

Radio Phonograph—Models 42-1010, Code 121; 42-1011W, Code 121; 42-1011M, Code 121

SPECIFICATIONS

MODELS 42-1010, 42-1011, CODE 121

Models 42-1010, Code 121, 42-1011W, Code 121 and 42-1011M, Code 121 are radio-phonograph combinations, consisting of a ten (10) tube superheterodyne radio and automatic phonograph record changer. These models are similar in design with the exception of the cabinets.

RADIO SECTION

The radio incorporates the Philco Built-in Super Aerial System for reception of standard broadcasts and Short-Wave stations; electric push-buttons for automatically tuning stations in addition to manual tuning; three tuning bands covering 540 to 1720 K.C., 2.3 to 6.7 MC and 9 to 15.5 MC; two I.F. amplifier stages; two variable tone controls which vary BASS and TREBLE audio frequencies; automatic volume control; push-pull beam pentode audio output stage; PHILCO LOKTAL tubes; and a 12-inch concert grand balanced field Electro-dynamic speaker. In addition these models are designed to receive the sound of a television program tuned in by special Philco television radios.

INTERMEDIATE FREQUENCY: 455 KC.

POWER SUPPLY: 115 volts, 60 cycle A.C.

These models can also be operated on a 115 volt, 50 cycle A.C. power supply. To do this it is necessary to replace the automatic record changer turntable and drive pulley as follows:

Turntable (50 cycle, Early production Spindle) 35-3058

Turntable (50 cycle, Later production Spindle) 35-3060

Drive pulley (50 cycle, Item 55, Bulletin 402) 56-6173

POWER CONSUMPTION: 125 Watts.

PHILCO TUBES: 7C5, oscillator; XXL converter; two 7B7 I.F. amplifiers, 7C6 phonograph pre-amplifiers; 7C6, second detector first audio;

7A4, audio phase inverter; two 7C5, push-pull audio output and a 5Y4G rectifier.

PHONOGRAPH SECTION

The phonograph of each model consists of the PHILCO automatic Record Changer with a stroboscope pitch and tempo control and a dual speed motor that can be adjusted to play not only normal speed records (78 RPM) but also slow speed records (33 $\frac{1}{3}$ to 39 RPM); the Philco Photo-Electric Reproducer with a floating jewel which reproduces sound on a beam of light, and a special phonograph amplifier stage for operation through the push-pull output tubes of the radio. The automatic record changer plays 12 ten-inch or 10 twelve-inch records at one loading. The automatic record changer is also equipped with provision for attaching a Philco Home Recording Unit Model HR-2 for making phonograph records in the home. The Home Recording Units can be obtained from your Philco distributor with complete instructions for installation and operation.

EXTERNAL AERIAL CONNECTIONS

The built-in low-impedance loop aerial system is designed to operate without an outside aerial or ground and to give maximum receiving performance under average conditions.

To operate the radio, however, in steel reinforced buildings and other shielded locations where signal strength is weak, the Philco outdoor aerial part No. 45-2817 is recommended for maximum receiving performance. The outdoor aerial can be easily connected to the radio by inserting the plug attached to the transformer (supplied with the aerial) into the socket provided at the rear of the radio. This aerial can be obtained from your local Philco distributor.

AUTOMATIC RECORD CHANGER

The Service Procedure for adjusting the Automatic Record Changer Mechanism will be found in Radio Service Bulletin No. 402.

ADJUSTING ELECTRIC PUSH BUTTON TUNING

The electric push button tuning mechanism consists of ten push buttons. Five push buttons control and select power supply, Broadcast, Police and Shortwave Bands and Phonograph Operation. The remaining five push buttons are used for automatically selecting five standard broadcast stations.

Select five of the most popular stations received in the locality. Insert the station call letters into the spaces above the buttons. The station with the lowest frequency is placed in the second button from the left and the highest frequency is placed in the sixth push button from the left. Each push button is adjusted by two adjusting screws located on the rear of the chassis. Each set of screws is numbered and labeled "Ant.", "Osc." and covers a frequency range as shown in Fig. 1.

Looking at the front of the cabinet, the second button from the left is adjusted by adjusting screws No. 1. The next push button by adjusting screws No. 2, and the remaining push buttons in order.

1. Press in "Broadcast" push button.

2. Set up a Model 070 Signal Generator near the receiver and connect a loop aerial (made from a few turns of wire 12 inches in diameter) to the high and ground output jacks of the signal generator. Turn the output controls to maximum and set the modulation control to "MOD. ON."

3. Manually tune in the station to be set up on the first station push button. After doing this set the indicator of the 070 Signal Generator to the frequency of the station being received. As the indicator approaches the frequency of the station a whistle will be heard; leave the indicator at this point.

4. Press "in" the second push button from the left of cabinet. Using the insulated screw driver, turn the No. 1 "Osc." 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. Readjust No. 1 "Osc." and "Ant." screws until the station is clearly and distinctly heard. The push button should then be adjusted properly to the station.

After setting up the first station the same procedure as outlined above is used for the remaining stations. When these models are set up to receive the sound of a television program tuned in by the special type Philco Television Sets or if it is to be used in conjunction with a Philco Record Player, the lowest frequency push button should be used. To tune in these programs, the same procedure as given for broadcast stations above is used.

Further details for setting up these Radios for operation with Philco Television Sets or Record Players are supplied with the instruments.

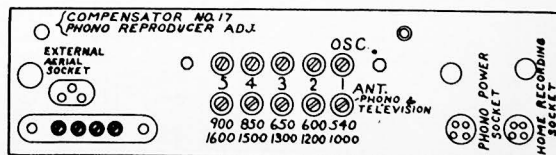


FIG. 1.—PUSH BUTTON COMPENSATOR LOCATIONS

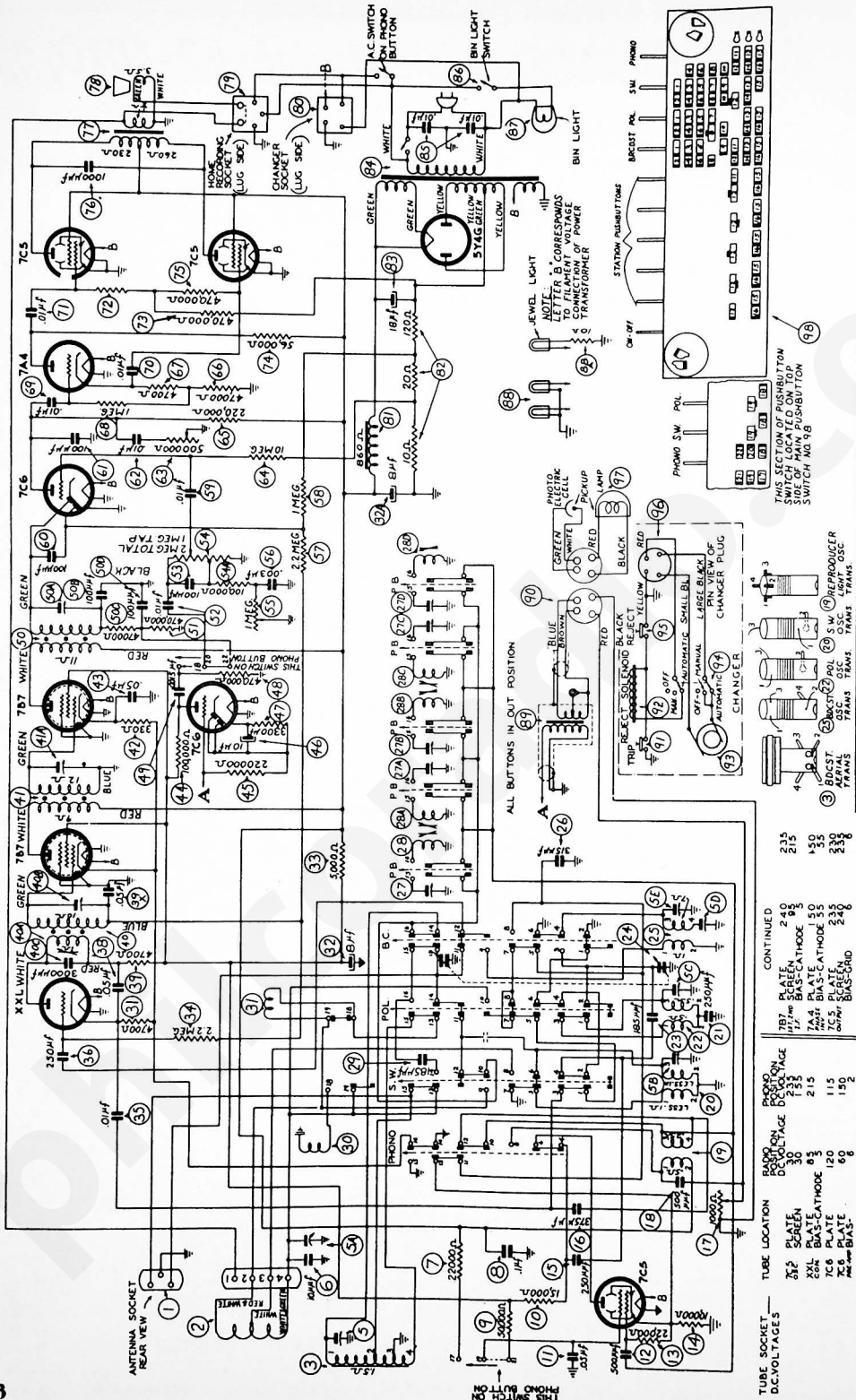


FIG. 2.—SCHEMATIC DIAGRAM—MODELS 42-1010, CODE 121; 42-1011, CODE 121

TUBE SOCKET VOLTAGES

TUBE SOCKET	TUBE LOCATION	POSITION	DC VOLTAGE
7C5	PLATE	D 233	215
7C6	SCREEN	D 233	249
7C6	BASE-CATHODE	D 233	83
7C6	7C6	D 215	155
7C6	7C6	D 215	115
7C5	7C5	D 120	235
7C5	7C5	D 152	230
7C5	7C5	D 152	246

D.C. voltages indicated at the tube elements in the diagram were measured with a 1000 ohms per voltmeter, Philco Model 027, using the 300-volt scale. Line voltage 117 volts A.C. no signal being received—orange switch broadcast.

ALIGNING R. F. AND I. F. COMPENSATORS

The following procedure is the same for both models:

EQUIPMENT REQUIRED

- SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Model 070.
- ALIGNING INDICATOR:** Either a vacuum tube voltmeter or an audio output meter may be used as an aligning indicator. Philco Models 027 and 028 circuit testers contain both these meters.
- TOOLS:** Philco Fiber Screw Driver, Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Either a vacuum tube voltmeter or an audio output meter may be used as a signal indicator when adjusting the receiver.

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator, make the following connections: Attach the negative (-) terminal of the voltmeter to any point in the circuit where the A.V.C. voltage can be obtained. Connect the positive (+) terminal of the vacuum tube voltmeter to the chassis.

Audio Output Meter: Terminal No. 1 is provided on the loop aerial panel for connecting one lead of the audio output meter to the voice coil of the speaker. The other lead of the meter is connected to the chassis. When using these connections, the lowest A.C. scale of the meter must be used. (0 to 10 volts).

The audio output meter can also be connected between the plate of the output tube and the ground of the chassis.

Signal Generator: The radio can be aligned in the cabinet or removed from the cabinet. When adjusting the "I. F." padders, the high side

of the signal generator is connected through a .1 mfd. condenser to the lug on the aerial section of the tuning condenser. The ground or low side of the signal generator is connected to the ground of the receiver.

When aligning the R.F. padders with the radio in the cabinet, a loop is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. If the radio is aligned outside of the cabinet without the loop connected an aerial input transformer, Part No. 76-1134, will be required. Insert the transformer into the external aerial socket on the rear of the chassis. Connect the high output terminal of the signal generator to the terminal on the transformer. Connect the ground terminal to the chassis.

After connecting the aligning indicator, adjust the compensators in the order shown in the tabulation below. Locations of the compensators are shown below. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Lug Aerial Section of Tuning Condenser	455 KC	580 KC	Vol. Max. "Brdcst" Push-button IN	50A, 41A 40B, 40A	
2	Use Loop on Generator or Aerial Trans.	1500 KC	1500 KC	Vol. Max. "Brdcst" Push-button IN	5E, 5	Note A
3	Use Loop on Generator or Aerial Trans.	580 KC	580 KC	Vol. Max. "Brdcst" Push-button IN	5D	Roll Tuning Condenser Note B
4	Use Loop on Generator	Repeat Operation No. 2				
5	Use Loop on Generator	6 MC	6 MC	Vol. Max. "Police" Push-button IN	5C	
6	Use Loop on Generator	15 MC	15 MC	Vol. Max. "S.W." Push-button IN	5B, 5A	Note C

NOTE A—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, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable in this position is shown in the schematic.

NOTE B—When adjusting the low frequency compensator of Range One (Broadcast) or the aerial padders of the high frequency tuning range; the receiver Tuning Condenser must be adjusted (rolled) as follows: First, tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left and again vary the receiver tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until maximum output reading is obtained.

NOTE C—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator (5B) to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second peak is obtained on the output meter. Adjust the compensator for maximum output at this second peak.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the signal generator dial 910 KC above the frequency being used on any high frequency range.

The aerial padder (5A) must be adjusted to maximum by rolling the tuning condenser. If two signal peaks occur when turning the padder, adjust the

maximum output on the first signal peak from the tight position (screw all the way down) of the padder.

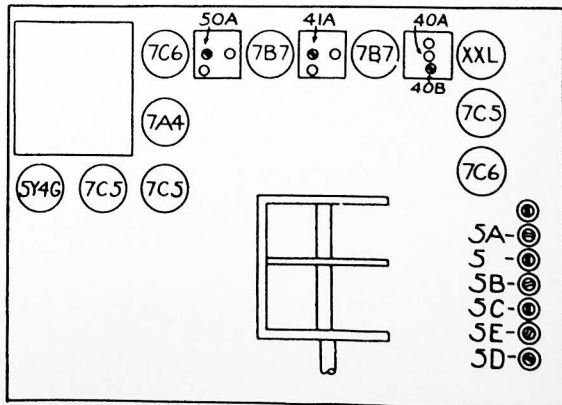


FIG. 4.—LOCATIONS OF COMPENSATORS
TOP OF CHASSIS 42-1010, 42-1011

REPLACEMENT PARTS—MODELS 42-1010, 42-1011

Schem. No.	Description	Part No.	Schem. No.	Description	Part No.	Schem. No.	Description	Part No.
1.	External Aerial Socket	27-6145	49.	Condenser (.0015 mid., 1000 volts)	30-4516	89.	Phono Input Transformer	32-8196
2.	Loop Aerial	76-1398	50.	Third I. F. Transformer	32-3051		Mtg. Screw	W-562F E11
	Terminal Panel	26-9070	50a.	Secondary Compensator (Part of 50)			Mtg. Screw	W-333F E11
	Mtg. Sleeve	26-406FA3	50b.	Mica Condenser (100 mfd.)		90.	Phono Reproducer and Input Transformer Cass. Assembly	41-3637
	Mtg. Screw	W-1127F E11		Part of 50a		91.	Phono Electric Reject Trip (see items 39 and 48 on page 4, in Service Bulletin 402)	
	Spring Washer	24-1140F E7	50c.	Resistor (47,000 ohms) Part of 50	33-317339	92.	Reject Solenoid (see item 36 in Service Bulletin 402)	
3.	Aerial Transformer (Police)	32-3452	50d.	Mica Condenser (100 mfd.)		93.	Phono Motor (see item 16, page 4 in Service Bulletin 402)	
4.	Condenser (S.W.) (consisting of a lug and wire)			Part of 50a	W-1949FA3	94.	Automatic Changer-over Switch (see item 50, page 4, in Radio Service Bulletin 402)	
5.	Compensator (Broadcast Band—Aerial)	31-6433	51.	Resistor (170,000 ohms)	33-47339	95.	Reject Switch (see item 10, page 4, in Radio Service Bulletin 402)	
5a.	Compensator (S.W. Band—Aerial)	Part of 5	52.	Condenser (.01 mid., 600 vlt)	30-4623	96.	Record Changer Power Cable and Plug	
5b.	Compensator (S.W. Band—Oscillator)	Part of 5	53.	Mica Condenser (100 mfd.)	60-110157	97.	Phono Tone Arm (Light Beam Reproducer complete)	35-2518
5c.	Compensator (Voice Band—Oscillator)	Part of 5	54.	Volume Control	33-5481		Push-button Switch and AC Switch Assembly	42-710
5d.	Compensator (Broadcast Band—Osc. Series)	Part of 5	54a.	Mtg. Nut	W-2157FA3		Miscellaneous Parts	W-523FA3
5e.	Compensator (Broadcast Band—Osc. Shunt)	Part of 5	55.	Resistor (100,000 ohms)	33-110339		Bezel (Dial—Models 42-1010, 42-1011W)	54-4128
6.	Condenser (10 mfd.)	60-110157	56.	Condenser (.003 mfd., 1000 volts)	30-4167		Mtg. Screw	W-2073F B26
7.	Resistor (33,000 ohms)	33-333339	56a.	Mica Condenser (100 mfd.)	60-110157		Bezel (Dial—Model 42-1011M)	54-4156
8.	Condenser (.1 mfd., 400 volts)	30-4527	57.	Resistor (1 megohm)	33-50339		Cabinet (Model 42-1011M)	10590A
9.	Resistor (150,000 ohms)	33-113339	58.	Condenser (.01 mid., 400 volts)	30-4572		Cabinet (Model 42-1011W)	10551-A
10.	Resistor (15,000 ohms)	33-315439	59.	Mica Condenser (100 mfd.)	60-110157		Cable and Plug (Power)	10551-B
11.	Condenser (.05 mid., 400 volts)	30-4514	60.	Mica Condenser (100 mfd.)	60-110157		Dial Scale	L-3292
12.	Mica Condenser (500 mfd.)	60-150157	61.	Condenser (.01 mid., 400 volts)	30-4572		Background Reflector	27-5801
13.	Resistor (22,000 ohms)	33-32339	62.	Condenser (.01 mid., 400 volts)	30-4572		Mtg. Spring	28-8990
14.	Resistor (10,000 ohms)	33-310339	63.	Mtg. Nut	W-2157FA3		Push-button Channel	54-5114
15.	Mica Condenser (250 mfd.)	60-125257	64.	Resistor (10 megohms)	33-610339		Mtg. Clamp	36-2331
16.	Mica Condenser (75 mfd.)	20-037517	65.	Resistor (220,000 ohms)	33-423339		Jewel (42-1011M Cabinet)	27-4777
17.	Phono Reproducer Light Control Mica Condenser (500 mfd.)	33-5435	66.	Resistor (47,000 ohms)	33-347339		Knob (Turning Volume, Tone—Model 42-1011M)	54-4154
18.	Oscillator Transformer (Reproducer Light)	32-3418	67.	Resistor (1 megohm)	33-510339		Knob (Push-button—Model 42-1011M)	54-4155
19.	Mtg. Clip	28-5002	68.	Condenser (.01 mid., 400 volts)	30-4572		Knob (Turning Volume, Tone—Models 42-1010, 42-1011W)	54-4105
20.	Oscillator Transformer (S.W.)	28-5002	69.	Condenser (.01 mid., 400 volts)	30-4572		Knob (Push-button—Models 42-1010, 42-1011W)	54-4105
21.	Mica Condenser (2500 mfd.)	60-225124	70.	Resistor (470,000 ohms)	33-417339		Spring Assembly	76-1294
22.	Oscillator Transformer (Police)	32-3418	71.	Resistor (170,000 ohms)	33-47339		Neon Lamp	27-6174
23.	Mtg. Clip	28-5002	72.	Resistor (470,000 ohms)	33-47339		Rubber Corner (Mtg. Chassis)	27-4571
24.	Mica Condenser (115 mfd.)	20-011517	73.	Resistor (356,000 ohms)	33-336339		Screw (Chassis Mtg.)	W-1355FA3
	Tuning Condenser	31-2603	74.	Condenser (.001 mfd., 1000 volts)	30-4601		Socket (Rectifier tube)	27-6177
	Drive Cord (Tuning Condenser)	24-9251	75.	Audio Output Transformer	32-9191		Socket (Lokalt tubes)	27-6177
	Spring	31-2676		Speaker—Early Production	36-1524		Tab (On-off)	27-5742
	Drive Cord (Pointer)	24-9251		Speaker—Later Production	36-1565		Tab (Television)	27-5779
	Spring	24-9252		Cone Assembly (For Speaker 36-1524)	36-4178		Tab (Broadcast)	27-5739
	Drive Drum	76-1293		Cone Assembly (For Speaker 36-1565)	36-4178		Tab (Police)	27-5748
	Mtg. Grommet	27-4596		Cable	41-3656		Tab (S.W.)	27-5740
	Mtg. Screw	W-2002FA3		Mtg. Grommet (Speaker)	27-4596		Tab (Phone)	27-5750
	Mtg. Sleeve	56-1505		Mtg. Washer	28-3320		Tab Cover	40-9683
	Spring Washer	26-6168		Mtg. Nut	31-2141		Wiring Panel (2 lug)	38-6323
	"C" Washer	24-2011		Mtg. Sleeve	56-1324		Wiring Panel (3 lug)	38-6369
25.	Oscillator Transformer (Broadcast)	32-3742		Home Recording Socket	27-6179		Wiring Panel (4 lug)	38-9007
	Mtg. Screw	W-1355FA3		Field Coil (Replace Speaker 36-1524 or 36-1565)	27-6182		Washer (Chassis Mtg.)	28-5114
26.	Mica Condenser (375 mfd.)	20-037517	76.	Bias Resistor (10-20 120 ohms)	33-3417			
27.	Push-button Padder (900 to 1600 KC)	31-6139	77.	Electrolytic Condenser (.18 mfd., 475 volts)	30-2517			
27a.	Push-button Padder (500 to 1500 KC)	Part of 27	78.	Power Transformer (115 volts, 60 cycles)	32-9204			
27b.	Push-button Padder (650 to 1300 KC)	Part of 27	79.	Condenser (.01-.01 mfd.)	3903-00G			
27c.	Push-button Padder (600 to 1200 KC)	Part of 27	80.	Bin Light Switch and Cable	76-1390			
27d.	Push-button Padder (650 to 1000 KC)	Part of 27	81.	Mtg. Screw	W-1960F E11			
	Mtg. Screw	W-2157FA3	82.	Bin Lamp	34-2484			
28.	Push-button Oscillator Transformer (900 to 1600 KC)	32-3779	83.	Cable and Socket	41-3634			
28a.	Push-button Oscillator Transformer (650 to 1500 KC)	32-3779	84.	Dial Lamps	76-1295			
28b.	Push-button Oscillator Transformer (650 to 1300 KC)	32-3779	84a.	Resistor (10 ohms, Jewel light model 42-1011 only)	33-010430			
28c.	Push-button Oscillator Transformer (600 to 1200 KC)	32-3780		Socket Assembly (Jewel Light)	76-1392			
28d.	Push-button Oscillator Transformer (540 to 1000 KC)	32-3780						
	Mtg. Nut	32-3780						
	Irene Core	56-6100						
	Cup	28-6936						
29.	Mica Condenser (.115 mfd.)	20-011517						
30.	Short Wave Band Aerial Shunt Transformer	32-3725						
31.	Police Band Aerial Series Transformer	32-3854						
32.	Electrolytic Condenser (8 mfd., 475 volts)	30-2535						
32a.	Electrolytic Condenser (8 mfd., 475 volts)	Part of 32						
	Mtg. Clamp	56-1466						
33.	Resistor (15,000 ohms, 1 watt)	33-315439						
34.	Resistor (2.2 megohms)	33-52139						
35.	Condenser (.01 mfd., 400 volts)	30-4572						
36.	Mica Condenser (250 mfd.)	60-125257						
37.	Resistor (4700 ohms)	33-247339						
38.	Condenser (.05 mfd., 400 volts)	30-4514						
39.	Resistor (4700 ohms)	33-247339						
40.	Condenser (.05 mfd., 400 volts)	30-4519						
41.	First I. F. Transformer	32-3742						
42.	Secondary Compensator, Part of 40	30-1021						
43.	Secondary Compensator, Part of 40	W-1949FA3						
44.	Second I. F. Transformer	32-3850						
45.	Secondary Compensator, Part of 41	32-3850						
46.	Mtg. Nut	W-1949FA3						
47.	Resistor (330 ohms)	33-133339						
48.	Condenser (.05 mfd., 200 volts)	30-4519						
49.	Resistor (100,000 ohms)	33-410339						
50.	Resistor (220,000 ohms)	33-423339						
51.	Electrolytic Condenser (10 mfd., 25 volts)	30-2500						
52.	Resistor (3300 ohms)	33-233339						
53.	Resistor (470,000 ohms)	33-447339						

FIG. 3.—LOCATIONS OF PARTS—UNDER CHASSIS.

PHONOGRAPH REPRODUCER ADJUSTMENTS

To reproduce the sound from a record, the light beam of the reproducer must be carefully positioned on the light sensitive cell. If the light beam is not carefully set, the sound reproduction will be distorted, weak or, if the light beam is completely on or off the cell, the phonograph will be silent. If any of these conditions exist, the following adjustment procedure should be made: NOTE—These adjustments should be made with the power line voltage at 117 volts A.C.

A. ADJUSTING WIDTH OF LIGHT BEAM

To make this adjustment push the lamp socket assembly into its holder until a clear image of the lamp filament appears on the light cell. The socket should then be slightly pushed in beyond this point until the rectangular spot of light is 5/32" in width. The socket assembly is now rotated so that the spotlight is vertical.

B. POSITIONING THE LIGHT BEAM

To position the light beam on the light cell, turn the adjusting screw at the lower left side of the reproducer until the spot is half on the cell and half on the metal frame surrounding the cell.

C. ADJUSTING INTENSITY OF LAMP

When shipped from the factory, the lamp of the reproducer is adjusted for best operating efficiency. The intensity of the light from the lamp is adjusted by Compensator No. 17 located on the radio chassis. Under ordinary circumstances, an adjustment will not be necessary. When replacing the reproducer or lamp, however, it may be necessary to readjust the light intensity. In this case the compensator is adjusted as follows:

- 1. Turn volume control on full and play a record.
- 2. While the record is playing, turn Compensator 17 in the direction necessary to obtain the best operating point without distortion. By turning the compensator the strength of the pickup output is increased or decreased.

D. INSTALLING NEW LAMP

When installing a new lamp in the socket, there are two positions in which the lamp can be inserted. Ordinarily, either of these positions can be used. In some cases, however, due to the lamp filament being off center, the lamp must be inserted in the position that gives the best centering of the spot of light on the vibrating mirror.