUENCY CIRCUIT: Insert the signal generator output lead into the "Med" jack on the panel of the generator. Connect the other end of the output lead through a .1 mfd. condenser to the grid of the 6AG5, det. osc. tube and the ground connection of the signal generator, and adjust chassis. Set the signal generator and receiver controls, and adjust the I. F. compensator as follows:

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 380 K. C. 3. Receiver Volume Control maximum.

4. Range Switch Broadcast Position. 5. Adjust compensators (195B), (19A), (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. Insert the Signal Generator output lead in the "Med." jack on the panel, and connect the other end through the .1 mfd. condenser to the "Red" terminal of the aerial panel of the receiver. The output lead ground must be connected to the "Blk" terminal or to the chassis.

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

Table with columns: Range Switch, Signal Generator and Receiver Dial In Order, Compensators in Order. Includes tuning range information for 1720 K. C. and 1500 KC.

EQUIPMENT REQUIRED: (1) Signal Generator, using a fundamental frequency covering the intermediate and tuning ranges of the receivers; Philco Model 071 Signal Generator which has a fundamental frequency range from 0.15 to 30000 K. C. is the correct instrument for this purpose; (2) Output meter, Philco Model 026 circuit meter incorporates a sensitive output meter and is recom-

Model 38-7 38-8 and 38-9 receivers employ a six tube A. C. operated superheterodyne circuit with such features as: Two tuning ranges covering standard and short wave broadcasts; Philco foreign tuning system; automatic volume control; bias compensation; tone control; and pentode audio output circuit. The features, however such as, tuning mechanism, speakers and cabinets differ in each model.

Model 38-7 in addition to the features given above employs the Philco automatic tuning mechanism with cone-centric tuning. The chassis of this model is built into a cosmetic cabinet type XX, Table Cabinet Type "T" and is designated code 121. The same chassis built into a type "CS" cabinet is identified as code 124. Model 38-8 differs from the 38-7 in that a manually operated tuning mechanism with shadow-meter tuning is used. This receiver is built into a type "CX" cabinet with type "HS" dynamic speaker. Model 38-9 is identically the same as model 38-8 with the exception that the shadow-meter is not used, and that the speaker and cabinet types differ. This model is assembled in a type "T" cabinet with dynamic speaker type "HS".

POWER SUPPLY: Different transformers are required for operation on the frequencies listed above. These are shown on the Parts List.

AUTOMATIC TUNING MECHANISM—MODEL 7 Complete information for setting the stations on the cone-centric tuning mechanism of Model 38-7 is covered in the instruction form no. (39-5533) which is supplied with each set.

A few major assemblies of the automatic cone-centric tuning mechanism are listed on page 3 of this bulletin. A complete list of replacement parts, however, and detailed service data for the automatic mechanism, will be found in bulletin 282.

SHADOW METER ADJUSTMENT Model 38-8

Apply power to the receiver and allow tubes to warm up. Then adjust shadow meter as follows:

1. Move the shadow meter coil backwards and forwards, until the opposite edges of the shadow are 1/8 of an inch from each end of the shadow screen, measuring along the bottom edge of the screen. Adjustment of the shadow meter light bracket may be necessary for perfect centering.

2. Remove the rectifier tube from its socket, and rotate the shadow-meter coil until shadow reaches minimum width. This width should not exceed 3/21 of an inch.

3. Replace the 5Y4G rectifier tube in its socket. The shadow should then widen to not more than 3/16 inch or less than 1/16 inch from each side of the screen measuring along the bottom edge. If these limits are not obtained readjust the shadow meter as given in paragraphs 1 and 2 again.

Alignment of Compensator

EQUIPMENT REQUIRED: (1) Signal Generator, using a fundamental frequency covering the intermediate and tuning ranges of the receivers; Philco Model 071 Signal Generator which has a fundamental frequency range from 0.15 to 30000 K. C. is the correct instrument for this purpose; (2) Output meter, Philco Model 026 circuit meter incorporates a sensitive output meter and is recom-