

Radio-Phonograph Models

42-1008, Code 121; 42-1009W, Code 121; 42-1009M, Code 121;

SPECIFICATIONS

Models 42-1008 and 42-1009 are Radio-Phonograph combinations consisting of a nine (9) tube superheterodyne radio with electric push-button tuning and an automatic phonograph record changer. These models are similar in design with the exception of the cabinets.

RADIO SECTION

The radio includes six (6) electric push-buttons for automatically tuning stations in addition to manual tuning; two tuning bands; two I.F. stages; variable tone control (combined BASS, and TREBLE); automatic volume control; push-pull pentode audio output stage with screen inversion; LOKTAL TUBES including the XXL noise-reducing converter tube; built-in, variable, low-impedance loop aerial and a twelve (12) inch dynamic speaker.

INTERMEDIATE FREQUENCY: 455 K.C.

TUNING BAND FREQUENCIES: 540 to 1720 K.C.; 9 to 15.5 M.C.

POWER SUPPLY: 115 volts, 50 or 40 cycle A.C., Consumption Watts. These models are shipped for operation on a 115-volt, 60-cycle, A.C. power supply. To operate on a 115-volt, 50-cycle current, the phonograph motor must be changed to

PHILCO TUBES USED: Nine; one 7C5, oscillator; one XXL, converter; two 7B7, I.F. amplifiers; 7C6, 2nd detector, 1st audio; 7C6, Phonograph pre-amplifier; two, 41 audio output, and a 6X5G, Rectifier.

ELECTRIC PUSH-BUTTON TUNING

The push-button tuning mechanism consists of six (6) push buttons, five buttons are used for selecting standard broadcast stations and one push button for the power control (ON-OFF). The procedure for adjusting the push buttons to stations is covered below.

PHONOGRAPH SECTION

The phonograph section of each model consists of an automatic record changer which plays twelve 10-inch or ten 12-inch records at one loading; the Philco Light-Beam Reproducer with a floating jewel needle which reproduces sound from a light beam; variable two speed motor (39½ and 78 RPM) with Neon speed indicator on turntable, and a phonograph amplifier stage for operation through the push-pull audio output tubes of the radio. Provisions are also provided on the automatic record changer and radio chassis for installation of the Philco Home Recording Unit, Model H.R.2, Part No. 45-2932. The home recording unit can be obtained from your Philco Distributor with complete instructions for installation and operation.

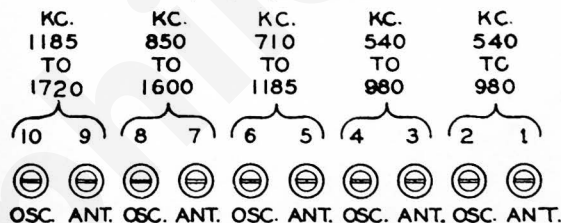
CABINET DIMENSIONS:	Height	Width	Depth
Model 42-1008—	38"	29¾"	15½"
" 42-1009W—	36"	32¾"	14¾"
" 42-1009M—	36"	32¾"	14¾"

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

Select five of the most popular stations received in the locality. Insert the station call letters into the spaces on 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 on the right. 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 follows:



Looking at the front of the cabinet, the second button on the left is adjusted by adjusting screws No. 1 and 2. The next push button by adjusting screws No. 3 and 4, and the remaining push buttons in order.

1. Press in "Off-On" push button, turn "Bands" knob to "Broadcast."
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 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. Turn "Bands" knob to "Push button" position. Using the insulated screw driver, turn the No. 2 "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. 2 "Osc." and No. 1 "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.

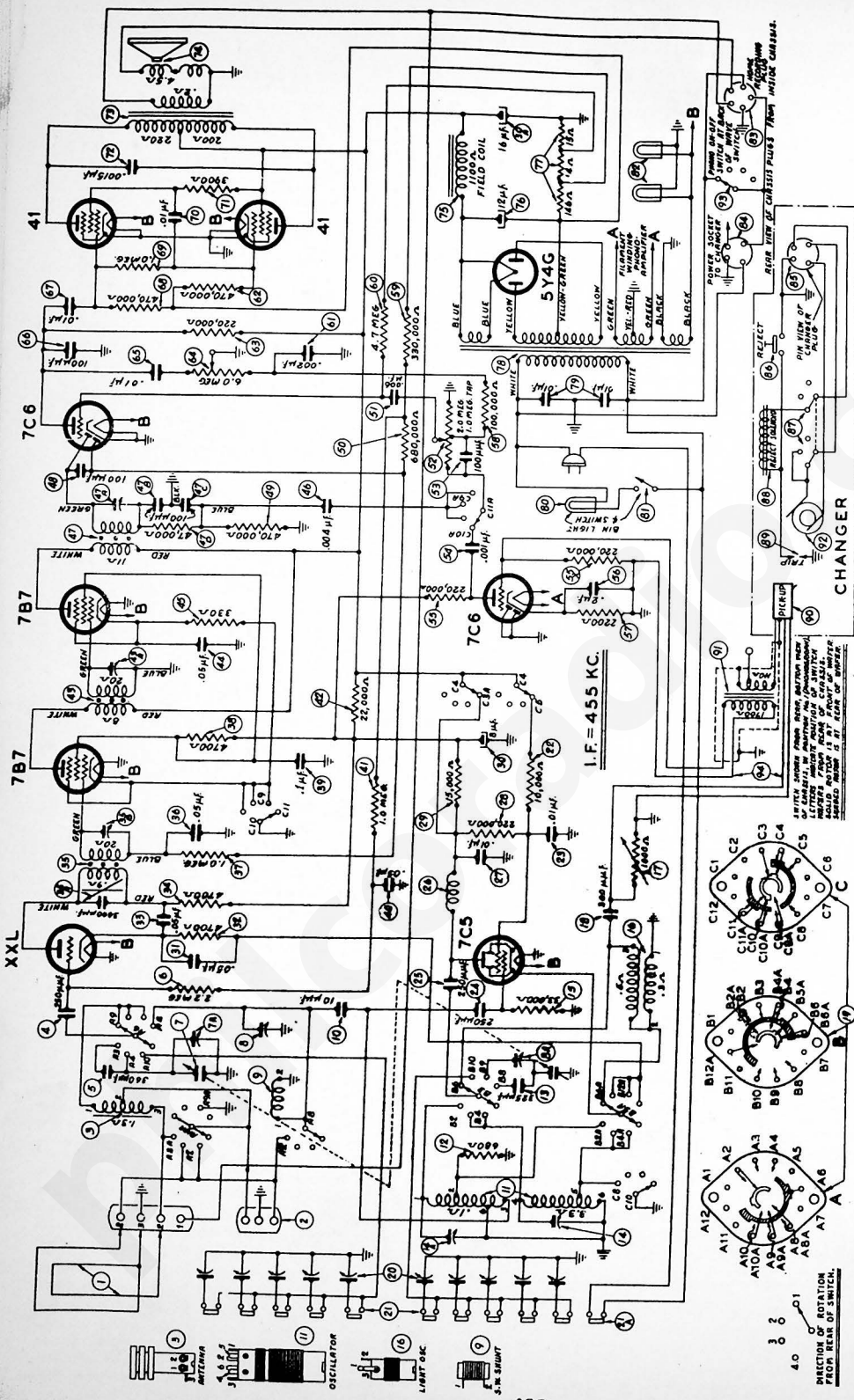


Fig. 1. Schematic Diagram Models 42-1008, code 121; 42-1009, code 121

TUBE SOCKET VOLTAGES

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—range switch broadcast.

Tube	Location	Radio Position	Photo Position	D.C. Voltage
7C5 Osc.	Plate	200	110	200
7C5 Osc.	Screen	110	2/2	110
7C5 Osc.	Bias (Grid Leak)	2/2	75	75
XXL 1st Det.	Plate	80	180	80
XXL 1st Det.	Bias (Cathode)	19	19	19
7C6 Preamp.	Tube	7C6 Preamp.		
41 Output (Phase inverter)	Plate	210	180	210
41 Output	Screen	200	180	200
41 Output	Plate	210	190	210
41 Output	Screen	215	195	215
5Y4G Rectifier	Tube	5Y4G Rectifier		
5Y4G Rectifier	Plate	35	65	35
5Y4G Rectifier	Screen	210	180	210
5Y4G Rectifier	Plate	200	180	200
5Y4G Rectifier	Screen	210	190	210
5Y4G Rectifier	Plate	215	195	215
41	Tube	41		
41	Location	41		
41	Radio Position	41		
41	Photo Position	41		
41	D.C. Voltage	41		
7B7	Tube	7B7		
7B7	Location	7B7		
7B7	Radio Position	7B7		
7B7	Photo Position	7B7		
7B7	D.C. Voltage	7B7		
7C6	Tube	7C6		
7C6	Location	7C6		
7C6	Radio Position	7C6		
7C6	Photo Position	7C6		
7C6	D.C. Voltage	7C6		
41	Tube	41		
41	Location	41		
41	Radio Position	41		
41	Photo Position	41		
41	D.C. Voltage	41		

REPLACEMENT PARTS — MODELS 42-1008, 42-1009

Schm. No.	Description	Part No.	Schm. No.	Description	Part No.	Schm. No.	Description	Part No.
1.	Loop Aerial (42-1008)	76-1345	53.	Mica Condenser (100 mmfd.)	86-110157	93.	Phonograph Power Switch	
	Loop Aerial (42-1009)	76-1337	54.	Condenser (.001 mfd., 600 volts)	38-4820		Cabinet (Mounted on 19)	42-1715
	Sleeve (Loop Mtg.)	28-3896	55.	Resistor (220,000 ohms)	34-422339	94.	Pickup Light Cable & Inset Cable Assembly	41-3635
	Spring Washer (Loop Mtg.)	28-4198	55X.	Condenser (.2 mfd., 200 volts)	38-4587			
	Washer (Loop Mtg.)	W-151	56.	Resistor (2200 ohms)	33-222339			
	Screw (Loop Mtg.)	W-722	57.	Resistor (100,000 ohms)	34-422339			
	Terminal Panel	38-9078	58.	Resistor (330,000 ohms)	33-433339			
2.	External Aerial Socket	27-6145	59.	Resistor (4.7 megohms)	33-547339			
3.	Aerial Transformer (Broadcast)	32-3784	60.	Resistor (.022 mfd., 600 volts)	33-547339			
	Mtg. Clip	28-5002	61.	Resistor (470,000 ohms)	33-447339			
4.	Mica Condenser (250 mmfd.)	60-125157	62.	Resistor (220,000 ohms)	33-422339			
5.	Mica Condenser (300 mmfd.)	30-1211	64.	Test Control	33-513339			
6.	Resistor (2.2 megohms)	31-2482						
7.	Tuning Condenser	31-522339	65.	Condenser (.004 mfd., 600 volts)	38-4623			
	Drive Cord (Pointer)	31-2502	66.	Mica Condenser (100 mmfd.)	60-110157			
	Spring	28-8913	67.	Condenser (.01 mfd., 400 volts)	38-4572			
	Drive Brum	38-8956	68.	Resistor (470,000 ohms)	33-447339			
	Mtg. Sleeve	28-5665	69.	Resistor (1 megohm)	33-510339			
	Mtg. Screw (Tuning Cond.)	W-2002	70.	Condenser (.01 mfd., 400 volts)	38-4572			
	Tuning Shaft	31-2589	71.	Resistor (3900 ohms)	33-225339			
	Spring Washer	56-1659	72.	Condenser (.0015 mfd., 1000 volts)	30-4616			
	"C" Washer	28-2043	73.	Output Transformer	32-6133			
8.	Compensator (Aerial-SW)	31-5401	174.	Speaker	36-1528-9			
8A.	Compensator (Oscillator—380 K.C.)			Speaker	36-1528-9			
	Part of 8			Cone Assembly (Speaker 36-1528-4)	36-4176			
9.	Aerial Transformer (S.W.)	32-3786		Cone Assembly (Speaker 36-1528-9)	36-4203			
10.	Mica Condenser (10 mmfd.)	60-010137		Speaker Cable	41-3593			
11.	Oscillator Transformer (Brdct.-S.W.)	32-3782		Rubber Grommet (Mtg. Speaker)	27-4596			
	Mtg. Clip	28-5002		W-124	W-124			
12.	Resistor (680 ohms)	33-168336		Washer	28-3320			
13.	Mica Condenser (325 mmfd.)	30-1212		Sleeve	56-2044			
14.	Compensator (Aerial Oscillator)	31-6440	75.	Slide Coil (Replace Speaker 46-1528)	30-2481			
14A.	Compensator (S.W. Oscillator)	31-6442	76.	Electrolytic Condenser (12 mfd., 475 v.)	33-5335			
	Part of 14		77.	Bias Resistor (14, 15, 146 ohms)	32-3239			
15.	Resistor (33,000 ohms)	33-333339	78.	Power Transformer (115 v., 50 cycles)	3903-00G			
16.	Light-Beam Oscillator Transformer	32-3785	80.	Record Changer Compartment Light	34-2484			
	Mtg. Clip	28-5002		Cable and Socket Assembly	41-3657			
17.	Light-Beam Oscillator Control	60-130127	81.	Compartment Light Switch & Cable	76-1383			
18.	Mica Condenser (300 mmfd.)	42-1688	82.	Pilot Lamp (Dial)	34-2219			
19.	Band Switch	W-2157		Socket Assembly (Dial Light)	34-2064			
	Mtg. Nut	31-2590		Pilot Lamp (Band Indicator)	78-1212			
	Spring	28-8953	83.	Socket Assembly (Band Indicator)	33-9607			
20.	Push-Button Compensator Assembly	42-1693		Socket (Home Recording on Chassis)	27-6179			
21.	Push-Button and Power Switch Assy.	42-1693	84.	Changer Power Socket (on Chassis)	27-6182			
21A.	Push-Button Power Switch		85.	Power Cable & Plug (Record Changer)	41-3635			
	Part of 21		86.	Reject Button (Record Changer)	35-2945			
	Mtg. Sleeve	42-1714	87.	Selecter Switch (OFF-Automatic-Manual-Record Changer)	35-2547			
	Mtg. Screw	56-1505			35-2549			
22.	Resistor (10,000 ohms)	W-523	88.	Reject Solenoid	35-2518			
23.	Condenser (.01 mfd., 400 volts)	33-510339	89.	Electric Reject Trip (on Changer)	35-8196			
24.	Mica Condenser (250 mmfd.)	60-125157	90.	Light Beam Reproducer	35-2549			
25.	Mica Condenser (250 mmfd.)	60-125157	91.	Phonograph Input Transformer	35-2518			
26.	Oscillator Plate Check	32-5615		Pushing Lever Assembly	35-2549			
27.	Condenser (.01 mfd., 400 volts)	30-4572		Trip Switch and Test Arm Position Lever Assembly	35-2551			
28.	Resistor (220,000 ohms)	33-422339	92.	Motor (Record Changer, 115 v., 60 cy.)	33-2532			
29.	Resistor (15,000 ohms)	33-513339						
30.	Electrolytic Condenser (8-16 mfd., 50 v.)	30-2480						
30A.	Electrolytic Condenser (16 mfd., 50 v.)							
	Part of 30							
	Mtg. Clamp	56-1848						
31.	Condenser (.05 mfd., 200 volts)	38-4519						
32.	Resistor (4700 ohms)	33-7339						
33.	Condenser (.05 mfd., 400 volts)	30-4518						
34.	Resistor (4700 ohms)	33-247339						
35.	1st I. F. Transformer	32-3623						
	Mtg. Nut	W-1949						
35A.	Primary Compensator (Iron Core)							
	Part of 35							
35B.	Secondary Compensator							
	Part of 35							
35C.	Condenser (3000 mmfd.)							
	Part of 35							
36.	Condenser (.05 mfd., 200 volts)	30-4519						
37.	Resistor (1 megohm)	33-510339						
38.	Resistor (4700 ohms)	33-247339						
39.	Resistor (1 megohm)	30-4527						
40.	Condenser (.05 mfd., 200 volts)	30-4518						
41.	Resistor (1 megohm)	33-510339						
42.	Resistor (22,000 ohms, 1 watt)	33-322439						
43.	2nd I. F. Transformer	32-3623						
	Mtg. Nut	W-1949						
43A.	Secondary Compensator							
	Part of 43							
44.	Condenser (.05 mfd., 200 volts)	30-4518						
45.	Resistor (330 ohms)	33-133336						
46.	Condenser (.004 mfd., 600 volts)	38-4623						
47.	3rd I. F. Transformer	32-3623						
	Mtg. Nut	W-1949						
47A.	Secondary Compensator							
	Part of 47							
47B.	Condenser (100 mmfd.)	60-110157						
47C.	Condenser (100 mmfd.)	60-110157						
47D.	Resistor (47,000 ohms)	33-347339						
48.	Condenser (.100 mmfd.)	30-4527						
49.	Resistor (470,000 ohms)	33-447339						
50.	Resistor (680,000 ohms)	33-468339						
51.	Condenser (.1 mfd., 400 volts)	30-4561						
52.	Volume Control	33-5488						
	Mtg. Nut	W-2187						

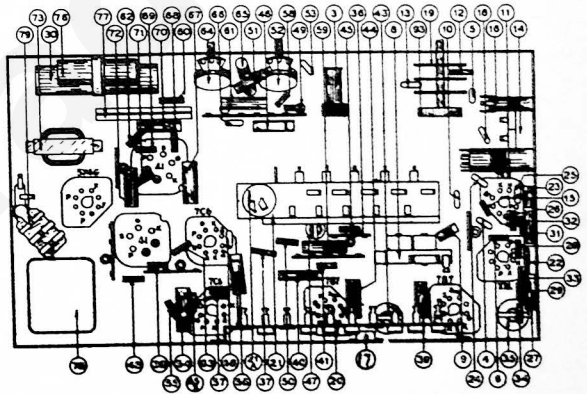


Fig. 2. Locations of Parts—Under Chassis Model 42-1008, 42-1009

LIGHT-BEAM 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 pick-up 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.

ALIGNING R. F. AND I. F. COMPENSATORS MODEL 42-1008, CODE 121; 42-1009W, AND 42-1009M, CODE 121

The following procedure is the same for both models.

EQUIPMENT REQUIRED

1. **SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Model 070.
2. **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.
3. **TOOLS:** Philco Fiber Screw Driver, Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

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: When adjusting the "I. F." padders, the high side of the signal generator is connected through a .1 mfd. condenser to the antenna

section of the tuning condenser. Connect the ground or low side of the generator to the chassis.

When aligning the R. F. padders a loop is made from a few turns of wire and connected to the signal generator output terminals; the signal generator is then placed close to the loop of the radio.

When adjusting the radio outside the cabinet the loop aerial should be placed in approximately the same position around or near the chassis as when assembled.

After connecting the aligning instruments, adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in the figures 3. If the indicating meter pointer goes off scale when adjusting the compensator, reduce the strength of the signal from the generator. Keep volume control of radio at maximum position.

Operations In Order	SIGNAL GENERATOR		RECEIVER			Special Instructions
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Settings	Adjust Compensators In Order	
1	Amt. Section of Tuning Cond. with .1 mfd. Cond.	455 K.C.	Tuning Cond. Closed	Vol. Max. Bands Switch "Brdst" S. W.	35, 35B 43A, 47A	
2	Loop Signal Generator	1720 K.C.	1720 K.C.	Bands Switch "Brdst"	14	Note A
3	Loop Signal Generator	1500 K.C.	1500 K.C.	Bands Switch "Brdst"	7A	
4	Loop Signal Generator	580 K.C.	580 K.C.	Bands Switch "Brdst"	8A	Roll comp. (8A) to "max." Recheck Operation No. 2
5	Loop Signal Generator	1720 K.C.	1720 K.C.	Bands Switch "Brdst"	14	
6	Loop Signal Generator	15 M.C.	15 M.C.	Bands Switch S. W.	14A, 8	Note B

AERIAL CONNECTIONS: The built-in loop aerial system is designed to operate without an outside aerial or ground and to give exceptionally sensitive receiving performance of stations on the standard and short wave frequencies. When operating the radio, however, in steel reinforced buildings and other shielded locations, 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 unit into the socket provided at the rear of the chassis. This aerial can be obtained from your local PHILCO distributors. A ground connection is not required with either type of installation.

NOTE A.—Dial calibration: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, proceed as follows: Turn the tuning condenser to the maximum capacity position (plates fully meshed). With the condenser in this position, set the tuning pointer on the extreme left index line at the low frequency end of the broadcast scale.

NOTE B.—Adjust padder (14A) to the second signal peak from the tight position. Roll padder (8) slowly to maximum on the first peak from tight position.

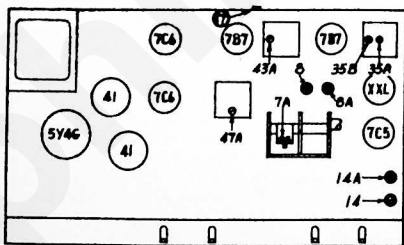


FIG. 3. LOCATIONS OF COMPENSATORS—TOP OF CHASSIS
MODELS 42-1008, 42-1009

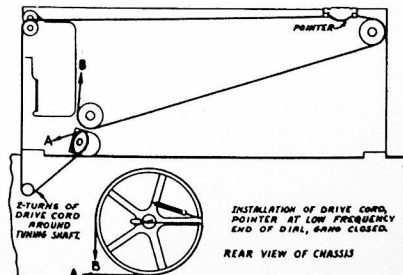


FIG. 4. INSTALLATION OF DRIVE CORDS POINTER AT LOW FREQUENCY END OF DIAL TUNING CONDENSER CLOSED.