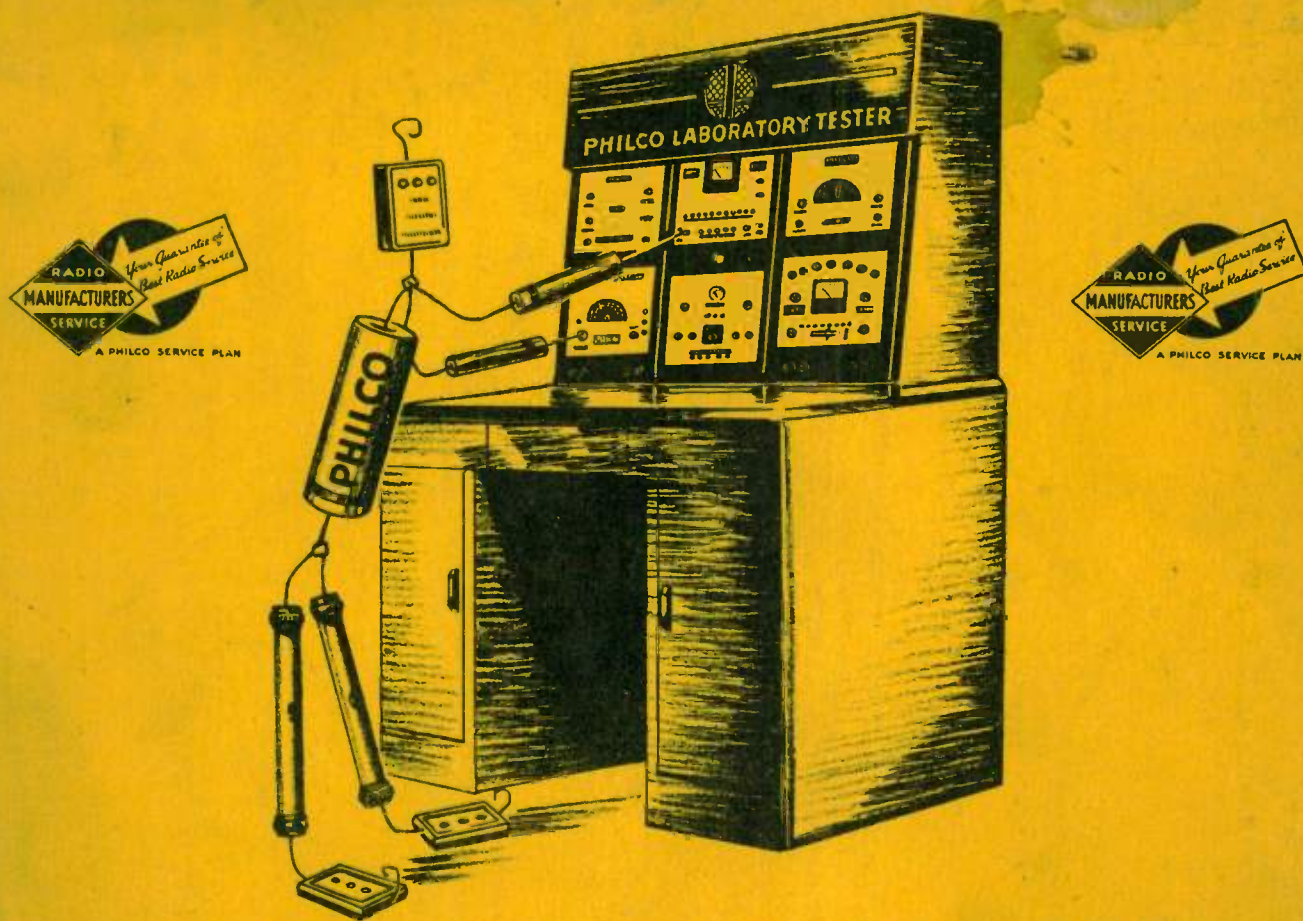


PHILCO 1940 RMS YEAR BOOK

HOME and AUTO RADIOS



Alignment Instructions :- **Schematic Diagrams**
Production Changes :- **Setting Push-Button Tuning**
Phonograph Record Changers :- **Replacement Parts**

Parts and Service Division
PHILCO RADIO and TELEVISION CORPORATION

PHILCO REPLACEMENT PARTS

Many of the parts, such as condensers and resistors used in the models listed in this book are held to much closer tolerance than standard replacement parts.

Genuine Philco replacement parts must be used to obtain satisfactory performance from Philco Receivers.

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R. F. and I. F. ALIGNING INSTRUCTIONS

MODELS TP-20, TP-21, PT-35-36-43, Codes 121-122; and 55-59-67

The same procedure is followed in aligning the compensating condensers in the R. F. and I. F. circuits of any of the above listed models. The procedure for adjusting the push-buttons on models equipped with automatic tuning will be found on page 10.

EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust these radios, a calibrated signal generator such as Philco Model 077 A. C. operated or Model 177 battery operated is required. These signal generators cover a frequency range from 115 to 36000 K. C.

Indicating Device: To obtain maximum signal strength and accurate adjustment of the padders, a vacuum tube voltmeter

or audio output meter should be used. Philco Models 027 and 028 vacuum tube voltmeters are recommended. These testers also contain an audio output meter which may be used as an indicating device.

Aligning Tools: Fibre handle screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

When connecting instruments and adjusting compensating condensers, it will be necessary to remove the chassis from the cabinet.

Audio Output Meter: If an aligning indicator of this type is used, connect it to the plate and screen terminals of the output tube.

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator, make either of the following connections:

1 — 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 to the ground connection of the receiver. In A.C.-D.C. sets the positive (+) terminal of the vacuum tube voltmeter should be connected to (B—) of the receiver. (Cathode 7C6)

2 — An aligning adaptor, Philco Part No. 45-2767, can be obtained from your PHILCO distributor for use 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.

Signal Generator: When adjusting the I. F. padders, the high side of the signal generator is connected through a .004 mfd. condenser to the antenna section of the tuning condenser. Connect the ground or low side of the generator to the chassis. It may be necessary when adjusting A.C.-D.C. models to reverse the power plug to eliminate hum.

The R. F. and oscillator padders are aligned with the high side of the signal generator connected to the antenna of the receiver through a 100 mmfd. condenser.

After connecting the aligning instruments, adjust the compensators on all models in the order as shown in the tabulation below. The first and second I. F. transformers in all models are located on the top and bottom sections of the chassis respectively. The "antenna" and "oscillator" padders are located on the tuning condenser.

Procedure PT-35 and PT-59

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Ant. Section of Tuning Condenser .004 mfd. Dummy	470 K. C.	Tuning Condenser Closed	Vol. Max.	1st and 2nd I. F. Trans.	Press in "Dial" Button on Push-Button Models
2	Ant. Terminal 100 mmfd. Dummy	1720 K. C.	Note A	Vol. Max.	Osc.	Note A
3	Ant. Terminal 100 mmfd. Dummy	1500 K. C.	Note B	Vol. Max.	Ant.	Note B

Procedure TP-20, PT-43 (121, 122)-36-55-67

1	Ant. Section of Tuning Condenser .004 mfd. Dummy	455 K. C.	540 K. C. Tuning Cond. Closed	Vol. Max.	1st and 2nd I. F. Trans.	Press in "Dial" Button on Push-Button Models
2	Ant. Terminal on "Back of Loop" .100 mmfd. Dummy	1600 K. C.	Note A	Vol. Max.	Osc.	Note A
3	Ant. Terminal on "Back of Loop" .100 mmfd. Dummy	1500 K. C.	Note B	Vol. Max.	Ant.	Note B Note C

NOTE A — Turn the tuning condenser to the extreme high frequency position (all plates out of mesh). Insert a .004 (four thousandths) gauge between the stationary and rotor plates of the oscillator condenser (end where both sections enter). If the gauge is not handy, a piece of bond writing paper can be used. After inserting gauge, turn the rotor toward the low frequency end so that both rotor and stator touch gauge. Then remove gauge, being careful not to disturb condenser setting. Adjust "oscillator" padder for maximum output with the 1600 K. C. signal or 1720 K. C. signal indicated in the tabulation.

NOTE B — Turn signal generator to 1500 K. C. and tune receiver tuning condenser for maximum reading on this signal, then adjust the antenna padder for maximum output.

Place set in cabinet so that the tuning arm on the tuning condenser engages the dial pointer on the cabinet. After

placing receiver in the cabinet and it is found that the dial pointer does not track properly with station signals, the dial can be calibrated as follows: Set the signal generator to 900 K. C. and tune receiver until signal shows maximum reading on the output meter. The dial pointer is then set to this signal by inserting a screw driver to the adjustment screw on the tuning condenser pulley. Loosen screw and slightly turn dial so that it reads 600 K. C. then retighten screw. When doing this, however, precaution should be taken so that the tuning condenser is not disturbed while dial is being adjusted and screw is being tightened or loosened.

In Models PT-36 and PT-43, Code 122, the dial pointer is simply pushed onto the tuning condenser shaft, and does NOT require the adjustment as given in the paragraph above.

NOTE C — Model 36 antenna padder must be adjusted with the loop connected and assembled in the cabinet.

R. F. and I. F. ALIGNING INSTRUCTIONS

MODELS TH-9, TH-18, TH-22, PT-25 (121-122); PT-27 (121-122) PT-29-31-37-38-39-45-47-49-51-53

The same general procedure is followed in aligning the compensating condensers in the "R.F." and "I.F." circuits of any of the above listed models. The procedure for adjusting the push-buttons on models equipped with automatic tuning will be found on page 10.

EQUIPMENT REQUIRED

SIGNAL GENERATOR: Philco Model 077, A. C. operated or 177 battery operated should be used.

ALIGNING INDICATOR: Philco Models 027 and 028 Vacuum Tube Voltmeters and Circuits Testers which contain an audio output meter are recom-

mended. Either the vacuum tube voltmeter or the audio output meters may be used as an aligning indicator and are connected as given under "Connecting Aligning Instruments".

TOOLS: Fibre handle aligning screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

AUDIO OUTPUT METER: If an aligning indicator of this type is used, connect it to the plate and screen terminals of the output tube.

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an aligning indicator, make either of the following connections:

1—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 (B—) of the receiver. (Cathode 7C6)

2—An aligning adaptor, Philco Part No. 45-2767 can be obtained from your Philco Distributor for use 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.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .004 mfd. condenser to the antenna section of the tuning condenser. Connect the ground or low side of the generator to the chassis. It may be necessary when adjusting these models to reverse the power plug to eliminate hum.

The R. F. and oscillator padders are aligned with the high side of the signal generator connected to the antenna of the receiver through a 100 mmfd. condenser.

After connecting the aligning instruments, adjust the compensators on all models in the order as shown in the tabulation below. The first and second I. F. transformers in all models are located on the top and bottom sections of the chassis respectively. The "antenna" and "oscillator" padders are located on the tuning condenser.

Models PT-25-27-29-31-39-45-47-49-51

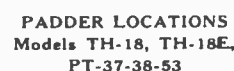
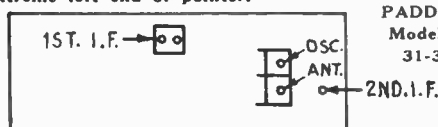
Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Ant. Section of Tuning Condenser	470 K. C.	540 K. C. Tuning Cond. Closed	Vol. Max.	1st & 2nd I. F.	Push in "Dial" button on push-button models
2	Ant. Ter.	1700 K. C.	1700 K. C.	Vol. Max.	"Osc."	Note A and B
3	Ant. Ter.	1500 K. C.	1500 K. C.	Vol. Max.	"Ant."	

Models TH-18, TH-18E, PT-37-38-53

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Ant. Section of Tuning Condenser	455 K. C.	Tuning Cond. Closed	Vol. Max. Range Sw. Brdcast.	1st & 2nd I. F.	
2	Aerial with 400 ohm Dummy	18 M. C.	18 M. C.	Range Sw. Brdcast.	3B, 3A on Tuning Condenser	
3	Aerial with 100 mmfd Dummy	1500 K. C.	1500 K. C.	Range Sw. Brdcast.	13 Shunt Padder	
4	Aerial with 100 mmfd Dummy	580 K. C.	580 K. C.	Range Sw. Brdcast.	13 Series Padder	Roll Tuning Conds. when Adjusting Padder
5	Aerial with 100 mmfd Dummy	1500 K. C.	1500 K. C.	Range Sw. Brdcast.	13 Shunt Padder	

NOTE A—DIAL CALIBRATION: The dial pointers are adjusted by closing the tuning condenser (plates fully meshed) and setting the pointers slightly below the top edge of the brown center line at the extreme left end of pointer.

NOTE B—The Police Band on Models PT-29-31-49 and 51 is automatically adjusted when the "Brdcast" Band is adjusted.



R. F. and I. F. ALIGNING INSTRUCTIONS

MODELS TH-14, TH-15, TH-16, TH-17, PT-26-28-33-41 (121-122); 46-48-50-57, PT-61 (121-122); and 65-66-69 (121-122)

The same general procedure is followed in aligning the compensating condensers in the "R.F." and "I.F." circuits of any of the above listed models. The procedure for adjusting the push-buttons on models equipped with automatic tuning will be found on page 10.

EQUIPMENT REQUIRED

SIGNAL GENERATOR: Philco Model 077, A. C. operated or 177 battery operated should be used.

ALIGNING INDICATOR: Philco Model 027 and Model 028 Vacuum Tube Voltmeter and Circuit Tester which also contain an audio output meter

are recommended. Either of the vacuum tube voltmeter or the audio output meters may be used as an aligning indicator and are connected as given under "Connecting Aligning Instruments".

TOOLS: Fibre handle aligning screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

AUDIO OUTPUT METER: If an aligning indicator of this type is used, connect it to the plate and screen terminals of the output tube.

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an aligning indicator, make either of the following connections:

1—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 (B—) of the receiver. (Cathode 7C6)

2—An aligning adaptor, Philco Part No. 45-2767 can be obtained from your Philco Distributor for use in connecting the vacuum tube voltmeter. To use the adaptor, remove the second 7C6 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.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .004 mfd. condenser to the antenna section of the tuning condenser. Connect the ground or low side of the generator to the chassis. It may be necessary when adjusting AC-DC models to reverse the power plug to eliminate hum.

The R. F. and oscillator padders are aligned with the high side of the signal generator connected to the antenna terminal on the loop of the receiver through a 100 mmfd. condenser.

After connecting the aligning instruments, adjust the compensators on all models in the order as shown in the tabulation below. The first and second I. F. transformers in all models are located on the top and bottom sections of the chassis respectively. The "antenna" and "oscillator" padders are located on the tuning condenser.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Ant. Section of Tuning Condenser .004 mfd. Dummy	455 K. C.	540 K. C. Tuning Cond. Closed	Vol. Max.	1st and 2nd I. F. Trans.	Push in "Dial" Button on Push-Button Models
2	Ant. Terminal on loop 100 mmfd. Dummy Note B	1500 K. C.	1500 K. C.	Vol. Max.	"Osc." "Ant."	Note A

NOTE A—DIAL CALIBRATION: The dial pointers are adjusted by closing the tuning condenser (plates fully meshed) and setting the pointers slightly below the top edge of the brown center line at the extreme left end of pointer.

NOTE B—Models PT-26, PT-28, PT-46, PT-48: Aerial padder must be adjusted with the loop connected and the set assembled in cabinet. The aerial connection on these models is the wire at the rear of the tuning condenser which is attached to the chassis. Remove wire lug from chassis and connect the 100 mmfd. condenser.

SETTING AND OPERATING ELECTRIC PUSH-BUTTON TUNING

In order to adjust the electric automatic tuning push-button accurately for reception of broadcast stations, a signal generator, such as Philco Model 077, and a padding screw driver, Philco Part No. 45-2610, are required. With this equipment at hand, proceed as follows: —

1 — Select five (5); seven (7) or eight (8) of the most popular stations received in the locality (depending on the number of push-buttons on the model to be adjusted). Insert the station call letters into the windows above the buttons. The station with the lowest frequency is placed in the first button on the left and the highest frequency station in the extreme right button. Each push-button is adjusted by two set screws. These set screws are located on the rear of the chassis or push-button unit. Each set of screws is numbered and covers a frequency range as follows: —

FREQUENCY RANGES OF PUSH-BUTTONS

Models 40-100, 40-110		Models 40-195, 40-200		Models 40-160, 40-165	
Push-Button	Frequency Range	Push-Button	Frequency Range	Push-Button	Frequency Range
1	540-1030 K. C.	1, 2, 3	540-1030 K. C.	1	540-1000 K. C.
2	650-1100 K. C.	4, 5	670-1160 K. C.	2	650-1100 K. C.
3	650-1100 K. C.	6, 7, 8	900-1600 K. C.	3	740-1300 K. C.
4	740-1240 K. C.			4	900-1500 K. C.
5	1160-1600 K. C.			5	1100-1600 K. C.
6	Dial				

Models 40-124, 40-125, 40-135, 40-145, 40-503, 40-506, 40-507, 40-525 (121), 40-526 (121)		Models 40-150, 40-155, 40-180, 40-185, 40-190, 40-508, 40-509	
Push-Button	Frequency Range	Push-Button	Frequency Range
1	540-1030 K. C.	1, 2, 3	540-1060 K. C.
2	650-1100 K. C.	4, 5	650-1110 K. C.
3	740-1240 K. C.	6, 7	920-1600 K. C.
4	900-1470 K. C.		
5	1160-1600 K. C.		
	Dial		

Looking at the front of the cabinet, the first button on the left is adjusted by "Osc." and "Ant." set screws No. 1; the next push-button by "Osc." and "Ant." set screws No. 2, and the remaining push-buttons in order.

2 Turn the receiver "on" and set the "Tuning Range Selector" or push-button for "Dial" tuning.

3 Set up the Model 077 signal generator about 3 feet from 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".

4 Manually tune in on the radio the first station to be set up; (usually No. 1 push-button first). After doing this, set the indicator of the 077 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 that point.

5 Turn the receiver tuning range selector to "push-button" and press in No. 1 button. (Models with a tuning range selector, simply press in push-button to be set up). Using the insulated screw

driver, turn the No. 1 "Osc." screw until the broadcast station identified by the signal generator is heard; then turn signal generator indicator off the frequency of the station.

6 — Readjust No. 1 "Osc." and "Ant." screws until the station is heard clearly and distinctly. The adjustment of No. 1 push-button is then complete. After setting up the first station the same procedure as outlined above is used for the remaining stations.

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 on page 10 under "Using Vacuum Tube Voltmeter for Aligning Compensators and Adjusting Push-Buttons."

When any of these models are to be set up to receive the sound of a television program, tuned in by special type Philco television sets, or if they are to be used in conjunction with a Philco Record Player, push-button No. 1 should be used. To adjust the push-button on these instruments, the same procedure as outlined above is used.

Further details for setting up this receiver for operation with Philco Television sets and Record Players are supplied with the instruments.

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 padders 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 padders 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 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 h 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 wale will be heard; leave the indicator at this point. Press the push button being set up. With a padding stick, turn the h button oscillator screw until the broadcast station identifies 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 pad for maximum deflection on the vacuum tube voltmeter. At 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 2 and 3 is followed with the exception that the push button is not depressed. The signal generator and receiver dials are set to the frequency desired or specified in the aligning procedure given for the various radios in this manual. The R.F. 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.

PHILCO 1940 HOME RADIO SPEAKERS

With Replacement Cones and Output Transformers

Listed below are the Philco speakers, replacement cones and output transformers used in the 1939 and 1940 Philco home and auto radio line.

In some models two or more different type speakers are used. These speakers, however, are interchangeable and will have the same part number, with the exception of a suffix number -1, -2, etc., added to the part number. The cone assemblies of these speakers are not interchangeable.

It is important when ordering cone assemblies that the correct part number, as indicated on these pages, be specified.

Speaker	Used In Models	Replacement Cones	Output Transformer
0110	TH-1	36-4130	43118
0112-9	TH-3	36-4119	
6-1266-3	905	36-4146	32-7927
6-1410-1	40-110B	36-4093	32-8066
	39-80B, 39-85B	36-4093	32-7984
6-1426-1	39-17T, 39-19T	36-4083	32-7980
6-1426-3	39-17T, 39-19T	36-4085	32-7980
6-1427-1	905	36-4096	32-7927
6-1435-3	39-70B	36-4090	32-7995
6-1436-1	39-80XF, 39-85XF	36-4094	32-7984
	40-105K, 40-110K	36-4094	32-8066
6-1437-2	39-25XF, 39-30XX	36-4088	32-7978
6-1437-4	39-30XX, 39-25XF	36-4118	32-7978
6-1438-2	39-35	36-4089	32-7978
6-1438-4	39-35XX, 39-31XF, 39-36XX	36-4117	32-7978
6-1439-2	39-25T, 39-30T	36-4087	32-7978
6-1439-8	39-25T, 39-30T	36-4112	32-7978
6-1440-3	39-17F, 39-7CS	36-4086	32-7980
6-1441-2	922 Auto	91-0025	32-8000
6-1442-3	39-70B, 39-75T	36-4090	32-7995
6-1444-1	39-18T	36-4083	32-7986
6-1444-3	39-18T	36-4085	32-7986
6-1445-3	39-18F	36-4086	32-7986
6-1447-3	39-70F, 39-75F	36-4092	32-7995
6-1447-8	39-70F, 39-75F	36-4116	32-7995
6-1449-3	39-19F	36-4086	32-7980
6-1450-2	39-40XX, 39-45XX	36-4089	32-7981
	39-55RX		32-7997
	39-116RX		32-7996
	40-216, 40-205, 40-215RX, 40-516	36-4089	32-7997
	40-510		
	40-195, 40-200	36-4089	32-7981
	40-508, 40-509	36-4089	32-8070
6-1450-4	39-55RX	36-4111	32-7997
	40-508, 40-509		32-8070
	39-116RX		32-7996
6-1451-3	39-71T	36-4090	32-8036
6-1452-2	39-720T	36-4103	32-8018
	40-725T, 40-725, Code 251, 40-2725T		

PHILCO 1940 HOME RADIO SPEAKERS

With Replacement Cones and Output Transformers

Speaker	Used In Models	Replacement Cones	Output Transformer
36-1453-4	39-750T	36-4104	32-3019
	40-755T, Code 121		32-8048
36-1455-3	39-744T	36-4107	32-8026
	39-751T		32-3028
	40-748T		32-3026
	40-756T		32-3072
36-1456-3	39-744XX, 39-751XX	36-4108 (39-744) (39-751)	32-3036 32-8038 32-8033 32-802
	40-748XX		32-802
	40-756XX, Code 121		32-800
36-1459-2	39-770T	36-4106	32-800
36-1460-3	39-750XX, 39-770XX	36-4105 (39-750XX) (39-770XX)	32-800 32-800 32-800
	40-755XX		32-800
	40-780XX, 40-755XX, Code 251		32-800
36-1461-1	TH3-CB, TH3-CB1, 39-7C	36-4114	32-800
36-1461-2	39-6, 39-7	36-4095	32-800
36-1469-1	TH-4, TP-4, TP-5, TP-10		
	40-115C, 40-120, 40-124, 40-125, 40-501, 40-502	36-4115	32-800
36-1469-2	TH-18, TP-20, TP-21, PT-25 PT-26, 27, 29, 31, 33, 35, 36, 39, 41, 43, 45, 46, 47, 49, 50, 53, 55, 57, 59, 61, 65, 67, 69, 40-115, 40-120, 40-124, 40-125, 40-501, 40-502		
		36-4132	32-800
36-1469-9	TH-4, TH-5	36-4113	32-800
	40-115C, 40-120, 40-124, 40-125, 40-501, 40-502		
36-1471-3	39-25CS	36-4086	3279
36-1472-3	39-711	36-4110	32-800
	40-715T		32-800
36-1473-3	105	36-4120	32-790
36-1476-3	40-90	36-4121	32-800
36-1477-3	40-95, 40-110	36-4121	32-800
36-1478-2	40-130, 40-140, 40-135, 40-145	36-4126	32-800
36-1478-3	40-130T, 40-140T, 40-135T 40-145T	36-4085	32-800
36-1478-4	40-130, 40-135, 40-140, 40-145	36-4134	32-800
36-1479-2	40-180, 40-185, 40-190	36-4089	32-800
36-1479-4	40-180, 40-185, 40-190	36-4117	
36-1480-3	40-158F	36-4086	32-800
	40-160, 40-165, 40-170, 40-525	36-4086	32-800
36-1480-4	40-158, 40-160, 40-165 40-170, 40-525, 40-526	36-4136	32-800 32-800
36-1481-3	40-81, 40-82	36-4121	32-800
36-1482-3	40-74, 40-88	36-4121	32-800
36-1483-2	40-150T, 40-155T	36-4127	32-800
36-1483-3	40-150T, 40-155T	36-4124	32-800
36-1483-4	40-150, 40-155	36-4135	32-800
36-1484-2	40-503	36-4126	32-800
36-1484-3	40-503	36-4137	32-800
36-1485-2	40-2780T	36-4106	32-800
36-1486-2	40-710C, 40-2710	36-4126	32-800
36-1487-2	40-506	36-4088	32-800
36-1487-3	40-506	36-4128	32-800
36-1488-3	40-95F, Code 122, 40-100F, Code 122	36-4129	32-800
36-1489-2	40-507	36-4089	32-800
36-1491-2	40-527	36-4133	32-800
36-1491-4	40-527	36-4147	32-800
	40-165K	36-4147	32-800

MODELS PT-25, PT-27, Codes 121-122; and PT-39

SPECIFICATIONS

CIRCUIT DESIGN: Models PT-25, Codes 121 and 122, PT-27, Codes 121 and 122, and PT-39 are five tube superheterodyne radios covering a frequency range from 540 to 1720 K. C. These models are similar with the exception of the cabinets. Codes 121 and 122 of Models PT-25 and PT-27 differ also in the type of cabinet used.

The circuit diagram and parts list shown below applies to all models.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: The receivers are designed for operation on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.)

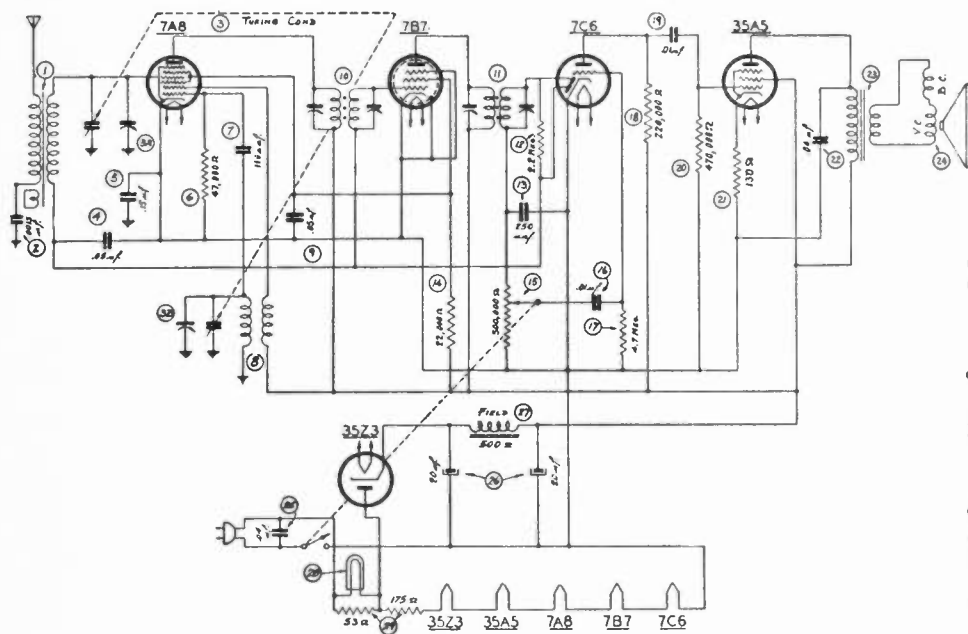
Note—If no sound is heard on D. C. circuits after the tubes

are sufficiently heated, reverse the plug of the cable in the outlet. If a slight hum is heard when using an A. C. power supply, the power plug should also be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception in apartment houses, hotels or steel reinforced buildings, the Philco Utility Aerial, Part No. 40-6384 is recommended. A ground is not necessary on these models.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 7.



PRODUCTION CHANGES

MODELS PT-25, PT-27

The cabinet, dial and several parts were changed on these models. The code number was also changed from 121 to 122. These changes are as follows.

MODEL PT-25

	Code 121	Code 122
Cabinet	10364A	10455A
Baffle and Cloth Assembly	40-6526	40-6520
Dial	27-5553	27-5572
Tuning Condenser	31-2427	31-2447
Instructions	39-6568	39-6568A

MODEL PT-27

	Code 121	Code 122
Cabinet	10364B	10455B
Baffle and Cloth Assembly	40-6526	40-6520
Dial	27-5553	27-5572
Instructions	39-6568	39-6568A
Knob Assembly	27-4810	27-4950
Tuning Condenser	31-2427	31-2447

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3151	22	Tubular Condenser (.04 mf., 400 V.)	30-41198		Cone Assembly	
2	Tubular Condenser (.0015 mf., 200 V.)	30-45558	23	Output Transformer			(for Speaker 36-1469-9)	36-4113
3	Tuning Condenser (Code 121)	31-2427		Part of Speaker No. 36-1469-1	32-8047		(for Speaker 36-1469-1)	36-4115
	Tuning Condenser (Code 122)	31-2447		Part of Speaker No. 36-1469-2	32-8044		(for Speaker 36-1469-2)	36-4132
4	Tubular Condenser (.05 mf., 200 V.)	30-45198	24	Speaker	36-1469		Cable (Power)	L-3199
5	Tubular Condenser (.15 mf., 400 V.)	30-45058	25	Tubular Condenser (.04 mf., 400 V.)	30-41198		Dial (PT-25, PT-27, PT-39,	
6	Resistor (47,000 ohms, 1/4 watt)	33-347154	26	Electrolytic Condenser			Code 121)	27-5553
7	Mica Condenser (110 mmf.)	30-1130		(20-20 mf., 150 V.)	30-2382		Dial (PT-25, PT-27, Code 122)	27-5572
8	Oscillator Transformer	32-3152	27	Field Coil	36-1469		Dial Drive Shaft Assembly	31-2355
9	Tubular Condenser (.05 mf., 200 V.)	30-45198	28	Pilot Lamp	34-2068		Dial Drive Cord Assembly	31-2358
10	1st I. F. Transformer	32-3149	29	Line Resistor	33-3387		Dial Window	27-5472
11	2nd I. F. Transformer	32-3150					Grille Cloth and Gasket	
12	Resistor 2.2 meg., 1/4 watt)	33-522154					(PT-25-27, Code 121)	318-1120
13	Mica Condenser (250 mmf.)	61-0033					(PT-25-27, Code 122)	40-6520
14	Resistor (22,000 ohms, 1/2 watt)	33-322334					Knob Assembly	
15	Volume Control (500,000 ohms)	33-5306					(PT-25, PT-39, Code 121)	27-4809
16	Tubular Condenser (.01 mf., 200 V.)	30-44798					(PT-27, Code 121)	27-4810
17	Resistor (4.7 meg., 1/4 watt)	547154					(PT-27, Code 122)	27-4950
18	Resistor (220,000 ohms, 1/4 watt)	33-422154					Pointer (Dial)	27-4891
19	Tubular Condenser (.01 mf., 400 V.)	30-45728					Spring (Dial Drive Cord)	28-8954
20	Resistor (470,000 ohms, 1/4 watt)	33-447154					Socket Assembly (Pilot Lamp)	38-9825
21	Resistor (130 ohms, 1/2 watt)	33-113336					Socket (Tubes)	27-6130
							Snap Fastener (Dial Mounting)	56-1387

MISCELLANEOUS PARTS

Cabinet (PT-25, Code 121)	10364A
Cabinet (PT-27, Code 121)	10364B
Cabinet (PT-25, Code 122)	10455A
Cabinet (PT-27, Code 122)	10455B
Cabinet (PT-39, Code 121)	10448A
Cardboard Back (PT-25, PT-27)	27-9511
Cardboard Back (PT-39)	27-9559

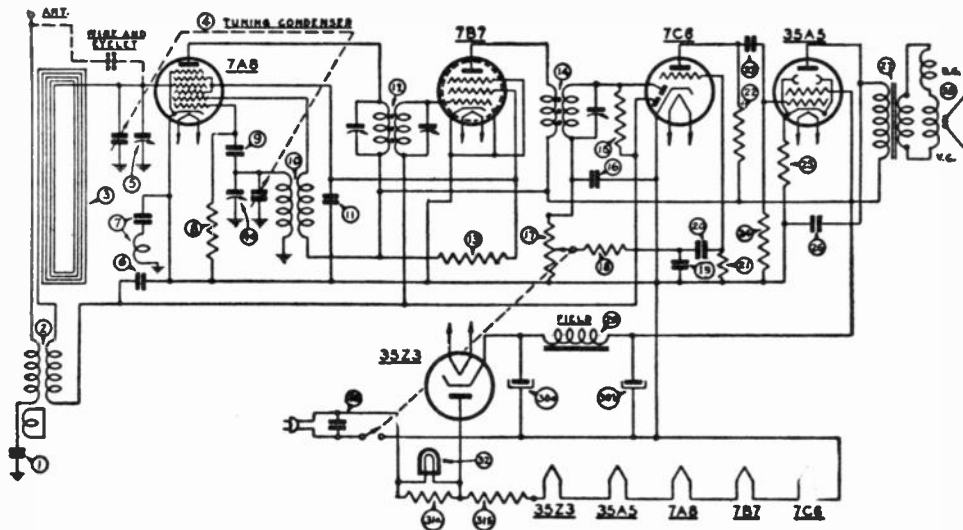
MODELS PT-26, PT-28 and PT-36

SPECIFICATIONS

Models PT-26, PT-28 and PT-36 are five tube superheterodyne radios covering a tuning frequency range from 540 to 1580 K. C. and designed with a built-in loop aerial for portable use. To obtain maximum performance, however, in steel reinforced buildings, apartment houses, hotels and other shielded locations where signal strength is weak, provisions are also provided at the rear of the cabinet for an outside aerial. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384 is recommended. These models are similar with the exception of the cabinets.

The circuit diagram and parts list shown below applies to all models.

INTERMEDIATE FREQUENCY: 455 K. C.



POWER SUPPLY: The receivers are designed for operation on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supplies.

Note—If no sound is heard on D. C. circuits after the tubes are sufficiently heated, reverse the plug of the cable in the outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 8.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Tubular Condenser (.0015 mf., 200V)	30-4555S
2	Antenna Transformer	32-3394
3	Loop Antenna — Part of cabinet and loop Assy.	
	PT-26	76-1005
	PT-28	76-1013
	PT-36	76-1014
4	Tuning Condenser — PT-26 & PT-28	31-2439
	PT-36	31-2443
5	Padding Condenser	31-6344
6	Tubular Condenser (.1 mf., 200V)	30-4499S
7	Condenser & Choke Assy.	76-1019
8	Resistor (22,000 ohms, 1/4 watt)	33-322154
9	Mica Condenser (110 mmf.)	30-1130
10	Oscillator Transformer	32-3182
11	Tubular Condenser (.05 mf., 200V)	30-4519S
12	1st I. F. Transformer	32-3390
13	Resistor (22,000 ohms, 1/2 watt)	33-322334
14	2nd I. F. Transformer	32-3391
15	Resistor (2.2 meg., 1/4 watt)	33-522154
16	Mica Condenser (250 mmf.)	61-0033
17	Volume Control (500,000 ohms)	33-5306
18	Resistor (47,000 ohms, 1/4 watt)	33-347154
19	Mica Condenser (250 mmf.)	61-0033
20	Tubular Condenser (.01 mf., 200V)	30-4479S
21	Resistor (4.7 meg., 1/4 watt)	33-547154
22	Resistor (220,000 ohms, 1/4 watt)	33-422154
23	Tubular Condenser (.01 mf., 400V)	30-4572S
24	Resistor (470,000 ohms, 1/4 watt)	33-447154
25	Resistor (130 ohms, 1/2 watt)	33-113336
26	Tubular Condenser (.04 mf., 400V)	30-4119S
27	Output Transformer—Part of Speaker No. 36-1469	
28	Speaker	36-1469
29	Field Coil—Part of Speaker No.	36-1469
30	Electrolytic Condenser (20-20 mf., 150V)	30-2382
31	Line Resistor	33-2387

SCHE. No.	DESCRIPTION	PART No.
32	Pilot Lamp	34-2068
33	Tubular Condenser (.04 mf., 400V)	30-4119S

MISCELLANEOUS PARTS

MODEL PT-26

Cabinet and Loop Assembly	76-1005
Cable (Power)	L-3199
Cardboard Back (Cabinet)	27-9615
Cone Assembly	
(for Speaker 36-1469-9)	36-4113
(for Speaker 36-1469-1)	36-4115
(for Speaker 36-1469-2)	36-4132

Dial	27-5554
Dial Window	27-5472
Dial Drive Shaft	31-2355
Dial Drive Cord	31-2358
Grille Cloth Assembly (Speaker)	40-6520
Knob Assembly	27-4809
Mounting Clips (Coil Mounting)	28-5002
Pointer (Dial)	27-4891
Spring (Drive Cord)	28-8954
Speaker	36-1469
Socket (Pilot Lamp)	38-9825
Socket (Tubes)	27-6130
Snap Fastener (Dial)	56-1387

MODEL PT-28

Cabinet and Loop Assembly	76-1013
Cable (Power)	L-3199
Cardboard Back	27-9616
Cone Assembly	
(for Speaker 36-1469-9)	36-4113
(for Speaker 36-1469-1)	36-4115
(for Speaker 36-1469-2)	36-4132

SCHE. No.	DESCRIPTION	PART No.
	Dial	27-5554
	Dial Window	27-5472
	Dial Drive Shaft	31-2355
	Dial Drive Cord	31-2358
	Knob Assembly	27-4950
	Screw Back Mounting	W-2062
	Screw Chassis Mounting	W-2110
	Speaker	36-1469
	Speaker, Baffle and Felt Assembly	40-6520
	Spring (Drive Cord)	28-8954
	Socket (Pilot Lamp)	38-9825
	Socket (Tubes)	27-6130
	Snap Fastener (Dial)	56-1387
	Mounting Clips (Coil Mounting)	28-5002
	Pointer (Dial)	27-4891

MODEL PT-36

Cabinet and Loop	76-1014
Baffle Cloth and Felt	40-6529
Cable (Power)	L-3199
Cardboard Back	27-9612
Clip (Coil Mounting)	28-5002
Driving Arm (Pointer Drive)	56-1376
Drive Drum	56-6033
Drive Cord Assembly	31-2358
Drive Shaft Assembly	31-2370
Pointer (Moulded)	27-4935
Pointer Ring	56-1689
Knob Assembly	27-4899
Rubber Tubing (Drive Arm)	27-9334
Spring (Drive Cord Assembly)	28-8954
Speaker	36-1469
Socket Assembly (Pilot Lamp)	38-9825
Socket	27-6130

MODELS PT-29 and PT-31

SPECIFICATIONS

Models PT-29 and PT-31 are five tube superheterodyne radios covering a frequency range from 540 to 1720 K. C. on the broadcast band and 2.3 to 2.5 megacycles (M. C.) on the local police range. These models are similar with the exception of the cabinets. The circuit diagram and parts list shown below applies to both models.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: The receivers are designed for operation on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.)

Note—If no sound is heard on D. C. circuits after the tubes are sufficiently heated, reverse the plug of the cable in the

outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should be reversed.

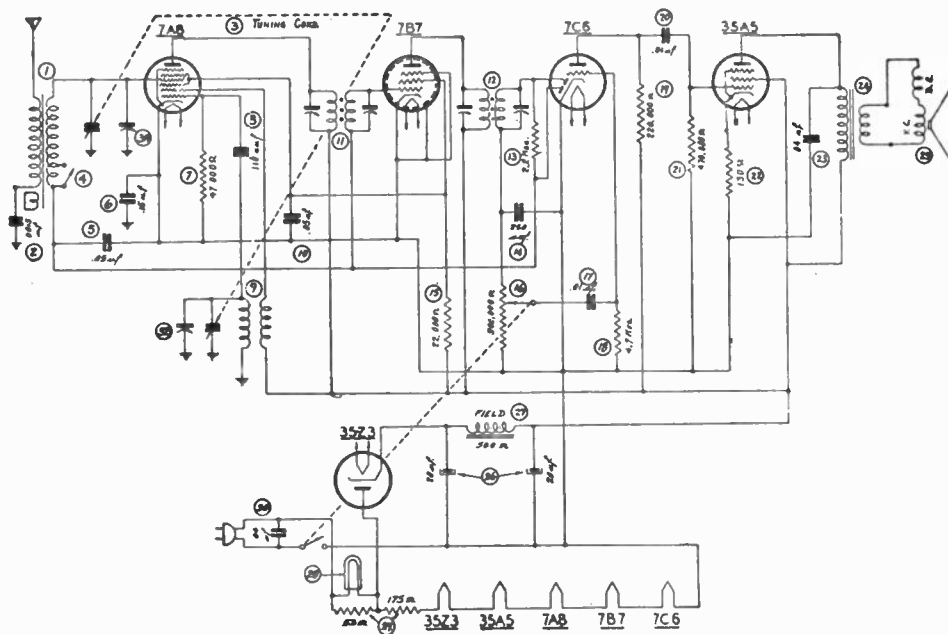
PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception in apartment houses, hotels or steel reinforced buildings, the Philco Utility Aerial, Part No. 40-6384 is recommended. A ground is not necessary on these models.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 7.

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3164	20	Tubular Condenser (.01 mf., 400 v.)	30-45223		Cabinet (PT-31)	10364B
2	Tubular Condenser (.0015 mf., 200 v.)	30-45558	21	Resistor (47,000 ohms, 1/4 watt)	33-447154		Cardboard Back (PT-29)	27-9511
3	Tuning Condenser	31-2427	22	Resistor (130 ohms, 1/4 watt)	33-113336		Cardboard Back (PT-31)	27-9545
4	Switch	42-1408	23	Tubular Condenser (.04 mf., 400 v.)	30-41198		Cone Assembly	
5	Tubular Condenser (.05 mf., 200 v.)	30-45198	24	Output Transformer			(for Speaker 36-1469-9)	36-4113
6	Tubular Condenser (.15 mf., 400 v.)	30-45058	25	Speaker	36-1469		(for Speaker 36-1469-1)	36-4115
7	Resistor (47,000 ohms, 1/4 watt)	33-347154	26	Electrolytic Capacitor (20-20 mf., 150 v.)	30-2392		(for Speaker 36-1469-2)	36-4132
8	Mica Condenser (110 mmf.)	30-1130	27	Field Coil			Dial	27-5556
9	Oscillator Transformer	32-3152		Part of Speaker	36-1469		Dial Drive Shaft	31-2355
10	Tubular Condenser (.05 mf., 200 v.)	30-45198		Part Number	36-1469		Dial Drive Cord	31-2358
11	1st I. F. Transformer	32-3149	28	Pilot Lamp	34-2088		Dial Window	27-5472
12	2nd I. F. Transformer	32-3150	29	Line Resistor	33-3387		Grille Cloth and Gasket	318-1120
13	Resistor (2.2 meg., 1/4 watt)	33-522154	30	Tubular Condenser (.04 mf., 400 v.)	30-41198		Knob Assembly	27-4809
14	Mica Condenser (250 mmf.)	61-0033					Knob Assembly	27-4810
15	Resistor (22,000 ohms, 1/4 watt)	33-323334					Pointer	27-4891
16	Volume Control (500,000 ohms)	33-5396					Snap Fastener	56-1387
17	Tubular Condenser (.01 mf., 200 v.)	30-44798					Speaker	36-1469
18	Resistor (4.7 meg., 1/4 watt)	33-547154					Spring (Drive Cord)	28-8954
19	Resistor (220,000 ohms, 1/4 watt)	33-422154					Socket Assembly (Pilot Lamp)	38-9825
							Socket (Tubes)	27-6130

MISCELLANEOUS PARTS

Cable L-3199
Cabinet (PT-29) 10364A

MODELS PT-33, PT-41, Codes 121-122; and PT-61, Codes 121-122

SPECIFICATIONS

Models PT-33, PT-41, Codes 121 and 122, PT-61, Codes 121 and 122, are five tube superheterodyne radios covering a frequency range from 540 to 1580 kilocycles (K. C.) These models are equipped with a loop aerial built into the cabinet for portable use and do not need an aerial under average receiving conditions. Connections are also provided on the rear of the cabinet for attaching an outside aerial, to obtain maximum performance in locations where signal strength is weak, such as in apartment houses, hotels and other shielded locations. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended.

These models are similar with the exception of the cabinets. The circuit diagram and parts list shown below applies to all models.

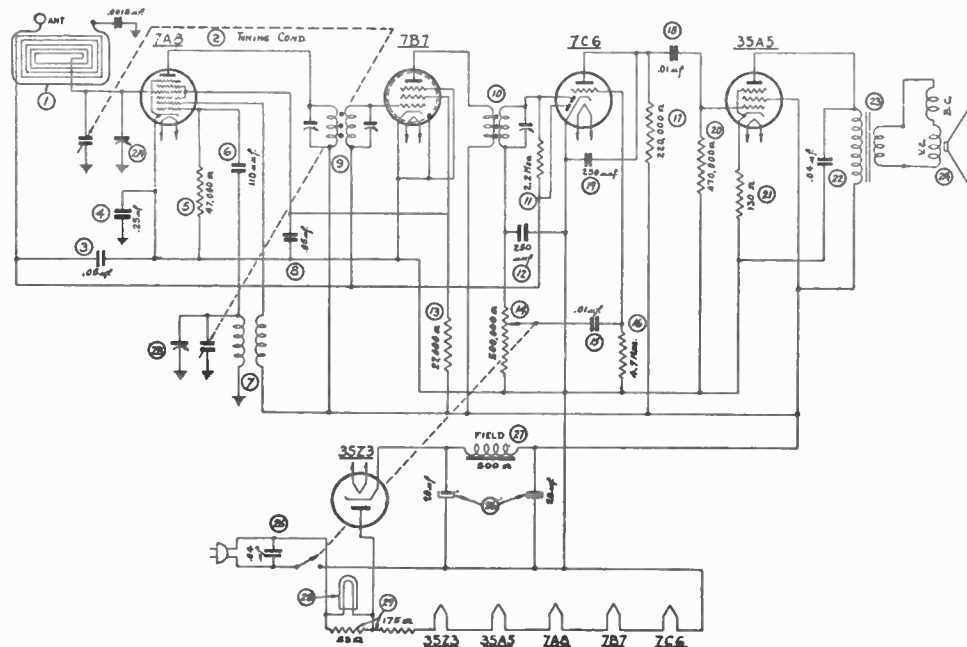
INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

Note—If no sound is heard on D. C. circuits after the tubes are sufficiently heated, reverse the plug of the cable in the outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 8.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assem. (Code 121)...	38-9858
1	Loop Antenna Assem. (Code 122)...	32-3179
2	Tuning Condenser (Code 121)...	31-2429
2	Tuning Condenser (Code 122)...	31-2448
3	Tubular Condenser (.05 mf., 200 V.)	30-45198
4	Tubular Condenser (.25 mf., 400 V.)	30-46048
5	Resistor (47,000 ohms, 1/4 watt)	33-347154
6	Mica Condenser (110 mmf.)	30-1130
7	Oscillator Transformer	32-3182
8	Tubular Condenser (.05 mf., 200 V.)	30-45198
9	1st I. F. Transformer	32-3177
10	2nd I. F. Transformer	32-3178
11	Resistor (2.2 megs., 1/4 watt)	33-522154
12	Mica Condenser (250 mmf.)	61-0033
13	Resistor (27,000 ohms, 1/4 watt)	33-327334
14	Volume Control (500,000 ohms)	33-5306
15	Tubular Condenser (.01 mf., 200 V.)	30-44793
16	Resistor (4.7 megs., 1/4 watt)	33-547154
17	Resistor (220,000 ohms, 1/4 watt)	33-422154
18	Tubular Condenser (.01 mf., 400 V.)	30-45723
19	Mica Condenser (250 mmf.)	61-0033
20	Resistor (470,000 ohms, 1/4 watt)	33-447154
21	Resistor (130 ohms, 1/4 watt)	33-113336
22	Tubular Condenser (.04 mf., 400 V.)	30-41198
23	Output Transformer	
	Part of Speaker No. 36-1469-1	32-8047
	Part of Speaker No. 36-1469-9	32-8044
	Part of Speaker No. 36-1469-2	32-8044

SCHE. No.	DESCRIPTION	PART No.
24	Speaker	36-1469
25	Tubular Condenser (.04 mf., 400 V.)	30-41198
26	Electrolytic Condenser (20-20 mf., 150 V.)	30-2382
27	Field Coil	Part of Speaker No. 36-1469
28	Pilot Lamp	34-2068
29	Line Resistor	33-3367

MISCELLANEOUS PARTS

Cable (Power)	L-3199
Cabinet (PT-33)	10364A
Cabinet Back (PT-33)	27-4821
Cabinet (PT-41)	10448B
Cabinet (PT-61)	10449A
Cone Assembly	
(for Speaker 36-1469-9)	36-4113
(for Speaker 36-1469-1)	36-4115
(for Speaker 36-1469-2)	36-4132
Dial (PT-41, PT-61, Code 122)	27-5570
Dial (PT-33, PT-41, Code 121)	27-5554
Dial (PT-61)	27-5554
Dial Drive Cord	31-2358
Dial Drive Shaft	31-2370
Dial Window	27-5472
Grille Cloth Assembly	318-1120
Handle (Cabinet)	45-6052
Knob (Tuning, Volume, PT-33, PT-41)	27-4809

SCHE. No.	DESCRIPTION	PART No.
	Knob (Tuning, Volume, PT-61)	27-4815
	Pointer (Dial)	27-4891
	Mounting Clip	28-5002
	Screw (Handle Mounting)	W-2043
	Screw (Chassis Mounting)	W-2176
	Screw (Back Mounting)	W-2029
	Screw (Back Mounting)	56-6056
	Snap Fastener	56-1387
	Spring	28-8954
	Speaker	36-1469
	Socket (Pilot Lamp)	38-9825
	Socket (Tubes)	27-6130
	Screw (Chassis Mounting, PT-61)	W-2030
	Screw (Back Mounting, PT-61)	W-2023

PRODUCTION CHANGES

Several parts were changed in these models and the code numbers changed from 121 to 122. These changes are as follows:

MODEL PT-41		
	Code 121	Code 122
Dial	27-5554	27-5570
Instructions	39-6570	39-6710
Loop Aerial Assembly	38-9858	32-3179
Tuning Condenser	31-2429	31-2448
MODEL PT-61		
Dial	27-5554	27-5570
Instructions	39-6570	39-6710
Loop Aerial Assembly	38-9858	32-3179
Tuning Condenser	31-2429	31-2448

MODEL PT-35

SPECIFICATIONS

Model PT-35 is a five tube superheterodyne radio, covering a frequency range from 540 to 1720 kilocycles (K. C.) on the broadcast band and 2.3 to 2.5 megacycles (M. C.) on the local police band.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

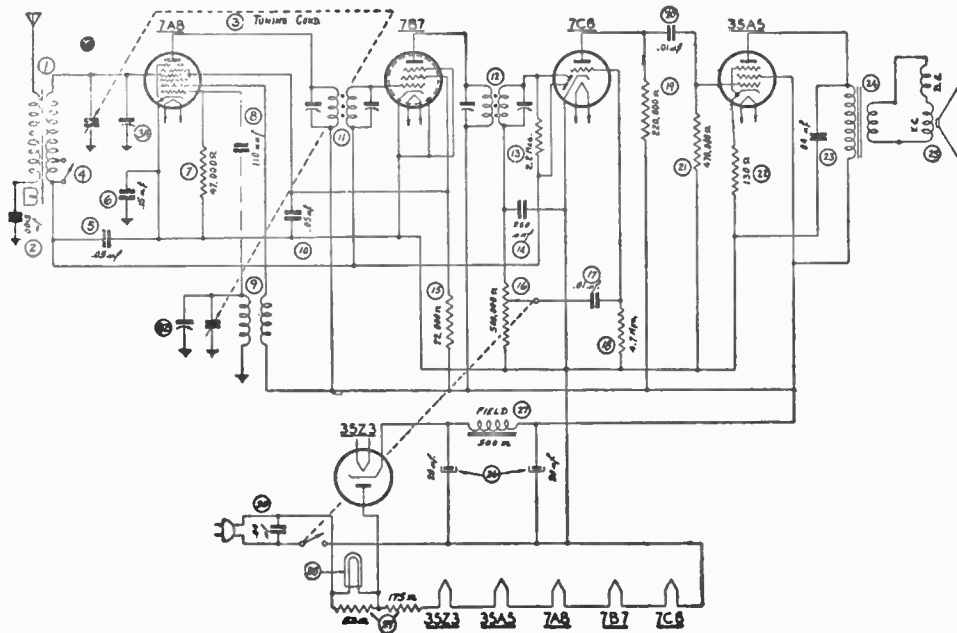
Note—If no sound is heard on D. C. circuits, after the tubes are sufficiently heated, reverse the plug of the cable in the

outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should also be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception in apartment houses, hotels, or steel reinforced buildings, the Philco Utility Aerial, Part No. 40-6384, is recommended. A ground is not necessary with this model.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 6.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3164	19	Resistor (220,000 ohms, ¼ watt)	33-422154	MISCELLANEOUS PARTS		
2	Tubular Condenser (.0015 mf., 200 v.)	30-45555	20	Tubular Condenser (.01 mf., 400 v.)	30-45725		Cable (Power)	1-3199
3	Tuning Condenser	31-2434	21	Resistor (470,000 ohms, ¼ watt)	33-447154		Cabinet	10367B
4	Switch	42-1406	22	Resistor (130 ohms, ½ watt)	33-113336		Cardboard Back	27-9320
5	Tubular Condenser (.05 mf., 200 v.)	30-45198	23	Tubular Condenser (.04 mf., 400 v.)	30-41198		Cone Assembly	
6	Tubular Condenser (.15 mf., 400 v.)	30-45058	24	Output Transformer, Part of			(for Speaker 36-1469-9)	36-4113
7	Resistor (47,000 ohms, ¼ watt)	33-347154		Speaker No. 36-1469-1	32-8047		(for Speaker 36-1469-1)	36-4115
8	Mica Condenser (110 mmf.)	30-1130		Speaker No. 36-1469-9	32-8044		(for Speaker 36-1469-2)	36-4132
9	Oscillator Transformer	32-3152	25	Speaker	36-1469		Drive Arm (Pointer Drive)	56-1376
10	Tubular Condenser (.05 mf., 200 v.)	30-45198	26	Electrolytic Condenser (20-20 mf., 150 v.)	30-2382		Drive Drum (Pointer Drive)	56-6033
11	1st I. F. Transformer	32-3149	27	Field Coil—Part of Speaker No.	36-1469		Drive Shaft Assembly	31-2355
12	2nd I. F. Transformer	32-3150	28	Pilot Lamp	34-2068		Drive Cord Assembly	31-2358
13	Resistor (2.2 meg., ¼ watt)	33-522154	29	Line Resistor	33-3387		Grille Silk and Gasket Assembly	40-6452
14	Mica Condenser (250 mmf.)	61-0033	30	Tubular Condenser (.04 mf., 400 v.)	30-41198		Knob Assembly	27-4899
15	Resistor (22,000 ohms, ½ watt)	33-322334					Mounting Clip	28-5002
16	Volume Control (500,000 ohms)	33-5306					Rubber Tubing (Driving Arm)	27-9334
17	Tubular Condenser (.01 mf., 200 v.)	30-44798					Spring (Drive Cord)	28-8751
18	Resistor (4.7 meg., ¼ watt)	33-547154					Socket (Tubes)	27-6130
							Socket Assembly (Pilot Lamp)	38-9825
							Speaker	36-1469

MODELS PT-37 and PT-53

SPECIFICATIONS

Models PT-37 and PT-53 are five tube superheterodyne radios covering a tuning frequency range from 540 to 1720 kilocycles (K. C.) on the broadcast band and 5.5 to 19 megacycles (M. C.) on the short wave band. These models are similar with the exception of the cabinet. The circuit diagram and part list shown below applies to both models.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

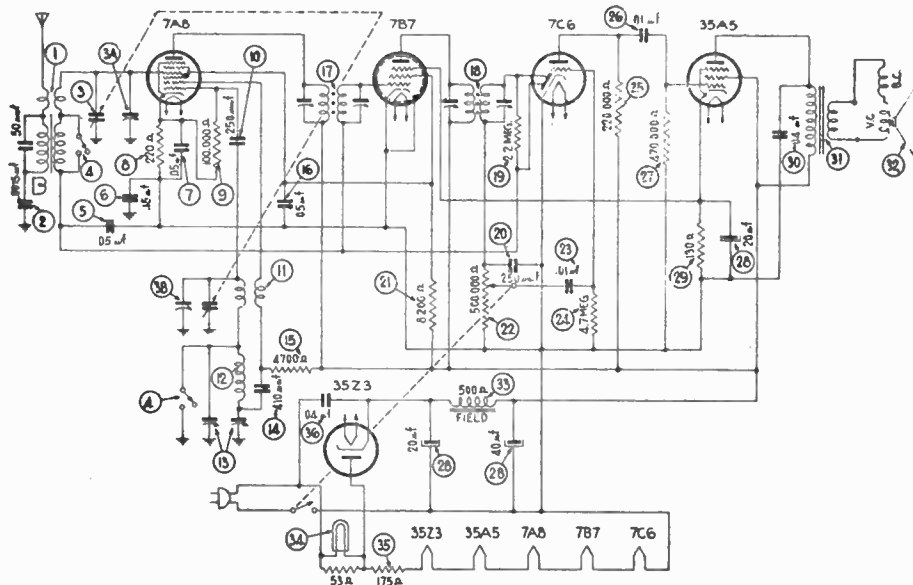
Note—If no sound is heard on D. C. circuits, after the tubes are sufficiently heated, reverse the plug of the cable in the

outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should also be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception in apartment houses, hotels, or steel reinforced buildings where signal strength is weak, a Philco Utility Aerial, Part No. 40-6384, is recommended.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 7.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3233	22	Volume Control	33-5308	35	Line Resistor	33-3387
2	Tubular Condenser (.0015 mf., 200 v.)	30-4555S	23	Tubular Condenser (.01 mf., 400 v.)	30-4572S	36	Tubular Condenser (.04 mf., 400 v.)	30-41198
3	Tuning Condenser	31-2431	24	Resistor (4.7 megohm, 1/4 watt)	33-547154			
4	Wave Switch	42-1497	25	Resistor (220,000 ohms, 1/4 watt)	33-522154			
5	Tubular Condenser (.05 mf., 200 v.)	30-4519S	26	Tubular Condenser (.01 mf., 200 v.)	30-4581S			
6	Tubular Condenser (.15 mf., 400 v.)	30-4600S	27	Resistor (470,000 ohms, 1/4 watt)	33-447154			
7	Tubular Condenser (.05 mf., 200 v.)	30-4519S	28	Electrolytic Condenser	30-2402			
8	Resistor (220 ohms, 1/4 watt)	33-122336	29	Resistor (130 ohms, 1/4 watt)	33-113336			
9	Resistor (100,000 ohms, 1/4 watt)	33-410154	30	Tubular Condenser (.04 mf., 400 v.)	30-4119S			
10	Mica Condenser (250 mmf.)	61-0033	31	Output Transformer, Part of				
11	Short Wave Oscillator Trans.	32-3234		Speaker No. 36-1469-1	32-8047			
12	BC Oscillator Transformer	32-3217		Speaker No. 36-1469-9	32-8044			
13	Dual Padding Condenser	31-6331		Speaker No. 36-1469-2	32-8044			
14	Mica Condenser (410 mmf.)	30-1089	32	Speaker	36-1469			
15	Resistor (4700 ohms, 1/4 watt)	33-247134		Cone Assembly				
16	Tubular Condenser (.05 mf., 200 v.)	30-4519S		(for Speaker 36-1469-1)	36-4115			
17	1st I. F. Transformer	32-3327		(for Speaker 36-1469-9)	36-4113			
18	2nd I. F. Transformer	32-3150		(for Speaker 36-1469-2)	36-4132			
19	Resistor (2.2 megohms, 1/4 watt)	33-522154	33	Field Coil—Part of Speaker No.	36-1469			
20	Mica Condenser (250 mmf.)	61-0033	34	Pilot Lamp	34-2068			
21	Resistor (8,200 ohms, 1/4 watt)	33-282334						

MISCELLANEOUS PARTS

	Cable (Power)	L-3199
	Clip Coil Mounting	28-5002
	Cabinet (PT-37)	10364A
	Cabinet (PT-53)	10448A
	Dial (PT-37)	27-5559
	Dial Window	27-5472
	Dial Drive Cord	31-2393
	Drive Drum	28-6662
	Drive Shaft Assembly	31-2355
	Grille Cloth and Gasket	40-6526
	Knob Tuning, Volume	27-4809
	Pointer	27-4891
	Socket Assembly (Pilot Lamp)	38-9825
	Speaker	36-1469
	Spring	28-8751
	Snap Fastener	56-1387

MODEL PT-38

SPECIFICATIONS

Model PT-38 is a five tube superheterodyne radio, covering a frequency range from 540 to 1720 kilocycles (K. C.) on the broadcast band and from 5.5 to 19 megacycles (M. C.) on the short-wave band.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

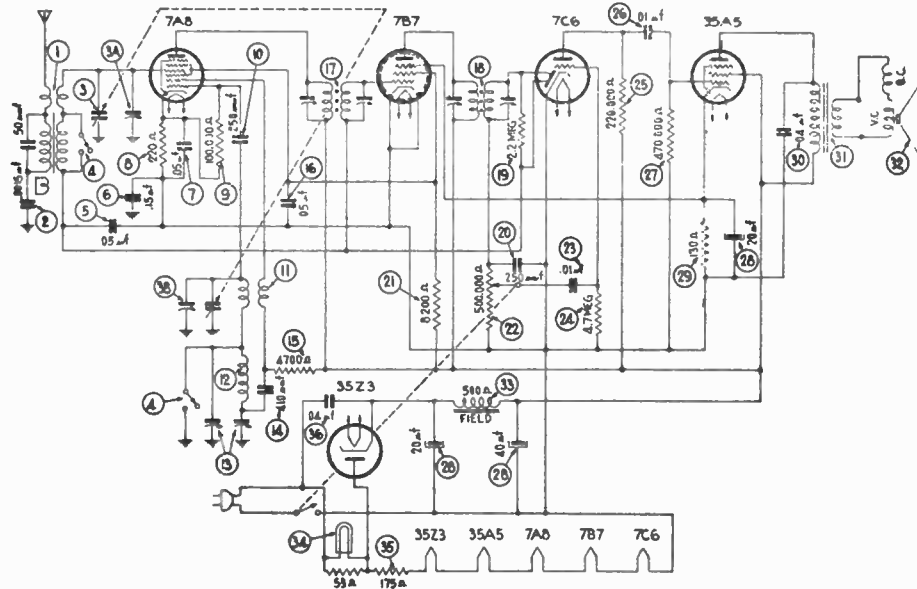
Note—If no sound is heard on D. C. circuits, after the tubes are sufficiently heated, reverse the plug of the cable in the

outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should be reversed.

PHILCO TUBES USED: one 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception in apartment houses, hotels, or steel reinforced buildings where signal strength is weak, a Philco Utility Aerial, Part No. 40-6384, is recommended.

ALIGNING PROCEDURE: The instructions for aligning the R. F. and I. F. compensators will be found on page 7.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.		
1	Antenna Transformer	32-8233	21	Resistor (8,200 ohms, 1/4 watt)	33-282334	34	Pilot Lamp	34-2088		
2	Tubular Condenser (.0015 mf., 200 v.)	30-4555	22	Volume Control	33-5306	35	Line Resistor	33-8387		
3	Tuning Condenser	31-2431	23	Tubular Condenser (.01 mf., 400 v.)	30-4572	36	Tubular Condenser (.04 mf., 400 v.)	30-4119		
4	Wave Switch	42-1497	24	Resistor (4.7 megohms, 1/4 watt)	33-547154	MISCELLANEOUS PARTS				
5	Tubular Condenser (.04 mf., 200 v.)	30-4519	25	Resistor (220,000 ohms, 1/4 watt)	33-522154				Cable	L-3199
6	Tubular Condenser (.15 mf., 400 v.)	30-4800	26	Tubular Condenser (.01 mf., 400 v.)	30-4572				Cabinet	10448A
7	Tubular Condenser (.05 mf., 200 v.)	30-4519	27	Resistor (470,000 ohms, 1/4 watt)	33-447154				Clip	28-5002
8	Resistor (220 ohms, 1/2 watt)	33-122336	28	Electrolytic Condenser	30-2402				Cardboard Back	27-9559
9	Resistor (100,000 ohms, 1/4 watt)	33-410154	29	Resistor (130 ohms, 1/4 watt)	33-113336				Dial	27-5571
10	Mica Condenser (250 mmf.)	61-0033	30	Tubular Condenser (.04 mf., 400 v.)	30-4119				Dial Drive Cord	31-2393
11	Short Wave Oscillator Trans.	32-3234	31	Output Transformer—					Drive Shaft	31-2355
12	BC Oscillator Transformer	32-3217	(for 36-1469-1)	32-8047	Knob				27-4809	
13	Dual Padding Condenser	31-6331	(for 36-1469-2)	32-8044	Pointer				27-4891	
14	Mica Condenser (410 mmf.)	30-1089	32	Speaker	36-1469	Socket, Pilot Lamp Assembly	38-9825			
15	Resistor (4700 ohms, 1/4 watt)	33-247134	Cone Assembly—			Socket	27-6130			
16	Tubular Condenser (.05 mf., 200 v.)	30-4519	(for Speaker 36-1469-1)	36-4115	Spring	28-8954				
17	1st I. F. Transformer	32-3327	(for Speaker 36-1469-2)	36-4113	Snap Fastener	56-1387				
18	2nd I. F. Transformer	32-3150	(for Speaker 36-1469-1)	32-4132	Speaker	36-1469				
19	Resistor (2.2 megohms, 1/4 watt)	33-522154	33	Field Coil—Part of Speaker No.	36-1469	Screw (Chassis Mounting)	W-2030			
20	Mica Condenser (250 mmf.)	61-0033								

MODEL PT-50

SPECIFICATIONS

Model PT-50 is a five-tube superheterodyne radio covering a frequency range from 540 to 1580 kilocycles (K. C.) This model is equipped with a loop aerial built into the cabinet for portable use and does not need an aerial under average receiving conditions. Connections are also provided on the rear of the cabinet for attaching an outside aerial, to obtain maximum performance in locations where signal strength is weak, such as in apartment houses, hotels and other shielded locations. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 46-6384, is recommended.

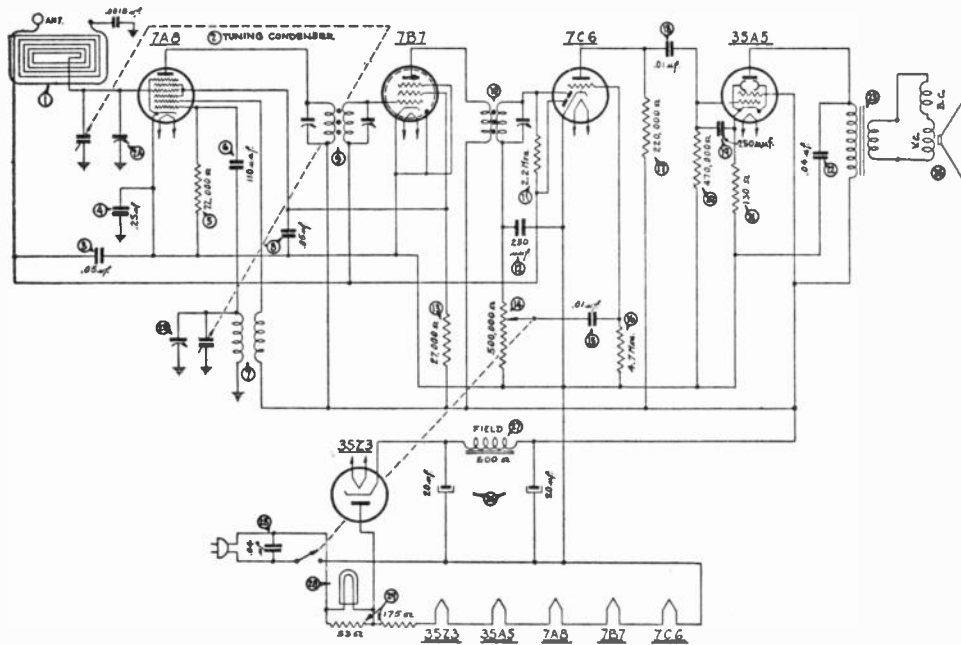
INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt, alternating current (A. C.), or a 115 volt, direct current (D. C.), power supply.

Note—If no sound is heard on "D. C." circuits after the tubes are sufficiently heated, reverse the plug of the cable in the outlet. If a slight hum is heard when operating on an "A. C." power supply, the power plug should also be reversed.

PHILCO TUBES USED: One 7A8, Converter; one 7B7, I. F. Amplifier; one 7C6, 2nd Detector, 1st Audio, A. V. C.; one 35A5, Audio Output; and one 35Z3, Rectifier.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 8.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.		
1	Loop Antenna Assembly	32-3179	19	Mica Condenser (250 mmf.)	61-0033	MISCELLANEOUS PARTS				
2	Tuning Condenser	31-2448	20	Resistor (470,000 ohms, ¼ watt)	33-447154				Cable (Power)	L-3199
3	Tubular Condenser (.05 mf., 200 V.)	30-4519	21	Resistor (130 ohms, ¼ watt)	33-113336				Cabinet	10467A
4	Tubular Condenser (.25 mf., 400 V.)	30-4604	22	Tubular Condenser (.04 mf., 400 V.)	30-4119				Dial	27-5570
5	Resistor (22,000 ohms, ¼ watt)	33-322154	23	Output Transformer					Dial Drive Cord	31-2358
6	Mica Condenser (110 mmf.)	30-1130		(for Speaker 36-1469-1)	32-8047				Drive Shaft Assembly	31-2370
7	Oscillator Transformer	32-3182		(for Speaker 36-1469-2)	32-8044				Knob (Tuning-Volume)	27-4936
8	Tubular Condenser (.05 mf., 200 V.)	30-4519		(for Speaker 36-1469-9)	32-8044				Screw (Chassis Mounting)	W-2030
9	1st I. F. Transformer	32-3177	24	Cone Assembly					Screw (Back Mounting)	W-2023
10	2nd I. F. Transformer	32-3178		(for Speaker 36-1469-1)	36-4115				Snap Fastener (Scale Mounting)	56-1387
11	Resistor (2.2 mega., ¼ watt)	33-522154		(for Speaker 36-1469-2)	36-4132	Spring (Drive Cord)	28-8954			
12	Mica Condenser (250 mmf.)	61-0033		(for Speaker 36-1469-9)	36-4113	Sockets (Tubes)	27-6130			
13	Resistor (27,000 ohms, ¼ watt)	33-327334			36-4113	Socket Assembly (Pilot Lamp)	38-9825			
14	Volume Control (500,000 ohms)	33-5306	25	Tubular Condenser (.04 mf., 400 V.)	30-4119					
15	Tubular Condenser (.01 mf., 200 V.)	30-4479	26	Electrolytic Condenser						
16	Resistor (4.7 mega., ¼ watt)	33-547154		(20-20 mf., 150 V.)	30-2382					
17	Resistor (220,000 ohms, ¼ watt)	33-422154	27	Field Coil	36-1469					
18	Tubular Condenser (.01 mf., 400 V.)	30-4572	28	Pilot Lamp	34-2068					
			29	Line Resistor	33-3367					

MODELS PT-43, Codes 121-122; and PT-55

SPECIFICATIONS

Models PT-43 and PT-55 are five tube superheterodyne radios, covering a frequency range from 540 to 1580 kilocycles (K. C.) on the broadcast band and 2.3 to 2.5 megacycles (M. C.) on the local police range. Each model is equipped with a loop aerial, built into the rear of the cabinet for portable use and does not require an outside aerial under average receiving conditions. Connections are also provided on the rear of the cabinet for attaching an outside aerial to obtain maximum performance in locations where signal strength is weak; such as in apartment houses, hotels and other shielded locations.

If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended.

These models are similar with the exception of the cabinets. The circuit diagram and parts list shown below apply to both models.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

Note—If no sound is heard on D. C. circuits, after the tubes are sufficiently heated, reverse the power plug. If a slight hum is heard when operating on an A. C. power supply, the power plug should be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 6.

PRODUCTION CHANGES

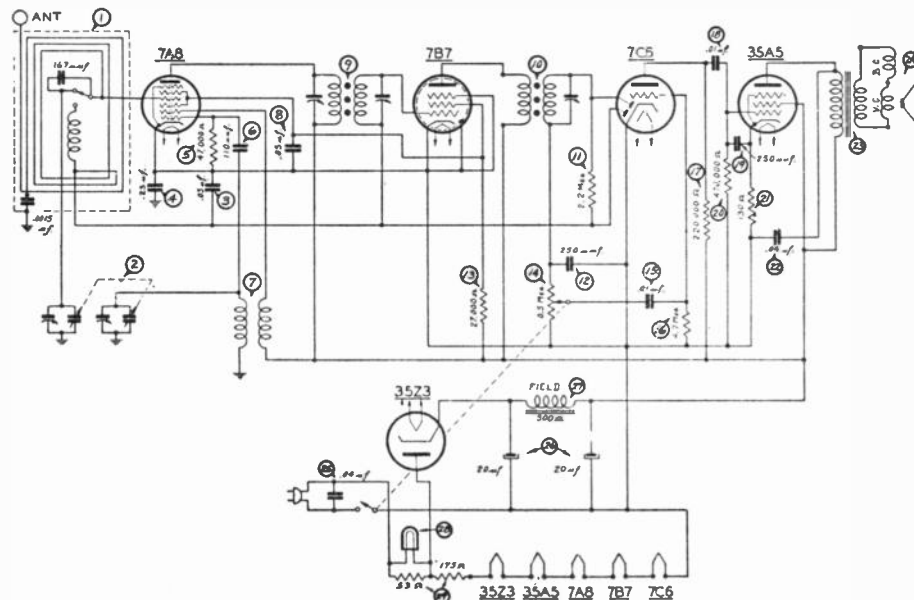
MODEL PT-43

Code number changed from 121 to 122 in addition to several part changes. These are as follows:

	Code 121	Code 122
Loop Aerial Ass'y	38-9936	32-3402
Tuning Condenser	31-2436	31-2446

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from: 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly (Code 121)	38-9936	18	Tubular Condenser (.01 mf., 400 v.)	30-4572S		Clip (Coil Mounting)	28-5002
	PT-43 (Code 122)	32-3402	19	Mica Condenser (250 mmf.)	61-0033		Cone Assembly	
2	Tuning Condenser (Code 121)	31-2436	20	Resistor (470,000 ohms, 1/4 watt)	33-447154		(for Speaker 36-1469-1)	36-4115
	PT-43 (Code 122)	31-2446	21	Resistor (130 ohms, 1/2 watt)	33-113336		(for Speaker 36-1469-2)	36-4132
3	Tubular Condenser (.05 mf., 200 v.)	30-4519S	22	Tubular Condenser (.04 mf., 400 v.)	30-4119S		Drive Arm (Pointer Drive)	56-1376
4	Tubular Condenser (.25 mf., 400 v.)	30-4604S	23	Output Transformer (for Speaker No. 36-1469-1)	32-3047		Drive Drum	56-6033
5	Resistor (47,000 ohms, 1/4 watt)	33-347154		(for Speaker No. 36-1469-2)	32-3044		Drive Cord	31-2358
6	Mica Condenser (110 mmf.)	30-1130	24	Speaker	36-1469		Drive Shaft	31-2370
7	Oscillator Transformer	32-3182	25	Tubular Condenser (.04 mf., 400 v.)	30-4119S		Grille Silk and Baffle	40-6452
8	Tubular Condenser (.05 mf., 200 v.)	30-4519S	26	Electrolytic Condenser (20-20 mf., 150 v.)	30-2382		Grille Silk and Gasket (PT-43, Code 121)	40-6451
9	1st I. F. Transformer	32-3177	27	Field Coil, ....Part of Speaker No. 36-1469			Handle (PT-55, Code 121)	45-6082
10	2nd I. F. Transformer	32-3178	28	Pilot Lamp	34-2068		Knob Assembly	27-4899
11	Resistor (2.2 megs., 1/4 watt)	33-322154	29	Line Resistor	33-3307		Mounting Clip	28-5002
12	Mica Condenser (250 mmf.)	61-0033					Rubber Tubing (Drive Arm)	27-9334
13	Resistor (27,000 ohms, 1/2 watt)	33-327334					Spring (Drive Cord Assembly)	28-8751
14	Volume Control (500,000 ohms)	33-5306					Socket Assembly (Pilot Lamp)	38-9825
15	Tubular Condenser (.01 mf., 200 v.)	30-4479S					Socket (Tubes)	27-6130
16	Resistor (4.7 megs., 1/4 watt)	33-547154					Speaker Assembly	36-1469
17	Resistor (220,000 ohms, 1/4 watt)	33-422154					Screws (Back Mounting)	56-6056

MISCELLANEOUS PARTS

Cable (Power)	L-3199
Cabinet (PT-43, Code 121)	13-51A
Cabinet Back (PT-55, Code 121)	27-4907
Cabinet (PT-55, Code 121)	19-446B

MODELS PT-45 and PT-47

SPECIFICATIONS

Models PT-45 and PT-47 are five tube electric push-button tuning, superheterodyne radios with a manual tuning range covering 540 to 1720 kilocycles (K. C.)

Six electric push-buttons are provided on these models. Five of the push-buttons are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

The procedure for adjusting and operating the electric push-buttons for stations will be found on page 10.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

Note—If no sound is heard on D. C. circuits, after the tubes

are sufficiently heated, reverse the power plug. If a slight hum is heard when operating on an A. C. power supply, the power plug should be reversed.

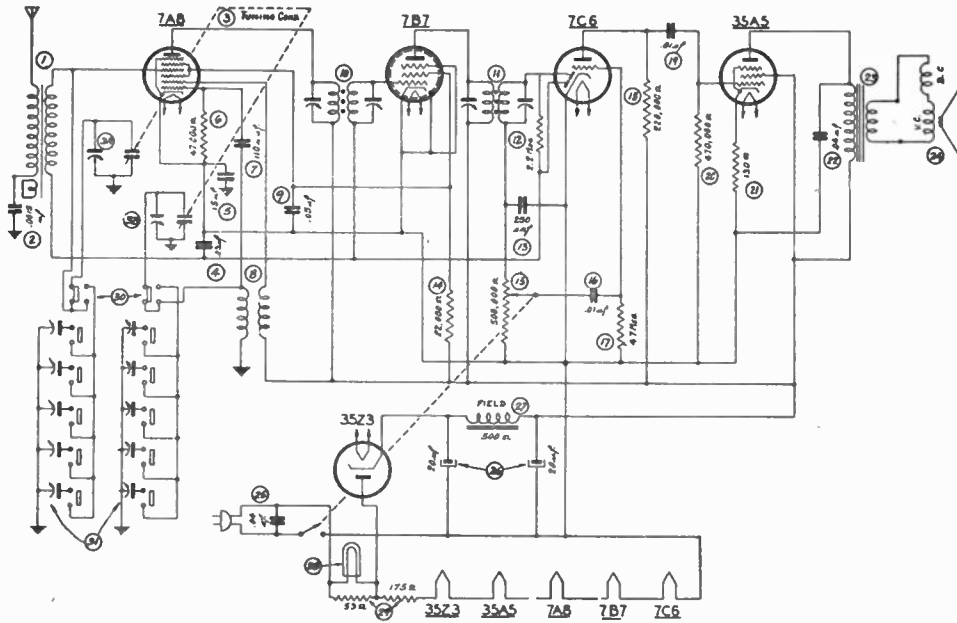
PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL AND GROUND: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain maximum reception, however, in apartment houses, hotels or steel reinforced buildings, the Philco Utility Aerial, Part No. 40-6384, is recommended. A ground is not necessary with these models.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 7.

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3186	22	Tubular Condenser (.04 mf., 400 v.)	30-41198		Cone Assembly	
2	Tubular Condenser (.0015 mf., 200 v.)	30-45558	23	Output Transformer			(for Speaker 36-1469-1)	36-4115
3	Tuning Condenser	31-2428		(for Speaker 36-1469-2)	32-8047		(for Speaker 36-1469-2)	36-4132
4	Tubular Condenser (.05 mf., 200 v.)	30-45198		(for Speaker 36-1469-9)	32-8044		(for Speaker 36-1469-9)	36-4113
5	Tubular Condenser (.15 mf., 400 v.)	30-45058						
6	Resistor (47,000 ohms, 1/4 watt)	33-347154	24	Speaker	36-1469		Dial	27-5553
7	Mica Condenser (110 mf.)	30-1130	25	Tubular Condenser (.04 mf., 400 v.)	30-41198		Dial Drive Shaft	31-2355
8	Oscillator Transformer	32-3167	26	Electrolytic Condenser			Dial Drive Cord	31-2358
9	Tubular Condenser (.05 mf., 200 v.)	30-45198		(20-20 mf., 150 v.)	30-2382		Dial Window	27-5472
10	1st I. F. Transformer	32-3140	27	Field Coil Part of Speaker No.	36-1469		Grille Cloth & Gasket Assembly	318-1134
11	2nd I. F. Transformer	32-3150	28	Pilot Lamp	34-2068		Knob (Push-Button—PT-45)	27-4824
12	Resistor (2.2 meg., 1/4 watt)	33-522154	29	Line Resistor	33-3367		Knob (Tuning & Volume—PT-45)	27-4809
13	Mica Condenser (250 mmf.)	61-0033	30	Push Button Switch	42-1485		Knob (Tuning & Volume—PT-47)	27-4810
14	Resistor (22,000 ohms, 1/4 watt)	33-322334	31	Padding Condenser Strip	31-6293		Knob (Push-Button—PT-47)	27-4831
15	Volume Control (500,000 ohms)	33-5306					Pointer	27-4891
16	Tubular Condenser (.01 mf., 200 v.)	30-44798					Spring (Drive Cord)	28-8954
17	Resistor (4.7 meg., 1/4 watt)	33-547154					Speaker	36-1469
18	Resistor (220,000 ohms, 1/4 watt)	33-422154					Snap Fastener	56-1387
19	Tubular Condenser (.01 mf., 400 v.)	30-45728					Socket Assembly (Pilot Lamp)	38-9825
20	Resistor (470,000 ohms, 1/4 watt)	33-447154					Socket (Tubes)	27-6130
21	Resistor (130 ohms, 1/4 watt)	33-113338					Tab Kit	40-6474
							Tab (Dial)	27-5528

MODELS PT-46 and PT-48

SPECIFICATIONS

Models PT-46 and PT-48 are five tube electric push-button tuning superheterodyne radios with a manual tuning range covering 540 to 1580 K. C. In addition a loop aerial is built into the cabinet for portable use. Aerial connections are also provided on the rear of the cabinet for an external aerial. If an outside aerial is necessary, the Philco Utility aerial, Part No. 40-6384 is recommended.

Six electric push-buttons are provided on these models. Five of the push-buttons are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1580 kilocycles.

The procedure for adjusting and operating the electric push-buttons will be found on page 10.

These models are similar with the exception of the cabinets.

The circuit diagram and part list shown below applies to both models.

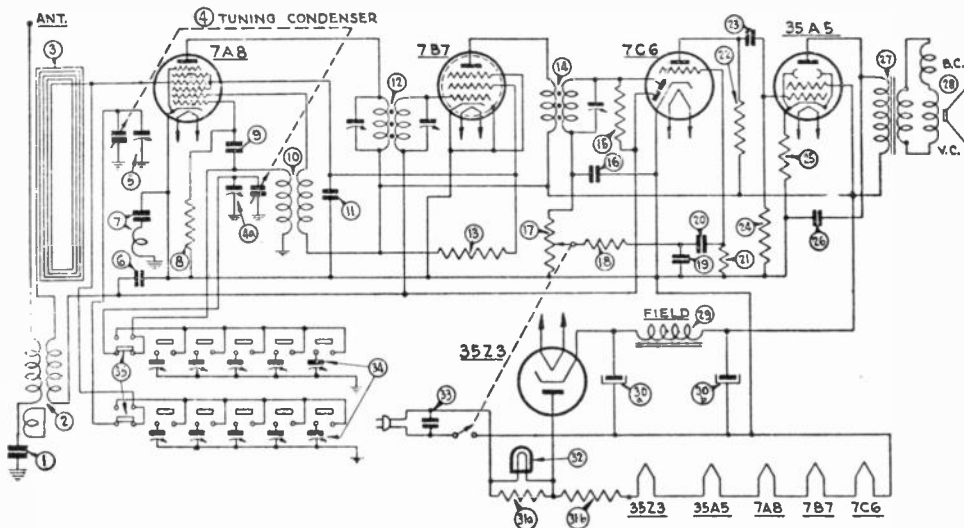
INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

Note—If no sound is heard on D. C. circuits, after the tubes are sufficiently heated, reverse the plug in the power outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should also be reversed.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 8.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Tubular Condenser (.0015 mf., 200 v.)	30-4555	24	Resistor (470,000 ohms, 1/4 watt)	33-447154		Cabinet Back (PT-48)	27-9618
2	Antenna Transformer	32-3394	25	Resistor (130 ohms, 1/2 watt)	33-113336		Clip (Coil Mounting)	28-5002
3	Loop Antenna — Part of Cabinet and Loop Assy.		26	Tubular Condenser (.04 mf., 400 v.)	30-4119		Cable (Power)	1-3199
	PT-46	76-1015	27	Output Transformer			Cone Assembly	
	PT-48	76-1016		(for Speaker 36-1469-1)	32-8047		(for Speaker 36-1469-1)	36-4115
4	Tuning Condenser (PT-46 and PT-48)	31-2445		(for Speaker 36-1469-2)	32-8044		(for Speaker 36-1469-9)	36-4113
5	Padding Condenser	31-6344		(for Speaker 36-1469-9)	32-8044		(for Speaker 36-1469-2)	36-4132
6	Tubular Condenser (.1 mf., 200 v.)	30-4499	28	Speaker	36-1469		Dial	27-5570
7	Condenser & Choke Assy.	76-1019	29	Field Coil	Part of Speaker No. 36-1469		Dial Window	27-5472
8	Resistor (22,000 ohms, 1/4 watt)	33-322154	30	Electrolytic Condenser			Dial Drive Shaft	31-2370
9	Mica Condenser (110 mmf.)	30-1130		(20-20 mf., 150 v.)	30-2382		Dial Drive Cord	31-2358
10	Oscillator Transformer	32-3152	31	Line Resistor	33-3367		Knob (Tuning & Volume—PT-46)	27-4809
11	Tubular Condenser (.05 mf., 200 v.)	30-4519	32	Pilot Lamp	34-2068		Knob (Push-Button—PT-46)	27-4824
12	1st I. F. Transformer	32-3390	33	Tubular Condenser (.04 mf., 400 v.)	30-4119		Knob (Tuning and Volume)	27-4950
13	Resistor (22,000 ohms, 1/4 watt)	33-322334	34	Padding Condenser Strip	31-6324		Knob (Push-Buttons)	27-4952
14	2nd I. F. Transformer	32-3391	35	Push Button Switch	42-1485		Pointer	27-4891
15	Resistor (2.2 meg., 1/4 watt)	33-322154					Mounting Grommet	
16	Mica Condenser (250 mmf.)	61-0033					(Push-Buttons)	27-4596
17	Volume Control (500,000 ohms)	33-5308					Spring (Drive Cord)	28-8954
18	Resistor (47,000 ohms, 1/4 watt)	33-347154					Screw (Back Mounting)	W-2062
19	Mica Condenser (250 mmf.)	61-0033					Screw Chassis Mounting)	W-2110
20	Tubular Condenser (.01 mf., 200 v.)	30-4479					Socket	27-6130
21	Resistor (4.7 meg., 1/4 watt)	33-547154					Snap Fastener	56-1387
22	Resistor (220,000 ohms, 1/4 watt)	33-422154					Tab (Dial)	27-5528
23	Tubular Condenser (.01 mf., 400 v.)	30-4572					Tab Kit	40-6474

MISCELLANEOUS PARTS

Baffle, Cloth and Felt Assembly (PT-46-48)	40-6528
Cabinet and Loop (PT-46)	76-1015
Cabinet Back (PT-46)	27-9617
Cabinet and Loop (PT-48)	76-1016

MODELS PT-49 and PT-51

SPECIFICATIONS

Models PT-49 and PT-51 are five tube electric push button tuning superheterodyne radios with a manual tuning covering 540 to 1720 K. C. on the broadcast range and 2.3 to 2.5 megacycles (M. C.) on the local police range. These models are similar with the exception of the cabinet. The circuit diagram and parts lists shown below applies to both models.

Six electric push-buttons are provided on these models. Five of the push-buttons are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

Note—If no sound is heard on D. C. circuits, after the tubes are sufficiently heated, reverse the plug in the power outlet. If a slight hum is heard when operating on an A. C. power supply, the power plug should also be reversed.

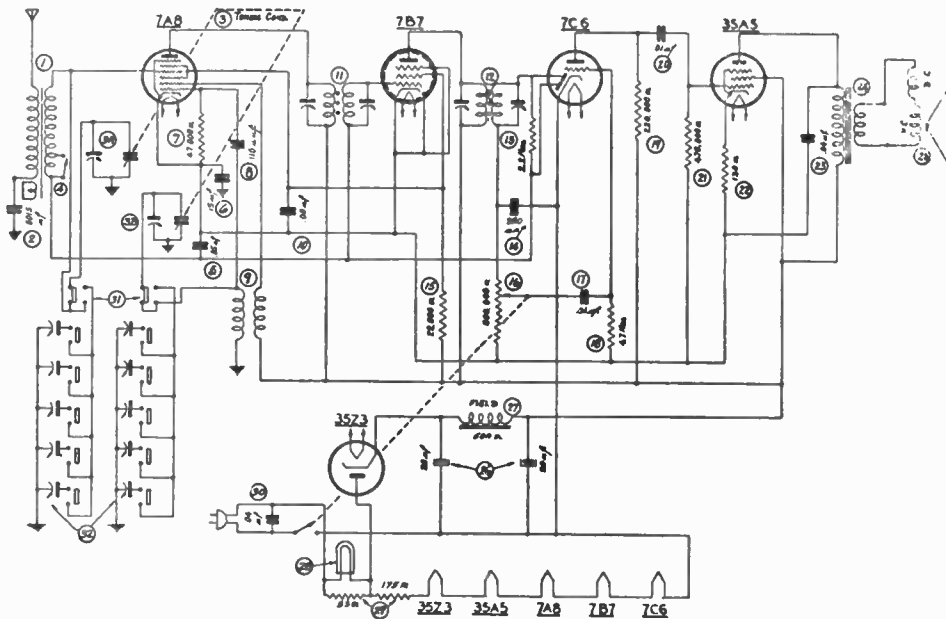
PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception, however, in apartment houses, hotels, or steel reinforced buildings where signal strength is weak, an outside aerial, such as a Philco Utility Aerial, Part No. 40-6384, is recommended.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 7.

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3168	23	Tubular Condenser (.04 mf., 400 v.)	30-41198		Clip	28-5002
2	Tubular Condenser (.0015 mf., 200 v.)	30-45558	24	Output Transformer			Cone Assembly	
3	Tuning Condenser	31-2428		(for Speaker 36-1469-1)	32-8047		(for Speaker 36-1469-2)	36-4132
4	Switch	42-1406		(for Speaker 36-1469-2)	32-8044		(for Speaker 36-1469-9)	36-4113
5	Tubular Condenser (.05 mf., 200 v.)	30-45198	25	Speaker	36-1469		Dial	27-5556
6	Tubular Condenser (.15 mf., 400 v.)	30-45058	26	Electrolytic Condenser			Dial Drive Shaft	31-2355
7	Resistor (47,000 ohms, 1/4 watt)	33-347154		(20-20 mf., 150 v.)	30-2382		Dial Drive Cord	31-2358
8	Mica Condenser (110 mmf.)	30-1130	27	Field Coil Part of Speaker No.	36-1469		Dial Window	27-5472
9	Oscillator Transformer	32-3167	28	Pilot Lamp	34-2068		Grille Cloth Assembly	318-1134
10	Tubular Condenser (.05 mf., 200 v.)	30-45198	29	Line Resistor	33-3367		Knob (Push-Button—PT-49)	27-4824
11	1st I. F. Transformer	32-3149	30	Tubular Condenser (.04 mf., 400 v.)	30-41198		Knob (Tuning & Volume—PT-49)	27-4809
12	2nd I. F. Transformer	32-3150	31	Push Button Switch	42-1485		Knob (Push-Button—PT-51)	27-4831
13	Resistor (2.2 meg., 1/4 watt)	33-522154	32	Padding Condenser Strip	31-6293		Knob (Tuning and Volume)	27-4810
14	Mica Condenser (250 mmf.)	61-0033					Pointer	27-4891
15	Resistor (22,000 ohms, 1/4 watt)	33-322334					Speaker	36-1469
16	Volume Control (500,000 ohms)	33-5306					Spring (Drive Cord)	28-8954
17	Tubular Condenser (.01 mf., 200 v.)	30-44798					Snap Fastener	56-1387
18	Resistor (4.7 meg., 1/4 watt)	33-547154					Socket (Pilot Lamp)	38-9825
19	Resistor (220,000 ohms, 1/4 watt)	33-422154					Socket (Tubes)	27-6130
20	Tubular Condenser (.01 mf., 400 v.)	30-45728					Tab Kit	40-6474
21	Resistor (470,000 ohms, 1/4 watt)	33-447154					Tab Dial	27-5528
22	Resistor (130 ohms, 1/4 watt)	33-113336						

MISCELLANEOUS PARTS

Cable (Power)	1-3199
Cabinet (PT-49)	10366A
Cabinet Back (PT-49)	27-9314
Cabinet (PT-51)	10366B
Cabinet Back (PT-51)	27-9328

MODELS PT-57 and PT-65

SPECIFICATIONS

Models PT-57 and PT-65 are five tube electric push-button tuning superheterodyne radios with a manual tuning range covering 540 to 1580 K. C. In addition a loop aerial is built into the cabinet for portable use. Aerial connections are also provided on the rear of the cabinet for external aerial. If an outside aerial is necessary, the Philco Utility Aerial Part No. 40-6384 is recommended.

Six electric push-buttons are provided on these models. Five of the push-buttons are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

The models are similar with the exception of the cabinets

and dials. The circuit diagram and part list shown below applies to both models.

INTERMEDIATE FREQUENCY: 455 K. C.

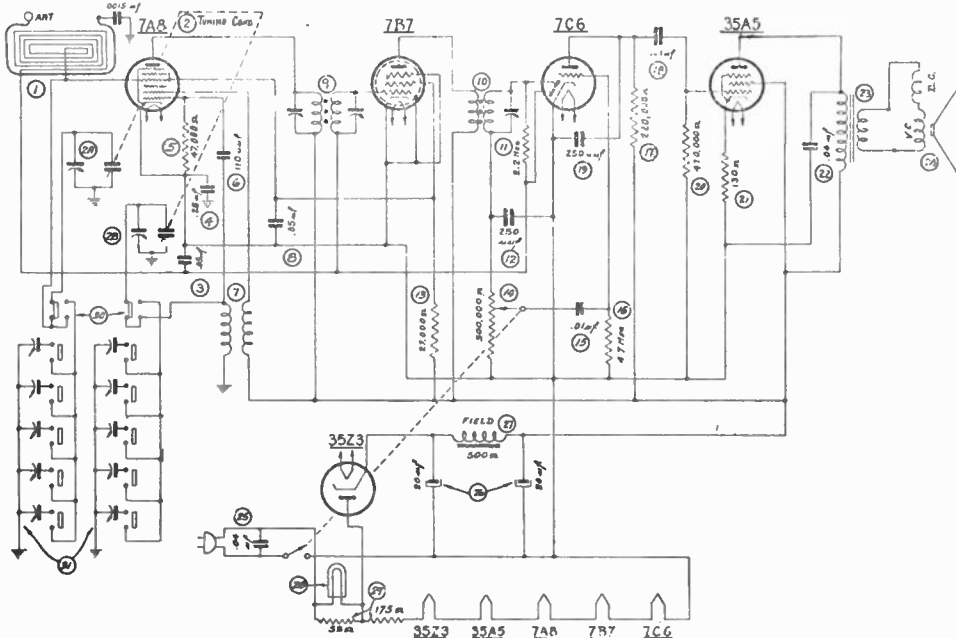
POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 8.

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly	38-9859	24	Speaker	36-1469		Dial (PT-65)	27-5554
2	Tuning Condenser	31-2430	25	Tubular Condenser (.04 mf., 400 v.)	30-4119S		Dial (PT-57)	27-5499
3	Tubular Condenser (.05 mf., 200 v.)	30-4519S	26	Electrolytic Condenser (20-20 mf., 150 v.)	30-2382		Dial Drive Cord	31-2358
4	Tubular Condenser (.25 mf., 400 v.)	30-4604S	27	Field Coil—Part of Speaker No.	36-1469		Dial Drive Shaft	31-2370
5	Resistor (47,000 ohms, 1/4 watt)	33-347154	28	Pilot Lamp	34-2068		Dial Window	27-5472
6	Mica Condenser (110 mmf.)	30-1130	29	Line Resistor	33-3367		Grille Cloth and Gasket (PT-57)	318-1134
7	Oscillator Transformer	32-3152	30	Push Button Switch	42-1485		Grille & Baffle Assembly (PT-65)	40-6451
8	Tubular Condenser (.05 mf., 200 v.)	30-4519S	31	Padding Condenser Strip	31-6296		Knob (Tuning and Volume)	27-4809
9	1st I. F. Transformer	32-3177					Knob (Push-Button)	27-4824
10	2nd I. F. Transformer	32-3178					Knob (Tuning and Volume)	27-4809
11	Resistor (2.2 mega., 1/4 watt)	33-522154					Handle (Cabinet)	45-6052
12	Mica Condenser (250 mmf.)	61-0033					Spring (Drive Cord)	28-8954
13	Resistor (27,000 ohms, 1/4 watt)	33-327334					Speaker	36-1469
14	Volume Control (500,000 ohms)	33-5306					Screw (Chassis Mounting)	W-2176
15	Tubular Condenser (.01 mf., 200 v.)	30-4479S					Screw (Handle-Cabinet)	W-2043
16	Resistor (4.7 mega., 1/4 watt)	33-547154					Screw (Cabinet Back)	56-6056
17	Resistor (220,000 ohms, 1/4 watt)	33-422154					Screw (Cabinet Back)	W-2029
18	Tubular Condenser (.01 mf., 400 v.)	30-4572S					Socket (Pilot Lamp)	38-9825
19	Mica Condenser (250 mmf.)	61-0033					Socket (Tubes)	27-6130
20	Resistor (470,000 ohms, 1/4 watt)	33-447154					Tab Holder (Cabinet)	28-5742
21	Resistor (130 ohms, 1/4 watt)	33-113336					Tab Kit (PT-57)	40-6474
22	Tubular Condenser (.04 mf., 400 v.)	30-4119S					Tab Kit (PT-65)	40-6473
23	Output Transformer						Tab (Dial-PT-57)	27-5528
	(for Speaker 36-1469-1)	32-8047					Tab (Dial-PT-65)	27-5526
	(for Speaker 36-1469-2)	32-8044						
	(for Speaker 36-1469-9)	32-8044						

MISCELLANEOUS PARTS

Cable (Power)	L-3199
Cabinet (PT-57)	10366A
Cabinet Back (PT-57)	27-4822
Cabinet (PT-65)	10376A
Cabinet Back (PT-65)	27-9358
Clip	28-5002
Cone Assembly	
(for Speaker 36-1469-1)	36-4115
(for Speaker 36-1469-2)	36-4132
(for Speaker 36-1469-9)	36-4113

MODEL PT-59

SPECIFICATIONS

Model PT-59 is a five tube electric push-button tuning super-heterodyne radio with a manual tuning covering 540 to 1720 K. C. on the broadcast range and 2.3 to 2.5 megacycles (M. C.) on the local police range.

Six electric push-buttons are provided. Five of the push-buttons are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

INTERMEDIATE FREQUENCY: 470 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

Note—if no sound is heard on D. C. circuits after the tubes

are sufficiently heated, reverse the power plug in the outlet. If a slight hum is heard when operating on A. C. power supply, the power plug should also be reversed.

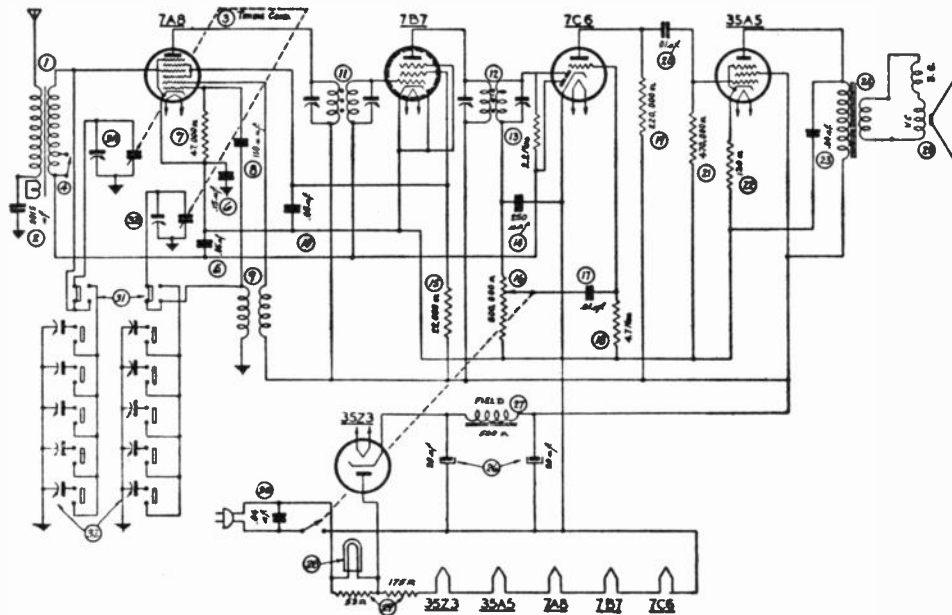
PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

AERIAL: A twenty foot indoor aerial wire is attached to the radio for average receiving conditions. To obtain best reception, however, in apartment houses, hotels, or steel reinforced buildings where signal strength is weak, an outside aerial, such as a Philco Utility Aerial, Part No. 40-6384, is recommended.

ALIGNING PROCEDURE: The instructions for adjusting the R. F. and I. F. compensators will be found on page 6.

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3164	22	Resistor (130 ohms, 1/2 watt)	33-113336		Cabinet Back	27-9324
2	Tubular Condenser (.0015 mf., 200 v.)	30-45553	23	Tubular Condenser (.4 mf., 400 v.)	30-41198		Cabinet Feet	27-9337
3	Tuning Condenser	31-2435	24	Output Transformer			Clip (Coil Mounting)	28-5002
4	Switch	42-1408		(for Speaker 36-1469-1)	32-8047		Dial Drive Arm	56-1376
5	Tubular Condenser (.05 mf., 200 v.)	30-45198		(for Speaker 36-1469-2)	32-8044		Dial Drive Drum	56-6033
6	Tubular Condenser (.15 mf., 400 v.)	30-45053		(for Speaker 36-1469-9)	32-8044		Dial Drive Shaft	31-2355
7	Resistor (47,000 ohms, 1/4 watt)	33-347154	25	Cone Assembly			Dial Drive Cord	31-2358
8	Mica Condenser (110 mmf.)	30-1130		(for Speaker 36-1469-1)	36-4115		Knob (Tuning and Volume)	27-4815
9	Oscillator Transformer	32-3152		(for Speaker 36-1469-2)	36-4132		Knob (Push-Button)	27-4824
10	Tubular Condenser (.05 mf., 200 v.)	30-45198		(for Speaker 36-1469-9)	36-4113		Rubber Grommet	
11	1st I. F. Transformer	32-3149	26	Electrolytic Condenser	30-2382		(Switch and Padder Mtg.)	27-4596
12	2nd I. F. Transformer	32-3150		(20-20 mf., 150 v.)			(Tuning Condenser Mtg.)	27-4610
13	Resistor (2.2 meg., 1/4 watt)	33-522154	27	Field Coil			Rubber Tubing (Driving Arm)	27-9334
14	Mica Condenser (250 mmf.)	61-0033		Part of Speaker, Part No.	36-1469		Spring (Drive Cord)	28-8751
15	Resistor (22,000 ohms, 1/4 watt)	33-322334	28	Pilot Lamp	34-2068		Socket (Tubes)	27-6130
16	Volume Control (500,000 ohms)	33-5306	29	Line Resistor	33-3387		Socket (Pilot Lamp)	38-9825
17	Tubular Condenser (.01 mf., 200 v.)	30-44798	30	Tubular Condenser (.04 mf., 400 v.)	30-41198		Screw (Drive Arm Mounting)	W-2036
18	Resistor (4.7 meg., 1/4 watt)	33-547154					Screw (Back Mounting)	W-2062
19	Resistor (220,000 ohms, 1/4 watt)	33-422154					Screw (Chassis Mounting)	W-2176
20	Tubular Condenser (.01 mf., 400 v.)	30-45728					Speaker	36-1469
21	Resistor (470,000 ohms, 1/4 watt)	33-447154					Tab (Dial)	27-5528

MISCELLANEOUS PARTS

Cable (Power)	L-3199
Cabinet	10368A

MODEL PT-63

SPECIFICATIONS

Model PT-63 is a four tube portable battery operated super-heterodyne receiver designed for reception of standard broadcast stations. In addition other features included are a loop aerial built into the cabinet, extremely sensitive permanent magnet field speaker, automatic volume control and pentode audio output.

TUNING RANGE: 540 to 1550 K. C.

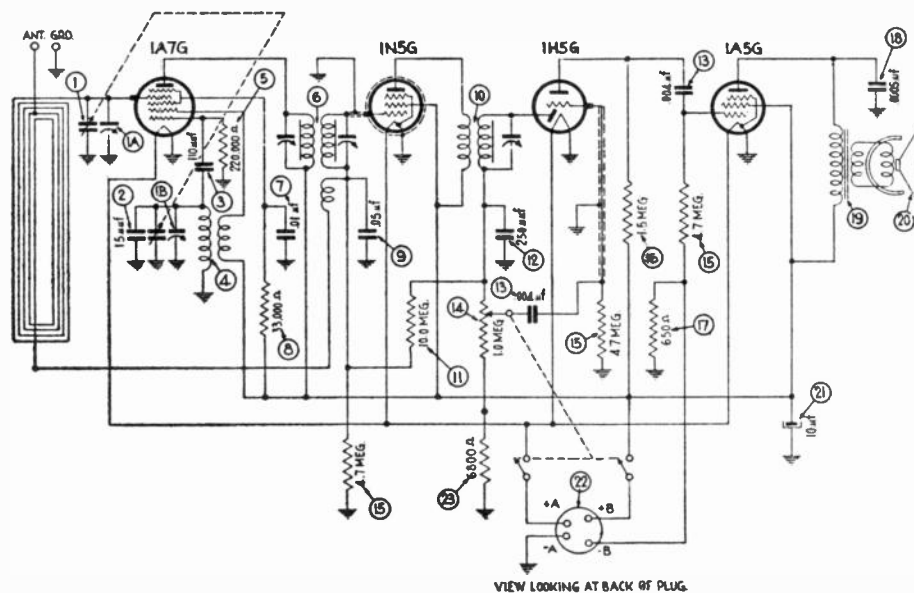
INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: One 1A7G, 1st detector and oscillator; one 1N5G, I. F. amplifier; one 1H5G, 2nd detector, (1st audio) amplifier and automatic volume control and one 1A5G power output.

PHILCO BATTERIES REQUIRED: One P-41A-4FL.

BATTERY CURRENT: "A" 200 M. A. "B" 5.6 M. A.

R. F. AND I. F. ALIGNING INSTRUCTIONS: The aligning procedure for this model is the same as that listed for Model 40-81, Code 122 on page 40.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Tuning Condenser	31-2432	13	Tubular Condenser (.004 mf., 400 v.)	30-4578S	23	Resistor (6800 ohms ¼ watt)	33-268154
2	Mica Condenser (15 mmf.)	61-0038	14	Volume Control	33-5331	MISCELLANEOUS PARTS		
3	Mica Condenser (110 mmf.)	30-1031	15	Resistor (4.7 megs. ¼ watt)	33-547154		Cabinet	104131B
4	Oscillator Transformer	33-3277	16	Resistor (1.5 meg. ¼ watt)	33-515154		Dial Scale	27-5555
5	Resistor (220,000 ohms ¼ watt)	33-422154	17	Resistor (650 ohms ¼ watt)	33-165326		Dial Drive Cord	31-2411
6	1st I. F. Transformer	32-3265	18	Mica Condenser (.0005 mf.)	30-1114		Dial Pointer	27-4891
7	Tubular Condenser (.01 mf. 400 v.)	30-4572S	19	Output Transformer	32-8062		Dial Drive Shaft	38-9878
8	Resistor (33,000 ohms ¼ watt)	33-333154	20	Speaker	36-1481		Grille Screen	56-1539
9	Tubular Condenser (.05 mf., 200 v.)	30-4519S		Cone Assembly			Knob	27-4924
10	2nd I. F. Transformer	32-3266		(for Speaker 36-1481-3)	36-4121		Spring (Dial Drive Cord)	28-8751
11	Resistor (10 megs. ¼ watt)	33-610154	21	Electrolytic Condenser	30-2396		Socket	27-6133
12	Mica Condenser (250 mmf.)	61-0033	22	Battery Cable	41-3487			

MODEL PT-66

SPECIFICATIONS

Model PT-66 is a five tube, electric push-button tuning, superheterodyne radio with a manual tuning range covering 540 to 1580 K. C. In addition a loop aerial is built into the cabinet for portable use. Aerial connections are also provided in the rear of the cabinet for an external aerial. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384 is recommended.

Six electric push-buttons are provided on this model. Five of the push-buttons are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

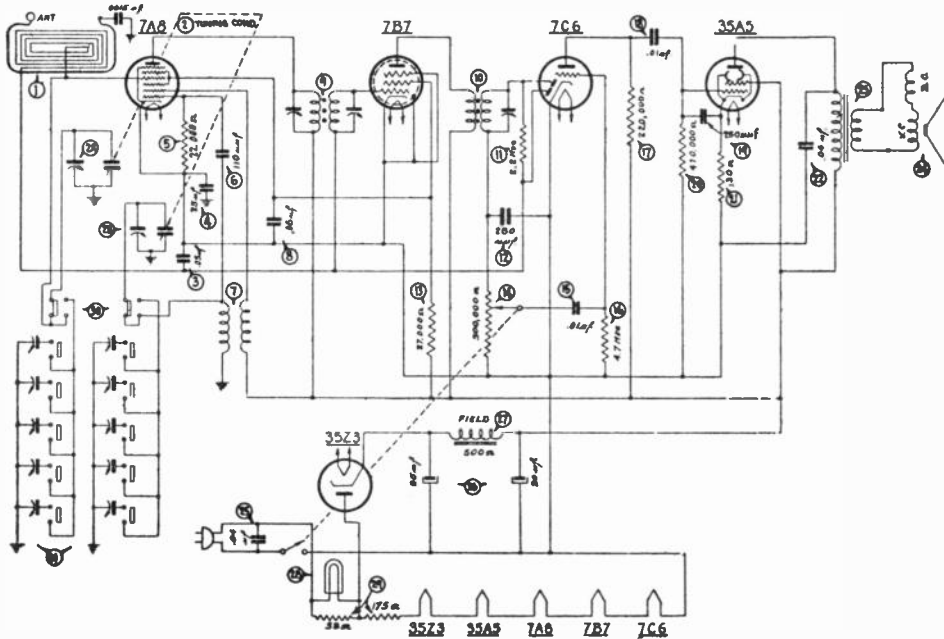
The procedure for adjusting and operating electric push-buttons will be found on page 10.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page 8.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.		
1	Loop Antenna Assembly	32-3186	21	Resistor (130 ohms, 1/2 watt)	33-113338	MISCELLANEOUS PARTS				
2	Tuning Condenser	31-2449	22	Tubular Condenser (.04 mf., 400 v.)	30-4119				Cable (Power)	L-3199
3	Tubular Condenser (.05 mf., 200 v.)	30-4519	23	Output Transformer					Cabinet	10468A
4	Tubular Condenser (.25 mf., 400 v.)	30-4604		(for Speaker 36-1469-1)	32-8047				Clip (Coil Mounting)	28-5002
5	Resistor (22,000 ohms, 1/2 watt)	33-322154		(for Speaker 36-1469-2)	32-8044				Dial	27-5570
6	Mica Condenser (110 mmf.)	30-1130		(for Speaker 36-1469-2)	32-8044				Drive Cord	31-2358
7	Oscillator Transformer	32-3152	24	Speaker	36-1469				Drive Shaft	31-2370
8	Tubular Condenser (.05 mf., 200 v.)	30-4519		Cone Assembly					Knob (Tuning, Volume)	27-4950
9	1st I. F. Transformer	32-3177		(for Speaker 36-1469-9)	36-4113				Knob (Push-Button)	27-4952
10	2nd I. F. Transformer	32-3178		(for Speaker 36-1469-2)	36-4132				Pointer	27-4891
11	Resistor (2.2 meg., 1/2 watt)	33-522154	25	Tubular Condenser (.04 mf., 400 v.)	30-4119	Speaker	36-1469			
12	Mica Condenser (250 mmf.)	61-0033	26	Electrolytic Capacitor		Spring (Drive Cord)	28-8954			
13	Resistor (27,000 ohms, 1/2 watt)	33-327334		(20-20 mf., 150 v.)	30-2382	Screw (Chassis Mounting)	W-2030			
14	Volume Control (500,000 ohms)	33-5306	27	Field Coil—Part of Speaker No.	36-1469	Snap Fastener (Dial)	56-1387			
15	Tubular Condenser (.01 mf., 200 v.)	30-4479	28	Pilot Lamp	34-2068	Socket (Pilot Lamp Assembly)	38-9825			
16	Resistor (4.7 meg., 1/2 watt)	33-547154	29	Line Resistor	33-3387	Socket (Tubes)	27-6130			
17	Resistor (220,000 ohms, 1/2 watt)	33-422154	30	Push Button Switch	42-1485	Tab Kit	40-6473			
18	Tubular Condenser (.01 mf., 400 v.)	30-4572	31	Padding Condenser Strip	31-6286	Tab (Dial)	27-5526			
19	Mica Condenser (250 mmf.)	61-0033								
20	Resistor (470,000 ohms, 1/2 watt)	33-447154								

MODEL PT-67

SPECIFICATIONS

Model PT-67 is a five tube electric push-button tuning, superheterodyne radio with a manual tuning range covering 540 to 1580 K. C. on the broadcast band and 2.3 to 2.5 M. C. on the local police range. In addition, a loop aerial is built into the cabinet for portable use. Aerial connections are also provided on the rear of the cabinet for an external aerial. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended.

Six electric push-buttons are provided on this model. Five push-buttons are used for selecting stations and one push-

button for selecting dial tuning. The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

INTERMEDIATE FREQUENCY: 455 K. C.

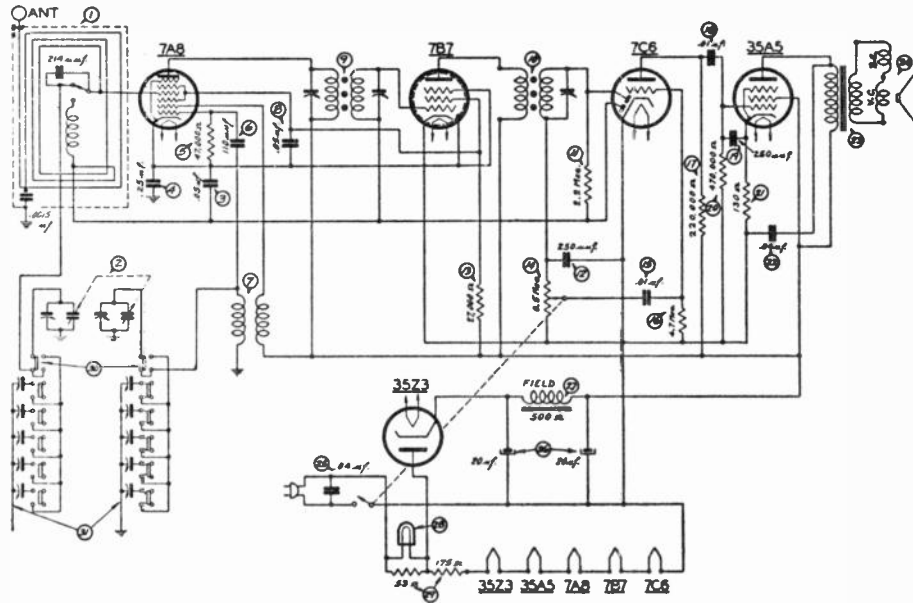
PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

ALIGNING PROCEDURE: The aligning procedure for adjusting the R. F. and I. F. compensators will be found on page 6.

PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly	38-9937	22	Tubular Condenser (.04 mf., 400 v.)	30-4119S		Cone Assembly	
2	Tuning Condenser	31-2437	23	Output Transformer			(for Speaker 36-1469-1)	36-4115
3	Tubular Condenser (.05 mf., 200 v.)	30-4519S		(for Speaker 36-1469-1)	32-8047		(for Speaker 36-1469-2)	36-4132
4	Tubular Condenser (.25 mf., 400 v.)	30-4604S		(for Speaker 36-1469-2)	32-8044		(for Speaker 36-1469-9)	36-4113
5	Resistor (47,000 ohms, 1/4 watt)	33-347154		(for Speaker 36-1469-9)	32-8044		Drive Drum (Tuning Condenser)	56-6033
6	Mica Condenser (110 mmf.)	30-1130	24	Speaker	36-1469		Drive Cord Assembly	31-2358
7	Oscillator Transformer	32-3152	25	Tubular Condenser (.04 mf., 400 v.)	30-4119S		Drive Shaft Assembly	31-2370
8	Tubular Condenser (.05 mf., 200 v.)	30-4519S	26	Electrolytic Condenser			Clips (Coil Mounting)	28-5002
9	1st I. F. Transformer	32-3177		(20-20 mf., 150 v.)	30-2382		Grille Silk and Baffle	40-6452
10	2nd I. F. Transformer	32-3178	27	Field Coil	Part of Speaker No. 36-1469		Handle	45-6053
11	Resistor (2.2 megs., 1/4 watt)	33-522154	28	Pilot Lamp	34-2068		Knob (Tuning and Volume)	27-4815
12	Mica Condenser (250 mmf.)	81-0033	29	Line Resistor	33-3367		Pointer (Dial)	27-4891
13	Resistor (27,000 ohms, 1/4 watt)	33-327334	30	Push Button Switch	42-1485		Pointer Drive Arm	56-1376
14	Volume Control (500,000 ohms)	33-5306	31	Padding Condenser Strip	31-6324		Screws (Back Mounting)	56-6056
15	Tubular Condenser (.01 mf., 200 v.)	30-4479S					Screws (Handle)	W-2043
16	Resistor (4.7 megs., 1/4 watt)	33-547154					Screws (Chassis Mounting)	W-2176
17	Resistor (220,000 ohms, 1/4 watt)	33-422154					Screws (Back Mounting)	W-2029
18	Tubular Condenser (.01 mf., 400 v.)	30-4572S					Spring (Drive Cord)	28-8751
19	Mica Condenser (250 mmf.)	81-0033					Socket (Pilot Lamp)	38-9825
20	Resistor (470,000 ohms, 1/4 watt)	33-447154					Socket (Tubes)	27-6130
21	Resistor (130 ohms, 1/2 watt)	33-113336					Tab (Dial)	27-5528
							Tab Kit	40-6474

MISCELLANEOUS PARTS

Cable (Power)	L-3199
Cabinet	1047A
Cabinet Back	27-4833

MODEL PT-69, Codes 121 and 122

SPECIFICATIONS

Model PT-69, Codes 121 and 122 are five tube, superheterodyne radios covering a tuning frequency range from 540 to 1580 K. C. This model is equipped with a self-starting Sessions electric clock. In addition, a loop aerial is built into the cabinets for portable use. Aerial connections are also provided, however, on the rear of the cabinet for an external aerial. An outside aerial should be used in steel reinforced buildings, apartment houses, hotels and other shielded locations where signal strength is weak. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended. Codes 121 and 122 are similar with the exception of the type of dial, tuning condenser and loop aerial assembly.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

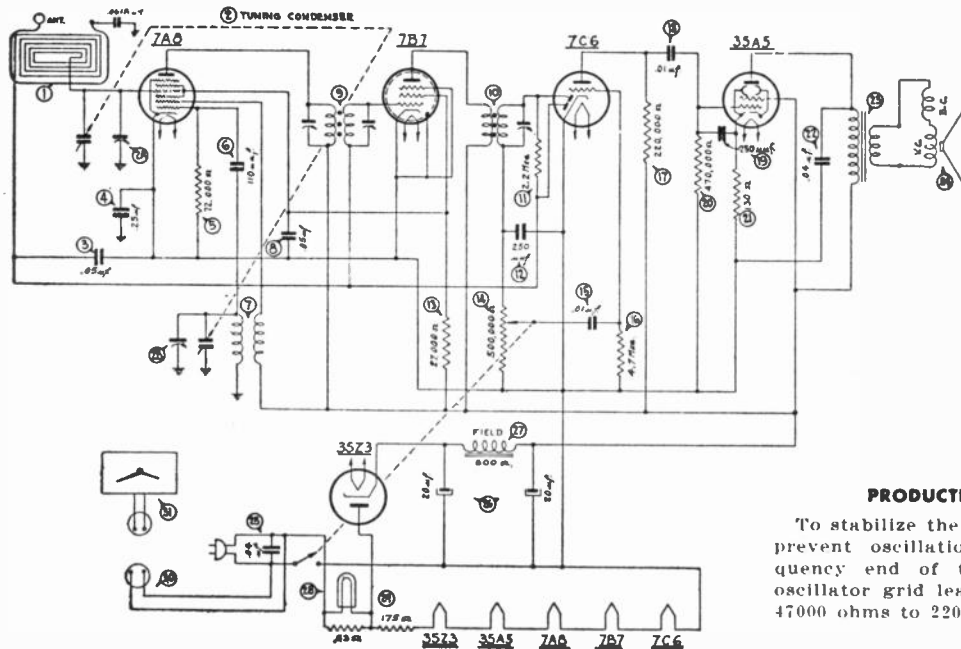
PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page 8.

PRODUCTION CHANGES

Several parts were changed in this model and the code number changed from 121 to 122. These changes are as follows:

	Code 121	Code 122
Dial	27-5554	27-5570
Instructions	39-6573	39-6712
Loop Aerial Ass'y	38-9858	32-3179
Tuning Condenser	31-2429	31-2448



PRODUCTION CHANGE

To stabilize the oscillator circuit and prevent oscillation at the high frequency end of the tuning dial, the oscillator grid leak was changed from 47000 ohms to 22000 ohms.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly (Code 121)	38-9858	21	Resistor (130 ohms, 1/2 watt)	33-11338		Cable	41-3484
	(Code 122)	32-3179	22	Tubular Condenser (.04 mf., 400 v.)	30-4119		Cable (Power)	L-3199
2	Tuning Condenser (Code 121)	31-2429	23	Output Transformer (for Speaker 36-1469-1)	32-8047		Clip (Coil Mounting)	28-5002
	(Code 122)	31-2448		(for Speaker 36-1469-2)	32-8044		Cone Assembly (for Speaker 36-1469-1)	36-4115
3	Tubular Condenser (.05 mf., 200 v.)	30-4519		(for Speaker 36-1469-9)	32-8044		(for Speaker 36-1469-2)	36-4132
4	Tubular Condenser (.25 mf., 400 v.)	30-4604		Speaker	36-1469		(for Speaker 36-1469-9)	36-4113
5	Resistor (22,000 ohms, 1/4 watt)	33-322154	24	Speaker	36-1469		Dial (Code 121)	27-5554
6	Mica Condenser (110 mmf.)	30-1130	25	Tubular Condenser (.04 mf., 400 v.)	30-4119		Dial (Code 122)	27-5570
7	Oscillator Transformer	32-3182	26	Electrolytic Condenser (20-20 mf., 150 v.)	30-2382		Dial Pointer	31-2370
8	Tubular Condenser (.05 mf., 200 v.)	30-4519	27	Field Coil			Dial Drive Cord	31-2358
9	1st I. F. Transformer	32-3177		Part of Speaker No.	36-1469		Dial Drive Shaft	31-2370
10	2nd I. F. Transformer	32-3178	28	Pilot Lamp	34-2068		Instructions (Code 121)	39-6573
11	Resistor (2.2 megs., 1/4 watt)	33-522154	29	Line Resistor	33-3367		Instructions (Code 122)	39-6712
12	Mica Condenser (250 mmf.)	61-0033	30	Connector Cable	41-3484		Knob (Volume Tuning)	27-4809
13	Resistor (27,000 ohms, 1/2 watt)	33-327334	31	Complete Clock (For 50 Cycle operation)	45-2778		Rubber Grommet	27-4610
14	Volume Control (500,000 ohms)	33-5306		(For 60 Cycle operation)	45-2779		Speaker	36-1469
15	Tubular Condenser (.01 mf., 200 v.)	30-4479		MISCELLANEOUS PARTS			Spring (Drive Cord)	28-8954
16	Resistor (4.7 megs., 1/4 watt)	33-547154		Bolts (Chassis Mounting)	W-2017		Snap Fastener (Dial Mounting)	56-1387
17	Resistor (220,000 ohms, 1/4 watt)	33-422154		Cabinet	10-454-A		Socket (Pilot Lamp)	38-9825
18	Tubular Condenser (.01 mf., 400 v.)	30-4572					Socket (Tube)	27-6130
19	Mica Condenser (250 mmf.)	61-0033					Screws (Clock Mounting)	W-1837
20	Resistor (470,000 ohms, 1/4 watt)	33-447154					Screws (Back Mounting)	W-2023

MODELS TH-9, TH-18 and TH-22

SPECIFICATIONS

Models TH-9, TH-18 and TH-22 are five tube, superheterodyne radios covering frequency ranges as follows:

TH-9 — 540 — 1720 K. C.	3.0 — 10 M. C.
TH-18 — 540 — 1720 K. C.	5.5 — 19 M. C.
TH-22 — 540 — 1720 K. C.	7.0 — 24 M. C.

These models are similar with the exception of the tuning frequency ranges and cabinets.

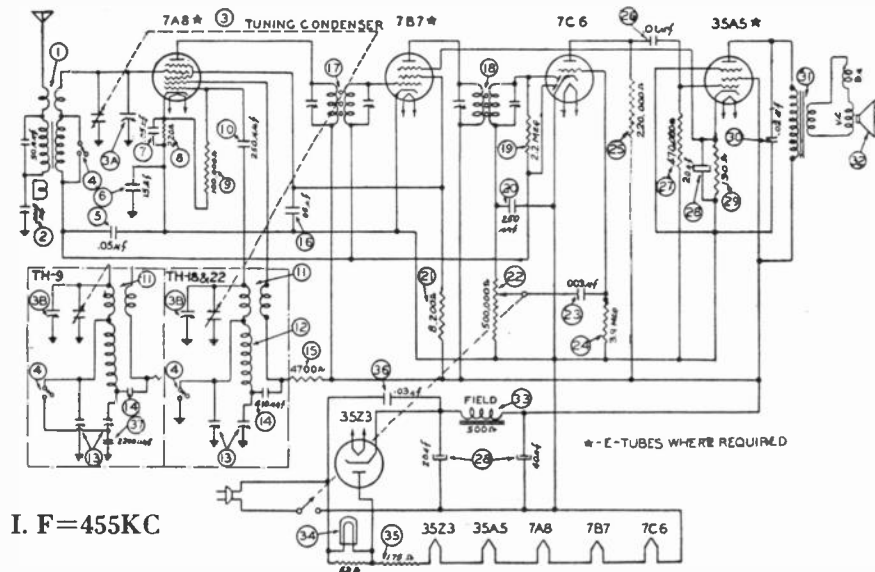
INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The procedure for aligning the R. F. and I. F. circuits will be found on page 7.

AERIAL CONNECTIONS: A 20 foot indoor aerial is provided with the receiver for average receiving conditions. In steel reinforced buildings, apartment houses and locations where signal strength is weak, an external aerial should be used. If an external aerial is necessary, Philco Utility Aerial, Part No. 40-6384, is recommended.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	{ TH-9 32-3235 TH-18 32-3233 TH-22 32-3215	20	Mica Condenser (250 mmf.)	30-1032			
2	Tubular Condenser (.0015 mf., 200 v.)	30-4555S	21	Resistor (8,200 ohm, 1/4 watt)	33-282134			
3	Tuning Condenser	{ TH-9 31-2385 TH-18, TH-22 31-2377	22	Volume Control	33-5306			
4	Wave Switch	42-1497	23	Tubular Condenser (.003 mf., 200 v.)	30-4580			
5	Tubular Condenser (.05 mf., 200 v.)	30-4519S	24	Resistor (3.9 megohm, 1/4 watt)	33-539134			
6	Tubular Condenser (.15 mf., 400 v.)	30-4600	25	Resistor (220,000 ohms, 1/4 watt)	33-522154			
7	Tubular Condenser (.05 mf., 200 v.)	30-4519S	26	Tubular Condenser (.01 mf., 200 v.)	30-4581			
8	Resistor (220 ohms, 1/4 watt)	33-122254	27	Resistor (470,000 ohms, 1/4 watt)	33-447154			
9	Resistor (100,000 ohms, 1/4 watt)	33-410154	28	Electrolytic Condenser	30-2402			
10	Mica Condenser (250 mmf.)	30-1032	29	Resistor (130 ohms, 1/3 watt)	33-113336			
11	Short Wave Oscillator Trans.	{ TH-9 32-3236 TH-18 32-3234 TH-22 32-3216	30	Tubular Condenser (.02 mf., 400 v.)	30-4516			
12	BC Oscillator Transformer	{ TH-9 32-3244 TH-18, TH-22 32-3217	31	Output Transformer				
13	Dual Padding Condenser	{ TH-9 31-6304 TH-18, TH-22 31-6303		(for Speaker 36-1469-1)	32-8047			
14	Mica Condenser (410 mmf.)	30-1089		(for Speaker 36-1469-2)	32-8044			
15	Resistor (4700 ohm, 1/4 watt)	33-247134		(for Speaker 36-1469-9)	32-8044			
16	Tubular Condenser (.05 mf., 200 v.)	30-4519	32	Speaker (Cone Assembly)	36-1469			
17	1st I. F. Transformer	32-3149		(for Speaker 36-1469-1)	36-4115			
18	2nd I. F. Transformer	32-3150		(for Speaker 36-1469-2)	36-4132			
19	Resistor (2.2 megohms, 1/4 watt)	33-522154		(for Speaker 36-1469-9)	36-4113			
			33	Field Coil — Part of Speaker No.	36-1469			
			34	Pilot Lamp	34-2088			
			35	Line Resistor	33-3367			
			36	Tubular Condenser (.03 mf., 400 v.)	30-4517			
			37	Mica Condenser (2200 mmf.)	30-1129			

MISCELLANEOUS PARTS

Cable (Power)	L-3199
Cabinet Back (TH-18E)	27-9368
Cabinet Back (TH-18EW)	27-9383
Cabinet (TH-18EW)	10362A
Cabinet (TH-18, TH-18E)	10364A
Clip (Coil Mounting)	28-5002
Dial (TH-18)	27-5515
Dial (TH-18E)	27-5520
Dial Drive Cord	31-2393
Dial Drive Drum	28-6662
Dial Drive Shaft	31-2355
Dial Window	27-5472
Grille Cloth & Gasket (TH-18E)	318-1120
Knob (Tuning and Volume)	27-4809
Pointer (Dial-TH-18)	56-1494
Speaker	36-1469
Spring (Drive Cord)	28-8751
Snap Fastener (Dial)	56-1387
Socket (Pilot Lamp)	38-9825
Screw (Chassis Mounting)	W-2176
Screw (Cabinet Back)	W-2168
Screw (Cabinet Back TH-18EW)	W-2023
Screw (Back Mounting)	W-2168

MODELS TH-14 and TH-16

SPECIFICATIONS

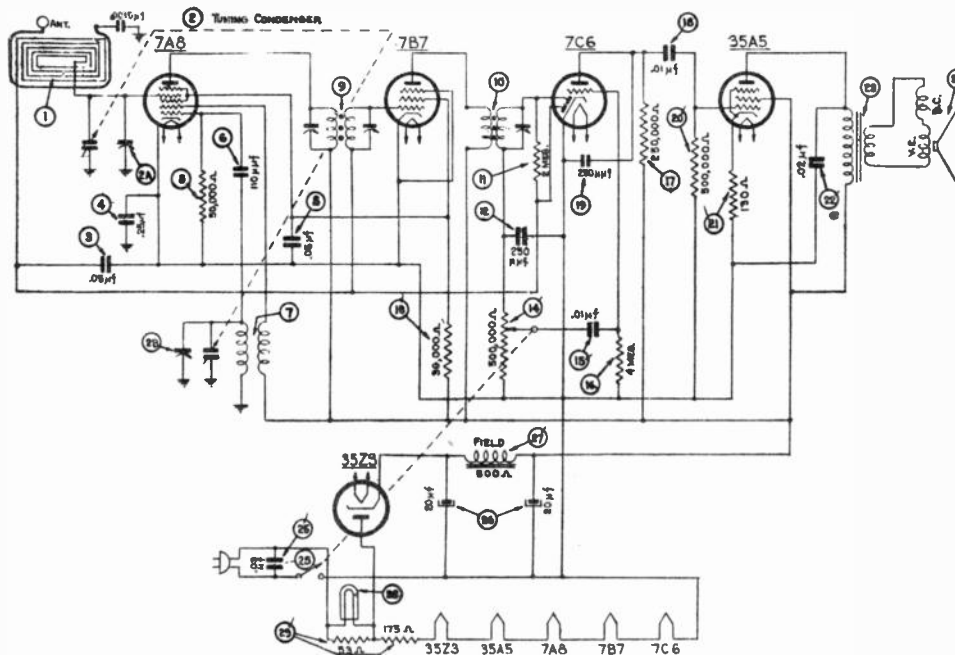
Models TH-14 and TH-16 are five tube, superheterodyne radios covering a frequency range from 540 to 1580 K. C. A loop aerial is provided on the rear of the cabinet for portable use in addition to external aerial connections on the rear of the cabinet for locations such as steel reinforced buildings, apartment houses and other locations where signal strength is weak. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended. These models are similar with the exception of the cabinets.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt alternating current (A. C.) or 115 volt direct current (D. C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output and one 35Z3, rectifier.

ALIGNING PROCEDURE: The aligning procedure for these models will be found on page 8.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly	32-3179		(for Speaker 36-1469-2)	32-8044		Dial Window	27-5541
2	Tuning Condenser	31-2369		(for Speaker 36-1469-9)	32-8044		Dial Window (TH-16)	27-5472
3	Tubular Condenser (.05 mf., 200 v.)	30-4519S	24	Speaker	36-1469		Drive Drum (Dial)	28-6662
4	Tubular Condenser (.25 mf., 400 v.)	30-4604S		Cone Assembly			Drive Cord	31-2358
5	Resistor (50,000 ohms, 1/3 watt)	33-350244		(for Speaker 36-1469-1)	36-4115		Drive Shaft (Dial) TH-16	31-2355
6	Mica Condenser (110 mmf.)	30-1031		(for Speaker 36-1469-2)	36-4132		Drive Shaft (Dial) TH-14	31-2370
7	Oscillator Transformer	32-3182		(for Speaker 36-1469-9)	36-4113		Grille and Baffle (TH-16)	318-1120
8	Tubular Condenser (.05 mf., 200 v.)	30-4519S	25	Tubular Condenser (.03 mf., 400 v.)	30-4449S		Grille and Baffle (TH-14)	40-6456
9	1st I. F. Transformer	32-3177	26	Electrolytic Condenser			Handle (Cabinet TH-14)	45-6051
10	2nd I. F. Transformer	32-3178		(20—20 mf., 150 v.)	30-2382		Handle (Cabinet TH-16)	45-6052
11	Resistor (2 megs., 1/3 watt)	33-520244	27	Field Coil—Part of Speaker No.	36-1469		Knob (Tuning, Volume)	27-4809
12	Mica Condenser (250 mmf.)	30-1032	28	Pilot Lamp	34-2068		Pointer (Dial)	56-1326
13	Resistor (30,000 ohms, 1/3 watt)	33-330244	29	Line Resistor	33-3367		Snap Fastener	56-1387
14	Volume Control (500,000 ohms)	33-5306					Spring (Drive Cord)	28-8751
15	Tubular Condenser (.01 mf., 200 v.)	30-4479S					Socket (Pilot Lamp)	38-9825
16	Resistor (4 megs., 1/3 watt)	33-540244					Screw (Chassis Mounting)	W-2176
17	Resistor (250,000 ohms, 1/3 watt)	33-425244					Screw (Cabinet Back)	W-2028
18	Tubular Condenser (.01 mf., 400 v.)	30-4572S					Screw (Cabinet Back)	W-2029
19	Mica Condenser (250 mmf.)	30-1032					Screw (Chassis Mtg.) TH-14	W-2017
20	Resistor (500,000 ohms, 1/3 watt)	33-450244					Screw (Cab. Back Mtg.) TH-14	W-552
21	Resistor (130 ohms, 1/2 watt)	33-113336					Screws (Handle) TH-14	W-2038
22	Tubular Condenser (.02 mf., 400 v.)	30-4516S					Screw (Handle) TH-16	W-2021
23	Output Transformer (for Speaker 36-1469-1)	32-8047					Tab (Dial)	27-5482
							Tab Kit	40-6445

MISCELLANEOUS PARTS

Cabinet (TH-14)	10375A
Cabinet Back (TH-14)	27-9353
Cabinet (TH-16)	10378A
Cabinet Back	27-4821
Clip (Coil Mounting)	28-5002
Cable (Power)	L-3199
Dial (TH-16, TH-14)	27-5499

MODELS TH-15 and TH-17

SPECIFICATIONS

Models TH-15 and TH-17 are five tube, electric push-button tuning, superheterodyne radios with a manual tuning range covering 540 to 1580 K. C. A loop aerial is provided on the rear of the cabinet for portable use. Aerial connections are also provided on the rear of the cabinet for locations such as steel reinforced buildings, apartment houses or any other location where signal strength is weak. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended. Six electric push-buttons are provided on this model. Five are used for stations and one push-button for selecting dial tuning. The push buttons cover a frequency range as follows: 540 to 1600 kilocycles.

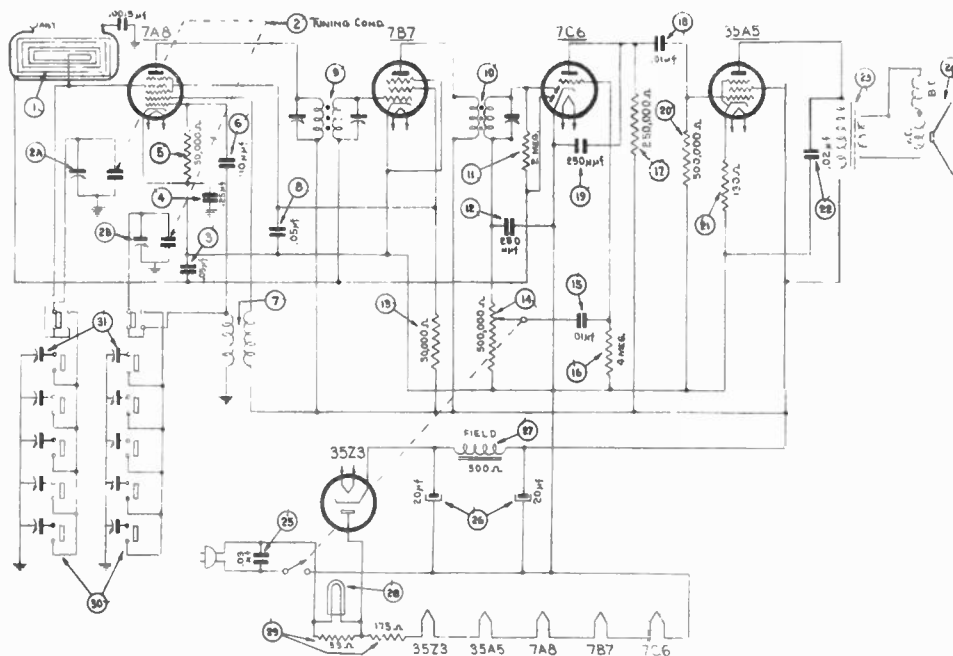
These models are similar with the exception of the cabinet. The circuit diagram and parts list shown below apply to both models.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt, alternating current (A. C.) or a 115 volt, direct current (D. C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, second detector, first audio, A. V. C.; one 35A5, audio output; one 35Z3 rectifier.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page (8).



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly	32-3186
2	Tuning Condenser	31-2371
3	Tubular Condenser (.05 mf., 200 v.)	40-4519S
4	Tubular Condenser (.25 mf., 400 v.)	30-4604S
5	Resistor (50,000 ohms, 1/3 watt)	33-350244
6	Mica Condenser (110 mmf.)	30-1031
7	Oscillator Transformer	32-3152
8	Tubular Condenser (.05 mf., 200 v.)	30-4519S
9	1st I. F. Transformer	32-3177
10	2nd I. F. Transformer	32-3178
11	Resistor (2 megs., 1/3 watt)	33-520241
12	Mica Condenser (250 mmf.)	30-1032
13	Resistor (30,000 ohms, 1/3 watt)	33-330244
14	Volume Control (500,000 ohms)	33-5306
15	Tubular Condenser (.01 mf., 200 v.)	30-4479S
16	Resistor (4 megs., 1/3 watt)	33-540244
17	Resistor (250,000 ohms, 1/3 watt)	33-425244
18	Tubular Condenser (.01 mf., 400 v.)	30-4572S
19	Mica Condenser (250 mmf.)	30-1032
20	Resistor (500,000 ohms, 1/3 watt)	33-450244
21	Resistor (130 ohms, 1/2 watt)	33-113335
22	Tubular Condenser (.02 mf., 400 v.)	30-4516S
23	Output Transformer	
	(for Speaker 36-1469-1)	32-8047
	(for Speaker 36-1469-2)	32-8044
	(for Speaker 36-1469-9)	32-8044

SCHE. No.	DESCRIPTION	PART No.
24	Speaker	36-1469
	Cone Assembly	
	(for Speaker 36-1469-1)	36-4115
	(for Speaker 36-1469-2)	36-4132
	(for Speaker 36-1469-9)	36-4113
25	Tubular Condenser (.03 mf., 400 v.)	30-4449S
26	Electrolytic Condenser (20-20 mf., 150 v.)	30-2382
27	Field Coil — Part of Speaker No.	36-1469
28	Pilot Lamp	34-2068
29	Line Resistor	33-3367
30	Push Button Switch	42-1485
31	Padding Condenser Strip	31-6296

MISCELLANEOUS PARTS

Cable (Power)	1-3183
Cabinet (TH-15)	10376A
Cabinet Back (TH-15)	27-9358
Cabinet (TH-17)	10379A
Cabinet Back (TH-17)	27-4822
Clip (Coil Mounting)	28-5002
Dial	27-5499
Dial Window	27-5472
Drive Cord (Dial)	31-2358

SCHE. No.	DESCRIPTION	PART No.
Drive Drum	28-6662	
Drive Shaft (TH-15)	31-2370	
Drive Shaft (TH-17)	31-2355	
Grille and Baffle (TH-15)	40-6451	
Grille and Baffle (TH-17)	318-1134	
Handle (Cabinet, TH-15)	45-6051	
Handle (Cabinet, TH-17)	45-6052	
Knob (Push-Button)	27-4824	
Knob (Push-Button) TH-15	27-4702	
Knob (Tuning, Volume)	27-4809	
Mounting Feet (Cabinet)	27-9337	
Pointer	56-1326	
Screw (Cabinet Back Mounting TH-17, 1 1/2" long)	W-2029	
TH-17, 2 3/8" long)	W-2028	
TH-15)	W-452	
Screw (Chassis Mtg., TH-15)	W-2017	
Screw (Handle Mounting)	W-2021	
Screw (Chassis Mtg., TH-17)	W-2176	
Snap Fastener (Dial)	56-1387	
Spring	28-8751	
Station Tab Holder (Cabinet)	28-5742	
Socket (Tubes)	27-6128	
Socket (Pilot Lamp)	38-9825	
Tab (Dial)	27-5482	
Tab Kit	40-6445	

MODEL TP-20

SPECIFICATIONS

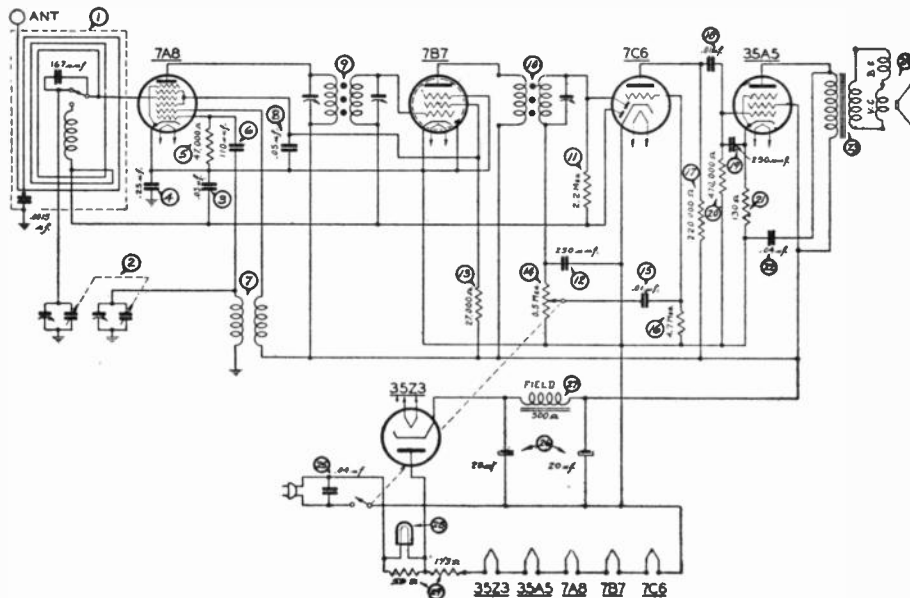
Model TP-20 is a five tube, superheterodyne radio covering a frequency range from 540 to 1580 K. C. on the broadcast band and 2.3 to 2.5 M. C. on the local police tuning range. A built-in loop aerial is provided in this model for portable use in addition to aerial connections for an external aerial. An external aerial should be used in steel reinforced buildings, apartment houses or any other location where signal strength is weak. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt, alternating current (A. C.) or 115 volt, direct current (D. C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output; one 35Z3 rectifier.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page (6).



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly	38-9936	21	Resistor (130 ohms, 1/4 watt)	33-113336		Clip (Coil Mounting)	28-5002
2	Tuning Condenser	31-2413	22	Tubular Condenser (.04 mf., 400 v.)	30-41198		Cone Assembly (for Speaker 36-1469-1)	36-4115
3	Tubular Condenser (.05 mf., 200 v.)	30-45198	23	Output Transformer (for Speaker 36-1469-1)	32-8047		(for Speaker 36-1469-2)	36-4132
4	Tubular Condenser (.25 mf., 400 v.)	30-46048		(for Speaker 36-1469-9)	32-8044		(for Speaker 36-1469-9)	36-4113
5	Resistor (47,000 ohms, 1/4 watt)	33-347154	24	Speaker	36-1469		Dial (Drive Shaft)	31-2370
6	Mica Condenser (110 mmf.)	30-1130	25	Tubular Condenser (.04 mf., 400 v.)	30-41198		Dial (Drive Cord)	31-2358
7	Oscillator Transformer	32-2182	26	Electrolytic Condenser (20-20 mf., 150 v.)	30-2382		Dial Driving Arm (Pointer Dr.)	56-1376
8	Tubular Condenser (.05 mf., 200 v.)	30-45198	27	Field Coil, Part of Speaker No.	36-1469		Drive Drum	56-6033
9	1st I. F. Transformer	32-3177	28	Pilot Lamp	34-2068		Handle	45-6053
10	2nd I. F. Transformer	32-3178	29	Line Resistor	33-3367		Knob (Volume-Tuning)	27-4815
11	Resistor (2.2 megs., 1/4 watt)	33-522154					Rubber Tubing (Driving Arm)	27-9334
12	Mica Condenser (250 mmf.)	61-0033					Speaker	36-1469
13	Resistor (27,000 ohms, 1/4 watt)	33-327134					Spring (Drive Cord)	28-8751
14	Volume Control (500,000 ohms)	33-5306					Socket (Pilot Lamp)	38-9825
15	Tubular Condenser (.01 mf., 200 v.)	30-44798					Sockets (Tubes)	27-6130
16	Resistor (4.7 megs., 1/4 watt)	33-547154					Screws (Chassis Mounting)	W-2176
17	Resistor (220,000 ohms, 1/4 watt)	33-422154					Screws (Cabinet Back)	56-6056
18	Tubular Condenser (.01 mf., 400 v.)	30-45728					Screws (Handle Mounting)	W-2021
19	Mica Condenser (250 mmf.)	61-0033					Screws (Cabinet Back)	W-2029
20	Resistor (470,000 ohms, 1/4 watt)	33-447154					Washer (Fibre)	3045

MISCELLANEOUS PARTS

Raffle and Grille Silk	40-6452
Cable (Power)	1-3199
Cabinet	10446A
Cabinet Back	27-4832
Cabinet Feet	27-9337

MODEL TP-21

SPECIFICATIONS

Model TP-21 is a five tube, electric push-button tuning super-heterodyne radio with a manual tuning range covering 540 to 1580 K. C. In addition a loop aerial is built into the cabinet for portable use. Aerial connections are also provided on the rear of the cabinet for locations such as steel reinforced buildings, apartment houses or any other location where signal strength is weak. If an outside aerial is necessary, the Philco Utility Aerial, Part No. 40-6384, is recommended. Six electric push-buttons are provided on this model. Five are used for stations and one push-button for selecting dial tuning. The push-buttons cover a frequency range as follows:
540 to 1600 kilocycles.

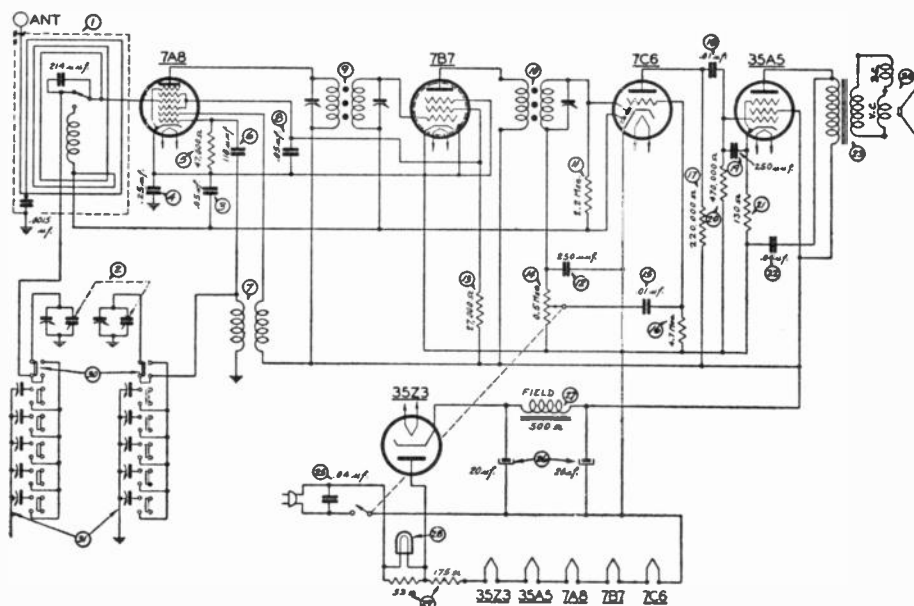
The procedure for adjusting and operating the electric push-buttons will be found on page 10.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: Operates on either a 115 volt, alternating current (A. C.) or a 115 volt, direct current (D.C.) power supply.

PHILCO TUBES USED: One 7A8, converter; one 7B7, I. F. amplifier; one 7C6, 2nd detector, 1st audio, A. V. C.; one 35A5, audio output; one 35Z3 rectifier.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page (6).



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assembly	38-9937	23	Output Transformer (for Speaker 36-1469-1)	32-8047		Clip (Coil Mounting)	28-5002
2	Tuning Condenser	31-2414		(for Speaker 36-1469-2)	32-8044		Drive Arm (Pointer)	56-1376
3	Tubular Condenser (.05 mf., 200 v.)	40-45198		(for Speaker 36-1469-9)	32-8044		Drive Drum (Tuning Cond.)	56-6033
4	Tubular Condenser (.25 mf., 400 v.)	30-46048	24	Cone Assembly (for Speaker 36-1469-1)	36-4115		Drive Cord (Dial Pointer)	31-2358
5	Resistor (47,000 ohms, 1/4 watt)	33-347154		(for Speaker 36-1469-2)	36-4132		Drive Shaft (Dial)	31-2370
6	Mica Condenser (110 mmf.)	30-1130		(for Speaker 36-1469-9)	36-4113		Handle	45-6053
7	Oscillator Transformer	32-3152	25	Tubular Condenser (.04 mf., 400 v.)	30-41198		Knob (Volume Tuning)	27-4815
8	Tubular Condenser (.05 mf., 200 v.)	30-45198	26	Electrolytic Capacitor (20-20 mf., 150 v.)	30-2382		Knob (Push-button Switch)	27-4824
9	1st I. F. Transformer	32-3177					Rubber Grommet (Switch and Padder Mtg.)	27-4596
10	2nd I. F. Transformer	32-3178	27	Field Coil	Part of Speaker No. 36-1469		Rubber Tubing (Driving Arm)	27-9334
11	Resistor (2.2 megs, 1/4 watt)	33-522154	28	Pilot Lamp	34-2068		Speaker	36-1469
12	Mica Condenser (250 mmf.)	61-0033	29	Line Resistor	33-3367		Spring (Drive Cord)	28-8751
13	Resistor (27,000 ohms, 1/4 watt)	33-327134	30	Push Button Switch	42-1485		Screws (Chassis Mounting)	W-2176
14	Volume Control (500,000 ohms)	33-5306	31	Padding Condenser Strip	31-6324		Screw (Drive Drum Mounting)	W-1400
15	Tubular Condenser (.01 mf., 200 v.)	30-44798					Screw (Drive Arm Mounting)	W-2036
16	Resistor (4.7 megs, 1/4 watt)	33-547154		MISCELLANEOUS PARTS			Screws (Cabinet Back Mtg.)	56-6056
17	Resistor (220,000 ohms, 1/4 watt)	33-422154		Baffle and Grille Silk	40-6452		Screw (Cabinet Back Mounting)	W-2021
18	Tubular Condenser (.01 mf., 400 v.)	30-45728		Cable (Power)	L-3199		Screw (Cabinet Back Mounting)	W-2029
19	Mica Condenser (250 mmf.)	61-0033		Cabinet	10368A		Sockets (Tubes)	27-6130
20	Resistor (470,000 ohms, 1/4 watt)	33-447154		Cabinet Back	27-4833		Socket (Pilot Lamp)	38-9825
21	Resistor (130 ohms, 1/2 watt)	33-113336		Cabinet Feet	27-9337		Tab (Dial)	27-5528
22	Tubular Condenser (.04 mf., 400 v.)	30-41198					Tab Kit	40-6474

MODEL 40-74

SPECIFICATIONS

TYPE OF CIRCUIT: Model 40-74 is a portable, four-tube, battery operated superheterodyne radio, designed with a built-in loop aerial. Connections are also provided for an external aerial and ground.

TUNING RANGE: 530 to 1600 K. C.

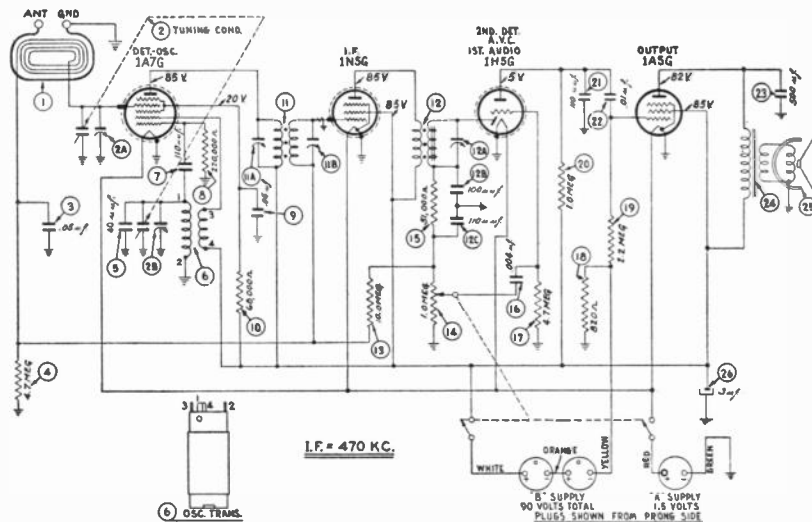
INTERMEDIATE FREQUENCY: 470 K. C.

PHILCO TUBES USED: One 1A7G, converter; one 1N5G, I. F. amplifier; one 1H5G, 2nd detector, 1st audio, A. V. C.; one 1A5G, output.

BATTERIES REQUIRED: One "A" pack, Philco Type P-94
Two "B" packs, Philco Type P-305

BATTERY DRAIN: "A" 200 M. A.; "B" 7.2 M. A.

The R. F. and I. F. aligning procedure for this model is the same as that listed for Model 40-81 on page 40, with the exception of the padder numbers. Model 40-74 I. F. padders are 12A, 11B and 11A. The R. F. padder located on the bottom of the condenser and reached through the bottom of the cabinet are 2B oscillator and 2A (aerial).



SCH. No. 12
I.F. = 470 KC.
SCHEMATIC DIAGRAM MODEL 40-74
Wiring Diagram, PHILCO Model 40-74

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly	40-6421	14	Volume Control (1.0 meg.)	33-5310	MISCELLANEOUS PARTS		
2	Tuning Condenser	31-2403	15	Resistor (51,000 ohms, 1/2 watt)	33-351339		Cabinet (Model 40-74T)	10399A
3	Tubular Condenser (.05 mfd.)	30-4519	16	Tubular Condenser (.004 mfd.)	30-4578		Cabinet (Model 40-74T-C.L.S.)	10399B
4	Resistor (4.7 meg., 1/2 watt)	33-547339	17	Resistor (4.7 meg., 1/2 watt)	33-547339		Dial	27-5542
5	Mica Condenser (40 mmfd.)	30-1095	18	Resistor (820 ohms, 1/2 watt)	33-182339		Drive Cord Assembly	31-2318
6	Oscillator Transformer	32-3274	19	Resistor (2.2 meg., 1/2 watt)	33-522339		Drive Shaft and Bracket	31-2324
7	Mica Condenser (110 mmfd.)	30-1031	20	Resistor (1.0 meg., 1/2 watt)	33-510339		Flag Cam and Hub Assembly	38-9861
8	Resistor (220,000 ohms, 1/2 watt)	33-422339	21	Mica Condenser (110 mmfd.)	30-1031		Knobs (Volume and Tuning)	27-4862
9	Tubular Condenser (.05 mfd.)	30-4444	22	Tubular Condenser (.01 mfd.)	30-4572		Pointer	27-4845
10	Resistor (68,000 ohms, 1/2 watt)	33-368339	23	Mica Condenser (500 mmfd.)	30-1114		Speaker	36-1482
11	First I. F. Transformer Assembly	32-3103	24	Output Transformer	32-8096		Speaker Grille	56-1255
12	Second I. F. Trans. Assembly	32-3176	25	Cone and Voice Coil Assembly			Spring (Drive Cord)	28-8954
12-C	Mica Condenser (110 mmfd.)	30-1031		(Speaker Part No. 36-1482-3)	36-4121		Sockets (Six-prong)	27-6086
13	Resistor (10.0 meg., 1/2 watt)	33-610339	26	Electrolytic Condenser (3 mfd.)	30-2359		Sockets (Seven-prong)	27-6087
							Shield (Tube)	56-1260
							Shield Base	56-1259
							Shield Cap	56-1261

MODELS 40-81, T, CSL, Codes 121-122; 40-82, 40-83

SPECIFICATIONS

Models 40-81, Codes 121 and 122 are 4 tube portable battery operated superheterodyne receivers. These receivers are similar with the exception of the type tubes used. Incorporated in the receivers is a self-contained loop aerial and an extremely sensitive permanent magnet field speaker. In addition terminals are provided for connection an outside aerial and ground. The receiver is operated from a self-contained A-B battery pack.

TUNING RANGE: 540 to 1550 K. C.
INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: Model 40-81, Code 121: 1-1LA6, 1st Detector and Oscillator; 1-1LN5, I. F. Amplifier; 1-1LH4, 2nd Detector, A. F. Amplifier and Automatic Volume Control; and 1-1LA4, Power Output.
Model 40-81, Code 122: 1-1A7G, 1st Detector and Oscillator; 1-1N5G, I. F. Amplifier; 1-1H5G, 2nd Detector, A. F. Amplifier and Automatic Volume Control; and 1-1A5G, Power Output.

PHILCO BATTERIES REQUIRED: One P-41A-4FL.

BATTERY CURRENT:
"A" Battery, 200 M. A.

"B" Battery, 5.6 M. A.

Model 40-82, Code 121, is a 4-tube portable battery operated superheterodyne radio and covers the standard broadcast frequency range from 540 to 1550 K. C. This Model is similar to Philco Model 40-81, Code 122, with the exception of the cabinet, and several of the replacement parts.

The following service data listed for Model 40-81, Code 122, also applies to Model 40-82, Code 121. The parts used in 40-82 which differ from those shown for Model 40-81, Code 122, are as follows:

Knobs	27-4876
Pointer	27-4891
Scale	27-5561
Tuning Condenser	31-2432
Grille Screen	56-1255
Cabinet	10450A

MODEL 40-83

Model 40-83 is similar to Model 40-81, Code 122, with the exception of the following parts:

Grille Screen	56-1539
Scale	27-5550
Pointer	56-1326

The service data listed for Model 40-81, Code 122, applies to Model 40-83.

MODEL 40-81, CODES 121-122

To improve the padding at 1500 K. C., condenser (2) 25 mmfd. Part No. 30-1137 changed to 15 mmfd. Part No. 61-0038.

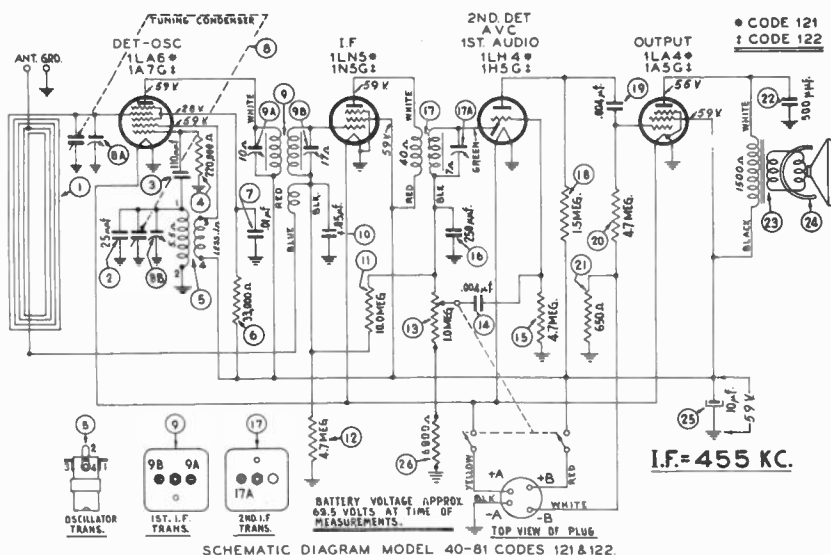
Tuning condenser, dial scale, and pointer changed on later production receivers. These changes are as follows:

	Early Production	Later Production
(8) Tuning Condenser	31-2402	31-2432
Dial Scale	27-5538	27-5561
Pointer	56-1326	27-4891

MODEL 40-81, CODE 122

To improve the operating characteristics of the receiver at 550 K. C. and prevent oscillation the following items should be observed:

- The loop wire going to the 1A7 grid, the wire from the 1A7 grid to the wiring panel and the wire from the tuning condenser antenna section lug to the wiring panel must be kept as far away from the 1A7 tube as is possible.
- The second I. F. Shield must be tightly fastened to the sub-base so that no openings exist between the base and the bottom of the shield.



SCHEMATIC DIAGRAM MODEL 40-81 CODES 121 & 122

See Page 40 for Aligning Procedure.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly (Part of Cabinet)	10413A
2	Mica Condenser (15 mmfd.)	61-0038
3	Mica Condenser (110 mmfd.)	30-1031
4	Resistor (220,000 ohms, 1/2 watt)	33-422339
5	Oscillator Transformer	32-3277
6	Resistor (33,000 ohms, 1/2 watt)	33-333339
7	Tubular Condenser (.01 mfd.)	30-4572
8	Tuning Condenser Assembly	31-2432
9	1st I. F. Transformer Assembly	32-3265
10	Tubular Condenser (.05 mfd.)	30-4819
11	Resistor (10.0 meg., 1/2 watt)	33-610339
12	Resistor (4.7 meg., 1/2 watt)	33-547339
13	Volume Control and On-Off Switch	33-5331
14	Tubular Condenser (.004 mfd.)	30-4578
15	Resistor (4.7 meg., 1/2 watt)	33-547339
16	Mica Condenser (250 mmfd.)	61-0033
17	2nd I. F. Transformer Assembly	32-3266
18	Resistor (1.5 meg., 1/2 watt)	33-515339
19	Tubular Condenser (.004 mfd.)	30-4878
20	Resistor (4.7 meg., 1/2 watt)	33-547339
21	Resistor (850 ohms, 1/2 watt)	33-165326
22	Mica Condenser (500 mmfd.)	30-1114
23	Output Transformer	32-8062
24	Cone and Voice Coil Assembly (Speaker Part No. 36-1481-3)	36-4121
25	Electrolytic Condenser (10 mfd., 150 V.)	30-2396
26	Resistor (6800 ohms, 1/2 watt)	33-268339

MISCELLANEOUS PARTS

Acetate Window	27-5541
Cabinet (40-81)	10413A
Clip (Coil Mounting)	28-5002
Drive Cord Assembly	31-2411
Dial (40-81)	27-5561
Grille Screen	56-1539

SCHE. No.	DESCRIPTION	PART No.
Knobs (Volume and Tuning)	27-4876	
Pointer	27-4891	
Speaker	36-1481	
Shield (Tube, Code 122)	56-1566	
Sockets (Loctal, Code 121)	58-0575	
Sockets (Octal, Code 122)	27-6133	
Spring (Drive Cord)	28-6751	
Tuning Shaft Assembly	30-9878	

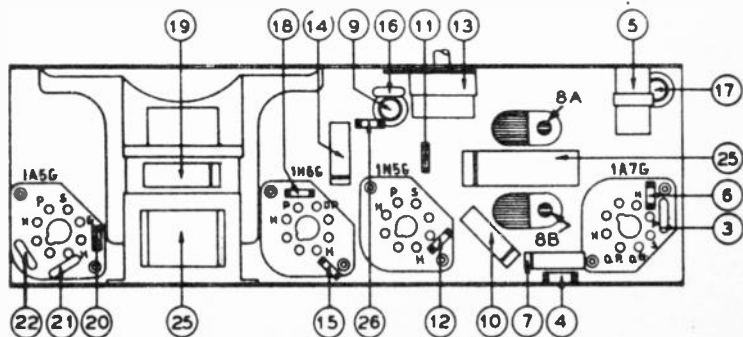
MODEL 40-82

Knobs	27-4876
Pointer	27-4891

MODEL 40-81T, CSL

Cabinet	10413C
Dial	27-5561
Knob Assembly	27-4876
Pointer	27-4891

This model is the same as 40-81, Code 122, with the exception of the above parts.



PART LOCATIONS, UNDERSIDE OF CHASSIS, MODEL 40-81

MODEL 40-84

SPECIFICATIONS

Model 40-84 is a portable five (5) tube A.C.-D.C. power line or battery operated superheterodyne radio. This model covers a tuning frequency range of 540 K. C. to 1550 K. C.

An especially designed loop antenna is built into the cabinet for portable use. Aerial and ground connections are also provided for remote locations, where signal strength is weak or for use in permanent or semi-permanent installation.

POWER SUPPLY: For battery operation, a Philco combination "A" and "B" battery pack type P60A-110 is required. This battery is mounted in the rear of the cabinet. To operate the radio on 115 volt A.C. or D.C. power supply,

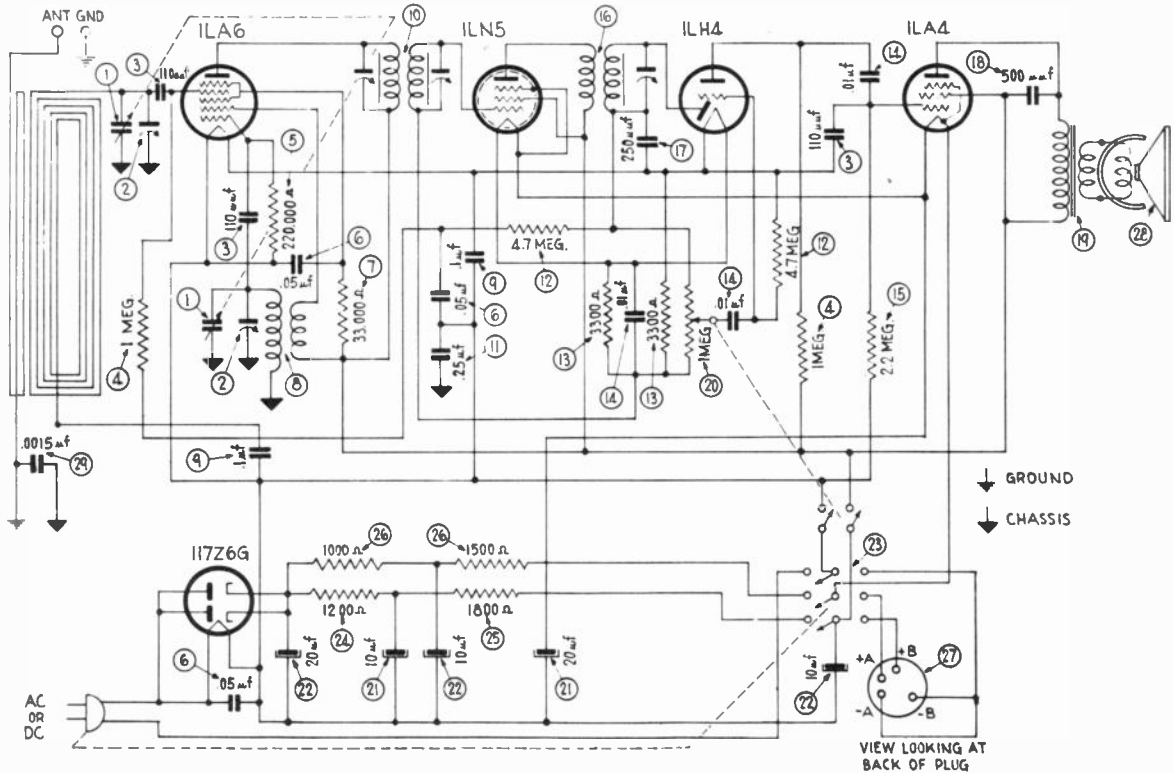
insert the power line cord plug into the socket on the back of the chassis. This plug-in arrangement automatically disconnects the A.-B. battery from the circuits of the set.

BATTERY CURRENT: "A" "B"

PHILCO TUBES USED: One 1LA6, converter; one 1LN5, I. F. amplifier; one 1LH4, 2nd detector, A. F. amplifier and A. V. C.; one 1LA4, power output and one 117Z6G rectifier.

INTERMEDIATE FREQUENCY: 455 K. C.

The R. F. and I. F. aligning procedure for this model will be found on page 40.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Tuning Condenser	31-2438	17	Mica Condenser (250 mmf.)	61-0033	29	Tubular Condenser (.0015 mfd., 200 V.)	30-4555
2	Trimmer Condenser	31-6211	18	Mica Condenser (500 mmf.)	30-1114	MISCELLANEOUS PARTS		
3	Mica Condenser	30-1130	19	Output Transformer	32-8100		Cable (Power)	L-3199
4	Resistor (1/4 watt, 1 meg.)	33-510154	20	Volume Control	33-5375		Cabinet	10458A
5	Resistor (1/4 watt, 220,000 ohms)	33-422154	21	Electrolytic Condenser (20-10 mfd., 150 V.)	30-2453		Dial	27-5568
6	Tubular Condenser (.05 mfd., 400 V.)	30-4518	22	Electrolytic Condenser (10-10 mfd., 150 V.; 20 mfd., 25 V.)	30-2452		Dial Drive Cord Assembly	31-2381
7	Resistor (1/4 watt, 33,000 ohms)	33-333154	23	Automatic T. P. D. T. Switch	42-1553		Dial Tuning Shaft	56-6070
8	Oscillator Coil	32-3385	24	Resistor (1/2 watt, 1200 ohms)	33-212334		Grille Screen (Speaker)	56-1255
9	Tubular Condenser (.1 mfd., 400 V.)	30-4455	25	Resistor (1/4 watt, 1800 ohms)	33-218334		Knob (Tuning, Volume)	27-4876
10	1st I. F. Transformer	32-3384	26	Filament Resistor	33-3387		Pointer (Dial)	27-4868
11	Tubular Condenser (.25 mfd., 400 V.)	32-4448	27	Battery Cable	41-3526		Screw (Chassis Mounting)	W-2067
12	Resistor (1/4 watt, 4.7 megs.)	33-547154	28	Speaker Cone Assembly (for Speaker 36-1476-3)	36-4121		Socket (Tube Rectifier)	27-6137
13	Resistor (1/4 watt, 10,000 ohms)	33-310154					Socket (Tubes)	55-0575
14	Tubular Condenser (.01 mfd., 400 V.)	30-4572					Spring (Tuning Cond. Drive)	28-8882
15	Resistor (1/4 watt, 2.2 meg.)	33-522154					Washer "C" Tuning Shaft	57-0127
16	2nd I. F. Transformer	32-3266						

MODEL 40-88T, TL, Code 121

SPECIFICATIONS

Model 40-88 is a portable 5 tube battery operated superheterodyne receiver for reception of standard and shortwave broadcast stations. Other features of design incorporated in this model are: a self-contained twin loop aerial for standard broadcast and shortwave reception, R. F. stage, extremely sensitive permanent magnet field speaker, and Philco loktal tubes. Outside aerial and ground terminals are provided for locations where signal strength is very weak or for permanent or semi-permanent installations. The receiver is operated from a self-contained A-B battery.

TUNING RANGE:

Broadcast, 540 to 1600 K. C. Shortwave, 5.8 to 18 M. C.
INTERMEDIATE FREQUENCY: 455 K. C.

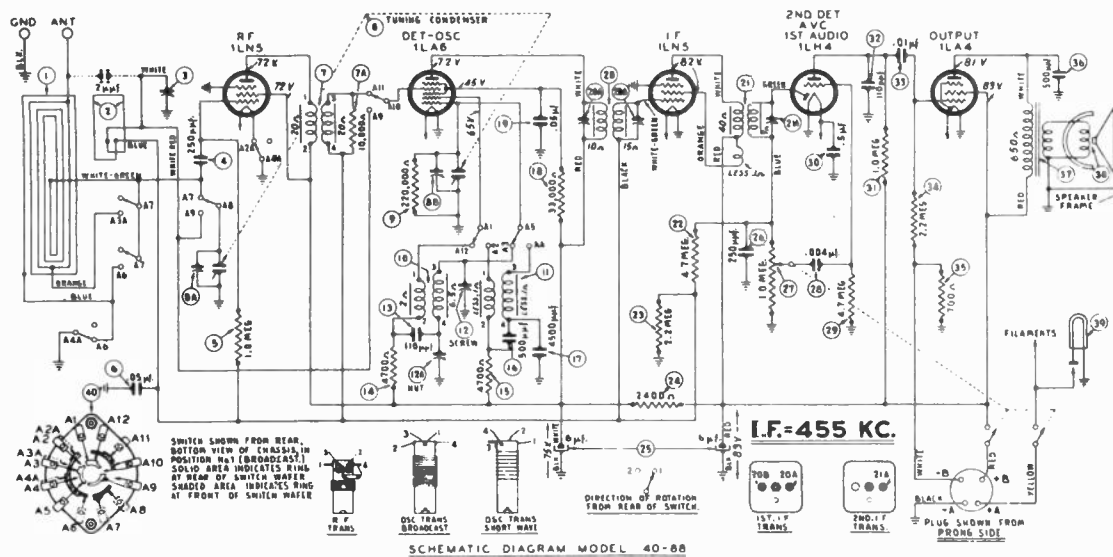
PHILCO TUBES USED: 1-1LN5, R. F. Amplifier; 1-1LA6, Converter; 1-1LN5, I. F. Amplifier; 1-1LH4, Second Detector, A. F. Amplifier and Automatic Volume Control; and 1-1LA4, Audio Output.

PHILCO BATTERIES USED: One P-60A-4L.

BATTERY CURRENT:

"A" Battery, 250 M. A.

"B" Battery, 8 M. A.

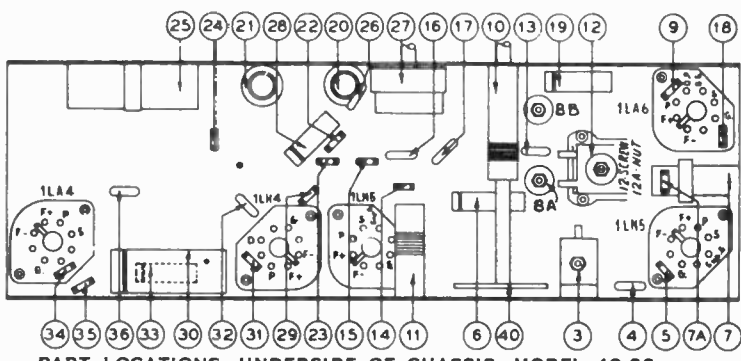


See Page 40 for Aligning Procedure.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly (Broadcast)	38-9917		Gasket (Dial Mounting)	27-9472			
2	Loop Assembly (Short Wave)	38-9885		Knobs (Tuning, Volume and Wave Switch)	27-4862			
3	Compensator	31-6288		Pilot Lamp Socket Assembly	38-9839			
4	Mica Condenser (250 mmfd.)	61-0033		Pointer	27-4868			
5	Resistor (1.0 meg., 1/2 watt)	33-510339		Pushbutton (Pilot Lamp)	27-4844			
6	Tubular Condenser (.05 mfd.)	30-4819		Operating Finger (Pilot Lamp)	56-1487			
7	R. F. Transformer Assembly	32-3219		Speaker	56-1482			
7A	Resistor (10,000 ohms, 1/2 watt)	33-310339		Speaker Grille	56-1255			
8	Tuning Condenser Assembly	31-2378		Spring (Pilot Lamp)	28-8952			
9	Resistor (220,000 ohms, 1/2 watt)	33-422339		Spring (Drive Cord)	28-8862			
10	Oscillator Transformer (Broadcast)	32-3249		Spring (Wave Switch Centering)	28-8665			
11	Oscillator Transformer (Short Wave)	32-3220		Snap Fastener (Dial Mounting)	28-4342			
12	Compensator	31-8100		Sockets (Loktal)	55-0575			
13	Mica Condenser (210 mmfd.)	30-1130		Tuning Shaft	56-6070			
14	Resistor (4700 ohms, 1/2 watt)	33-247339		Tuning Drum	56-1486			
15	Resistor (4700 ohms, 1/2 watt)	33-247339						
16	Mica Condenser (500 mmfd.)	30-1114						
17	Mica Condenser (4500 mmfd.)	30-1109						
18	Resistor (33,000 ohms, 1/2 watt)	33-333339						
19	Tubular Condenser (.05 mfd.)	30-4519						
20	1st I. F. Transformer Assembly	32-3222						
21	2nd I. F. Transformer Assembly	32-3223						
22	Resistor (4.7 meg., 1/2 watt)	33-547339						
23	Resistor (2.2 meg., 1/2 watt)	33-224339						
24	Resistor (2400 ohms, 1/2 watt)	33-224339						
25	Electrolytic Condenser (6.6 mf., 150 V.)	30-2388						
26	Mica Condenser (250 mmfd.)	61-0033						
27	Volume Control and On-Off Switch	33-5310						
28	Tubular Condenser (.004 mfd.)	30-4578						
29	Resistor (4.7 meg., 1/2 watt)	33-547339						
30	Tubular Condenser (.5 mfd.)	30-4551						
31	Resistor (1.0 meg., 1/2 watt)	33-510339						
32	Mica Condenser (110 mmfd.)	30-1130						
33	Tubular Condenser (.01 mfd.)	30-4572						
34	Resistor (2.2 meg., 1/2 watt)	33-522339						
35	Resistor (700 ohms, 1/2 watt)	33-170339						
36	Mica Condenser (500 mmfd.)	30-1114						
37	Output Transformer	32-8096						
38	Cone and Voice Coil Assembly (Speaker Part No. 38-1482-3)	38-4121						
39	Pilot Lamp	34-2246						
40	Wave Switch	42-1499						

MODEL 40-88T-TL



ALIGNING PROCEDURE

MODELS 40-81, 40-82, 40-83, 40-84, 40-88, 40-90, 40-95, 40-100, 40-105, 40-110

EQUIPMENT REQUIRED

1. **Signal Generator** such as Philco Model 077 (A. C. operated) or Model 177 (Battery operated).
2. **Aligning Indicator:** Philco Models 027 or 028 Vacuum Tube Voltmeter and Circuit Tester contain sensitive audio output

meters. Either of these instruments can be used as an aligning indicator and are connected as indicated below.

3. **Tools:** Aligning screw driver, Philco Part No. 45-2610.

CONNECTING THE ALIGNING METERS

Audio Output Meter: If an audio output meter is used, connect it across the plate and screen terminals of the output tubes. Adjust the meters to use the 0 to 10 scale.

Vacuum Tube Voltmeter: If a vacuum tube voltmeter is used as an aligning indicator, the negative (—) terminal is connected to the A. V. C. circuit of the receiver through a 2 meg. resistor. The positive (+) terminal is connected to the chassis or ground.

Signal Generator: When adjusting the I. F. padders the high side of the signal generator is connected through a .1 mfd. condenser to the loop tuning condenser stator lug which connects to the grid of the first tube. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R. F. padders of the portable models a loop aerial is made from a few turns of wire and connected to the signal generator output terminals. The signal generator is then placed a few feet from the set. The loop aerial of the receiver must be assembled in the cabinet, together with the battery when adjusting the R. F. padders. The R. F. padding condensers can be reached from the bottom of the cabinet.

When aligning the R. F. padders of the battery models using an aerial, connect the signal generator as given in the column "Output Connections to Receiver" with a dummy aerial as indicated.

Models 40-81, Codes 121, 122, 40-82, 40-83, 40-84, PT-63

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	See Paragraph on Signal Generator above	455 K. C.	580 K. C.	Vol. Max.	17A, 9B, 9A	See Paragraph on Signal Generator above
2	Use Loop on Generator	1500 K. C. 1400KC (40-84)	1500 K. C. 1400KC (40-84)	Vol. Max.	8B, 8A	Padder location Fig. 1 Note A

Model 40-88, Code 121

1	See Signal Generator Paragraph above	455 K. C.	580 K. C.	Vol. Max.	21A, 20B, 20A	
2	Use Loop on Generator	18 M. C.	18 M. C.	Vol. Max. Range Switch "S. W."	8B	Note A
3	Use Loop	1400 K. C.	1400 K. C.	Range Switch "Brdcat"	12, Screw, 8A	
4	Use Loop	580 K. C.	580 K. C.	Range Switch "Brdcat"	12A, Nut	Roll Tuning Condenser
5	Use Loop	1400 K. C.	1400 K. C.	Range Switch "Brdcat"	12, Screw, 8A	
6	Use Loop	18 M. C.	18 M. C.	Range Switch "S. W."	3	See Paragraph on Signal Generator above

Model 40-90

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Aerial	Dial Setting	Dial Setting	Control Setting	Adjust Padders	
1	1A7 Grid	.004 mfd.	455 K. C.	580 K. C.	Vol. Max.	On 1st and 2nd I. F. Trans.	Note C
2	Aerial	225 mmfd.	1500 K. C.	1500 K. C.	Vol. Max.	Osc. Ant. on Tuning Conds.	Note B Note A

Models 40-95, 40-100, 40-105

1	1A7 Grid	.004 mfd.	455 K. C.	580 K. C.	Vol. Max.	On 1st and 2nd I. F. Trans.	Note B
2	Aerial	225 mmfd.	1500 K. C.	1500 K. C.	Vol. Max.	Osc. Ant. on Tuning Conds.	Note B Note A

Model 40-110

1	Aerial	Note A	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	18A, 17A, 17B	Manual Push-button "IN"
2	Aerial	400 ohms	18 M. C.	18 M. C.	Vol. Max. Range Switch "S. W."	4A	Note B
3	Aerial	225 mmfd.	1500 K. C.	1500 K. C.	Range Switch "Brdcat"	7 screw, 4B	Note E
4	Aerial	225 mmfd.	580 K. C.	580 K. C.	Range Switch "Brdcat"	7A (nut)	Roll Tuning Condenser
5	Aerial	400 ohms	1500 K. C.	1500 K. C.	Range Switch "Brdcat"	7 screw	

NOTE A — DIAL CALIBRATION: Before adjusting the R. F. padders the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the tuning condenser in the closed position (maximum capacity) set the dial pointer on the small dot below 550 K. C.

NOTE B — 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, the tuning pointer is set horizontal at the low frequency end of the scale (530 K. C.).

MODEL 40-90

SPECIFICATIONS

Model 40-90 is a four (4) tube battery operated super-heterodyne radio covering a tuning frequency range from 540 to 1720 K. C.

Features of design included in this model are:—low current drain tube; automatic volume control and pentode audio output.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: One 1A7G converter; one 1N5G, I. F. Amplifier; one 1H5G, 2nd detector, A. V. C. 1st audio; one 1A5G, audio output.

PHILCO BATTERIES: One type P 60D-11L—Battery Drain "A" 200 M. A. "B" 7.2 M. A.

CABINET DIMENSIONS: 8" high, 12" wide, 6¼" deep.

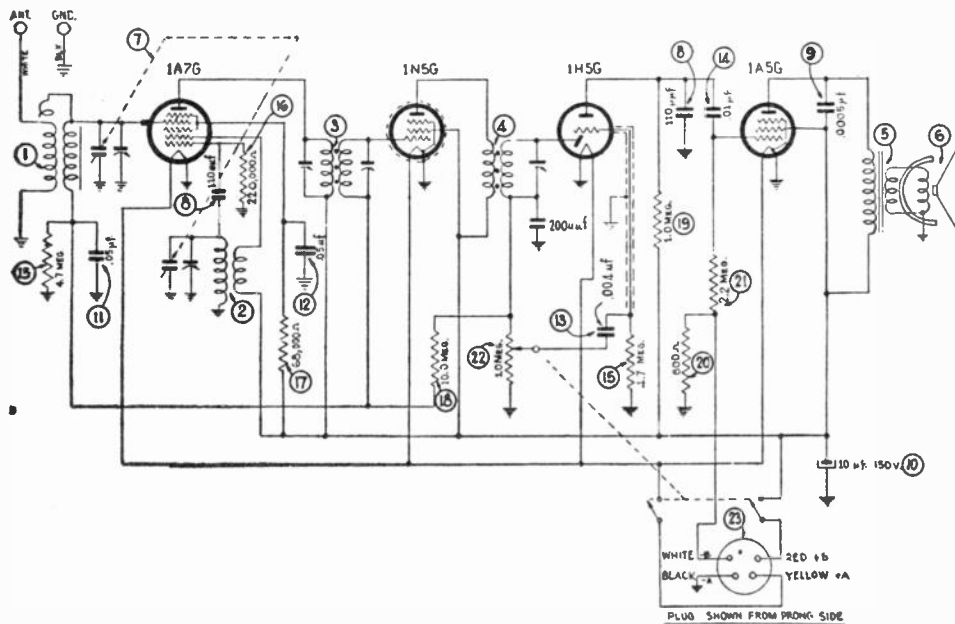
AERIAL AND GROUND: To obtain maximum operating performance from this model, Philco Farm Radio Aerial Part No. 40-6383 is recommended, in addition to a good ground connection.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page (40).

PRODUCTION CHANGES

To improve the padding at 1500 K. C. of receivers with oscillator transformer (2) Part No. 32-3184 identified with red paint on a red lead, the following adjustments should be made:

1. Bend the oscillator padding condenser on the tuning-condenser back after removing the screw and mica.
2. Set the top of the pointer even with the bottom of the 1500 K. C. division line with set tuned to 1500 K. C.



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-8183	14	Tubular Condenser (.01 mf.)	30-4572	MISCELLANEOUS PARTS		
2	Oscillator Transformer	32-8184	15	Resistor (4.7 meg., 1/3 watt)	33-547244		Bezel Window	27-5370
3	First I. F. Transformer	32-3180	16	Resistor (320,000 ohms, 1/3 watt)	33-423244		Baffle & Silk Assem. (Speaker)	40-6311
4	Second I. F. Transformer	32-3181	17	Resistor (68,000 ohms, 1/3 watt)	33-368244		Cam and Hub Assembly	38-9723
5	Output Transformer	32-8051	18	Resistor (10 meg., 1/3 watt)	33-610244		Cabinet	10313J
6	Speaker	36-1476	19	Resistor (1 meg., 1/8 watt)	33-510244		Dial	27-5502
	Cone Assembly (for Speaker 36-1476-3)	36-4121	20	Resistor (800 ohms, 1/2 watt)	33-180826		Dial Pointer	28-5468
7	Tuning Condenser	32-2372	21	Resistor (2.2 meg., 1/3 watt)	33-522244		Dial Drive Shaft	318-1142
8	Moulded Mica Condenser (110 mmf.)	30-1031	22	Volume Control (1 meg., with D.P.S.T. Switch)	33-5312		Drive Cord	31-2086
9	Moulded Mica Condenser (500 mmf.)	30-1114	23	Battery Cable	41-3477		Indicator Arm Assembly	38-9838
10	Electrolytic Condenser (10 mf., 150 v.)	80-2596		Flag Arm Spring	28-8947		Knob Assembly	27-4632
11	Tubular Condenser (.05 mf., 200 v.)	30-4519S		Flag Cam Assembly	38-9723		Spring (Indicator Arm)	28-8947
12	Tubular Condenser (.05 mf., 200 v.)	30-4444		Flag Assembly	38-9838		Spring (Drive Cord)	28-8751
13	Tubular Condenser (.004 mf., 400 v.)	30-4578					Socket (6 prong)	27-6086
							Socket (7 prong)	27-6087
							Screw (Chassis Mounting)	W-1921
							Washer ("C" Type—Dr. Shaft)	28-2043

MODEL 40-95, Codes 121-122

SPECIFICATIONS

Model 40-95 is a four (4) tube battery operated super-heterodyne radio covering a tuning frequency range from 540 to 1720 K. C.

Features of design included in this model are:—low current drain tube; automatic volume control and pentode audio output.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: One 1A7G converter; one 1N5G, I. F. Amplifier; one 1H5G, 2nd Detector, A. V. C. 1st Audio and one 1A5G, Pentode Audio Output.

PHILCO BATTERY: One Type P 60D-11L.

BATTERY DRAIN: "A" 200 M. A. "B" 7.2 M. A.

CABINET DIMENSIONS: 9 1/4" high, 17" wide, 9 1/8" deep.

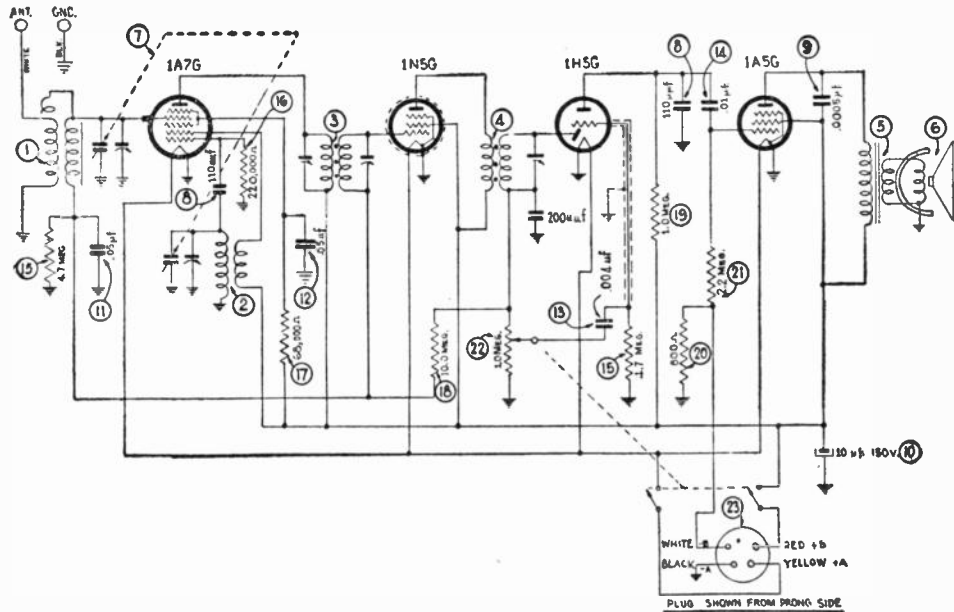
AERIAL AND GROUND: To obtain maximum operating performance from this model, Philco Farm Radio Aerial Part No. 40-6383 is recommended, in addition to a good ground connection.

ALIGNING PROCEDURE: The aligning procedure for this model will be found on page (40).

PRODUCTION CHANGES

The two codes of this model differ only in cabinets, speakers, and cables as shown below:

Code 121		Code 122
36-1477-3	Speaker	35-1488-3
36-4121	Cone Assembly	36-4129
41-3478	Battery Cable	41-3505
	Speaker Socket	27-6115
32-8051	Output Transformer	32-8051



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3183	16	Resistor (220,000 ohms, 1/3 watt)	33-422244		Cable (Battery, Code 121)	41-3478
2	Oscillator Transformer	32-3184	17	Resistor (68,000 ohms, 1/3 watt)	33-368244		Cam Assembly (Indicator Drive)	38-9861
3	1st I. F. Transformer	32-3198	18	Resistor (10 meg., 1/3 watt)	33-610244		Cone Assembly	
4	2nd I. F. Transformer	32-3199	19	Resistor (1 meg., 1/3 watt)	33-510244		(for Speaker 36-1477-3)	36-4121
5	Output Transformer (Code 121)	32-8051	20	Resistor (800 ohms, 1/2 watt)	33-180326		(for Speaker 36-1488-3)	36-4129
	Output Transformer (Code 122)	32-8051	21	Resistor (2.2 meg., 1/3 watt)	33-522244		Dial	27-5516
6	Speaker (Code 121)	36-1477-3	22	Volume Control			Dial Window (Code 122)	27-5512
	Speaker (Code 122)	36-1488-3		(1 meg., with D.P.S.T. Switch)	33-5321		Dial Drive Cord	31-2392
	Cone Assembly		23	Battery Cable (Code 121)	41-3478		Drum (Tuning Condenser)	38-9865
	(for Speaker 36-1477-3)	36-4121		Battery Cable (Code 122)	41-3505		Indicator Assembly	38-9844
	(for Speaker 36-1488-3)	36-4129		Flag Arm Spring	28-8949		Lever Assembly (Flag Drive)	38-9843
7	Tuning Condenser	31-2373		Flag Arm Transfer Lever Assembly	38-9848		Knob Assembly (Code 121)	27-4321
8	Moulded Mica Condenser (110 mmf.)	30-1031		Flag Cam Assembly	38-9723		Knob Assembly (Code 122)	27-4332
9	Moulded Mica Condenser (500 mmf.)	30-1114		Flag Assembly	38-9844		Pointer	56-1464
10	Electrolytic Condenser (10 mf., 150 v)	30-2396					Shaft (Tuning)	31-2395
11	Tubular Condenser (.05 mf., 200 v)	30-45198					Socket (Speaker)	27-6115
12	Tubular Condenser (.05 mf., 200 v)	30-4444					Socket (6 prong)	27-6086
13	Tubular Condenser (.004 mf., 400v)	30-4578					Socket (7 prong)	27-6087
14	Tubular Condenser (.01 mf.)	30-4572					Speaker (Code 121)	36-1477-3
15	Resistor (4.7 meg., 1/8 watt)	33-547244					Speaker (Code 122)	36-1488-3
							Spring (Drive Cord)	28-8913
							Spring (Indicator Assembly)	28-8949

MISCELLANEOUS PARTS

Baffle and Silk Assembly	40-6461
Cabinet (40-95T)	10387A
Cabinet (40-95F)	10415A
Cable (Battery, Code 122)	41-3505

MODEL 40-100, Codes 121-122

SPECIFICATIONS

Model 40-100 is a four (4) tube battery operated super-heterodyne receiver with electric push-button tuning. This model covers a tuning frequency range of 540 to 1720 K. C. Features of design included in this model are: low current drain tube; automatic volume control and pentode audio output. The differences in the "codes" of this model are in the cabinets. Code 121 is assembled in a table model cabinet and Code 122 in a floor model.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: One 1A7G converter; one 1N5G, I. F. Amplifier; one 1H5G, 2nd Detector, A. V. C. 1st Audio and one 1A5G, Pentode Audio Output.

BATTERY REQUIRED: Philco Type P 60D-11L battery.

BATTERY DRAIN: "A" 200 M. A. "B" 7.2 M. A.

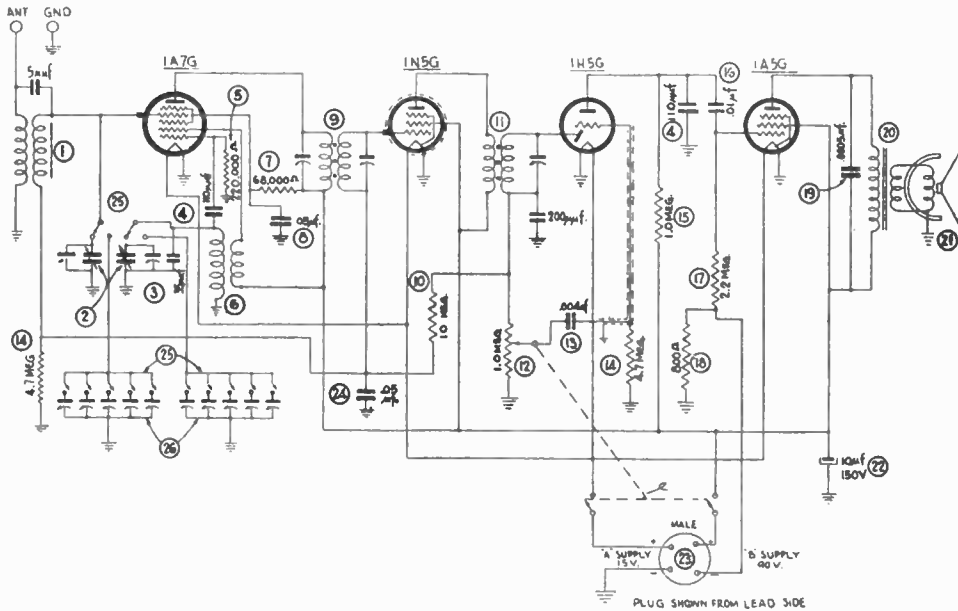
Cabinet Dimensions:	High	Wide	Depth
"T" Cabinet	10 7/8"	17 1/4"	9 1/4"
"F" Cabinet	36 7/8"	23 3/4"	9 3/4"

AERIAL AND GROUND: To obtain maximum operating performance from this model, Philco Farm Radio Aerial Part No. 40-6383 is recommended, in addition to a good ground connection.

ALIGNING PROCEDURE for this model will be found on page 9.

ELECTRIC PUSH-BUTTON TUNING: Five (5) push-buttons are used for the broadcast stations and one push-button for selecting "dial tuning." The push-buttons cover a frequency range as follows: 540 to 1600 kilocycles.

The procedure for adjusting and operating the electric push-button tuning will be found on page (9).



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3248	21	Speaker	36-1477		Dial	27-5519
2	Variable Condenser	31-2384	22	Electrolytic Condenser (10 mf., 150 v.)	30-2396		Dial Drive Cord Assembly	31-2392
3	Silver Mica Condenser	30-1113	23	Battery Cable	41-3478		Drive Drum (Tuning Condenser)	38-9856
4	Molded Mica Condenser (110 mmf.)	30-1031	24	Tubular Condenser (.05 mf., 200 v.)	30-4519S		Escutcheon (Push-Button)	56-1455
5	Resistor (220,000 ohms., 1/2 watt)	33-422244	25	Push Button Switch	42-1835		Indicator Assembly	38-9844
6	Oscillator Transformer	32-3214	26	Push Button Condenser Strip	31-6309		Knob (Volume and Tuning, Code 121)	27-4321
7	Resistor (68,000 ohms., 1/2 watt)	33-368244		Flag Arm Spring	28-8949		Knob Assembly (Volume, Tuning, Code 122)	27-4322
8	Tubular Condenser (.05 mf., 200 v.)	30-1444		Flag Arm Transfer Lever Assembly	38-9843		Knob (Push-Button)	27-4824
9	1st I. F. Transformer	32-3198		Flag Cam Assembly	38-9723		Lever Assembly (Indicator)	38-9843
10	Resistor (10 meg., 1/2 watt)	33-610244		Flag Assembly	38-9844		Pointer	56-1464
11	2nd I. F. Transformer	32-3199					Shaft (Drive Tuning)	31-2395
12	Volume Control (1 meg. and D. P. S. T. Switch)	33-5321					Socket (6 prong)	27-6086
13	Tubular Condenser (.004 mf., 400 v.)	30-4578					Socket (7 prong)	27-6099
14	Resistor (4.7 meg., 1/2 watt)	33-547244					Socket (Speaker, Code 122)	27-6115
15	Resistor (1 meg., 1/2 watt)	33-510244					Spring (Dial Drive Cord)	28-8913
16	Tubular Condenser (.01 mf., 400 v.)	30-4572					Spring (Indicator Assem. Mtg.)	28-8949
17	Resistor (2.2 meg., 1/2 watt)	33-522244					Speaker Assembly (Code 121)	36-1477-3
18	Resistor (800 ohms., 1/2 watt)	33-180326					Speaker Assembly (Code 122)	36-1488-3
19	Molded Mica Condenser (500 mmf.)	30-1114					Tab Kit	40-6472
20	Output Transformer	32-8051						

MISCELLANEOUS PARTS

Bezel (Dial)	56-1453
Cable (Battery—Code 121)	41-3478
Cable (Battery—Code 122)	41-3505
Cone Assembly (for Speaker 36-1477-3)	36-4121
(for Speaker 36-1488-3)	36-4129
Cam Assembly	38-9861

MODEL 40-105

SPECIFICATIONS

Model 40-105 is a four (4) tube battery operated super-heterodyne radio covering a tuning frequency range from 540 to 1720 K. C. Features of design included in this model are: low current drain tubes; automatic volume control; specially designed tone chamber for speaker and pentode audio output.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: One 1A7G converter; one 1N5G, I. F. Amplifier; one 1H5G, 2nd Detector, A. V. C. 1st Audio and one 1A5G, Pentode Audio Output.

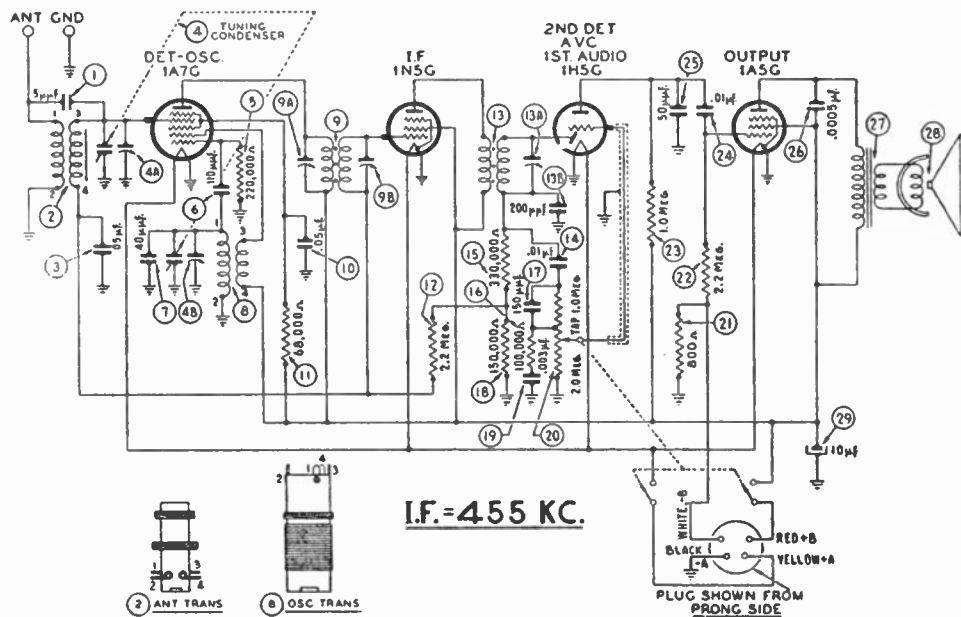
PHILCO BATTERY: Type P 60D-11L.

BATTERY CURRENT DRAIN: "A" 200 M. A. "B" 8 M. A.

CABINET DIMENSIONS: 37½" high, 26¾" wide, 11½" deep.

AERIAL AND GROUND: To obtain maximum operating performance from this model, Philco Farm Radio Aerial Part No. 40-6383 is recommended, in addition to a good ground connection.

ALIGNING PROCEDURE for this model will be found on page 40.



SCHEMATIC DIAGRAM MODEL 40-105

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Mica Condenser (5 mmf.)	30-1097	20	Volume Control (2.0 meg.)	33-5326		Dial	27-5519
2	Antenna Transformer	32-3248	21	Resistor (800 ohms, ½ watt)	33-180326		Dial Drive Cord	31-2392
3	Tubular Condenser (.05 mfd.)	30-4519	22	Resistor (2.2 meg., ½ watt)	33-522339		Drum Assembly (Tuning Cond.)	38-9856
4	Tuning Condenser Assembly	31-2384	23	Resistor (1.0 meg., ½ watt)	33-510339		Indicator Assembly	38-9844
5	Resistor (220,000 ohms, ½ watt)	33-422339	24	Tubular Condenser (.01 mf.)	30-4572		Knob (Volume-Tuning)	27-4332
6	Mica Condenser (110 mmf.)	30-1130	25	Mica Condenser (50 mmf.)	30-1029		Lever Assem. (Indicator Drive)	38-9854
7	Mica Condenser (40 mmf.)	30-1132	26	Mica Condenser (.0005 mf.)	30-1114		Pointer	56-1464
8	Oscillator Transformer	32-3214	27	Output Transformer	32-7984		Shaft (Tuning)	31-2395
9	1st I. F. Transformer Assembly	32-3198	28	Speaker	36-1410		Spring Locking, Flag Drive and Assembly Mounting	28-8496
10	Tubular Condenser (.05 mf.)	30-4444	29	Electrolytic Condenser (10 mf., 150 v.)	30-2396		Spring (Drive Cord)	28-8913
11	Resistor (68,000 ohms, ½ watt)	33-368339					Spring (Indicator Mounting)	28-8949
12	Resistor (2.2 mega., ½ watt)	33-522339					Speaker ("B" Cabinet, Table Model)	36-1410-1
13	2nd I. F. Transformer Assembly	32-3199					Speaker ("K" Cabinet, Console Model)	36-1436-1
14	Tubular Condenser (.01 mf.)	30-4572					Socket (6 prong)	27-6086
15	Resistor (330,000 ohms, ½ watt)	33-433339					Socket (7 prong)	27-6087
16	Resistor (100,000 ohms, ½ watt)	33-410339					Socket (Speaker)	27-6115
17	Mica Condenser (150 mmf.)	30-1033						
18	Resistor (150,000 ohms, ½ watt)	33-415339						
19	Tubular Condenser (.003 mf.)	30-4469						

MISCELLANEOUS PARTS

Bezel Assembly	56-1453
Cam Assembly (Indicator Drive)	38-9861
Cable Battery	41-3478
Cone Assembly	
(for Speaker 36-1410-1)	36-4093
(for Speaker 36-1436-1)	36-4094

MODEL 40-110

SPECIFICATIONS

TYPE OF CIRCUIT: Model 40-110 is a four tube battery operated superheterodyne receiver with electric push-button tuning. In addition other features of design are: Low current drain tubes, new high sound output speaker, specially designed tone chamber, two tuning ranges, automatic volume control, and pentode audio output.

The receiver is equipped with six electric tuning push-buttons for automatically selecting stations. Five of the push-buttons are used for broadcast stations and one for selecting dial tuning. The procedure for adjusting the push-buttons will be found in the instructions supplied with each set.

TUNING RANGES: 540 to 1630 K. C. 5.1 to 18.0 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: One 1A7G, Converter; one 1N5G, I. F. Amplifier; one 1H5G, 2nd Detector, A. V. C. 1st Audio; one 1A5G, Audio Output.

PHILCO BATTERIES: One Type P-60D-11L.

BATTERY DRAIN: "A" 200 M. A. "B" 7.2 M. A.

CABINET DIMENSIONS: Height Width Depth
40-110K 37 $\frac{1}{2}$ 26 $\frac{3}{4}$ 11 $\frac{1}{2}$
40-110B 17 $\frac{1}{2}$ 17 $\frac{1}{2}$ 9 $\frac{1}{2}$

AERIAL AND GROUND: To obtain maximum operating performance with this model, Philco Farm Radio Aerial, Part No. 10-6383, is recommended and a good ground source such as a water pipe.

ALIGNING PROCEDURE for this model will be found on page 10.

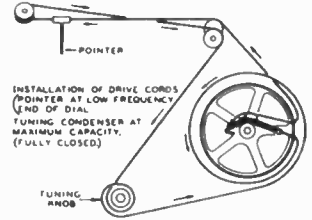
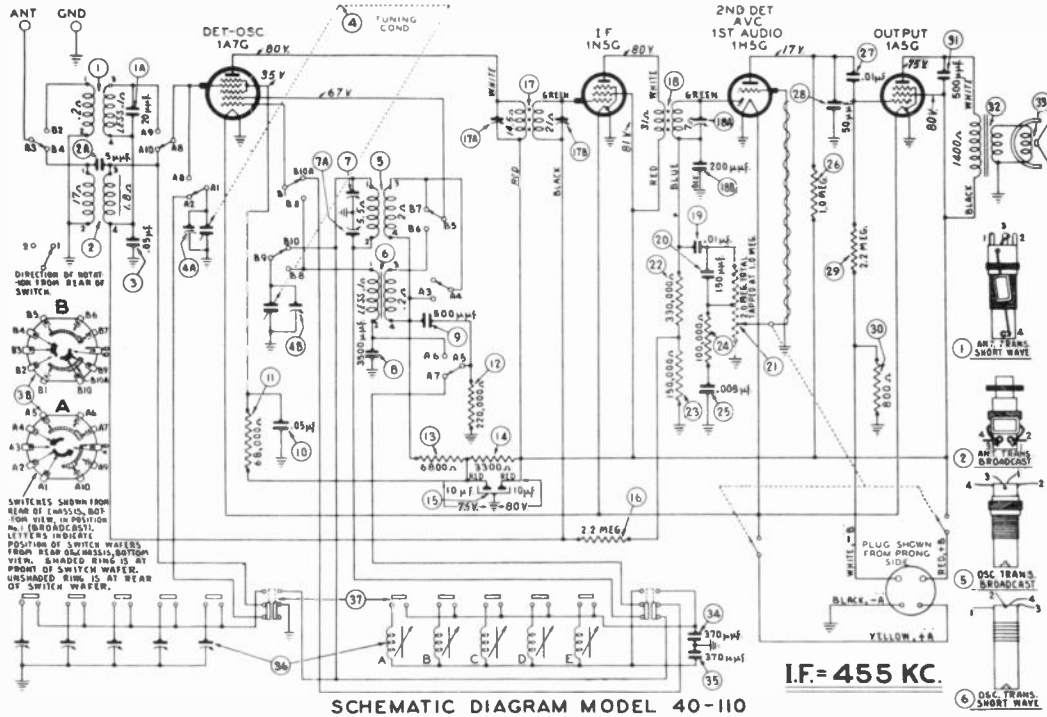


FIG. 1. INSTALLATION OF DRIVE CORD.



SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Ant. Trans. Ass'y. (Short Wave)	32-3289	22	Resistor (330,000 ohms, 1/2 watt)	33-433339
1A	Mica Condenser (20 mmd.)	61-0039	23	Resistor (150,000 ohms, 1/2 watt)	33-415339
2	Ant. Trans. Ass'y. (Broadcast)	32-3279	24	Resistor (100,000 ohms, 1/2 watt)	33-410339
2A	Mica Condenser (5 mmd.)	30-1097	25	Tubular Condenser (.003 mfd.)	30-4469
3	Tubular Condenser (.05 mfd.)	30-4519	26	Resistor (1.0 meg., 1/2 watt)	33-510339
4	Tuning Condenser Assembly (Broadcast)	31-2404	27	Tubular Condenser (.01 mfd.)	30-4572
5	Osc. Transformer (Broadcast)	32-3287	28	Mica Condenser (50 mmd.)	30-1029
6	Osc. Transformer (Short Wave)	32-3286	29	Resistor (2.2 meg., 1/2 watt)	33-522339
7	Compensator	31-6321	30	Resistor (800 ohms, 1/2 watt)	33-180326
8	Mica Condenser (3500 mmd.)	30-1094	31	Mica Condenser (500 mmd.)	30-1114
9	Mica Condenser (500 mmd.)	30-1114	32	Output Transformer	32-8086
10	Tubular Condenser (.05 mfd.)	30-4444	33	Cone and Voice Coil Assembly (Speaker Part No. 18-1410-1)	36-4093
11	Resistor (68,000 ohms, 1/2 watt)	33-366339	34	Silver Mica Condenser (370 mmd.)	30-1110
12	Resistor (220,000 ohms, 1/2 watt)	33-422339	35	Silver Mica Condenser (370 mmd.)	30-1110
13	Resistor (6800 ohms, 1/2 watt)	33-268339	36	Coils-Padder Strip and Brk. Assembly	
14	Resistor (3300 ohms, 1/2 watt)	33-233339	36A	Coil No. 1 (540-1030 K. C.)	32-3042
15	Elec. Condenser (10-10 mfd., 150 V.)	30-2408	36B	Coil No. 2 (650-1100 K. C.)	32-3042
16	Resistor (2.2 meg., 1/2 watt)	33-522339	36C	Coil No. 3 (850-1100 K. C.)	32-3042
17	1st I. F. Transformer Assembly	32-3198	36D	Coil No. 4 (740-1240 K. C.)	32-3041
18	2nd I. F. Transformer Assembly	32-3259	36E	Coil No. 5 (1160-1600 K. C.)	32-3041
19	Tubular Condenser (.01 mfd.)	30-4572	37	Push-Button Switch	42-1527
20	Mica Condenser (180 mmd.)	30-1033	38	Wave Switch	42-1516
21	Volume Control (2 meg.)	33-5326			

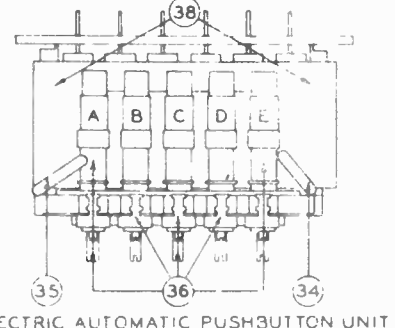


FIG. 2.

MISCELLANEOUS PARTS

SCHE. No.	DESCRIPTION	PART No.
	Bezel (Dial)	56-1453
	Bezel (Push-Buttons)	56-1455
	Cabinet	1039B
	Clip (Coil Mounting)	28-5002
	Dial	27-5539
	Dial Tab	27-5534
	Drive Cord Assembly	31-2405
	Knob Ass'y. (Vol., Tuning, Wave Switch)	27-4329
	Knob Assembly (Push-Buttons)	27-4624
	Pointer	56-1464
	Speaker	36-1410
	Spring (Drive Cord Assembly)	28-8913
	Spring (Flag Assembly Mounting)	28-8949
	Spring (Locking, Flag Drive and Flag Assembly Mounting)	28-8486
	Socket (6 prong)	27-6086
	Socket (7 prong)	27-6087
	Socket (Speaker)	27-6099
	Socket (Speaker)	27-6115
	Screw (Push-Button Bezel Mounting)	W-1834FQ2
	Screw (Bezel Mounting)	W-1834FQ2
	Tab Kit	40-6472
	Tuning shaft Assembly	31-2395

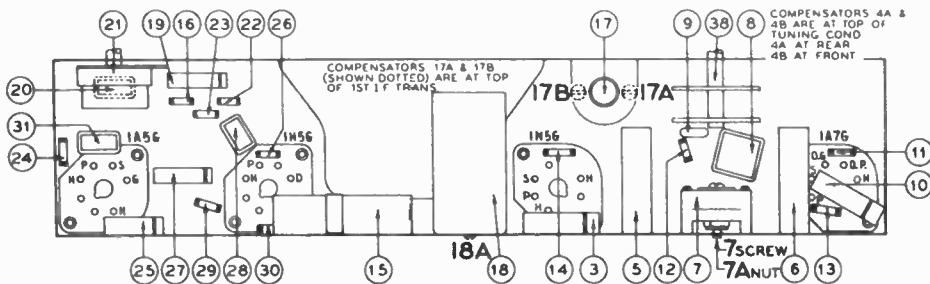


FIG. 3.

MODELS 40-115 and 40-124, Code 121

SPECIFICATIONS

MODEL 40-115, CODE 121

TYPE OF CIRCUIT: Model 40-115 is a six tube AC-DC operated superheterodyne receiver with two tuning ranges covering standard Broadcast and Police frequencies. In addition other features of design are: R. F. Stage, Beam Pentode Audio Output, Automatic Volume Control, and Philco Loktal Tubes.

POWER SUPPLY: 115 Volts, AC or DC.

TUNING RANGES: 540 to 1600 K. C., 1.5 to 3.3 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: 7C7, R. F.; 7A8, Converter; 7B7, I. F.; 7C6, 2nd Detector, A. V. C. 1st Audio; 35A5, Audio Output; and 35Z3, Rectifier.

AUDIO OUTPUT: 1 Watt.

CABINET DIMENSIONS:

Height, 7³/₄". Width, 12³/₄". Depth, 5³/₄".

MODEL 40-124, CODE 121

TYPE OF CIRCUIT: Model 40-124 is a six tube AC-DC operated superheterodyne receiver using Electric Pushbutton tuning in addition to manual tuning. Other features of design are: Two Tuning Ranges, R. F. Stage, Beam Pentode Audio Output, Automatic Volume Control, and Philco Loktal Tubes.

Five broadcast stations can be automatically tuned in by electric pushbutton tuning. One pushbutton is also provided for selecting dial tuning. The procedure for adjusting the pushbuttons to stations is covered in the instructions on page 9.

POWER SUPPLY: 115 Volts, AC or DC.

TUNING RANGES: 540 to 1600 K. C., 1.5 to 3.3 M. C.

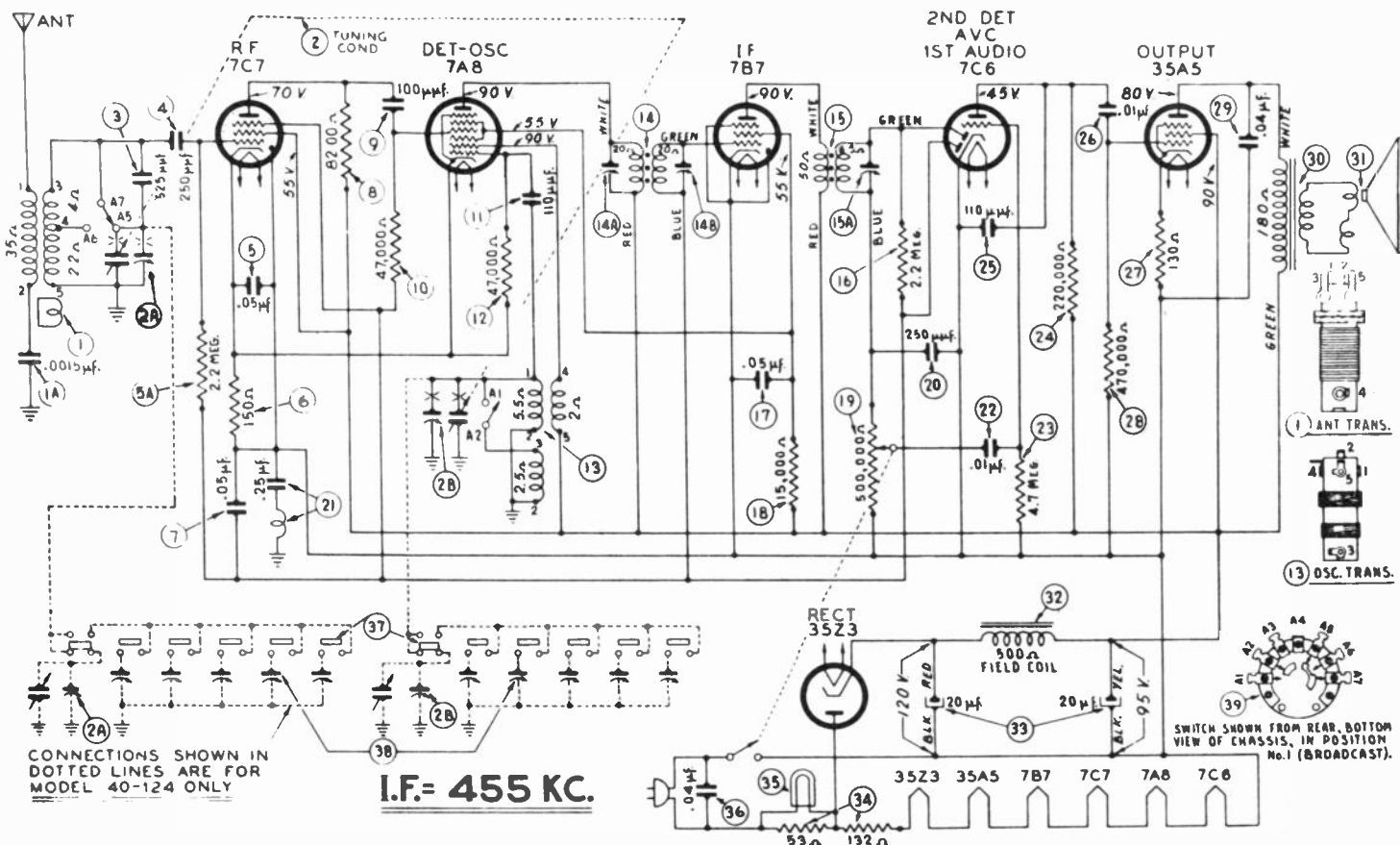
INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: 7C7, R. F.; 7A8, Converter; 7B7, I. F.; 7C6, 2nd Detector, A. V. C. 1st Audio; 35A5, Audio Output; and 35Z3, Rectifier.

AUDIO OUTPUT: 1 Watt.

CABINET DIMENSIONS:

Height, 7³/₄". Width, 12³/₄". Depth, 5³/₄".



SCHMATIC DIAGRAM MODELS 40-115 & 40-124

MODELS 40-115, Code 121; and 40-124, Codes 121-122

REPLACEMENT PARTS

Models 40-115 and 40-124, Code 121

SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer (Model 40-115).....	32-3303
1A	Antenna Transformer (Model 40-124).....	32-3321
2	Tubular Condenser (.0015 mfd.).....	30-4555
3	Tuning Condenser (Model 40-115).....	31-2425
4	Tuning Condenser (Model 40-124).....	31-2426
5	Mica Condenser (525 mmfd.).....	30-1142
6	Mica Condenser (250 mmfd.).....	61-0033
7	Tubular Condenser (.05 mfd.).....	30-4519
8	Resistor (2.2 meg., 1/2 watt).....	33-522339
9	Resistor (150 ohms, 1/2 watt).....	33-115336
10	Tubular Condenser (.05 mfd.).....	30-4519
11	Resistor (8200 ohms, 1/2 watt).....	33-282339
12	Mica Condenser (100 mmfd.).....	30-1128
13	Resistor (47,000 ohms, 1/2 watt).....	33-347339
14	Mica Condenser (110 mmfd.).....	30-1130
15	Resistor (47,000 ohms, 1/2 watt).....	33-347339
16	Oscillator Trans. (Model 40-115).....	32-3255
17	Oscillator Trans. (Model 40-124).....	32-3256
18	1st I. F. Transformer Assembly.....	32-3237
19	2nd I. F. Transformer Assembly.....	32-3238
20	Resistor (2.2 meg., 1/2 watt).....	33-522339
21	Tubular Condenser (.05 mfd.).....	30-4519
22	Resistor (15,000 ohms, 1/2 watt).....	33-315339
23	Volume Control and On-Off Switch.....	33-5306
24	Mica Condenser (250 mmfd.).....	30-1074
25	Choke and Condenser Assembly (.25 mfd.).....	38-9956
26	Tubular Condenser (.01 mfd.).....	30-4479
27	Resistor (4.7 meg., 1/2 watt).....	33-547339
28	Resistor (220,000 ohms, 1/2 watt).....	33-422339
29	Mica Condenser (110 mmfd.).....	30-1130
30	Tubular Condenser (.01 mfd.).....	30-4572
31	Resistor (130 ohms, 1/2 watt).....	33-113336
32	Resistor (470,000 ohms, 1/2 watt).....	33-447339
33	Tubular Condenser (.04 mfd.).....	30-4119
34	Output Transformer (Speaker Part No. 36-1469-1).....	32-8047
35	(Speaker Part No. 36-1469-9).....	32-8044
36	Cone and Voice Coil Assembly (Speaker Part No. 36-1469-1).....	36-4115
37	(Speaker Part No. 36-1469-9).....	36-4113
38	Field Coil (Replace Speaker Part No. 36-1469).....	30-2403
39	Electrolytic Condenser (20-20 mfd.).....	33-3375
40	Filament Resistor.....	33-3375
41	Pilot Lamp.....	34-2068
42	Tubular Condenser (.04 mfd.).....	30-4119

SCHE. No.	DESCRIPTION	PART No.
37	Pushbutton Switch (Model 40-124).....	42-1512
38	Padder Strip (Model 40-124).....	31-6312
39	Wave Switch.....	42-1505

MISCELLANEOUS PARTS

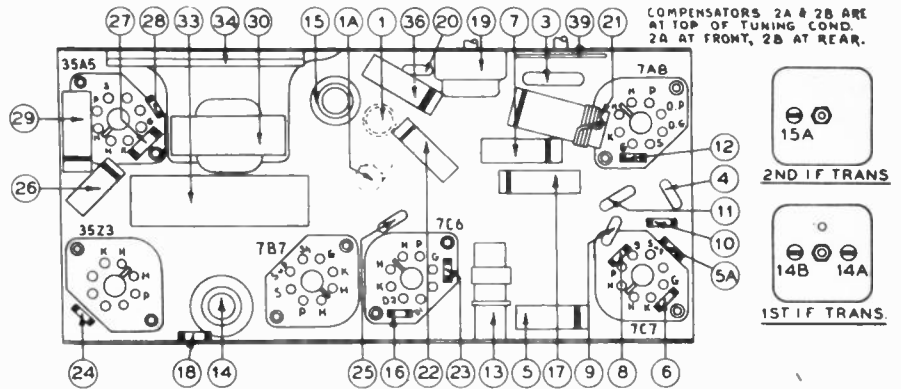
Cable and Plug (Power Supply).....	L-3199
Cabinet (Model 40-115).....	10432A
Clip (Coil Mounting).....	28-5002
Dial.....	27-5517
Drive Cord Assembly.....	31-2387
Drive Shaft Assembly.....	31-2370
Knobs (Volume, Tuning, Wave Switch).....	27-4809
Pilot Lamp Socket Assembly.....	38-9825
Pointer (Dial).....	27-4868

SCHE. No.	DESCRIPTION	PART No.
Pointer (Knob).....	27-9521	
Spring (Drive Cord Assembly).....	28-8954	
Speaker Assembly.....	36-1469	
Sockets (Loktal).....	55-0578	

MISCELLANEOUS PARTS

MODEL 40-124

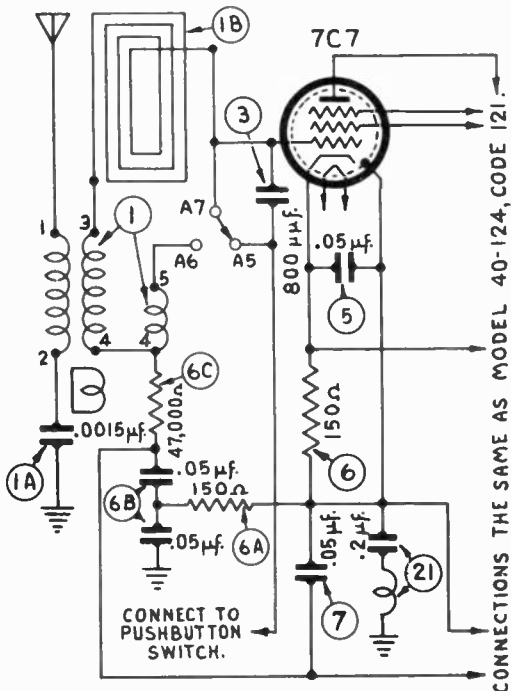
Cabinet.....	10433A
Knobs (Pushbutton).....	27-4824
Tab (Dial).....	27-5526
Tab (Television).....	27-9450
Tab Kit.....	40-6473



MODELS 40-115, 40-124 PART LOCATIONS, UNDERSIDE OF CHASSIS.

MODEL 40-124, CODE 122

Model 40-124, Code 122, is similar to Code 121 with the addition of a loop aerial mounted inside the cabinet and several part changes in the aerial circuit. These changes are shown in the following circuit diagram and parts list. The service information on page 46, for Model 40-124, Code 121, with these changes, applies to Model 40-124, Code 122.



CONNECTIONS FOR MODEL 40-124 CODE 122.

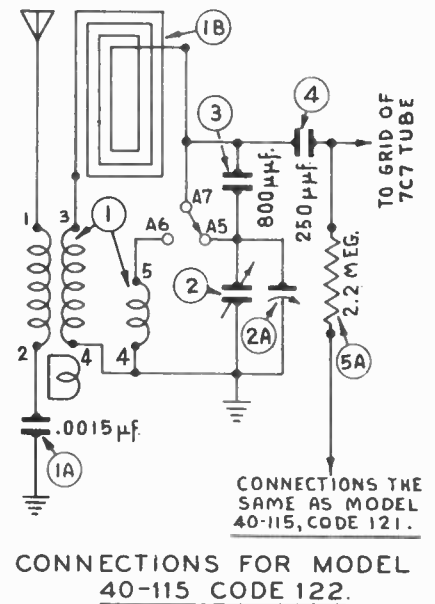
SCHEMATIC NUMBER	DESCRIPTION	PART No. CODE 122
1	Antenna Transformer.....	32-3404
1A	Tubular Condenser (.0015 mfd.).....	30-4555
1B	Loop Assembly.....	32-3411
2	Tuning Condenser.....	31-2450
3	Mica Condenser (800 mmfd.).....	30-1135
4	Not used.	
5	Tubular Condenser (.05 mfd.).....	30-4519
6	Resistor (150 ohm, 1/2 watt).....	33-115336
6A	Resistor (150 ohm, 1/2 watt).....	33-115336
6B	Tubular Condenser (.05, .05 mfd.).....	30-4522
6C	Resistor (47,000 ohms, 1/2 watt).....	33-347339
7	Tubular Condenser (.05 mfd.).....	30-4519
21	Choke and Condenser Assembly (.2 mfd.)...	76-1034

MODELS 40-115, Codes 121-122; and 40-124, Codes 121-122

MODEL 40-115, CODE 122

Model 40-115, Code 122, is similar to Code 121 with the addition of a loop aerial mounted inside the cabinet and several part changes in the aerial circuit. These changes are shown in the following circuit diagram and parts list. The service information on page 46, for Model 40-115, Code 121, with these changes, applies to Model 40-115, Code 122.

SCHEMATIC NUMBER	DESCRIPTION	PART No. CODE 122
1	Antenna Transformer	32-3404
1A	Tubular Condenser (.0015 mfd.).....	30-4555
1B	Loop Assembly	32-3405
2	Tuning Condenser	31-2450
3	Mica Condenser (800 mmfd.).....	30-1135
	Cabinet	10432B



ALIGNMENT OF COMPENSATORS Models 40-115, 40-124 EQUIPMENT REQUIRED

Signal Generator: Philco Model 077, covering a frequency range of 115 K. C. to 36 M. C.

Aligning Indicator: A vacuum tube voltmeter or audio output meter such as contained in Philco Models 027 and 028 circuit

testers. Either of these meters can be used to align the receiver and are connected as given below.

Tools: Aligning screw driver, Part No. 45-2610.

CONNECTING THE ALIGNING METERS

Audio Output Meter: The audio output meter is connected to the plate and screen terminals of the 35A5 tube. Adjust the meter for the 0 to 30 volt A. C. scale.

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows: Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to any point in the A. V. C.

circuit where voltage can be obtained. The positive (+) terminal of the vacuum tube voltmeter is connected to the negative (—) side of the high voltage supply (cathode of the 7C6 tube).

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna	Dial Setting	Dial Setting	Control Settings	Adjust Padders	
1	7A8 Grid	Note A .004	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	15A, 14A, 14B	Manual Pushbutton "IN" Model 40-124
2	Aerial	100 mmfd.	1580 K. C.	1580 K. C.	Range Switch "Brdcat"	(2B)	Note B, Note C
3	Aerial	100 mmfd.	1500 K. C.	1500 K. C.	Range Switch "Brdcat"	(2A)	

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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, the tuning pointer is set horizontal at the low frequency end of the scale (530 K. C.).

NOTE C—Compensators 2A and 2B are on top of the Tuning Condenser. 2A at the front, 2B at the rear.

MODELS 40-120 and 40-125

SPECIFICATIONS

TYPE OF CIRCUIT:

Models 40-120 and 40-125 are six (6) tube super-heterodyne receivers employing the new Philco built-in super aerial system which eliminate an outside aerial, and Philco High-Efficiency Loktal tubes. In addition, other features of design are: two tuning ranges; special high gain R. F. stage; automatic volume control and a Beam power audio output stage. In general, these models are similar but differ in their tuning mechanisms and cabinets.

Model 40-120 is dial tuned and assembled in cabinet type "C".

Model 40-125 is equipped with six electric push buttons for automatically selecting stations in addition to dial tuning. Five push buttons are used for stations one of which can be used in combination with a Special type PHILCO TELEVISION receiver for reception of television sound programs. The sixth push button selects dial tuning. The procedure for

adjusting and operating push-button tuning will be found on page 9. Instructions for setting up the television push-button is supplied with Philco Television Receivers. This model is assembled in special type "C" cabinet.

TUNING RANGE: 540 to 1600 K. C. 1.6 to 3.3 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: 115 volts A. C. or D. C. current.

POWER CONSUMPTION: 28 watts.

AUDIO OUTPUT: 1 watt.

PHILCO TUBES USED:

7C7, R. F.; 7A8, oscillator and first detector; 7B7, I. F.; 7C6, second detector, first audio; 35A5, output; 35Z3, rectifier.

CABINET DIMENSIONS: Height Width Depth
 Model 40-120..... 6⁹/₁₆ 1¹/₈ 6⁷/₁₆
 Model 40-125..... 7¹/₁₆ 11 6⁵/₁₆

ALIGNMENT OF DIAL TUNING COMPENSATORS

EQUIPMENT REQUIRED:

(1) Signal Generator; Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose.

(2) Output Meter; Philco Models 027 or 028 Vacuum Tube Voltmeters and Circuit Testers incorporate a sensitive output meter and are recommended.

(3) Philco Fiber Handle Screw Driver, Part No. 45-2610. Aligning adapter Part No. 45-2767.

OUTPUT METER: The Philco 027 or 028 Output Meter is connected to the plate and screen terminals of the type 35A5 tube and adjusted for the 0 to 30 V. A. C. scales.

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an alignment indicator make the following connections:

Remove the 7C6 tube from its socket and insert the aligning adapter, Part No. 45-2767, then replace the tube in the adapter. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adapter. Attach the positive terminal of the voltmeter to the chassis. The positive terminal is connected to the chassis.

After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on Fig. 2. 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	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	7C7 See Note C	.1 mf.	455 K. C.	580 K. C.	Vol. Cont. Max.	14A, 14B, 15A	Push "IN" Manual Button Model 40-125
2	Ant. Ter.	10 mmf.	1600 K. C.	1600 K. C.	Vol. Cont. Max.	2B	See Note B See Note C
3	Ant. Ter.	10 mmf.	1400 K. C.	1400 K. C.	Vol. Cont. Max.	2A	

NOTE A — The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (High side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B — **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, the tuning pointer is set horizontal at the low frequency end of the scale (540 K. C.).

NOTE C — Compensators 2A and 2B are at the top of the tuning condenser. Compensator 2A is on the front section and compensator 2B on the rear section. When padding the I. F. the signal generator can be attached to the 7C7 grid on the front section of the tuning condenser.

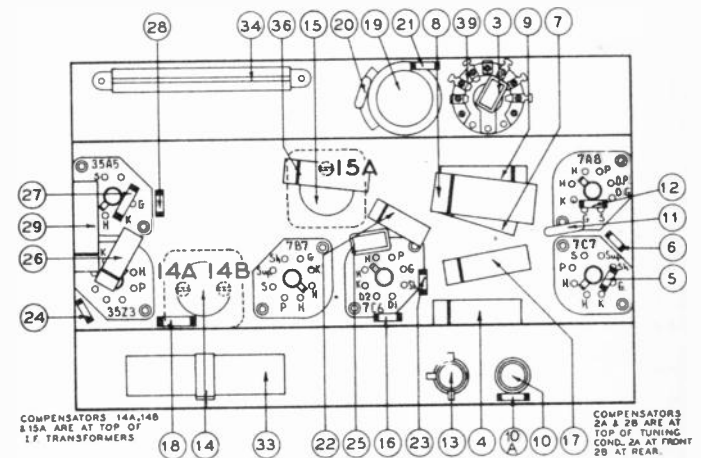


Fig. 1

PRODUCTION CHANGES

MODEL 40-120

Tuning condenser (2) changed from Part No. 31-2388 to Part No. 31-2423. The new condenser uses a rear mounting grommet, Part No. 27-4610, and sleeve, Part No. 28-5583.

MODEL 40-125

Tuning condenser (2) changed from Part No. 31-2397 to Part No. 31-2424. The new condenser uses a rear mounting grommet, Part No. 27-4610, and sleeve, Part No. 28-5583.

MODELS 40-120 and 40-125

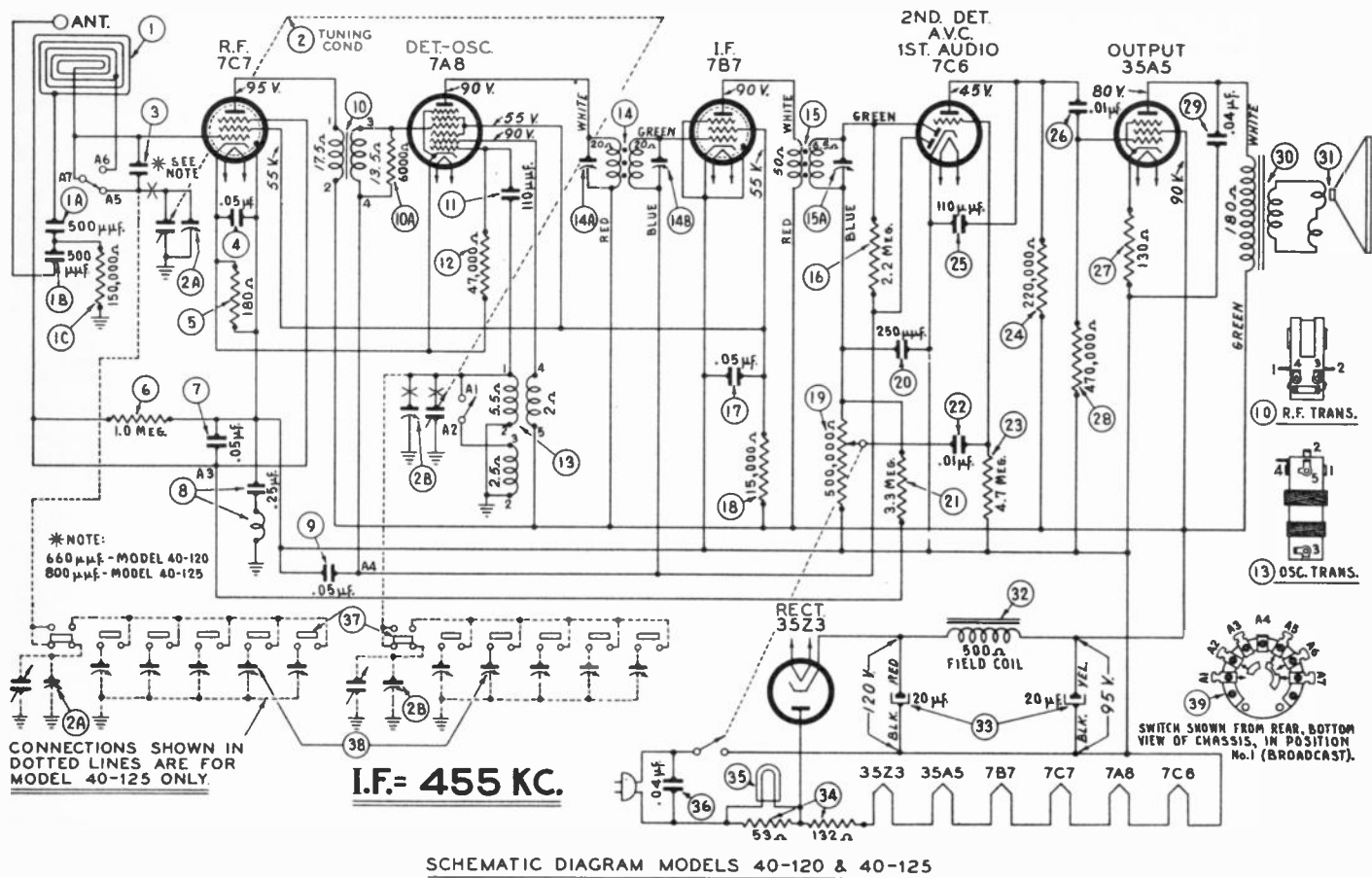


Fig. 2

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Antenna Assy. (Model 40-120)	38-9889	16	Resistor (2.2 meg., 1/2 watt)	33-822339	36	Tubular Cond. (.04 mfd.)	30-4119
	(Model 40-125)	38-9890	17	Tubular Cond. (.08 mfd.)	30-4519	37	Push Button Switch (Model 40-125)	42-1812
1A	Mica Cond. (500 mmfd.)	30-1114	18	Resistor (18,000 ohms, 1/2 watt)	33-315339	38	Padder Strip (Model 40-125)	31-6312
1B	Mica Cond. (500 mmfd.)	30-1114	19	Volume Control & On-Off Switch	33-8308	39	Wave Switch	42-1805
1C	Resistor (150,000 ohms, 1/2 watt)	33-418339	20	Mica Cond. (250 mmfd.)	30-1074		Cable & Plug (Power Supply)	L-3199
2	Tuning Cond. Assy. (Model 40-120)	31-2388	21	Resistor (3.3 meg., 1/2 watt)	33-833339		Cabinet (Model 40-120)	10390A
	(Model 40-125)	31-2397	22	Tubular Cond. (.01 mfd.)	30-4479		Clip (Coil Mtg.)	28-9002
3	Mica Cond. (660 mmfd., Model 40-120)	30-1136	23	Resistor (4.7 meg., 1/2 watt)	33-847339		Dial	27-9817
	(800 mmfd., Model 40-125)	30-1135	24	Resistor (220,000 ohms, 1/2 watt)	33-422339		Drive Shaft Assy.	31-2387
4	Tubular Cond. (.08 mfd.)	30-4519	25	Mica Cond. (110 mmfd.)	30-1130		Pilot Lamp Socket Assy.	31-2370
5	Resistor (180 ohms, 1/2 watt)	33-118339	26	Tubular Cond. (.01 mfd.)	30-4572		Knobs (Volume-Tuning-Wave Switch)	27-4809
6	Resistor (1.0 meg., 1/2 watt)	33-810339	27	Resistor (130 ohms, 1/2 watt)	33-113336		Pointer (Knob)	28-1465
7	Tubular Cond. (.08 mfd.)	30-4519	28	Resistor (470,000 ohms, 1/2 watt)	33-447339		Spring (Drive Card Assy.)	28-9854
8	Tubular Cond. & Choke Assy. (.28 mfd.)	36-9851	29	Tubular Cond. (.04 mfd.)	30-4119		Speaker Assy.	36-1469
9	Tubular Cond. (.05 mfd.)	30-4519	30	Output Trans. (Spkr. Part No. 36-1469-1)	32-8047		Speakers (Lekta)	55-0575
10	R. F. Trans. Assy.	32-3273		(Spkr. Part No. 36-1469-9)	32-8044			
10A	Resistor (6000 ohms, 1/2 watt)	33-260339	31	Cone & Voice Coil Assy. (Spkr. Part No. 36-1469-1)	36-4118			
11	Mica Cond. (110 mmfd.)	30-1130		(Spkr. Part No. 36-1469-9)	36-4113			
12	Resistor (47,000 ohms, 1/2 watt)	33-347339	32	Field Coil (Replace Spkr. Part No. 36-1469)				
13	Oscillator Trans. (Model 40-120)	32-3255	33	Electrolytic Cond. (20-20 mfd.)	30-2403			
	(Model 40-125)	32-3256	34	Filament Resistor	33-3378			
14	1st I. F. Trans. Assy.	32-3237	35	Pilot Lamp	34-2068			
15	2nd I. F. Trans. Assy.	32-3238						

MISCELLANEOUS PARTS—MODEL 40-125

	Cabinet	10390A
	Escutcheon Plate (Pushbutton)	28-9742
	Escutcheon Pins	55-1074
	Knobs (Pushbutton)	27-4824
	Tab (Dial)	27-9826
	Tab Kit	40-8473

MODELS 40-130, 40-135 and 40-170CS

SPECIFICATIONS

TYPE OF CIRCUIT: Models 40-130 and 40-135 are six (6) tube alternating current operating superheterodyne receivers employing the new Philco built-in aerial system which eliminates an outside aerial and reduces local interference to a minimum. One feature of the built-in super aerial system is that a statically shielded loop is used. This permits the receiver to be turned to the position where the minimum amount of interference is picked up or, if interference is not present, the receiver may be set in the position where best reception is obtained.

In addition, other features of design are: Two tuning ranges; Philco high efficiency Loktal tubes; special high gain R. F. stage; automatic volume control, tone control and a Beam power audio output stage. In general, these models are similar but differ in their tuning mechanisms and cabinets.

Model 40-130 is dial tuned and assembled in cabinet type "T".

Model 40-135 is equipped with six electric push buttons for automatically selecting stations in addition to dial tuning. Five push buttons are used for stations one of which can be used in combination with Special type PHILCO TELEVISION receivers for reception of television sound programs. The sixth push button selects dial tuning. The push buttons in this model cover frequency ranges as follows:

540 to 1030 K. C.	740 to 1300 K. C.
650 to 1100 K. C.	900 to 1470 K. C.
	1160 to 1600 K. C.

The procedure for adjusting the push buttons for reception of stations will be found on page 9, the only difference being that the frequency range of each button is different.

Philco television sets and record players contain instructions for setting up and adjusting the push-button in model 40-135.

TUNING RANGES: 540 to 1550 K. C.; 1.5 to 3.3 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

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

POWER CONSUMPTION: 35 watts.

AUDIO OUTPUT: 1½ watts.

PHILCO TUBES USED: 7C7, R. F.; 7A8, Oscillator and Detector; 7B7, I. F.; 7C6, Second Detector, First Audio; 7B5, Output; 7Y4, Rectifier.

CABINET DIMENSIONS:

Height, 10¼"; Width, 14½"; Depth, 8½".

40-170CS

Models 40-135 and 40-170 are similar in design with the exception of the cabinets, speakers, and several circuit changes. The Service information for Model 40-135 covers the Model 40-170 with the exception of the part changes listed below.

Sche. No.	Description	Part No.
1	Loop Assembly	38-9985
3	Mica Condenser	30-1140
30	Tubular Condenser (.006 mfd., 600 V.)	30-4504
31	Tubular Condenser (.02 mfd., 600 V.)	30-4599
34	Cone and Voice Coil Assembly (For Speaker Part No. 36-1480-3)	36-4086
	Cable (A. C.)	L-3240
	Cabinet	10453A
	Speaker	36-1480

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

EQUIPMENT REQUIRED

(1) **Signal Generator:** Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 36,000 K. C. is the correct instrument for this purpose.

(2) **Aligning Indicator:** Philco Models #27 or #28 Vacuum Tube

Voltmeters and Circuit Testers incorporate sensitive vacuum tube voltmeters and audio output meters and are recommended.

(3) **Philco Fiber Handle Screw Driver,** Part No. 45-2610. **Aligning adaptor** Part No. 45-2767, when using the vacuum tube voltmeter for alignment.

CONNECTING ALIGNING METERS

Audio Output Meter: Philco Model 027 or 028 Audio Output Meters is connected to the voice coil terminals of the speaker or the plate and screen of the 7B5 tube and adjusted for the 0 to 10 volt A. C. scale.

Vacuum Tube Voltmeter: To use the Vacuum Tube Voltmeter as an alignment indicator make the following connections:

(1) **Adjusting I. F. Circuit:** Remove the 7C7 R. F. tube from its socket and insert the aligning adaptor, 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) **Adjusting R. F. Circuit:** To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 second detector tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the paragraph above. With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted.

After connecting the aligning adaptors, adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in Fig. 1. 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 Settings	Adjust Compensators in Order	
1	No. 1 Ter. on Panel Note B	455 K. C.	580 K. C.	Vol. Cont. Max. Range Switch "Brdcat"	21B, 21A, 18B, 18A	Dial Push-Button "In" Model 40-125
2	Loop Note C	1500 K. C.	1500 K. C.	Vol. Cont. Max. Range Switch "Brdcat"	9A, 1A Note D	Note A

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.

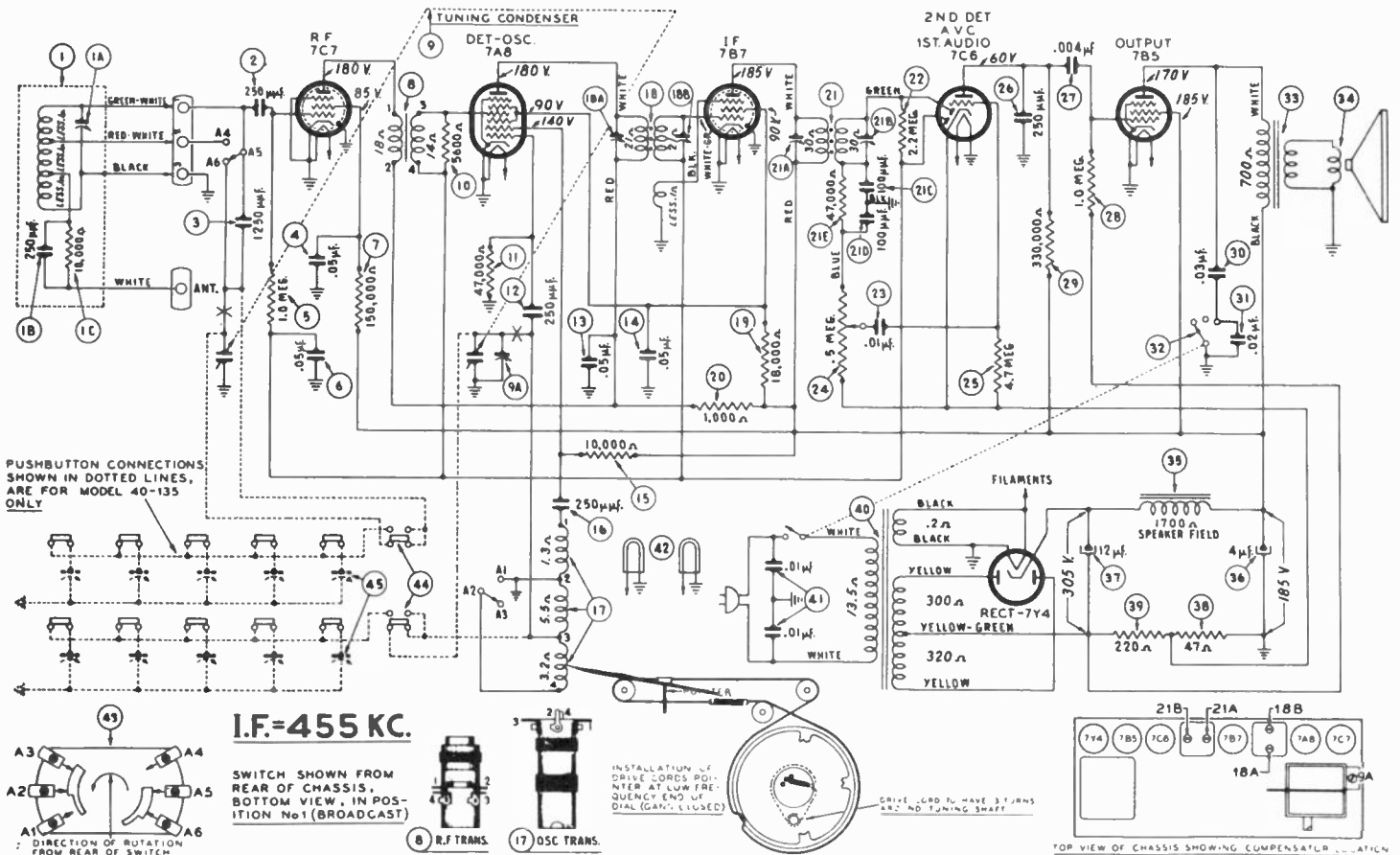
NOTE B — When adjusting the I. F. padders the high side of the signal generator output is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis.

The ground or low side of the generator is connected to the chassis of the receiver.

NOTE C — When aligning the R. F. a loop is made from a few turns of wire and connected to the signal generator output terminals; the signal generator is then placed two or three feet from the loop in the cabinet.

NOTE D — Oscillator compensator (9A) is located on top of the tuning condenser. Antenna compensator (1A) is located on the loop. When adjusting the "ANT" compensators the receiver loop should be held in place against the back of the cabinet.

MODELS 40-130, 40-135 and 40-170CS



SCHEMATIC DIAGRAM MODEL 40-130 & 40-135

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly	38-9891	27	Rubber Bushing (Tuning Cond. Drive)	27-9432
1A	Compensator	31-6318	28	Spring (Drive Cord, Tuning Cond.)	28-8751
18	Mica Cond. (250 mmfd.)	61-0033	28	Spring (Drive Cord, Pointer)	28-8953
1C	Resistor (10,000 ohms, 1/2 watt)	33-310339	28	Spring (Tuning Shaft Assy.)	28-8955
2	Mica Cond. (250 mmfd.)	61-0033	36	Speaker	36-1478
3	Mica Cond. (1250 mmfd.)	5886	36	Socket (Loktal, all tubes)	55-0575
4	Tubular Cond. (.05 mfd.)	30-4518	36	Tuning Shaft	36-8052
5	Resistor (1.0 meg., 1/2 watt)	33-510339	36	Tuning Drive Drum Assy.	36-9883
6	Tubular Cond. (.05 mfd.)	30-4518	39	Tab (Dial, Model 40-135)	27-5526
7	Resistor (150,000 ohms, 1/2 watt)	33-415339	39	Tab (Television, Model 40-135)	27-9450
8	R. F. Transformer	32-3283	40	Tab Kit (Model 40-135)	40-6473
9	Tuning Condenser	31-2374	41	Washer "C" Type, Tuning Shaft	28-2043
10	Resistor (5600 ohms, 1/2 watt)	33-236339			
11	Resistor (47,000 ohms, 1/2 watt)	33-347339			
12	Mica Cond. (250 mmfd.)	61-0033			
13	Tubular Cond. (.05 mfd.)	30-4518			
14	Tubular Cond. (.05 mfd.)	30-4518			
15	Resistor (10,000 ohms, 1/2 watt)	33-310339			
16	Mica Cond. (250 mmfd.)	61-0033			
17	Oscillator Transformer	32-3212			
18	1st I. F. Trans. Assy.	32-3210			
19	Resistor (18,000 ohms, 1 watt)	33-318439			
20	Resistor (1,000 ohms, 1/2 watt)	33-210339			
21	2nd I. F. Trans. Assy.	32-3281			
22	Resistor (2.2 meg., 1/2 watt)	33-522339			
23	Tubular Cond. (.01 mfd.)	30-4572			
24	Volume Control (.8 mfd.)	33-415339			
25	Resistor (4.7 meg., 1/2 watt)	33-547339			
26	Mica Cond. (250 mmfd.)	61-0033			
27	Tubular Cond. (.004 mfd.)	30-8978			
28	Resistor (1.0 meg., 1/2 watt)	33-510339			
29	Resistor (330,000 ohms, 1/2 watt)	33-433339			
30	Tubular Cond. (.03 mfd.)	30-4449			
31	Tubular Cond. (.02 mfd.)	30-4481			
32	Tone Control and On-Off Switch	42-1520			
33	Output Transformer	32-8063			
34	Cone and Voice Coil Assy. (Spkr. Part No. 36-1478-3)	36-4085			
35	Field Co. (Replace Spkr. Part No. 36-1478)	30-2401			
36	Electrolytic Cond. (.4 mfd., 400 V.)	30-2409			
37	Electrolytic Cond. (12 mfd., 400 V.)	30-2409			
38	Electrolytic Condenser 20 mfd., 400 V. (25 cycle operation)	30-2438			
39	Resistor (47 ohms, 1/2 watt)	33-047331			
40	Resistor (220 ohms, 1 watt)	33-122431			
41	Power Trans. (115 V., 50-60 cycles)	32-8064			
42	Power Transformer (115 V., 25 cycle)	32-8075			
43	Power Transformer (220 V., 60 cycle)	32-8093			
44	Bakelite Cond. (.01-.01 mfd.)	3903-00			
45	Pilot Lamps	34-2064			
	Wave Switch	42-1494			
	Pushbutton Switch (Model 40-135 only)	42-1326			
	Padder Strip (Model 40-135 only)	31-6315			

MISCELLANEOUS PARTS

Cabinet (Model 40-130)	10394A
Cabinet (Model 40-135)	10394B
Cable and Plug (Power Supply)	L-3199
Clip (R. F. and Osc. Trans. Mtg.)	28-5002
Dial	27-5506
Drive Cord Assy. (Pointer)	31-2399
Drive Cord Assy. (Tuning Cond.)	31-2400
Escutcheon (Pushbutton) (Model 40-135)	28-5742
Escutcheon Pin (Model 40-135)	W-1074
Insulating Bushing (Insulate Drive Shaft)	27-9437
Knobs (Tuning, Tone, Volume and Wave Switch)	27-4332
Knobs (Pushbutton, Model 40-135)	27-4824
Pilot Lamp Socket Assy.	38-9904
Pointer	36-1532

PRIMARY WIRING FOR 220 VOLT OPERATION — TRANSFORMER 32-8093
 Power Supply—
 220 Volt.....Red and Yellow to White
 110 Volt.....Red to White
 Connect Together—
 220 Volt.....Black and White to Red
 110 Volt.....Black & White to Red & Yellow

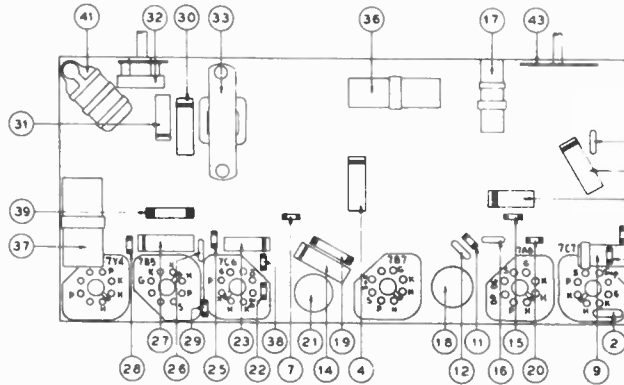


FIG. 1. PART LOCATIONS, UNDERSIDE OF CHASSIS.

PRODUCTION CHANGES

MODELS 40-130 RUN 3, 40-135, 40-170CS

To prevent oscillation at the low end of the broadcast band and 2nd I. F. transformer (21) changed from Part No. 32-3281 to Part No. 32-3382.

MODEL 40-170CS

The speaker, Part No. 36-1480-3 and cone assembly, Part No. 36-4086 listed in No. 1 change notice for Model 40-170CS has been changed on later production receivers to speaker 36-1480-4. The cone assembly for this new speaker is 36-4136.

MODELS 40-140 and 40-145

SPECIFICATIONS

TYPE OF CIRCUIT: Models 40-140 and 40-145 are six (6) tube alternating current superheterodyne models employing the new Philco built-in super aerial system which eliminates an outside aerial and reduces local interference to a minimum.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. A feature of the built-in broadcast band statically shielded loop is that the receiver may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the receiver may be set in the position where best reception is obtained.

In addition, other features of design are: Three tuning ranges; special high gain R. F. stage; Philco high-efficiency Loktal tubes; automatic volume control, tone control and a beam power audio output stage. In general, these models are similar but differ in their tuning mechanisms and cabinets.

Model 40-140 is dial tuned and assembled in cabinet type "T" (Table model).

Model 40-145 is equipped with six electric push buttons for automatically selecting stations in addition to dial tuning. Five push buttons are used for stations one of which can be

used in combination with special type PHILCO TELEVISION receivers for reception of television sound programs. The sixth push button selects dial tuning.

The procedure for adjusting the push buttons to broadcast stations will be found on page 9. The frequency coverage of each push button is as follows:

540 to 1030 K. C.	740 to 1300 K. C.
650 to 1100 K. C.	900 to 1470 K. C.
	1160 to 1600 K. C.

Philco television sets and record players contain information for adjusting the push button on the 40-145.

TUNING RANGES: 540 to 1550 K. C. 1.5 to 3.3 M. C. 5.7 to 18.0 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

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

POWER CONSUMPTION: 38 watts.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: 1232, R. F.; 7J7, converter; 7B7, I. F.; 7C6, second detector, AVC and first audio; 7B5, audio output and 7Y4, rectifier.

CABINET DIMENSIONS: Height, 10 1/4"; Width, 14 1/4"; Depth, 8".

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

EQUIPMENT REQUIRED

1. **Signal Generator** with a frequency range from 115 to 36,000 K. C., such as Philco Model 077.

2. **Aligning Indicator**, Philco Model 027 or 028, vacuum tube voltmeter and circuit tester incorporates sensitive audio output

meters and vacuum tube voltmeters. Either of these instruments can be used as an aligning indicator.

3. **Fibre Handle Screw Driver**, Philco Part No. 45-2610. When using the vacuum tube voltmeter for aligning the receiver, an aligning adaptor Part No. 45-2767 is required.

CONNECTING ALIGNING METERS

1. **Audio Output Meter:** If the Philco Models 027 and 028 audio output meters are used, they are connected to the speaker voice coil terminals or the plate and screen terminals of the 7B5 tube. Adjust the meter to use the 9 to 10 volt A. C. scale.

2. **Vacuum Tube Voltmeter:** To use the vacuum tube voltmeter as an aligning indicator make the following connections:

Adjusting I. F. Circuit: Remove the 1232 R. F. tube from its socket and insert the aligning adaptor, 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.

Adjusting R. F. Circuit: To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 second detector tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the paragraph above. With the voltmeter connected in this manner, a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted.

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

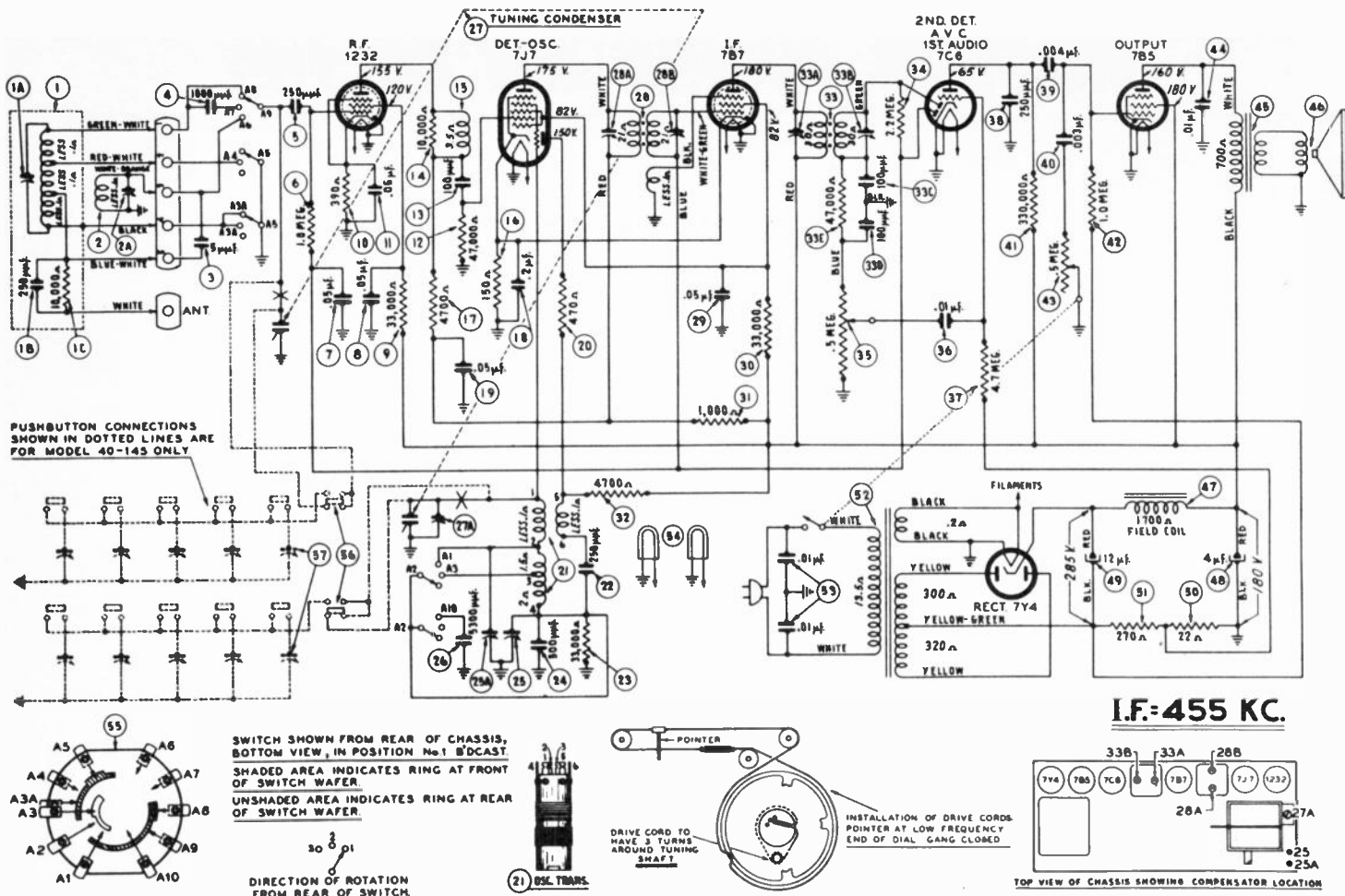
Opera- tions in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	No. 1 Ter. on Loop Panel Note B	455 K. C.	580 K. C.	Vol. Cont. Max. Range Switch "Brdcst"	33A, 33B, 28A, 28B	Dial Push-Button "In" Model 40-145
2	Use Loop, Note C	18.0 M. C.	18.0 M. C.	Vol. Cont. Max. Range Switch "S.W."	27A, 2A, Note D	Check Image at 17.090 K. C.
3	Use Loop, Note C	1500 K. C.	1500 K. C.	Range Switch "Brdcst"	25A, 1A	Note A
4	Use Loop, Note C	580 K. C.	580 K. C.	Range Switch "Brdcst"	25	Roll Tuning Condenser
5	Use Loop, Note C	1500 K. C.	1500 K. C.	Range Switch "Brdcst"	25A, 2A	
6	Use Loop, Note C	18.0 M. C.	18.0 M. C.	Range Switch "S.W."	2A, Note D	Roll Tuning Condenser & Adjust Padder to First Peak from Tight Position

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 — When adjusting the I. F. padders the high side of the signal generator output is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the generator is connected to the chassis of the receiver.

NOTE C — When aligning the R. F. Circuits a loop is made from a few turns of wire and connected to the generator output terminals; the signal generator is then placed two or three feet from the loop in the cabinet.

NOTE D — S. W. Oscillator compensator (27A) is located on top of the tuning condenser. Antenna compensators (1A) and (2A) are located on the loop. When adjusting the "Ant" compensators, the receiver loop should be held in place against the back of the cabinet.



I.F.: 455 KC.

REPLACEMENT PARTS

SCHEMATIC DIAGRAM MODEL 40-140 & 40-145

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly (Broadcast)	38-9892	27	Insulating Bushing (Drive Shaft)	27-9437	28	Spring (Tuning Shaft Assy.)	28-8955
1A	Compensator	31-8318	27A	Knobs (Tuning, Tone, Vol., Wave Switch)	27-4332	28A	Speaker	38-1476
2	Mica Cond. (250 mmfd.)	60-0033	27B	Knobs (Pushbuttons, Model 40-145)	27-4824	28B	Sockets (Lokalt Tubes)	55-0875
1C	Resistor (10,000 ohms, 1/2 watt)	33-310339	27C	Pilot Lamp Socket Assy.	38-9904	28C	Tuning Shaft	56-8052
2A	Loop Assembly (Short Wave)	38-9893	27D	Pointer	38-1532	28D	Tuning Drive Drum Assy.	38-9883
3	Compensator	31-8320	27E	Rubber Bushing (Tuning Cond. Drive)	27-9430	28E	Tab (Dial, Model 40-145)	37-8528
3A	Mica Cond. (5 mmfd.)	30-1087	27F	Spring (Tuning, Drive Cord)	28-8791	28F	Tab (Television, Model 40-145)	27-9480
4	Mica Cond. (1000 mmfd.)	30-1083	27G	Spring (Pointer, Drive Cord)	28-8953	28G	Tab (Model 40-145)	40-8473
4A	Mica Cond. (250 mmfd.)	61-0023	27H			28H	Washer ("C" Type, Tuning Shaft)	28-2043
5	Resistor (1.0 meg., 1/2 watt)	33-510339	27I					
6	Tubular Cond. (.05 mfd.)	30-4518	27J					
7	Resistor (33,000 ohms, 1/2 watt)	33-333339	27K					
8	Mica Cond. (100 mmfd.)	30-1128	27L					
9	Resistor (390 ohms, 1/2 watt)	33-139331	27M					
10	Tubular Cond. (.05 mfd.)	33-310339	27N					
11	Resistor (47,000 ohms, 1/2 watt)	33-347339	27O					
12	Mica Cond. (100 mmfd.)	30-1128	27P					
13	Resistor (10,000 ohms, 1/2 watt)	33-310339	27Q					
14	R. F. Transformer	32-3194	27R					
15	Resistor (150 ohms, 1/2 watt)	33-118331	27S					
16	Resistor (4700 ohms, 1/2 watt)	33-247339	27T					
17	Tubular Cond. (.2 mfd.)	30-4523	27U					
18	Tubular Cond. (.05 mfd.)	30-4518	27V					
19	Resistor (470 ohms, 1/2 watt)	33-147339	27W					
20	Oscillator Transformer	32-3198	27X					
21	Mica Cond. (250 mmfd.)	61-0033	27Y					
22	Resistor (33,000 ohms, 1/2 watt)	33-333339	27Z					
23	Silver Mica Cond. (500 mmfd.)	30-1134						
24	Compensator (2 section)	31-6317						
25	Mica Cond. (5300 mmfd.)	30-1134						
26	Tuning Condenser	31-2378						
27	1st I. F. Trans. Assy.	32-3198						
28	Tubular Cond. (.05 mfd.)	30-4518						
29	Resistor (33,000 ohms, 1/2 watt)	33-333339						
30	Resistor (1,000 ohms, 1/2 watt)	33-139331						
31	Resistor (4700 ohms, 1/2 watt)	33-247339						
32	Mica Cond. (230 mmfd.)	61-0033						
33	1st I. F. Trans. Assy.	32-3281						
34	Resistor (2.2 meg., 1/2 watt)	33-522339						
35	Volume Control (.5 meg.)	33-8319						
36	Tubular Cond. (.01 mfd.)	30-4872						
37	Resistor (4.7 meg., 1/2 watt)	33-847339						
38	Mica Cond. (230 mmfd.)	61-0033						
39	Tubular Cond. (.004 mfd.)	30-4578						
40	Tubular Cond. (.003 mfd.)	30-4880						
41	Resistor (330,000 ohms, 1/2 watt)	33-433339						
42	Resistor (1.0 meg., 1/2 watt)	33-510339						
43	Tone Control (.5 meg.) & On-Off Switch	33-5333						
44	Tubular Cond. (.01 mfd.)	32-8064						
45	Output Transformer	32-8063						
46	Cone and Voice Coil Assy. (Sptr. Part No. 38-1478-3)	36-4085						
47	Field Coil (Replace Spkr. Part No. 38-1478)	36-4085						
48	Electrolytic Cond. (4 mfd., 400 V.)	30-2401						
49	Electrolytic Cond. (12 mfd., 400 V., 25 cycle)	30-2409						
50	Resistor (22 ohms, 1/2 watt)	33-022331						
51	Resistor (270 ohms, 1 watt)	33-127431						
52	Power Trans. (115 V., 50-60 cycles)	32-8064						
53	Power Transformer (115 V., 25 cycle)	32-8075						
54	Power Transformer (220 V., 60 cycle)	32-8093						
55	Line Condenser (.01-.01 mfd.)	3903-ODD						
56	Pilot Lamps	34-2064						
57	Wave Switch	38-1495						
58	Push Button Switch (Model 40-145 only)	42-1328						
59	Padder Strip (Model 40-145 only)	31-6316						

MISCELLANEOUS PARTS

Cable and Plug Assy. (Power Supply)	L-3199
Cabinet (Model 40-140)	10395A
Cabinet (Model 40-145)	10395B
Clip (24g. Osc. Coil)	38-5003
Drive Cord Assy. (Pointer)	31-2399
Drive Cord Assy. (Tuning Cond.)	31-2400
Dial	27-8507
Escutcheon (Pushbuttons, Model 40-145)	37-8522
Escutcheon Pin (Model 40-145)	W-1074

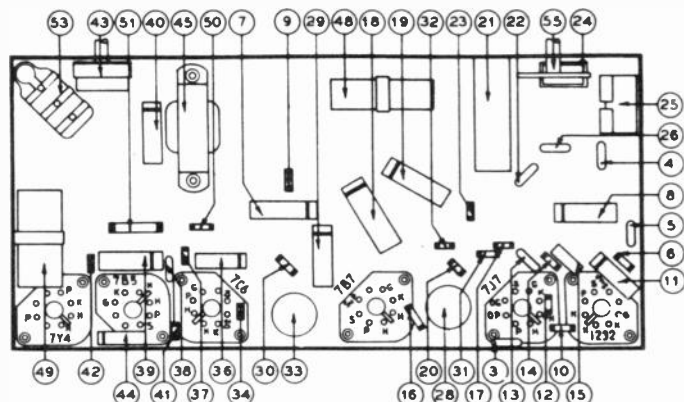


FIG. 1. PART LOCATIONS, UNDERSIDE OF CHASSIS.

PRODUCTION CHANGES

MODEL 40-140
Dial Scale changed from Part No. 27-5507 to Part No. 27-5552.
Tone Control (27) changed from Part No. 42-1496 to 33-5333.

MODEL 40-145
Dial Scale changed from Part No. 27-5507 to Part No. 27-5552.
Tone Control (27) changed from Part No. 42-1496 to 33-5333.

MODELS 40-140, 40-145
Operating on 115 Volt, 25 Cycle and 220 Volt, 60 Cycle Current
To operate Model 40-140 and 40-145 on 115 volts, 25 cycle current the power transformer (52) Part No. 32-8064, 115 volts, 60 cycle listed in the Service Bulletin, must be changed to Part No. 32-8075, 115 volts, 25 cycle. In addition, Electrolytic Condenser (49) Part No. 30-2409, 12 mfd., 400 volts must be changed to Part No. 30-2438, 20 mfd., 400 volts.
Model 40-140 can be operated on 220 volts, 60 cycle current by changing the power transformer (52).
Service Bulletin 324, from Part No. 32-8064, 115 volts, 60 cycle to Part No. 32-8093, 220 volts, 60 cycle.
The new transformer Part No. 32-8093 can be operated on either 115 or 220 volts, 60 cycle current by connecting the primary wiring as listed below:
Power Supply: 220 Volts—Red and Yellow to White. 110 Volts—Black and White to Red and Yellow.
Connect together: 220 Volts—Black and White to Red. 110 Volts—Black and White to Red and Yellow.
To prevent oscillation at the low end of the broadcast band the 2nd I. F. transformer (33) changed from Part No. 32-3281 to Part No. 32-3382.
The cabinet and B. C. loop assembly was changed on late production receivers as follows:
Model 40-140
Original Part No. 10395A
New Part No. 10464A
Cabinet 10464A
B. C. Loop 38-9892
Model 40-145
Original Part No. 10395B
New Part No. 10465B
Cabinet 10465B
B. C. Loop 38-9892

MODELS 40-150 and 40-155

SPECIFICATIONS

TYPE OF CIRCUIT: Models 40-150 and 40-155 are Electric Push-button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. These radios are also designed to receive the sound of a television program tuned in by special type *Philco Television Sets*.

PHILCO BUILT-IN SUPER AERIAL SYSTEM—Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the loop may be set in the position where best reception is obtained.

In general, these models are similar with the exception of the number of tubes used and cabinet design. Model 40-150 employs seven (7) tubes and Model 40-155, eight (8) tubes.

In addition, other features of design are: Continuously variable tone control; three tuning ranges covering the frequencies listed below; automatic bass compensation and a degenerative push-pull pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

Each model is equipped with eight electric tuning push buttons for automatically selecting stations. Six of the push buttons are used for broadcast stations, one for selecting dial tuning and one push button may be set up for use with a Philco Record Player or in combination with Philco Television sets for reception of television sound programs.

POWER SUPPLY: 115 Volts, 25 and 60 cycle AC.

POWER CONSUMPTION: 60 watts.

FREQUENCY TUNING RANGES: Three.

540 to 1550 K. C.

1.55 to 3.5 K. C.

6.0 to 18 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED:

MODEL 40-150—1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector and First Audio; two 41, Audio Power Outputs; 84, Rectifier.

MODEL 40-155—1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6, Diode Detector; 7C6, First Audio; two 41, Power Outputs; 84, Rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-150, type T.....	10½	18½	12½
Model 40-155, type T.....	11	18	12½

CIRCUIT ADJUSTMENTS:

The procedure for adjustment of electric push button tuning will be found on page 9. The procedure for aligning the R. F. and I. F. compensators is the same as that given on page 65 for Models 40-180 and 40-185.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Ass'y (Broadcast).....	38-9994
1A	Mica Cond. (250 mmfd.).....	61-0033
1B	Resistor (10,000 ohms, ½ watt).....	33-310339
1C	Compensator Ass'y.....	31-6318
2	Loop Ass'y (Short Wave).....	38-9884
3	Compensator.....	31-6308
4	Mica Cond. (5 mmfd.).....	30-1120
5	Mica Cond. (1500 mmfd.).....	7139
5A	Ant. Loading Trans.....	32-3290
6	Mica Cond. (250 mmfd.).....	61-0033
7	Resistor (390 ohms, ½ watt).....	33-139339
8	Tubular Cond. (.05 mfd.).....	30-4519
9	Resistor (1.0 meg., ½ watt).....	33-510339
10	Tubular Cond. (.05 mfd.).....	30-4123
11	Resistor (33,000 ohms, ½ watt).....	33-333339
12	Resistor (10,000 ohms, ½ watt).....	33-310339
13	R. F. Coupling Trans.....	32-3194
14	Mica Cond. (100 mmfd.).....	30-1128
15	Resistor (47,000 ohms, ½ watt).....	33-347339
16	Resistor (4700 ohms, ½ watt).....	33-247339
17	Tubular Cond. (.05 mfd.).....	30-4123
18	Oscillator Trans.....	32-3195
19	Compensator (2 section).....	31-6298
20	Mica Cond. (5300 mmfd.).....	30-1134
21	Tuning Cond. Ass'y.....	31-2401
22	Mica Cond. (250 mmfd.).....	61-0033
23	Silver Mica Cond. (370 mmfd.).....	30-1110
24	Silver Mica Cond. (370 mmfd.).....	30-1110
25	Resistor (33,000 ohms, ½ watt).....	33-333339
26	Push Button Switch.....	42-1489
27	Padder Strip (Pushbutton).....	31-6299
28	Coil Strip Ass'y.....	31-3193
28A	Coil No. 1.....	
28B	Coil No. 2.....	540-1030 K. C. 32-3042
28C	Coil No. 3.....	
28D	Coil No. 4.....	650-1110 K. C. 32-3042
28E	Coil No. 5.....	
28F	Coil No. 6.....	
28G	Coil No. 7.....	920-1600 K. C. 32-3041
29	Resistor (4700 ohms, ½ watt).....	33-247339
30	1st I. F. Trans. Ass'y.....	32-3245
31	Tubular Cond. (.05 mfd.).....	30-4123
32	Tubular Cond. (.05 mfd.).....	30-4519
33	Tubular Cond. (.2 mfd.).....	30-4587
34	Resistor (150 ohms, ½ watt).....	33-115339
35	Resistor (33,000 ohms, ½ watt).....	33-333339
36	Resistor (1000 ohms, ½ watt).....	33-210339
37	2nd I. F. Trans. Ass'y.....	32-3246
38	Tubular Cond. (.01 mfd.).....	30-4581
39	Resistor (470,000 ohms, ½ watt).....	33-447339
40	Resistor (33,000 ohms, ½ watt).....	33-333339
40A	Tubular Cond. (.01 mfd.).....	30-4581
41	Volume Control (2.0 meg.).....	33-5275
42	Tubular Cond. (.01 mfd.).....	30-4581
43	Resistor (2.2 meg., ½ watt).....	33-522339
44	Resistor (10.0 meg., ½ watt).....	33-610339
45	Mica Cond. (110 mmfd.).....	30-1130

SCHE. No.	DESCRIPTION	PART No.
46	Tubular Cond. (.01 mfd.).....	30-4572
47	Resistor (220,000 ohms, ½ watt).....	33-422339
48	Resistor (1.0 meg., ½ watt).....	33-510339
49	Resistor (470,000 ohms, ½ watt).....	33-447339
50	Tubular Cond. (.003 mfd.).....	30-4469
51	Tone Control & (On-Off Switch).....	33-5314
52	Tubular Cond. (.01 mfd.).....	30-4572
53	Resistor (3900 ohms, ½ watt).....	33-239339
54	Resistor (470,000 ohms, ½ watt).....	33-447339
55	Tubular Cond. (.006 mfd.).....	30-4504
55A	Tubular Cond. (.006 mfd.).....	30-4504
56	Output Trans.....	32-8053
57	Cone and Voice Coil Ass'y (Spkr. Part No. 36-1483-2).....	36-4127
58	Electrolytic Cond. (16 mfd., 200 V.).....	30-2406
59	Resistor (15 ohms, ½ watt).....	33-015351
60	Resistor (150 ohms, 1 watt).....	33-115451
61	Electrolytic Cond. (12 mfd., 350 V.).....	30-2405
62	Field Coil (Replace Spkr. Part No. 36-1483).....	
63	Power Trans. (110 Volts, 60 Cycles).....	32-8065
	Power Trans. (115 Volts, 25 Cycles).....	32-8074
	Power Trans. (220 Volts, 60 Cycles).....	32-8092
64	Line Cond. (Bakelite, .01-.01 mfd.).....	3903-DG
65	Pilot Lamp.....	34-2210
66	Wave Switch.....	42-1490

MISCELLANEOUS PARTS

Bezel Ass'y.....	40-6489
Bezel Gasket.....	27-9175
Cable & Plug (Power Supply).....	L-3199
Clip (Ant. coil mtg.).....	28-5002
Clip (Osc. coil mtg.).....	28-5003
Dial.....	27-5508
Dial Tuning Drum Ass'y.....	38-9856
Drive Cord Ass'y.....	31-2383
Knobs (Tuning, Tone, Volume & Wave Switch).....	27-4332
Knobs (Pushbuttons).....	27-4852
Pilot Lamp Socket Ass'y.....	38-9607
Pointer (Dial).....	56-1516
Screws (Bezel mtg.).....	W-1834FG1
Spring (Drive Cord).....	28-8913
Spring (Mtg., Dial Background Plate).....	28-8908
Socket (Type 84 Tube).....	27-6035
Socket (Type 41 Tube).....	27-6036
Socket (Loktal, Type 7J7 Tube).....	27-6129
Socket (Loktal, Type 7A6, 7C6, etc., Tubes).....	27-6131
Speaker.....	36-1483
Tab (Dial).....	27-5530
Tab (Television).....	27-9449
Tab Kit.....	40-6475
Tuning Shaft Ass'y.....	38-9874
Washer ("C" Type, Tuning Shaft Ass'y).....	28-2043
Washer (Spring Type, Tuning Shaft Ass'y).....	28-4186

MODELS 40-150 and 40-155

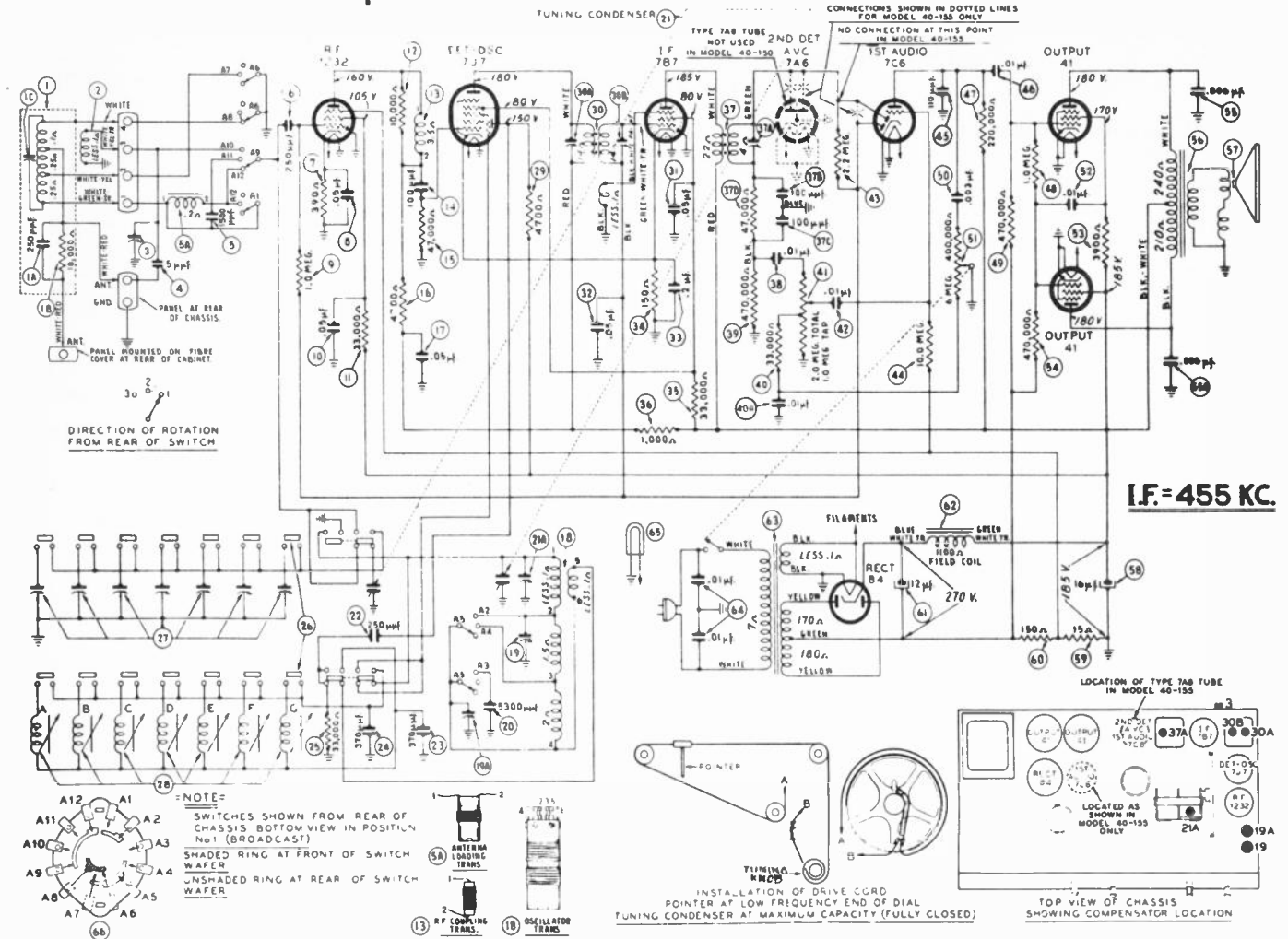


Fig. 1. Schematic diagram, models 40-150, 40-155

PRODUCTION CHANGES

MODEL 40-150

Beginning with Run 1 receivers the converter tube was changed from a 7J7 loktal type to a 6JHG octal type. Tube sockets changed from Part 27-6129 loktal to 27-6120 octal.

Run 2 - New resistor Part No. 33-115339, 150 ohms connected in series with 6JHG tube plate. Change made to stabilize oscillator action at 18 M. C. Cathode resistor (34) changed from Part No. 33-115339 to 33-115336.

Power transformer Part No. changed from 32-8065 to 32-8052.

Run 3 - Receivers marked with this run number have the converter changed from a 6JHG to a 7J7 loktal type tube as indicated in Service Bulletin. When this change was made, the resistor Part No. 33-115336 in Run 2 was removed. Shortwave loop changed from Part No. 38-9884 to 38-9935.

MODEL 40-155

Run 1 - Beginning with Run 1 receivers the converter tube was changed from a 7J7 loktal type to a 6JHG octal type. Tube sockets changed from Part 27-6129 (loktal) to 27-6120 octal.

Shortwave loop (2) changed from Part No. 38-9884 to Part No. 38-9335.

Run 2 - New resistor Part No. 33-115339, 150 ohms connected in series with 6JHG tube plate. Change made to stabilize oscillator action at 18 M. C.

Cathode resistor (34) Part No. 33-115339 changed to wirewound type Part No. 33-115336.

Power transformer changed from Part No. 32-8065 to Part No. 32-8052.

Run 3 - Receivers marked with this run number have the converter tube changed from a type 6JHG octal tube to a 7J7 loktal tube. When this change was made the resistor Part No. 33-115339 added in Run 2 was removed.

MODELS 40-150, 40-155

To prevent oscillation at the low end of the broadcast band the 2nd I. F. transformer (37) changed from Part No. 32-3246 to Part No. 32-3383.

Loop assembly (1) (Broadcast) Part No. 38-9894 is changed to Part No. 38-9904, a production design change.

The physical location of condenser (4) as shown in Fig. 2 of the service bulletin has been changed to prevent oscillation at 540 K. C. The condenser is now wired to a three lug wiring panel between the range switch and volume control. The antenna lead is connected to one lug of this panel. This change is made on all sets marked Run No. 6.

Primary Wiring 220 Volt Operation

Power Supply: 220 Volts—White to Red and Yellow. 110 Volts—Red to White.

Connect together: 220 Volt—Black and White to Red.

110 Volt—Black and White to Red and Yellow.

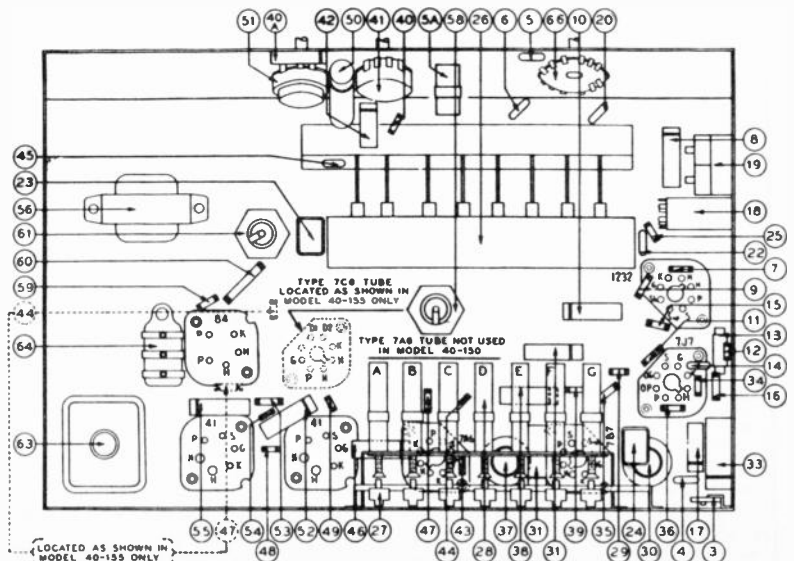


Fig. 2. Part locations, underside of chassis.

MODEL 40-158, Code 121

SPECIFICATIONS

TYPE OF CIRCUIT: Model 40-158 is a six (6) tube alternating current (A. C.) operated super-heterodyne radio having two tuning ranges covering standard and police broadcast frequencies. In addition other features of design are: Philco Loktal tubes; special high gain untuned R. F. stage; automatic volume control and a Pentode audio output stage.

TUNING RANGES: 540 to 1600 K. C.; 1.6 to 3.4 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

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

POWER CONSUMPTION: 45 watts.

AUDIO OUTPUT POWER: 2 watts.

PHILCO TUBES USED: 7B7, R. F. Amplifier; 7A8, Converter; 7B7, I. F. Amplifier; 7C6, Detector, A. V. C., 1st Audio; 41, Power Output; 84, Rectifier.

CABINET DIMENSIONS:

Height, 38 $\frac{7}{8}$ ". Width, 28 $\frac{3}{4}$ ". Depth, 10 $\frac{5}{8}$ ".

AERIAL AND GROUND: This radio is designed to operate efficiently from a Philco Utility Aerial, Part No. 40-6384, or Safety Aerial, Part 40-6370, or a short piece of wire (20 feet). The ground of the set should be connected to a cold water pipe or any other good ground source.

ALIGNING COMPENSATING CONDENSERS EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust the various R. F. and I. F. padders of this model, a calibrated signal generator such as Philco Model 077 is required.

Aligning Indicating Device: A Vacuum Tube Voltmeter or Audio Output Meter should be used. Philco Models 027 and

ain both of these type meters. Procedures for connecting either of these meters are listed below.

Aligning Tools: Fibre handle screw driver, Philco Part No. 45-2610. When using the vacuum tube voltmeter to align the set, an aligning adaptor, Part No. 45-2767, is required.

CONNECTING ALIGNING METERS

Audio Output Meter: Philco Model 027 or 028 Audio Output Meter is connected to the voice coil terminals of the speaker or the plate and screen of the 41 tube and adjusted for the 0 to 10 volt A. C. scale.

Vacuum Tube Voltmeter: To use the Vacuum Tube Voltmeter as an alignment indicator make the following connections:

(1) **Adjusting I. F. Circuit:** Remove the 7B7 R. F. tube from its socket and insert the aligning adaptor, 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) **Adjusting R. F. Circuit:** To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 second detector tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the paragraph above. With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted.

After connecting the aligning adaptors, adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in the schematic diagram. 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	Antenna Terminal	455 K. C.	580 K. C.	Vol. Cont. Max. Range Switch "Brdcst"	18A, 18B 14A, 14B	Note A
2	Antenna Terminal	1500 K. C.	1500 K. C.	Vol. Cont. Max. Range Switch "Brdcst"	13B, 13A Note B	

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—The oscillator padder (13B) and antenna padder (13A) are located on top of the tuning condenser (13B) at the rear and (13A) at the front of the tuning condenser.

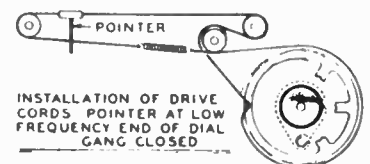
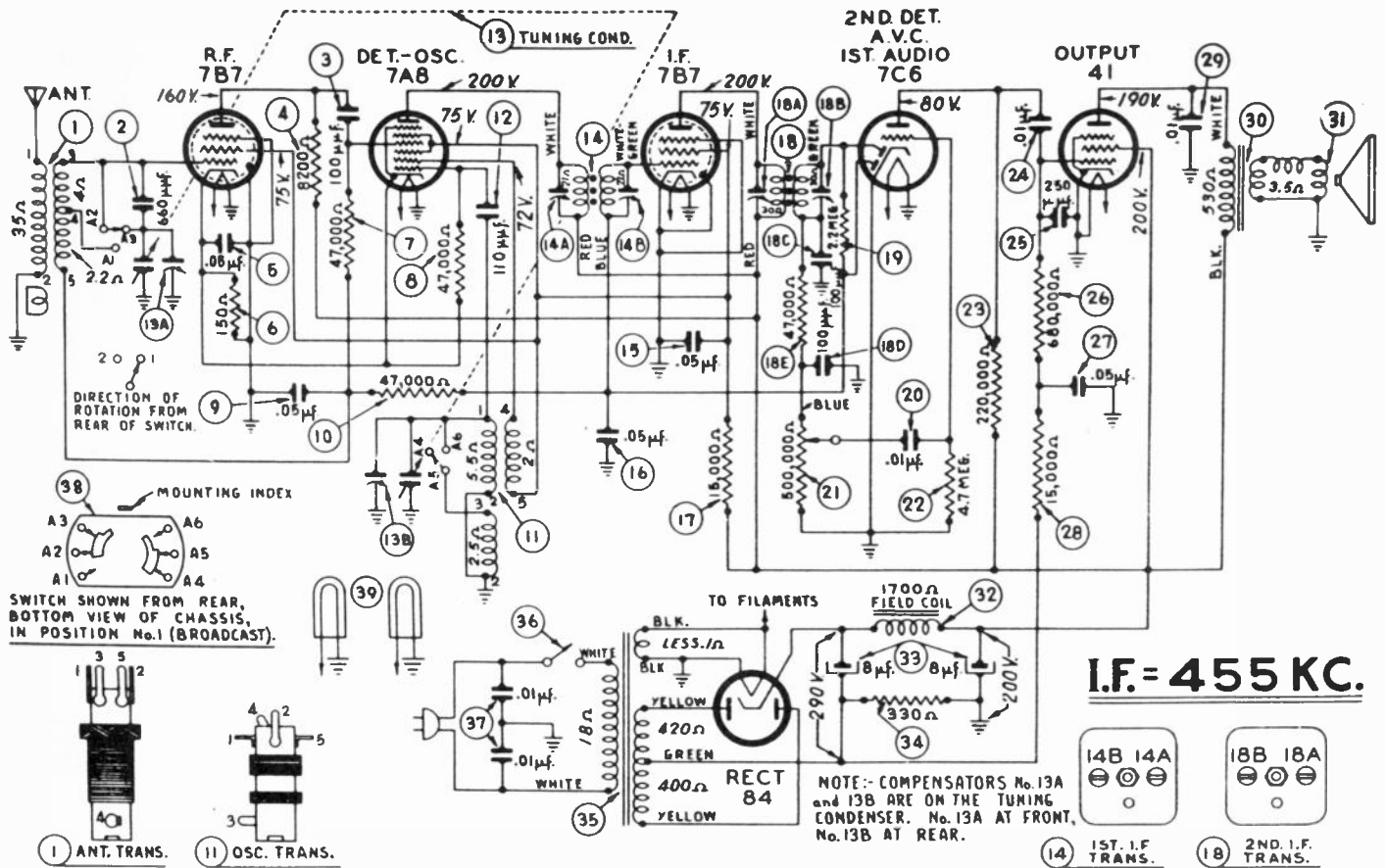


FIG. 1.

MODEL 40-158, Code 121



SCH. DIAGRAM MODEL 40-158

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3303	MISCELLANEOUS PARTS				Pilot Lamp Socket Assembly	38-9904
2	Mica Condenser (660 mmfd.)	30-1136					Bezels	27-4842	Pointer	56-1479
3	Mica Condenser (100 mmfd.)	30-1128		Cabinet	10398C	Rubber Insulator (Drive Shaft)	27-9432	
4	Resistor (8200 ohms, 1/2 watt)	33-282339		Cable and Plug (Power Supply)	L-3199	Socket (5 prong, type 84 tube)	27-6035	
5	Tubular Condenser (.05 mfd.)	30-4519		Clip (Coil Mounting)	28-5002	Socket (6 prong, type 41 tube)	27-6036	
6	Resistor (150 ohms, 1/2 watt)	33-115339		Dial	27-5551	Socket (Loktal)	27-6131	
7	Resistor (47,000 ohms, 1/2 watt)	33-347339		Drive Cord Assembly (Tuning Condenser)	31-2400	Spring (Drive Cord, Tuning)	27-8751	
8	Resistor (47,000 ohms, 1/2 watt)	33-347339		(Pointer Operation)	31-2382	Spring (Drive Cord, Pointer)	27-8953	
9	Tubular Condenser (.05 mfd.)	30-4519		Insulating Bushing (Dr. Shaft)	27-9437	Spring (Dr. Shaft, Grounding)	27-8955	
10	Resistor (47,000 ohms, 1/2 watt)	33-347339		Knobs (A. C. Switch, Volume, Tuning and Wave Switch)	27-4332	Tuning Drive Drum Assembly	38-9883	
11	Oscillator Transformer	32-3255				Tuning Shaft	56-6052	
12	Mica Condenser (110 mmfd.)	30-1130				Washer ("C" type, tun. shaft)	28-2043	
13	Tuning Condenser Assembly	31-2418						
14	1st I. F. Transformer Assy.	32-3361						
15	Tubular Condenser (.05 mfd.)	30-4519						
16	Tubular Condenser (.05 mfd.)	30-4519						
17	Resistor (15,000 ohms, 1 watt)	33-315439						
18	2nd I. F. Transformer Assembly	32-3211						
19	Resistor (2.2 meg., 1/2 watt)	33-522339						
20	Tubular Condenser (.01 mfd.)	30-4572						
21	Volume Control (500,000 ohms)	33-5319						
22	Resistor (4.7 meg., 1/2 watt)	33-547339						
23	Resist. (220,000 ohms, 1/2 watt)	33-422339						
24	Tubular Condenser (.01 mfd.)	30-4572						
25	Mica Condenser (250 mmfd.)	61-0033						
26	Resist. (680,000 ohms, 1/2 watt)	33-468339						
27	Tubular Condenser (.05 mfd.)	30-4519						
28	Resist. (15,000 ohms, 1/2 watt)	33-315339						
29	Tubular Condenser (.01 mfd.)	30-4501						
30	Output Transformer	32-8056						
31	Cone and Voice Coil Assembly (Speak r Part No. 38-1480-3)	38-4086						
32	Field Coil (Replace Speaker Part No. 38-1480)							
33	Elec. Cond. (8-8 mfd., 450 V.)	30-2447						
34	Resistor (330 ohms, 1 watt)	33-133439						
35	Power Transformer (115-130 V., 50-60 cycles)	32-8055						
	(115-130 V., 25 cycle)	32-8076						
36	A. C. Switch	42-1545						
37	Bakelite Cond. (.01-.01 mfd.)	3903-DG						
38	Wave Switch	42-1494						
39	Pilot Lamps	34-2064						

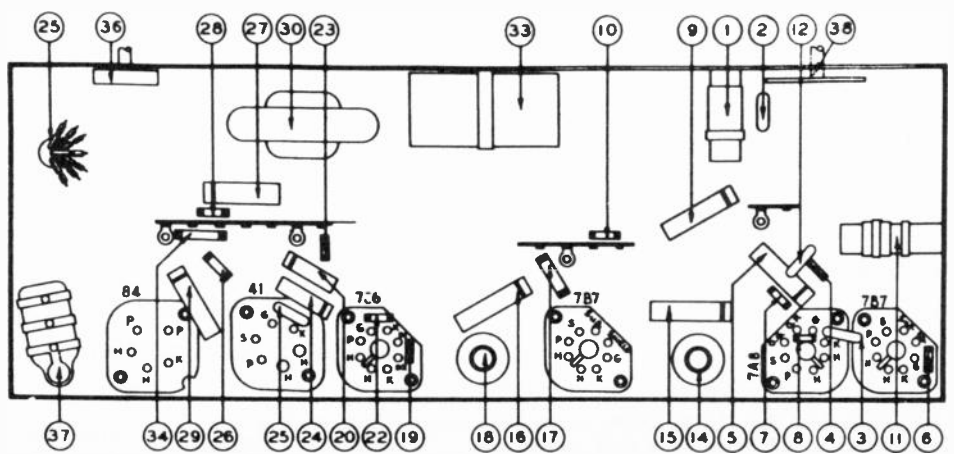


FIG. 2. PART LOCATIONS, UNDERSIDE OF CHASSIS.

MODEL 40-160

SPECIFICATIONS

Type of Circuit: Model 160 is a six tube Push-Button and dial tuned receiver incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. The model is also designed to receive the sound of a television program tuned in by special type Philco Television sets.

In addition, other features of design are: Tone control, two tuning ranges covering the frequencies listed below; and pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

The receiver is equipped with six electric tuning push buttons for automatically selecting stations. Five of the push buttons are used for broadcast stations and one for selecting dial tuning. One of the station push buttons (low frequency push button preferably) may be set up for use with a Philco wireless Record Player or the sound programs of Philco Television models.

Power Supply: 115 V., 25 and 60 Cyc. A. C.

Power Consumption: 45 watts.

Frequency Tuning Ranges: (Two) 540 to 1550 K.C. 1500 to 3350 K.C.

Intermediate Frequency: 455 K.C.

Audio Output: 2 watts.

Philco Tubes Used: 7C7, R.F.; 7A8, Converter; 717, I. F.; 7C6, Second Detector, A.V.C., and First Audio; 41, Audio Power Output; 84 Rectifier.

Cabinet Dimensions: Model 40-160; Type F; Height 37"; Width 23 3/4"; Depth 9 3/4".

Electric Push-button Adjustments:

See page 9 for adjustment of electric push-buttons.

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

Equipment Required

(1) Signal Generator. In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K.C. (2) Indicating Device. To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027

and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device. (3) Aligning Tools. Fiber handle screw driver Philco Part No. 45-2610 and when using the vacuum tube voltmeter for adjusting the set, an aligning adaptor Part No. 45-2767 is required.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. Adjusting I.F.: Remove the 7C7 R.F. 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 voltmeter to the black wire.

2. Adjusting R.F. Padders: To adjust the R.F. padders, insert the aligning adaptor in the 7C6 socket and place the tube in the adaptor. The vacuum voltmeter remains connected to the adaptor as given in the Adjusting I.F. above.

With the voltmeter connected in this manner a very sensitive indication of the output voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 41 type tube and adjust the output meter for the 0 to 30 A.C. scale.

After connecting the output meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 60. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I.F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R.F. padders a loop antenna 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. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

SIGNAL GENERATOR			RECEIVER			
Operations in Order	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	adjust compensators	Special Instructions
1	High Side to No. 1 Ter. Loop Panel	455 K.C.	580 K.C.	Vol. Max. Range Switch "Broadcast." Dial push button "In"	28A 25 A 28B 25 B	See Paragraph on Signal Generator Above
2	Use Loop on Generator	1500 K.C.	1500 K.C.	Vbl. Max. Range Switch "Broadcast"	16 A 22	Note A

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 Schematic Diagram.

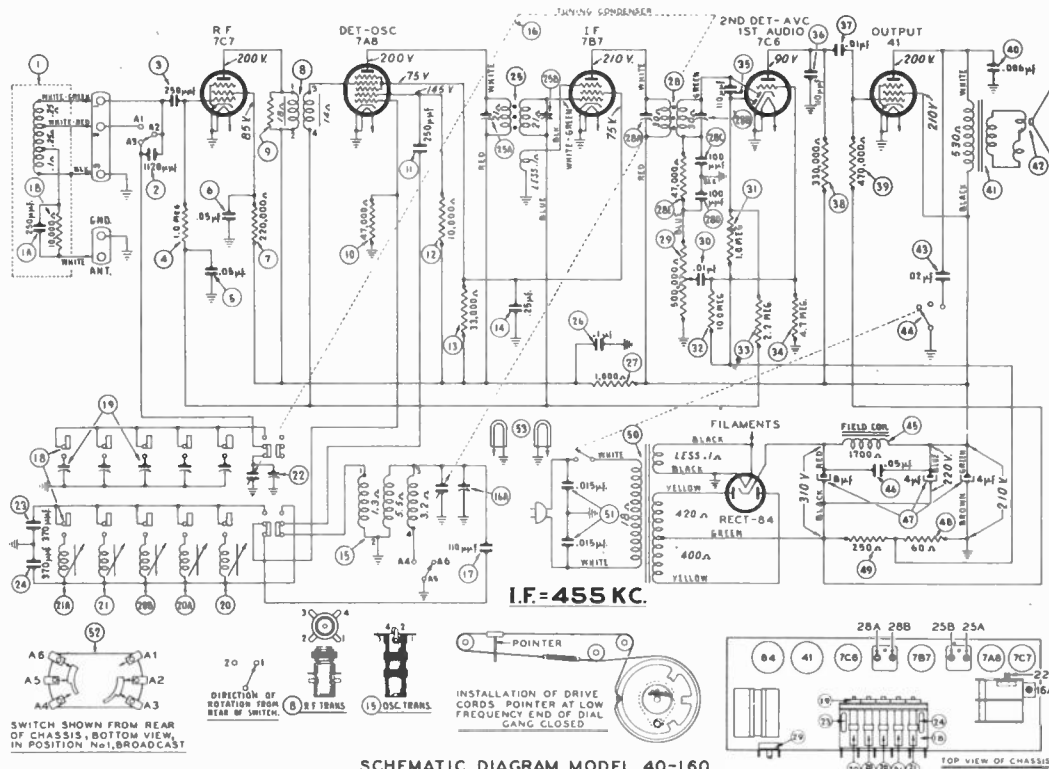
PRODUCTION CHANGES

Run 3—To prevent oscillation on push-button tuning, resistors (9) Part No. 33-268339 were removed from R. F. transformer (9) secondary. A new resistor Part No. 33-260339 is now added across primary winding of the same transformer.

Circuit differences between sets used on 25 and 60 cycle power supplies.

115 V., 25 Cycles 115 V., 60 Cycles
Power Transformer 32-8076 32-8055

MODEL 40-160



REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assy.	38-9897	47	Electrolytic Cond. (8-4-4 mfd.)	30-2400		Knobs (Push Buttons)	27-4824
1A	Mica Cond. (250 mmfd.)	61-0033	48	Resistor (60 ohms, 1/2 watt)	33-060339		Pilot Lamp Socket Assy.	38-9908
1B	Resistor (10,000 ohms, 1/2 watt)	33-310339	49	Resistor (250 ohms, 1/2 watt)	33-125339		Pointer	56-1479
2	Mica Cond. (1120 mmfd.)	30-1140	50	Power Transformer (115 volt, 60 cycles)	32-8055		Reflector (Pilot Lamp)	27-9455
3	Mica Cond. (250 mmfd.)	61-0033		(115 volt, 25 cycles)	32-8076		Rubber Hose (Tuning Cond. Drive)	27-9432
4	Resistor (1.0 meg., 1/2 watt)	33-510339	51	Line Cond. (.015-.015 mfd.)	3903-DG		Spring (Tuning, Drive Cord)	28-8751
5	Tubular Cond. (.05 mfd.)	30-4519	52	Wave Switch	42-1494		Spring (Pointer, Drive Cord)	28-8953
6	Tubular Cond. (.05 mfd.)	30-4123	53	Pilot Lamps	34-2064		Spring (Drive Shaft, Grounding)	28-8955
7	Resistor (220,000 ohms, 1/2 watt)	33-422339					Screw (Bezel Mtg.)	W-1834
8	R. F. Trans.	32-3283		MISCELLANEOUS PARTS			Speaker	36-1480
9	Resistor (6800 ohms, 1/2 watt)	33-268339		Bezel	27-4842		Socket (Type 84 Tube)	27-6035
10	Resistor (470,000 ohms, 1/2 watt)	33-447339		Cabinet	10398A		Socket (Type 41 Tube)	27-6036
11	Mica Cond. (250 mmfd.)	61-0033		Cable and Plug (Power Supply)	1-3199		Socket (Loktal, Type 7A8 Tube)	27-6129
12	Resistor (10,000 ohms, 1/2 watt)	33-310339		Clip (Coil Mtg.)	28-5002		Socket (Loktal, Type 7C7, 7B7, 7C6 Tubes)	27-6131
13	Resistor (33,000 ohms, 1/2 watt)	33-333339		Dial	27-5506		Tab (Dial)	27-5528
14	Tubular Cond. (.25 mfd.)	30-4448		Drive Cord Assy. (Pointer)	31-2382		Tab (Television)	27-9451
15	Oscillator Trans.	32-3212		Drive Cord Assy. (Tuning Cond.)	31-2400		Tab Kit	40-6474
16	Tuning Cond.	31-2474		Escutcheon (Push Button)	27-4843		Tuning Shaft	56-6052
17	Mica Cond. (110 mmfd.)	30-1130		Insulating Bushing (Insulate Drive Shaft)	27-9437		Tuning Drive Drum Assy.	38-9883
18	Push Button Switch	42-1493		Knobs (Tuning, Tone, Volume, Wave Switch)	27-4332		Washer ("C" Type, Tuning Shaft)	28-2043
19	Padder Strip and Bracket Assy.	31-6325						
20	Coil No. 1—540-1000 K.C.	32-3042						
20A	Coil No. 2—650-1100 K.C.							
20B	Coil No. 3—740-1300 K.C.							
21	Coil No. 4—900-1500 K.C.							
21A	Coil No. 5—1100-1600 K.C.							
22	Compensator	31-6308						
23	Silver Mica Cond. (370 mmfd.)	30-1110						
24	Silver Mica Cond. (370 mmfd.)	30-1110						
25	1st I.F. Trans.	32-3210						
26	Tubular Cond. (.1 mfd.)	30-4455						
27	Resistor (1000 ohms, 1/2 watt)	33-210339						
28	2nd I.F. Trans. Assy.	32-3211						
29	Volume Control	33-5319						
30	Tubular Cond. (.01 mfd.)	30-4572						
31	Resistor (1.0 meg., 1/2 watt)	33-510339						
32	Resistor (10.0 meg., 1/2 watt)	33-610339						
33	Resistor (2.2 meg., 1/2 watt)	33-522339						
34	Resistor (4.7 meg., 1/2 watt)	33-547339						
35	Mica Cond. (110 mmfd.)	30-1130						
36	Mica Cond. (110 mmfd.)	30-1130						
37	Tubular Cond. (.01 mfd.)	30-4572						
38	Resistor (330,000 ohms, 1/2 watt)	33-433339						
39	Resistor (470,000 ohms, 1/2 watt)	33-447339						
40	Tubular Cond. (.006 mfd.)	30-4504						
41	Output Trans.	32-8056						
42	Cone and Voice Coil Assy. (Spkr. Part No. 36-1480-3)	36-4086						
43	Tubular Cond. (.02 mfd.)	30-4599						
44	Tone Control and On-Off Switch	42-1520						
45	Field Coil (Replace Spkr. Part No. 36-1480)							
46	Tubular Cond. (.05 mfd.)	30-4123						

Fig. 2—Part Locations, Underside of Chassis

MODEL 40-165

SPECIFICATIONS

TYPE OF CIRCUIT: Model 165 is a six tube Push-Button and dial tuned set incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. The model is also designed to receive the sound of a television program tuned in by special type Philco Television sets.

In addition, other features of design are: Tone control, three tuning ranges covering the frequencies listed below; and a pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

The receiver is equipped with six electric tuning push buttons for automatically selecting stations. Five of the push buttons are used for broadcast stations and one for selecting dial tuning. One of the station push buttons (low frequency push button preferably) may be set up for use with a Philco Wireless Record Player or the sound programs of Philco Television models.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave

receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the loop may be set in the position where best reception is obtained.

POWER SUPPLY: 115 Volts, 25 and 60 Cycle A. C.

POWER CONSUMPTION: 45 watts.

FREQUENCY TUNING RANGES: (Three)

540 to 1550 K. C. 1.5 to 3.5 M. C. 6.0 to 18.0 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: 1232, R. F.; 6J8G, Converter; 7B7, I. F.; 7C6, Second Detector A. V. C. and First Audio; 41, Audio Power Output; 84, Rectifier.

CABINET DIMENSIONS: Type F; Height, 37"; Width, 23 3/4"; Depth, 9 3/4".

ADJUSTING ELECTRIC PUSH-BUTTON TUNING:

The procedure for adjusting the electric tuning push-buttons in this model is covered on page 9.

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C.

(2) **Aligning Indicator.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may also be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver Philco Part No. 45-2610. When using the vacuum tube voltmeter for adjusting the set, an aligning adaptor Part No. 45-2767 is required.

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. **Adjusting I. F. Circuit:** Remove the 1232 R. F. 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 voltmeter to the black wire.

2. **Adjusting R. F. Circuit:** To adjust the R. F. padders, insert the aligning adaptor in the 7C6 socket and place the tube in the adaptor. The vacuum voltmeter remains connected to the adaptor as given when adjusting I. F. With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted.

Audio Output Meter: If an audio output meter is used, connect it to the plate and screen terminals of the 41 type tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Signal Generator: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R. F. padders a loop antenna is made from a few turns of wire and connected to the signal generator output terminals; the generator is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Opera- tions in Order	SIGNAL GENERATOR		RECEIVER			
	Output Connections to Receiver	Frequency Setting	Dial Setting	Control Settings	Adjust Compensators	Special Instructions
1	High Side to No. 1 Ter. Loop Panel	455 K. C.	580 K. C. No Signal	Range Switch "Brdcat." Vol. Max. Dial Push-Button "In"	37A, 37B, 34A, 34B	See paragraph on signal generator above
2	Use Loop on Generator	18.0 M. C.	18.0 M. C.	Range Switch "SW"	61A	Note A. Image should be 910 K.C. below 18 M.C.
3	Use Loop on Generator	1500 K. C.	1500 K. C.	Range Switch Brdcat.	26, 25	
4	Use Loop on Generator	580 K. C.	580 K. C.	Range Switch Brdcat.	26A	Roll tuning condensor
5	Use Loop on Generator	1500 K. C.	1500 K. C.	Range Switch Brdcat.	26, 25	
6	Use Loop on Generator	18.0 M. C.	18.0 M. C.	Range Switch "SW"	2A	Note B, 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 Schematic Diagram.

NOTE B — Turn loop padder to closed position (maximum capacity), then adjust to the first signal peak from this position; at the same time roll the tuning condenser. See Note C.

PRODUCTION CHANGES

Run 1 — Beginning with Run 1 receivers the converter tube was changed from a 7J7 loktal type to a 6J8G octal type. Tube sockets change from 27-6129 loktal to 27-6120 octal.

Run 2 — Additional condenser Part No. 30-4123 added across condenser (54) to reduce hum.

Run 3 — 6J8G converter tube socket Part No. 27-6120 re-

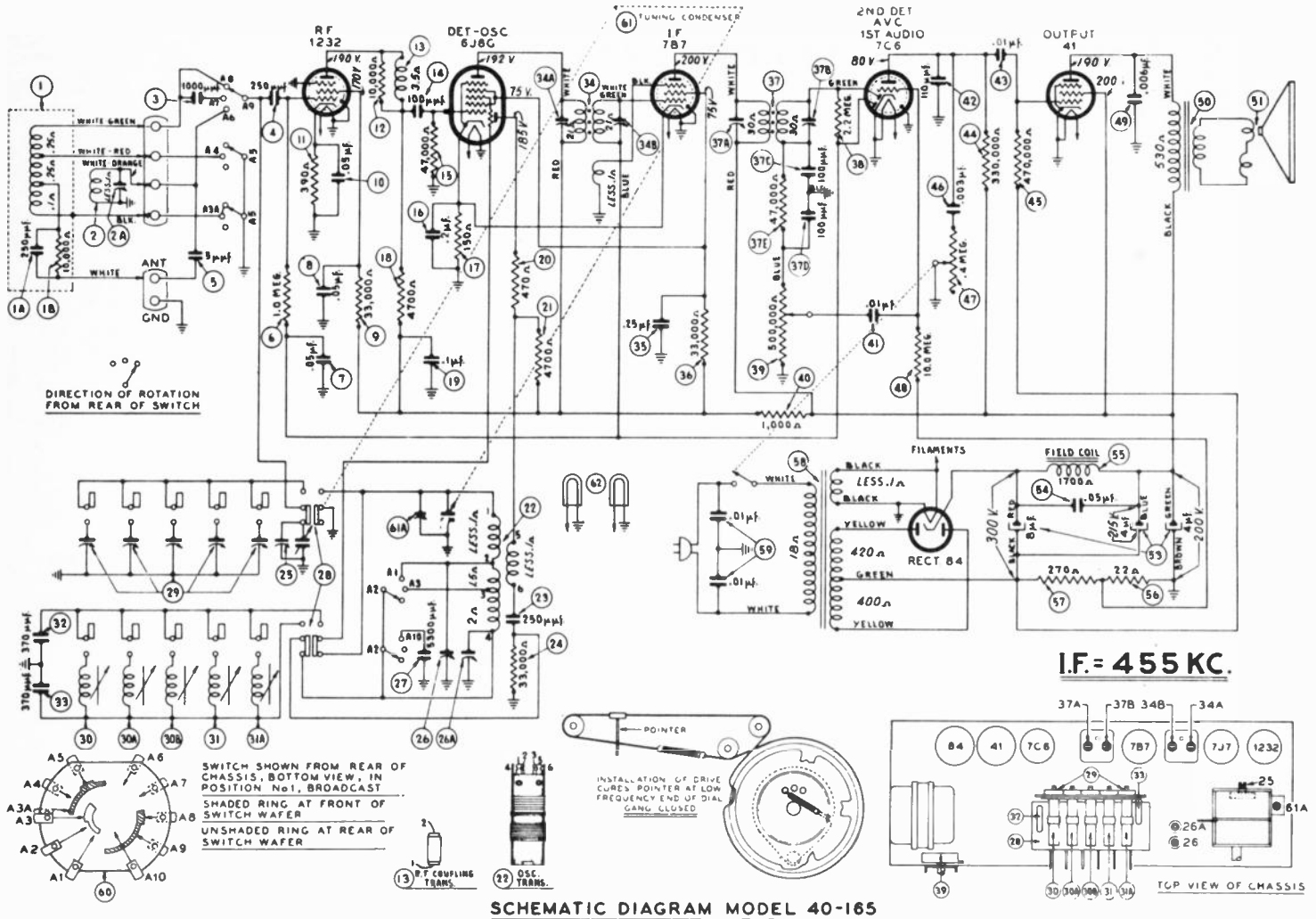
NOTE C — When adjusting the low frequency compensator of Range One (Broadcast) or the antenna compensators of the high frequency tuning ranges; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left. Continue turning compensator in the direction that gives greatest signal 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 there is no further gain in output reading.

versed 180 degrees to prevent oscillation at 18 M. C. This reversed the position of the socket as wired in Run 1 receiver.

Run 4 — Converter tube changed back to a 7J7 loktal type from a 6J8G tube. This change makes the set correspond to the circuit diagram in the Service Bulletin.

S. W. loop assembly in Model 40-165K is Part No. 38-9968. This differs from loops used in the "F" cabinet.

MODEL 40-165



SCHEMATIC DIAGRAM MODEL 40-165

Replacement Parts — Model 40-165

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assy. (Broadcast)	38-9895	54	Tubular Cond. (.05 mfd.)	30-4123	37A	Knobs (Tuning, Tone, Volume, Wave Switch)	27-4332
1A	Mica Cond. (250 mfd.)	61-0033	55	Field Coil (Replace Spkr. Part No. 36-1480)	33-022331	37B	Pilot Lamp Socket Assy.	38-9908
1B	Resistor (10,000 ohms, 1/2 watt)	33-310339	56	Resistor (22 ohms, 1/2 watt)	33-127439	7C6	Pointer	56-1479
2	Loop Assy. (Short Wave)	38-9896	57	Resistor (270 ohms, 1 watt)	32-8055	7B7	Rubber Hose (Tuning Cond. Drive)	27-9432
2A	Compensator (Part of S. W. Loop)	31-6308	58	Power Trans. (110 volt, 60 cycle)	32-8076	7J7	Spring (Tuning, Drive Cord)	28-8751
3	Mica Cond. (1000 mfd.)	30-1063	59	Line Cond. (.01-.01 mfd.)	3903-00	1232	Spring (Pointer, Drive Cord)	28-8653
3A	Mica Cond. (250 mfd.)	61-0033	60	Wave Switch	42-1495	41	Spring (Drive Shaft, Grounding)	28-8853
4	Mica Cond. (.5 mfd.)	30-1143	61	Tuning Cond.	31-2175	49	Screw (Bezel Mtg.)	W-1834
5	Resistor (1.0 meg., 1/2 watt)	33-510339	62	Pilot Lamps	34-2064	41	Speaker	36-1480
6	Tubular Cond. (.05 mfd.)	30-4519				84	Socket (Type 84 Tube)	27-6038
7	Tubular Cond. (.05 mfd.)	30-4123				7C6	Socket (Type 41 Tube)	27-6038
8	Resistor (33,000 ohms, 1/2 watt)	33-333339				7B7	Socket (Lokalt, Type 1232, 7B7, 7C6 Tube)	27-6120
9	Resistor (150 ohms, 1/2 watt)	33-115339				7J7	Socket (Type 6J8G Tube)	27-6120
10	Resistor (10,000 ohms, 1/2 watt)	33-310339				1232	Tab (Dial)	27-5528
11	R. F. Coupling Trans.	32-3194				25	Tab (Television)	27-9431
12	Mica Cond. (100 mfd.)	30-1128				26	Tab Kit	40-6474
13	Resistor (47,000 ohms, 1/2 watt)	33-347339				27	Tuning Shaft	56-6052
14	Tubular Cond. (.2 mfd.)	30-4587				28	Tuning Drive Brum Assy.	38-9843
15	Resistor (150 ohms, 1/2 watt)	33-115339				29	Washer ("C" Type, Tuning Shaft)	26-2043
16	Resistor (4700 ohms, 1/2 watt)	33-247339						
17	Tubular Cond. (.1 mfd.)	30-4527						
18	Resistor (470 ohms, 1/2 watt)	33-147339						
19	Resistor (4700 ohms, 1/2 watt)	33-247339						
20	Osc. Trans.	32-3195						
21	Mica Cond. (250 mfd.)	61-0033						
22	Resistor (33,000 ohms, 1/2 watt)	33-333339						
23	Compensator (Single)	31-6308						
24	Compensator (2 section)	31-6302						
25	Mica Cond. (5300 mfd.)	30-1124						
26	Push Button Switch	42-1493						
27	Padder Strip and Bracket Assy.	31-6325						
28	Coil No. 1 (540-1000 K.C.)	32-3042						
28A	Coil No. 2 (850-1100 K.C.)	32-3042						
28B	Coil No. 3 (740-1300 K.C.)	32-3042						
29	Coil No. 4 (900-1500 K.C.)	32-3042						
29A	Coil No. 5 (1100-1800 K.C.)	32-3042						
30	Silver Mica Cond. (370 mfd.)	30-1110						
30A	Silver Mica Cond. (370 mfd.)	30-1110						
30B	1st I. F. Trans.	32-3210						
31	Tubular Cond. (.25 mfd.)	30-4589						
31A	Resistor (33,000 ohms, 1/2 watt)	33-333339						
32	2nd I. F. Trans.	32-3211						
33	Resistor (2.2 meg., 1/2 watt)	33-522339						
34	Volume Control (500,000 ohms)	30-4572						
35	Resistor (1000 ohms, 1/2 watt)	33-210339						
36	Tubular Cond. (.01 mfd.)	30-4572						
37	Mica Cond. (110 mfd.)	30-1130						
38	Resistor (330,000 ohms, 1/2 watt)	33-433339						
39	Resistor (470,000 ohms, 1/2 watt)	33-447339						
40	Tubular Cond. (.003 mfd.)	30-4469						
41	Tone Control and On-Off Switch (.4 meg.)	33-3333						
42	Resistor (10.0 meg., 1/2 watt)	33-610339						
43	Tubular Cond. (.006 mfd.)	30-4572						
44	Output Trans.	32-8056						
45	Cone and Voice Coil Assy. (Spkr. Part No. 36-1480-3)	36-4088						
46	Electrolytic Cond. (4-4-8 mfd.)	30-2400						

FIG. 1. PART LOCATIONS. UNDERSIDE OF CHASSIS.

MODELS 40-180, 40-185 and 40-190

SPECIFICATIONS

TYPE OF CIRCUIT: Models 40-180, 40-185 and 40-190 are Electric Push-button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. The models are also designed to receive the sound of a television program tuned in by special type Philco Television Sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM—Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. A feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the loop may be set in the position where best reception is obtained.

In general, these models are similar with the exception of the number of tubes used and the cabinet design. Model 40-180 employs a seven tube receiver. Models 40-185 and 40-190 employ eight tube receivers assembled in different type cabinets.

In addition, other features of design are: Continuously variable tone control; three tunings ranges covering the frequencies listed below; automatic bass compensation and degenerative push-pull pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

Each model is equipped with eight electric tuning push-buttons for automatically selecting stations. Six of the push-buttons are used for

broadcast stations, one for selecting dial tuning and one push-button may be set up for use with a Philco wireless Record Player or the sound program tuned in by special Philco Television Sets.

POWER SUPPLY: 115 Volts, 25 and 60 cycle A. C.

POWER CONSUMPTION: 60 watts.

FREQUENCY TUNING RANGES: Three.
540 to 1550 K. C. 1.5 to 3.4 K. C. 6.0 to 18 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED:

MODEL 40-180—1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector and First Audio; two 41, Audio Power Outputs; 84, Rectifier.

MODELS 40-185 AND 40-190—1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6, Detector; 7C6, First Audio; two 41, Power Outputs; 84, Rectifier.

CABINET DIMENSIONS:

Model	Height	Width	Depth
Model 40-180, type "XF"	39 1/2"	28 3/8"	13 3/4"
Model 40-185, type "XX"	38"	29 1/2"	12 3/4"
Model 40-190, type "XF"	41"	29"	14 1/2"

ALIGNING INSTRUCTIONS: Page 9.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Ass'y (Broadcast)	38-9880	32	Tubular Cond. (.05 mfd.)	30-4519	64	Line Cond. (Bakelite, .01-.01 mfd.)	3903-DG
1A	Mica Cond. (250 mmfd.)	61-0033	33	Tubular Cond. (.2 mfd.)	30-4536	65	Pilot Lamp	34-2210
1B	Resistor (10,000 ohms, 1/2 watt)	33-310339	34	Resistor (150 ohms, 1/2 watt)	33-115339	66	Wave Switch	42-1490
2	Loop Ass'y (Short Wave)	38-9884	35	Resistor (33,000 ohms, 1/2 watt)	33-333339			
3	Compensator	31-6308	36	Resistor (1000 ohms, 1/2 watt)	33-210339			
4	Mica Cond. (5 mmfd.)	30-1097	37	2nd I. F. Trans. Ass'y	32-3246			
5	Mica Cond. (1250 mmfd.)	5886	38	Tubular Cond. (.01 mfd.)	30-4479			
6	Mica Cond. (250 mmfd.)	61-0033	39	Resistor (470,000 ohms, 1/2 watt)	33-447339			
7	Resistor (390 ohms, 1/2 watt)	33-139339	40	Resistor (33,000 ohms, 1/2 watt)	33-333339			
8	Tubular Cond. (.05 mfd.)	30-4444	40A	Tubular Cond. (.01 mfd.)	30-4479			
9	Resistor (1.0 meg., 1/2 watt)	33-510339	41	Volume Control (2.0 mfd.)	33-5275			
10	Tubular Cond. (.05 mfd.)	30-4123	42	Tubular Cond. (.01 meg.)	30-4479			
11	Resistor (33,000 ohms, 1/2 watt)	33-333339	43	Resistor (2.2 megs., 1/2 watt)	33-522339			
12	Resistor (10,000 ohms, 1/2 watt)	33-310339	44	Resistor (10.0 megs., 1/2 watt)	33-610339			
13	R. F. Coupling Trans.	32-3194	45	Mica Cond. (110 mmfd.)	30-1130			
14	Mica Cond. (100 mmfd.)	30-1128	46	Tubular Cond. (.01 mfd.)	30-4572			
15	Resistor (47,000 ohms, 1/2 watt)	33-347339	47	Resistor (220,000 ohms, 1/2 watt)	33-422339			
16	Resistor (4700 ohms, 1/2 watt)	33-247339	48	Resistor (1.0 meg., 1/2 watt)	33-510339			
17	Tubular Cond. (.05 mfd.)	30-4123	49	Resistor (470,000 ohms, 1/2 watt)	33-447339			
18	Oscillator Trans.	32-3195	50	Tubular Cond. (.003 mfd.)	30-4469			
19	Compensator (2 Section)	31-6298	51	Tone Control & On-Off Switch	33-5314			
20	Mica Cond. (5300 mmfd.)	30-1134	52	Tubular Cond. (.01 mfd.)	30-4572			
21	Tuning Cond. Ass'y	31-2391	53	Resistor (3900 ohms, 1/2 watt)	33-239339			
22	Mica Cond. (250 mmfd.)	61-0033	54	Resistor (470,000 ohms, 1/2 watt)	33-447339			
23	Silver Mica Cond. (370 mmfd.)	30-1110	55	Tubular Cond. (.003 mfd.)	30-4469			
24	Silver Mica Cond. (370 mmfd.)	30-1110	56	Output Trans.	32-8053			
25	Resistor (33,000 ohms, 1/2 watt)	33-333339	57	Cone & Voice Coil Ass'y (Spkr. Part No. 36-1479-2)	36-4089			
26	Push Button Switch	42-1489	58	Electrolytic Cond. (16 mfd., 200 V.)	30-2406			
27	Padder Strip (Push Buttons)	31-6299	59	Resistor (15 ohms, 1/2 watt)	33-015351			
28	Coil Strip Ass'y		60	Resistor (150 ohms, 1 watt)	33-115451			
28A	Coil No. 1		61	Electrolytic Cond. (12 mfd., 350 V.)	30-2405			
28B	Coil No. 2	540-1060 K. C.	62	Field Coil (Replace Speaker, Part No. 36-1479)				
28C	Coil No. 3		63	Power Transformer (115 Volts, 50 to 60 Cycle)	32-8052			
28D	Coil No. 4	650-1110 K. C.		(115 Volts, 25 Cycle)	32-8086			
28E	Coil No. 5			(120/240 Volts, 60 Cycle)	32-8092			
28F	Coil No. 6	920-1600 K. C.						
28G	Coil No. 7							
29	Resistor (4700 ohms, 1/2 watt)	33-247339						
30	1st I. F. Trans. Ass'y	32-3245						
31	Tubular Cond. (.05 mfd.)	30-4123						

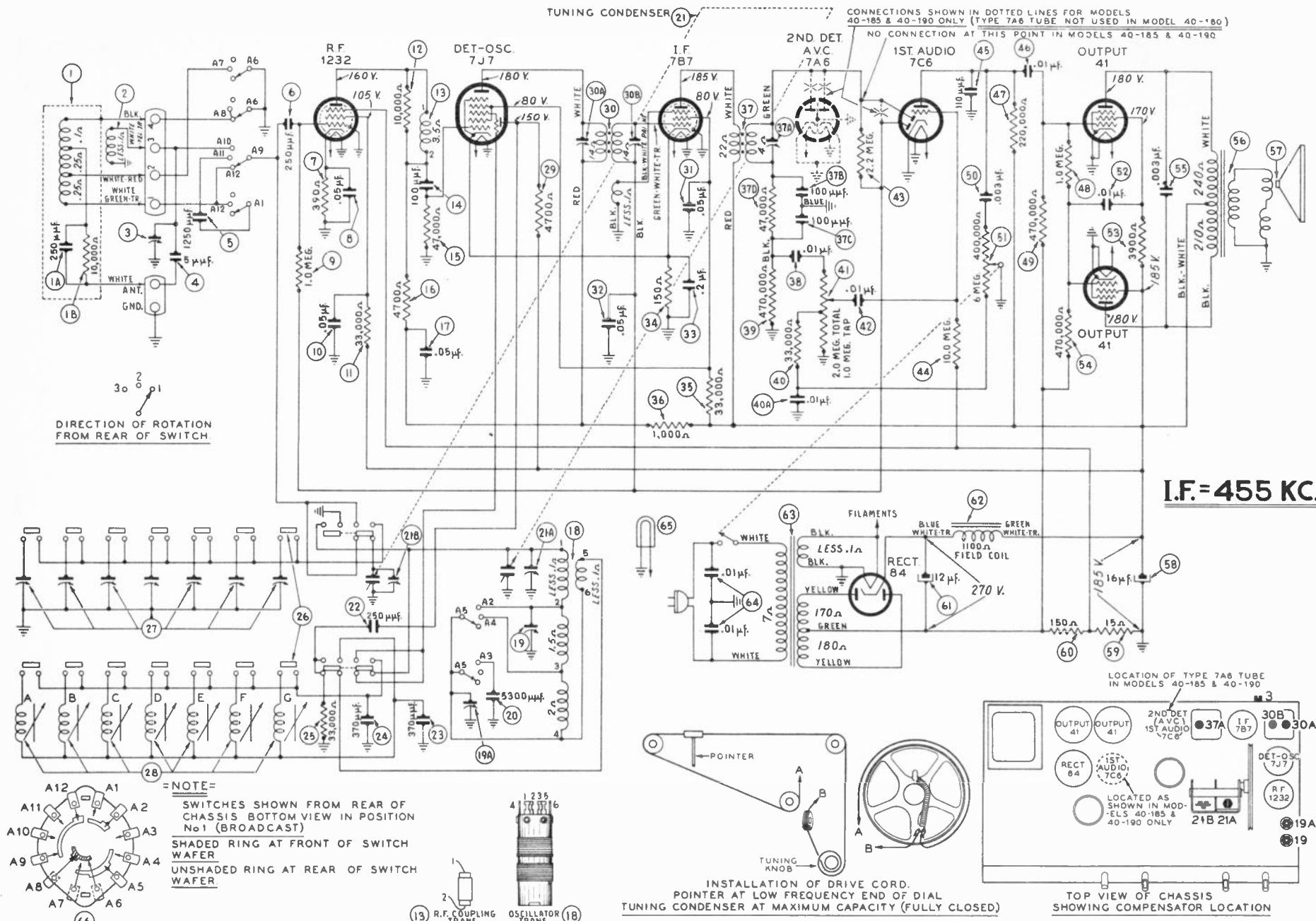
MISCELLANEOUS PARTS

Bezel Ass'y	40-6489
Bezel Gasket	27-9175
Cable & Plug (Power Supply)	L-3199
Cabinet Model 40-180	10372B
Cabinet Model 40-185	10400A
Cabinet Model 40-190	10391A
Clip (Coil mtg.)	28-5003
Dial	27-5508
Dial Tuning Drum Ass'y	38-9856
Drive Cord Ass'y	31-2383
Knobs (Tuning, Tone, Volume, Wave Switch)	27-4332
Knobs (Pushbuttons)	27-4857
Pilot Lamp Socket Ass'y	38-9607
Pointer	56-1516
Screws (Bezel mtg.)	W-1834FG1
Spring (Drive Cord)	28-8913
Spring (Dial Background Plate mtg.)	28-8908
Socket (Type 84 Tube)	27-6035
Socket (Type 41 Tube)	27-6036
Socket (Loktal, Type 7J7 Tube)	27-6129
Socket (Loktal, Type 7A6, 7C6 Tubes)	27-6131
Speaker	36-1479
Tab (Dial)	27-5530
Tab (Television)	27-9449
Tab Kit	40-6475
Tuning Shaft Ass'y	38-9874
Washer ("C" Type, Tuning Shaft Ass'y)	28-2043
(Spring Type, Tuning Shaft Ass'y)	28-4186

PRODUCTION CHANGES

- MODEL 40-180**
Run 4—Beginning with Run 4 receivers the converter tube was changed from a type 7J7 loktal to a 6J8G octal type.
Run 5—A new resistor Part No. 33-115339 not shown on diagram of Service Bulletin was added in series with plates of the 6J8G tube. This change made to improve oscillation action at 18 M. C. Cathode resistor (34) changed from Part No. 33-115339 carbon type to Part No. 33-115336 wirewound.
- MODEL 40-185**
Run 4—Beginning with Run 4 receivers the converter tube was changed from a type 7J7 loktal to a 6J8G octal type. Tube sockets changed from Part No. 27-6129 to Part No. 27-6120.
- MODEL 40-190**
Run 4—Beginning with Run 4 receivers the converter tube was changed from a type 7J7 loktal to a 6J8G octal type. Tube sockets changed from Part No. 27-6129 to Part No. 27-6120.
Run 5—A new resistor Part No. 33-115339 not shown on diagram of the Service Bulletin was added in series with the plates of the 6J8G tube. This change was made to improve oscillation action at 18 M. C. Cathode resistor (34) changed from Part No. 33-115339 carbon type to Part No. 33-115336 wirewound.
- MODELS 40-180, 40-190**
To prevent oscillation at the low end of the broadcast band the 2nd I. F. transformer (37) changed from Part No. 32-3246 to Part No. 32-3283.
The physical location of condenser (41) as shown in Fig. 2 of the Service Bulletin has been changed to prevent oscillation at 540 K. C. The condenser is now wired to a three lug wiring panel between the range switch and the volume control. The antenna lead is connected to one lug of the panel. This change is made on all sets marked Run No. 9, Model 40-180 and Run No. 10, Model 40-190.
- MODEL 40-185, 40-190**
Beginning with Run "8" receivers the converter tube is changed from a type 6J8G octal to a 7J7 loktal. Tube sockets changed from Part No. 27-6120 to 27-6129 loktal.
This change reverses the change made on Run "4" receivers.

MODELS 40-180, 40-185 and 40-190



SCHEMATIC DIAGRAM MODELS 40-180, 40-185 & 40-190

The voltages indicated were measured with a Philco Model 027 Voltmeter (1000 ohms per volt) — Power supply 115 volts, 60 cycle — Volume control minimum — No signal being received — Range switch "Brdst."

MODELS 40-180, 40-185 and 40-190

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

Equipment Required

(1) *Signal Generator.* In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C. (2) *Indicating Device.* To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027 and 028 is

recommended. When using the vacuum tube voltmeter, an aligning adaptor, Philco Part No. 45-2767, is necessary for connecting to the A. V. C. circuit. These testers also contain an audio output meter which may also be used as an indicating device. (3) *Aligning Tools.* Fiber handle screw driver, Philco Part No. 45-2610, and fiber wrench, Philco Part No. 7696.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER—To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. Adjusting I. F. Circuit.

Remove the 1252 R. F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the wire (light color) which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the black wire.

2. Adjusting R. F. Circuit.

To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 A. F. tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the above paragraph.

With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate

and socket terminals of the 41 output tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning indicator, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram, page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

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 loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders that the receiver be left in the cabinet.

40-180 - 185 - 190

Operations	SIGNAL GENERATOR		RECEIVER			Remarks
	Output Connections	Dial Frequency	Dial Frequency	Control Settings	Adjust Compensators for Max. Signal	
1	High Side to No. 1 Ter. Loop Panel	I. F. 455 K. C.	580 K. C. No Signal	Range Sw. "Brdest." Volume "Max." Push-Button "Dial"	37A, 30, 30A	See Note A.
2	Use Loop on Generator	18 M. C.	18 M. C.	Range Sw. "SW." Volume "Max." Push-Button "Dial."	21A	Note B. Note D.
3	Use Loop on Generator	1400 K. C.	1400 K. C.	Range Sw. "Brdest." Volume "Max."	19A, 21B	
4	Use Loop on Generator	580 K. C.	580 K. C.	Range Sw. "Brdest." Volume "Max."	19	Roll Cond. Note C.
5	Use Loop on Generator	1400 K. C.	1400 K. C.	Range Sw. "Brdest." Volume "Max."	19A, 21B	Roll Cond. Note C.
6	Use Loop on Generator	18 M. C.	18 M. C.	Range Sw. "SW."	3	Roll Cond. Note C.

NOTE A—A "Dummy Antenna" consisting of a .1 mfd. condenser is connected in series with the signal generator output lead (high side).

NOTE B—**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 diagram.

NOTE C—When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; 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 there is no further gain in output reading.

NOTE D—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator 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 receiver dial 910 K. C. below the frequency being used on any high frequency range.

MODELS 40-195, 40-200 and 40-201, Codes 121-122

SPECIFICATIONS

MODELS 40-195, 40-200

TYPE OF CIRCUIT: Models 40-195 and 40-200 are Electric Push-Button and dial tuned radios incorporating the new Philco Built-in Super Aerial system which eliminates an outside aerial and reduces local static interference to a minimum. These models are also designed to receive the sound of a television program tuned in by special type Philco Television Sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

Included in the built-in aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference, or if interference is not present the loop may be set in the position where best reception is obtained.

In general, both radios are similar with the exception of the number of tubes used and cabinet design. Models 40-195 and 40-200 employ ten and eleven tubes respectively.

In addition, other features of design are: Continuously variable tone control; three tuning ranges covering the frequencies listed below; automatic bass compensation and degenerative push-pull pentode audio output circuit. Outside aerial connections are also provided for remote localities where station signal strength is very weak.

Each receiver is equipped with eight electric tuning push buttons for automatically selecting stations. Seven of the push buttons are used for broadcast stations and one push button (left hand push button preferably) may be set up for use with a Philco wireless Record Player or the sound programs tuned in by Special Philco Television sets.

POWER SUPPLY: 115 Volts, 25 and 60 cycle A. C.

POWER CONSUMPTION: 110 watts.

FREQUENCY TUNING RANGES: (Three)

540 to 1550 K. C. 1.5 to 4.0 M. C. 6.0 to 18 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 5 watts.

PHILCO TUBES USED: Model 40-195

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7C6, Second Detector, A. V. C., and First Audio; 37, Phase Inverter; two 37, Drivers; two 42, Audio Power Outputs; 80, Rectifier.

Model 40-200

1232, R. F.; 7J7, Converter; 7B7, I. F.; 7A6 Detector A. V. C.; 7C6 First Audio; 37, Phase Inverter; two 37, Audio Drivers; two 42, Power Outputs; 80, Rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-195 type "XX".....	38"	29½"	13¾"
Model 40-200 type "RX".....	36¾"	34¾"	14¾"

MODEL 40-201XX

Models 40-200XXS and 40-201XX, Code 121 are similar with the exception of the cabinets. The service information for Model 40-200, Code 121 also applies to Model 40-201XX, Code 121.

MODEL 40-201, CODE 122

Model 40-201, Code 122 is similar to Model 40-195, Code 121 with the exception of the cabinet. Service information for Model 40-201, Code 122 is the same as that for the Model 40-195.

Instructions for adjusting the electric push-buttons will be found on page 9.

PRODUCTION CHANGES

MODEL 40-195

Run 2—A mica condenser Part No. 61-0038 was added to the police band and oscillator padder (25A) to improve padding of the circuit.

Run 4—Beginning with Run 4 receiver the converter tube was changed from a type 7J7 loktal to a 6J8G octal. Tube sockets changed from Part No. 27-6129 to 27-6120.

Run 5—To improve the operating characteristics of the set, screen by-pass condenser () was changed from .05 mfd. Part No. 30-4518 to .01 mfd. Part No. 30-4572.

Run 6—A resistor, 27 ohms Part No. 33-027339 was connected in series with the oscillator grid circuit of sets using the 6J8G tube. This change was made to improve the oscillator performance.

MODEL 40-200

Run 3—A mica condenser Part No. 62-0038 was added to the police band oscillator padder (25A) to improve padding of the circuit.

Run 4—Beginning with Run 4 receiver the converter tube

was changed from a type 7J7 loktal to a 6J8G octal. Tube sockets changed from Part No. 27-6129 to 27-6120.

Runs 5 and 6—Same as Model 40-195.

MODELS 40-195, 40-200

Beginning with Run "7" receivers the converter tube is changed from a type 6J8G octal to a 7J7 loktal. The tube sockets are changed from Part No. 27-6120 to Part No. 27-6129.

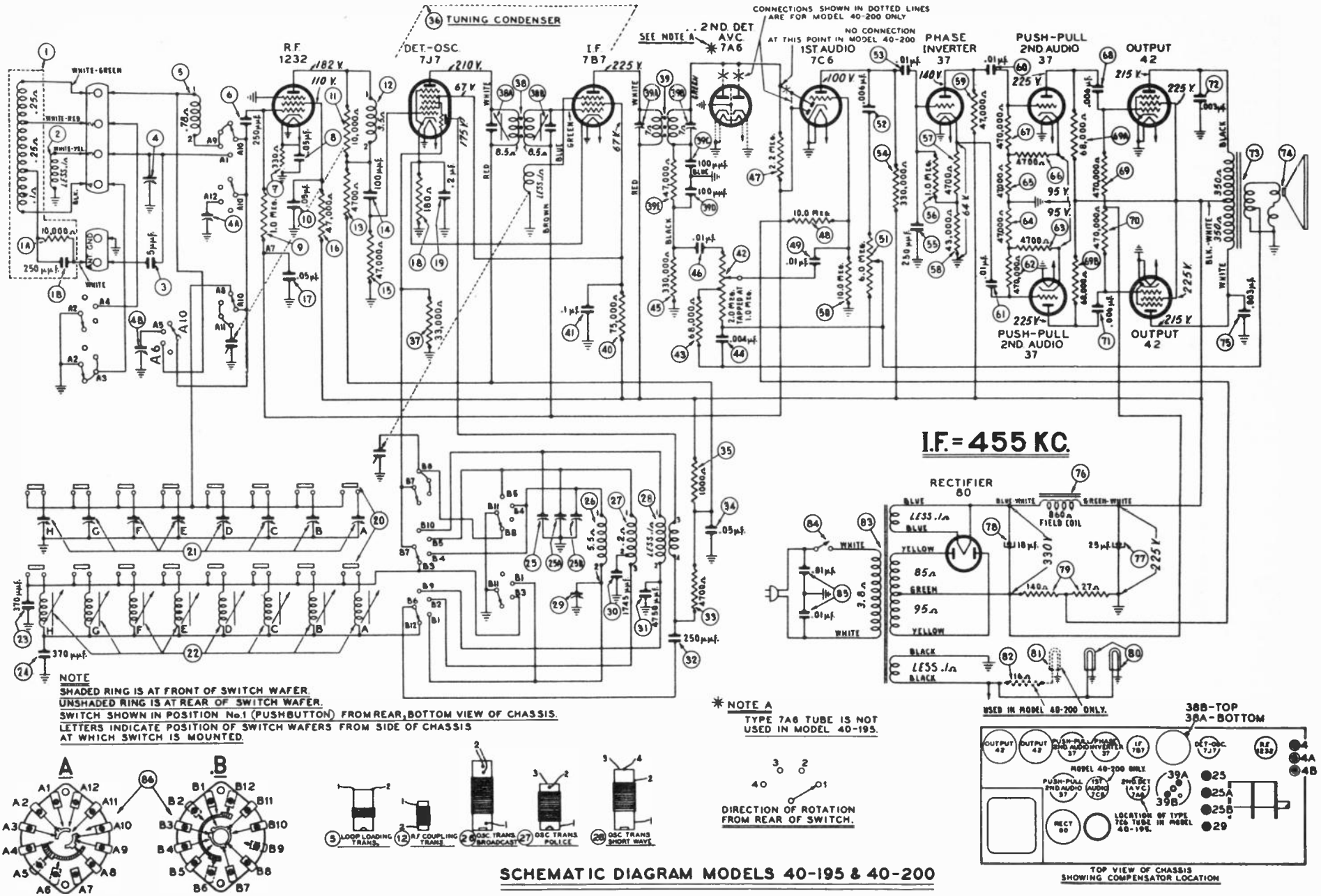
This change is the reverse of the change made on Run "4" receivers.

MODELS 40-195, 40-200, 40-201

To improve the padding at 1500 K. C. a mmfd. condenser Part No. 30-1097 was connected in parallel with compensator (25B). This change is on all sets marked Run 8.

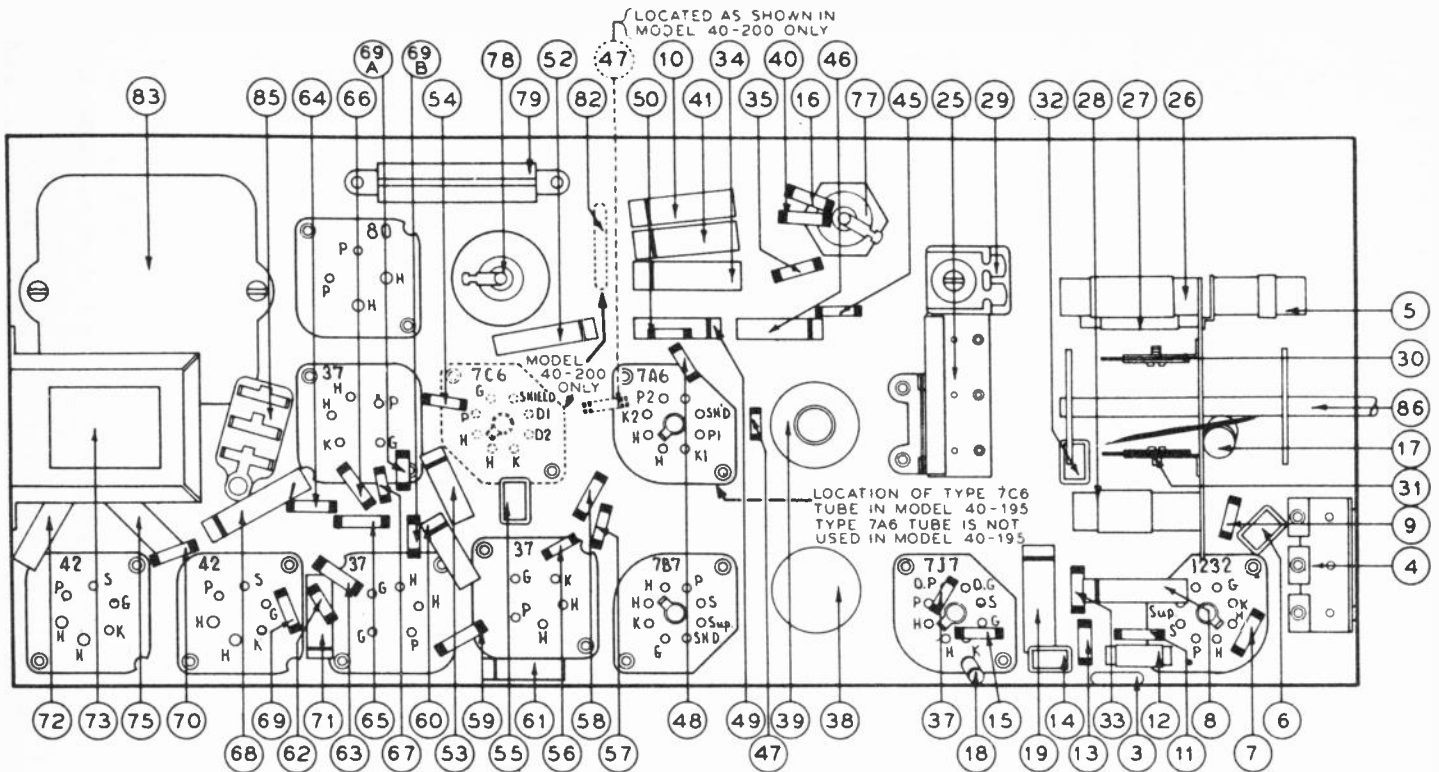
To prevent low frequency rumble at various points on the dial scale, another condenser Part No. 30-4334, .004 mfd. was connected in parallel with the present condenser (44) in the bass compensation circuit.

(See page 9 for Push Button Adjustments)



The voltages indicated were measured with a Philco Model 027 Voltmeter (1000 ohms per volt) — Power supply 115 volts, 60 cycle — Volume control minimum — No signal being received — Range switch "Brdcat."

MODELS 40-195, 40-200 and 40-201, Codes 121-122



Replacement Parts Models 40-195 and 40-200

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE	SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
1	Loop Assy. (Broadcast)	38-9881		39C	Part of No. 39		
1A	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	39D	Part of No. 39		
1B	Mica Cond. (250 mmfd.)	61-0033	.20	39E	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
2	Loop Assy. (Short Wave)	38-9887		40	Resistor (75,000 ohms, 1/2 watt)	33-375339	.17
3	Mica Cond. (5 mmfd.)	30-1097	.20	41	Tubular Cond. (.1 mfd.)	30-4455	.20
4	Compensator (3 section)	31-6308		42	Volume Control (2 meg.)	33-5286	1.00
4A	Part of No. 4			43	Resistor (68,000 ohms, 1/2 watt)	33-368339	.17
4B	Part of No. 4			44	Tubular Cond. (.004 mfd.)	30-4334	.15
5	Loop Loading Coil	32-3252		45	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
6	Mica Cond. (250 mmfd.)	61-0033	.20	46	Tubular Cond. (.01 mfd.)	30-4572	.15
7	Resistor (330 ohms, 1/2 watt)	33-133339	.17	47	Resistor (2.2 meg., 1/2 watt)	33-523339	.17
8	Tubular Cond. (.05 mfd.)	30-4444	.15	48	Resistor (10.0 meg., 1/2 watt)	33-610339	.17
9	Resistor (1.0 meg., 1/2 watt)	33-510339	.17	49	Tubular Cond. (.01 mfd.)	30-4572	.15
10	Tubular Cond. (.05 mfd.)	30-4518	.15	50	Resistor (10.0 meg., 1/2 watt)	33-610339	.17
11	Resistor (10,000 ohms, 1/2 watt)	33-310339	.17	51	Tone Control (6 meg.)	33-5325	
12	R. F. Coupling Coil	32-3194		52	Tubular Cond. (.006 mfd.)	30-4445	.15
13	Resistor (4700 ohms, 1/2 watt)	33-247339	.17	53	Tubular Cond. (.01 mfd.)	30-4572	.15
14	Mica Cond. (100 mmfd.)	30-1128	.15	54	Resistor (330,000 ohms, 1/2 watt)	33-433339	.17
15	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	55	Mica Cond. (250 mmfd.)	61-0033	.20
16	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17	56	Resistor (1.0 meg., 1/2 watt)	33-510339	.17
17	Tubular Cond. (.05 mfd.)	30-4519	.15	57	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
18	Resistor (180 ohms, 1/2 watt)	30-4587	.20	58	Resistor (43,000 ohms, 1/2 watt)	33-343339	.17
19	Tubular Cond. (.2 mfd.)	30-4587	.20	59	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
20	Push Button Switch	42-1515		60	Tubular Cond. (.01 mfd.)	30-4572	.15
21	Compensator Strip	31-6313		61	Tubular Cond. (.01 mfd.)	30-4572	.15
21A	Compensator			62	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21B	No. 1 (540-1030 K.C.)			63	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21C	No. 2 (540-1030 K.C.)			64	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21D	No. 3 (540-1030 K.C.)			65	Resistor (47,000 ohms, 1/2 watt)	33-347339	.17
21E	No. 4 (540-1030 K.C.)			66	Resistor (4700 ohms, 1/2 watt)	33-247339	.17
21F	No. 5 (670-1160 K.C.)			67	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21G	No. 6 (670-1160 K.C.)			68	Tubular Cond. (.006 mfd.)	30-4583	.15
21H	No. 7 (900-1600 K.C.)			69	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
21I	No. 8 (900-1600 K.C.)			70	Resistor (470,000 ohms, 1/2 watt)	33-447339	.17
22	Coil Strip (Complete)			71	Tubular Cond. (.006 mfd.)	30-4583	.15
22A	Coil No. 1 (540-1030 K.C.)	32-3042	.50	72	Tubular Cond. (.003 mfd.)	30-4469	.20
22B	Coil No. 2 (540-1030 K.C.)	32-3042	.50	73	Output Trans.	32-7951	1.80
22C	Coil No. 3 (540-1030 K.C.)	32-3042	.50	74	Cone and Voice Coil Assy. (for Speaker 36-1450-2)	36-4089	2.50
22D	Coil No. 4 (540-1030 K.C.)	32-3042	.50	75	Field Coil (Replace Spkr. No. 36-1450)	36-4111	2.50
22E	Coil No. 5 (540-1030 K.C.)	32-3042	.50	76	Electrolytic Con. (.25 mfd., 250V.)	30-2333	1.00
22F	Coil No. 6 (540-1030 K.C.)	32-3041	.50	77	Electrolytic Con. (.18 mfd., 400V.)	30-2335	1.25
22G	Coil No. 7 (900-1600 K.C.)	32-3041	.50	78	B. C. Resistor	33-3378	
22H	Coil No. 8 (900-1600 K.C.)	32-3041	.50	79	Pilot Lamps	34-2064	.09
23	Silvered Mica Cond. (370 mmfd.)	30-1110	.45	80	Pilot Lamps	34-2210	.18
24	Silvered Mica Cond. (370 mmfd.)	30-1110	.45	81	Resistor (15 ohms, pilot lamp)	33-016431	.20
25	Compensator (3 section)	31-6092	.60	82	Power Trans. (110V, 60 cycle)	32-8059	
25A	Part of No. 25			83	Power Trans. (110V, 25 cycle)	32-8080	
25B	Part of No. 25				Power Trans. (120 240V, 60 cyc)	32-8097	
26	Broadcast Oscillator Coil	32-3240		84	A. C. Switch	42-1517	
27	Police Oscillator Coil	32-3052	.75	85	Line Con. (.01-.01 mfd., Bakelite)	3903-D0	.30
28	Short Wave Oscillator Coil	32-3242		86	Wave Switch	42-1507	
29	Compensator	31-6230	.40				
30	Tracking Cond. (1745 mmfd.)	31-6307					
31	Tracking Cond. (4750 mmfd.)	31-6306					
32	Mica Cond. (250 mmfd.)	61-0033	.20				
33	Resistor (4700 ohms, 1/2 watt)	33-247339	.17				
34	Tubular Cond. (.05 mfd.)	30-4518	.15				
35	Resistor 1000 ohms, 1/2 watt	33-210339	.17				
36	Tuning Cond. Assy.	31-2389					
37	Resistor (33,000 ohms, 1/2 watt)	33-333339	.17				
38	1st I. F. Trans. Assy.	32-3243					
39	2nd I. F. Trans. Assy.	32-3250					
39A	Part of No. 39						
39B	Part of No. 39						

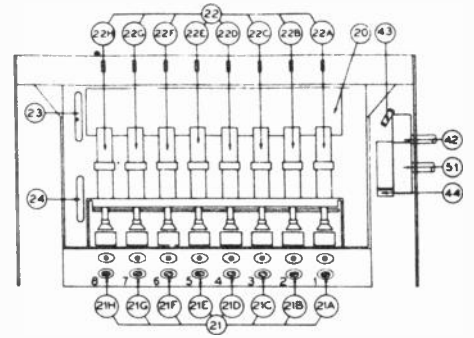


Fig. 3

SCHE. No.	DESCRIPTION	PART No.	LIST PRICE
	Coupling Assy. (Tuning Cond.)	31-2291	.35
	Dial	27-5513	
	Dial Clamp	56-1034	.08
	Dial Gasket	27-9224	.01
	Drive Cord Assy. (Pointer)	31-2316	.25
	Drive Cord Assy. (Tuning Cond.)	31-2316	.25
	Disc Control (Tuning)	27-4766	
	Disc Control (Volume)	27-4765	.30
	Disc Control (Tone)	27-4764	.30
	Disc Control (Wave Switch)	27-4767	.15
	Drum Assy. (Tuning Cond.)	38-9716	.60
	Drum Bracket & Bearing Assy.	38-9862	.10
	Pointer (Dial)	56-1033	.15
	Pilot Light Jewel	27-4777	.10
	Knobs (Push Buttons)	2	
	Shaft (Control Drums)	48-9924	.05
	Spring (Drive Cord)	28-9513	.05
	Socket Assy. (Dial Lamp)	38-9899	.20
	Socket Assy. (Dial Lamp)	38-9898	.20
	Socket Assy. (Pilot Lamp)	38-9896	.40
	Socket (5 Prong, 37-Tube)	27-6035	.11
	Socket (6 Prong, 42-Tube)	27-6036	.11
	Socket (6 Prong, 80-Tube)	27-6044	.10
	Socket (Loktal, 7J7-Tube)	27-6129	
	Socket (Loktal, 7A5, 7C4, Tubes)	27-6131	
	Speaker	36-1450	9.00
	Tab Kit	40-6475	
	Phone Tab	27-9418	
	Dial Tab	27-5930	

MOUNTING PARTS

Grommet (Push Button Sw. Mtg.)	27-4596	.03
Grommet (Tuning Unit Assy. Mtg.)	3914	.05
Grommet (Tuning Unit Assy. Mtg.)	3915	.02
Screw (Bezel Mtg.)	W-1834	.90 Per C.
Nut (Spkr. Mtg.)	W-124	.35 Per C.
Screw (Loop Mtg. Rail)	W-546	.45 Per C.

Miscellaneous Parts Model 40-200

Bezel Assy.	40-6490	
Bearing (Drum Shaft)	56-1036	.10
Cable and Plug (Power Supply)	L-2778	.40
Cable (Speaker)	41-3430	.50

Prices subject to change without notice

MODELS 40-195, 40-200 and 40-201, Codes 121-122

ALIGNING R. F. AND I. F. COMPENSATORS

(See page 9 for Push Button Adjustments)

Equipment Required

(1) Signal Generator. In order to properly adjust this receiver an accurately calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C. (2) Indicating Device, to obtain maximum signal strength and accurate adjustment of the padders a vacuum tube voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. When using

the vacuum tube voltmeter, an aligning adaptor Philco part No. 45-2767 is necessary for connecting to the A. V. C. circuit. These testers also contain an audio output meter which may also be used as an indicating device. (3) Aligning Tools, fiber handle screw driver Philco part No. 45-2610 and fiber wrench Philco part No. 7696.

Connecting Aligning Instruments

VACUUM TUBE VOLTMETER — To use the vacuum tube voltmeter as an alignment indicator make the following connections:

1. ADJUSTING I. F. CIRCUIT:

Remove the 1232 R. F. tube from its socket and insert the aligning adaptor, then replace the tube in the adaptor. Connect the negative terminal of the vacuum tube voltmeter to the wire which protrudes from the side of the adaptor. Attach the positive terminal of the voltmeter to the chassis.

2. ADJUSTING R. F. CIRCUIT:

To adjust the R. F. circuit, the aligning adaptor is inserted in the 7C6 A. F. tube socket. The vacuum tube voltmeter remains connected to the adaptor as given in the above paragraph.

With the voltmeter connected in this manner a very sensitive indication of the A. V. C. voltage is obtained when the padders are adjusted. If an audio output meter is used, connect it to the plate and socket terminals of the 42 type tube and adjust the output meter for the 0 to 30 A. C. scale.

After connecting the aligning indicator, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown on the schematic diagram page No. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

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 loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiving loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order See Fig.	
1	High Side to No. 1 Ter. Loop Panel	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst."	39B, 39A 38B, 38A	See Note A
2	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst."	29B, 4B	See Note B
3	Use Loop on Generator		580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst."	29	Roll Tuning Condenser Note C
4	Use Loop on Generator		1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst."	25B, 4B	
5	Use Loop on Generator		3.5 M. C.	3.5 M. C.	Vol. Max. Range Switch "Police"	25A, 4A	
6	Use Loop on Generator		18.0 M. C.	18.0 M. C.	Vol. Max. Range Switch "S. W."	25, 4	Check Image Signal Note D

NOTE A — A "Dummy Antenna" consisting of a .1 mfd. condenser is connected in series with the signal generator output lead (high side).

NOTE B — **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 Fig. 4.

NOTE C — When adjusting the low frequency compensator of Range One (Broadcast) or the antenna and R. F. compensators of the high frequency tuning ranges; 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

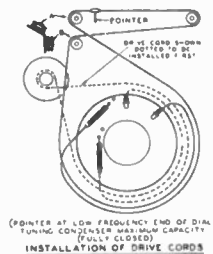


Fig. 4

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 there is no further gain in output reading.

NOTE D — To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator 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 receiver dial 910 K. C. below the frequency being used on any high frequency range.

MODELS 40-205 and 40-216

WIRELESS REMOTE CONTROL SPECIFICATIONS

Model 40-205

TYPE CIRCUIT: Model 40-205, code 121, is a 12-tube wireless remote control and dial tuned receiver employing a super-heterodyne circuit for reception of standard broadcast stations. Eight broadcast stations can be automatically tuned in from the remote control unit. The wireless remote control unit also increases and decreases volume and turns off the set without any connections between the receiver and the control unit. This model is also designed to receive the sound of a television program tuned in by Philco Television sets.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

A new type aerial system which eliminates an outside aerial is also incorporated in this model. Included in the built-in super aerial system is a statically shielded loop for broadcast band reception. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference or if interference is not present, the loop may be set in the position where best reception is obtained.

In addition, other features of design are automatic volume control, continuously variable tone control, base compensation, degenerated push pull pentode audio output.

POWER SUPPLY: 115 Volts, 50 to 60 Cycles, A. C.

POWER CONSUMPTION: 180 watts.

TUNING RANGES: 540 to 1600 K. C.

I. F. FREQUENCY: 470 K. C.

PHILCO TUBES USED: Receiver — 7C7, F. R. Amplifier: 6J8G, First Detector Oscillator; 78, I. F. Amplifier; 6Q7G, Second Detector, A. V. C. and First Audio; two (2) 42 Audio Output, and one 80 Rectifier.

Wireless Remote Control Amplifier — 78, First Control Amplifier; 6J7G, Second Control Amplifier; A. V. C.; 6ZY5G, A. V. C. and a 2A4G Thyatron Rectifier.

Wireless Remote Control Unit — One type 30.

AUDIO OUTPUT: 10 watts.

CABINET DIMENSIONS:	Height	Width	Depth
Console	38	30	15 1/2
Wireless Remote Control.....	5 1/2	7 1/2	9 1/2

SCHEMATIC AND PARTS LIST: The Schematic Diagram and Replacement Parts List for Model 40-205 will be found on page 74.

Model 40-216

TYPE CIRCUIT: Model 40-216, code 121, is a 14-tube wireless remote control and dial tuned receiver employing a super-heterodyne circuit with three tuning ranges for reception of standard and short wave broadcast stations. Eight broadcast stations can be automatically tuned in from the remote control unit. The wireless remote control unit also increases and decreases volume and turns off the set without any connections between the receiver and the control unit. This model is also designed to receive the sound of a television program tuned in by Philco Television sets. A Philco wireless record player can also be set up for use with this receiver.

PHILCO BUILT-IN SUPER AERIAL SYSTEM:

A new type aerial system which eliminates an outside aerial is also incorporated in this model. Included in the built-in super aerial system is a statically shielded loop for broadcast band reception and a short wave receiving loop. The feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference or if interference is not present, the loop may be set in the position where best reception is obtained.

In addition other features of design are automatic volume control, continuously variable tone control, base compensation, degenerated push pull pentode audio output. Outside aerial connections are also provided for remote localities where station signal strength is exceptionally weak.

POWER SUPPLY: 115 Volts, 50 to 60 Cycles, A. C.

POWER CONSUMPTION: 190 watts.

TUNING RANGES: 540 to 1600 K.C., 1.6 to 4.5 M.C., 6.0 to 18.0 M.C.

I. F. FREQUENCY: 470 K. C.

PHILCO TUBES USED: Receiver — 6J7G, R. F. Amplifier: 6A8G, Converter; 78, I. F. Amplifier; 6Q7G, Second Detector, A. V. C. and First Audio; 37, Phase Inverter; two 42 Audio Output, and one 80, Rectifier.

Wireless Remote Control Amplifier — 78, First Control Amplifier; 6J7G, Second Control Amplifier; 6J5G, A. V. C., 6ZY5G and 2A4G, Rectifier.

Wireless Remote Control Unit — 1 type 30 tube.

AUDIO OUTPUT: 10 watts.

CABINET DIMENSIONS:	Height	Width	Depth
Console	36 1/2	35	14 1/2
Wireless Remote Control.....	5 1/2	7 1/2	9 1/2

Adjusting Wireless Remote Control for Reception of Stations

The procedure for setting up stations on the wireless remote control receivers is similar to the procedure in setting up Philco electric automatic tuning models. The eight push buttons, however, are automatically dialed by the remote control unit instead of by pushing buttons. To set up stations on these models for best reception, a signal generator, Philco Model 077 and a vacuum tube voltmeter Philco Model 027 or 028 should be used. With this equipment proceed as follows:

1. Select and remove the desired eight station call letters from the large station tab card supplied with the receiver. Insert the station tabs in the apertures (windows) of the bezel. The lowest frequency station is placed in the first window on the left and the remaining station tabs in the order of increasing frequency. Turn "on" power switch.

2. Remove from the small call letter card the tab of the first low frequency station. Insert the tab in the third aperture on the right side of the bezel on the remote control unit dial. Transparent tabs are also supplied to be placed over each call letter. The remaining call letter tabs are then placed in the order of increasing frequency around the bezel from right to left (counter clock-wise).

3. Insert the loud and soft tabs in the first and second windows respectively on the right hand side of the bezel.

4. Connect the negative terminal of the vacuum tube voltmeter through a 2 meg. resistor to the grid of the 78 I. F. tube. The resistor must be connected directly to the grid of the tube and the voltmeter attached to the resistor at this point. Connect the positive terminal to the chassis ground terminal.

5. Attach a loop consisting of a few turns of wire to the output terminals of the Model 077 signal generator. Turn the signal generator modulation control to "mod on". Turn the receiver range selector switch to "Broadcast" and manually tune in the lowest frequency station desired. This station should be between 540 and 1030 K. C. The signal generator is then tuned to the frequency of the station being received. A beat note should then be heard when the volume control is turned on.

6. Turn the range selector disc of the receiver to "remote". Dial first low frequency station on the right side of the bezel of the remote control unit.

7. Using a padding screw driver, adjust the first 540 to 1030 K. C. "Osc" padder (bottom row of holes) at the left rear of the chassis, until the station identified by the modulated signal of the generator is tuned in to maximum on the vacuum tube voltmeter. Next adjust the first 540 to 1030 K. C. "Ant" padder (top row of holes) for maximum indication on the voltmeter.

8. Turn the signal generator off the station frequency and readjust the "Ant" and "Osc" padders with the station signal for maximum reading on the voltmeter. This should be done with the volume control of the receiver adjusted for low volume. This procedure is repeated for each of the remaining stations to be set up. The next station to be set up should be within the frequency range of 540 to 1030 K. C. of the second set of padders. The third station is tuned in by the third set of padders and should be within a frequency range of 670 to 1160 K. C. The remaining stations are then set up in the order of increasing frequency.

PRODUCTION CHANGES

When operating the Model 40-216 on 25 cycle power supply, the volume control motor assembly, motor condenser and wave switch link must be changed in addition to the parts shown in Service Bulletin for 25 cycle operation. Part numbers of these parts are as follows:

Volume Control Motor (80)	115 V., 25 cyc.
Motor Condenser (88)	35-1152
Wave Switch Link	30-2377
	56-1295

In addition a resistor Part No. 33-3368 is connected in series with the low side of the Choke Coil (96) in the plate of the 2A4G tube and the Stepper Unit Coil (81).

MODEL 40-216

Replacement Parts — Model 40-216

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assy. (Broadcast)	38-9882	81	Stepper Unit (Complete)	38-9689		Drive Cord (Pointer)	31-2320
1A	Resistor (10,000 ohms, 1/2 watt)	33-310339	81X	Rotary Switch (Stepper Unit)	42-1468		Disc (Tuning)	27-4766
2	Mica Cond. (.250 mmfd.)	61-00333	82	B. C. Resistor (Wirewound, 10 ohms)	33-2363		Disc (Volume)	27-4765
2A	Loop Assy. (Short Wave)	38-9883	83	Switch (Volume Control-Motor)	34-2064		Disc (Wave Switch)	27-4767
3	Compensator	31-6326	84	Resistor (150 ohms, 1/2 watt)	42-1469		Disc (Tone Control)	27-4764
3X	Ant. Series Trans. (Broadcast)	32-3291	85	Tubular Cond. (.1 mfd.)	33-15339		Pilot Lamp Assy. (R. H. Bracket)	38-9694
4	Compensator (250 mmfd.)	31-6212	86	Tubular Cond. (.1 mfd.)	30-4499		Pilot Lamp Assy. (L. H. Bracket)	38-9711
4X	Ant. Series Trans. (Short Wave)	32-3293	87	Electrolytic Cond. (30 mfd., 30 V.)	30-2361		Pilot Lamp Assy. (Station Lights)	38-9709
5	Ant. Trans. (Police Shunt)	32-3292	88	Padder Strip (Pushbuttons)	31-6284		Pilot Lamp Assy. (Cabinet Bullseye)	38-9712
6	Mica Cond. (.250 mmfd.)	61-00333	89A	Compensator No. 1			Socket (4 prong, type 80 tube)	27-6044
7	Tubular Cond. (.05 mfd.)	30-4123	89B	Compensator No. 2			Socket (3 prong, type 37 tube)	27-6038
8	Resistor (150,000 ohms, 1/2 watt)	33-41339	89C	Compensator No. 3			Socket (Octal, type 6J5G, 6Q7G tubes, etc.)	27-6088
9	Resistor (12,000 ohms, 1/2 watt)	33-31339	89D	Compensator No. 4			Socket (Octal, type 6ABG tubes)	27-6099
10	Resistor (12,000 ohms, 1/2 watt)	33-31339	89E	670-1180 K.C. Part of 89			Speaker	36-1480
11	Tubular Cond. (.05 mfd.)	30-4123	89F	Compensator No. 5			Spring (Drive Cords)	28-8913
12	R. F. Trans. (Broadcast, Pushbutton and Police)	32-3230	89G	Compensator No. 6			Tab (Television)	27-9447
12X	Mica Condenser (.35 mmfd.)	30-1141	89H	Compensator No. 7			Washer (Keyed Washer Tuning Disc)	56-1029
13	R. F. Trans. (Broadcast Manual)	32-3227	90	Compensator No. 8			Washer (Spring Washer Tuning Disc)	6717
13X	Compensator	31-6212	90A	1100-1800 K.C. Part of 89	32-3091			
14	R. F. Trans. (Short Wave)	32-3048	90B	Elec. Pushbutton Trans. Assy. (8 Trans.)	32-3042			
14X	Compensator	31-6212	90C	Osc. Trans. No. 1	32-3042			
15	Mica Cond. (.5 mmfd.)	30-1097	90D	Osc. Trans. No. 2	32-3042			
16	Tubular Cond. (.1 mfd.)	30-4455	90E	Osc. Trans. No. 3	32-3042			
17	Tubular Cond. (.1 mfd.)	30-4455	90F	Osc. Trans. No. 4	32-3042			
18	Resistor (51,000 ohms, 1/2 watt)	33-351339	90G	Osc. Trans. No. 5	32-3041			
19	Oscillator Trans. (Broadcast)	32-3231	90H	Osc. Trans. No. 6	32-3041			
20	Oscillator Trans. (Police)	32-3294	90I	Osc. Trans. No. 7	32-3041			
21	Oscillator Trans. (Short Wave)	32-3051	90J	Osc. Trans. No. 8	32-3041			
22	Compensator (3 section, oscillator)	31-8230	91	1100-1800 K.C.	32-3041			
23	Compensator (Broadcast, Low Frequency)	31-6262	92	1100-1800 K.C.	30-1110			
24	Tracking Cond. (1230 mmfd.)	61-6262	93	Silver Mica Cond. (370 mmfd.)	30-1110			
25	Tracking Cond. (3425 mmfd.)	61-6263	94	Silver Mica Cond. (370 mmfd.)	30-1110			
26	Mica Cond. (250 mmfd.)	61-00333	95	Bakelite Cond. (.05 mfd.)	36-1550			
27	Resistor (32,000 ohms, 1/2 watt)	33-32339	96	Resistor (150 ohms)	30-3556			
28	Resistor (10,000 ohms, 1/2 watt)	33-310339	97	Electrolytic Cond. (16 mfd., 200 V.)	32-1281			
29	Resistor (10,000 ohms, 1/2 watt)	33-310339	98	Choke Coil	30-4123			
30	Resistor (5,000 ohms, 2 watt)	33-250339	99	Tubular Cond. (.05 mfd.)	30-4499			
31	Electrolytic Cond. (4 mfd., 250 V.)	30-2334	100	Tubular Cond. (.1 mfd.)	30-4551			
32	Mica Cond. (250 mmfd.)	61-00333	101	Resistor (4,000 ohms, 1/2 watt)	33-33339			
33	1st I. F. Trans. Assy.	32-3089	102	Resistor (51,000 ohms, 1/2 watt)	33-351339			
34	Tubular Cond. (.01 mfd.)	30-4572	103	No. 3 Control Amp. Trans.	32-3275			
35	Resistor (1.0 meg., 1/2 watt)	33-10339	104	Resistor (102 ohms, 1/2 watt)	33-4516			
36	Resistor (330,000 ohms, 1/2 watt)	33-43339	105	Resistor (750,000 ohms, 1/2 watt)	33-475339			
37	Resistor (330,000 ohms, 1/2 watt)	33-43339	106	Resistor (2700 ohms, 1/2 watt)	33-227339			
38	2nd I. F. Trans. Assy.	32-3049	107	Resistor (100 ohms, 1/2 watt)	33-399339			
39	Mica Cond. (100 mmfd.)	30-1031	108	Resistor (120,000 ohms, 1/2 watt)	33-41239			
39X	Tubular Cond. (.004 mfd.)	30-4578	109	Tubular Cond. (.05 mfd.)	30-4123			
40	Tubular Cond. (.01 mfd.)	30-4578	110	Resistor (99,000 ohms, 1/2 watt)	30-4123			
41	Mica Cond. (50 mfd.)	30-1029	111	Tubular Cond. (.05 mfd.)	30-4123			
42	Volume Control	33-5300	112	Resistor (150,000 ohms, 1/2 watt)	33-415339			
43	Resistor (70,000 ohms, 1/2 watt)	33-370339	112X	Tubular Cond. (.05 mfd.)	30-4123			
44	Tubular Cond. (.004 mfd.)	30-4578	113	Resistor (1.5 mer., 1/2 watt)	33-515339			
45	Resistor (2.0 meg., 1/2 watt)	33-520339	114	Tubular Cond. (.05 mfd.)	30-4519			
46	Tubular Cond. (.015 mfd.)	30-4529	115	No. 2 Control Amp. Trans.	32-3087			
47	Tubular Cond. (.02 mfd.)	33-10339	116	Tubular Cond. (.05 mfd.)	32-3086			
48	Tubular Cond. (.01 mfd.)	30-4527	117	Sensitivity Control	33-5295			
49	Resistor (99,000 ohms, 1/2 watt)	33-399339	118	Resistor (300 ohms, 1/2 watt)	33-130339			
50	Tubular Cond. (.01 mfd.)	30-4169	119	No. 1 Control Amp. Trans.	32-3086			
51	Resistor (490,000 ohms, 1/2 watt)	33-449339	120	Silver Mica Cond. (130 mmfd.)	30-1122			
52	Resistor (5,000 ohms, 1/2 watt)	33-250339	121	Compensator (Secondary Inductor)	31-6268			
53	Resistor (45,000 ohms, 1/2 watt)	33-345339	122	Secondary Inductor (Mystery Tuning)	40-6415			
54	Tubular Cond. (.02 mfd.)	30-4483	123	Wave Switch	42-1537			
55	Tone Control (3.0 meg.)	33-5287	124	Tuning Cond.	31-2417			
56	Tubular Cond. (.01 mfd.)	30-4572						
57	Tubular Cond. (.02 mfd.)	33-4572						
58	Resistor (51,000 ohms, 1/2 watt)	33-351339						
59	Resistor (490,000 ohms, 1/2 watt)	33-449339						
60	Resistor (90,000 ohms, 1/2 watt)	33-499339						
61	Resistor (240,000 ohms, 1/2 watt)	33-424339						
62	Tubular Cond. (.1 mfd.)	30-4499						
63	Tubular Cond. (.01 mfd.)	30-4501						
64	Output Trans.	32-7996						
65	Cone and Voice Coil Assy. (Spkr. Part No. 36-1480-2)	36-4089						
66	Resistor (3,000 ohms, 1/2 watt)	30-4501						
67	Resistor (1.0 meg., 1/2 watt)	33-20339						
68	Electrolytic Cond. (.025 mfd., 300 V.)	33-510339						
70	Electrolytic Cond. (18 mfd., 475 V.)	30-2200						
71	Field Coil (Replace Spkr. Part No. 36-1480)	33-3364						
72	Power Trans. (115 V., 50-60 cycles)	32-8001						
73	Power Trans. (115 V., 25-40 cycles)	32-8017						
74	Bypass Cond. (.05 mfd., 110 V. Plug)	30-4876						
75	Pilot Lamp (Bullseye)	34-2210						
76	Pilot Lamp Resistor (16 ohms)	33-018331						
77	Filament Trans. (115 V., 50-60 cycles)	32-7993						
78	Filament Trans. (115 V., 25-40 cycles)	32-8016						
78X	Choke Coil	34-2064						
79	Motor Trans. (115 V., 50-60 cycles)	32-7990						
80	Motor Trans. (115 V., 25-40 cycles)	32-8015						
80	Motor Assy. (Volume Control)	35-1151						

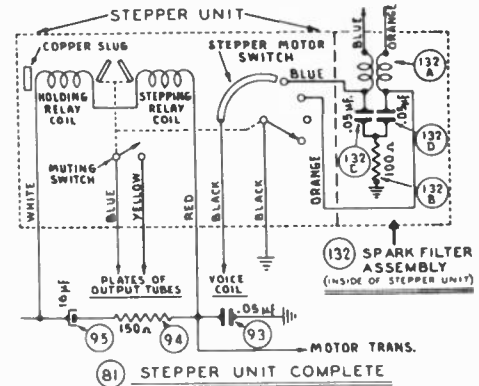


FIG. 2. INTERNAL WIRING OF STEPPER UNIT. NUMBERS CORRESPOND TO SCHEMATIC, PAGE 73.

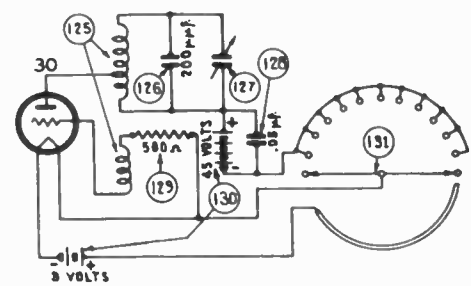


FIG. 3. WIRELESS REMOTE CONTROL UNIT SCHEMATIC DIAGRAM.

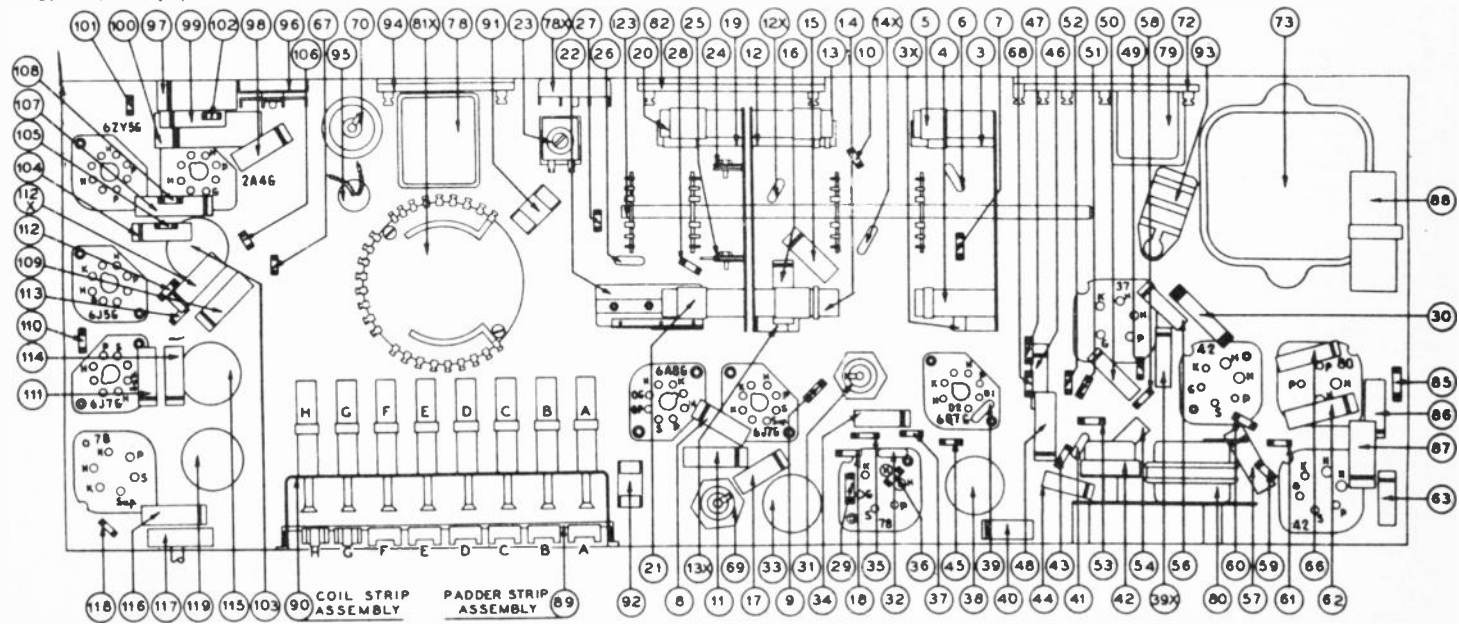


FIG. 1. MODEL 40-216 PART LOCATIONS, UNDERSIDE OF CHASSIS.

* To operate this model on 220 volt, 60 cycle current, use Stepdown Transformer, Part No. 32-8035.

MODEL 40-205

Specifications will be found on page 70, Aligning Procedure for R. F. and I. F. Circuits on page 75, and Wireless Remote Control Adjustments on page 76.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Resistor (1.0 meg., 1/2 watt)	33-510339	59	Stepper Unit Complete	38-9689	MISCELLANEOUS PARTS		
1X	Tubular Cond. (.05 mfd.)	30-4519	60	Compensator Strip (Pushbutton)	31-6264	38-9691	Bezel	38-9734
1Y	Resistor (330,000 ohms, 1/2 watt)	33-433339	60A	Compensator No. 1		38-9734	Bezel Gasket and Staple Assy.	W-1834
2	Mica Cond. (200 mmfd.)	30-1078	60B	Compensator No. 2		L-3176	Cable and Plug (Power Supply)	10402A
2X	Tubular Cond. (.05 mfd.)	30-4123	60C	540-1030 K.C. Part of 60		31-2350	Drive Cord (Tuning Cond.)	31-2320
3	R. F. Trans.	32-3282	60D	Compensator No. 3		27-5537	Dial	27-4766
3A	Resistor (12,000 ohms, 1/2 watt)	33-312339	60E	Compensator No. 4		27-4766	Disc (Tuning)	27-4763
4	Mica Cond. (250 mmfd.)	30-1032	60F	Compensator No. 5		27-4763	Disc (Volume Control)	27-4767
5	Resistor (32,000 ohms, 1/2 watt)	33-323339	60G	Compensator No. 6		38-9694	Disc (Wave Switch)	38-9711
6	Oscillator Trans.	32-3278	60H	Compensator No. 7		38-9709	Pilot Lamp Assy. (Station Lights)	38-9712
7	Compensator	31-6230	60I	Compensator No. 8		27-4777	Pilot Lamp Assy. (Cabinet Bulbseye)	27-4777
7X	Mica Cond. (15 mmfd.)	30-1139	60J	1170-1600 K.C. Part of 60		27-6044	Socket (4 prong, type 80 tube)	27-6044
8	Resistor (10,000 ohms, 1/2 watt)	33-310339	60K	Compensator No. 9		27-6036	Socket (6 prong, type 42 and 78 tubes)	27-6036
9	Resistor (5,000 ohms, 2 watts)	33-250339	60L	Oscillator Coil No. 4		27-6086	Socket (6 prong, type 42 and 78 tubes)	27-6086
10	Resistor (13,000 ohms, 1 watt)	33-313439	61	Oscillator Coil No. 5	32-3042	27-6057	Socket (7 prong, Octal, 6A7G tubes)	27-6057
11	Electrolytic Cond. (4 mfd., 250 V.)	30-2334	61A	Oscillator Coil No. 6	32-3042	27-6099	Speaker	36-1450
12	Tubular Cond. (.05 mfd.)	30-4123	61B	Oscillator Coil No. 7	32-3041	28-8913	Spring (Drive Cords)	27-9447
13	1st I. F. Trans. Assy.	32-3089	61C	Oscillator Coil No. 8	32-3041	56-1029	Washer (Keyed Washer, Tuning Disc)	6717
14	2nd I. F. Trans. Assy.	32-2645	61D	Oscillator Coil No. 9	32-3041			
15	Mica Cond. (110 mmfd.)	30-1031	61E	Oscillator Coil No. 10	32-3041			
16	Resistor (2.0 meg., 1/2 watt)	33-520339	61F	Oscillator Coil No. 11	32-3041			
17	Resistor (1.0 meg., 1/2 watt)	33-510339	61G	Oscillator Coil No. 12	32-3041			
18	Tubular Cond. (.01 mfd.)	30-4479	61H	1170-1600 K.C.	32-3041			
19	Mica Cond. (50 mmfd.)	30-1029	62	Silver Mica Cond. (370 mmfd.)	30-1110			
20	Resistor (70,000 ohms, 1/2 watt)	33-370339	62X	Silver Mica Cond. (370 mmfd.)	30-1110			
21	Volume Control (2.0 meg.)	33-5300	63	Spark Filter Assy.	32-3276			
22	Tubular Cond. (.004 mfd.)	30-4334	63A	Spark Filter Choke	32-3276			
23	Resistor (1.0 meg., 1/2 watt)	33-510339	63B	Resistor (100 ohms, 1/2 watt)	33-110339			
24	Tubular Cond. (.015 mfd.)	30-4358	63C	Tubular Cond. (.05 mfd.)	30-4444			
25	Tone Control (3.0 meg.)	33-5287	64	Bakelite Cond. (.05 mfd.)	3615-50			
26	Tubular Cond. (.02 mfd.)	30-4481	65	Resistor (150,000 ohms, 1/2 watt)	33-4455			
27	Resistor (99,000 ohms, 1/2 watt)	33-393339	66	Electrolytic Cond. (16 mfd., 150 V.)	30-2387			
28	Resistor (330,000 ohms, 1/2 watt)	33-433339	67	Choke Coil	32-1281			
29	Resistor (490,000 ohms, 1/2 watt)	33-449339	68	Tubular Cond. (.05 mfd.)	30-4123			
30	Tubular Cond. (.02 mfd.)	30-4517	69	Tubular Cond. (.05 mfd.)	30-4123			
30X	Tubular Cond. (.006 mfd.)	30-4445	70	Tubular Cond. (.1 mfd.)	30-4499			
31	Tubular Cond. (.01 mfd.)	30-4501	71	Tubular Cond. (.5 mfd.)	30-4551			
32	Resistor (3500 ohms, 1/2 watt)	33-235339	72	Resistor (51,000 ohms, 1/2 watt)	33-113339			
33	Tubular Cond. (.01 mfd.)	30-4501	73	Resistor (4,000 ohms, 1/2 watt)	33-240339			
34	Output Trans.	32-7997	74	No. 3 Control Amp. Coil	32-3275			
35	Cone and Voice Coil Assy. (Spkr. Part No. 36-1450-2)	36-1408	75	Resistor (750,000 ohms, 1/2 watt)	33-473339			
36	Tubular Cond. (.01 mfd.)	30-4501	76	Tubular Cond. (.02 mfd.)	30-4516			
37	Resistor (3000 ohms, 1/2 watt)	33-230339	77	Resistor (120,000 ohms, 1/2 watt)	33-412339			
38	Tubular Cond. (.1 mfd.)	30-4498	78	Tubular Cond. (.1 mfd.)	30-4455			
39	Resistor (1.0 meg., 1/2 watt)	33-510339	79	Resistor (150,000 ohms, 1/2 watt)	33-415339			
40	Electrolytic Cond. (25 mfd., 300 V.)	30-2360	80	Tubular Cond. (.05 mfd.)	30-4123			
41	Bias Resistor (Wirewound)	33-3381	81	Resistor (2700 ohms, 1/2 watt)	33-227339			
42	Electrolytic Cond. (16 mfd., 475 V.)	30-2200	82	Resistor (99,000 ohms, 1/2 watt)	33-389339			
43	Field Coil (Replace Spkr. Part No. 36-1450)	32-7999	83	Tubular Cond. (.05 mfd.)	30-4123			
44	Power Trans. (115 V., 25-40 cycles)	32-8013	84	Resistor (1.5 meg., 1/2 watt)	33-515339			
45	Condenser (.05 mfd., 115 V. cycles)	30-4576	85	No. 2 Control Amp. Coil	32-3087			
46	Pilot Lamp (Bulbseye)	34-2210	86	Tubular Cond. (.05 mfd.)	30-4123			
47	Pilot Lamp Resistor (16 ohms, 1 watt)	33-016431	87	Tubular Cond. (.05 mfd.)	30-4444			
48	Filament Trans. (115 V., 50-60 cycles)	32-7993	88	Resistor (300 ohms, 1/2 watt)	33-130339			
49	Filament Trans. (115 V., 25-40 cycles)	32-8016	89	Sensitivity Control (50,000 ohms)	33-5295			
48X	Choke Coil	32-1281	90	No. 1 Control Amp. Coil	32-3086			
50	Motor Trans. (115 V., 50-60 cycles)	32-7990	91	Silver Mica Cond. (155 mfd.)	30-1121			
51	Volume Control Motor Assy.	35-1151	92	Air Padder (Secondary Inductor)	31-6268			
52	Rotary Switch	42-1468	93	Secondary Inductor	40-6414			
53	Bias Resistor (Wirewound, 10 ohms)	34-2064	94	Wave Switch	42-1454			
54	Pilot Lamps (Station Indicator)	34-2064	95	Tuning Cond.	31-2311			
55	Resistor (150 ohms, 1/2 watt)	33-115339	96	Lab Assembly	38-9688			
56	Volume Control Switch (Motor Control)	42-1469	96A	Mica Cond. (250 mmfd.)	61-0033			
57	Tubular Cond. (.1 mfd.)	30-4499	96B	Resistor (10,000 ohms, 1/2 watt)	33-310339			
58	Tubular Cond. (.1 mfd.)	30-4499	97	Ant. Series Trans.	32-3226			
58X	Electrolytic Cond. (30 mfd., 30 V.)	30-2361						

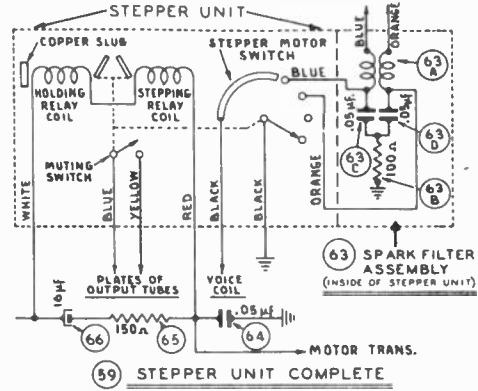
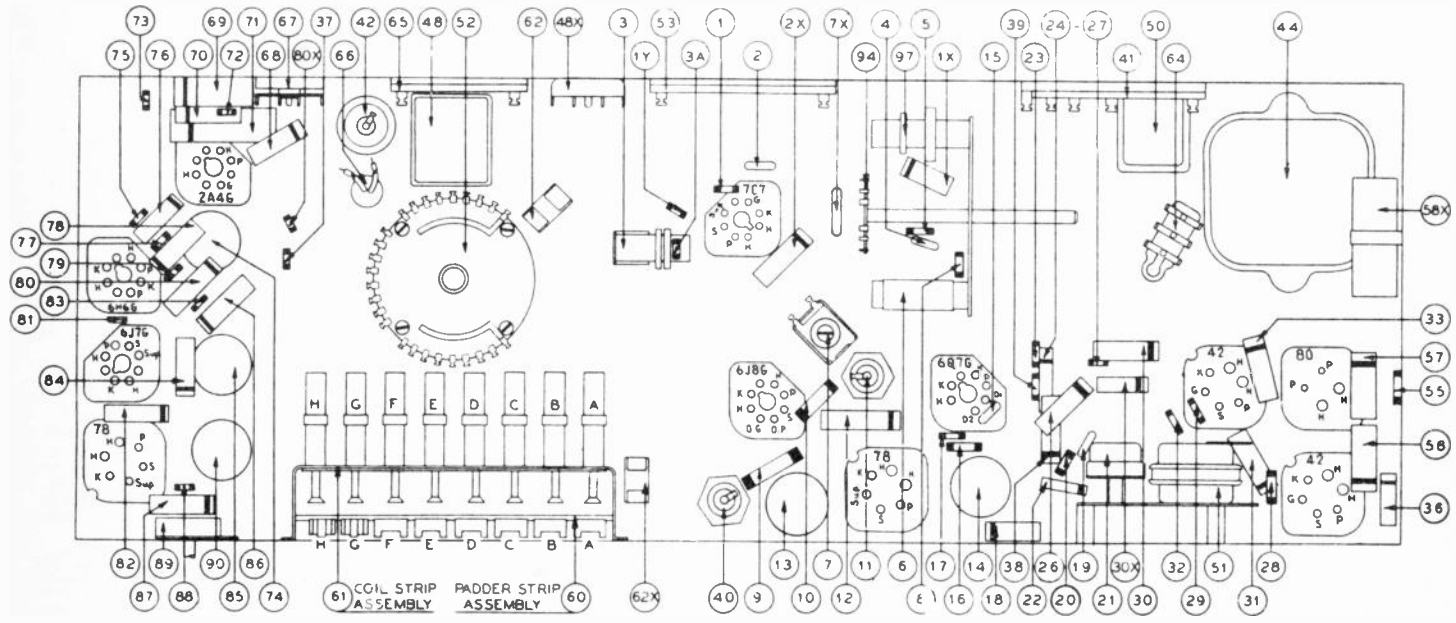
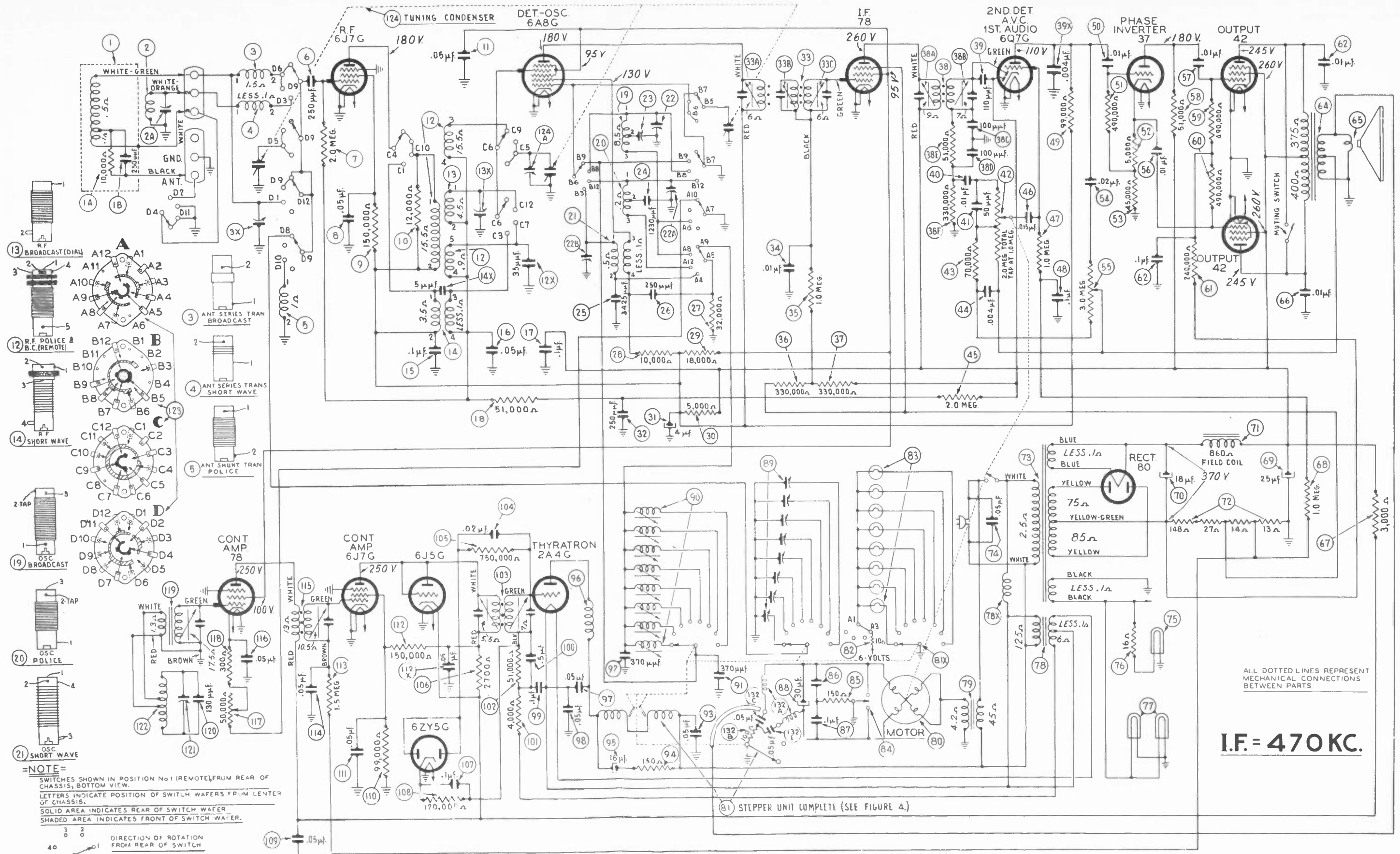


FIG. 8. INTERNAL WIRING OF STEPPER UNIT. NUMBERS CORRESPOND TO SCHEMATIC, PAGE 74.



MODEL 40-205. LOCATIONS OF PARTS. UNDERSIDE OF CHASSIS.

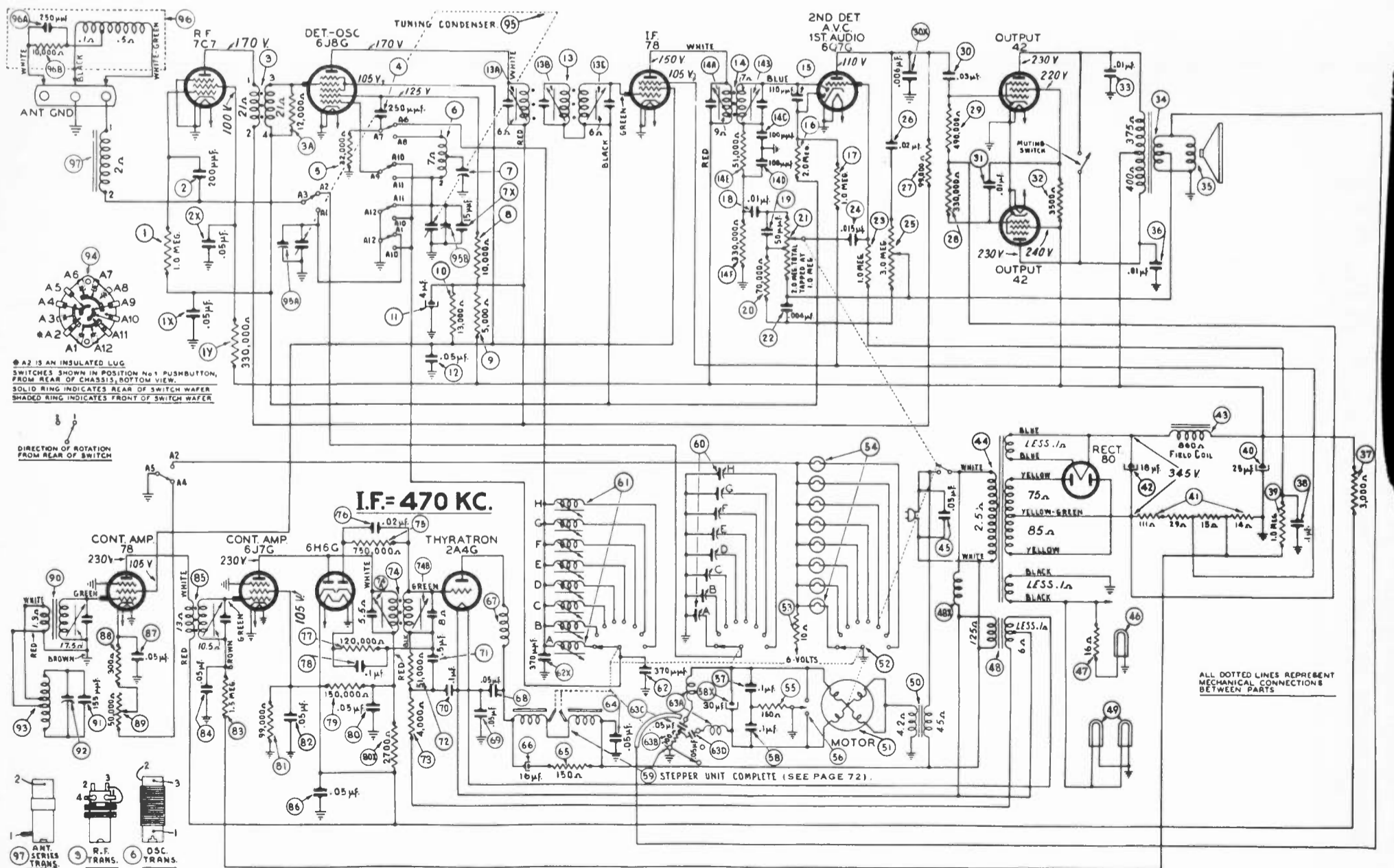
* To operate this model on 220 volt, 60 cycle current, use Stepdown Transformer, Part No. 32-8035.



SCHEMATIC DIAGRAM MODEL 40-216

FIG. 4. MODEL 40-216 SCHEMATIC DIAGRAM.

VOLTAGES MEASURED FOR SOCKET CONTACTS TO CHASSIS. LINE VOLTAGE 115 VOLT A. C. VOLUME MINIMUM. RANGE SELECTOR (BROADCAST). NO STATION BEING RECEIVED.



SCHMATIC DIAGRAM MODEL 40-205

VOLTAGES MEASURED FOR SOCKET CONTACTS TO CHASSIS, LINE VOLTAGE 115 VOLT A. C., VOLUME MINIMUM, RANGE SELECTOR (BROADCAST), NO STATION BEING RECEIVED.

MODELS 40-205 and 40-216

ALIGNING OF COMPENSATING CONDENSERS

Models 40-205, 40-216

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C.

(2) **Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver Philco Part No. 45-2610. When using the vacuum tube voltmeter for adjusting the set, an aligning adaptor Part No. 45-2767 is required.

CONNECTING ALIGNING INSTRUMENTS

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the converter grid (6J8G) Model 205; (6A8G) Model 216. The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

AUDIO OUTPUT METER: If this type of meter is used as an aligning indicator, it should be connected to the plate terminals of the 42 tubes. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators

in the order as shown in the tabulation below. Locations of the compensators are shown on page 76. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

SIGNAL GENERATOR: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to terminal No. 1 of the loop terminal panel at the rear of the chassis. The ground or low side of the signal generator is connected to the chassis of the receiver.

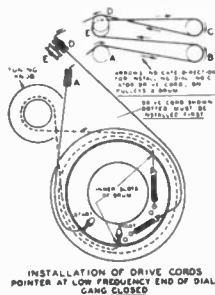
When aligning the R. F. padders a loop antenna is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

Receiver Circuit Adjustments — Model 40-216

Operation	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 I. F. Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	38A, 38B	Turn Out 33B Full
2	6A8G Det. Osc. Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	33C, 33A, 33B	Note A
3	Use Loop on Generator	18.0 M.C.	18.0 M.C.	Vol. Max. Range Switch "Short Wave"	22B, 124A, 2A	Note C, Note D
4	Use Loop on Generator	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcst"	22, 13X, 3X	Note A
5	Use Loop on Generator	580 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	23	Rollgang
6	Use Loop on Generator	1550 K.C.	1550 K.C.	Vol. Max. Range Switch "Brdcst"	22	
7	Use Loop on Generator	3.5 M.C.	3.5 M.C.	Vol. Max. Range Switch "Police"	22A	Note B

Receiver Circuit Adjustments — Model 40-205

Operation	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	14A, 14B	Turn Out 13B Full
2	6J8G Grid	470 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	13A, 13C, 13B, 14A	
3	Loop	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcst"	95B, 95A	Note A
4	Loop	580 K.C.	580 K.C.	Vol. Max. Range Switch "Brdcst"	7	Rollgang when Adjusting Padder
5	Loop	1500 K.C.	1500 K.C.	Vol. Max. Range Switch "Brdcst"	95B, 95A	Note B



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 and dial pointer is shown in Fig. 5.

NOTE B — See page 76 for Remote Control Amplifier adjustments.

NOTE C — If two peaks (signals) are observed on the aligning meter when adjusting the oscillator padder No. 22A tune the padder to the second peak from the maximum capacity position (screw all the way in).

NOTE D — If two peaks (signals) are observed on the aligning meter when adjusting the R. F. and loop padders 124A and 2A, tune the padders to the first peak signal from the maximum capacity position (screw all the way in). When adjusting the padders to this first peak roll the tuning condenser (rock) slightly back and forth to obtain the maximum readings on the aligning meter.

← FIG. 5. DIAL POINTER AND CABLE ARRANGEMENT, MODELS 40-205, 40-216.

MODELS 40-205 and 40-216

ADJUSTMENT OF WIRELESS REMOTE CONTROL CIRCUITS

Models 40-205, 40-216

ADJUSTING CONTROL FREQUENCY AMPLIFIER

The wireless remote control models are shipped with 5 different control frequencies which range from 350 to 400 K. C. These frequencies are identified by code numbers appearing on the serial number ticket and on the rear of the chassis. The code numbers and frequencies are as follows:

Code 5 355 K. C. Code 7 375 K. C.
Code 6 367 K. C. Code 8 383 K. C.
Code 9 395 K. C.

The purpose of the different control frequencies is to prevent interaction between two or more wireless remote control models which are on the same floor or exceptionally close together. When several wireless remote control models are to be located close together, it will be necessary to use different control frequencies. These frequencies should be 20 K. C. apart. For example, if three models are to be operated at the same time and are closely situated, it will be advisable to adjust the control frequency of the first set to 355 K. C., the second set to 375 K. C., and the third set to 395 K. C.

In order to realign or change the control frequency of these models, the following equipment is required:

1. Philco Model 077 signal generator with a loop attached to the output terminal. (A few turns of wire 12 inch in diameter).
2. Philco wireless remote control aligning adapter. Part No. 45-2769.
3. Philco aligning screw driver, Part No. 45-2610.

With this apparatus the control frequency is adjusted as follows:

1. Remove the 2A4G control tube from its socket and replace with the aligning adapter. Connect the red lead of the aligning adapter to the positive terminal of the vacuum tube voltmeter. The black lead of the adapter is connected to the negative terminal of the vacuum tube voltmeter.
2. Remove the 78 control amplifier tube, its shield and the shield of the 6J7G tube. Apply power to the set and turn the range selector disc to "remote".
3. Attach the "high" side of the signal generator output to the grid of the 6J7G tube. Set the generator modulation

control to "mod on" and turn the attenuator control about one-fourth on.

4. The control frequency to which the control amplifier is tuned can now be determined by tuning the signal generator between 350 and 400 K. C. When the signal generator is tuned to the control frequency, the vacuum tube voltmeter will show maximum deflection. If this frequency is to be used, leave the signal generator at this point or turn the indicator to any other frequency desired between 350 and 400 K. C.

5. After the control frequency has been found or changed, compensators (103A), (103B) Model 40-216; and (74A), (74B) Model 40-205 are adjusted for maximum indication on the vacuum tube voltmeter.

6. After adjusting this circuit, replace the 78 tube and shields in their sockets and remove the signal generator lead from the grid of the 6J7G tube.

7. Place the small loop mentioned above into the "high" and "ground" of the signal generator output terminals and place the signal generator near the secondary inductor loop in the bottom of the cabinet. When doing this, do not disturb the setting of the signal generator indicator. Turn the sensitivity control located on the right rear of the chassis toward the position marked "extreme" then adjust compensators (119), (115) Model 40-216; (90), (85) Model 40-205 for maximum reading on the vacuum tube voltmeter.

8. Next adjust the secondary inductor loop compensator (121) in the Model 216 and (92) Model 205 located in the bottom of the cabinet. This compensator is encased in a cardboard container that is attached to one corner of a loop. Extreme care should be used in adjusting the compensator to the exact point of resonance as the secondary inductor is a very sharply tuned circuit.

9. If the vacuum tube voltmeter pointer goes off scale when adjusting the compensators, turn the attenuator control of the signal generator toward the "off" position. After these compensators are adjusted to maximum, the control amplifier is tuned to the frequency selected.

ADJUSTING WIRELESS REMOTE CONTROL UNIT

The wireless remote control unit is now adjusted to the control frequency of the amplifier as follows:

1. Turn off the signal generator, then dial any one of the stations indicated on the remote control unit by pulling the selector to the stop position; release the selector and at the same time press the stop down and hold it in this position.
2. Now bring the wireless remote control unit close to the receiver. Using a padding wrench, Philco Part No. 3164, tune the compensator (127) Fig. 3, located on the bottom of the remote control unit until a maximum voltage reading is indicated on the vacuum tube voltmeter. When tuning this compensator, it should be done very slowly so as not to pass over the frequency to which the control amplifier is tuned.

3. After adjusting the compensator with the sensitivity control on the receiver in the "extreme" position, the remote control unit is adjusted for maximum sensitivity by setting the sensitivity control in the "near" position and placing the remote control unit a few feet away from the receiver. The compensator (127) Fig. 3, is then adjusted again for maximum voltage reading of the vacuum tube voltmeter.

4. After making these adjustments, remove the aligning adapter from the socket and replace the 2A4G tube. The wireless remote control unit should now be adjusted to the same frequency as the control frequency in the receiver.

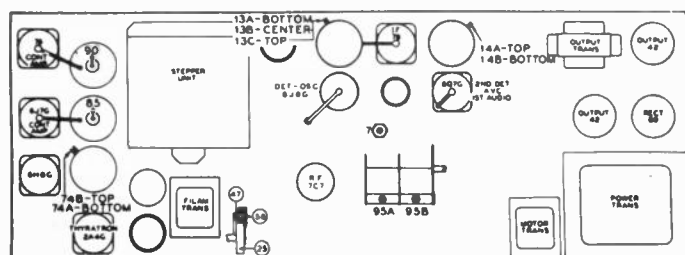


FIG. 6. LOCATIONS OF COMPENSATORS, MODEL 40-205.

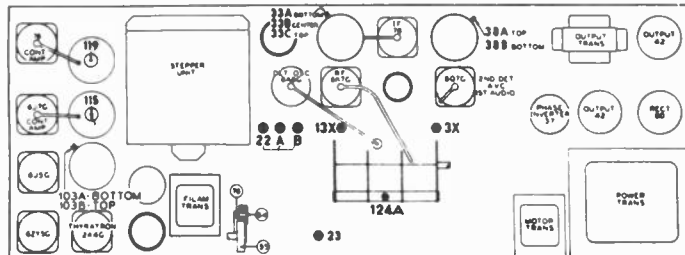


FIG. 7. LOCATIONS OF COMPENSATORS, MODEL 40-216.

MODELS 40-215 and 40-217

WIRELESS REMOTE CONTROL

SPECIFICATIONS

Models 40-215, code 121, and 40-217, code 121, are twelve (12) tube super-heterodyne radios employing Philco Wireless Remote Control and a Built-in Super-Aerial System. Three tuning ranges are also provided for reception of standard, Police and Short Wave Broadcast stations. These models are also designed to receive the sound of a television program, tuned in by Philco Television Sets and can be set up for use with a Wireless Record Player.

The Wireless Remote Control will automatically tune in eight (8) broadcast stations, increase and decrease volume and turning off the radio without any connections between the set and the control unit.

The Built-in Super-Aerial System eliminates an outside aerial and ground. Included in the Built-in Super Aerial System is a statically shielded loop for broadcast band reception and a short wave broadcast loop. The feature of the built-in broadcast band statically shielded loop, is that it may be turned to the position in which it picks up a minimum amount of interference; or if interference is not present, the loop may be set in the position where best reception is obtained.

In addition, other features of design are: automatic volume control, continuously variable tone control, bass compensation, and degenerated push-pull pentode audio output. Outside aerial

connections are also provided for remote localities where station signal strength is exceptionally weak.

POWER SUPPLY: 115 volts, 60 cycles.

This model can also be operated on a 115 volt, 25 cycle power supply, changing the power transformers and several parts as indicated on the replacement parts on page 79.

FREQUENCY TUNING RANGES:

540 to 1520 K. C. 1.4 to 3.6 M. C. 6.0 to 18 M. C.

INTERMEDIATE FREQUENCY: 470 K. C.

PHILCO TUBES USED; Receiver—1232, R. F. Amplifier; 6J8G, Detector Oscillator; 78, I. F. Amplifier; 6Q7G, 2nd Detector, A. V. C., 1st Audio; two 42, Push-Pull Audio Output; 89, Rectifier.

Control Frequency Amplifier—78, 6J7G, 6H6G, 2A4C.

Wireless Remote Control—Type 30 tube.

AUDIO OUTPUT: 7 Watts.

CABINET DIMENSIONS:

	Height	Width	Depth
Model 40-215	38"	30"	15 1/2"
Model 40-217	36 1/4"	35"	14 1/4"

The procedure for adjusting the Wireless Remote Control for reception of stations will be found on page 70.

ALIGNING OF COMPENSATING CONDENSERS EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a calibrated signal generator such as Philco Model 077 is required. This signal generator covers a frequency range of 540 to 36,000 K. C.

(2) **Aligning Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum

tube voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the grid of the 78 I. F. tube. The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and screen terminals of one of the 42 tubes. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the R. F. and I. F. compensators in the order as shown in the tabulation

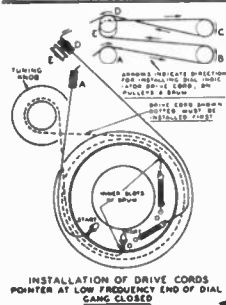
below. Locations of the compensators are shown in Fig. 5, page 80. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Signal Generator: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to the grid of the tubes. The ground or low side of the signal generator is connected to the chassis of the receiver.

When aligning the R. F. padders a loop antenna 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. Do not remove the receiver loop from the cabinet. It is necessary when adjusting the padders, that the receiver be left in the cabinet.

RECEIVER CIRCUIT ADJUSTMENTS — Models 40-215, 40-217

Operation	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 I. F. Grid	470 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	41A, 41B	Turn Out 38B Full
2	6J8G Det. Osc. Grid	470 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	38A, 38C, 38B	Note A
3	Use Loop on Generator	18.0 M. C.	18.0 M. C.	Vol. Max. Range Switch "Short Wave"	29B, 2A	Note C, Note D 2A on SW Loop
4	Use Loop on Generator	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcat"	29, 8A	Note A
5	Use Loop on Generator	580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	30	Rollgang
6	Use Loop on Generator	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcat"	29	
7	Use Loop on Generator	3.5 M. C.	3.5 M. C.	Vol. Max. Range Switch "Police"	29A, 8	Note B



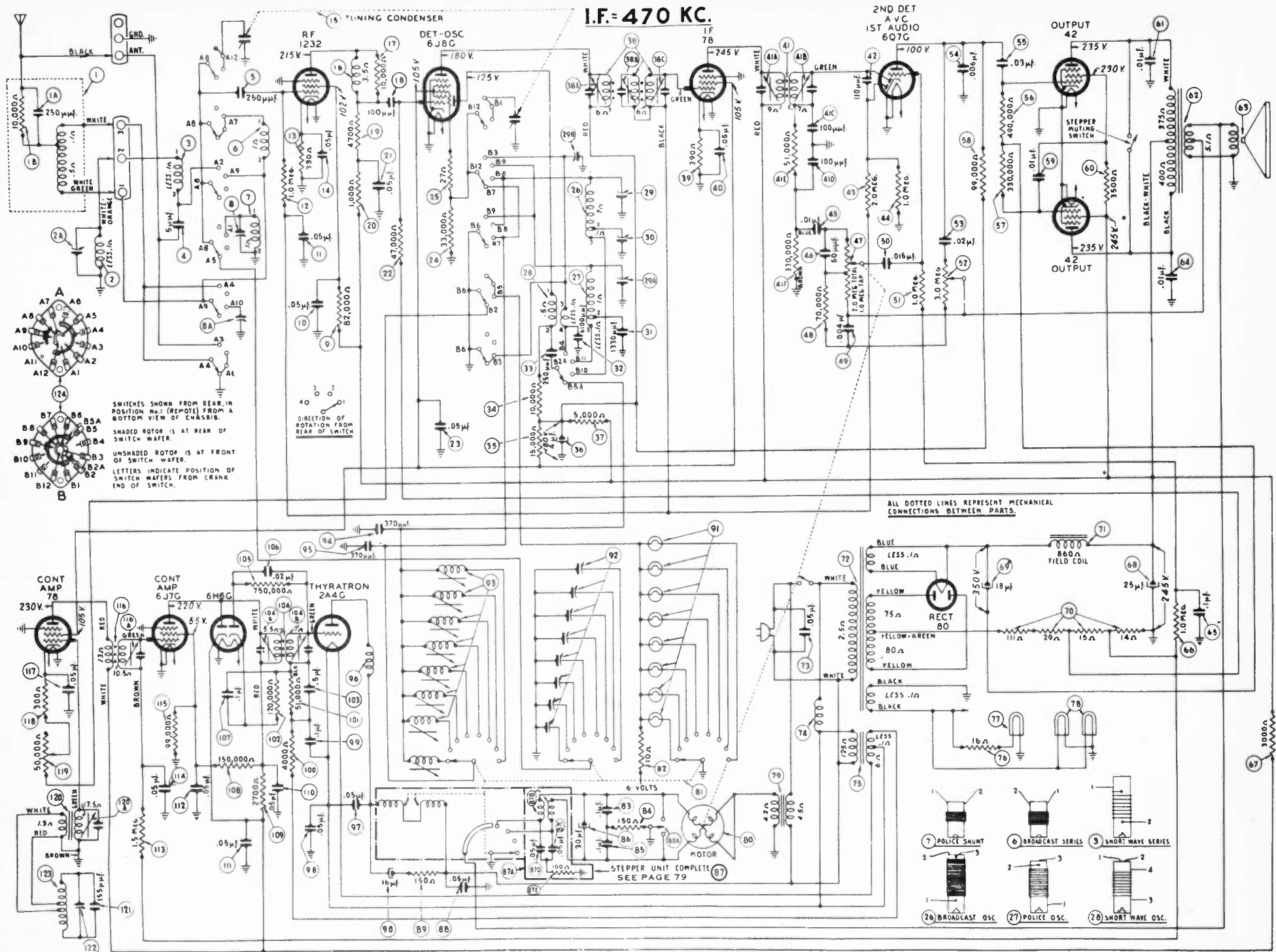
NOTE A — DIAL CALIBRATION: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable and dial pointer is shown in Fig. 1.

NOTE B—See page 80 for Wireless Remote Control Amplifier adjustments.

NOTE C—If two peaks (signals) are observed on the aligning meter when adjusting the oscillator padder No. 29B, tune the padder to the second peak from the maximum capacity position (screw all the way in).

NOTE D—If two peaks (signals) are observed on the aligning meter when adjusting the loop padder 2A, tune the padder to the first peak signal from the maximum capacity position (screw all the way in). When adjusting the padders to this first peak roll the tuning condenser (rock) slightly back and forth to obtain the maximum readings on the aligning meter.

← FIG. 1. DIAL POINTER AND CABLE ARRANGEMENT.



SCHEMATIC DIAGRAM MODELS 40-215RX AND 40-217RX

MODELS 40-215 and 40-217

ADJUSTMENT OF WIRELESS REMOTE CONTROL CIRCUITS

ADJUSTING CONTROL FREQUENCY AMPLIFIER

The wireless remote control models are shipped with 5 different control frequencies which range from 350 to 400 K. C. These frequencies are identified by code numbers appearing on the serial number ticket and on the rear of the chassis. The code numbers and frequencies are as follows:

Code 5.....355 K. C. Code 7.....375 K. C.
Code 6.....367 K. C. Code 8.....383 K. C.
Code 9.....395 K. C.

The purpose of the different control frequencies is to prevent interaction between two or more wireless remote control models which are on the same floor or exceptionally close together. When several wireless remote control models are to be located close together, it will be necessary to use different control frequencies. These frequencies should be 20 K. C. apart. For example, if three models are to be operated at the same time and are closely situated, it will be advisable to adjust the control frequency of the first set to 355 K. C., the second set to 375 K. C., and the third set to 395 K. C.

In order to realign or change the control frequency of these models, the following equipment is required:

1. Philco Model 077 signal generator with a loop attached to the output terminal. (A few turns of wire 12 inch in diameter).
2. Philco wireless remote control aligning adapter. Part No. 45-2769.
3. Philco aligning screw driver, Part No. 45-2610.

With this apparatus the control frequency is adjusted as follows:

1. Remove the 2A4G control tube from its socket and replace with the aligning adapter. Connect the red lead of the aligning adapter to the positive terminal of the vacuum tube voltmeter. The black lead of the adapter is connected to the negative terminal of the vacuum tube voltmeter.
2. Remove the 78 control amplifier tube, its shield and the shield of the 6J7G tube. Apply power to the set and turn the range selector disc to "remote".

3. Attach the "high" side of the signal generator output through a .5 mfd. condenser to the grid of the 6J7G tube. Set the generator modulation control to "mod on" and turn the attenuator control about one-fourth on.

4. The control frequency to which the control amplifier is tuned can now be determined by tuning the signal generator between 350 and 400 K. C. When the signal generator is tuned to the control frequency, the vacuum tube voltmeter will show maximum deflection. If this frequency is to be used, leave the signal generator at this point or turn the indicator to any other frequency desired between 350 and 400 K. C.

5. After the control frequency has been found or changed, compensators (104A), (104B), are adjusted for maximum indication on the vacuum tube voltmeter.

6. After adjusting this circuit, replace the 78 tube and shields in their sockets and remove the signal generator lead from the grid of the 6J7G tube.

7. Place the small loop mentioned above into the "high" and "ground" of the signal generator output terminals and place the signal generator near the secondary inductor loop in the bottom of the cabinet. When doing this, do not disturb the setting of the signal generator indicator. Turn the sensitivity control located on the right rear of the chassis toward the position marked "extreme" then adjust compensators (116A), (120A), for maximum reading on the vacuum tube voltmeter.

8. Next adjust the secondary inductor loop compensator (122) located in the bottom of the cabinet. This compensator is encased in a cardboard container that is attached to one corner of a loop. Extreme care should be used in adjusting the compensator to the exact point of resonance as the secondary inductor is a very sharply tuned circuit.

9. If the vacuum tube voltmeter pointer goes off scale when adjusting the compensators, turn the attenuator control of the signal generator toward the "off" position. After these compensators are adjusted to maximum, the control amplifier is tuned to the frequency selected.

ADJUSTING WIRELESS REMOTE CONTROL UNIT

The wireless remote control unit is now adjusted to the control frequency of the amplifier as follows:

1. Turn off the signal generator, then dial any one of the stations indicated on the remote control unit by pulling the selector to the stop position; release the selector and at the same time press the stop down and hold it in this position.

2. Now bring the wireless remote control unit close to the receiver. Using a padding wrench, Philco Part No. 3164, tune the compensator (128) Fig. 5, located on the bottom of the remote control unit until a maximum voltage reading is indicated on the vacuum tube voltmeter. When tuning this compensator, it should be done very slowly so as not to pass over the frequency to which the control amplifier is tuned.

3. After adjusting the compensator with the sensitivity control on the receiver in the "extreme" position, the remote control unit is adjusted for maximum sensitivity by setting the sensitivity control in the "near" position and placing the remote control unit a few feet away from the receiver. The compensator (128) Fig. 5, is then adjusted again for maximum voltage reading of the vacuum tube voltmeter.

4. After making these adjustments, remove the aligning adapter from the socket and replace the 2A4G tube. The wireless remote control unit should now be adjusted to the same frequency as the control frequency in the receiver.

PRODUCTION CHANGES

When operating Models 40-215 and 40-217 on a 115 volt, 25 cycle, power supply, the volume control motor assembly, motor condenser and wave switch link must be changed in addition to the parts shown in the Replacement Parts list page 79. These changes are as follows:—

Sche. No.	115 Volt 25 Cycle Part No.
80	Motor Assembly (Volume Control) .....32-1152
86	Motor Condenser .....30-2377
	Wave Switch Link Assembly .....56-1295

In addition a resistor, Part No. 33-3368, is connected in series with the choke coil (96) and the stepper unit coil.

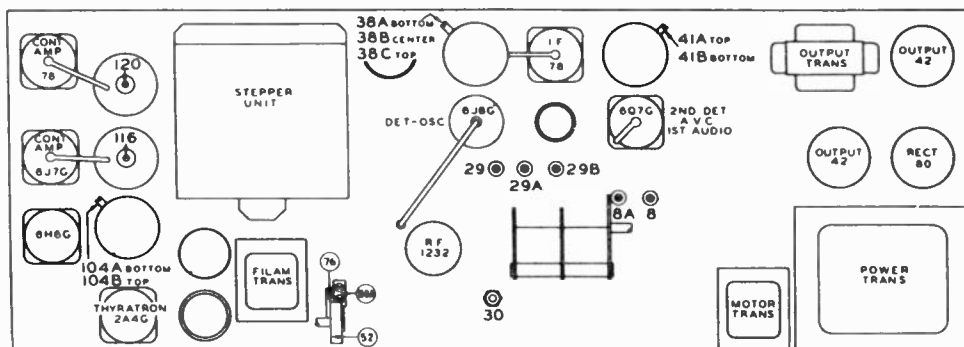


FIG. 5. LOCATIONS OF ALIGNING COMPENSATORS, MODELS 40-215, 40-217.

MODELS 40-501, Code 121; and 40-502, Codes 121-122

SPECIFICATIONS

Models 40-501, Code 121 and 40-502, Codes 121 and 122 are radio-phonograph combinations employing a five tube super-heterodyne receiver and a manually operated crystal pickup. These models are similar with the exception of the cabinets, phonograph motors, phonograph tone control and crystal pickups. The same radio receiver is used in each model.

The Phonograph will play 10 inch and 12 inch records manually and contains an automatic switch which starts the motor when the needle is placed on the record. An additional feature of the phonograph in the Model 40-502, Codes 121 and

122 (not incorporated in Model 40-501) is a tone control. This control is in the third position on the Radio-Phono Switch.

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

FREQUENCY TUNING RANGE: 540 to 1720 K. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: One watt.

PHILCO TUBES USED: 7A8, Converter; 7B7, I. F.; 7C6, Detector—First Audio—A. V. C.; 35A5, Audio Output, and a 35Z3, Rectifier.

ALIGNING COMPENSATORS

EQUIPMENT REQUIRED

Signal Generator, Philco Model 077 or 177 are recommended.
Aligning Indicator, Philco Model 027 and Model 028 Circuit Testers, which contain an audio output meter and vacuum tube voltmeter. Either the vacuum tube voltmeter or the audio

output meters may be used as an aligning indicator and are connected as given under "Connecting Aligning Instruments".

Tools: Fibre handle aligning screw driver. Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Audio Output Meter: If an aligning indicator of this type is used, connect it to the plate and screen terminals of the output tube.

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 B— of the receiver (Cathode 7C6).

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.

Signal Generator: When adjusting the I. F. padders, the high side of the signal generator is connected through a .004 mfd. condenser to the antenna section of the tuning condenser. Connect the ground or low side of the generator to the chassis. Reverse the power plug of the Receiver to eliminate hum.

The R. F. and oscillator padders are aligned with the high side of the signal generator connected to the antenna of the receiver through a 100 mmfd. condenser.

After connecting the aligning instruments, adjust the compensators as shown in the tabulation below. The first and second I. F. transformers are located on the top and bottom sections of the chassis respectively. The antenna and oscillator padders are located on the tuning condenser.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Ant. Section of Tuning Cond.	470 K. C.	540 K. C. Tuning Cond. Closed	Vol. Max.	11A, 11B 10A, 10B	
2	Ant. Ter.	1700 K. C.	1700 K. C.	Vol. Max.	5B	Note A
3	Ant. Ter.	1500 K. C.	1500 K. C.	Vol. Max.	5A	

NOTE A—DIAL CALIBRATION: The dial pointer is adjusted by closing the tuning condenser (plates fully meshed) and setting the pointer on the dot below 55 on the dial.

PRODUCTION CHANGES

MODELS 40-501, CODE 121; 40-502, CODES 121-122

Beginning with sets marked Run 2, resistor (6) 47000 ohms, Part No. 33-347339 was changed to 22000 ohms, Part No.

33-322339. This change was made to stabilize oscillator circuit. Output Transformer for Speaker Part No. 36-1469-1 listed as Part No. 32-8057 should be Part No. 32-8047.

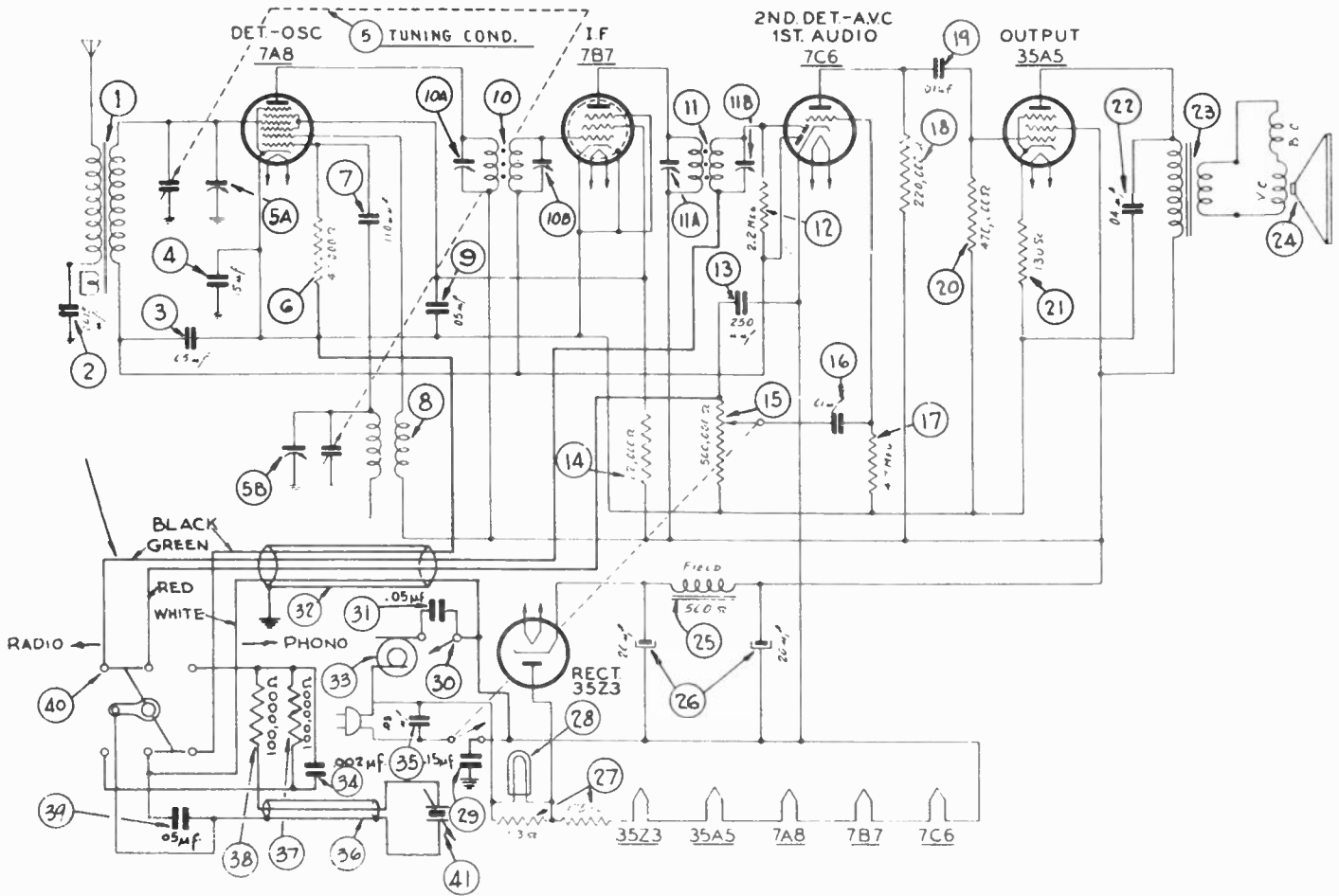
MODEL 40-502, Code 122

Motor (33) 115 volts, 60 cycle, Part No. 35-1216 changed to Part No. 35-1222. The turntable for the new motor is Part No. 35-3044.

MISCELLANEOUS PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
	Cabinet (40-501)	10404-A		Spring Drive Assembly	28-8751		Snap Fastener Dial Scale	56-1387
	Cabinet (40-502, Code 121)	10405-A		Speaker Assembly	36-1469		Screw (Motor Mounting)	
	Cabinet (40-502, Code 122)	10405-B		Sleeve (Motor Mounting)	28-2258		Models 40-501, 40-502, Code 121	W-599
	Dial Scale	27-5536		Sockets Luktal Tubes	27-6130		Model 40-502, Code 122	W-218
	Dial Pointer	56-1326		Socket (Pilot Lamp)	38-9825		Nut "T" (Motor Mounting)	W-1758
	Drive Drum	28-6662		Tone Arm Assem. Complete with Crystal			Screw (Chassis Mounting)	
	Drive Shaft Assembly	31-2355		(Models 40-501, 40-502, Code 121)	35-2042		Model 40-502, Code 122	W-2030
	Drive Cord	31-2358		Tone Arm Assembly			Models 40-501, 40-502, Code 121	W-2017
	Knob (Phono Switch)	27-4332		(Model 40-502, Code 122)	35-2064		Cover (Radio-Phono Switch)	
	Knob (Tuning and Volume)	27-4809		Turntable (Models 40-501, Code 121, 40-502, Code 121)	315-1000		Model 40-501	27-9426
	Power Cord	L-3199		Turntable (Model 40-502, Code 122)	35-1217		Model 40-502, Code 121-122	27-9435
							Nut (Radio-Phono Switch Mfg.)	W-684

MODELS 40-501, Code 121; and 40-502, Codes 121-122



SCH. No. 1
SCHEMATIC DIAGRAM MODELS 40-501 CODE 121

THE PHONOGRAPH PICKUP WIRING AS SHOWN IN THE ABOVE DIAGRAM IS FOR MODEL 40-501 CODE 121
THE PICKUP WIRING FOR MODELS 40-502 CODE 121-122 IS SHOWN IN FIGURE 1 & 2

REPLACEMENT PARTS

MODELS 40-501, CODE 121 AND
40-502, CODES 121 AND 122

SCH. No.	DESCRIPTION	PART No.
1	Antenna Transformer	32-3151
2	Condenser (.0015 mfd., 200 volts)	30-4555
3	Condenser (.05 mfd., 400 volts)	30-4519
4	Condenser (.15 mfd., 400 volts)	30-4505
5	Tuning Condenser	31-2354
5A	Antenna Compensator, Part of 5	
6	Resistor (47,000 ohms, Model 40-502)	33-347339
7	Condenser (110 mmfd.)	30-1130
8	Oscillator Transformer	32-3152
9	Condenser (.05 mfd., 200 volts)	30-4519
10	1st I. F. Transformer	32-3149
11	2nd I. F. Transformer	32-3150
12	Resistor (2.2 megohms)	33-522339
13	Condenser, Mica (250 mmfd.)	31-0033
14	Resistor (22,000 ohms, Model 40-502, Code 122)	33-322339
15	Volume Control	33-5306
16	Condenser (.01 mfd., 200 volts)	30-4479
17	Resistor (4.7 megohms, Model 40-502, Code 122)	33-547339
18	Resistor (220,000 ohms, Model 40-502, Code 122)	33-422339
19	Condenser, Tubular (.01 mfd., 400 volts)	30-4572
20	Resistor (470,000 ohms, Model 40-502, Code 122)	33-447339
21	Resistor (130 ohms)	33-113339
22	Condenser (.02 mfd., 400 volts)	30-4516
23	Output Transformer	
	For use with Speaker 36-1469-1	32-8057
	For use with Speaker 36-1469-9	32-8044
24	Cone Assembly for Speaker 36-1469-1	36-4115
	Cone Assembly for Speaker 36-1469-9	36-4113
25	Field Coil—Replace Speaker 36-1469	30-2382
26	Electrolytic Condenser (20-20 mfd.)	33-3367
27	Pilot Lamp	34-2068
29	Condenser (.15 mfd.)	33-3339
30	Motor Switch (40-501, 121, 40-502, 121-122)	42-1521

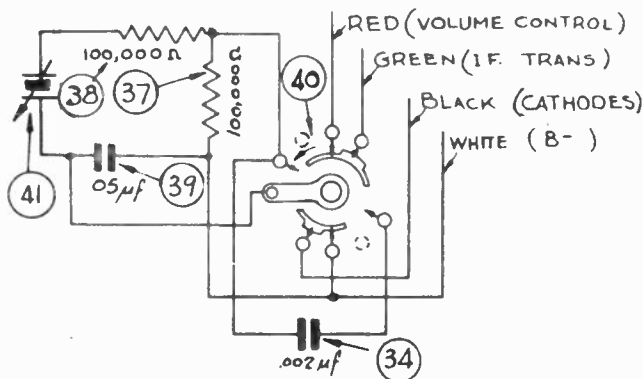


FIG. 1. PHONOGRAPH WIRING AS USED ON MODEL 40-502, CODE 121

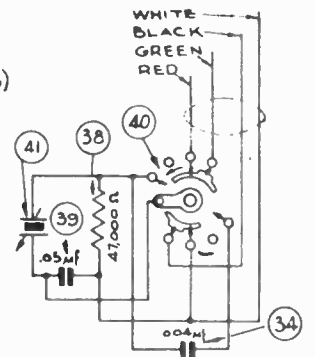


FIG. 2. PHONOGRAPH WIRING AS USED ON MODEL 40-502, CODE 122

SCH. No.	DESCRIPTION	PART No.
31	Condenser, Tubular (.05 mfd.)	30-4518
32	Radio-Phono Cable, Model 40-501	L-3192
	Radio-Phono Cable, Model 40-502, Code 121-122	L-3206
33	Motor (115 volts, 60 cycle)	
	40-501, Code 121, 40-502, Code 121	35-1158
	40-502, Code 122	35-1216
34	Condenser (.002 mfd., 40-501, 40-502, Code 121)	30-4579
	Condenser (.004 mfd., 40-502, Code 122)	30-4578
35	Condenser (.03 mfd., 400 volts)	30-4449
36	Pickup Cable	

SCH. No.	DESCRIPTION	PART No.
37	Resistor (100,000 ohms, 40-501, Code 121, 40-502, Code 121)	33-410339
38	Resistor (100,000 ohms, 40-501, 40-502, Code 121)	33-410339
	Resistor (47,000 ohms, 40-502, Code 122)	33-347339
39	Condenser, Tubular (.05 mfd., 400 volts)	30-4519
40	Radio-Phono Switch (Model 40-501)	42-1523
	(Model 40-502, Code 121-122)	42-1524
41	Pickup Crystal Cartridge	
	40-501, 40-502, Code 121	415-1027
	40-502, Code 122	35-2069

MODELS 40-503 and 40-506

SPECIFICATIONS

Models 40-503 and 40-506 are radio-phonograph combinations consisting of a 6 tube electric push button tuning superheterodyne radio receiver. The models are similar in design with the exception of cabinets and phonograph mechanisms.

Model 40-503 is assembled in a table model cabinet and consists of a semi-automatic crystal pickup mechanism which will play 10" or 12" records. The pickup is placed on the record automatically when the lid is closed.

Model 40-506 is assembled in a console type cabinet and consists of a manually operated crystal pickup and will play 10" or 12" records. An automatic switch is provided on this model that starts the phonograph motor when the pickup is lifted from the mounting.

The specifications and the instructions for alignment of the compensators for the radio receivers in these models are the same as Model 40-135. The power consumption and cabinet dimensions, however, differ from those of Model 40-135.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-506	34"	26 5/8"	14"
Model 40-503	13 1/8"	13 1/8"	13 1/2"

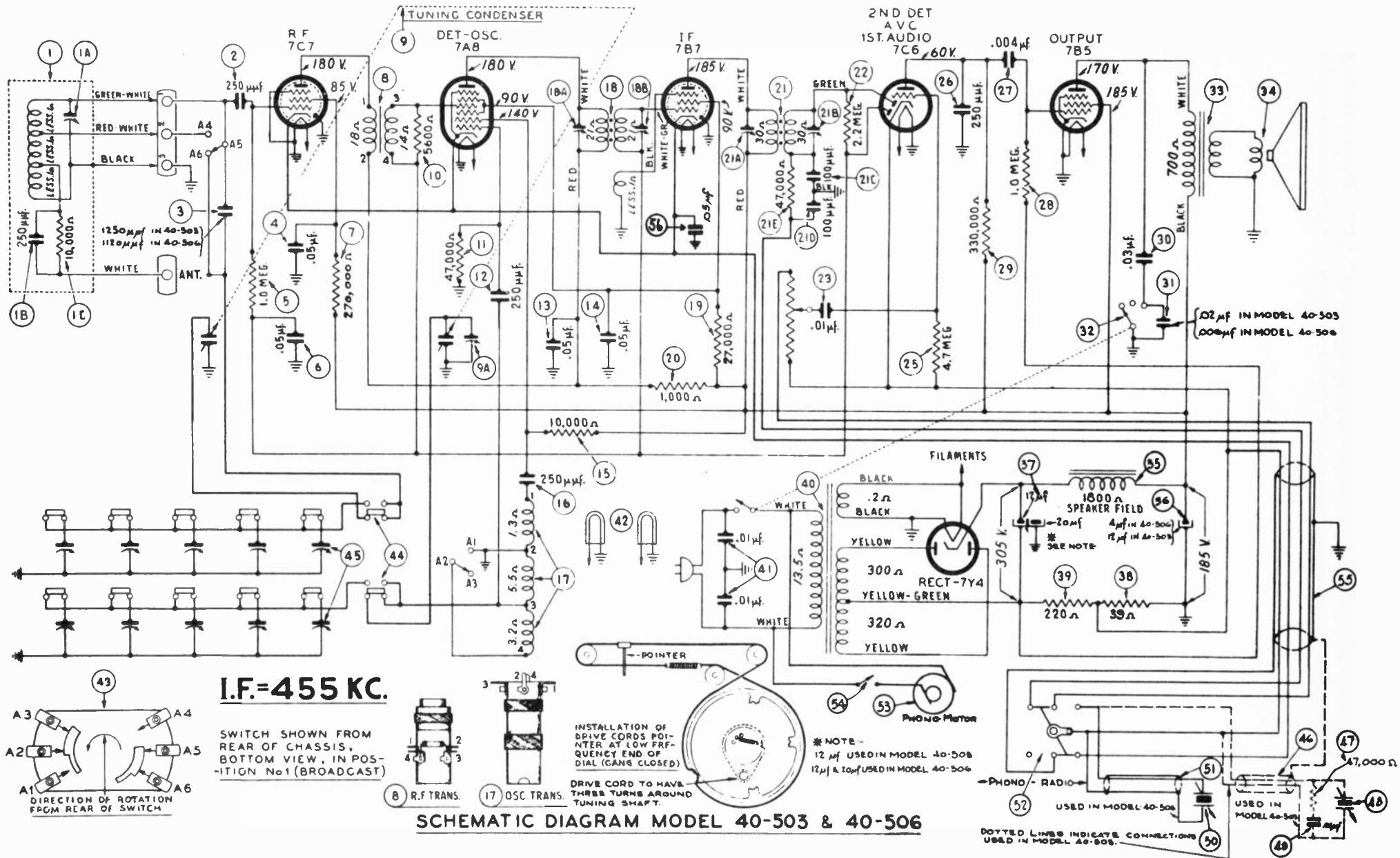
POWER CONSUMPTION:
Model 40-503—65 watts.
Model 40-506—65 watts.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly	38-9926	34	Cone & Voice Coil Assembly:			Cabinet (40-506)	10408A
1A	Compensator	31-6318		For Spkr. 36-1484-2, 40-503	36-4126		Cable (Power)	L-3199
1B	Mica Condenser (250 mmfd.)	61-0033		For Spkr. 36-1487-2, 40-506	36-4088		Cable (Speaker)	41-3430
1C	Resist. (10,000 ohms, 1/2 watt)	33-310339		For Spkr. 36-1487-3, 40-506	36-4128		Cable (Radio-Phono)	L-3217
2	Mica Condenser (250 mmfd.)	61-0033	35	Field Coil			Dial Scale	27-5506
3	Mica Condenser			(For 40-503, Replace Spkr.)	36-1484		Drive Cord (Pointer Drive)	31-2399
	(1250 mmfd., 40-503)	5886		(For 40-506, Replace Spkr.)	36-1487		Drive Cord (Cond. Drive)	31-2400
	(1120 mmfd., 40-506)	30-1140	36	Electrolytic Condenser			Drive Drum (Tuning)	38-9863
4	Tubular Condenser (.05 mfd.)	30-4518		(12 mfd., 475 V., 40-503)	30-2410		Escutcheon (Station Tubes)	28-5742
5	Resistor (1.0 meg., 1/2 watt)	33-510339		(4 mfd., 400 V., 40-506)	30-2411		Knobs (Vol., Tone., Wave Sw.)	27-4332
6	Tubular Condenser (.05 mfd.)	30-4518	37	Electrolytic Condenser			Knob (Pushbutton Switch)	27-4824
7	Resis. (270,000 ohms, 1/2 watt)	33-427339		(12 mfd., 475 V., 40-503)	30-2410		Motor (Phono) Model 40-503	35-2021
8	R. F. Transformer	32-3283		(12-20 mfd., 475 V., 40-506)	30-2437		Motor Con. Plug (Female)	41-3507
9	Tuning Condenser	31-2374	38	Resistor (39 ohms, 1/2 watt)	33-039339		Motor Connecting Plug	
10	Resistor (5600 ohms, 1/2 watt)	33-256339	39	Resistor (220 ohms, 1 watt)	33-122431		(Male, 40-503, 40-506)	27-4863
11	Resist. (47,000 ohms, 1/2 watt)	33-347339	40	Power Transformer			Motor Switch	42-1536
12	Mica Condenser (250 mmfd.)	61-0033		(115 V., 50-60 cycles)	32-8064		Pilot Lamp	34-2064
13	Tubular Condenser (.05 mfd.)	30-4518	41	Bakelite Cond. (.01-.01 mfd.)	3903-DG		Pilot Light Socket Assy.	38-9904
14	Tubular Condenser (.05 mfd.)	30-4518	42	Pilot Lamps	34-2064		Pointer	56-1532
15	Resist. (10,000 ohms, 1/2 watt)	33-310339	43	Wave Switch	42-1494		Plate Switch	28-2401
16	Mica Condenser (250 mmfd.)	61-0033	44	Pushbutton Switch	42-1528		Pickup Assembly (40-503)	35-2028
17	Oscillator Transformer	32-3212	45	Padder Strip	31-6315		Pickup Assembly (40-506)	35-2042
18	1st I. F. Trans. Assembly	32-3210	46	Pickup Cable (Model 40-503)	L-3198		Shaft (Tuning)	56-6052
19	Resistor (27,000 ohms, 1 watt)	33-327439	47	Resistor (47,000 ohms,			Spring (Cond. Drive Cord)	28-8751
20	Resistor (1,000 ohms, 1/2 watt)	33-210339		1/2 watt, Model 40-503)	33-347339		Spring (Pointer Drive Cord)	28-8953
21	2nd I. F. Trans. Assembly	32-3281	48	Crystal Cartridge			Spring (Tuning Shaft Assy.)	28-8955
22	Resistor (2.2 meg., 1/2 watt)	33-522339		(Pickup, Model 40-503)	415-1027		Speaker (40-503)	36-1484
23	Tubular Condenser (.01 mfd.)	30-4572	49	Condenser, Tubular (.01 mfd.)	30-4518		Speaker (40-506)	36-1487
24	Volume Control (.5 meg.)	33-5332	50	Crystal Cartridge			Switch (Motor)	42-1498
25	Resistor (4.7 meg., 1/2 watt)	33-547339		(Pickup, Model 40-506)	415-1027		Sockets	55-0575
26	Mica Condenser (250 mmfd.)	61-0033	51	Pickup Cable (Model 40-506)			Tab Kit (Station Call Letters)	40-6473
27	Tubular Cond. (.004 mfd.)	30-4578	52	Radio-Phono. Switch	42-1523		MOUNTING PARTS	
28	Resistor (1.0 meg., 1/2 watt)	33-510339	53	Motor (110 V., 60 cycles)	35-2021		Sleeve (Chassis Mtg.)	28-5274
29	Resis. (330,000 ohms, 1/2 watt)	33-433339	54	Motor Switch (40-506)	42-1536		Screw (Chassis Mtg., 40-503)	W-2030
30	Tubular Condenser (.03 mfd.)	30-4449		Motor Switch (40-503)	42-1498		Screw (Chassis Mtg., 40-506)	W-783
31	Tubular Condenser		55	Cable (Radio-Phono)	L-3217		Screw (Motor Mtg.)	W-599
	(.02 mfd., 40-503)	30-4481	56	Condenser (.05 mfd.)	30-4518		Screw (Pickup Mtg.)	W-2027
	(.006 mfd., 40-506)	30-4504					"T" Nut (Motor Mtg.)	W-1758
32	Tone Control & On-Off Switch	42-1520					Washer (Motor Mtg.)	W-1366
33	Output Transformer	32-8063					"C" Washer (Tuning Shaft)	28-2043

PRODUCTION CHANGES

Beginning with Run No. 3, Model 40-503, and Run No. 2, Model 40-506, the Second I. F. Transformer (21) changed from Part No. 32-3281 to 32-3382. This change made to prevent oscillation at the low end of the Broadcast Band.



THE VOLTAGES INDICATED WERE MEASURED WITH A 1000 OHMS PER VOLTMETER, PHILCO MODEL 027. LINE VOLTAGE 115 VOLTS A. C. NO SIGNAL BEING RECEIVED. SEE PAGE 51 FOR INSTRUCTIONS ON THE ALIGNMENT OF COMPENSATORS.

MODEL 40-504

SPECIFICATIONS

Model 40-504 is a portable battery operated combination phonograph and radio. The radio consists of a four tube super-heterodyne circuit covering a frequency range from 540 to 1600 K. C. A loop aerial is also built into the cabinet for portable use in addition to connections for an external aerial and ground for permanent and semi-permanent use.

The phonograph plays 10 and 12 inch records and consists of a crystal pick-up and a mechanically operated turntable motor (handwind).

INTERMEDIATE FREQUENCY: 470 K. C.

BATTERIES REQUIRED: "A" Philco Type P-94.

"B" Philco Type P-305

BATTERY DRAIN: "A" 210 M. A.; "B" 8.5 M. A.

ALIGNING PROCEDURE: The equipment required and method of connecting the aligning instruments is the same as that given for Model 40-81 on page 40. With this equipment connected to the radio, adjust the padders as given in the following tabulation:

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Cont. Max.	12A, 11B, 11A	Note C
2	Ant. & Grd. Terminals	400 ohms	1550 K. C.	1550 K. C.	Vol. Cont. Max.	2B, 2A	Note B Note C

NOTE A—The "Dummy Antenna" consists of a condenser or resistor connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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: Turn the tuning condenser to maximum capacity (plates fully meshed). With tuning condenser in this position set the pointer to the small "black dot" at the low frequency end of the dial scale.

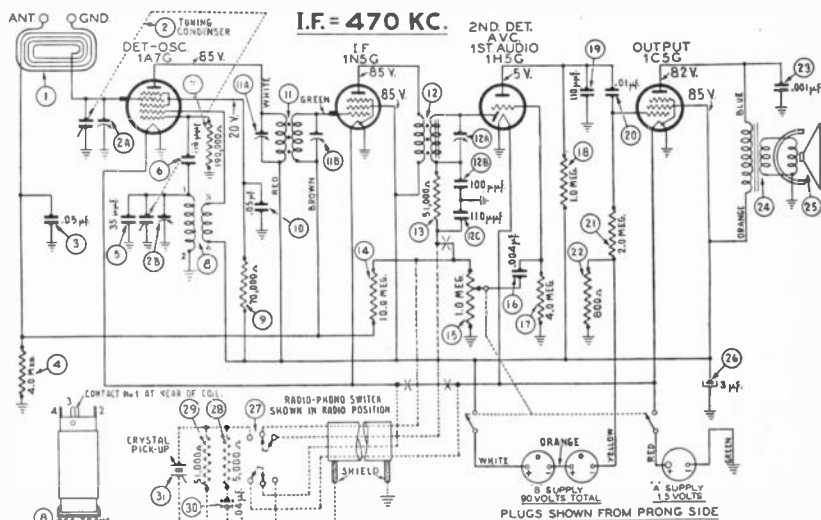
NOTE C—To adjust the I. F. compensators, remove the back

from the cabinet, which is held in place by four screws. The chassis is then taken out by removing the four screws and two corks underneath the cabinet, and the Tuning and Volume knobs. The I. F. compensators are located on top of the I. F. transformers.

When adjusting the Antenna (2A) and Oscillator (2B) compensators, the chassis must be assembled in the cabinet with the batteries and loop in place. The Signal Generator output lead with the "Dummy Antenna" is then connected to the terminals marked "Ant" and "Grd" underneath the cabinet. The antenna and oscillator compensators are then adjusted through the holes in the bottom of the cabinet.

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly	40-6421
2	Tuning Condenser	31-2322
3	Tubular Cond. (.05 mfd.)	30-4519
4	Resistor (4.0 meg., 1/2 watt)	33-540339
5	Mica Cond. (35 mmfd.) mounted at top of tuning condenser	30-1095
6	Mica Cond. (110 mmfd.)	30-1031
7	Resistor (190,000 ohms, 1/2 watt)	33-419339
8	Oscillator Trans.	32-3118
9	Resistor (70,000 ohms, 1/2 watt)	33-370339
10	Tubular Cond. (.05 mfd.)	30-4444
11	1st I. F. Trans. Assy.	32-3103
12	2nd I. F. Trans. Assy.	32-3176
12C	Mica Cond. (110 mmfd.)	30-1031
13	Resistor (51,000 ohms, 1/2 watt)	33-351339
14	Resistor (10.0 meg., 1/2 watt)	33-610339
15	Volume Control (1.0 meg.)	33-5310
16	Tubular Cond. (.004 mfd.)	30-4578
17	Resistor (4.0 meg., 1/2 watt)	33-540339
18	Resistor (1.0 meg., 1/2 watt)	33-510339
19	Mica Cond. (110 mmfd.)	30-1031
20	Tubular Cond. (.01 mfd.)	30-4572
21	Resistor (2.0 meg., 1/2 watt)	33-520339
22	Resistor (800 ohms, 1/2 watt)	33-180339
23	Tubular Cond. (.001 mfd.)	30-4201
24	Output Trans. (Spkr. No. 36-1451-3)	32-8036
25	Cone & Voice Coil Assy. (Spkr. No. 36-1451-3)	36-4090
26	Electrolytic Cond. (3 mf., 150 V.)	30-2359



SCHE. No.	DESCRIPTION	PART No.
27	Radio-Phono Switch	42-1501
28	Resistor (5000 ohms, 1/2 watt)	33-250339
29	Resistor (51,000 ohms, 1/2 watt)	33-351339
30	Tubular Cond. (.04 mfd.)	30-4119
31	Crystal Pick-up (less tone arm)	35-2033
	Pick-up and tone arm complete	35-2036
	Tone arm (less pick-up)	35-2037

MISCELLANEOUS PARTS

Description	Part No.
Bezel Window	27-5434
Cabinet	10382-A
Crank Handle	35-2039
Dial	31-2321
Drive Cord Assy.	31-2394
Escutcheon (knobs)	56-1252

SCHE. No.	DESCRIPTION	PART No.
	Grille Screen	56-1420
	Knobs (Volume and Tuning)	27-4331
	Knob (Radio-Phono Switch)	27-4332
	Motor (less turntable)	35-1162
	Needle Screw	218-1047
	Pointer (dial)	28-5185
	Pulley (Tuning Cond.)	28-6662
	Pulley (idler, drive cord)	28-5986
	Rubber Coupler (turntable shaft)	35-2040
	Screw (escutcheon mtg.)	W-2129
	Socket (6 prong)	27-6086
	Socket (7 prong)	27-6087
	Spring (drive cord)	28-8751
	Speaker	36-1451
	Tuning Shaft and Brkt. Assy.	31-2324
	Turntable	35-2038
	Washer (top rubber, motor mtg.)	27-4418
	Washer (bottom rubber, motor mtg.)	27-4307
	Washer (metal, coupling, turntable shaft)	315-1003

MODEL 40-507

RADIO-PHONOGRAPH

SPECIFICATIONS

Model 40-507 is a radio-phonograph combination consisting of a 6 tube electric push-button tuning superheterodyne radio receiver and an automatic record changer.

The specifications for the radio receiver are the same as those contained on page 53, for Model 40-145, with the exception of the power consumption, cabinet dimensions, and record changer, which are listed below.

Five of the electric push-buttons are used for reception of stations and one for dial tuning. The alignment of the R. F. and I. F. compensators and procedure for adjusting the electric push-buttons to

stations will also be found on page 53, for Model 40-145.

POWER CONSUMPTION: 70 watts.

CABINET DIMENSIONS:

34" high, 31 $\frac{5}{8}$ " wide, 17" deep.

The automatic record changer plays at one loading twelve 10" or ten 12" records. The service instructions for the automatic record changer will be found on page 123.

The replacement parts and schematic diagram for this model are listed below and on page 87.

Replacement Parts — Model 40-507

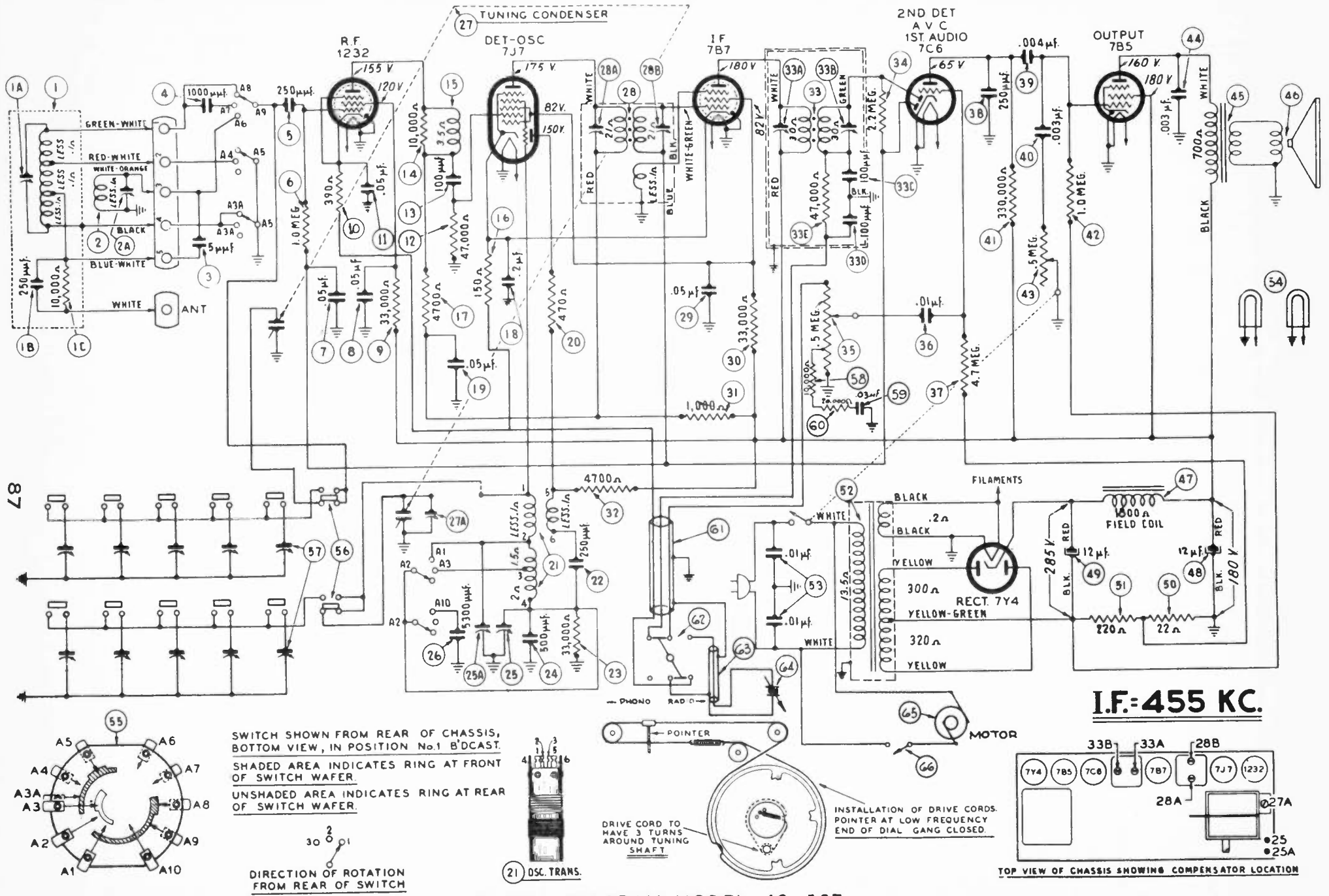
SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly (Broadcast) ..	38-9943	32	Resistor (4700 ohms, 1/2 watt)	33-247339	63	Pickup Cable	L-3195
1A	Compensator	31-6308	33	Second I. F. Trans. Assembly	32-3281	64	Crystal Pickup Cartridge	35-2030
1B	Mica Condenser (250 mmfd.)	61-0033	34	Resistor (2.2 meg., 1/2 watt)	33-522339	65	Motor	35-1205
1C	Resist. (10,000 ohms, 1/2 watt)	33-310339	35	Volume Control (.5 meg.)	33-5289	66	Switch (Off-On Motor)	42-1548
2	Loop Assembly (Short Wave)	38-9944	36	Tubular Condenser (.01 mfd.)	30-4572	65	Motor (115 V., 60 cycle)	35-1204
2A	Compensator	31-6320	37	Resistor (4.7 meg., 1/2 watt) ..	33-547339	MISCELLANEOUS PARTS		
3	Mica Condenser (5 mmfd.) ..	30-1097	38	Mica Condenser (250 mmfd.)	61-0033	Automatic Record Changer... 35-1180		
4	Mica Condenser (1,000 mmfd.)	30-1063	39	Tubular Cond. (.004 mfd.) ..	30-4578	Cable and Plug Assembly		
5	Mica Condenser (250 mmfd.)	61-0033	40	Tubular Cond. (.003 mfd.) ..	30-4580	(Power Supply)		
6	Resistor (1.0 meg., 1/2 watt) ..	33-510339	41	Resis. (330,000 ohms, 1/2 watt)	33-433339	Clip (Mtg. Osc. Coil)		
7	Tubular Condenser (.05 mfd.)	30-4518	42	Resistor (1.0 meg., 1/2 watt) ..	33-510339	Drive Cord Assy. (Pointer) ..		
8	Tubular Condenser (.05 mfd.)	30-4518	43	Tone Control (.5 meg.) and		Drive Cord Assy. (Tun. Cond.)		
9	Resist. (33,000 ohms, 1/2 watt)	33-333339		On-Off Switch	33-5333	Dial		
10	Resistor (390 ohms, 1/2 watt) ..	33-139331	44	Tubular Cond. (.003 mfd.) ..	30-4580	Escutcheon (Push-Buttons) ..		
11	Tubular Condenser (.05 mfd.)	30-4518	45	Output Transformer	32-8071	Escutcheon Pin		
12	Resist. (47,000 ohms, 1/2 watt)	33-347339	46	Cone and Voice Coil Assembly		Insul. Bushing (Drive Shaft)		
13	Mica Condenser (100 mmfd.)	30-1128		(Spkr. Part No. 36-1489-2) ..	36-4089	Knobs (Tuning, Tone,		
14	Resist. (10,000 ohms, 1/2 watt)	33-310339	47	Field Coil		Volume, Wave Switch)		
15	R. F. Transformer	32-3194		(Replace Spkr. Part No. 36-1489-2)		Knobs (Push-Buttons)		
16	Resistor (150 ohms, 1/2 watt)	33-115331	48	Elect. Cond. (12 mfd., 400 V.)	30-2410	Pilot Lamp Socket Assembly ..		
17	Resist. (4700 ohms, 1/2 watt) ..	33-247339	49	Elect. Cond. (12 mfd., 400 V.)	30-2410	Pointer		
18	Tubular Condenser (.2 mfd.)	30-4536	50	Resistor (22 ohms, 1/2 watt) ..	33-022331	Rubber Bushing		
19	Tubular Condenser (.05 mfd.)	30-4518	51	Resistor (220 ohms, 1 watt) ..	33-122431	(Tuning Condenser Drive) ..		
20	Resistor (470 ohms, 1/2 watt) ..	33-147339	52	Power Transformer		Spring (Tuning, Drive Cord) ..		
21	Oscillator Transformer	32-3195		(115 V., 50-60 cycles)	32-8068	Spring (Pointer, Drive Cord) ..		
22	Mica Condenser (250 mmfd.)	61-0033	53	Line Condenser (.01-.01 mfd.)	3903-ODG	Spring (Tuning Shaft Assy.) ..		
23	Resist. (33,000 ohms, 1/2 watt)	33-333339	54	Pilot Lamps	34-2064	Speaker		
24	Silver Mica Cond. (500 mmfd.)	30-1138	55	Wave Switch	42-1495	Sockets (Loktal Tubes)		
25	Compensator (Two Section) ..	31-6317	56	Push-Button Switch	42-1528	Tuning Shaft		
26	Mica Condenser (5300 mmfd.)	30-1134	57	Padding Strip	31-6316	Tuning Drive Drum Assembly ..		
27	Tuning Condenser	31-2375	58	Resist. (10,000 ohms, 1/2 watt)	33-310339	Tab (Dial)		
28	First I. F. Trans. Assembly ..	32-3210	59	Tubular Condenser (.03 mfd.)	30-4517	Tab (Television)		
29	Tubular Condenser (.05 mfd.)	30-4518	60	Resist. (20,000 ohms, 1/2 watt)	33-320339	Tab Kit		
30	Resist. (33,000 ohms, 1/2 watt)	33-333339	61	Radio-Phono Cable	L-3218	Washer (C Type, Tun. Shaft) ..		
31	Resistor (1,000 ohms, 1/2 watt)	33-210339	62	Radio-Phono Switch	42-1523			

PRODUCTION CHANGES

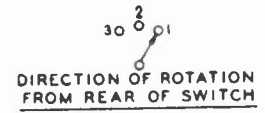
To prevent oscillation at the low end of the broadcast band the 2nd I. F. transformer (33) is changed from Part No. 32-3281 to Part No. 32-3382. This change is made in all sets beginning with run "3".

CORRECTION

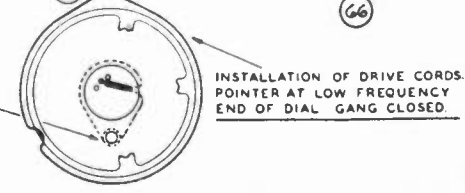
The motor (65) Part No. 35-1205 listed in the Parts List is for 110 volts, 25 cycle operation. Motor Part No. 35-1204 is used for 110 volts, 60 cycle operation.



SWITCH SHOWN FROM REAR OF CHASSIS, BOTTOM VIEW, IN POSITION No.1 B'CAST. SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER. UNSHADED AREA INDICATES RING AT REAR OF SWITCH WAFER.



DRIVE CORD TO HAVE 3 TURNS AROUND TUNING SHAFT



SCHEMATIC DIAGRAM MODEL 40-507

SEE PAGE 65 FOR INSTRUCTIONS ON THE ALIGNMENT OF COMPENSATORS.

THE VOLTAGES INDICATED WERE MEASURED WITH A 1000 OHMS PER VOLTMETER. PHILCO MODEL O27. LINE VOLTAGE 115 VOLTS A. C. NO SIGNAL BEING RECEIVED.

MODELS 40-508, 40-509 and 40-515

RADIO-PHONOGRAPH SPECIFICATIONS

Models 40-508 and 40-509 are radio-phonograph combinations consisting of an 8 tube electric push button tuning superheterodyne radio and an automatic record changer. The same radio receiver is used in each model. The automatic record changer and cabinet, however, are different.

Model 40-508 employs an improved type automatic record changer, Philco Part No. 35-1180, which plays twelve 10" records or ten 12" records at one loading. Service information on the mechanical adjustments of this record changer will be found on pages 123 to 126. The electrical connections to the receiver are shown on the schematic diagram on page 89.

Model 40-509 incorporates the Philco Inter-Mix Record Changer Part No. 35-1176. This record changer plays fourteen 10" and 12" records intermixed, or fifteen 10" or thirteen 12" records at one loading. Service information for the mechanical adjustments of this record changer will be found on page 119.

The radio receiver of these models contains 8 electric push buttons; 6 of the electric push buttons are used for reception of stations, one for television sound and one to switch to dial tuning.

The adjustment procedure of the R.F. and I.F. compensating condensers in addition to the procedure for adjusting the electric push buttons to radio stations will be found on pages 9 and 65.

In addition, the Philco Built-In Super Aerial System is included in these models. This system eliminates an outside aerial and reduces local static interference to a minimum. Included in the Built-In Super Aerial System is a statically shielded loop for broadcast band reception and a shortwave

receiving loop. A feature of the built-in broadcast band statically shielded loop is that it may be turned to the position in which it picks up a minimum amount of interference or if interference is not present, the loop may be set in the position where best reception is obtained. Outside aerial connections are also provided for remote localities where signal strength is weak.

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

POWER CONSUMPTION:

Model 40-508—90 watts. Model 40-509—110 watts.

TUNING RANGES: Three

540 to 1550 K. C. 1.5 to 3.4 M. C. 6 to 18 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

AUDIO OUTPUT: 2 watts.

PHILCO TUBES USED: 1232, R. F.; 6J8G, converter; 7B7, I. F.; 7C6, second detector, first audio and A.V.C.; 7A4, phase inverter; two 42, audio output; 80, rectifier.

CABINET DIMENSIONS:	Height	Width	Depth
Model 40-508	35"	32 3/4"	16"
Model 40-509	34 1/2"	33 1/2"	17 1/2"

MODEL 40-515, CODE 121 SERVICE INFORMATION

Model 40-515, Code 121 is a radio phonograph combination similar to Model 40-509, Code 121, with the exception of the cabinets. The service information listed in Radio Service Bulletin No. 323A for Model 40-509, also applies to Model 40-515 P-W, and P-M with the part changes as follows:

Cable Assembly (Power from chassis to changer).....	41-3506
Cable and Plug (Speaker)	41-3515
Cable Assembly (Terminal Strip Changer)	41-3510
Cable and Plug Assembly (Motor)	41-3523
Cabinet Walnut (40-515 P-W)	10471A
Cabinet Maghogany (40-515 P-M)	10471B
Pilot Lamp Socket Assembly	38-9922

Replacement Parts — Models 40-508, 40-509

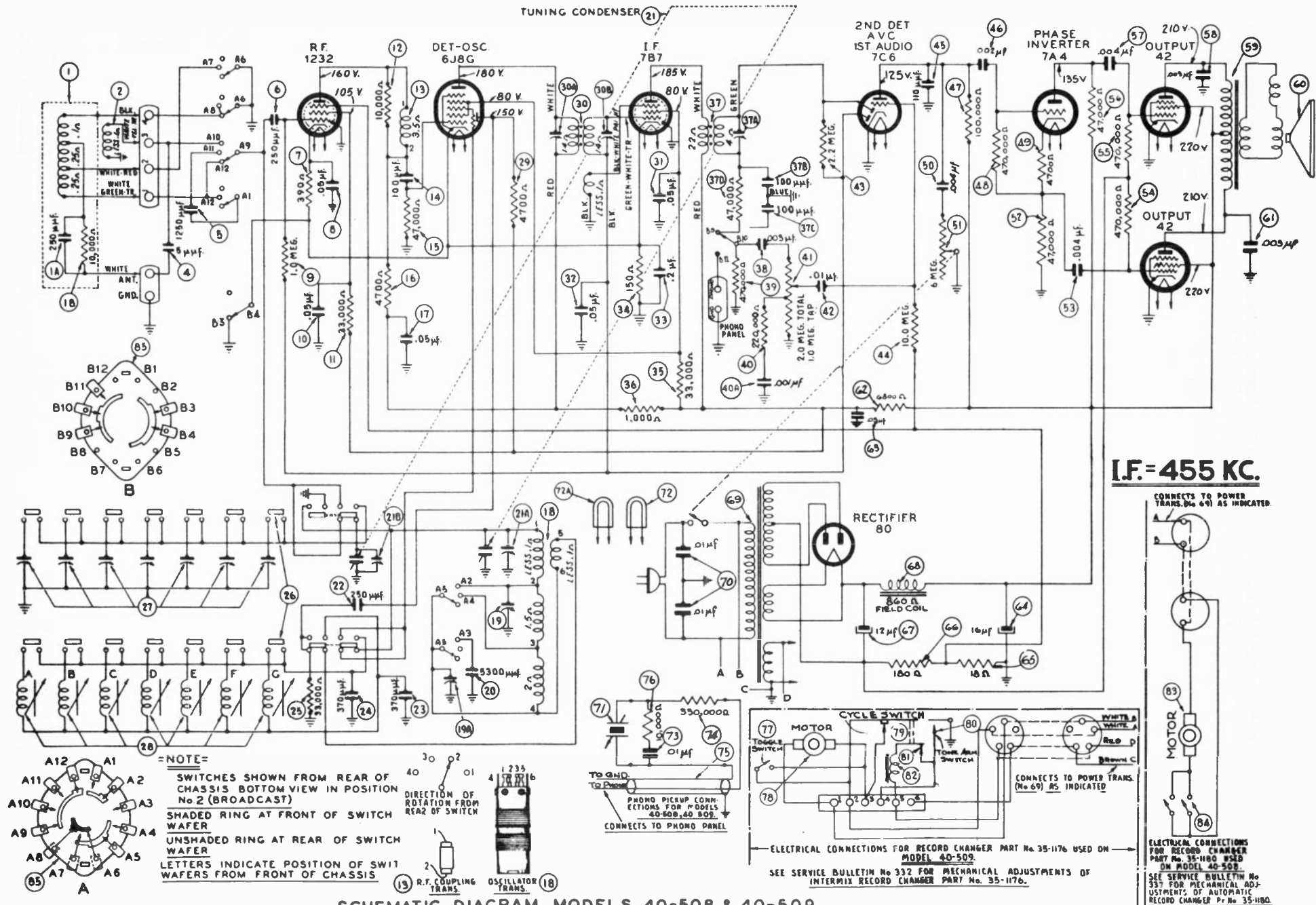
SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assy. (Broadcast)	38-9940	38	Tubular Cond. (.01 mfd.)	30-4479	80	Tone Arm Switch Contact Spring Blade	56-1663
1A	Mica Cond. (250 mmfd.)	61-0033	39	Resistor (470,000 ohms, 1/2 watt)	33-447339	80	Tone Arm Switch Adjusting Screw	W-2100
1B	Resistor (20,000 ohms, 1/2 watt)	33-310339	40	Resistor (220,000 ohms, 1/2 watt)	33-420339	81	Reject Switch (Part of 79)	
2	Loop Assy. (Short Wave)	30-4444	40A	Tubular Cond. (.001 mfd.)	30-4453	82	Reject Solenoid	42-1552
3	Compensator	31-6308	41	Volume Control (2.0 meg.)	33-5275	83	Phono Motor (40-508)	35-1204
4	Mica Cond. (5 mmfd.)	30-1097	42	Tubular Cond. (.01 mfd.)	30-4479	84	On-Off Switch (Phono Motor)	42-1548
5	Mica Cond. (1250 mmfd.)	5886	43	Resistor (2.2 megs, 1/2 watt)	33-522339	85	Wave Switch (Tuning Ranges)	42-1530
6	Mica Cond. (250 mmfd.)	61-0033	44	Resistor (10.0 meg., 1/2 watt)	33-610339			
7	Resistor (390 ohms, 1/2 watt)	33-139339	45	Mica Cond. (110 mmfd.)	30-1130			
8	Tubular Cond. (.05 mfd.)	30-4444	46	Tubular Cond. (.002 mfd.)	30-4579			
9	Resistor (1.0 meg., 1/2 watt)	33-510339	47	Resistor (100,000 ohms, 1/2 watt)	33-410339			
10	Tubular Cond. (.05 mfd.)	30-4123	48	Resistor (470,000 ohms, 1/2 watt)	33-447339			
11	Resistor (33,000 ohms, 1/2 watt)	33-333339	49	Resistor (4700 ohms, 1/2 watt)	33-247339			
12	Resistor (10,000 ohms, 1/2 watt)	33-310339	50	Tubular Cond. (.004 mfd.)	30-4456			
13	R. F. Coupling Trans.	32-3194	51	Tone Control and On-Off Switch	33-5314			
14	Mica Cond. (100 mmfd.)	30-1128	52	Resistor (47,000 ohms, 1/2 watt)	33-347339			
15	Resistor (47,000 ohms, 1/2 watt)	33-347339	53	Tubular Cond. (.004 mfd.)	30-4456			
16	Resistor (4700 ohms, 1/2 watt)	30-247339	54	Tubular Cond. (.003 mfd.)	30-4469			
17	Tubular Cond. (.05 mfd.)	30-4123	55	Resistor (470,000 ohms, 1/2 watt)	33-447339			
18	Oscillator Trans.	32-3195	56	Resistor (47,000 ohms, 1/2 watt)	33-347339			
19	Compensator (2 Section)	31-6298	57	Tubular Cond. (.004 mfd.)	30-4456			
20	Mica Cond. (5300 mmfd.)	30-1134	58	Tubular Cond. (.003 mfd.)	30-4469			
21	Tuning Cond. Assy.	31-2397	59	Output Transformer	32-8070			
22	Mica Cond. (250 mmfd.)	61-0033	60	Cone and Voice Coil Assy.	36-4089			
23	Silver Mica Cond. (370 mmfd.)	30-1110		(Spir. Part No. 38-1450-2)	36-4089			
24	Silver Mica Cond. (370 mmfd.)	30-1110	61	Tubular Cond. (.003 mfd.)	30-4469			
25	Resistor (33,000 ohms, 1/2 watt)	33-333339	62	Resistor (6800 ohms, 1/2 watt)	33-268339			
26	Push Button Switch	42-1489	63	Tubular Cond. (.05 mfd.)	30-4123			
27	Padder Strip (Push Buttons)	31-6299	64	Electrolytic Cond. (16 mfd., 300 V.)	30-2412			
28	Coil Strip Assy.		65	Resistor (18 ohms, 1/2 watt)	33-018351			
28A	Coil No. 1		66	Resistor (180 ohms, 1 watt)	33-118451			
28B	Coil No. 2	540-1060 K. C.	67	Electrolytic Cond. (12 mfd., 450 V.)	30-2413			
28C	Coil No. 3		68	Field Coil (Replace Spkr. Part No. 38-1480)	32-8069			
28D	Coil No. 4		69	Power Trans. (115 V., 50-60 cycles)	32-8069			
28E	Coil No. 5	650-1110 K. C.	70	Bakelite Cond. (.01-.01 mfd.)	3903-00			
28F	Coil No. 6		71	Crystal Cartridge (40-508, 40-509)	35-2030			
28G	Coil No. 7	920-1800 K. C.	72	Pilot Lamp (Chassis)	34-2210			
29	Resistor (4700 ohms, 1/2 watt)	33-247339	72A	Pilot Lamp (Cabinet)	34-2210			
30	1st I. F. Trans. Assy.	32-3245	73	Tubular Cond. (.01 mfd.)	30-4581			
31	Tubular Cond. (.05 mfd.)	30-4123	74	Resistor (330,000 ohms, 1/2 watt)	33-433339			
32	Tubular Cond. (.05 mfd.)	30-4519	75	Phono Pickup Cable (40-508)	41-3514			
33	Tubular Cond. (.2 mfd.)	30-4536	76	Phono Pickup Cable (40-509)	41-3511			
34	Resistor (150 ohms, 1/2 watt)	33-115339	76	Resistor (10,000 ohms, 1/2 watt)	33-310339			
35	Resistor (33,000 ohms, 1/2 watt)	33-333339	77	Toggle Switch (Model 40-509)	42-1503			
36	Resistor (1000 ohms, 1/2 watt)	33-210339	78	Phono Motor (Model 40-509)	35-1177			
37	2nd I. F. Trans. Assy.	32-3246	79	Parallel Switch Assy. (Model 40-509)	42-1555			

PRODUCTION CHANGES

MODELS 40-508, 40-509

Beginning with Run "5" receivers, the converter tube is changed from a type 6J8G octal to a 7J7 loktal. The tube sockets are changed from Part No. 27-6120 to Part No. 27-6129.

The 2nd I. F. transformer (37) beginning with Run "6" receivers was changed from Part No. 32-3246 to Part No. 32-3383.



SCHEMATIC DIAGRAM MODELS 40-508 & 40-509

SEE PAGE 65 FOR INSTRUCTIONS ON THE ALIGNMENT OF COMPENSATORS.

THE VOLTAGES INDICATED ON THE DIAGRAM WERE MEASURED WITH A 1000 OHMS PER VOLTMETER SUCH AS PHILCO MODEL 027. LINE VOLTAGE 115 A. C.

MODEL 40-510, Code 121

RADIO-PHONOGRAPH SPECIFICATIONS

Model 40-510 is a radio-phonograph combination assembled in a console cabinet consisting of a 12 tube, wireless remote control superheterodyne radio receiver and a Deluxe Inter-Mix Record Changer.

The specifications for this model are the same as those contained on page 70 for Model 40-205 with the exception of the power consumption, record changer, cabinet type. The wireless remote control circuit will automatically tune in seven broadcast stations and operate the automatic phonograph mechanism. The adjustment procedures for the R. F. and I. F. compensating condensers and wireless remote control circuits will be found on page 75 for Model 40-205. The adjustment procedure for reception of stations by wireless remote control is the same as that also covered on page 76 for Model 40-205 with the exception that No. 8 position is used for phonograph. This position is already connected and will not need adjustment.

POWER CONSUMPTION: 220 Watts.

CABINET DIMENSIONS: 38 1/8" High; 40 1/2" Wide; 21" Deep.

The Deluxe Inter-Mix Record Changer plays fourteen 10" and 12" records intermixed, fifteen 10" or thirteen 12" records at one loading. The record changer can be operated manually or from the wireless remote control circuit of the radio receiver. When using the wireless remote control to operate the phonograph, the Inter-Mix Record Changer can be started and stopped, records rejected and volume adjusted, from the remote control unit. The automatic record changer is selected by dialing "PHONO" position. This operates relay (112) which pulls "Radio-Phono" switch (109) to the "PHONO" position. Records are also rejected by dialing the "PHONO" position on the wireless remote control unit. Phono relay (112) is connected to No. 8 contact of the pilot lamp section of rotary switch (52). The service information for the Inter-Mix Record Changer will be found on page 119. Operating instructions for the phonograph mechanism is covered in the instructions Part No. 39-6408 supplied with each set.

The replacement parts and schematic diagram for this model are listed herein.

Replacement Parts — Model 40-510

SCHE. NO.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Resistor (1.0 meg., 1/2 watt)	33-510339	60F	Compensator No. 6	30-4519
1X	Tubular Cond. (.05 mfd.)	30-4519	60G	900-1470 K.C., Part of 60	30-433339
1Y	Resistor (330,000 ohms, 1/2 watt)	33-433339	60H	Compensator No. 7	30-1078
2	Mica Cond. (.200 mfd.)	30-1078		Compensator No. 8	30-4123
2X	Tubular Cond. (.05 mfd.)	30-4123	61	Kil Assy. (Pushbuttons)	32-3282
3	R. F. Trans.	32-3282	61A	Oscillator Coil No. 1	33-312339
3A	Resistor (12,000 ohms, 1/2 watt)	33-312339	61B	Oscillator Coil No. 2	30-1032
4	Mica Cond. (.250 mfd.)	30-1032	61C	Oscillator Coil No. 3	32-3278
5	Resistor (32,000 ohms, 1/2 watt)	33-323339	61D	Oscillator Coil No. 4	30-1032
5	Oscillator Trans.	32-3278	61E	Oscillator Coil No. 5	32-3042
7	Compensator	31-82039	61F	Oscillator Coil No. 6	30-1110
7X	Mica Cond. (15 mfd.)	30-1139	61G	Oscillator Coil No. 7	32-3041
8	Resistor (10,000 ohms, 1/2 watt)	33-310339	61H	Oscillator Coil No. 8	32-3041
9	Resistor (5,000 ohms, 2 watts)	33-250539		1170-1600 K.C.	
10	Resistor (13,000 ohms, 1 watt)	33-313439	62	Silver Mica Cond. (.370 mfd.)	30-1110
11	Electrolytic Cond. (4 mfd., 250 V.)	30-2334	62X	Silver Mica Cond. (.370 mfd.)	30-1110
12	Tubular Cond. (.05 mfd.)	30-4123	63	Spark Filter Assy.	32-3276
13	1st I. F. Trans. Assy.	32-3089	63A	Spark Filter Choke	32-3276
14	2nd I. F. Trans. Assy.	32-2645	63B	Resistor (100 ohms, 1/2 watt)	33-110339
15	Mica Cond. (110 mfd.)	30-1031	63C	Tubular Cond. (.05 mfd.)	30-4444
16	Resistor (2.0 meg., 1/2 watt)	33-510339	63D	Tubular Cond. (.05 mfd.)	30-4444
17	Resistor (1.0 meg., 1/2 watt)	33-510339	64	Bakelite Cond. (.05 mfd.)	3615-5C
18	Tubular Cond. (.01 mfd.)	30-4479	64	Resistor (150 ohms, Wirewound)	33-3362
19	Mica Cond. (50 mfd.)	30-1029	66	Electrolytic Cond. (16 mfd., 150 V.)	30-2387
20	Resistor (70,000 ohms, 1/2 watt)	33-370339	67	Choke Coil	32-1281
21	Volume Control (2.0 meg.)	33-5100	68	Tubular Cond. (.05 mfd.)	30-4123
22	Tubular Cond. (.02 mfd.)	30-4481	68	Tubular Cond. (.05 mfd.)	30-4123
23	Resistor (1.0 meg., 1/2 watt)	33-510339	69	Tubular Cond. (.1 mfd.)	30-4495
24	Tubular Cond. (.015 mfd.)	30-4358	70	Tubular Cond. (.05 mfd.)	30-4551
25	Tone Control (3.0 meg.)	33-5287	71	Resistor (100,000 ohms, 1/2 watt)	33-2275
26	Tubular Cond. (.02 mfd., 40 cycles)	30-4481	72	Resistor (750,000 ohms, 1/2 watt)	33-475339
27	Resistor (99,000 ohms, 1/2 watt)	33-399339	73	Tubular Cond. (.02 mfd.)	30-4516
28	Resistor (330,000 ohms, 1/2 watt)	33-433339	74	Resistor (4,000 ohms, 1/2 watt)	33-412339
29	Resistor (490,000 ohms, 1/2 watt)	33-449339	75	Tubular Cond. (.01 mfd.)	30-4455
30	Tubular Cond. (.03 mfd.)	30-4517	76	Tubular Cond. (.01 mfd.)	32-415339
30X	Tubular Cond. (.006 mfd.)	30-4445	78	Tubular Cond. (.05 mfd.)	30-4123
31	Tubular Cond. (.01 mfd.)	30-4501	79	Resistor (99,000 ohms, 1/2 watt)	33-399339
32	Resistor (350 ohms, 1/2 watt)	33-223339	80	Tubular Cond. (.05 mfd.)	30-4123
33	Tubular Cond. (.01 mfd.)	30-4501	81	Resistor (1.5 meg., 1/2 watt)	33-515339
34	Output Trans.	32-7997	82	Tubular Cond. (.05 mfd.)	30-4519
35	Cone and Voice Coil Assy. (Spkr. Part No. 36-1450-2)	36-4089	83	No. 2 Control Amp. Coil	32-3087
36	Tubular Cond. (.1 mfd.)	36-4111	84	Tubular Cond. (.05 mfd.)	33-130339
37	Resistor (3000 ohms, 1/2 watt)	30-4501	85	Tubular Cond. (.05 mfd.)	30-4444
38	Tubular Cond. (.1 mfd.)	33-203339	86	Resistor (300 ohms, 1/2 watt)	33-130339
39	Resistor (1.0 meg., 1/2 watt)	30-4499	87	No. 1 Control Amp. Coil	32-3086
40	Electrolytic Cond. (25 mfd., 300 V.)	33-510339	88	Silver Mica Cond. (.155 mfd.)	30-1121
41	Bias Resistor (Wirewound)	33-3361	89	Part of Tuning Condenser (95)	32-351339
42	Electrolytic Cond. (18 mfd., 475 V.)	30-2200	90	Part of Tuning Condenser (95)	32-3086
43	Field Coil (Replace Spkr. Part No. 36-1450)	32-7999	91	Wave Switch	42-1454
44	Power Trans. (115 V., 50-60 cycles)	32-7999	92	Tuning Cond.	31-2311
45	Power Trans. (115 V., 25-40 cycles)	32-8013	93	Loop Series Transformer	38-9882
46	Condenser (.05 mfd., 15 V. Plug)	32-1468	94	Mica Condenser (15 mfd.)	30-1139
47	Pilot Lamp (Bullseye)	34-2210	95	Phone-Motor (115 V., 60 cycle)	35-1177
48	Pilot Lamp Resistor (16 ohms, 1 watt)	33-016431	96	Reject Magnet (Record Changer)	42-1552
48X	Filament Trans. (115 V., 50-60 cycles)	32-7993	97	Cam Parallax Switch (Record Changer)	42-1555
49	Filament Trans. (115 V., 50-60 cycles)	32-8016	98	Adjust. Screw (Tone Arm Reject Switch)	W-2100
50	Choke Coil	32-1281	102	Terminal Panel Record Changer	33-415339
50	Pilot Lamps (Dial)	34-2064	103	Resistor (150,000 ohms)	56-1663
51	Motor	32-7990	104	Contact Blade (Tone Arm Reject Switch)	33-415339
52	Motor Trans. (115 V., 25-40 cycles)	32-8015	105	Resistor (150,000 ohms)	38-2030
53	Volume Control Motor Assy.	38-1151	106	Pick-up Cable (Record Changer)	41-3504
54	Rotary Switch	32-1468	106	Pick-up Cable (Chassis)	41-3406
55	Bias Resistor (Wirewound, 10 ohms)	33-3363	109	Remote Phono Radio Switch (Operates from Relay 112, mounted in chassis)	42-1526
56	Pilot Lamps (Station Indicator)	34-2064	110	Auxiliary Sw. (Mntd. on Range Sw. Cam)	42-1531
57	Resistor (150 ohms, 1/2 watt)	33-115339	111	Man. Phono Radio Sw. (Mntd. on Chngr.)	42-1533
58	Volume Control Switch (Motor Control)	32-8016	112	Relay (Part of 109, Operates Remote Phono Radio Switch 108)	
59	Tubular Cond. (.1 mfd.)	30-4499	113	Condenser (.05 mfd., Tubular)	30-4519
59X	Electrolytic Cond. (30 mfd., 30 V.)	30-2361			
60	Stepper Unit Complete	38-9889			
60	Compensator Strip (Pushbutton)	31-6264			
60	Compensator No. 1				
60B	Compensator No. 2				
60C	540-1030 K.C., Part of 60				
60D	Compensator No. 3				
60E	Compensator No. 4				
60F	670-1160 K.C., Part of 60				
60G	Compensator No. 5				

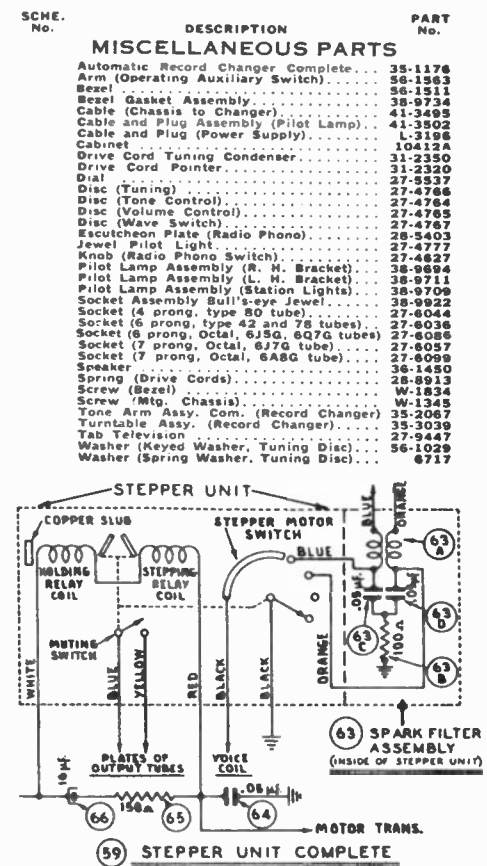
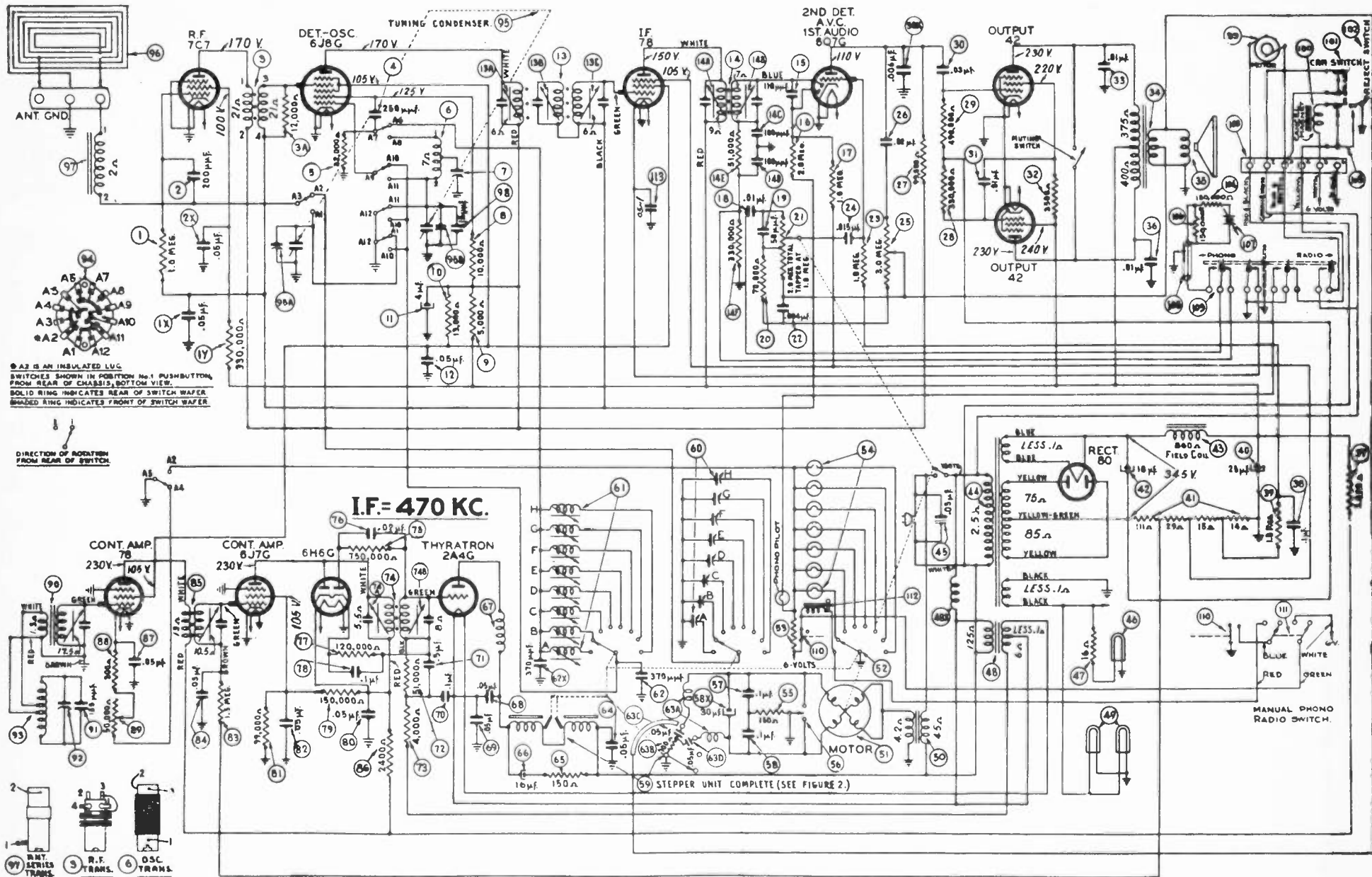
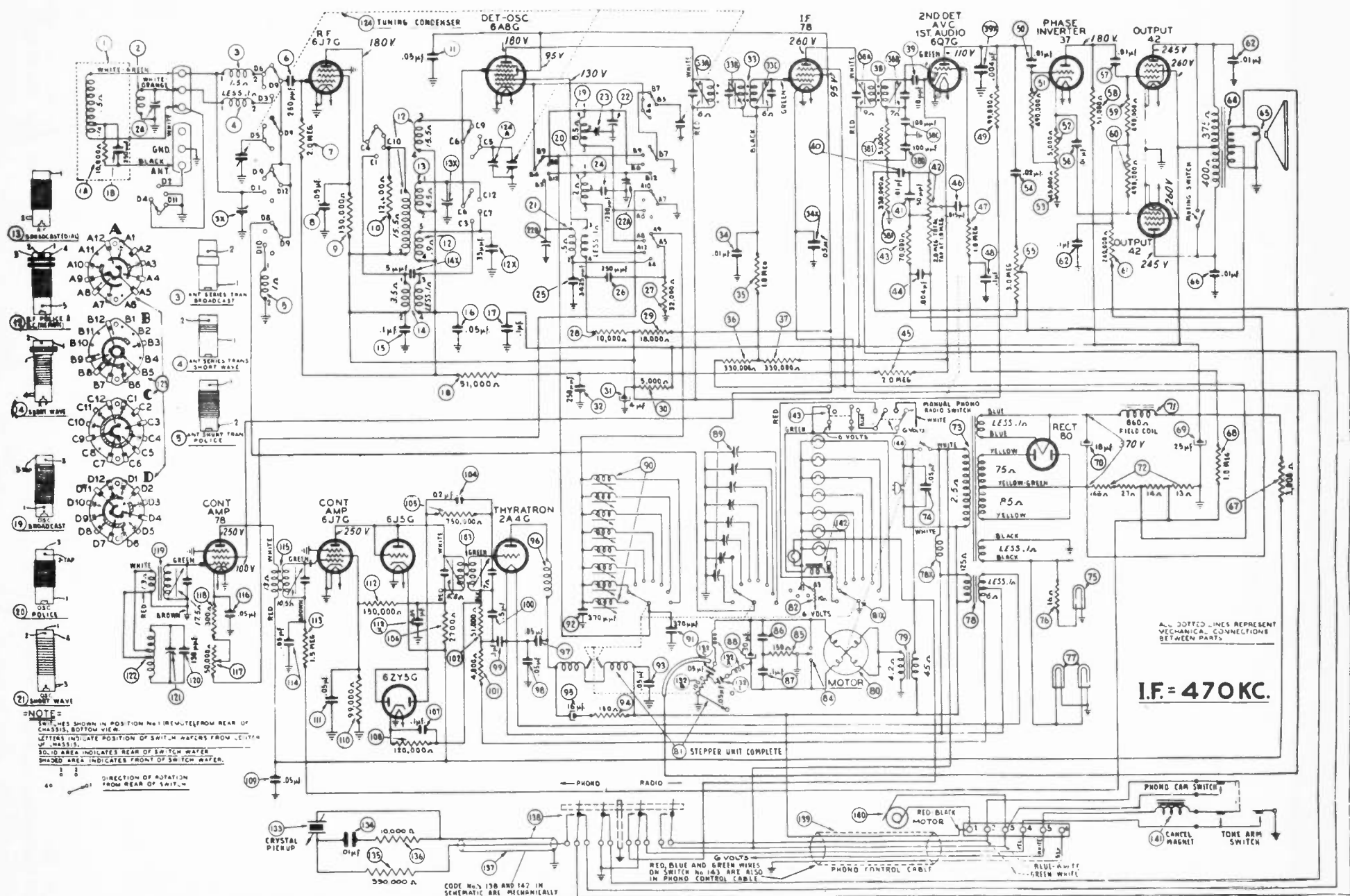


FIG. 2. INTERNAL WIRING OF STEPPER UNIT. NUMBERS CORRESPOND TO SCHEMATIC.



SCHEMATIC DIAGRAM MODEL 40-510

VOLTAGES INDICATED AT TUBE ELEMENTS WERE MEASURED WITH A PHILCO MODEL 027 CIRCUIT TESTER AND VACUUM TUBE VOLTMETER. LINE VOLTAGE 115 VOLTS A. C., NO SIGNAL BEING RECEIVED.



SCHEMATIC DIAGRAM MODEL 40-516 RADIO-PHONOGRAPH

MODELS 40-525, 40-526 and 40-527

RADIO-PHONOGRAPH

SPECIFICATIONS

MODEL 40-525

Model 40-525 is a combination radio-phonograph consisting of a six tube electric push-button tuning superheterodyne radio receiver and an automatic record changer. The radio receiver contains six (6) electric push-buttons; five (5) of the push-buttons are used for reception of stations and one (1) to select manual tuning (Dial). The Specifications with the exception of those listed below are the same as Model 40-135. The instructions for alignment of the R. F. and I. F. compensating condenser in addition to the procedure for adjusting the electric push-buttons will also be found on page 9.

The Automatic Record Changer, Philco Part No. 35-1180, plays twelve 10-inch records or ten 12-inch records at one loading. Service information for the mechanical adjustments of the changer will be found on page 123.

The circuit diagram and replacement parts are listed herein.

CABINET DIMENSIONS:

Height, 39 1/4". Width, 26 3/4". Depth, 16 3/4".
POWER CONSUMPTION: 60 watts.

MODEL 40-526, Code 121

Model 40-526, Code 121, is similar to Model 40-525, Code 121, with the exception of the cabinet and phonograph mechanism. A manually operated tone arm and pick-up is used in the Model 40-526. The same radio set is incorporated in both models.

The circuit diagram and replacement parts for Model 40-525, Code 121, apply also to Model 40-526. There are several part changes, however, which differ from those of Model 40-525. These parts are as follows:

MODEL 40-527, Code 121

Model 40-527, Code 121, is similar to Model 40-525, Code 121, with the exception of the cabinet, speaker and several parts. The service information for the Model 40-525, Code 121, also applies to Model 40-527, Code 121.

REPLACEMENT PARTS — Models 40-525, 40-526, 40-527

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Assembly	38-9897	36	Electrolytic Condenser (4 mfd., 400 V.)	30-2401		Spring (Cond. Drive Cord)	28-8751
1A	Compensator	31-6308	37	Electrolytic Condenser (12-20 mfd., 475 V.)	30-2437		Spring (Pointer Drive Cord)	28-8953
1B	Mica Condenser (250 mmfd.)	61-0033	38	Resistor (39 ohms, 1/2 watt)	33-039339		Spring (Tuning Shaft Assy.)	28-8955
1C	Resist. (10,000 ohms, 1/2 watt)	33-310339	39	Resistor (220 ohms, 1 watt)	33-122431		Speaker	36-1480
2	Mica Condenser (250 mmfd.)	61-0033	40	Power Transformer (115 V., 50-60 cycles)	32-8064		Sockets	55-0575
3	Mica Condenser (1120 mmfd.)	30-1140	41	Bakelite Cond. (.01-.01 mfd.)	3903-DG		Tab (Dial)	27-5826
4	Tubular Condenser (.05 mfd.)	30-4518	42	Pilot Lamps	34-2064		Tab (Television)	27-9450
5	Resistor (1.0 meg., 1/2 watt)	33-510339	43	Wave Switch	42-1494		Tab Kit (Station Call Letters)	40-6473
6	Tubular Condenser (.05 mfd.)	30-4518	44	Pushbutton Switch	42-1528			
7	Resis. (270,000 ohms, 1/2 watt)	33-427339	45	Padder Strip	31-6315			
8	R. F. Transformer	32-3283	46	Motor Switch	42-1548			
9	Tuning Condenser	31-2374	47	Motor (110 volts, 60 cycles)	35-1204			
10	Resistor (5600 ohms, 1/2 watt)	33-256339	48	Switch (Part of 46)				
11	Resist. (47,000 ohms, 1/2 watt)	33-347339	49	Crystal Cartridge (Pickup)	35-2030			
12	Mica Condenser (250 mmfd.)	61-0033	50	Pickup Cable Assembly				
13	Tubular Condenser (.05 mfd.)	30-4518		Switch Section	41-3508			
14	Tubular Condenser (.05 mfd.)	30-4518		Changer	318-1775			
15	Resist. (10,000 ohms, 1/2 watt)	33-310339	51	Radio-Phono Switch	42-1551			
16	Mica Condenser (250 mmfd.)	61-0033	52	Cable (Radio-Phono Switch)	L-3217			
17	Oscillator Transformer	32-3212	53	Condenser (.05 mfd.)	30-4518			
18	1st I. F. Trans. Assembly	32-3210						
19	Resistor (27,000 ohms, 1 watt)	33-327439						
20	Resistor (1,000 ohms, 1/2 watt)	33-210339						
21	2nd I. F. Trans. Assembly	32-3281						
22	Resistor (2.2 meg., 1/2 watt)	33-522339						
23	Tubular Condenser (.01 mfd.)	30-4572						
24	Volume Control (.5 meg.)	33-5332						
25	Resistor (4.7 meg., 1/2 watt)	33-547339						
26	Mica Condenser (250 mmfd.)	61-0033						
27	Tubular Cond. (.004 mfd.)	30-4578						
28	Resistor (1.0 meg., 1/2 watt)	33-510339						
29	Resis. (330,000 ohms, 1/2 watt)	33-433339						
30	Tubular Cond. (.006 mfd.)	30-4445						
31	Tubular Condenser (.02 mfd.)	30-4481						
32	Tone Control & On-Off Switch	42-1520						
33	Output Transformer	32-8063						
34	Cone & Voice Coil Assembly: For Speaker 36-1480-3	36-4086						
35	Field Coil (Replace Spkr. Part No. 36-1480)							

MOUNTING PARTS

Nail Escutcheon Mounting	W-1074
Nut Speaker Mounting	W-124FA3
Nut Phono Switch Mtg.	W-684FA4
Screw (Chassis Mounting)	W-2068
Screw (Speaker Plug)	W-1714
Washer (Chassis Mounting)	W-410FA3
Washer (Speaker Mounting)	27-7467
"C" Washer (Tuning Shaft)	28-2043

MODEL 40-526

21	2nd I. F. Transformer Assembly	32-3382
46	Motor Switch	42-1536
47	Motor (110 volts, 60 cycles)	35-1225
48	Switch (pick-up shorting—is not used in Model 40-526)	

49	Crystal Cartridge (Pick-up)	35-2069
	Rubber Washer (Motor Board Mtg.)	27-4201
	Rubber Bushing (Motor Board Mtg.)	27-4202
	Plug Motor Connecting (Motor Board)	27-4863
	Connector (Pick-up Lead)	27-7133
	Connector Housing (Pick-up Lead)	28-1270
	Sleeve (Motor Board Mounting)	28-2257
	Pick-up and Tone Arm Complete	35-2064
	Speaker	36-1480
	Motor Connecting Plug and Wires (Chassis)	41-3507
	Turntable	35-3045

MODEL 40-527, Code 121

34	Cone Assem. (for Speaker 36-1491-2)	36-4133
	Cabinet	10465A
51	Phono-Radio Switch	42-1523
	Speaker	36-1491
	Knob (Phone Off-On Switch)	27-4627
	Pilot Lamp Assmby (Cabinet)	38-9939
	Connector	27-7133
	Housing	28-1270
	Cable (Pick-up)	L-3195

PRODUCTION CHANGES

MODEL 40-525

RADIO-PHONOGRAPH

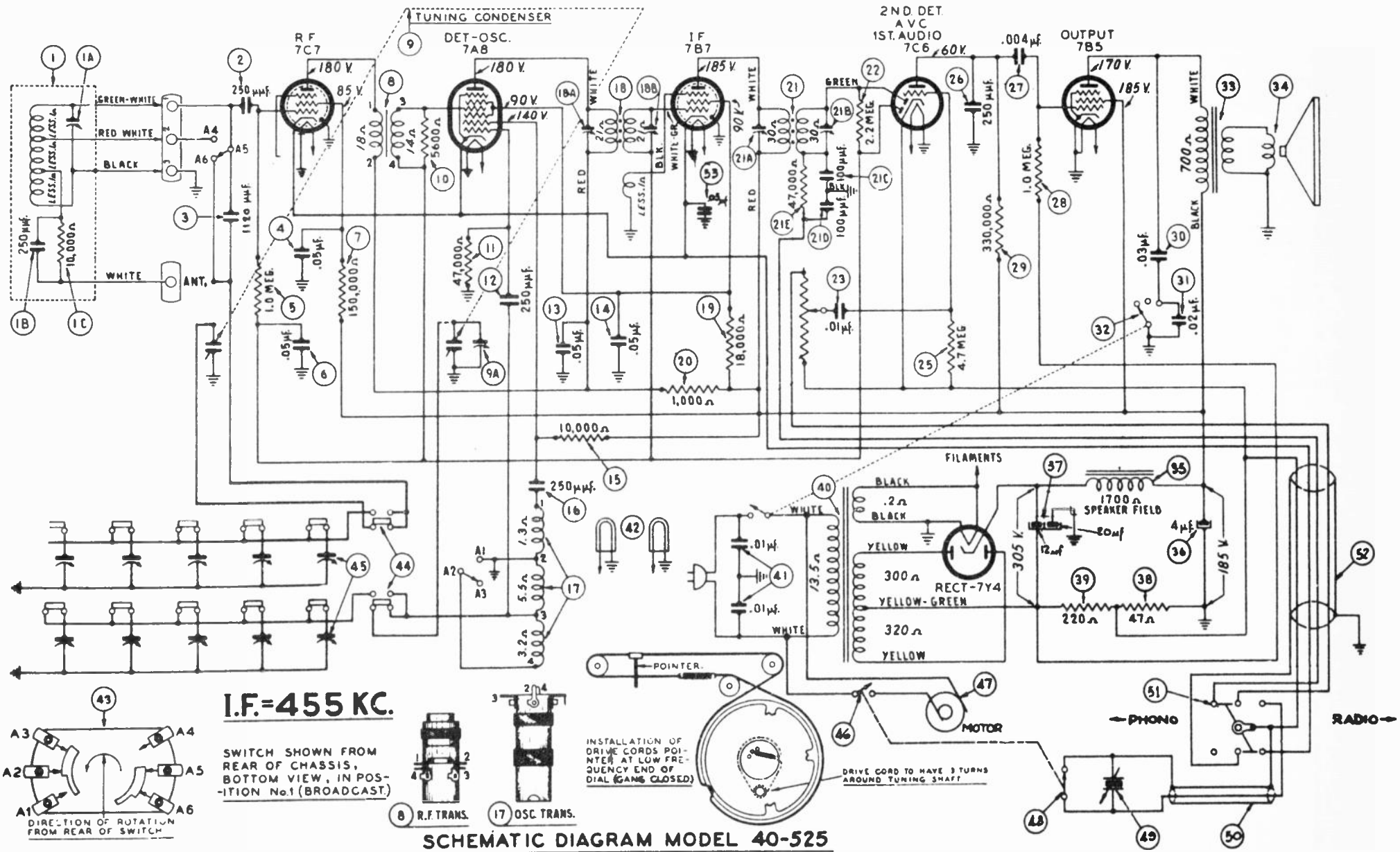
To prevent oscillation at the low end of the Broadcast Band, the 2nd I. F. Transformer (21) Part No. 32-3281 is changed to Part No. 32-3382.

To stabilize the R. F. circuit and prevent oscillation, the cathode of the 7C7 R. F. tube is removed from the common connection of the R. F., I. F. and converter cathodes and connected directly to the ground. See diagram on page 9. Sets with this change marked "Run No. 3".

MODELS 40-525, 40-526

The cabinet and speaker of these models were changed in later production. The part number changes are as follows:

	Early Production	Later Production
Cabinet Model (40-526)	10452B	10452D
Cabinet Model (40-525)	10452A	10452C
Baffle and Silk Assembly	40-6512	40-6582
Speaker	36-1480	36-1491
Cone and Voice Coil Assembly (For Speaker 36-1480-3)		36-4086
(For Speaker 36-1480-4)		36-4136
(For Speaker 36-1491-2)		36-4133
(For Speaker 36-1491-4)		36-4147



VOLTAGES INDICATED AT TUBE ELEMENTS WERE MEASURED WITH A PHILCO MODEL O27 CIRCUIT TESTER AND VACUUM TUBE VOLTMETER. LINE VOLTAGE 115 VOLTS A. C., NO SIGNAL BEING RECEIVED.

MODEL 40-710---PHILCO-TROPIC

SPECIFICATIONS

Philco-Tropic Model 40-710 is particularly recommended for locations where super reception of short wave is necessary and where the radio and the cabinet are exposed to extreme conditions. The receiver is specially constructed to withstand decay, spoilage and deterioration caused by extreme conditions of humidity, heat, salt air and cold; and to stand up under the most severe tropic weather conditions.

The chassis is heavily plated, making it impervious to salt air, rust and corrosion.

The various parts, such as coils, condensers, chokes and transformers, are treated with special wax that will withstand very high temperatures. In addition the wax is treated with chemicals which repel rodents and insects.

TYPE CIRCUIT: Model 40-710, code 121, is a five (5) tube A. C. or D. C. operated receiver employing a superheterodyne circuit with three tuning ranges for reception of Standard, Police and Shortwave Broadcast Stations. In addition other features of design are: Automatic Volume Control, Bass Compensation; and special temperature and humidity-proof compensators for reducing frequency drift to a minimum.

POWER SUPPLY: 100-130 or 200-260 volts A. C. or D. C. To operate the receiver on 200-260 volts A. C. or D. C. requires the use of a Ballast resistor, Part No. 33-3377 which can be obtained from your distributor. The Ballast resistor is inserted in the socket provided on the top of the chassis.

POWER CONSUMPTION: 120 volts, 35 watts; 240 volts, 70 watts.

TUNING RANGES:

530 to 1720 K. C. 2.3 to 7.4 M. C. 7.3 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 7A8E, Converter-Oscillator; 7B7E, I. F. Amplifier; 7C6, Second Detector, First Audio and A. V. C.; 35A5E, Audio Output; 35Z3, Rectifier.

AERIAL: To obtain maximum performance from this receiver, the Philco Safety Aerial, Part No. 40-6370, should be used.

CABINET DIMENSIONS:

Height, 8 1/4" Width, 11 1/2" Depth, 6 1/4"

ALIGNING COMPENSATING CONDENSERS

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver, a calibrated signal generator such as Philco Model 077 A. C. or Model 177 battery operated are required. These signal generators cover a frequency range of 540 to 36,000 K. C.

(2) **Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeters: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit with the Philco aligning adaptor, Part No. 45-2767, as follows:

Remove the 7C6 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 voltmeter to the black wire.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and

series terminals of the 35A5 tube. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

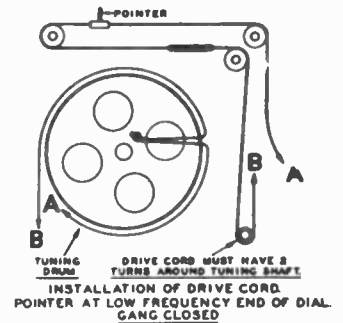


FIG. 1. DIAL CALIBRATION.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	7A8	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	23A, 19B, 19A	
2	Ant. & Chassis	400 ohms	20 M. C.	20 M. C.	Range Switch "S. W. 2"	18B, 18A	Note C
3	Ant. & Chassis	400 ohms	7.0 M. C.	7.0 M. C.	Range Switch "S. W. 1"	16A	Rollgang
4	Ant. & Chassis	200 mmfd.	1400 K. C.	1400 K. C.	Vol. Max. Range Switch "Brdcat"	16	Note B
5	Ant. & Chassis	200 mmfd.	580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	15	Rollgang Repeat Oper. 4

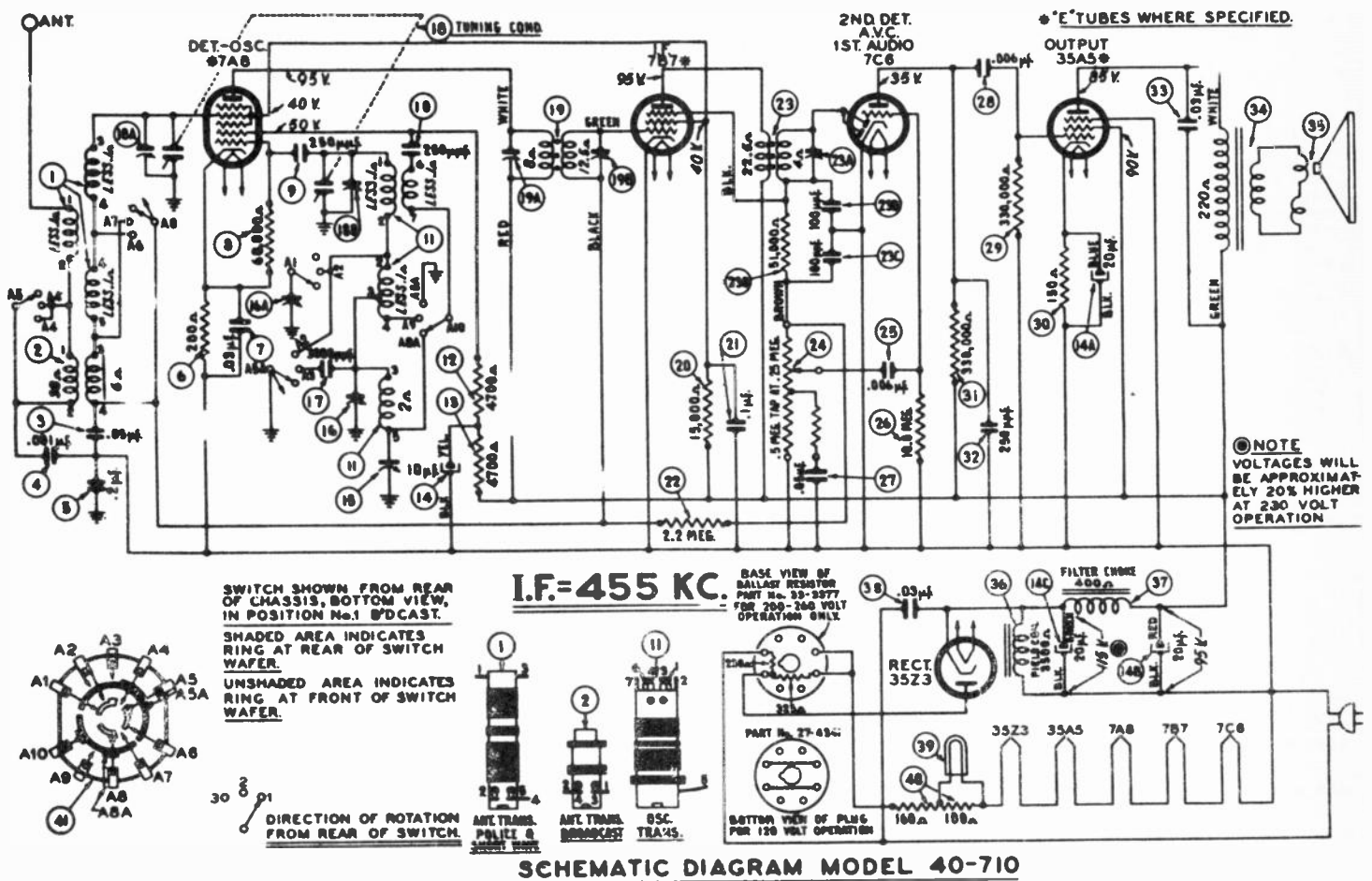
NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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 first mark on the left edge (low frequency end) of the broadcast scale.

NOTE C—When adjusting compensator (18B) be sure to tune in the fundamental signal (20 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be found by turning dial 910 K. C. below the fundamental signal, which will be 19,090 M. C.

MODEL 40-710---PHILCO-TROPIC



SCHEMATIC DIAGRAM MODEL 40-710

Replacement Parts — Model 40-710

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	
1	Ant. Trans. (Police, Short Wave)	32-3295	39	Pilot Lamp	34-2068E		Drive Cord Assy.	31-2415	
2	Ant. Trans. (Broadcast)	32-3166	40	Filament Resistor	33-3372		Knobs (Volume, Tuning, Wave Switch)	27-4604	
3	Tubular Cond. (.05 mfd.)	30-4609	41	Wave Switch	42-1834		Pointer	28-5201	
4	Tubular Cond. (.001 mfd.)	30-4601	MISCELLANEOUS PARTS					Pilot Lamp Assy.	38-9327
5	Tubular Cond. (.2 mfd.)	30-4894		Acetate Window	27-8370		Socket (Lektal Tubes)	27-6531	
6	Resistor (200 ohms, 1/2 watt)	33-120339		Ballast Resistor (230-260 V. operation)	33-3371		Socket (8 prong, Ballast Resistor)	27-6088	
7	Tubular Cond. (.03 mfd.)	30-4888		Changeover Plug (Volt., 115-130 V. oper.)	33-4347		Spring (Drive Cord)	28-8983	
8	Resistor (68,000 ohms, 1/2 watt)	33-368339		Cabinet	10313-B		Spring Clip (Mtg. Ant. Trans.)	28-5002	
9	Mica Cond. (250 mmfd.)	30-1119		Cable and Plug (Power Supply)	L-2289		Spring Clip (Mtg. Osc. Trans.)	28-5003	
10	Mica Cond. (250 mmfd.)	30-1119		Special Plug (Power Supply)	L-1367		Speaker	34-1486	
11	Oscillator Trans.	32-3396		Dial	27-8845		Tuning Drum	31-1283	
12	Resistor (4700 ohms, 1/2 watt)	33-247339					Tuning Shaft and Bracket Assy.	38-9888	
13	Resistor (4700 ohms, 1/2 watt)	33-247339							
14	Electrolytic Cond. (20,20,20,10 mf. 250V.)	30-2436							
15	Compensator (single)	31-6289							
16	Compensator (2 section)	31-6323							
17	Mica Cond. (3000 mmfd.)	30-1028							
18	Tuning Condenser	31-2410							
19	1st I. F. Trans. Assy.	32-3297							
20	Resistor (15,000 ohms, 1/2 watt)	33-318339							
21	Tubular Cond. (1 mfd.)	30-4896							
22	Resistor (2.2 meg., 1/2 watt)	33-822339							
23	2nd I. F. Trans. Assy.	32-2674							
24	Volume Control (.8 meg.)	33-8336							
25	Tubular Cond. (.006 mfd.)	30-4883							
26	Resistor (10.0 meg., 1/2 watt)	33-610339							
27	Tubular Cond. (.05 mfd.)	30-4810							
28	Tubular Cond. (.008 mfd.)	30-4610							
29	Resistor (330,000 ohms, 1/2 watt)	33-433339							
30	Resistor (180 ohms, 1/2 watt)	33-118339							
31	Resistor (330,000 ohms, 1/2 watt)	33-433339							
32	Mica Cond. (250 mmfd.)	30-1119							
33	Tubular Cond. (.03 mfd.)	30-4888							
34	Output Trans.	32-8095							
35	Gene and Voice Coil Assy. (Sptr. Part No. 36-1486-2)	36-4126							
36	Field Coil (Replaces Spkr. Part No. 36-1486)	36-1486							
37	Filter Choke	32-8073							
38	Tubular Cond. (.03 mfd.)	30-4820							

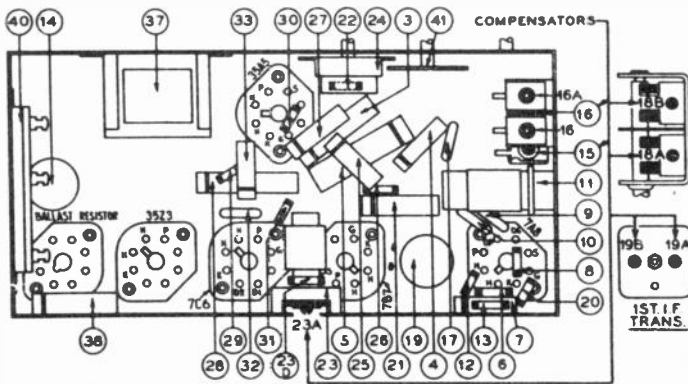


FIG. 2. PART LOCATIONS, UNDERSIDE OF CHASSIS.

MANY OF THE PARTS IN THIS PHILCO, SUCH AS CONDENSERS AND RESISTORS, ARE HELD TO MUCH CLOSER TOLERANCE THAN STANDARD REPLACEMENT PARTS. GENUINE PHILCO REPLACEMENT PARTS MUST BE USED TO OBTAIN SATISFACTORY PERFORMANCE OF THIS MODEL.

MODEL 40-715---PHILCO TROPIC

SPECIFICATIONS

Philco-Tropic Model 40-715 is particularly recommended for locations where super reception of short wave is necessary and where the radio and the cabinet are exposed to extreme conditions. The receiver is specially constructed to withstand decay, spillage and deterioration caused by extreme conditions of humidity, heat, salt air and cold; and to stand up under the most severe tropic weather conditions.

The chassis is heavily plated, making it impervious to salt air, rust and corrosion.

The various parts, such as coils, condensers, chokes and transformers, are treated with special wax that will withstand very high temperatures. In addition the wax is treated with chemicals which repel rodents and insects.

The cabinet is treated with a special sealing compound which protects it against moisture and heat.

TYPE CIRCUIT: Model 40-715, code 121, is a five (5) tube A. C. operated radio employing a superheterodyne circuit with three tuning ranges for reception of Standard, Police and Shortwave Broadcast Stations. Connections are also provided for attaching a high impedance Electric Phonograph pick-up. In addition other features of design are: Automatic Volume

Control; Three Point Tone Control; Bass Compensation; and special temperature and humidity-proof compensators for reducing frequency drift to a minimum.

POWER SUPPLY: 100-130 or 200-260 volts A. C. The voltage ranges are selected by inserting the changeover plug as indicated on top of the power transformer.

POWER CONSUMPTION: 40 watts.

TUNING RANGES:

530 to 1720 K. C. 2.3 to 7.4 M. C. 7.3 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 6J8EG, Converter-Oscillator; 78E, I. F. Amplifier; 75, Second Detector, First Audio and A. V. C.; 41E, Audio Output; 84, Rectifier.

AERIAL AND GROUND: To obtain maximum performance from this radio, the Philco Safety Aerial, Part No. 40-6370 should be used and a good ground connection to the nearest water pipe or any other good source.

CABINET DIMENSIONS:

Height, 12%. Width, 16%. Depth, 9%.

ALIGNING COMPENSATING CONDENSERS

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a calibrated signal generator such as Philco Model 077 A. C. or Model 177 battery operated are required. These signal generators cover a frequency range of 540 to 36,000 K. C.

(2) **Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the converter grid (6J8G). The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and

screen terminals of the 41 tube. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 1. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

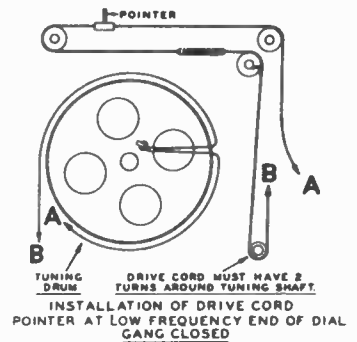


FIG. 1. DIAL CALIBRATION.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	6J8EG	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Tone Treble Range Switch "Brdcat"	24, 16B, 16A	
2	Ant. & Grnd.	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Tone Treble Range Switch "Brdcat"	9A, 15A	Note B
3	Ant. & Grnd.	200 mmfd.	580 K. C.	580 K. C.	Vol. Max. Tone Treble Range Switch "Brdcat"	11	Roll Gang Repeat Oper. 2
4	Ant. & Grnd.	400 ohms	7.0 M. C.	7.0 M. C.	Range Switch "Police"	9	Roll Gang
5	Ant. & Grnd.	400 ohms	20 M. C.	20 M. C.	Range Switch "S.W."	5A, 5	Note C

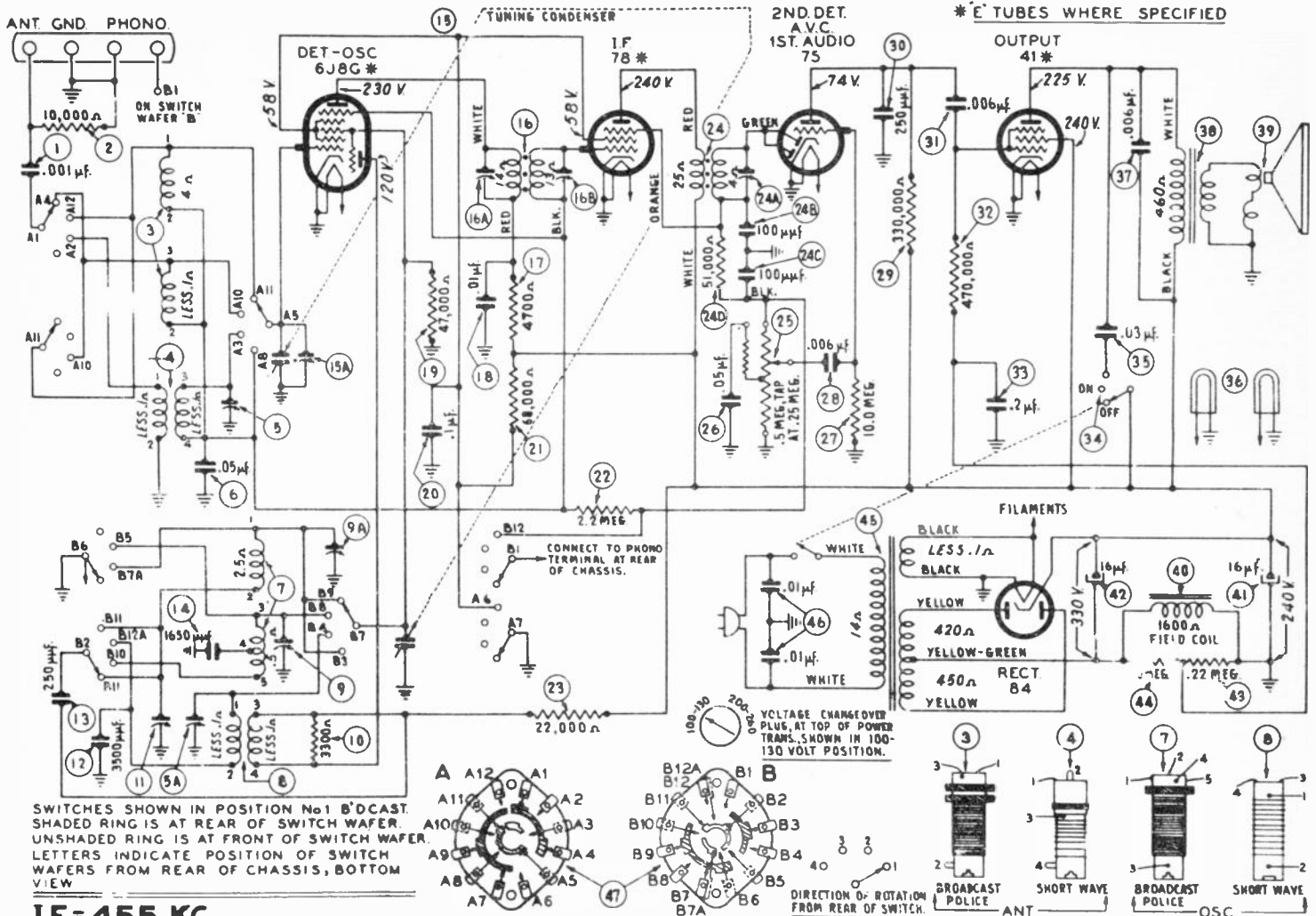
NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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 first mark on the left edge (low frequency end) of the broadcast scale.

NOTE C—When adjusting compensator (5A) be sure to tune in the fundamental signal (20 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be found by turning dial 910 K. C. below the fundamental signal, which will be 19.090 M. C.

MODEL 40-715---PHILCO TROPIC



SCHEMATIC DIAGRAM MODEL 40-715

Replacement Parts — Model 40-715

SCHE. No.	DESCRIPTION	PART No.
1	Tubular Cond. (.001 mfd.)	30-4892
2	Resistor (10,000 ohms, 1/2 watt)	33-310739
3	Antenna Trans. (Broadcast, Police)	32-3142
4	Antenna Trans. (Short Wave)	32-3143
5A	Compensator (2 section)	31-6287
6	Tubular Cond. (.05 mfd.)	30-4409
7	Oscillator Trans. (Broadcast, Police)	32-3142
8	Oscillator Trans. (Short Wave)	32-3144
9	Compensator (2 section)	31-6287
9A	Compensator (part of 2)	31-6288
10	Resistor (3500 ohms, 1/2 watt)	33-233339
11	Compensator (1 section)	31-6289
12	Mica Cond. (3500 mmfd.)	30-1094
13	Mica Cond. (250 mmfd.)	30-1119
14	Mica Cond. (1850 mmfd.)	5877
15	Tuning Condenser	31-2357
16	1st I. F. Transformer	32-3139
16A	Part of 16	
16B	Part of 16	
17	Resistor (4700 ohms, 1/2 watt)	33-247339
18	Tubular Cond. (.01 mfd.)	30-4572
19	Resistor (47,000 ohms, 1/2 watt)	33-347339
20	Tubular Cond. (.1 mfd.)	30-4527
21	Resistor (68,000 ohms, 1/2 watt)	33-368439
22	Resistor (2.2 meg., 1/2 watt)	33-222339
23	Resistor (22,000 ohms, 1/2 watt)	33-322339
24	2nd I. F. Transformer	32-3140
24A	Part of 24	
24B	Part of 24	
24C	Part of 24	
25	Volume Control (.5 meg.)	33-5305
26	Tubular Cond. (.05 mfd.)	30-4519
27	Resistor (10.0 meg., 1/2 watt)	33-610739
28	Tubular Cond. (.006 mfd.)	30-4583
29	Resistor (330,000 ohms, 1/2 watt)	33-447339
30	Mica Cond. (250 mmfd.)	30-1119
31	Tubular Cond. (.006 mfd.)	30-4810
32	Resistor (470,000 ohms, 1/2 watt)	33-447339
33	Tubular Cond. (.2 mfd.)	30-4587
34	Tone Control and On-Off Switch	42-1481
35	Tubular Cond. (.03 mfd.)	30-4517
36	Pilot Lamps	34-2064E
37	Tubular Cond. (.03 mfd.)	30-4591
38	Output Transformer	32-8018
39	Coil and Voice Coil Assembly (Spkr. Part No. 36-1452-2)	30-4753
40	Field Coil (Resistive Spkr. Part No. 36-1452)	30-2363
41	Electrolytic Cond. (18 mfd., 300 V.)	30-2364
42	Electrolytic Cond. (16 mfd., 400 V.)	33-422339
43	Resistor (1.0 meg., 1/2 watt)	33-10339
45	Power Transformer (100-150 V., 200-280 V., 50-60 cycles)	32-8008

SCHE. No.	DESCRIPTION	PART No.
46	Line Cond. (.01-.01 mfd.)	3903-000
47	Wave Switch	42-1480

MISCELLANEOUS PARTS

Clamp (Dial Mounting)	56-1271
Cabinet (Plug (Power Supply))	10365A
Cable and Plug (Power Supply)	L-2289
A. C. Plug (Special)	L-1367
Dial	27-5469
Drive Cord Assembly (Pointer Operation)	31-2359
Gasket (Dial Mounting)	27-9458
Knobs (Tuning, Tone, Volume, Wave Sw.)	27-4332

SCHE. No.	DESCRIPTION	PART No.
Pilot Lamp Socket Assembly	38-9798	
Pointer	56-1276	
Speaker	36-1472	
Socket (5 prong, type 84 tube)	27-6035	
Socket (6 prong, type 41, 75 & 78 tubes)	27-6036	
Socket (8 prong, Octal, type 6J8G tube)	27-6058	
Spring Clip (Coil Mounting)	28-5002	
Spring (Drive Cord)	28-8913	
Station Card Shield	27-5437	
Station Card Holder	56-1273	
Tuning Condenser Drum	31-2353	
Tuning Shaft and Bracket Assembly	31-2356	

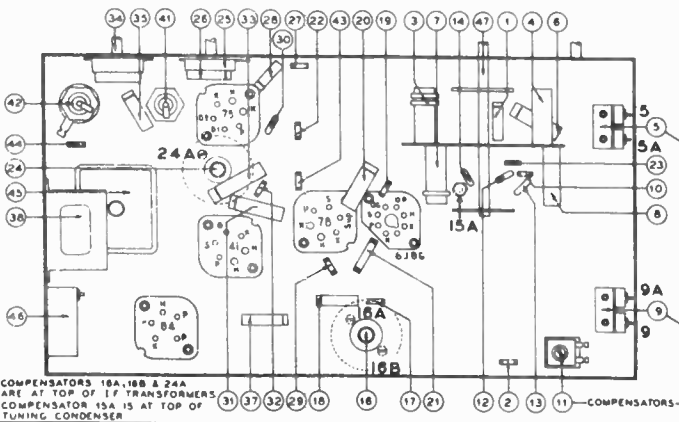


FIG. 2. PART LOCATIONS, UNDERSIDE OF CHASSIS.

MANY OF THE PARTS IN THIS PHILCO SUCH AS CONDENSERS AND RESISTORS, ARE HELD TO MUCH CLOSER TOLERANCE THAN STANDARD REPLACEMENT PARTS. GENUINE PHILCO REPLACEMENT PARTS MUST BE USED TO OBTAIN SATISFACTORY PERFORMANCE OF THIS MODEL.

MODELS 40-725, Code 121; and 40-755, Code 121

SPECIFICATIONS

Model 40-725

TYPE CIRCUIT: Model 40-725, code 121, is a six (6) tube A. C. operated receiver employing a superheterodyne circuit with three tuning ranges for reception of Standard, Police and Shortwave Broadcast Stations. Connections are also provided for attaching a high impedance Electric Phonograph pick-up. In addition other features of design are: Automatic Volume Control; Continuously Variable Tone Control; Bass Compensation, and special compensation for reducing frequency drift to a minimum.

POWER SUPPLY: 100-130 or 200-260 volt, 50-60 cycle, 60 watts. The voltage ranges are selected by inserting the plug as indicated on top of the power transformer.

TUNING RANGES:
530 to 1720 K. C. 2.3 to 7.4 M. C. 7.3 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 78E, R. F. Amplifier; 6J8EG, Converter-Oscillator; 78E, I. F. Amplifier; 75, Second Detector, First Audio, and A. V. C.; 41E, Pentode Audio Output; 84, Rectifier.

AUDIO OUTPUT: 2.5 watts.

AERIAL AND GROUND: To obtain maximum performance from this receiver, the Philco Safety Aerial, Part No. 40-6370 should be used and a good ground connection to the nearest water pipe or any other good ground.

CABINET DIMENSIONS:
Height, 14 1/4". Width, 18 1/4". Depth, 10 1/4".

Model 40-755

TYPE CIRCUIT: Model 40-755, code 121, is an eight (8) tube A. C. operated receiver employing a superheterodyne circuit with three tuning ranges for reception of Standard, Police and Shortwave Broadcast Stations. Connections are also provided for attaching a high impedance Electric Phonograph pick-up. Other features of design are: Automatic Volume Control; Continuously Variable Tone Control; Bass Compensation; Push-Pull Pentode Audio Output; Tuning Resonance Indicator, and special compensation for reducing frequency drift to a minimum.

POWER SUPPLY: 100-130 or 200-260 volt, 50 to 60 cycle, 83 watts. The voltage ranges are selected by inserting the plug as indicated on top of the power transformer.

TUNING RANGES:
530 to 1720 K. C. 2.3 to 7.4 M. C. 7.3 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 78E, R. F. Amplifier; 6J8EG, Converter-Oscillator; 78E, I. F. Amplifier; 75, Second Detector, First Audio, and A. V. C.; 76, Inverter; two 42E, Pentode Audio Output; 80, Rectifier.

AUDIO OUTPUT: 6 watts.

AERIAL AND GROUND: Same as Model 40-725.

CABINET DIMENSIONS:
Height, 14 1/4". Width, 20". Depth, 10 1/4".

ALIGNING COMPENSATING CONDENSERS

EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver a calibrated signal generator such as Philco Model 077 A. C. or Model 177 battery operated are required. These signal generators cover a frequency range of 540 to 36,000 K. C.

(2) **Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube volt-

meter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver, Philco Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the converter grid (6J8G). The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and screen terminals of the 41 tube. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 1. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Opera- tions in Order	SIGNAL GENERATOR			RECEIVER				SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators		
						Model 40-725	Model 40-755	
1	6J8G Grid and Ground	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Tone Treble	38B, 38A, 32B, 32A	39B, 39A, 33B, 33A	
2	Ant. & Grnd.	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	27, 22B, 22A	27, 32B, 32A	Note B
3	Ant. & Grnd.	200 mmfd.	580 K. C.	580 K. C.	Vol. Max.	23	23	Roll Gang
4	Ant. & Grnd.	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max.	27, 22B, 22A	27, 32B, 32A	
5	Ant. & Grnd.	400 ohms	6.0 M. C.	6.0 M. C.	Vol. Max. Tone Treble Range Switch "S.W.1"	27A	27A	Roll Gang
6	Ant. & Grnd.	400 ohms	20 M. C.	20 M. C.	Vol. Max. Tone Treble Range Switch "S.W.2"	29, 15, 5	29, 16, 5	Note C

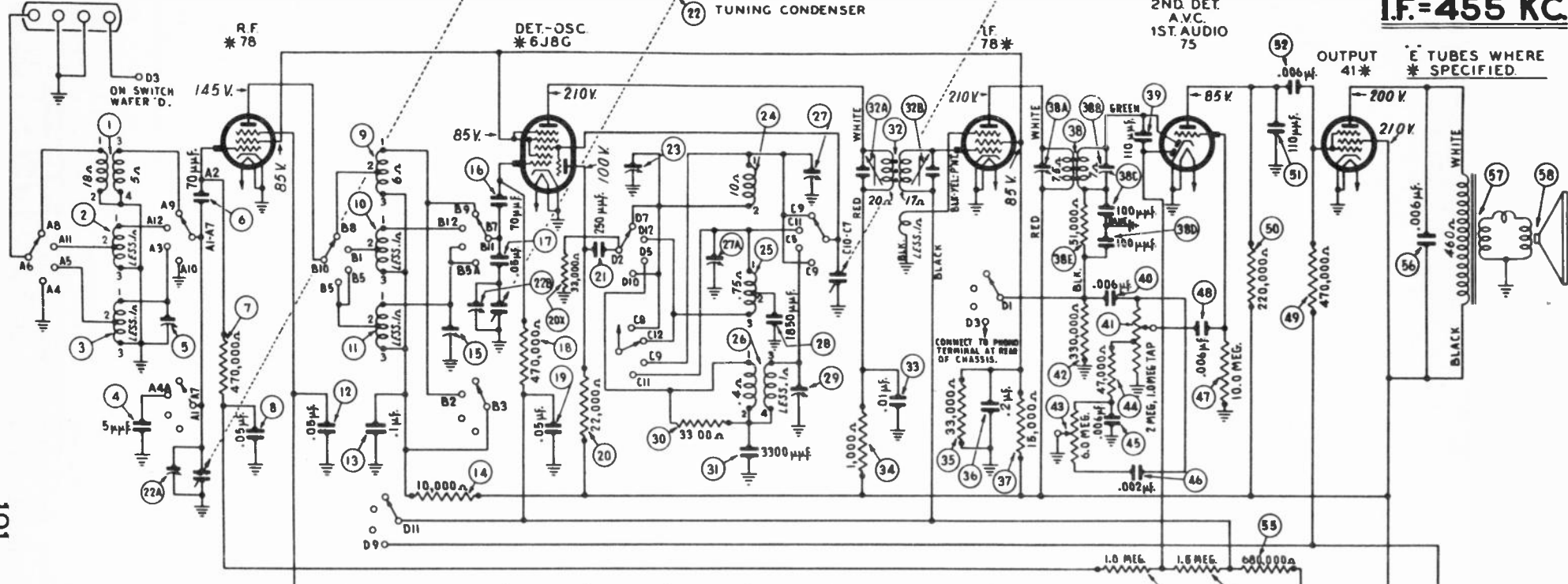
NOTE A — The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B — **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 first mark on the left edge (low frequency end) of the broadcast scale.

NOTE C — When adjusting compensator (29) be sure to tune in the fundamental signal (20 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be 910 K. C. below the fundamental signal, which will be 19.090 M. C.

ANT. GND. PHONO

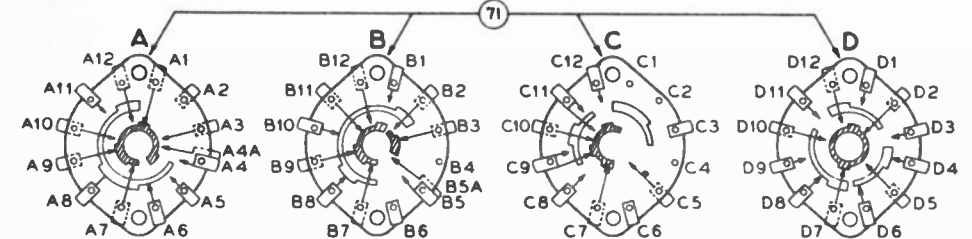
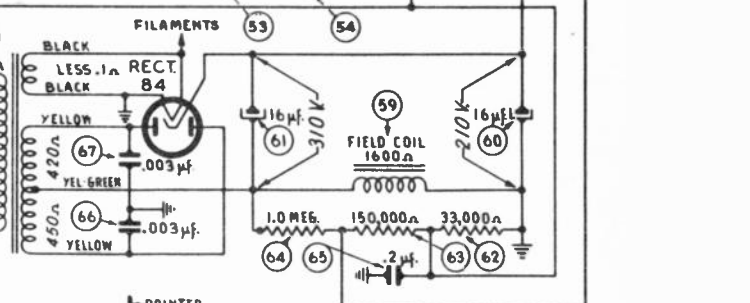
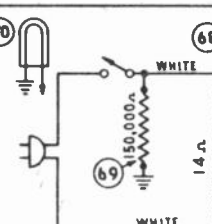
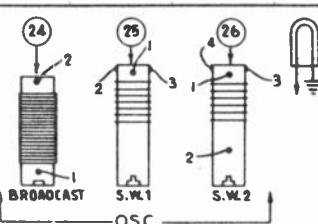
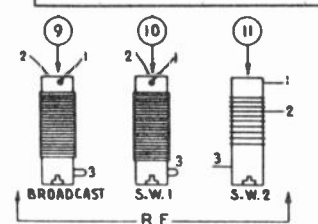
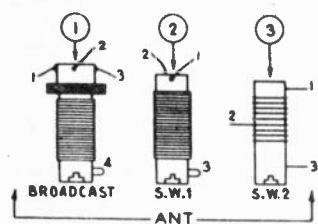


I.F. = 455 KC

2ND DET. A.V.C. 1ST. AUDIO 75

OUTPUT 41*
* TUBES WHERE SPECIFIED

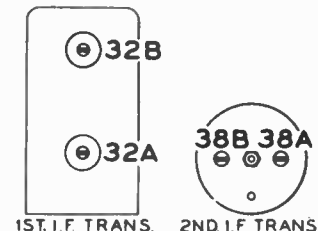
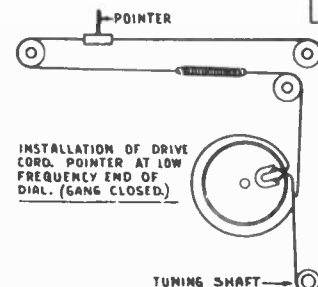
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SOLID AREA INDICATES RING AT REAR OF SWITCH WAFER.
 SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER.
 LETTERS INDICATE POSITION OF SWITCH WAFERS FROM FRONT OF CHASSIS, BOTTOM VIEW.
 SWITCHES SHOWN IN POSITION No.1 BROADCAST.

VOLTAGE CHANGEOVER PLUG AT TOP OF POWER TRANS. SHOWN IN 100-120 VOLT POSITION.

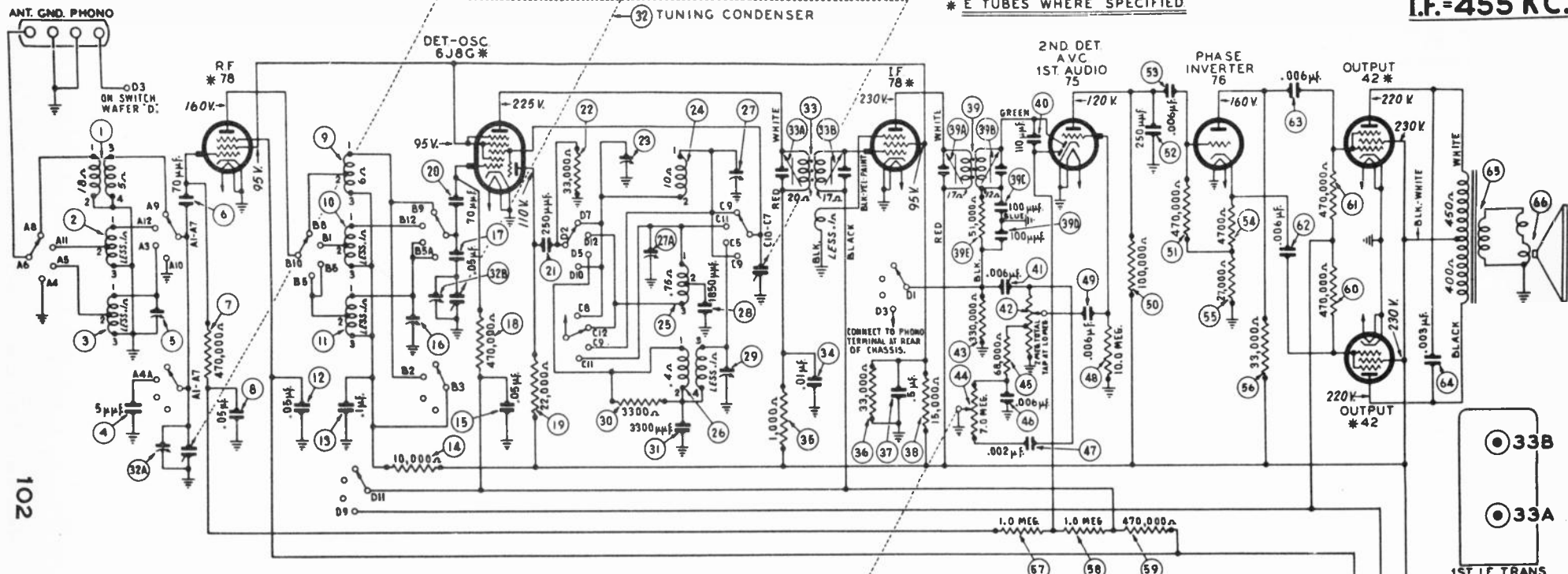
DIRECTION OF ROTATION FROM REAR OF SWITCH



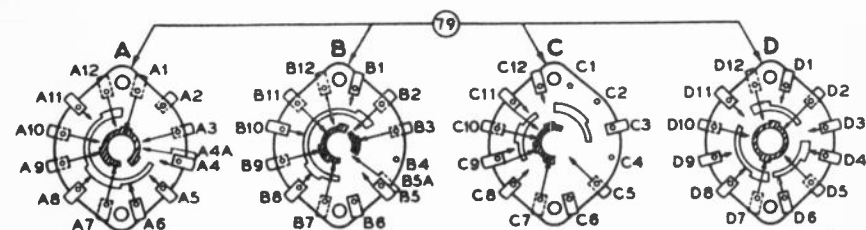
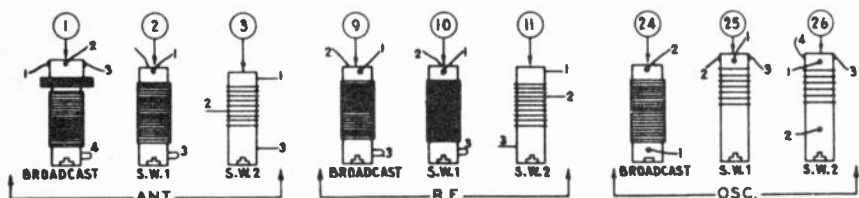
SCHEMATIC DIAGRAM MODEL 40-725

I.F.=455 KC.

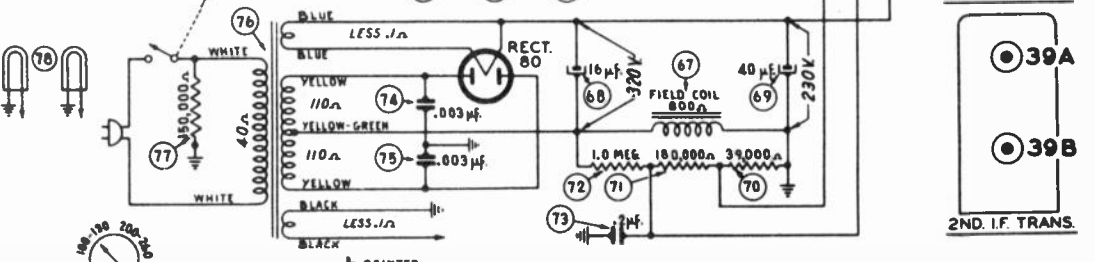
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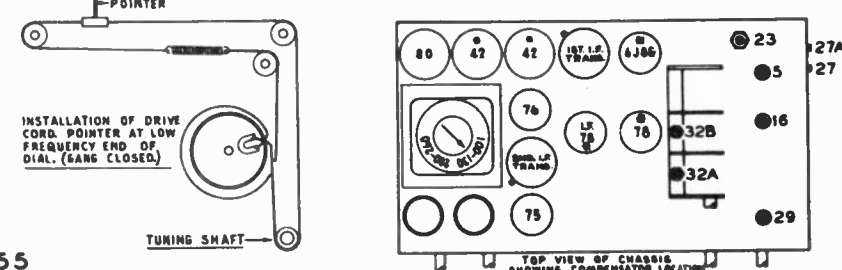
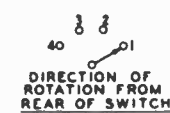
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SOLID AREA INDICATES RING AT REAR OF SWITCH WAFER.
 SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER.
 LETTERS INDICATE POSITION OF SWITCH WAFERS FROM FRONT OF CHASSIS, BOTTOM VIEW.
 SWITCHES SHOWN IN POSITION No.1 BROADCAST.



VOLTAGE CHANGEOVER PLUG AT TOP OF POWER TRANS. SHOWN IN 100-130 VOLT POSITION.



SCHEMATIC DIAGRAM MODEL 40-755

MODELS 40-725, Code 121; and 40-755, Code 121

Model 40-725, Code 121 Replacement Parts

SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer (Broadcast)	32-2588
2	Antenna Transformer (S. W. 1)	32-3191
3	Antenna Transformer (S. W. 2)	32-3190
4	Tubular Condenser (5 mmfd.)	30-1120
5	Compensator (Antenna S. W. 2)	31-6288
6	Mica Condenser (70 mmfd.)	30-1117
7	Resistor (470,000 ohms, 1/2 watt)	33-447339
8	Tubular Condenser (.05 mfd.)	30-4809
9	R. F. Transformer (Broadcast)	32-3189
10	R. F. Transformer (S. W. 1)	32-3190
11	R. F. Transformer (S. W. 2)	32-3197
12	Tubular Condenser (.05 mfd.)	30-4819
13	Tubular Condenser (.1 mfd.)	30-4811
14	Resistor (10,000 ohms, 1 watt)	33-310439
15	Compensator (R. F., S. W. 2)	31-6288
16	Mica Condenser (70 mmfd.)	30-1117
17	Tubular Condenser (.05 mfd.)	30-4819
18	Resistor (470,000 ohms, 1/2 watt)	33-447339
19	Tubular Condenser (.05 mfd.)	30-4809
20	Resistor (22,000 ohms, 1/2 watt)	33-322339
20X	Resistor (33,000 ohms, 1/2 watt)	33-333339
21	Mica Condenser (250 mmfd.)	30-1119
22	Tuning Condenser Assembly	31-2386
23	Compensator (Broadcast series)	31-6289
24	Oscillator Transformer (Broadcast)	32-3254
25	Oscillator Transformer (S. W. 1)	32-3094
26	Oscillator Transformer (S. W. 2)	32-3102
27	Compensator (Broadcast shunt)	31-6287
27A	Compensator (S. W. 1)	31-6310
28	Tracking Condenser (1850 mmfd.)	31-6310
29	Compensator (S. W. 2)	31-6288
30	Resistor (3300 ohms, 1/2 watt)	33-233339
31	Tracking Condenser (3300 mmfd.)	31-6311
32	Tuning Condenser Assembly	31-2386
33	1st I. F. Transformer Assembly	32-3187
34	Tubular Condenser (.01 mfd.)	30-4872
35	Resistor (1,000 ohms, 1/2 watt)	33-210339
36	Resistor (33,000 ohms, 1/2 watt)	33-333339
37	Resistor (18,000 ohms, 1 watt)	33-318439
38	Tubular Condenser (.2 mfd.)	30-4887
39	Resistor (18,000 ohms, 1 watt)	33-318439
40	2nd I. F. Transformer Assembly	32-3133
41	Mica Condenser (110 mmfd.)	30-1118
42	Tubular Condenser (.006 mfd.)	30-4883
43	Volume Control (2 meg.)	33-5298
44	Resistor (330,000 ohms, 1/2 watt)	33-433339
45	Tone Control and On-Off Switch	33-347339
46	Resistor (47,000 ohms, 1/2 watt)	33-4583
47	Tubular Condenser (.002 mfd.)	30-4878
48	Resistor (10.0 meg., 1/2 watt)	33-610339
49	Tubular Condenser (.006 mfd.)	30-4883
50	Resistor (470,000 ohms, 1/2 watt)	33-447339
51	Resistor (220,000 ohms, 1/2 watt)	33-422339
52	Mica Condenser (110 mmfd.)	30-1118
53	Tubular Condenser (.006 mfd.)	30-4810
54	Resistor (1.0 meg., 1/2 watt)	33-510339
55	Resistor (1.5 meg., 1/2 watt)	33-513339
56	Resistor (680,000 ohms, 1/2 watt)	33-488339
57	Tubular Condenser (.2 mfd.)	30-4887
58	Output Transformer	32-8018
59	Cone and Voice Coil Assembly (Speaker Part No. 36-1452)	36-4103
60	Field Coil (Replace Spkr. Part No. 36-1452)	36-4103
61	Electrolytic Condenser (16 mfd., 300 V.)	30-2319
62	Electrolytic Condenser (16 mfd., 400 V.)	30-2364
63	Resistor (33,000 ohms, 1/2 watt)	33-333339
64	Resistor (150,000 ohms, 1/2 watt)	33-413339
65	Resistor (1.0 meg., 1/2 watt)	33-510339
66	Tubular Condenser (.003 mfd.)	30-4808

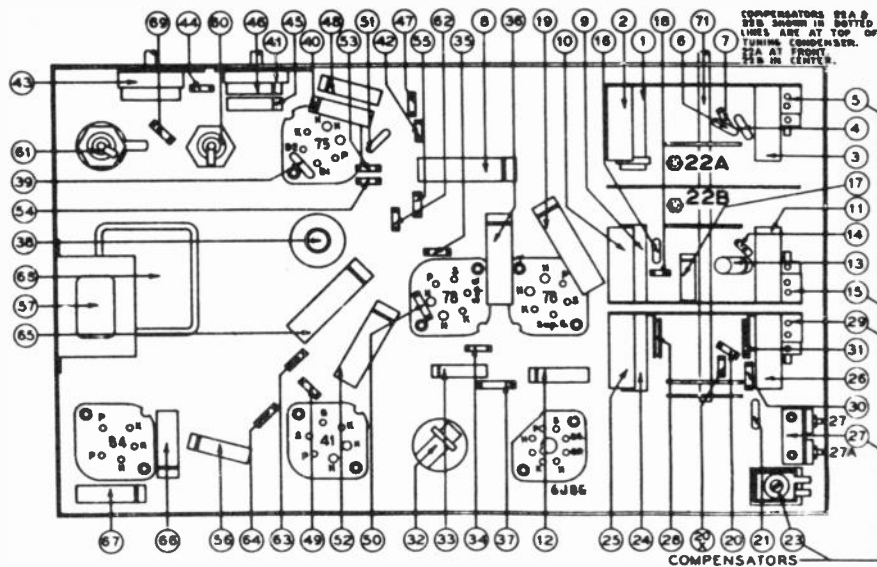


FIG. 1. MODEL 40-725 PART LOCATIONS, UNDERSIDE OF CHASSIS.

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
67	Tubular Condenser (.003 mfd.)	30-4808	27-8225	Felt Strip (Bezel Mounting)	27-8225
68	Power Transformer (100-130 V., 200-260 V., 50-60 cycles)	32-8006	27-4330	Knob (Tuning)	27-4330
69	Resistor (150,000 ohms, 1/2 watt)	33-413339	27-4862	Knob (Tuning)	27-4862
70	Pilot Lamp	34-2064E	27-4872	Knob (Tone Control)	27-4872
71	Wave Switch	42-1504	27-4332	Knob (Volume and Wave Switch)	27-4332
			36-9796	Pilot Lamp Socket Assembly	36-9796
			56-1276	Pointer	56-1276
			W-2071	Screws (Bezel Mounting)	W-2071
			28-8913	Spring (Drive Cord)	28-8913
			28-8002	Spring Clip (Coil Mounting)	28-8002
			27-6035	Socket (5 prong, type 84 tube)	27-6035
			27-6036	Socket (6 prong, type 78, 41, 78 tubes)	27-6036
			27-6058	Socket (Octal, type 6J8G tube)	27-6058
			36-1452	Speaker (Model 40-755T)	36-1452
			31-2327	Tuning Drum and Coupling Assembly	31-2327
			31-2329	Vernier Drive (Tuning)	31-2329

MISCELLANEOUS PARTS

Model 40-755, Code 121 Replacement Parts

SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer (Broadcast)	32-2588
2	Antenna Transformer (S. W. 1)	32-3191
3	Antenna Transformer (S. W. 2)	32-3190
4	Tubular Condenser (5 mmfd.)	30-1120
5	Compensator (Antenna S. W. 2)	31-6288
6	Mica Condenser (70 mmfd.)	30-1117
7	Resistor (470,000 ohms, 1/2 watt)	33-447339
8	Tubular Condenser (.05 mfd.)	30-4809
9	R. F. Transformer (Broadcast)	32-3189
10	R. F. Transformer (S. W. 1)	32-3190
11	R. F. Transformer (S. W. 2)	32-3197
12	Tubular Condenser (.05 mfd.)	30-4819
13	Tubular Condenser (.1 mfd.)	30-4811
14	Resistor (10,000 ohms, 1 watt)	33-310439
15	Tubular Condenser (.05 mfd.)	30-4809
16	Compensator	31-6288
17	Tubular Condenser (.05 mfd.)	30-4819
18	Resistor (470,000 ohms, 1/2 watt)	33-447339
19	Resistor (22,000 ohms, 1/2 watt)	33-322339
20	Mica Condenser (250 mmfd.)	30-1119
21	Resistor (33,000 ohms, 1/2 watt)	33-333339
22	Compensator	31-6289
23	Oscillator Transformer (Broadcast)	32-3254
24	Oscillator Transformer (S. W. 1)	32-3094
25	Oscillator Transformer (S. W. 2)	32-3102
26	Compensator (2 section)	31-6287
27	Tracking Condenser (1850 mmfd.)	31-6310
28	Compensator	31-6288
29	Resistor (3300 ohms, 1/2 watt)	33-233339
30	Tracking Condenser (3300 mmfd.)	31-6311
31	Tuning Condenser Assembly	31-2386
32	1st I. F. Transformer Assembly	32-3187
33	Tubular Condenser (.01 mfd.)	30-4872
34	Resistor (1,000 ohms, 1/2 watt)	33-210339
35	Resistor (33,000 ohms, 1/2 watt)	33-333339
36	Resistor (18,000 ohms, 1 watt)	33-318439
37	Tubular Condenser (.2 mfd.)	30-4887
38	Resistor (18,000 ohms, 1 watt)	33-318439
39	2nd I. F. Transformer Assembly	32-3133
40	Mica Condenser (110 mmfd.)	30-1118
41	Tubular Condenser (.006 mfd.)	30-4883
42	Volume Control (2.0 meg.)	33-5298
43	Resistor (330,000 ohms, 1/2 watt)	33-433339
44	Tone Control and On-Off Switch	33-347339
45	Resistor (47,000 ohms, 1/2 watt)	33-4583
46	Tubular Condenser (.002 mfd.)	30-4878
47	Resistor (10.0 meg., 1/2 watt)	33-610339
48	Tubular Condenser (.006 mfd.)	30-4883
49	Resistor (470,000 ohms, 1/2 watt)	33-447339
50	Resistor (220,000 ohms, 1/2 watt)	33-422339
51	Mica Condenser (110 mmfd.)	30-1118
52	Tubular Condenser (.003 mfd.)	30-4808
53	Resistor (1.0 meg., 1/2 watt)	33-510339
54	Resistor (1.5 meg., 1/2 watt)	33-513339
55	Resistor (680,000 ohms, 1/2 watt)	33-488339
56	Tubular Condenser (.2 mfd.)	30-4887
57	Output Transformer	32-8018
58	Cone and Voice Coil Assembly (Speaker Part No. 36-1452)	36-4104
59	Field Coil (Replace Spkr. Part No. 36-1452 (T Cabinet))	36-4105
60	Replace Spkr. Part No. 36-1460 (XX Cabinet)	36-4105
61	Field Coil	36-4104
62	Electrolytic Condenser (16 mfd., 400 V.)	30-2364

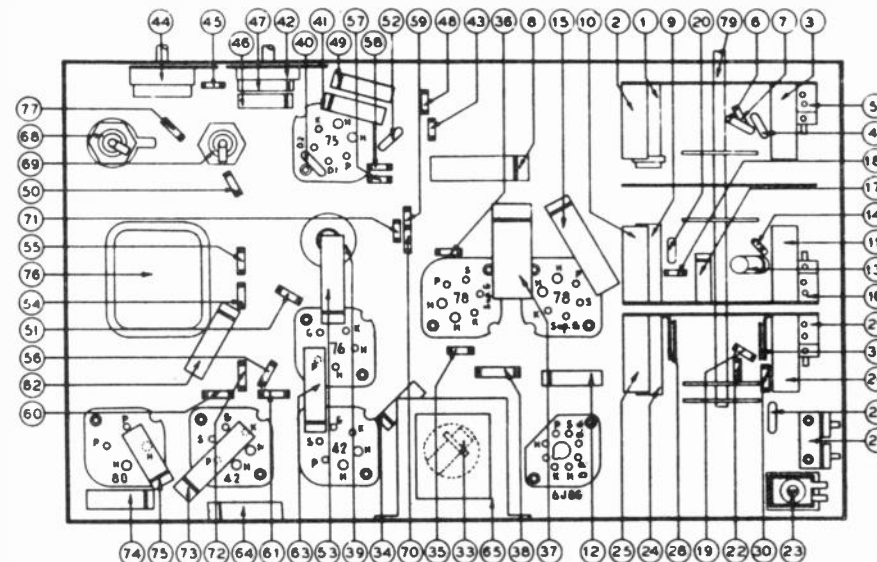


FIG. 2. MODEL 40-755 PART LOCATIONS, UNDERSIDE OF CHASSIS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
69	Electrolytic Condenser (40 mfd., 300 V.)	30-2366	27-5844	Dial	27-5844
70	Resistor (39,000 ohms, 1/2 watt)	33-339339	31-2320	Drive Cord	31-2320
71	Resistor (180,000 ohms, 1/2 watt)	33-413339	27-4330	Felt Strip (Bezel Mounting)	27-4330
72	Resistor (1.0 meg., 1/2 watt)	33-510339	27-4330	Knob (Tuning)	27-4330
73	Tubular Condenser (.2 mfd.)	30-4887	27-4862	Knob (Tuning)	27-4862
74	Tubular Condenser (.003 mfd.)	30-4808	27-4332	Knob (Volume and Wave Switch)	27-4332
75	Tubular Condenser (.003 mfd.)	30-4808	27-4872	Knob (Tone Control)	27-4872
76	Power Transformer (100-130 V., 200-260 V., 50-60 cycles)	32-8007	56-1276	Pointer	56-1276
77	Resistor (150,000 ohms, 1/2 watt)	33-413339	27-6035	Socket (5 prong, 78 tube)	27-6035
78	Pilot Lamps	34-2064E	27-6036	Socket (6 prong, type 78, 42, 78 tubes)	27-6036
79	Wave Switch	42-1504	27-6044	Socket (4 prong, type 80 tube)	27-6044
			27-6058	Socket (Octal, type 6J8G tube)	27-6058
			36-1452	Speaker (Model 40-755T)	36-1452
			36-1460	Speaker (Model 40-755XX)	36-1460
			28-8002	Spring Clip (Coil Mounting)	28-8002
			28-8913	Spring (Drive Cord)	28-8913
			56-1273	Station Card Holder	56-1273
			31-2327	Tuning Drum and Coupling Assembly	31-2327
			31-2329	Vernier Drive (Tuning)	31-2329

MODEL 40-748, Code 121---PHILCO-TROPIC

SPECIFICATIONS

TYPE CIRCUIT: Model 40-748, code 121 is a 7 tube battery operated radio receiver employing a superheterodyne circuit with 3 tuning ranges for reception of standard, police, and shortwave broadcast stations. Connections are also provided for attaching an external high impedance electric phonograph pick-up. In addition other features of design are automatic volume control, continuously variable tone control, BASS compensation, and a push pull pentode audio output circuit. A vibrator is used for supplying the "B" voltage from the 6 volt storage battery.

POWER SUPPLY: 6 volt storage battery.

TUNING RANGES: 530-1720 K. C. 2.3-7.4 M. C. 7.3-22 M. C.

INTERMEDIATE FREQUENCY: 455 K. C.

PHILCO TUBES USED: 6S7EG, R. F. Amplifier; 6D8EG, Converter; 6S7EG, I. F. Amplifier; 6T7G, Second Detector A. V. C. and First Audio; 6G6EG, Second Audio; two 49, Output.

AUDIO OUTPUT: 2.5 watts.

AERIAL & GROUND: To obtain maximum performance from this receiver, the Philco Safety aerial, Part No. 40-6370 should be used. A good ground source to the nearest water pipe or any other grounding connection should be used.

CABINET DIMENSIONS: Height, 14 5/8"; Width, 20"; Depth, 10 1/4".

ALIGNMENT OF COMPENSATORS

EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust the receiver, a calibrated signal generator such as Philco Model 077 A. C. operated or Model 177 battery operated is required. These signal generators cover a frequency range from 115 to 36000 K. C.

Indicating Device: To obtain maximum signal strength and accurate adjustment of the padders, a vacuum tube voltmeter or audio output meter should be used. Philco Models 027 and 028 vacuum tube voltmeters are recommended. These testers also contain an audio output meter which may be used as an indicating device.

Aligning Tools: Fibre handle screw driver, Philco Part No. 45-2610.

CONNECTING THE ALIGNING METERS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning meter, it should be connected to the A. V. C. circuit as follows:

1. Connect the negative terminal of the voltmeter through a 2 meg. resistor to any point in the circuit where the A. V. C. voltage can be read such as the grids of the 6S7EG tube or resistors 46 and 48.

2. The positive terminal of the vacuum tube voltmeter is connected to the ground or chassis of the receiver.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected between the plate of the

one 49 tube and ground. Adjust the meter to use the 0 to 30 volt A. C. scale.

After connecting the aligning meters as described above, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 1. If the pointer of the aligning meter goes off scale when adjusting the compensators, reduce the strength of the signal from the signal generator.

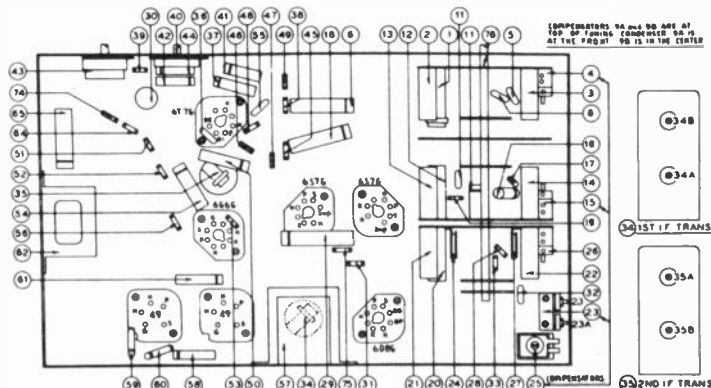


FIG. 1. PART LOCATIONS—UNDERSIDE OF CHASSIS.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	6D8EG Grid and Ground	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Tone-Treble Range Switch "Brdcst"	35A, 35B 34A, 34B	
2	Ant. & Grd.	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	23, 9B, 9A	Note B
3	Ant. & Grd.	200 mmfd.	580 K. C.	580 K. C.	Vol. Max.	25	Roll Gang
4	Ant. & Grd.	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	23, 9B, 9A	Note B
5	Ant. & Grd.	400 ohms	6.0 M. C.	6.0 M. C.	Vol. Max. Tone-Treble Range Switch "S. W. 1"	23A	Roll Gang
6	Ant. & Grd.	400 ohms	21 M. C.	21 M. C.	Vol. Max. Tone-Treble Range Switch "S. W. 2"	26, 15, 4	Note C

NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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 first mark on the left edge (low frequency end) of the broadcast scale.

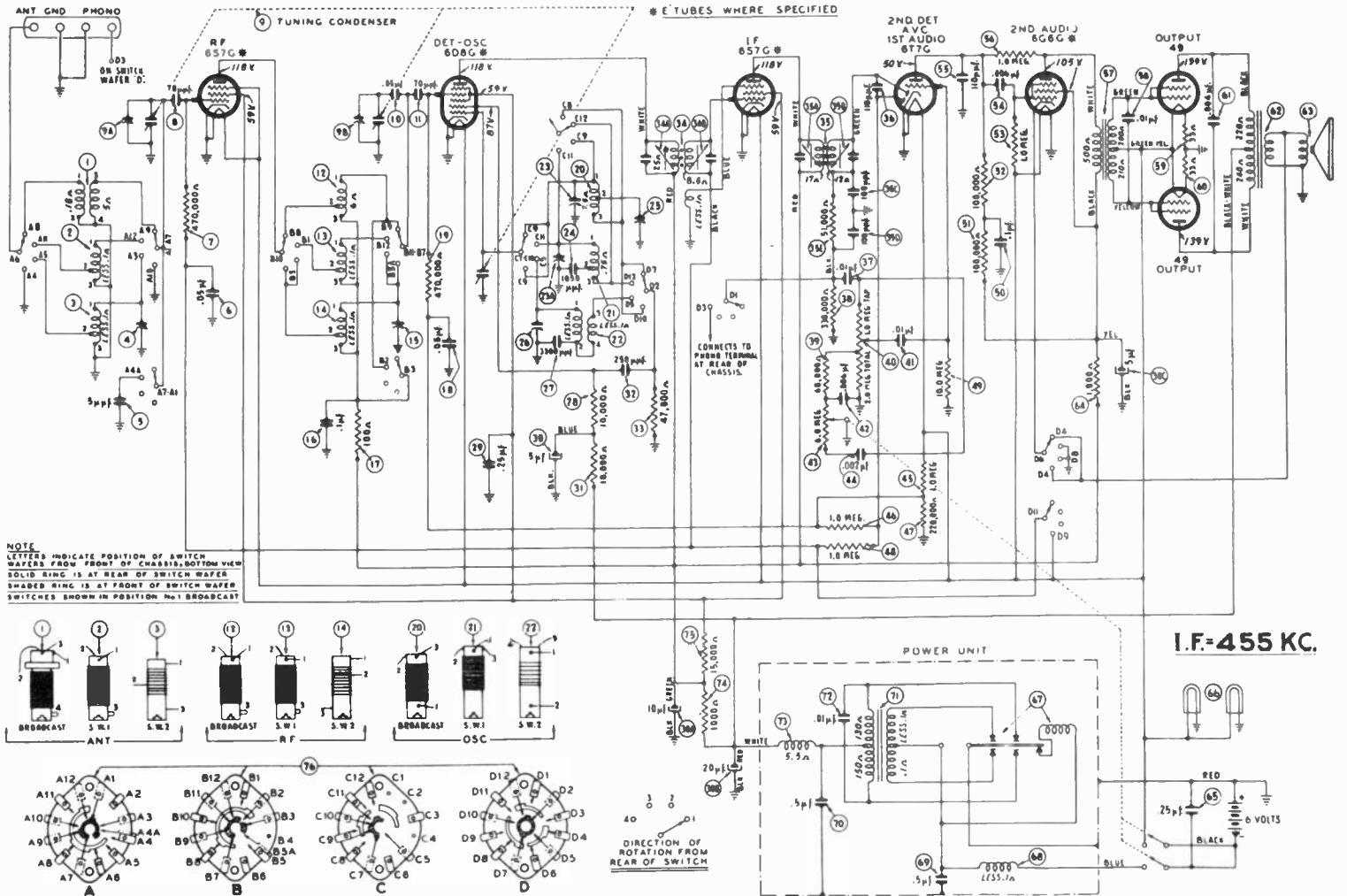
NOTE C—When adjusting compensator (26) be sure to tune in the fundamental signal (21 M. C.—second signal from tight position of padder) instead of the image signal. If the compensator is correctly adjusted, the image signal will be found by turning the receiver dial 910 K. C. below the fundamental signal.

PRODUCTION CHANGES

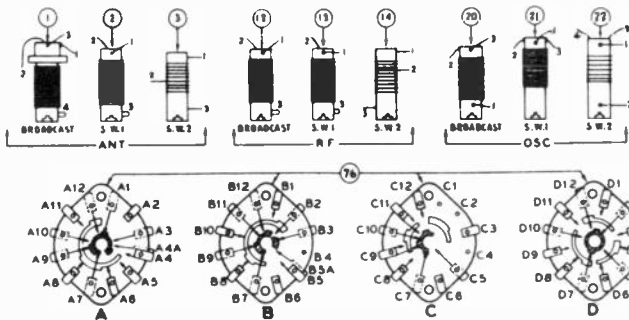
To increase the efficiency of the oscillator at the low frequency end of the short wave band, resistor (33) 47000 ohms, Part Number 33-347339 was changed to 100,000 ohms, Part Number 33-410339.

Replacement Parts Model 40-748

SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer (Broadcast)	32-2588
2	Antenna Transformer (S. W. 1)	32-3191
3	Antenna Transformer (S. W. 2)	32-3196
4	Compensator	31-6288
5	Mica Condenser (5 mmfd.)	30-1120
6	Tubular Condenser (.05 mfd.)	30-4609
7	Resistor (470,000 ohms, 1/2 watt)	33-447339
8	Mica Condenser (70 mmfd.)	30-1117
9	Tuning Condenser Assembly	31-2386
10	Tubular Condenser (.05 mfd.)	30-4519
11	Mica Condenser (70 mmfd.)	30-1117
12	R. F. Transformer (Broadcast)	32-3189
13	R. F. Transformer (S. W. 1)	32-3190
14	R. F. Transformer (S. W. 2)	32-3197
15	Compensator	31-6288
16	Tubular Condenser (.1 mfd.)	30-4611
17	Resistor (100 ohms, 1/2 watt)	33-110336
18	Tubular Condenser (.05 mfd.)	30-4609
19	Resistor (470,000 ohms, 1/2 watt)	33-447339
20	Oscillator Transformer (Broadcast)	32-2120
21	Oscillator Transformer (S. W. 1)	32-3190
22	Oscillator Transformer (S. W. 2)	32-2889
23	Compensator (2 section)	31-6287
24	Tracking Condenser (1850 mmfd.)	31-6310
25	Compensator	31-6289
26	Compensator	31-6288
27	Tracking Condenser (3300 mmfd.)	31-6311
28	Resistor (10,000 ohms, 1/2 watt)	33-310339
29	Tubular Condenser (.05 mfd.)	30-4588
30	Electrolytic Condenser (5 mfd., 150 V.)	30-2374
30A	Part of 30 (10 mfd., 150 V.)	
30B	Part of 30 (20 mfd., 150 V.)	
30C	Part of 30 (5 mfd., 150 V.)	
31	Resistor (10,000 ohms, 1/2 watt)	33-310339
32	Mica Condenser (250 mmfd.)	30-1119
33	Resistor (47,000 ohms, 1/2 watt)	33-347339
34	1st I. F. Transformer Assembly	32-3328
35	2nd I. F. Transformer Assembly	32-3188
36	Mica Condenser (170 mmfd.)	30-1118
37	Tubular Condenser (.01 mfd.)	30-4581
38	Resistor (330,000 ohms, 1/2 watt)	33-433339
39	Resistor (68,000 ohms, 1/2 watt)	33-366339
40	Volume Control (2.0 meg.)	30-4581
41	Tubular Condenser (.01 mfd.)	30-4581
42	Tubular Condenser (.006 mfd.)	30-4583
43	Tone Control and On-Off Switch	30-8303
44	Tubular Condenser (.002 mfd.)	30-4579
45	Resistor (1.0 meg., 1/2 watt)	33-510339
46	Resistor (1.0 meg., 1/2 watt)	33-510339
47	Resistor (220,000 ohms, 1/2 watt)	33-423339
48	Resistor (1.0 meg., 1/2 watt)	33-510339
49	Resistor (10.0 meg., 1/2 watt)	33-610339
50	Tubular Condenser (.1 mfd.)	30-4586
51	Resistor (100,000 ohms, 1/2 watt)	33-410339
52	Resistor (100,000 ohms, 1/2 watt)	33-410339
53	Resistor (1.0 meg., 1/2 watt)	33-510339
54	Tubular Condenser (.006 mfd.)	30-4610
55	Mica Condenser (.110 mmfd.)	30-1118
56	Resistor (1.0 meg., 1/2 watt)	33-510339
57	Driver Transformer	32-8027
58	Tubular Condenser (.01 mfd.)	30-4581
59	Resistor (33 ohms, 1 watt)	33-033436
60	Resistor (33 ohms, 1 watt)	33-033436
61	Tubular Condenser (.004 mfd.)	30-4578
62	Output Transformer	32-8026
63	Cone and Voice Coil Assembly (Speaker Part No. 36-1456-3)	36-4108
	(Speaker Part No. 36-1455-3)	36-4107
64	Resistor (1,000 ohms, 1/2 watt)	33-210339
65	Tubular Condenser (.25 mfd.)	30-4588
66	Pilot Lamps	34-2068E
67	Vibrator	41-3222
68	"A" Choke	41-3478
69	Tubular Condenser (.8 mfd., metal case)	30-4296
70	Tubular Condenser (.5 mfd., metal case)	30-4296
71	Power Transformer	32-7662
72	Tubular Condenser (.01 mfd.)	30-4598
73	"B" Choke	32-2925
74	Resistor (1,000 ohms, 1/2 watt)	33-210339
75	Resistor (15,000 ohms, 1/2 watt)	33-319339
76	Wave Switch	42-1504



NOTE: LETTERS INDICATE POSITION OF SWITCH WAFERS FROM FRONT OF CHASSIS; BOTTOM VIEW. SOLID RING IS AT REAR OF SWITCH WAFER. SHADED RING IS AT FRONT OF SWITCH WAFER. SWITCHES SHOWN IN POSITION NOT BROADCAST.



MISCELLANEOUS PARTS

SCHE. No.	DESCRIPTION	PART No.
86	Base	86-1222
87	Cable (Battery)	41-3478
88	Cable (Speaker)	41-3486
89	Cabinet (T Model)	10418A
90	Cabinet (XX Model)	10420A
91	Dial	27-8844
92	Drive Cord Assembly	31-2330
93	Gasket (Dial Mounting)	27-8258
94	Knob (Tuning)	27-4330
95	Knob (Vernier)	27-4862
96	Knob (Volume and Wave Switch)	27-4332
97	Knob (Tone Control)	27-4872
98	Pointer	86-1376

SCHE. No.	DESCRIPTION	PART No.
99	Speaker (T Cabinet)	36-1455
100	Speaker (XX Cabinet)	36-1456
101	Spring Clip (Coil Mounting)	28-5002
102	Spring (Drive Cord)	28-8913
103	Station Card Holder	36-1273
104	Socket (8 prong, type 49 tube)	27-6035
105	Socket (8 prong, vibrator)	27-8036
106	Socket (Loktal tubes)	27-8058
107	Shield (Tube, Half)	86-1072
108	Shield Cap	86-1073
109	Shield Base	86-1074
110	Rubber Cushion (Vibrator Mounting)	27-4287
111	Rubber Washer (Vibrator Unit Mounting)	27-4307
112	Rubber Corner (Chassis)	27-4864
113	Tuning Drum and Sampling Assembly	27-4864
114	Vernier Drive (Tuning)	31-2329

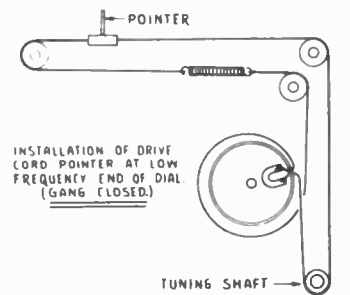


FIG. 2. INSTALLATION OF DRIVE CORD.

105

MODEL 40-756---PHILCO-TROPIC

SPECIFICATIONS

TYPE CIRCUIT: Model 40-756, code 121, is an eight (8) tube A. C. or D. C. operated receiver employing a superheterodyne circuit with three tuning ranges for reception of Standard, Police and Shortwave Broadcast Stations. Connections are also provided for attaching a high impedance Electric Phonograph pick-up. Other features of design are: Automatic Volume Control, Continuously Variable Tone Control, Bass Compensation, Push-Pull Pentode Audio Output.

POWER SUPPLY: 100-130 or 200-260 volt, A. C. or D. C. current. The voltage ranges are selected by inserting the changeover plug as indicated on top of the chassis.

POWER CONSUMPTION:
50 watts at 120 volts. 100 watts at 240 volts.

TUNING RANGES:

530 to 1720 K. C. 2.3 to 7.4 M. C. 7.3 to 22 M. C.

I. F. FREQUENCY: 470 K. C.

PHILCO TUBES: 78E, R. F. Amplifier; 6J8EG, Converter-Oscillator; 78E, I. F. Amplifier; 75, Second Detector, First Audio and A. V. C.; 76, Phase Inverter; two 25L6EG, Pentode Audio Output; BKU126D, Ballast Tube; and 25Z5, Rectifier.

AERIAL AND GROUND: To obtain maximum performance from this receiver, the Philco Safety Aerial, Part No. 40-6370, should be used and a good ground connection to the nearest water pipe or any other good source.

CABINET DIMENSIONS:

Height, 14 1/2". Width, 20". Depth, 9 3/4".

ALIGNING COMPENSATING CONDENSERS EQUIPMENT REQUIRED

(1) **Signal Generator.** In order to properly adjust this receiver, a calibrated signal generator such as Philco Model 077 A. C. or Model 177 battery operated are required. These signal generators cover a frequency range of 115 to 36,000 K. C.

(2) **Indicating Device.** To obtain maximum signal strength and accurate adjustment of the padders a vacuum tube

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator, it should be connected to the A. V. C. circuit as follows:

1. Connect 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 read.
2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator it should be connected to the plate of one of the 25L6EG tubes and chassis ground. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 1. If the output meter pointer goes off scale when adjusting the compensators reduce the strength of the signal from the generator.

voltmeter and circuit tester such as Philco Models 027 and 028 is recommended. These testers also contain an audio output meter which may be used as an indicating device.

(3) **Aligning Tools.** Fiber handle screw driver, Philco Part No. 45-2610.

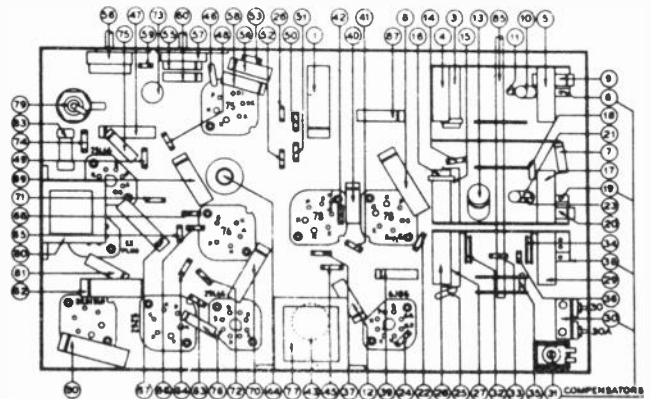


FIG. 1. PART LOCATIONS, UNDERSIDE OF CHASSIS.

Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	6J8G Grid and Ground	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Tone Treble Range Switch "Brdcat"	44A, 44B, 43A, 43B	
2	Ant. & Grnd.	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcat"	30, 26B, 26A	Note B
3	Ant. & Grnd.	200 mmfd.	580 K. C.	580 K. C.	Vol. Max.	31	Roll Gang Repeat Operation 2
4	Ant. & Grnd.	400 ohms	6.0 M. C.	6.0 M. C.	Vol. Max. Tone Treble Range Switch "S.W.1"	30A	Roll Gang
5	Ant. & Grnd.	400 ohms	21 M. C.	21 M. C.	Vol. Max. Tone Treble Range Switch "S.W.1"	38, 19, 6	Note C

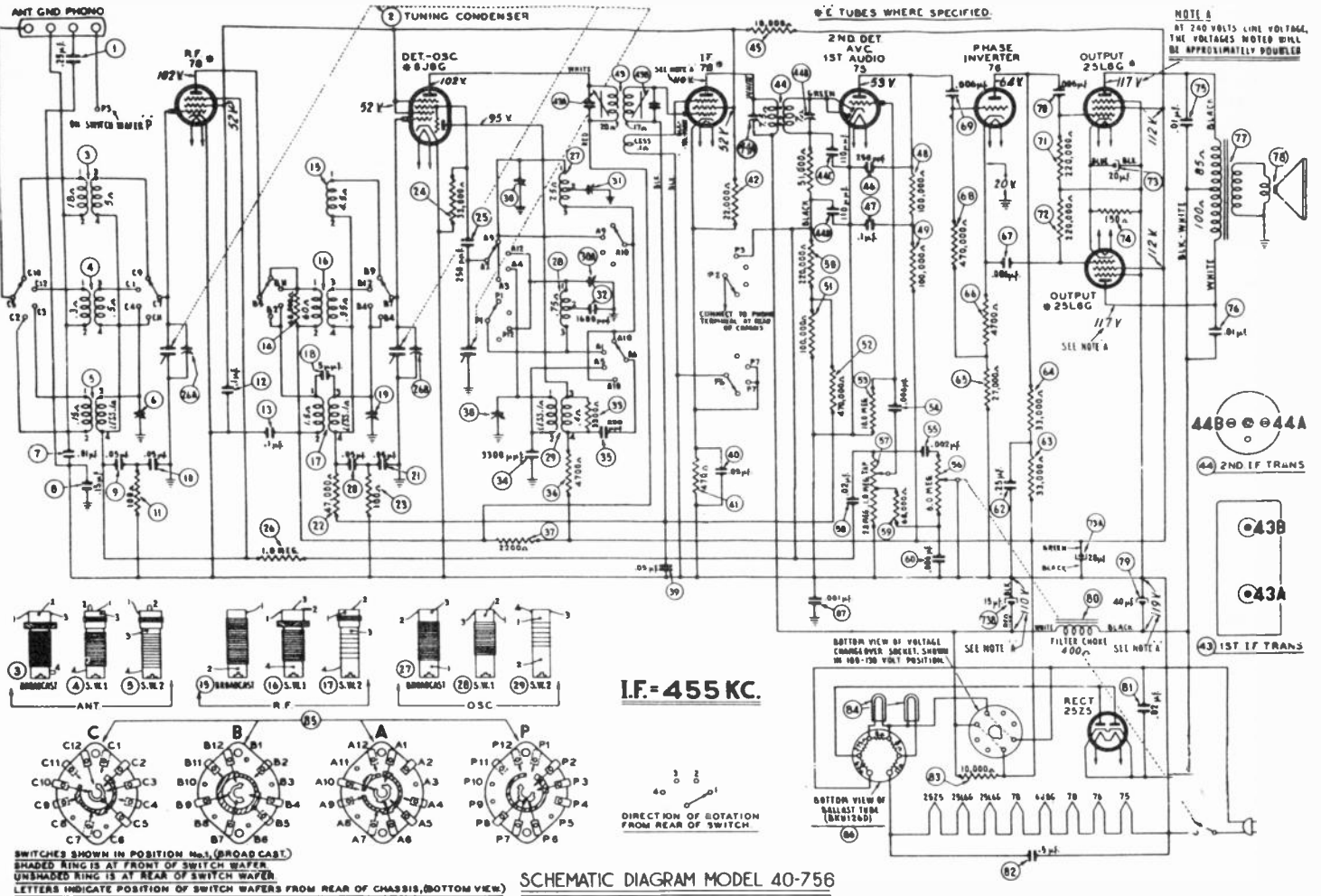
NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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 first mark on the left edge (low frequency end) of the broadcast scale.

NOTE C—When adjusting compensator (38) be sure to tune in the fundamental signal (21 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be found by turning dial 910 K. C. below the fundamental signal, which will be 20.090 M. C.

MODEL 40-756---PHILCO-TROPIC

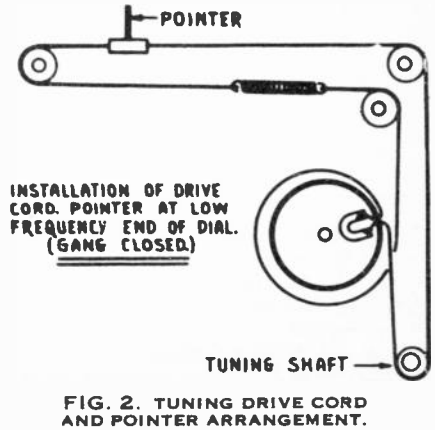


Replacement Parts — Model 40-756

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Tubular Condenser (.25 mfd.)	30-4589	55	Tubular Condenser (.002 mfd.)	30-4579	76	Socket (Type 78, 25X5, 75, BKU1260 tubes)	27-6036
2	Tuning Condenser Assembly	31-2386	56	Tone Control and On-Off Switch	33-5299	77	Socket (Type 6J8G, 29L2 tubes)	27-6058
3	Antenna Transformer (Broadcast)	32-2888	57	Volume Control (2.0 meg.)	33-5304	78	Socket (EZ plug)	27-6127
4	Antenna Transformer (Short Wave 1)	32-3093	58	Tubular Condenser (.02 mfd.)	30-4586	79	Spring (Drive Cord)	28-8913
5	Antenna Transformer (Short Wave 2)	32-2888	59	Resistor (88,000 ohms, 1/2 watt)	33-368339	80	Speaker (40-756T)	28-1455
6	Compensator	31-6288	60	Tubular Condenser (.006 mfd.)	30-4583	81	Speaker (40-756XX)	28-1486
7	Tubular Condenser (.08 mfd.)	30-4600	61	Removed in first production		82	Tube Shield	28-2728
8	Tubular Condenser (.15 mfd.)	30-4600	62	Tubular Condenser (.25 mfd.)	30-4588	83	Tube Shield Base	28-2728
9	Tubular Condenser (.05 mfd.)	30-4519	63	Resistor (33,000 ohms, 1/2 watt)	33-333339	84	Tube Shield Cap.	28-2727
10	Tubular Condenser (.05 mfd.)	30-4519	64	Resistor (33,000 ohms, 1/2 watt)	33-333339	85	Tuning Drum and Coupling Assembly	31-2327
11	Resistor (100 ohms, 1/2 watt)	33-110336	65	Resistor (37,000 ohms, 1/2 watt)	33-273339	86	Vernier Drive	31-2329
12	Tubular Condenser (.1 mfd.)	30-4588	66	Resistor (4700 ohms, 1/2 watt)	33-247339			
13	Tubular Condenser (.1 mfd.)	30-4611	67	Tubular Condenser (.006 mfd.)	30-4610			
14	Resistor (68,000 ohms, 1/2 watt)	33-368339	68	Resistor (220,000 ohms, 1/2 watt)	33-422339			
15	R. F. Transformer (Broadcast)	32-2379	69	Tubular Condenser (.006 mfd.)	30-4610			
16	R. F. Transformer (Short Wave 1)	32-3099	70	Tubular Condenser (.008 mfd.)	30-4610			
17	R. F. Transformer (Short Wave 2)	32-3185	71	Resistor (220,000 ohms, 1/2 watt)	33-422339			
18	Mica Condenser (5 mmfd.)	30-1120	72	Resistor (220,000 ohms, 1/2 watt)	33-422339			
19	Compensator	31-6288	73	Electrolytic Condenser (15 mfd., 300 V., 20 mfd., 150 V., 20 mfd.)	30-2446			
20	Tubular Condenser (.05 mfd.)	30-4519	74	Resistor (150 ohms, 1 watt)	33-115439			
21	Tubular Condenser (.05 mfd.)	30-4519	75	Tubular Condenser (.01 mfd.)	30-4581			
22	Resistor (47,000 ohms, 1/2 watt)	33-347339	76	Tubular Condenser (.01 mfd.)	30-4581			
23	Resistor (100 ohms, 1/2 watt)	33-110336	77	Output Transformer	32-8072			
24	Resistor (33,000 ohms, 1/2 watt)	33-333339	78	Cone and Voice Coil Assembly (Speaker Part No. 38-1455-3)	38-4107			
25	Mica Condenser (250 mmfd.)	30-1119	79	Electrolytic Condenser (40 mfd., 300 V.)	30-2373			
26	Resistor (1.0 meg., 1/2 watt)	33-510339	80	Filter Choke	32-8029			
27	Oscillator Transformer (Broadcast)	32-2120	81	Tubular Condenser (.02 mfd.)	30-4599			
28	Oscillator Transformer (Short Wave 1)	32-3094	82	Tubular Condenser (.02 mfd.)	30-4599			
29	Oscillator Transformer (Short Wave 2)	32-2889	83	Resistor (10,000 ohms, 3 watt)	33-3366			
30	Compensator (2 section)	31-6287	84	Pilot Lamps	34-2088			
31	Compensator	31-6289	85	Wave Switch	42-1474			
32	Tracking Condenser (1600 mmfd.)	31-6282	86	Ballast Tube (BKU1260)	34-2228			
33	Resistor (3300 ohms, 1/2 watt)	33-233339	87	Tubular Condenser (.001 mfd.)	30-4592			
34	Tracking Condenser (3900 mmfd.)	31-6283						
35	Mica Condenser (250 mmfd.)	30-1119						
36	Resistor (4700 ohms, 1/2 watt)	33-247339						
37	Resistor (2200 ohms, 1/2 watt)	33-222339						
38	Compensator	31-6289						
39	Tubular Condenser (.05 mfd.)	30-4519						
40	Tubular Condenser (.05 mfd.)	30-4519						
41	Resistor (470 ohms, 1/2 watt)	33-147336						
42	Resistor (22,000 ohms, 1/2 watt)	33-322339						
43	1st I. F. Transformer Assembly	32-3187						
44	2nd I. F. Transformer Assembly	32-3133						
45	Resistor (10,000 ohms, 1/2 watt)	33-110339						
46	Mica Condenser (250 mmfd.)	30-1119						
47	Tubular Condenser (.1 mfd.)	30-4588						
48	Resistor (100,000 ohms, 1/2 watt)	33-410339						
49	Resistor (100,000 ohms, 1/2 watt)	33-410339						
50	Resistor (220,000 ohms, 1/2 watt)	33-422339						
51	Resistor (100,000 ohms, 1/2 watt)	33-410339						
52	Resistor (4700 ohms, 1/2 watt)	33-447339						
53	Resistor (10.0 ohms, 1/2 watt)	33-610339						
54	Tubular Condenser (.006 mfd.)	30-4583						

MISCELLANEOUS PARTS

Bezel	56-1222
Cabinet (40-756XX)	10418A
Cable and Plug (Power Supply)	L-2289
Dial	27-5544
Drive Cord	31-2330
Gasket (Dial Mounting)	27-9258
Knob (Tuning)	27-4330
Knob (Volume)	27-4362
Knob (Volume and Wave Switch)	27-4332
Knob (Tone Control)	27-4872
Pin (Dial)	31-1046
Pilot Lamp Socket Assembly	38-9818
Screws (Bezel Mounting)	W-2071
Socket (Type 78 tube)	27-6035



MODEL 40-780, Codes 121-251

SPECIFICATIONS

TYPE CIRCUIT: Model 40-780, Code 121, is an Eleven (11) Tube A. C. operated Superheterodyne receiver. The features of design included in this model are three (3) tuning ranges for reception of standard, police and short-wave broadcast stations; connections for attaching a high impedance electric phonograph pick-up; automatic volume control; continuously variable tone control; bass compensation and a degenerated push-pull audio output circuit.

POWER SUPPLY: 118 or 236 Volt, 50 to 60 Cycle A. C.
118 or 236 Volt, 25 to 40 Cycle A. C.

The receiver is adjusted for operation on either of the above operating voltages by inserting the plug as indicated on top of the power transformer.

TUNING RANGES:
530 to 1720 K. C. 2.3 to 7.4 M. C. 7.4 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 7C7E, R. F. Amplifier; 6J8EG, Detector Oscillator; 6K7EG, 1st I. F. Amplifier; 7C7, 2nd I. F. Amplifier; 7A6, 2nd Detector, A. V. C.; 6R7G, 1st Audio; two 6J5C, Phase Inverter; two 6V6EG, Audio Output; and 80, Rectifier.

AUDIO OUTPUT: 8 Watts.

AERIAL AND GROUND: To obtain maximum performance from this receiver, the Philco Safety Aerial, Part No. 40-6370, or Farm Radio Aerial, Part No. 40-6383, should be used. In addition a good ground connection is required to the nearest water pipe or any other ground source that is available.

CABINET DIMENSIONS:
Height, 38". Width, 30". Depth, 15 $\frac{3}{8}$ ".

ALIGNING COMPENSATING CONDENSERS EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust the various R. F. and I. F. padders of this receiver, a calibrated signal generator such as Philco Model 077 A. C. operated or Model 177 battery operated is required. These signal generators cover a frequency range of 540 to 36000 K. C.

Aligning Indicating Device: A Vacuum Tube Voltmeter or Audio Output Meter, such as Philco Models 027 and 028, is required. Procedures for connecting these instruments are listed below.

Aligning Tools: Fiber handle screwdriver, Philco Part No. 45-2610 and Aligning Wrench, Part No. 7696.

CONNECTING ALIGNING INSTRUMENTS

Signal Generator: The signal generator is connected to the receiver as indicated in the tabulations below under "output connections to receiver". A Dummy Antenna is also required. This is listed under column, "Dummy Antenna, Note A".

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the Det-Osc. tube grid (6J8EG). The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the other end of the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and screen terminals of one of the 6V6EG tubes. Adjust the meter of the 0 to 30 volt A. C. scale.

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

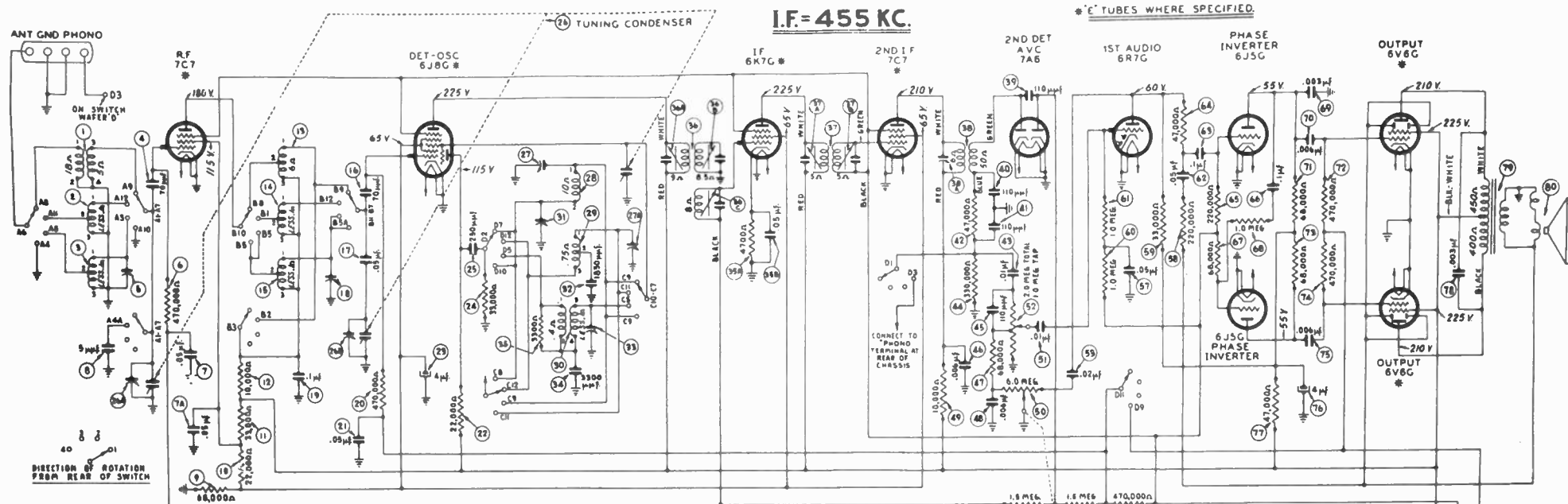
Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	6J8G Grid and Ground	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Tone Treble	38A, 37A, 37B, 36A, 36C	Note D
2	Antenna and Ground	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	27, 26B, 26A	Note B
3	Antenna and Ground	200 mmfd.	580 K. C.	580 K. C.	Vol. Max.	31	Roll Gang
4	Antenna and Ground	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max.	27, 26B, 26A	
5	Antenna and Ground	400 ohms	6.0 M. C.	6.0 M. C.	Vol. Max. Tone Treble Range Switch "S.W.1"	27A	Roll Gang
6	Antenna and Ground	400 ohms	20 M. C.	20 M. C.	Vol. Max. Tone Treble Range Switch "S.W.2"	33, 18, 5	Note C

NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

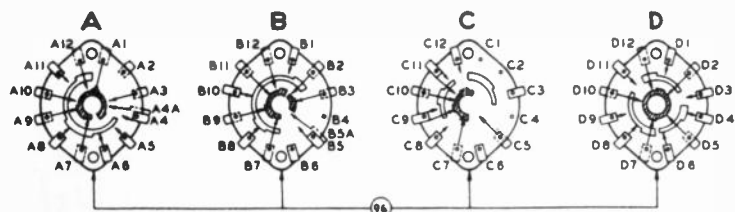
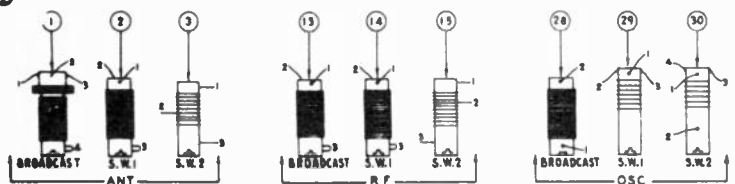
NOTE B—**DIAL CALIBRATION:** In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the first mark on the left edge (low frequency end) of the broadcast scale.

NOTE C—When adjusting compensator (33) be sure to tune in the fundamental signal (20 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be 910 K. C. below the fundamental signal, which will be 19,090 M. C.

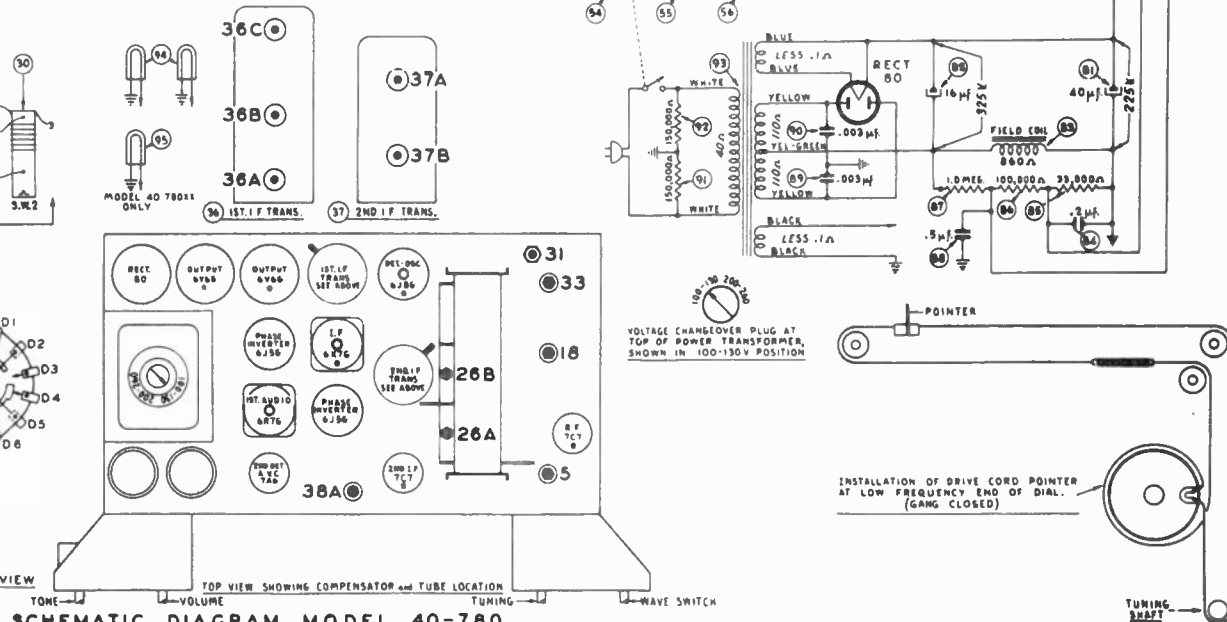
NOTE D—Before adjusting padders 38A, 37A, 37B, 36A, 36C, turn padder 36B all the way out. After the padders are adjusted to maximum, then adjust padder 36B for maximum.



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=NOTE=
SWITCHES SHOWN IN POSITION No. 1 BROADCAST
SOLID AREA INDICATES RING AT REAR OF SWITCH WAFER
SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER
LETTERS INDICATE POSITION OF SWITCH WAFERS FROM FRONT OF CHASSIS, BOTTOM VIEW



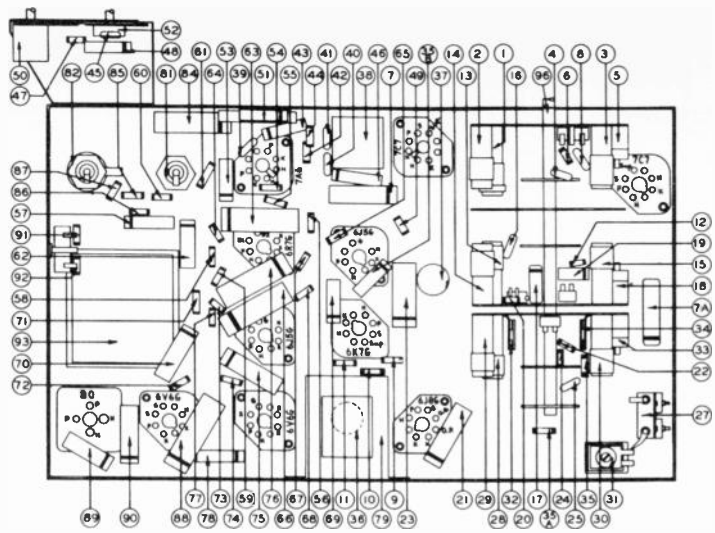
SCHEMATIC DIAGRAM MODEL 40-780

SCHEMATIC DIAGRAM AND COMPENSATOR LOCATIONS — MODEL 40-780

D. C. VOLTAGES INDICATED AT THE TUBE ELEMENTS IN THE ABOVE DIAGRAM WERE MEASURED WITH A 1000 OHMS PER VOLTMETER, PHILCO MODEL 027
LINE VOLTAGE 115 VOLTS A. C. NO SIGNAL BEING RECEIVED — RANGE SWITCH BROADCAST.

REPLACEMENT PARTS

Model 40-780



SCHE. No.	DESCRIPTION	PART No.
1	Antenna Trans. (Brdcst)	32-2588
2	Antenna Trans. (S.W.1)	32-3191
3	Antenna Trans. (S.W.2)	32-3196
4	Mica Cond. (70 mmfd.)	30-1117
5	Compensator	31-6288
6	Resistor (470,000 ohms, 1/2 watt)	33-447339
7	Tubular Cond. (.05 mfd.)	30-4609
7A	Tubular Cond. (.05 mfd.)	30-4518
8	Mica Cond. (5 mmfd.)	30-1120
9	Resistor (68,000 ohms, 1/2 watt)	33-368339
10	Resistor (22,000 ohms, 1/2 watt)	33-322339
11	Resistor (33,000 ohms, 1/2 watt)	33-333339
12	Resistor (10,000 ohms, 1 watt)	33-310439
13	R. F. Trans. (Broadcast)	32-3189
14	R. F. Trans. (S.W.1)	32-3190
15	R. F. Trans. (S.W.2)	32-3197
16	Mica Cond (70 mmfd.)	30-1117
17	Tubular Cond. (.05 mfd.)	30-4519
18	Compensator	31-6288
19	Tubular Cond. (.1 mfd.)	30-4611
20	Resistor (470,000 ohms, 1/2 watt)	33-447339
21	Tubular Cond. (.05 mfd.)	30-4609
22	Resistor (22,000 ohms, 1/2 watt)	33-322339
23	Electrolytic Condenser (4 mfd., 300 V.)	30-2415
24	Resistor (33,000 ohms, 1/2 watt)	33-333339
25	Mica Cond. (250 mmfd.)	30-1119
26	Tuning Cond. Assy.	31-2386
27	Compensator (2 section)	31-6287
28	Oscillator Trans. (Brdct)	32-3254
29	Oscillator Trans. (S.W.1)	32-3094
30	Oscillator Trans. (S.W.2)	32-3102
31	Compensator	31-6289
32	Tracking Condenser (1850 mmfd.)	31-6310
33	Compensator	31-6288
34	Tracking Condenser (3300 mmfd.)	31-6311
35	Resistor (3300 ohms, 1/2 watt)	33-233339
35A	Resistor (4700 ohms, 1/2 watt)	33-247339
35B	Tubular Cond. (.05 mfd.)	30-4519
36	1st I. F. Trans. Assy.	32-3284
37	2nd I. F. Trans. Assy.	32-3285
38	3rd I. F. Trans. Assy.	32-3286
39	Mica Cond. (110 mmfd.)	30-1118
40	Mica Cond. (110 mmfd.)	30-1118
41	Mica Cond. (110 mmfd.)	30-1118
42	Resistor (47,000 ohms, 1/2 watt)	33-347339
43	Tubular Cond. (.01 mfd.)	30-4581
44	Resistor (330,000 ohms, 1/2 watt)	33-433339
45	Mica Cond. (110 mmfd.)	30-1118
46	Tubular Con. (.006 mfd.)	30-4591
47	Resistor (68,000 ohms, 1/2 watt)	33-368339
48	Tubular Con. (.006 mfd.)	30-4583
49	Resistor (10,000 ohms, 1/2 watt)	33-310339
50	Tone Control and On-Off Switch	33-5335

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
51	Tubular Cond. (.01 mfd.)	30-4581	85	Resistor (33,000 ohms, 1/2 watt)	33-333339
52	Vol. Control (2.0 meg.)	33-5334	86	Resistor (100,000 ohms, 1/2 watt)	33-410339
53	Tubular Cond. (.02 mfd.)	30-4516	87	Resistor (1.0 meg., 1/2 watt)	33-510339
54	Resistor (1.5 meg., 1/2 watt)	33-515339	88	Tubular Cond. (.5 mfd.)	30-4590
55	Resistor (1.5 meg., 1/2 watt)	33-515339	89	Tubular Con. (.003 mfd.)	30-4608
56	Resistor (470,000 ohms, 1/2 watt)	33-447339	90	Tubular Con. (.003 mfd.)	30-4608
57	Tubular Cond. (.05 mfd.)	30-4519	91	Resistor (150,000 ohms, 1/2 watt)	33-415339
58	Resistor (220,000 ohms, 1/2 watt)	33-422339	92	Resistor (150,000 ohms, 1/2 watt)	33-415339
59	Resistor (33,000 ohms, 1/2 watt)	33-333339	93	Power Trans. (100-130 V., 200-260 V., 50-60 cycles)	32-8007
60	Resistor (1.0 meg., 1/2 watt)	33-510339	94	Pilot Lamps (Dial)	34-2064E
61	Resistor (1.0 meg., 1/2 watt)	33-510339	95	Pilot Lamp (XX Cabinet only)	34-2210E
62	Tubular Cond. (.05 mfd.)	30-4518	96	Wave Switch	42-1525
63	Tubular Cond. (.1 mfd.)	30-4611		Bezel	56-1222
64	Resistor (47,000 ohms, 1/2 watt)	33-347339		Cable and Plug (Power Supply)	L-3238
65	Resistor (220,000 ohms, 1/2 watt)	33-422339		Spec. Export A.C. Plug	L-1367
66	Tubular Cond. (.1 mfd.)	30-4611		Cabinet (40-780T)	10419A
67	Resistor (68,000 ohms, 1/2 watt)	33-368339		Cabinet (40-780XX)	10421A
68	Resistor (1.0 meg., 1/2 watt)	33-510339		Dial	27-5544
69	Tubular Con. (.003 mfd.)	30-4582		Drive Cord Assy. (Dial)	31-2407
70	Tubular Con. (.006 mfd.)	30-4610		Felt Strip (Bezel Mtg.)	27-8225
71	Resistor (68,000 ohms, 1/2 watt)	33-368339		Gasket (Dial Mtg.)	27-9258
72	Resistor (470,000 ohms, 1/2 watt)	33-447339		Knob (Tuning)	27-4330
73	Resistor (68,000 ohms, 1/2 watt)	33-368339		Knob (Tuning)	27-4862
74	Resistor (470,000 ohms, 1/2 watt)	33-447339		Knob (Volume and Wave Switch)	27-4332
75	Tubular Con. (.006 mfd.)	30-4610		Knob (Tone Control)	27-4872
76	Electrolytic Condenser (4 mfd., 300 V.)	30-2415		Pointer	56-1276
77	Resistor (47,000 ohms, 1/2 watt)	33-347339		Socket (4 prong, type 80 tube)	27-6044
78	Tubular Con. (.003 mfd.)	30-4582		Socket (6 prong, type 6J5G, 6K7G, 6R7G tubes)	27-6086
79	Output Transformer	32-8058		Socket (8 prong, type 6J8G, 6V6G tubes)	27-6058
80	Cone and Voice Coil Assy. (Spr. Pt. No. 36-1459-2)	36-4106		Socket (Loktal type)	27-6131
	(Spr. Pt. No. 36-1460-3)	36-4105		Speaker (Model 40-780T)	36-1459
81	Electrolytic Condenser (40 mfd., 300 V.)	30-2366		Spkr. (Model 40-780XX)	36-1460
82	Electrolytic Condenser (16 mfd., 400 V.)	30-2364		Spring Clip (Coil Mtg.)	28-5002
83	Field Coil (Replace Spkr.)			Spring (Drive Cord)	28-8913
84	Tubular Cond. (.2 mfd.)	30-4587		Station Card Holder	56-1273
				Tube Shield	28-2726
				Tube Shield Base	28-2725
				Tuning Drum and Coupling Assy.	31-2327
				Vernier Drive (Tuning)	31-2406
				Washer ("C" type, Shaft Mtg.)	28-2043

MODEL 40-2710---PHILCO-TROPIC

SPECIFICATIONS

TYPE CIRCUIT: Model 40-2710, code 121, is a six (6) tube A. C. or D. C. operated radio employing a superheterodyne circuit with three tuning ranges for reception of Standard, Long Wave and Shortwave Broadcast Stations. In addition other features of design are: Automatic Volume Control, Bass Compensation and a pentode audio output stage.

POWER SUPPLY: 100-130 or 200-260 v. lts A. C. or D. C. To operate the receiver on 200-260 volts A. C. or D. C. requires the use of a Ballast resistor, Part No. 33-3377 which can be obtained from your distributor. The Ballast resistor is inserted in the socket provided on the top of the chassis.

POWER CONSUMPTION: 120 volts, 35 watts; 240 volts, 70 watts.

TUNING RANGES:

530 to 1720 K. C. 150 to 390 K. C. 7.2 to 24 M. C.

I. F. FREQUENCY: 455 K. C.

AUDIO OUTPUT: 1 watt.

PHILCO TUBES: 7A8E, Converter-Oscillator; 7B7E, I. F. Amplifier; 7C6, Second Detector, First Audio and A. V. C.; 35A5E, Audio Output; 35Z3, Rectifier.

AERIAL: To obtain maximum performance from this receiver the Philco Safety Aerial, Part No. 40-6370, should be used.

CABINET DIMENSIONS:

Height, 8". Width, 11 7/8". Depth, 6 3/4".

ALIGNING COMPENSATING CONDENSERS EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust the various R. F. and I. F. padders of this receiver, a calibrated signal generator such as Philco Model 077 A. C. operated or Model 177 battery operated is required. These signal generators cover a frequency range of 510 to 36000 K. C.

Aligning Indicating Device: A Vacuum Tube Voltmeter or Audio Output Meter, such as Philco Models 027 and 028, is

required. If the Vacuum Tube Voltmeter is used, an adaptor, Philco Part No. 45-2767, is necessary in order to connect to the A. V. C. circuit of the receiver. Procedures for connecting these instruments are listed below.

Aligning Tools: Fiber handle screwdriver, Philco Part No. 45-2610 and Aligning Wrench, Part No. 7696.

CONNECTING ALIGNING INSTRUMENTS

Signal Generator: The signal generator is connected to the receiver as indicated in the tabulations below under "Output Connections to Receiver." A dummy antenna is also required. This is listed under column, "Dummy Antenna, Note A."

Vacuum Tube Voltmeters: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit with the Philco aligning adaptor, Part No. 45-2767, as follows:

Remove the 7C6 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 voltmeter to the black wire.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and screen terminals of the 35A5 tube. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 2. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

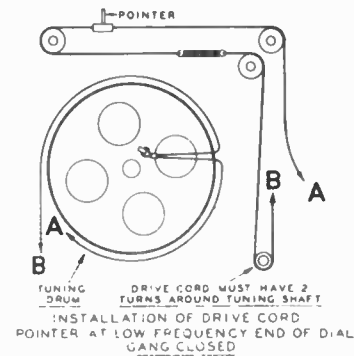


FIG. 1. DIAL CALIBRATION.

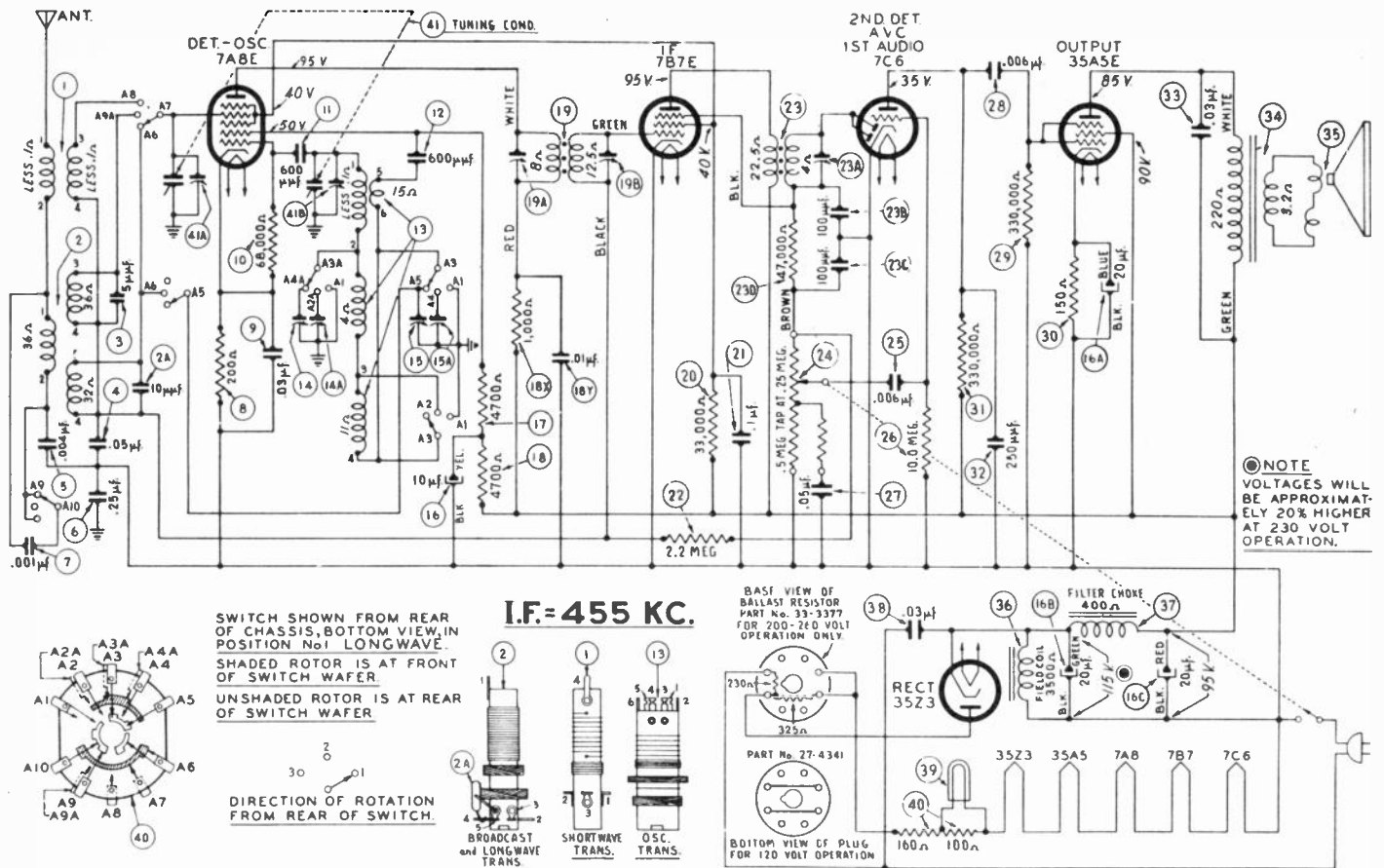
Opera- tions in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	Antenna	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdst"	23A, 19A, 19B	
2	Ant. & Grnd.	400 ohms	21 M. C.	21 M. C.	Range Switch "S.W."	41B, 41A	Notes B-C
3	Ant. & Grnd.	200 mmfd.	1500 K. C.	1500 K. C.	Range Switch "Brdst"	14A	
4	Ant. & Grnd.	200 mmfd.	580 K. C.	580 K. C.	Range Switch "Brdst"	15A (Nut)	Roll Gang
5	Ant. & Grnd.	200 mmfd.	1500 K. C.	1500 K. C.	Range Switch "Brdst"	14A	
6	Ant. & Grnd.	200 mmfd.	300 K. C.	300 K. C.	Range Switch "L.W."	14	
7	Ant. & Grnd.	200 mmfd.	175 K. C.	175 K. C.	Range Switch "L.W."	15 (Screw)	
8	Ant. & Grnd.	200 mmfd.	300 K. C.	300 K. C.	Range Switch "L.W."	14	

NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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 first mark on the left edge (low frequency end) of the broadcast scale.

NOTE C—When adjusting compensator (41B) be sure to tune in the fundamental signal (21 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be found by turning dial 910 K. C. below the fundamental signal, which will be 20.090 M. C.

MODEL 40-2710---PHILCO-TROPIC



SCHMATIC DIAGRAM MODEL 40-2710

Replacement Parts — Model 40-2710

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Trans. (Short Wave)	32-3381	40	Filament Resistor (Wirewound)	33-3372		Knobs (Volume, Tuning, Wave Switch)	27-4632
2	Antenna Transformer (Broadcast, Long Wave)	32-3370	41	Tuning Condenser Assembly	31-2410		Pointer	28-5201
2A	Mica Condenser (10 mmfd., Part of No. 2)	30-1124	42	Wave Switch	42-1549		Pilot Lamp Assembly	38-9127
3	Mica Condenser (5 mmfd.)	30-1120	MISCELLANEOUS PARTS				Socket (Loktal Tubes)	27-6131
4	Tubular Condenser (.05 mfd.)	30-4609		Acetate Window	27-5370		Socket (8 prong, Ballast Resis.)	27-6058
5	Tubular Condenser (.004 mfd.)	30-4578		Ballast Resistor (200-260 V. operation)	33-3377		Spring (Drive Cord)	28-8953
6	Tubular Condenser (.25 mfd.)	30-4589		Changeover Plug (Voltage, 115-130 V. operation)	27-4341		Spring Clip (Mtg. and Trans.)	28-5002
7	Tubular Condenser (.001 mfd.)	30-4601		Cabinet	10313B		Spring Clip (Mtg. Osc. Trans.)	28-5003
8	Resistor (200 ohms, 1/2 watt)	33-120339		Cable and Plug (Power Supply)	L-2289		Speaker	36-1486
9	Tubular Condenser (.03 mfd.)	30-4585		Dial	27-5566		Tube Shield	56-1566
10	Resistor (68,000 ohms, 1/2 watt)	33-368339		Drive Cord Assembly	31-2415		Tube Shield Clip	56-1567
11	Mica Condenser (600 mmfd.)	30-1154					Tuning Drum	31-1283
12	Mica Condenser (600 mmfd.)	30-1154					Tuning Shaft & Bracket Assy.	38-9888
13	Oscillator Transformer	32-3371						
14	Compensator (2 section)	31-6337						
15	Compensator	31-6044						
16	Electrolytic Condenser (20, 20, 20, 10 mfd., 250 V.)	30-2436						
17	Resistor (4700 ohms, 1/2 watt)	33-247339						
18	Resistor (4700 ohms, 1/2 watt)	33-247339						
18X	Resistor (1000 ohms, 1/2 watt)	33-210339						
18Y	Tubular Condenser (.01 mfd.)	30-4581						
19	1st I. F. Transformer Assembly	32-3297						
20	Resistor (33,000 ohms, 1/2 watt)	33-333339						
21	Tubular Condenser (.1 mfd.)	30-4586						
22	Resistor (2.2 meg., 1/2 watt)	33-522339						
23	2nd I. F. Transformer Assembly	32-2674						
24	Volume Control and On-Off Switch (.5 meg.)	33-5336						
25	Tubular Condenser (.006 mfd.)	30-4583						
26	Resistor (10.0 meg., 1/2 watt)	33-610339						
27	Tubular Condenser (.05 mfd.)	30-4519						
28	Tubular Condenser (.006 mfd.)	30-4610						
29	Resist. (330,000 ohms, 1/2 watt)	33-433339						
30	Resistor (150 ohms, 1/2 watt)	33-115339						
31	Resist. (330,000 ohms, 1/2 watt)	33-433339						
32	Mica Condenser (250 mmfd.)	30-1119						
33	Tubular Condenser (.03 mfd.)	30-4585						
34	Output Transformer	32-8095						
35	Cone and Voice Coil Assembly (Spkr. Part No. 36-1486-2)	36-4126						
36	Field Coil (Replace Speaker Part No. 36-1486)	32-8073						
37	Filter Choke	30-4520						
38	Tubular Condenser (.03 mfd.)	34-2068E						
39	Pilot Lamp							

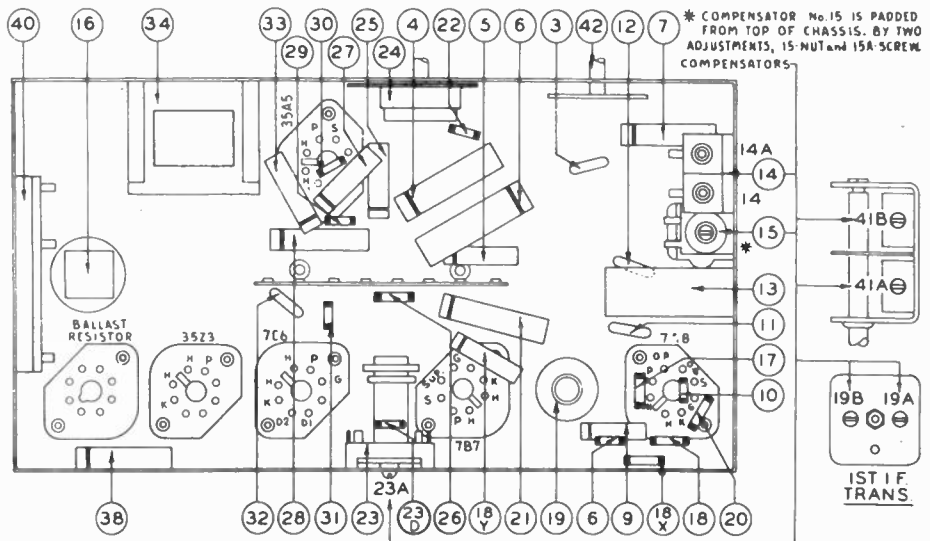


FIG. 2. PART LOCATIONS, UNDERSIDE OF CHASSIS.

MODEL 40-2725, Code 121

SPECIFICATIONS

TYPE CIRCUIT: Model 40-2725, code 121, is a six (6) tube A. C. operated radio employing a superheterodyne circuit with three tuning ranges for reception of Standard, Long-wave and Shortwave Broadcast Stations. Connections are also provided for attaching a high impedance Electric Phonograph pick-up. In addition other features of design are: Automatic Volume Control; Continuously Variable Tone Control; Bass Compensation, and a Pentode Audio Output.

POWER SUPPLY: 100-130 or 200-260 volt, 50-60 cycle, 60 watts. The voltage ranges are selected by inserting the plug as indicated on top of the power transformer.

TUNING RANGES:
150 to 390 K. C. 530 to 1720 K. C. 7.3 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 78E, R. F. Amplifier; 6J8EG, Converter Oscillator; 78E, I. F. Amplifier; 75, Second Detector, First Audio, and A. V. C.; 41E, Pentode Audio Output; 84, Rectifier.

AUDIO OUTPUT: 2.5 watts.

AERIAL AND GROUND: To obtain maximum performance from this receiver, the Philco Safety Aerial, Part No. 40-6370, should be used and a good ground connection to the nearest water pipe or any other good ground.

CABINET DIMENSIONS:
Height, 14 1/8". Width, 18 1/2". Depth, 9 3/8".

ALIGNING COMPENSATING CONDENSERS

EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust the various R. F. and I. F. padders of this receiver, a calibrated signal generator such as Philco Model 077 A. C. operated or Model 177 battery operated is required. These signal generators cover a frequency range of 540 to 36000 K. C.

Aligning Indicating Device: A Vacuum Tube Voltmeter or Audio Output Meter, such as Philco Models 027 and 028 is required. Procedures for connecting these instruments are listed below.

Aligning Tools: Fiber handle screwdriver, Philco Part No. 45-2610, and Aligning Wrench, Part No. 7696.

CONNECTING ALIGNING INSTRUMENTS

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the converter grid (6J8G). The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and screen terminals of the 41 tube. Adjust the meter for the 0 to 30 volt A. C. scale.

After connecting the aligning meter, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in Fig. 1. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

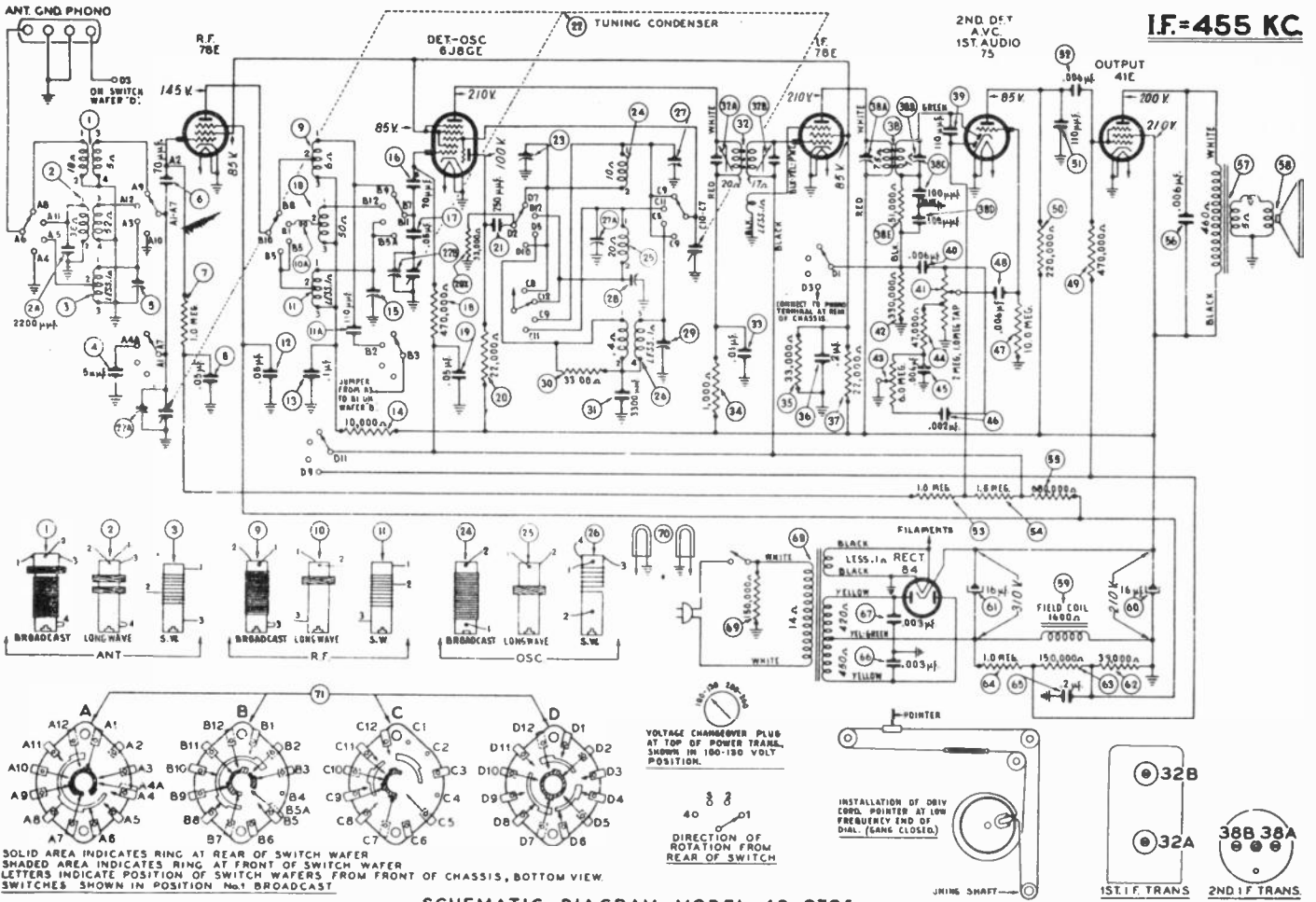
Operations in Order	SIGNAL GENERATOR			RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	6J8G	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcat"	38B, 38A, 32B, 32A	
2	Antenna and Ground	200 mmfd.	1500 K. C.	1500 K. C.	Range Switch "Brdcat"	27, 22B, 22A	Note B
3	Antenna and Ground	200 mmfd.	580 K. C.	580 K. C.	Range Switch "Brdcat"	23	
4	Antenna and Ground	200 mmfd.	1500 K. C.	1500 K. C.	Range Switch "Brdcat"	27, 22B, 22A	
5	Antenna and Ground	200 mmfd.	300 K. C.	300 K. C.	Range Switch "L.W."	27A	
6	Antenna and Ground	200 mmfd.	175 K. C.	175 K. C.	Range Switch "L.W."	28	
7	Antenna and Ground	200 mmfd.	300 K. C.	300 K. C.	Range Switch "L.W."	27A	
8	Antenna and Ground	400 ohms	21 M. C.	21 M. C.	Range Switch "S.W."	29, 15, 5	Note C

NOTE A — The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B — **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 first mark on the left edge (low frequency end) of the broadcast scale. See Schematic Diagram.

NOTE C — When adjusting compensator (29) be sure to tune in the fundamental signal (21 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be 910 K. C. below the fundamental signal, which will be 20.090 M. C.

MODEL 40-2725, Code 121



Replacement Parts — Model 40-2725

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Antenna Transformer (Broadcast)	32-2358	61	Electrolytic Capacitor (16 mfd., 400 V.)	30-2364		Cabinet	10417B
2	Antenna Transformer (Long Wave)	32-3268	62	Resistor (39,000 ohms, 1/2 watt)	33-339339		Dial	27-9558
2A	Mica Capacitor (2200 mmfd.)	30-1125	63	Resistor (150,000 ohms, 1/2 watt)	33-415339		Drive Cord Assembly	31-2350
3	Antenna Transformer (S. W. 2)	32-3196	64	Resistor (1.0 meg., 1/2 watt)	33-510339		Felt Strip (Bezel Mounting)	27-8225
4	Tubular Capacitor (5 mfd.)	30-1120	65	Tubular Capacitor (.2 mfd.)	30-4587		Knob (Tuning)	27-4330
5	Compensator (Antenna S. W. 2)	31-6288	66	Tubular Capacitor (.003 mfd.)	30-4808		Knob (Tuning)	27-4882
6	Mica Capacitor (70 mmfd.)	30-1117	67	Tubular Capacitor (.003 mfd.)	30-4808		Knob (Tone Control)	27-4872
7	Resistor (1.0 meg., 1/2 watt)	33-510339	68	Power Transformer (100-130 V., 200-260 V., 50-60 cycles)	32-8006		Knobs (Volume and Wave Switch)	27-4332
8	Tubular Capacitor (.05 mfd.)	30-4609	69	Resistor (150,000 ohms, 1/2 watt)	33-415339		Pilot Lamp Socket Assembly	38-9756
9	R. F. Transformer (Broadcast)	32-3189	70	Pilot Lamps	34-2064E		Pointer	56-1276
10	R. F. Transformer (Long Wave)	32-3269	71	Wave Switch	42-1504		Screws (Bezel Mounting)	W 2071
10A	Suppressor Coil	32-3352					Spring (Drive Cord)	28-8913
11	R. F. Transformer (S. W. 2)	32-3197					Spring Clip (Coil Mounting)	28-5002
11A	Mica Capacitor (110 mmfd.)	30-1118					Socket (5 prong, type 84 tube)	27-6035
12	Tubular Capacitor (.05 mfd.)	30-4611					Socket (6 prong, type 78, 41, 75 tubes)	27-6036
13	Tubular Capacitor (1 mfd.)	30-4611					Socket (Octal, type 6J8 tube)	27-6038
14	Resistor (10,000 ohms, 1 watt)	33-310439					Speaker	36-1452
15	Compensator (R. F., S. W. 2)	31-6288					Turning Drum and Coupling	31-2327
16	Mica Capacitor (70 mmfd.)	30-1117					Vernier Drive (Tuning)	31-2329
17	Tubular Capacitor (.05 mfd.)	30-4519						
18	Resistor (470,000 ohms, 1/2 watt)	33-447339						
19	Tubular Capacitor (.05 mfd.)	30-4609						
20	Resistor (22,000 ohms, 1/2 watt)	33-323339						
20X	Resistor (33,000 ohms, 1/2 watt)	33-333339						
21	Mica Capacitor (250 mmfd.)	30-1119						
22	Tuning Capacitor Assembly	31-2386						
23	Compensator (Broadcast series)	31-6287						
24	Oscillator Transformer (Long Wave)	32-3254						
25	Oscillator Transformer (Long Wave)	32-3137						
26	Oscillator Transformer (S. W. 2)	32-3102						
27	Compensator (Broadcast shunt)	31-6337						
27A	Compensator (Long Wave, Part of No. 27)							
28	Tracking Capacitor (Long Wave)	31-6297						
29	Compensator (S. W. 2)	31-6288						
30	Resistor (3300 ohms, 1/2 watt)	33-233339						
31	Tracking Capacitor (3300 mmfd.)	31-6111						
32	1st I. F. Transformer Assembly	32-3187						
33	Tubular Capacitor (.01 mfd.)	30-4572						
34	Resistor (1,000 ohms, 1/2 watt)	33-210339						
35	Resistor (33,000 ohms, 1/2 watt)	33-333339						
36	Tubular Capacitor (.2 mfd.)	30-4587						
37	Resistor (22,000 ohms, 1 watt)	33-324339						
38	2nd I. F. Transformer Assembly	32-3133						
39	Mica Capacitor (110 mmfd.)	30-1118						
40	Tubular Capacitor (.006 mfd.)	30-4583						
41	Volume Control (2 meg.)	33-5298						
42	Resistor (330,000 ohms, 1/2 watt)	33-433339						
43	Tone Control and On-Off Switch	33-5299						
44	Resistor (47,000 ohms, 1/2 watt)	33-47339						
45	Tubular Capacitor (.006 mfd.)	30-4583						
46	Tubular Capacitor (.002 mfd.)	30-4579						
47	Resistor (1.0 meg., 1/2 watt)	33-510339						
48	Tubular Capacitor (.006 mfd.)	30-4583						
49	Resistor (470,000 ohms, 1/2 watt)	33-447339						
50	Resistor (220,000 ohms, 1/2 watt)	33-423339						
51	Mica Capacitor (110 mmfd.)	30-1118						
52	Tubular Capacitor (.006 mfd.)	30-4610						
53	Resistor (1.0 meg., 1/2 watt)	33-510339						
54	Resistor (1.5 meg., 1/2 watt)	33-51339						
55	Resistor (680,000 ohms, 1/2 watt)	33-468339						
56	Tubular Capacitor (.006 mfd.)	30-4591						
57	Output Transformer	32-8018						
58	Cone and Voice Coil Assembly (Speaker Part No. 36-1452-2)	36-4103						
59	Field Coil (Replace Spkr. Part No. 36-1452)	36-1452						
60	Electrolytic Capacitor (16 mfd., 300 V.)	30-2319						

FIG. 2. PART LOCATIONS, UNDERSIDE OF CHASSIS.

MODEL 40-2780, Code 121

SPECIFICATIONS

TYPE CIRCUIT: Model 40-2780, code 121, is an Eleven (11) Tube A. C. operated Superheterodyne radio. The features of design included in this model are three (3) tuning ranges for reception of standard, long wave and short wave broadcast stations; connections for attaching a high impedance electric phonograph pick-up; automatic volume control; continuously variable tone control; bass compensation and a degenerated push-pull audio output circuit.

POWER SUPPLY: 118 or 236 Volt, 50 to 60 Cycle A. C.
118 or 236 Volt, 25 to 40 Cycle A. C.

The receiver is adjusted for operation on either of the above operating voltages by inserting the plug as indicated on top of the power transformer.

TUNING RANGES:
150 to 390 K. C. 530 to 1720 K. C. 7.4 to 22 M. C.

I. F. FREQUENCY: 455 K. C.

PHILCO TUBES: 7C7E, R. F. Amplifier; 6J8EG, Detector Oscillator; 6K7EG, 1st I. F. Amplifier; 7C7, 2nd I. F. Amplifier; 7A6, 2nd Detector, A. V. C.; 6R7G, 1st Audio; two 6J5G, Phase Inverter; two 6V6EG, Audio Output; and 80, Rectifier.

AUDIO OUTPUT: 8 Watts.

AERIAL AND GROUND: To obtain maximum performance from this receiver, the Philco Safety Aerial, Part No. 40-6370, or Farm Radio Aerial, Part No. 40-6383, should be used. In addition a good ground connection is required to the nearest water pipe or any other ground source that is available.

CABINET DIMENSIONS:

	Height	Width	Depth
Type T	15 3/4"	22"	13 1/4"
Type XX	38"	30"	15 5/8"

ALIGNING COMPENSATING CONDENSERS EQUIPMENT REQUIRED

Signal Generator: In order to properly adjust the various R. F. and I. F. padders of this receiver, a calibrated signal generator such as Philco Model 077 A. C. operated or Model 177 battery operated is required. These signal generators cover a frequency range of 540 to 36000 K. C.

Aligning Indicating Device: A Vacuum Tube Voltmeter or Audio Output Meter, such as Philco Models 027 and 028 is required. Procedures for connecting these instruments are listed below.

Aligning Tools: Fiber handle screwdriver, Philco Part No. 45-2610 and Aligning Wrench, Part No. 7696.

CONNECTING ALIGNING INSTRUMENTS

Signal Generator: The signal generator is connected to the receiver as indicated in the tabulations below under "output connections to receiver." A Dummy Antenna is also required. This is listed under column, "Dummy Antenna, Note A."

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator it should be connected to the A. V. C. circuit as follows:

1. Connect the negative (—) terminal of the voltmeter through a 2 meg. resistor to the Det-Osc. tube grid (6J8EG). The resistor must be connected directly to the grid of the tube and the voltmeter wire attached to the other end of the resistor.

2. Connect the positive (+) terminal to the chassis ground terminal.

Audio Output Meter: If this type of meter is used as an aligning indicator, it should be connected to the plate and screen terminals of one of the 6V6EG tubes. Adjust the meter of the 0 to 30 volt A. C. scale.

After connecting the aligning meters, adjust the compensators in the order as shown in the tabulation below. Locations of the compensators are shown in the schematic diagram. If the aligning 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	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Settings	Adjust Compensators	
1	6J8EG Grid	.1 mfd.	455 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst"	38A, 37A, 37B, 36A, 36C, 36B	Note D
2	Antenna to Ground	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	27, 26B, 26A	Note B
3	Antenna to Ground	200 mmfd.	580 K. C.	580 K. C.	Vol. Max. Range Switch "Brdcst"	31	Roll Gang
4	Antenna to Ground	200 mmfd.	1500 K. C.	1500 K. C.	Vol. Max. Range Switch "Brdcst"	27, 26B, 26A	
5	Antenna to Ground	200 mmfd.	300 K. C.	300 K. C.	Range Switch "L.W."	27A	
6	Antenna to Ground	200 mmfd.	175 K. C.	175 K. C.	Range Switch "L.W."	32	
7	Antenna to Ground	200 mmfd.	300 K. C.	300 K. C.	Range Switch "L.W."	27A	
8	Antenna to Ground	400 ohms	20 M. C.	20 M. C.	Range Switch "S.W."	33, 18, 5	Note C

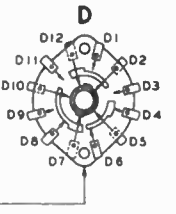
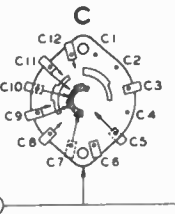
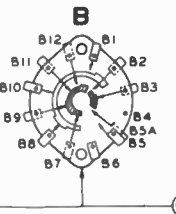
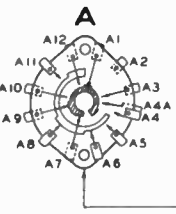
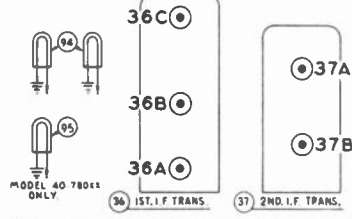
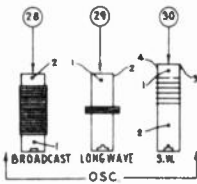
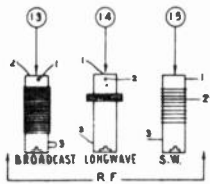
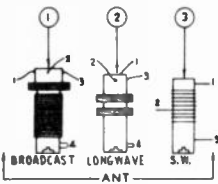
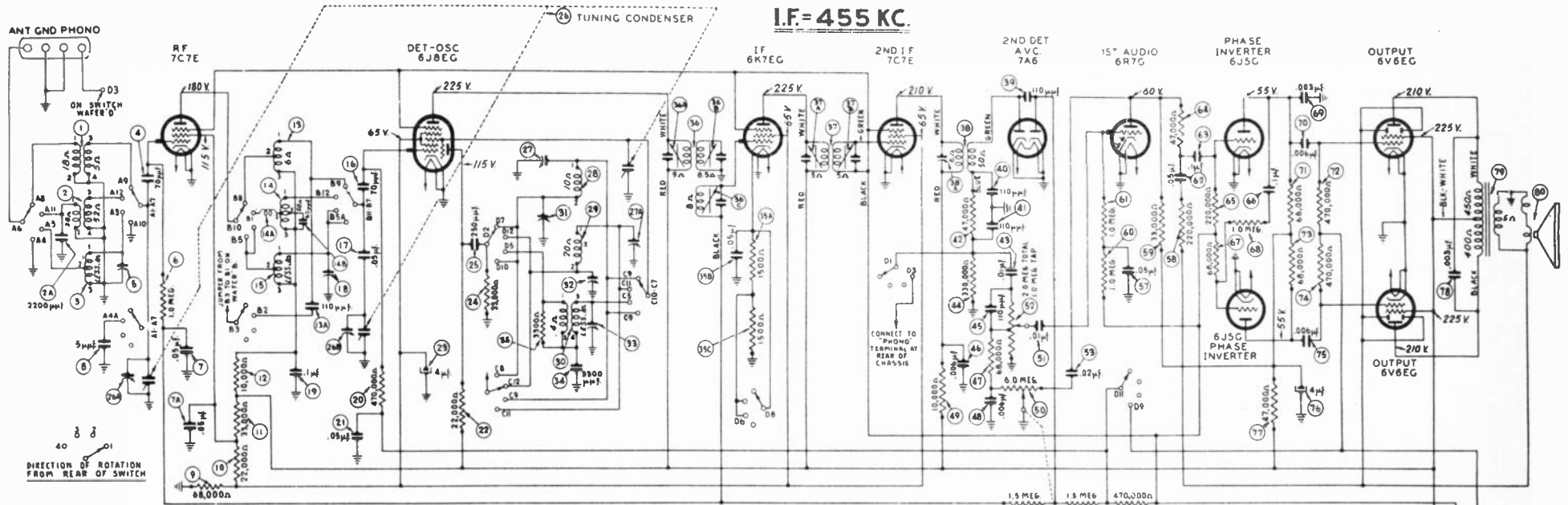
NOTE A—The "Dummy Antenna" consists of a condenser or resistance connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

NOTE B—**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

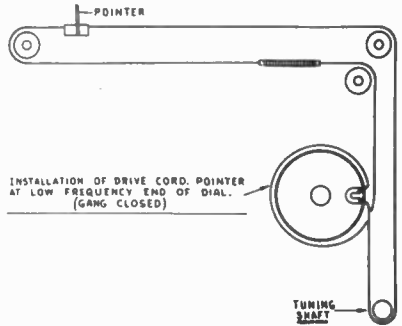
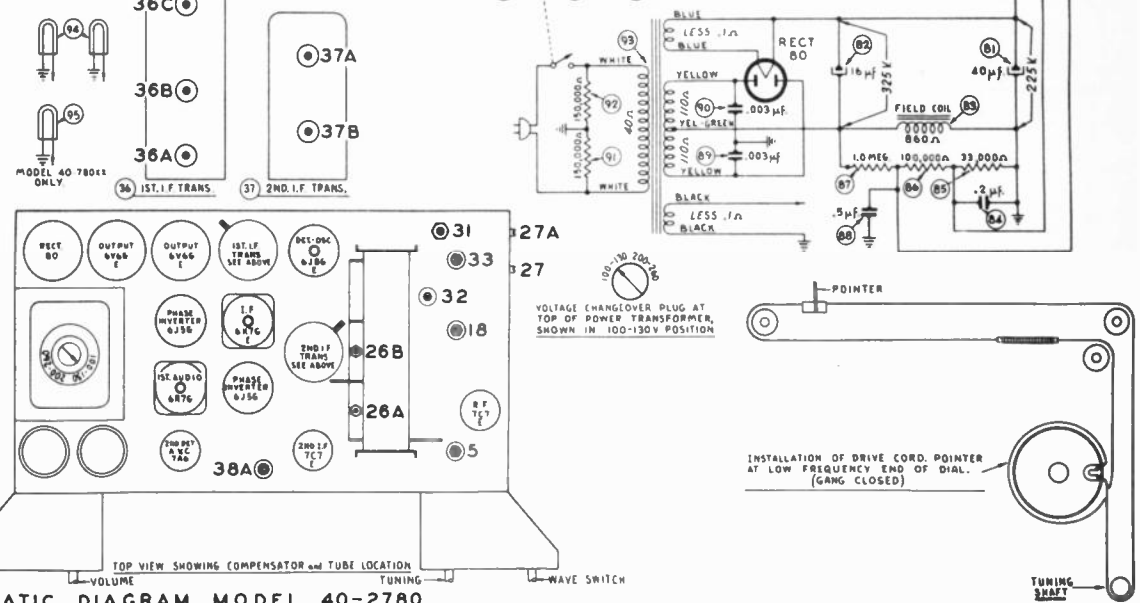
first mark on the left edge (low frequency end) of the broadcast scale. See Schematic Diagram for dial pointer cord adjustment.

NOTE C—When adjusting compensator (33) be sure to tune in the fundamental signal (20 M. C.) instead of the image signal. If the compensator is correctly adjusted, the image signal will be 910 K. C. below the fundamental signal, which will be 19.090 M. C.

NOTE D—Before adjusting padders 38A, 37A, 37B, 36A, 36C, turn padder 36B all the way out. After the padders are adjusted to maximum, then adjust padder 36B for maximum.



=NOTE=
 SWITCHES SHOWN IN POSITION No.1, BROADCAST
 SOLID AREA INDICATES RING AT REAR OF SWITCH WAFER
 SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER
 LETTERS INDICATE POSITION OF SWITCH WAFERS FROM FRONT OF CHASSIS, BOTTOM VIEW



SCHEMATIC DIAGRAM MODEL 40-2780

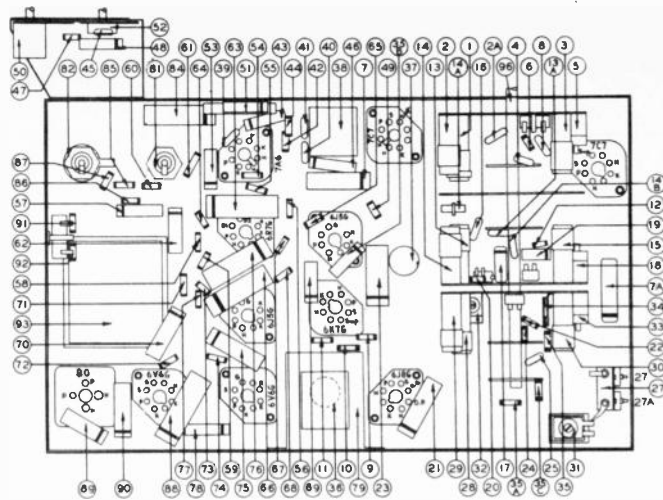
SCHEMATIC DIAGRAM AND COMPENSATOR LOCATIONS — MODEL 40-2780

D. C. VOLTAGES INDICATED AT THE TUBE ELEMENTS IN THE ABOVE DIAGRAM WERE MEASURED WITH A 1000 OHMS PER VOLTMETER, PHILCO MODEL O27. LINE VOLTAGE 115 VOLTS A. C. NO SIGNAL BEING RECEIVED — RANGE SWITCH BROADCAST.

REPLACEMENT PARTS

Model 40-2780

SCHE. No.	DESCRIPTION	PART No.
1	Antenna Trans. (Brdcst)	32-2588
2	Ant. Tran. (Long Wave)	32-3368
2A	Mica Cond. (2200 mmfd.)	30-1125
3	Antenna Trans. (S.W.2)	32-3196
4	Mica Cond. (70 mmfd.)	30-1117
5	Compensator	31-6288
6	Resist. (1.0 meg., 1/2 watt)	33-510339
7	Tubular Cond. (.05 mfd.)	30-4609
7A	Tubular Cond. (.05 mfd.)	30-4518
8	Mica Cond. (5 mmfd.)	30-1120
9	Resistor (68,000 ohms, 1/2 watt)	33-368339
10	Resistor (22,000 ohms, 1/2 watt)	33-322339
11	Resistor (33,000 ohms, 1/2 watt)	33-333339
12	Resistor (10,000 ohms, 1 watt)	33-310439
13	R. F. Trans. (Broadcast)	32-3189
13A	Mica Cond. (110 mmfd.)	30-1118
14	R. F. Tran. (Long Wave)	32-3369
14A	Suppressor Coil	32-3352
14B	Mica Cond. (60 mmfd.)	30-1040
15	R. F. Trans. (S.W.2)	32-3197
16	Mica Cond (70 mmfd.)	30-1117
17	Tubular Cond. (.05 mfd.)	30-4519
18	Compensator	31-6288
19	Tubular Cond. (.1 mfd.)	30-4611
20	Resistor (470,000 ohms, 1/2 watt)	33-447339
21	Tubular Cond. (.05 mfd.)	30-4609
22	Resistor (22,000 ohms, 1/2 watt)	33-322339
23	Electrolytic Condenser (4 mfd., 300 V.)	30-2415
24	Resistor (33,000 ohms, 1/2 watt)	33-333339
25	Mica Cond. (250 mmfd.)	30-1119
26	Tuning Cond. Assy.	31-2386
27	Compensator (2 section)	31-6337
28	Oscillator Trans. (Brdct)	32-3254
29	Osc. Tran. (Long Wave)	32-3137
30	Oscillator Trans. (S.W.2)	32-3102
31	Compensator	31-6289
32	Compensator	31-6297
33	Compensator	31-6288
34	Tracking Condenser (3300 mmfd.)	31-6311
35	Resistor (3300 ohms, 1/2 watt)	33-233339
35A	Resistor (1500 ohms, 1/2 watt)	33-215339
35B	Tubular Cond. (.05 mfd.)	30-4519
35C	Resistor (1500 ohms, 1/2 watt)	33-215339
36	1st I. F. Trans. Assy.	32-3284
37	2nd I. F. Trans. Assy.	32-3285
38	3rd I. F. Trans. Assy.	32-3286
39	Mica Cond. (110 mmfd.)	30-1118
40	Mica Cond. (110 mmfd.)	30-1118
41	Mica Cond. (110 mmfd.)	30-1118
42	Resistor (47,000 ohms, 1/2 watt)	33-347339
43	Tubular Cond. (.01 mfd.)	30-4581
44	Resistor (330,000 ohms, 1/2 watt)	33-433339
45	Mica Cond. (110 mmfd.)	30-1118
46	Tubular Con. (.006 mfd.)	30-4591
47	Resistor (68,000 ohms, 1/2 watt)	33-368339
48	Tubular Con. (.006 mfd.)	30-4583
49	Resistor (10,000 ohms, 1/2 watt)	33-310339
50	Tone Control and On-Off Switch	33-5335



SCHE. No.	DESCRIPTION	PART No.
51	Tubular Cond. (.01 mfd.)	30-4581
52	Vol. Control (2.0 meg.)	33-5334
53	Tubular Cond. (.02 mfd.)	30-4516
54	Resistor (1.5 meg., 1/2 watt)	33-515339
55	Resistor (1.5 meg., 1/2 watt)	33-515339
56	Resistor (470,000 ohms, 1/2 watt)	33-447339
57	Tubular Cond. (.05 mfd.)	30-4519
58	Resistor (220,000 ohms, 1/2 watt)	33-422339
59	Resistor (33,000 ohms, 1/2 watt)	33-333339
60	Resistor (1.0 meg., 1/2 watt)	33-510339
61	Resistor (1.0 meg., 1/2 watt)	33-510339
62	Tubular Cond. (.05 mfd.)	30-4518
63	Tubular Cond. (.1 mfd.)	30-4611
64	Resistor (47,000 ohms, 1/2 watt)	33-347339
65	Resistor (220,000 ohms, 1/2 watt)	33-422339
66	Tubular Cond. (.1 mfd.)	30-4611
67	Resistor (68,000 ohms, 1/2 watt)	33-368339
68	Resistor (1.0 meg., 1/2 watt)	33-510339
69	Tubular Con. (.003 mfd.)	30-4582
70	Tubular Con. (.006 mfd.)	30-4610
71	Resistor (68,000 ohms, 1/2 watt)	33-368339
72	Resistor (470,000 ohms, 1/2 watt)	33-447339
73	Resistor (68,000 ohms, 1/2 watt)	33-368339
74	Resistor (470,000 ohms, 1/2 watt)	33-447339
75	Tubular Con. (.006 mfd.)	30-4610
76	Electrolytic Condenser (4 mfd., 300 V.)	30-2415
77	Resistor (47,000 ohms, 1/2 watt)	33-347339
78	Tubular Con. (.003 mfd.)	30-4582
79	Output Transformer	32-8058
80	Cone and Voice Coil Assy. (Spr. Pt. No. 36-1459-2)	36-4106
	(Spr. Pt. No. 36-1460-3)	36-4105
81	Electrolytic Condenser (40 mfd., 450 V.)	30-2445
82	Electrolytic Condenser (16 mfd., 300 V.)	30-2412
83	Field Coil (Replace Spkr.)	
84	Tubular Cond. (.2 mfd.)	30-4587

SCHE. No.	DESCRIPTION	PART No.
85	Resistor (33,000 ohms, 1/2 watt)	33-333339
86	Resistor (100,000 ohms, 1/2 watt)	33-410339
87	Resistor (1.0 meg., 1/2 watt)	33-510339
88	Tubular Cond. (.5 mfd.)	30-4590
89	Tubular Con. (.003 mfd.)	30-4608
90	Tubular Con. (.003 mfd.)	30-4608
91	Resistor (150,000 ohms, 1/2 watt)	33-415339
92	Resistor (150,000 ohms, 1/2 watt)	33-415339
93	Power Trans. (100-130 V., 200-260 V., 50-60 cycles)	32-8007
94	Pilot Lamps (Dial)	34-2064E
95	Pilot Lamp (XX Cabinet only)	34-2210E
96	Wave Switch	42-1525

MISCELLANEOUS PARTS

Bezel	56-1222
Cable and Plug (Power Supply)	L-3238
Spec. Export A.C. Plug	L-1367
Cabinet (40-2780T)	10419B
Cabinet (40-2780XX)	10421B
Dial	27-5558
Drive Cord Assy. (Dial)	31-2407
Felt Strip (Bezel Mtg.)	27-8225
Gasket (Dial Mtg.)	27-9258
Knob (Tuning)	27-4330
Knob (Tuning)	27-48E2
Knob (Volume and Wave Switch)	27-4332
Knob (Tone Control)	27-4872
Pointer	56-1276
Socket (4 prong, type 80 tube)	27-6044
Socket (6 prong, type 6J5G, 6K7G, 6K7G tubes)	27-6086
Socket (8 prong, type 6J8G, 6V6G tubes)	27-6058
Socket (Loktal type)	27-6131
Spkr. (Model 40-2780T)	36-1459
Spkr. (Model 40-2780XX)	36-1460
Spring Clip (Coil Mtg.)	28-5002
Spring (Drive Cord)	28-8913
Station Card Holder	56-1273
Tube Shield	28-2726
Tube Shield Base	28-2725
Tuning Drum and Coupling Assy.	31-2327
Vernier Drive (Tuning)	31-2406
Washer ("C" type, Shaft Mtg.)	28-2043

MODEL RP-1, Code 123

WIRELESS RECORD PLAYER

SPECIFICATIONS

The Model RP-1 is a remote type record player which can be used in conjunction with any standard broadcast receiver to reproduce phonograph records.

The unit is designed to operate on various power supplies as follows:

110 volts, 60 cycles; 110 volts, 25 cycles; 220 volts, 60 cycles.

To operate on any one of these power supplies, it is necessary that the proper power transformer and turntable motor is used as indicated in the parts list below.

To operate the unit: — Place record on turn-table and slide "Off-On Switch" (Diagram "A") to "On" position; this will be indicated by pilot light in tone arm.

After allowing sufficient time for tubes to warm up, place tone arm on record; this automatically starts motor.

Next go to your radio and tune to approximately 540 K. C. (54 on most dials), at which setting the phonograph signal will be picked up. Volume can be regulated by the radio receiver's volume control in the normal way.

At the end of the record, turn the tone arm to rest position, which will automatically turn motor off. It is not necessary to slide "Off-On Switch" to the "Off" position between records.

If interference from broadcast stations is encountered the

frequency of the unit can be changed to any other frequency between 530 K. C. and 580 K. C. by adjusting the small screw indicated in Diagram "B". Turning screw clockwise lowers the frequency, counter-clockwise raises the frequency. **This adjustment is best made while the unit is in operation.**

If hum is experienced it may be necessary to reverse the power plug of the record player, the radio, or both. In most cases it is preferable to use different receptacles for record player and radio.

No definite rule can be established for the relative location of the record player to your radio; individual trial will establish best location. However, in general, satisfactory operation may be obtained up to a distance of fifty (50) feet, provided local noise conditions are not too severe.

PRODUCTION CHANGES

Master On-Off switch changed from Part No. 42-1406 to 42-1562.

Two types of motor and turntable assemblies were used on this model. The part numbers are as follows:

Motor — 110 volts, 60 cycles.....	35-1222
Motor — 110 volts, 60 cycles.....	35-1216
Turntable for Motor 35-1222.....	35-3044
Turntable for motor 35-1216.....	35-1217

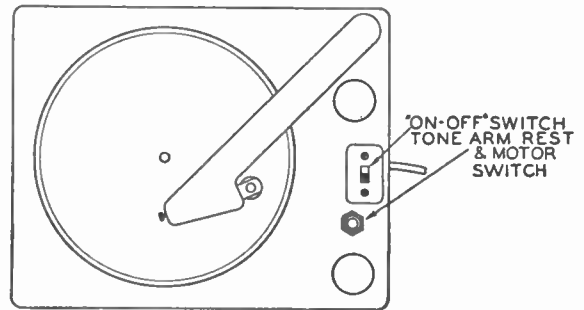
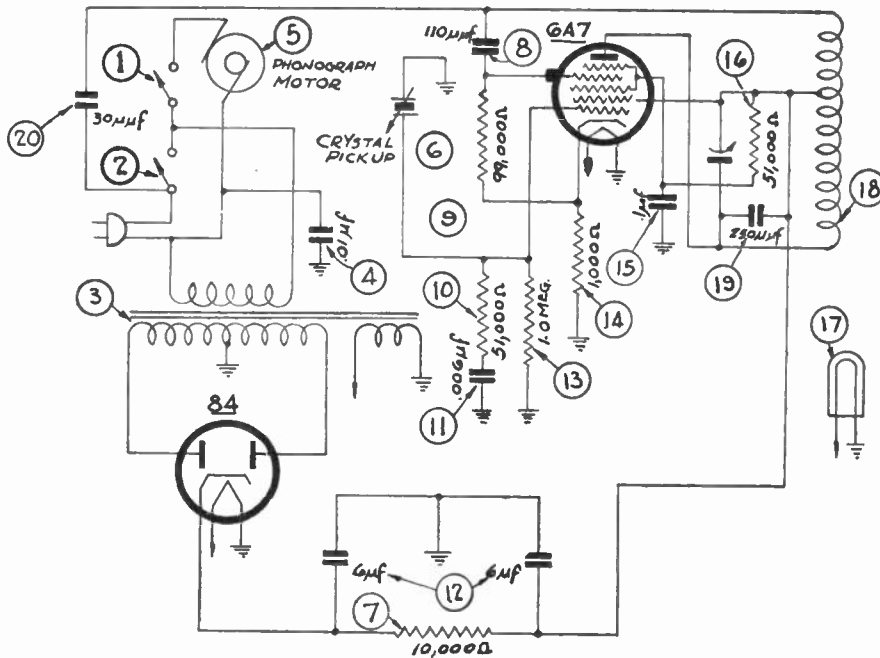


DIAGRAM A

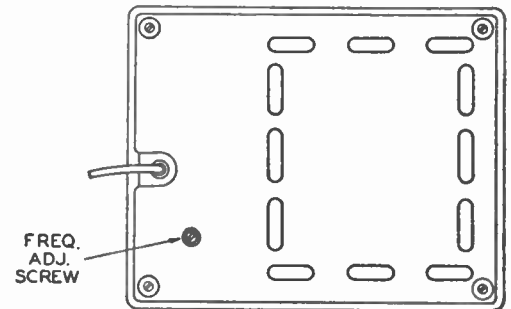


DIAGRAM B

REPLACEMENT PARTS

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Motor Switch	42-1557	10	Comp. Resistor (51,000 ohms, ½ watt).....	33-351344
2	Master Switch	42-1562	11	Comp. Cond. (.006 mf., 200 V.)...	30-4467
3	Power Trans. (110 V., 60 cycles)...	32-8043	12	Electrolytic Condenser (6 mf., 6 mf., 150 V., 60 cy.)...	30-2388
4	Line Condenser (.01 mf., 600 V.)...	3903-SG		(6 mf., 6 mf., 150 V., 25 cy.)...	35-2394
5	Motor (110 V., 60 cycles).....	35-1222	13	Grid Resistor (1 meg., ½ watt)...	33-510344
	Motor (110 V., 60 cycles).....	35-1216	14	Cathode Bias Resistor (1000 ohms, ½ watt).....	33-210344
	Motor (110 V., 25 cycles).....	315-1004	15	Screen By-Pass (.1 mf., 200 V.)...	30-4499-S
	Motor (220 V., 60 cycles).....	315-1005	16	Screen Resistor (51,000 ohms, ½ watt).....	33-351344
	Motor (220 V., 50 cycles).....	315-1006	17	Pilot Light (6-8 V., 250 amp.)....	34-2064
6	Crystal Pickup and Tone Arm.....	35-2068	18	Oscillator Coil & Padder Assem....	32-3218
	Crystal Cartridge	35-2069	19	Mica Condenser (250 mmf.).....	30-1032
7	Filter Resistor (10,000 ohms, ½ watt).....	33-310344	20	Coupling Condenser (30 mmf.)....	30-1059
8	Oscillator Grid Cond. (110 mmf.)...	30-1031			
9	Oscillator Grid Resistor (99,000 ohms, ½ watt).....	33-399344			

MISCELLANEOUS PARTS

Cable (Power)	L-2778
Cover (Bottom of Cabinet).....	27-9326
Cabinet	10459
Mounting Feet Cabinet.....	27-4817
Switch Plate	56-1383
Socket (5 prong).....	27-6035
Socket (7 prong).....	27-6037
Turntable (for Motor 35-1222)....	35-3044
Turntable (for Motor 35-1216)....	35-1217
Turntable (for Motor 315-1004)....	35-1004

Two types of 110 volt, 60 cycle motors were used on this model, when ordering be sure correct turntable is ordered for motor.

INTER-MIX AUTOMATIC RECORD CHANGER---Part No. 35-1176

SPECIFICATIONS

PHILCO INTER-MIX RECORD CHANGER, Part No. 35-1176 plays and automatically changes with one loading—14 ten-inch and twelve-inch records mixed together in any order. This record changer will also separately play 15 ten-inch records or 13-twelve inch records. In addition, the mechanism is designed to operate with slightly warped records.

Service information contained in this bulletin covers operation, care, and adjustments that may be necessary if the mechanism ceases to function properly.

When ordering parts, refer to the part number of the entire mechanism in addition to the number and name of parts shown in the figures of this bulletin.

PHILCO RECORD PLAYER NEEDLES

To obtain brilliant life-like tone quality, PHILCO Record Player Needles are recommended. These needles are especially designed to give high fidelity tone reproduction—less record wear and less surface noise. One needle plays 15 to 20 records. The use of inferior needles in the pick-up of this mechanism will greatly affect the tone reproduction performance.

AUTOMATIC AND MANUAL POSITIONS

A control knob (1) Fig. 2 is provided for placing the mechanism in the automatic or manual operating position.

When changing from manual to automatic or automatic to manual positions, the mechanism should be turned off and allowed to complete its cycle. The knob can then be set for the position desired as follows:

To operate the mechanism manually, press knob (1) Fig. 2 marked "Press-Turn" down and turn to the right (clockwise) until record support arm assembly (16) Fig. 1 is in the extreme clockwise position.

For the automatic operating position, control knob (1) Fig. 2 is turned to the left (counter-clockwise) until knob snaps up.

PICK-UP DOES NOT INDEX PROPERLY ON OUTER EDGE OF 10" AND 12" RECORDS

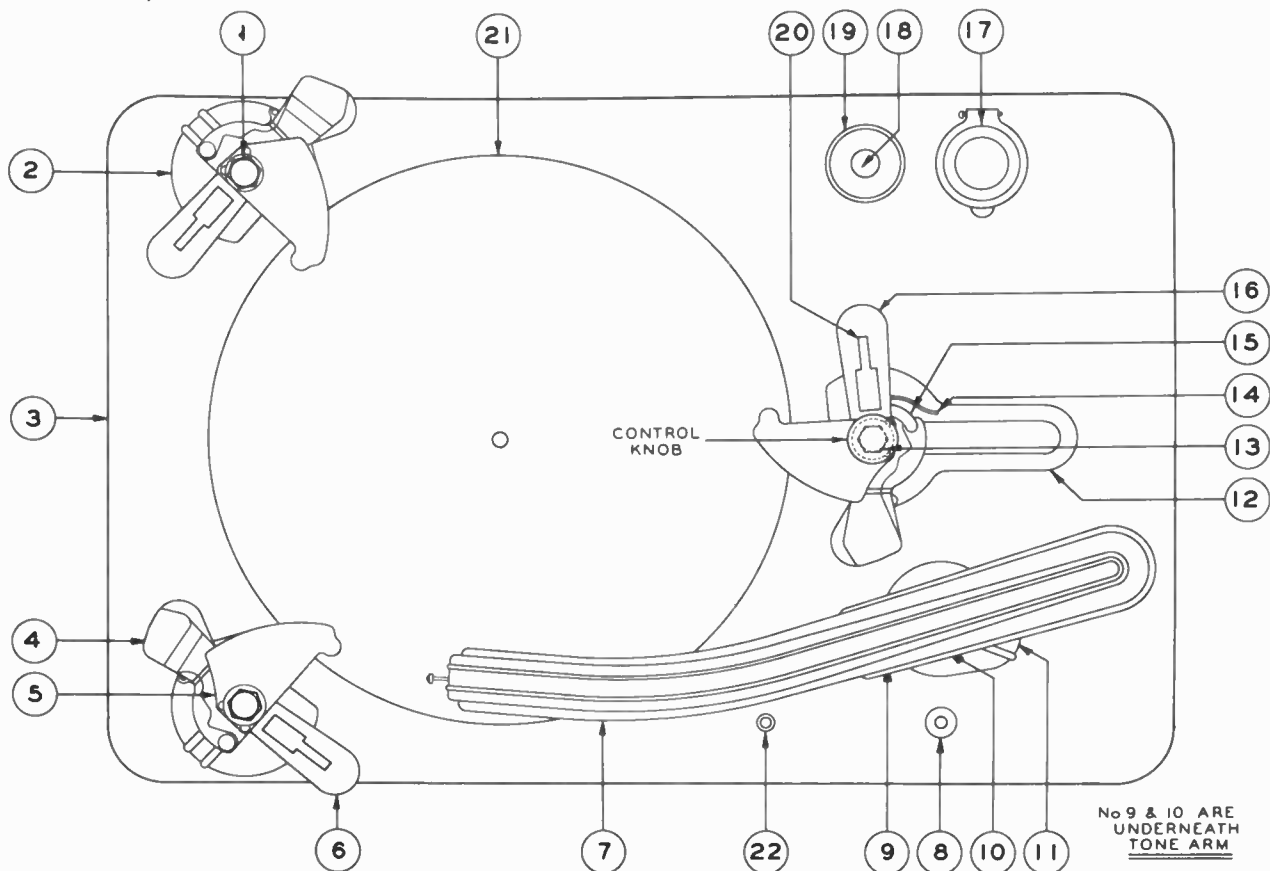
The pick-up is set for 12" records by the trip cam (15) Fig. 1 that is pivotally mounted under the selector blade on main record support post (12) Fig. 1. This trip cam is operated by the edge of a 12" record compressing the cam when the record support arm moves in a clockwise direction. This cam moves trip lever blade (14) Fig. 1 and toggle bar and spring (38) Fig. 3 which pushes set lever blade (5) Fig. 3 into position to hold the tone arm locator (36) Fig. 3 in the 12" position.

After playing a record or the mechanism has been rejected, the set lever (5) Fig. 3 is reset for the 10" position by the control cam bracket lever (35) Fig. 3 mounted on the set lever shaft. The control cam bracket (35) Fig. 3 engages the control shaft cam pin (31) Fig. 3 at the start of rotation.

Adjustment of the tone arm when placing the needle in the first groove of 10" and 12" records is controlled by tone arm locator (36) Fig. 3. When 10" or 12" adjustments are made, the 12" adjustment should be made first. If 10" adjustment alone is necessary, the 12" adjustment should be re-checked. Adjustment of the locator lever is as follows:

12-inch Record Adjustment

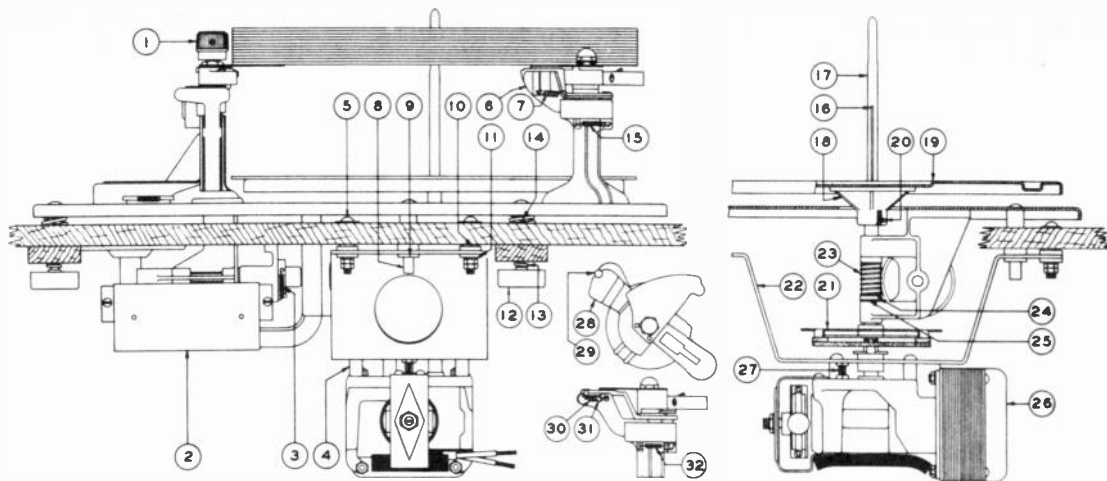
1. Turn control knob (1) Fig. 2 to "manual" position.
2. Place a 12" record on the turntable.
3. Start mechanism and allow pick-up to position itself on the outer edge of the record. If the needle has not been placed in the center of the smooth outer rim of the record, adjust stop (2) Fig. 3 by loosening set screw. Move the stop in the direction necessary to center the needle on the smooth outer rim of the record.



TOP VIEW OF RECORD CHANGER PART No. 35-1176

FIGURE 1

INTER-MIX AUTOMATIC RECORD CHANGER---Part No. 35-1176



SIDE VIEW OF RECORD CHANGER PART No. 35-1176 & MOTOR PART No. 35-1177

FIGURE 2

10-inch Record Adjustment

1. Set control knob (1) Fig. 2 to "automatic" position.
2. Load the mechanism with several 10" records.
3. Allow mechanism to set a record on turntable and place the pick-up on the smooth outer rim of the record.
4. If the pick-up does not come down in the center of the smooth outer edge of the record, adjust the following:
5. Loosen 10" record stop (1) Fig. 3.
6. Move the stop slightly toward or away from the stop pin as the case may be to center the pick-up needle on the outer edge of the record.

If, after making the above adjustments, it is found that the pick-up will not move into the first groove after the needle is centered on the outer edge of the record, examine the following parts:

1. Spring (2) Fig. 3 on 12" adjustment stop may be weak.
2. Tone arm lever or swivel shaft may be binding; examine and lubricate.

2. Oscillating Groove Records

TONE ARM ELECTRIC REJECT SWITCH WILL NOT OPERATE

(When no record is on turntable)

The tone arm electric reject switch operates when the mechanism is first loaded and no records are on the turntable or no records are on the record support arms. This switch closes when the pick-up needle drops into a groove provided in the turntable; allowing the tone arm to go to a lower level and causing switch contact to close. Adjustment of this switch is as follows:

1. Adjust screw (9) Fig. 1 located in the tone arm directly above the end of the tone arm shaft. Turn this screw in the direction necessary to obtain a clearance of $\frac{1}{16}$ " between the bottom of the groove in the turntable and the bottom end of the needle.
2. With a record on the turntable and the needle resting on the record, a clearance of $\frac{1}{16}$ " between the top and bottom contacts of the tone arm electric reject switch should be obtained. Bend the moving contacts spring upward or downward to obtain the necessary clearance.
3. Also check the electric magnet (19) Fig. 3 and associated wiring for open circuits.
4. Check the small metal rod connecting the trip trigger (13) Fig. 3 and lever of electric magnet.

MECHANISM WILL NOT REJECT AT THE END OF RECORDS

The tone arm is designed to reject records with an oscillating or spiral reject groove. To make the adjustments for either type of records, proceed as follows:

1. See that the screw (10) Fig. 1 which clamps the tone arm swivel bracket is tight. Make sure that the set screws holding the tone arm lever (12) Fig. 3 to the tone arm shaft are tight.

Records with an oscillating reject groove are rejected by the trip dog located on the end of the tone arm lever (12) Fig. 3 engaging the saw teeth of the trip trigger (13) Fig. 3. When the mechanism will not reject an oscillating groove record, either the screws mentioned in paragraph 1 are loose or the trip dog trigger (13) Fig. 3 or springs (15) Fig. 3 are at fault. When it is found that these parts have become worn or weak, they should be replaced.

3. Spiral Groove Records

Records with spiral reject grooves are rejected by the trip shoe (14) Fig. 3 located on the end of the tone arm lever (12) Fig. 3. This trip shoe (14) Fig. 3 hits the pin on the trip trigger (13) Fig. 3 releasing the clutch throwout bracket (29) Fig. 3. This should occur when the pick-up needle has traveled to within a distance of $1\frac{1}{8}$ " from the center of the turntable spindle. Adjust the mechanism to properly reject this type of record as follows: If the pick-up does not reject the mechanism after traveling to within $1\frac{1}{8}$ " from the center of the turntable spindle (or $1\frac{1}{4}$ " from the edge of spindle), loosen the knurled nut holding trip shoe (14) Fig. 3 to the tone arm lever (12) Fig. 3. Move trip shoe toward or away from the pin on the trip trigger (13) Fig. 3 until the trip shoe operates the mechanism properly. When this point is found, the knurled nut should be well tightened.

TEN AND TWELVE INCH RECORDS DO NOT SEPARATE PROPERLY IN A MIXED LOADING

Ten and twelve inch records in a mixed loading are separated by lifter cams (20) Fig. 1 located on the record support arms (6) (16) Fig. 1. These cams operate when the next record to be selected by the mechanism is 10" and are designed to lift a 12" record when one is located directly above the 10" record. This allows the selector blades (5) Fig. 1 and guide arms (4) Fig. 1 to slide under the 12" record so that a 10" record can be placed on the turntable. The lifter cams (20) Fig. 1 are caused to operate by the 10" record hitting the end of the cam. Check the following parts when mechanism does not separate records properly:

1. The lifter cam link (20) Fig. 1 should be approximately $\frac{3}{32}$ " above the surface of the record support arms (6) (16) Fig. 1 when no records are on support arms (6) (16) Fig. 1. This link is held in this position by the small return spring found under (20) Fig. 1 underneath the support arms (6) (16) Fig. 1. If link is not above the surface of support arms (6) (16) Fig. 1, check for loose spring; replace spring if necessary.
2. The selector blades (5) Fig. 1 should have a slight downward pressure on the top surface of the guide arms (4) Fig. 1 when in their return position ready for next selection.
3. In their full return position after a record has been placed on the turntable the selector blades should also pass the guide arm link pin (22) Fig. 1 so that the selector blades will carry the guide arm toward the edge of a record when making the next selection. If any one of the blades do not return enough to clear the guide arm link pin (22) Fig. 1, the blade should be adjusted as given in paragraph "RECORD SELECTORS DO NOT OPERATE IN SYNCHRONISM".

INTER-MIX AUTOMATIC RECORD CHANGER---Part No. 35-1176

4. There should also be sufficient tension between the guide arm link pin (22) Fig. 1 and the end of the selector blade (5) Fig. 1 so that the guide arms (4) Fig. 1 will be pulled forward against the record when the selector blade (5) Fig. 1 moves to select the next record. Tension between guide arms and selector blades should be sufficient so that sloop on guide should lift a full load of records to proper height for selector blades to select bottom record. If guide arm pin (22) Fig. 1 does not have enough tension against end of selector blades (5) Fig. 1, check the springs holding the pin in position, also, for worn surface on side of pin.

5. Action of the selector guide arm (4) Fig. 1. The guide arm is designed to guide the selector blade (5) Fig. 1 and lift the record to the proper height necessary to separate the records. The top of the guide arm (4) Fig. 1 has two inclined surfaces. The outer surface for 10" records and the inner surface for 12" records. After the selector blades (5) Fig. 1 have entered between the records, the guide arm (4) Fig. 1 is released and returned to its normal position. If it does not return to its normal position, check for a weak spring on the guide arms (4) Fig. 1 or binding between guide arm and record support post (2) Fig. 1. These springs are attached to record support posts (2) (12) Fig. 1 and a pin at the swivel of the guide arm.

6. In case of a warped 10" record with its concave face down, resting on a warped 12" record with the concave face upward, there is a tendency for the selector blades to jam against the edge of the 10" record instead of going in under it. In order to prevent this condition the blades must be bent down sufficiently to slide along the top surface of the 12" record.

SELECTOR BLADE (5) FIG. 1 FAILS TO SEPARATE BOTTOM RECORD FROM STACK

This is due either to a badly warped condition of the record, or to its being of a thickness considerably different from those now in standard use. The design of both selector blade and record support arms is such as to accommodate a maximum variation in thickness and flatness of records, but certain records may be found which are so far out as to be unfit for use in the automatic changer.

RECORD SELECTORS DO NOT OPERATE IN SYNCHRONISM

If the record selector blades (5) Fig. 1 do not operate in synchronism proceed as follows:

1. Set the control knob (1) Fig. 2 to "automatic" position. See page 1 "Automatic and Manual Positions". (Turn knob to the left until it snaps up). Place one 10" record on selector blades. After record has been dropped to record supports, pull lower plug and rotate turntable by hand until the selector blades are close to the edge of record. At this point all selector blades should be as nearly as possible the same distance from spindle. If the selector blades are not the same distance from the spindle due to replacement of gears, etc., the blades are resynchronized as follows:

2. With the mechanism in the same condition as outlined in paragraph 1, remove the "C" washer from segment arms (23) or (27) Fig. 3 depending on which of these selector blades are out of time. Pull segment arm down so that gears are disengaged, then move selector blade (5) Fig. 1 in direction necessary to align it with other blades. When this position is found, mesh gears and replace "C" washer.

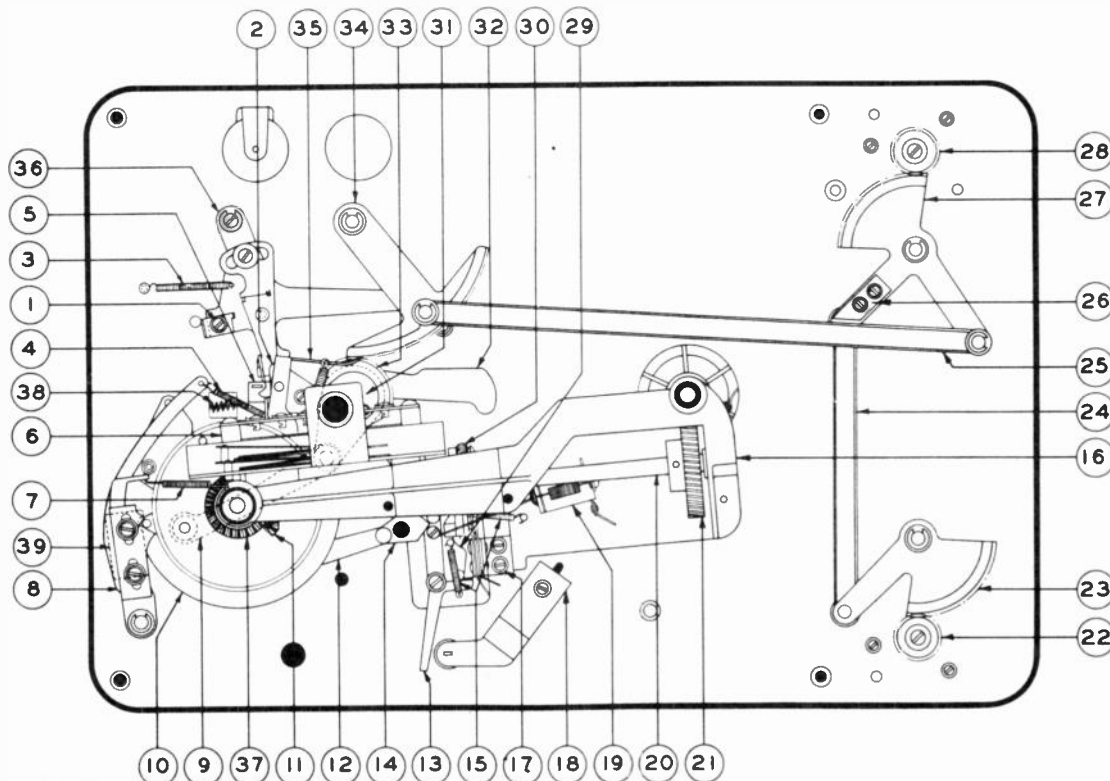
MECHANISM DOES NOT RETURN SELECTOR BLADES TO LOADING POSITION

If the selector blades will not return to the loading position (pointed toward spindle) after a record has been placed on the turntable:

1. Look for trouble in the parallel cam switch (6) Fig. 3. The contact of this switch should be in a closed position, at the time a record is being played.

2. When the selector blades are in the proper loading position cam (37) Fig. 3 should open parallel switch (6) Fig. 3. To place the mechanism in the loading position, turn changer switch (8) Fig. 1 off. After the switch is off the changer should continue to operate until the next record is selected and dropped on the turntable, cam (37) Fig. 3 should open parallel switch (6) Fig. 3. When the turntable stops rotating the selector blades should be pointed toward spindle.

3. To adjust cam (37) Fig. 3 loosen the two set screws and rotate cam on the shaft until proper position is obtained. Retighten set screws.



BOTTOM VIEW OF RECORD CHANGER PART No. 35-1176

FIGURE 3

INTER-MIX AUTOMATIC RECORD CHANGER---Part No. 35-1176

NO REPRODUCTION WHEN NEEDLE IS OPERATING ON RECORD

A muting switch (177 Fig. 3, the purpose of which is to short the pick-up during the change cycle. This switch is mounted on the transmission frame, and is operated from the clutch throw-out (29) Fig. 3. When a record is on the turntable and the needle is in playing position, the contact of this switch should be in the open position.

AUTOMATIC CLUTCH DOES NOT COMPLETELY DISENGAGE AT THE END OF THE CYCLE

This trouble is identified by a steady thumping or clicking sound when the pick-up is in the playing position and is caused by the clutch not properly disengaging at the end of the automatic cycle. In most cases, this trouble is due to the clutch clearance adjusting plate not being in the proper position on the tone arm brake (8) Fig. 3. To eliminate this trouble, make the following adjustments:

1. Loosen the two screws that hold the clutch clearance adjusting plate to the tone arm brake lever (8) Fig. 3. Advance the adjusting plate until the clutch pawl [found in clutch housing (30) Fig. 3] clears the clutch sprocket.

2. If the clutch disengages before the pin on the drive drum (10) Fig. 3 reaches the inclined surface of the adjusting plate, the plate should then be retarded until the drive drum pin passes over the humps and slides down inclined surface.

FAILURE OF UNIVERSAL DRIVE COUPLING

The Universal drive coupling consists of four strips of rubber held together by a frame having ears projecting into slots in the rubber.

If excessive strain is placed on the coupling, the projecting ears may slip out of the slots in the rubber, thus disconnecting the drive. In order to hold the coupling together more firmly, the outer end of these ears projecting through the rubber may be bent outward at right angles to form a hook which will hold the rubber firmly in place. Do not make bend any more than $\frac{1}{8}$ " from end of ear. See Fig. 4.

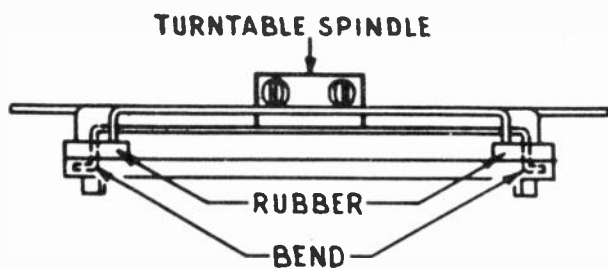


FIGURE 4

REMOVING MOTOR TRANSMISSION

In removing the motor transmission, the following parts should be disassembled first:

1. Remove turntable shaft. (See paragraph — Removing Turntable Shaft Assembly.)
2. Unsolder pick-up wires.
3. Loosen the two set screws which hold the tone arm lever and the tone arm shaft and remove tone arm and shaft.
4. Remove the mounting screws which hold the tone arm post to the panel. Unsolder electric tone arm reject switch wire from the terminal strip and remove tone arm post.
5. Remove "C" washer from the drive link pin — this will allow the drive link to be removed from the transmission and then remove the six mounting screws holding the transmission to the panel and take out the transmission.

TOP RECORD SLIPS WHEN PICK-UP IS IN THE PLAYING POSITION

If the top record slips in the playing position, check the following parts:

1. Check for excessively warped records. Records warped too badly should be replaced and not used in the changes.

2. Check for worn grooves in record, particularly old records. After the grooves of the records lose their gloss, the pick-up does not glide through the groove. This condition has a tendency to cause pick-up needle to drag resulting in the top record slipping.

3. Check record friction spring (16) Fig. 2 for tension. This spring should protrude far enough from the shaft to hold the top record from slipping when in the playing position. This spring when adjusted properly to hold a record, should also allow a 10" record to fall freely onto the turntable.

If the spring is in need of adjustment, see heading "Removing Turntable Shaft Assembly", Paragraph 4.

OILING AND GREASING MOTOR AND MECHANISM

The motor and mechanism should be oiled and greased every six months with a good grade of S. A. E. 10 oil.

Parts to Lubricate:

1. All bearings of the mechanism.
2. All sliding surfaces such as, cams, etc., should be lubricated with a very light grease.
3. Motor bearings and governor felt.

TURNTABLE SPEED ADJUSTMENT

If motor runs too fast or slow, the governor adjustment screw (27) Fig. 2 on the top side of the governor should be screwed in or out slightly as required. To do this, loosen the lock nut and turn screw, then retighten lock nut.

REMOVING TURNTABLE SHAFT ASSEMBLY

To remove the turntable shaft assembly, proceed as follows:

1. Loosen the two set screws holding the motor coupling (21) Fig. 2 to the turntable shaft.
2. Loosen the two screws holding the turntable drive worm (23) Fig. 2 to the turntable shaft, then lift out turntable and shaft.
3. To remove the turntable from the shaft, remove the three screws and nuts which hold it to the hub.
4. The record friction spring (16) Fig. 2 on the turntable shaft can be removed by pushing the hub downward toward the heavy end of the shaft — the spring can then be removed. If it is desired to increase the record friction on spring, bend upward the lower section of the spring which contacts with the bottom surface of the hub. To decrease the record friction against the spring, bend the spring downward.

The motor is removed as follows:

1. Remove the three $\frac{1}{8}$ " machine screws which hold the motor to the motor mounting bracket. Three $\frac{1}{2}$ " spacers will also be found which space the motor from the mounting plate.
2. There are two motor bracket locating pins on the underside of the changer base panel which pass through rubber grommets located in the motor mounting bracket. These are provided to keep the mounting panel and motor bracket in proper alignment.

MECHANISM AND CHASSIS MOUNTING

The mechanism is mounted in the cabinet as follows: 4 mounting studs are located in the bottom surface of the panel each threaded to take $\frac{1}{4}$ " No. 20 machine screws. The mounting panel rests on four tapered coil springs. The small end of each spring is pressed over a mounting stud and the large end of each spring fits into a screw in the top surface of the mounting shaft in the cabinet. Four spacing blocks $\frac{1}{8}$ " thick and with a $\frac{3}{8}$ " hole are fastened to the lower side of the cabinet motor board. The $\frac{3}{8}$ " hole in each block is centered with the $\frac{7}{16}$ " screw clearance hole. These are provided and located on the lower side of the cabinet motor board into which each of the lower mounting springs are to fit. The $\frac{1}{4}$ " No. 20 machine screws are turned through the four wing nuts until the head of each screw is against the head of the bottom side of each wing nut. The four lower springs are of smaller diameter than the upper springs. These lower springs are slipped over the nuts to each of the $\frac{1}{4}$ " No. 20 machine screws with the smaller end toward the head and resting on the wing nuts.

The $\frac{1}{4}$ " No. 20 machine screws are pushed through the $\frac{7}{16}$ " clearance hole and tightly screwed into the mounting studs. Wing nuts should be backed down on head of $\frac{1}{4}$ " No. 20 bolt to place changer in operation.

SPECIFICATIONS

PHILCO AUTOMATIC RECORD CHANGER Part No. 35 - 1180 automatically changes either twelve 10" or ten 12" records. The service information contained in this bulletin covers the operation, care, and adjustments that may be necessary if the mechanism ceases to function properly.

When ordering parts for this mechanism, refer to the part number of the entire mechanism in addition to the number and names of the parts shown in the figures of this bulletin.

PHILCO RECORD PLAYER NEEDLES

To obtain brilliant life-like tone quality, PHILCO needles are recommended. These needles are especially designed to give high fidelity tone reproduction—less record wear and less surface noise. One needle plays 15 to 20 records. The use of inferior needles in the pick-up of this mechanism will greatly affect the tone reproduction performance.

CHANGER OPERATION

Setting for Record Size

This changer plays up to twelve 10-inch records or ten 12-inch records at one loading.

On each post you will see two plates. The lower one, on which the records rest, is the shelf plate. The upper one is the selector blade which selects the next record to be played from the bottom of the stack.

To set for record size. (1) Clasp one of the posts just underneath the shelf plate, with thumb and finger of left hand. With right hand, lift knob and turn selector plate until the figure 10 or 12 (whichever size you want to play) is opposite the pointer. Do the same with the other post. Both selector plates must be in 10 or 12 position. (2) Push button marked 10 or 12, as required (see Figure 1).

Loading

See that both shelf plates are turned toward center of turntable. As shelf plates near correct position you will feel the shelf plates drop into their indexing slots. Make sure both posts have dropped into their slots, if one is not in the slot, records may be damaged. Place the stack of records over center pin so they will rest on the two shelf plates.

Starting the Mechanism

To start motor and turntable (1) turn the switch to "ON" position. (2) Then push button "R". This will release the first record and start the record-changing mechanism.

Rejecting a Record

To reject a record press the "R" button. This can be done any time after the needle has come into contact with that record.

Turning Off

Turn changer switch to "OFF" position. Lift pickup arm, place it on the pickup rest. (If you happen to turn off the changer switch while the mechanism is going through a "change cycle", you will notice that it does not stop until the cycle has been completed, and pickup is again in playing position, ready to be lifted over onto the pickup rest.)

To avoid warping of records, never leave records resting on the shelf plates.

Removing Played Records

To remove records make sure motor switch is off, then take hold of both posts, just below the shelf plates, and turn

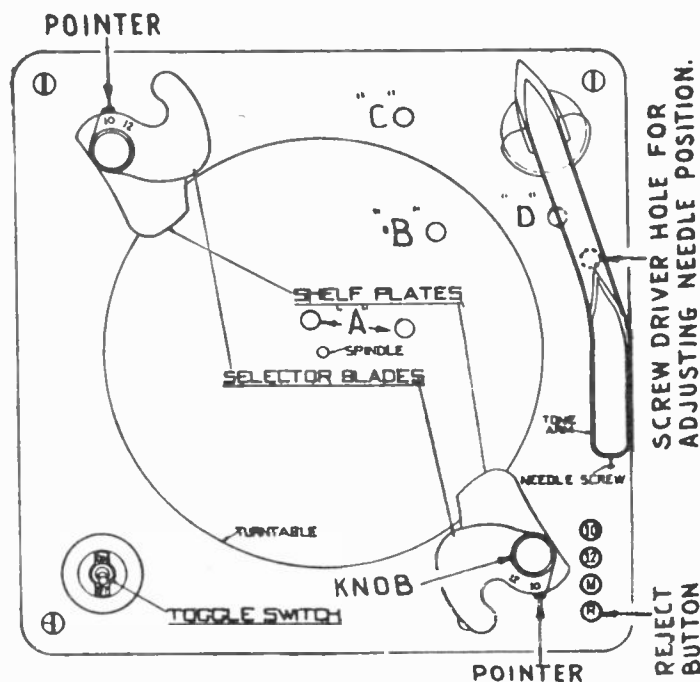


FIG. 1 SHOWS SELECTOR BLADES IN POSITION FOR 10-INCH RECORDS.

them out of the way. Lift the played records from the turntable. Taking hold of posts as before (below shelf plate) move plates until post again falls into indexed position as outlined under loading. The changer may then be loaded with a new stack of records.

Manual Operation

To play records one at a time as in an ordinary phonograph: (1) Remove any records remaining on the turntable, leave plates turned outward as for removing played records. (2) Press button marked "M". Then place a record on the turntable, switch on motor and lift pickup into position.

LUBRICATION

The record changer will not need lubrication more than once a year and should be lubricated with a good light machine oil such as S.A.E. 10. There are 6 locations that will need oiling. These are shown in Figure 1. These lubricating holes can be reached from the top of the mechanism and are as follows:

1. The motor gear housing contains 3 lubricating wicks. These wicks are shown at "A" in Figure 1. Two of these wicks are reached through the hole directly in back of the turntable spindle and the other wick to the right of the turntable spindle.

2. A small quantity of oil should be dropped through hole marked "B" in Figure 1. Lubricating this point distributes oil to the various moving surfaces of the mechanism.

3. A felt wick directly below the hole marked "C" in Figure 1 should also be oiled.

4. Another felt wick marked "D" in Figure 1 should also be well oiled.

After long periods of use the oil becomes gummed in the above mentioned wicks. The wicks should be removed and cleaned with kerosene or carbon tetrachloride.

AUTOMATIC RECORD CHANGER--Part No. 35-1180

SQUEAKS OR OTHER NOISES DURING PLAYING OF RECORDS

If squeaks or various noises are heard from the mechanism during the playing of records or changing of records, the following items should be checked:

1. In the majority of the cases, these squeaks will be usually found to come from the friction between the stacked records and the turntable spindle. To check for this trouble, operate the mechanism with and without a load of records. To eliminate this condition, apply a very thin coat of light motor grease or vaseline to the turntable spindle.

2. Check the 5 wicks given under the paragraph on "Lubrication." Each wick should be thoroughly saturated with oil. All 3 motor wicks should be removed from the retaining holes with tweezers and examined to see if the oil has become gummy. In this case, the wicks should be thoroughly cleaned and relubricated with oil and replaced in their sockets.

3. Check all set screws to see that they are in place and tight.

4. Check motor windings. If coils have been jarred loose they should be tightened in place. The shading coils which encircle a portion of each laminated pole, the purpose of which is to make the motor self-starting, should be rigidly held in place by the retaining tape.

TURNTABLE SPEED VARIES

The turntable speed should be 78 R.P.M. + or - 2 R.P.M. when a record is being played, and the mechanism will operate satisfactorily. If the speed is below or above these limits, it indicates either trouble in the motor windings or bearings of the motor. Sometimes a few drops of oil on the bearings will increase the speed to normal. If upon investigation the normal speed cannot be obtained, replace the motor.

ADJUSTING LANDING POSITION OF NEEDLE ON RECORD

Adjustment of the landing position of the needle on records is controlled by the adjusting screw located in the hole shown in Figure 1. This adjustment is made with a screw driver from the top of the mechanism and does not require the removal of the changer from the cabinet. If the needle comes down too far from the edge of the record, playing of records will not start at their beginning. In this case, turn the needle positioning adjustment screw very slightly counter-clockwise. If the needle comes down too close to the edge of the record, the pickup may slip off the record. To adjust this condition turn the adjusting screw clock-wise. If adjustment screw is too far to rear and cannot be adjusted through hole in base plate, depress "Manual" push button, and push bracket —Forward.

NEEDLE FAILS TO MOVE INTO RECORD GROOVE AFTER LANDING ON RECORD

Generally when the needle will not pull into the groove after landing on the record, trouble may be found due to lead spring (97) being weak. Increasing the tension of this spring or replacing spring will generally eliminate the trouble.

If after adjusting the lead spring (97) it is found that the needle jumps across the record, it may be necessary to adjust the angle of the pickup in relation to the turntable spindle. This procedure is covered under paragraph "Mechanism Will Not Reject at the End of Records".

TONE ARM SLIDES INWARD ACROSS RECORD

This is caused by the guide arms stud (12) not releasing from the grooves in the upper side of the large cam gear (11). This may be due to friction at the shoulder screw (26) or the coil spring lifting the arm may be weak.

If the coil spring appears to be weak, it may be strengthened by shortening. If there is binding at the bearing, a little oil will help; also, a few movements by hand under considerable pressure will relieve the binding. If the binding is caused by the arms being twisted out of line, the trouble can be cured by straightening up the parts.

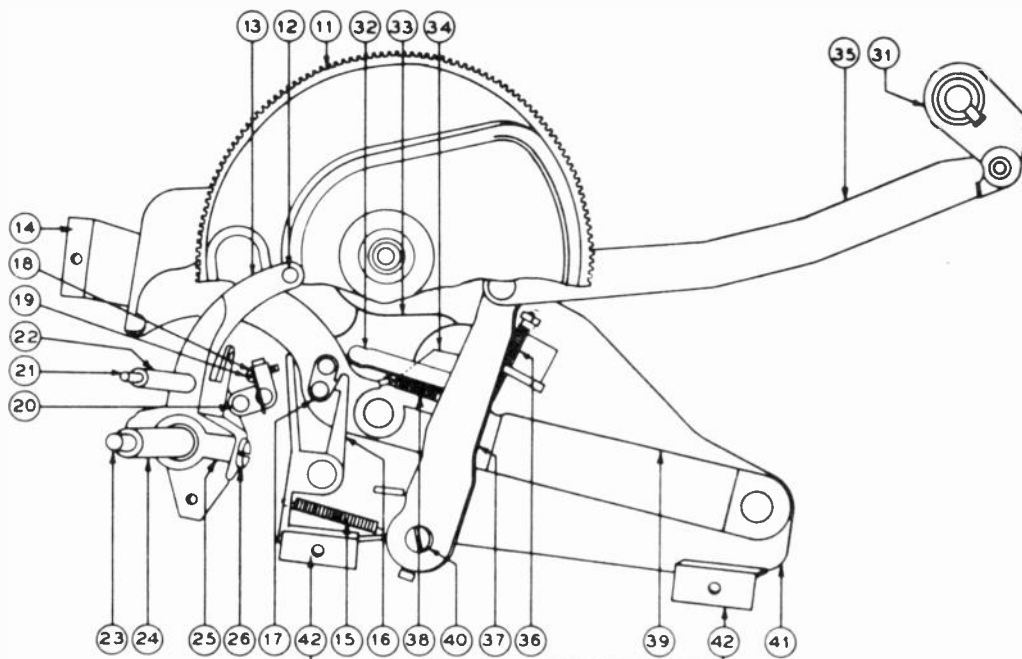


FIG. 2. CUTAWAY VIEW SHOWING PARTS UNDER SUB-PLATE ASSEMBLY (83) FIG. 3

Numbers on Figs. 2 and 3	PART DESCRIPTION	Numbers on Figs. 2 and 3	PART DESCRIPTION	Numbers on Figs. 2 and 3	PART DESCRIPTION
11	Cam Gear	38	Spring	77	Manual Rod
12	Stud	39	Cam Lever	78	Reject Rod
13	Guide Arm	40	Shoulder Screw	79	Extension Rod
14	Bracket	41	Sub-Plate	80	Truss Bar
15	Trigger Spring	42	Bracket	81	Adjusting Cam
16	Trigger	51	Grommet Sleeve	82	Cam Gear
17	Trigger Catch	52	Shim	83	Sub-Plate Assem.
18	Trip Adj. Screw	53	Main Plate	84	Spring
19	Lock Spring	54	Changer Switch	85	Cycling Switch
20	Release Lever	55	Motor	86	Bracket
21	Pickup Plunger	56	Connecting Plug	87	Spring
22	Pickup Sleeve	57	Changer Connect. Rod	88	Link
23	Swivel Shaft	58	Cam Connecting Rod	89	Release Lever
24	Swivel Tube	59	Spreader-Hub Assem.	90	Upper Spreader
25	Swivel Trunnion	60	Shaft	91	Lower Spreader
26	Shoulder Screw	61	Spring Roller	92	Rod
31	Spreader-Hub Assem.	62	Spreader Spring	93	Lever-Hub Assem.
32	Bridge	71	Post Nut	94	Lever
33	Lifter Cam	72	Lever-Hub Assem.	95	Swivel Spring
34	Pawl	73	Flat Spring	96	Lever Spring
35	Cam Connecting Rod	74	Shaft	97	Lead Spring
36	Spring	75	Key Unit		
37	Lift	76	Key Bracket		

ADJUSTING THE RISING HEIGHT OF PICK-UP ARM

The pick-up arm should rise high enough during the change cycle so that the top of the tone arm clears the record resting on the support arms by $\frac{1}{8}$ ". When the maximum load of records are on the turntable, the needle should clear the top record, if not adjust as follows:

Loosen the lock nut in pick-up sleeve (22). Turn the sleeve in the direction necessary to lengthen or shorten the pick-up plunger (21). After correct adjustment is found, tighten lock nut.

AUTOMATIC RECORD CHANGER---Part No. 35-1180

ADJUSTING DISTANCE FROM TURNTABLE SPINDLE AT WHICH REJECT WILL OPERATE AND CYCLE WILL BEGIN

The mechanism is designed to reject records of all types whether they are provided with special grooves or not. The mechanism is adjusted to operate $1\frac{1}{2}$ " from the center of the record spindle; this distance has been found to be the most satisfactory point for all modern records so that they will be rejected after they have been played through. To adjust the reject mechanism for this distance or any distance that may be desired, a trip adjusting screw (18) is provided. By turning this screw toward the trip trigger (16), the mechanism is caused to operate at a closer distance from the spindle. Turning the adjusting screw (18) away from the trip trigger, operates the reject closer to the turntable spindle.

It may be found on some records of very early manufacture that it will not be possible to obtain a satisfactory adjustment that will always operate the changer mechanism.

MECHANISM WILL NOT REJECT AT THE END OF RECORDS

There are several parts that will cause the mechanism to fail in the operation of rejecting of records. These items are listed as follows:

1. Examine swivel spring (95) for stretching. This spring is attached to the lugs at the end of the swivel spreaders (90) (91). The purpose of this spring is to keep the swivel spreaders (90) (91) closed, so that the trip trigger can be actuated. Increasing the tension of the spring (95) will prevent the swivel spreads from opening allow the trip trigger to actuate properly.

If after increasing the tension of the spring (95) it is found that the needle jumps across the record, it may be necessary to adjust the horizontal level of the pickup. Sometimes the pickup leans towards the center of the record. To remedy this condition, the pickup mounting post should be examined for proper mounting position or the pickup arm may be twisted out of shape. In either of these cases the pickup arm should be replaced or adjusted to its original position. When the pickup arm is properly adjusted, it should lean slightly in an outward direction (toward the edge of the record).

2. After it is found that the trip trigger (16) is operating properly, trouble may be found due to the cam lever (39) binding against sub-Plate (41). In this case, look for some obstruction or foreign material on these two parts. Also see that the rivets are operating freely. If lever (39) engages cam lever pawl (34) so that lift (37) forces its rollers up into the groove on cam gear (82) and if the set screws are tight, the change cycle should go into motion as the cam gear (82) turns.

3. Sometimes friction between the trigger (16) and trigger catch (17) due to burrs or rough surfaces may also prevent the reject from operating. If the trigger unlatches but the cam lever (39) does not move, it indicates binding between sliding surfaces. This may be caused by above mentioned burrs or by the cam lever being slightly warped.

To eliminate this condition, locate the position where there is excessive friction. If it is found that the parts are out of shape due to being bent, new parts should be added or the old ones straightened. When it is found that trouble is due to a burr on the edge of the metal parts, burrs should be removed with a very fine file or scraper. After eliminating this trouble, a small amount of oil should be applied to the sliding surfaces.

REJECT BUTTON "R" WILL NOT OPERATE MECHANISM

If the "R" button does not cause the mechanism to go through a change cycle check the following parts:

a. Examine key control unit (75) for parts that have become out of shape or any obstruction that will prevent the "R" button from moving to its maximum length of travel.

b. Inspect reject rod (78). If this rod does not trip the mechanism even when properly revolved by complete depressing of "R" button, the rod has probably been bent out of shape. Replace the rod or reshape it to its former position.

c. If trigger (16) is properly actuated but without starting a change cycle see instructions as given under "Mechanism Will Not Reject at End of Records" paragraph 3.

PRESSING "M" BUTTON DOES NOT CHANGE MECHANISM FROM AUTOMATIC TO MANUAL POSITIONS

Observe action of "M" button. Button should travel far enough down when depressed to cause the manual rod (77) to actuate the key control unit. The key control unit (75) should also be checked for parts which have become out of shape or any foreign obstruction.

MOTOR STOPS IMMEDIATELY WHEN CHANGER SWITCH IS TURNED OFF DURING A CHANGE CYCLE

The normal action of the mechanism when the changer switch is turned off during a change cycle is to continue to operate until the needle is again on the record. The mechanism should then

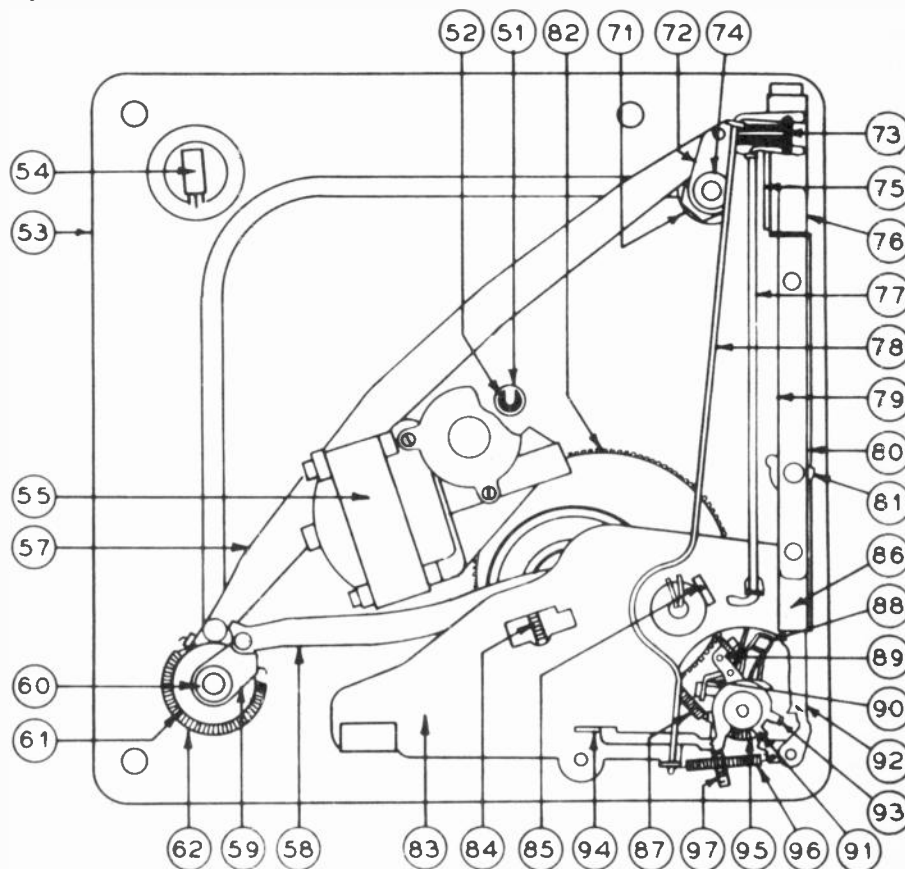


FIG. 3

stop. This action is caused by the cycling switch (85) short circuiting the manual changer switch during a change cycle. The switch should be changed when the above mentioned trouble develops.

TURNING CHANGER SWITCH OFF FAILS TO STOP MECHANISM

If after turning the changer switch off the mechanism continues to operate it indicates trouble in the cycling switch (85). Replace the switch when this trouble develops.

AUTOMATIC RECORD CHANGER---Part No. 35-1180

MECHANISM DOES NOT REPEAT THE LAST RECORD

If the mechanism does not repeat the last record, any one of the parts listed under "Mechanism Will Not Repeat at End of Records" may be causing the trouble.

RECORDS FALL UNEVENLY ON THE TURNTABLE

Records falling unevenly on the turntable is generally due to the turntable spindle not being correctly centered between the record loading posts. To correct this trouble, see "Replacing Motor."

LAST RECORD DROPS ON ONE SIDE

This trouble is due in most cases to the loading posts being bent out of perpendicular to the main plate. To check for this trouble, test the posts with a steel square as directed under "Replacing Motor". Replace or adjust post so that it will be perpendicular to the main plate.

CHANGER CONTINUES CYCLING

If the mechanism continues to change records constantly, it indicates trouble in the lift (37). Failure of this lift to disengage with the cam gear (11), Fig. 2, will cause the trouble. Check the various rivets at which motion occurs to find a point where friction or binding is interfering with freedom of motion. The cam lever (39), Fig. 2, should also be checked for too much friction. Oil this part if necessary.

SELECTOR BLADE FAILS TO SEPARATE BOTTOM RECORD FROM STACK

This is due either to a badly warped record or to its being of a thickness considerably different from records now in standard use. The selector blade and shelf blades are designed to accommodate a maximum variation in thickness and flatness of records now in standard use. There are certain records, however, that may be found which vary in thickness so much as to be impracticable for use in the automatic changers.

SELECTOR BLADES JAM INTO EDGE OF RECORD

This is generally caused by too small a spacing between the selector plate and the spacing between the selector plate and the shelf plate. This space should never be less than .050 inch when selector plate is in 10" position. Another cause of jamming is too sharp an edge on the selector plate.

To eliminate this trouble, check spacing of plates. Bend the selector plate slightly, if necessary. Smooth up the edge of the selector plate by means of a piece of fine emery cloth.

MECHANISM SLOW IN STARTING OR STALLS DURING A CHANGE OF CYCLE

Trouble is probably due to:

- Motor mechanism is not thoroughly lubricated. See heading "Lubrication".
- Check for loose set screws.
- Line voltage may be abnormally low or motor windings damaged. If the windings of the motor are damaged, replace motor. To remove motor, see heading "Replacing Motor".

REPLACING MOTOR

Replacing the motor necessitates extreme care in aligning and correctly mounting the new motor. The procedure listed below should be followed closely. When replacing a new motor or ordering a new one from your distributor, specify the power supply from which the motor is to be operated. The motor electrical wiring is shown in Fig. 4.

When mounting replacement motor, it is most important to see that record pin is centered between the two posts of the changer, that it stands perpendicular to main plate (53), and that it has not become bent so as to wobble. Even though the posts are stout and not easy to bend, it is well to check them also, with a 12" combination square laid clear across the concave upper surface of main plate. When the new motor has been attached, with three screws through grommet sleeves (51) (spacers) into its frame, and record pin is seen to revolve without appreciable wobble, the correct position of the record pin between the record-mounting posts can be accurately checked as follows: Place a single 12" record on the shelf plates, press "R" button, and turn turntable forward by hand. Immediately after the shelf plates open and allows the record to fall, turn turntable slightly backward, and with other hand support the record between the shelf plates; it can then be readily seen whether record pin is off center. If the record pin is found to be off center, remove the record and turntable, and loosen slightly the motor mounting screw or screws nearest the shelf plate to which record appeared closest. This should improve evenness of operation. However, unless the unevenness was very slight, it will be necessary for a permanent repair to insert a shim or two on one or more of the three screws (or change shims from one screw to another). The shims used are shaped like an ordinary washer, cut out at one side (see cut-away view at 52 on photo, showing a shim in place upon one of the grommet sleeves). Shims can readily be cut out with shears and punch from thin metal or cardboard—or an assortment of shims of different thicknesses can be had from your distributor. (Order "Assortment of Part No. 45-2785"). They should be inserted, around proper screws (when screws have been sufficiently loosened) between motor frame and the metal grommet sleeve. Do not insert shims next to rubber grommet.

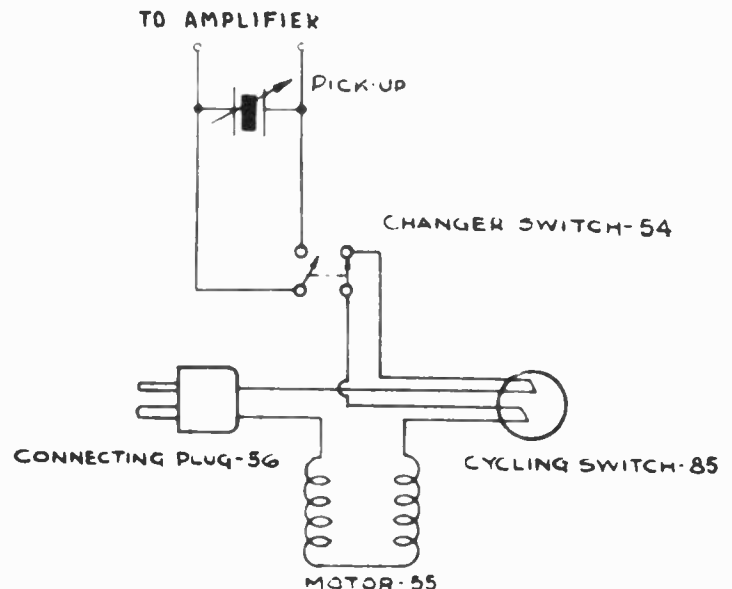


FIG. 4. MOTOR ELECTRICAL CONNECTIONS
DISASSEMBLING THE CHANGER

Before attempting to remove sub-plate assembly (83) detach key control unit (75) from main plate. To do this, start with control unit truss bar (80). Then take out the screw which holds left end of adjusting rod lever (94). Next remove adjusting rod (92) and adjusting rod extension (79). Take out the screw holding spring (73); then the screws holding key control unit (75) to main plate. Rods (77) and (78) can then, with due care, be extracted without bending. Free the cam connecting rod (58) by loosening setscrew holding spreader and hub assembly (59). Sub-plate assembly can then be detached without bending parts. In reassembling, reverse the procedure.

MODEL 35-1176

REPLACEMENT PARTS

Several Parts were changed on the Mechanism in later production. The major change was made in the "Selector Blade Guide Arm and Link Assembly". This change is shown in Fig. 1, Page 119, Parts 1, 4, 6, 13, 16, and Fig. 2, Page 120, Parts 6, 15, 27, 28, 29, 30, 31, 32. Other changes are indicated in the list below.

FIGURE 1, PAGE 119

TOP VIEW OF RECORD CHANGER, PART NO. 35-1176

Item No.	Description	Part No.	No. used per Instrument	Item No.	Description	Part No.	No. used per Instrument
1	Nut, Selector Blade Post (Early Production)	W-2092	2	9	Tone Arm Adjusting Screw	W-2100	1
	(Later Production)	35-2140	2	9	Contact Spring Blade	56-1663	1
	Spring Washer (Selector Post)	35-2141	2	10	Tone Arm Swivel Bracket	35-2182	1
	Rubber Bumpers	27-4926	3	11	Tone Arm Post	35-2183	1
2	Record Support Post	35-2147	2	12	Main Record Support Post	35-2148	1
3	Panel Assembly		1	13	Nut, Control Knob Selector Post (Early Production)	W-2091 (Hex)	1
4	Selector Blade Guide Arm and Link Assem. (Early Production)	35-2105	3		(Later Production)	35-2139	1
	Selector Blade Guide Arm and Link Assem. (Later Production)	35-2135	3	14	Trip Lever		1
5	Selector Blade	315-1022	3	15	Trip Cam	35-2104	1
6	Record Support Arm Assembly (Early Production)	35-2075	3	16	Main Record Support (Early Production)	35-2107	1
	(Later Production)	35-2136	3		(Later Production)	35-2137	1
	Spring (Record Support Arm)			17	New Needle Cup	45-6091	1
7	Tone Arm Assembly	35-2067	1	18	Used Needle Cup Cover	45-6093	1
8	Crystal Pickup	35-2030		19	Used Needle Cup	45-6092	1
	Needle Screw	45-2788		20	Lifter Cam	35-2149	3
	Screw (Mounting Crystal)	W-1377			Springs for Lifter Cams	35-2150	1
				21	Turntable Assembly	35-3039	1
				22	Reject Button	35-2184	1

FIGURE 2, PAGE 120

SIDE VIEW OF RECORD CHANGER, PART NO. 35-1176, AND MOTOR, PART NO. 35-1177

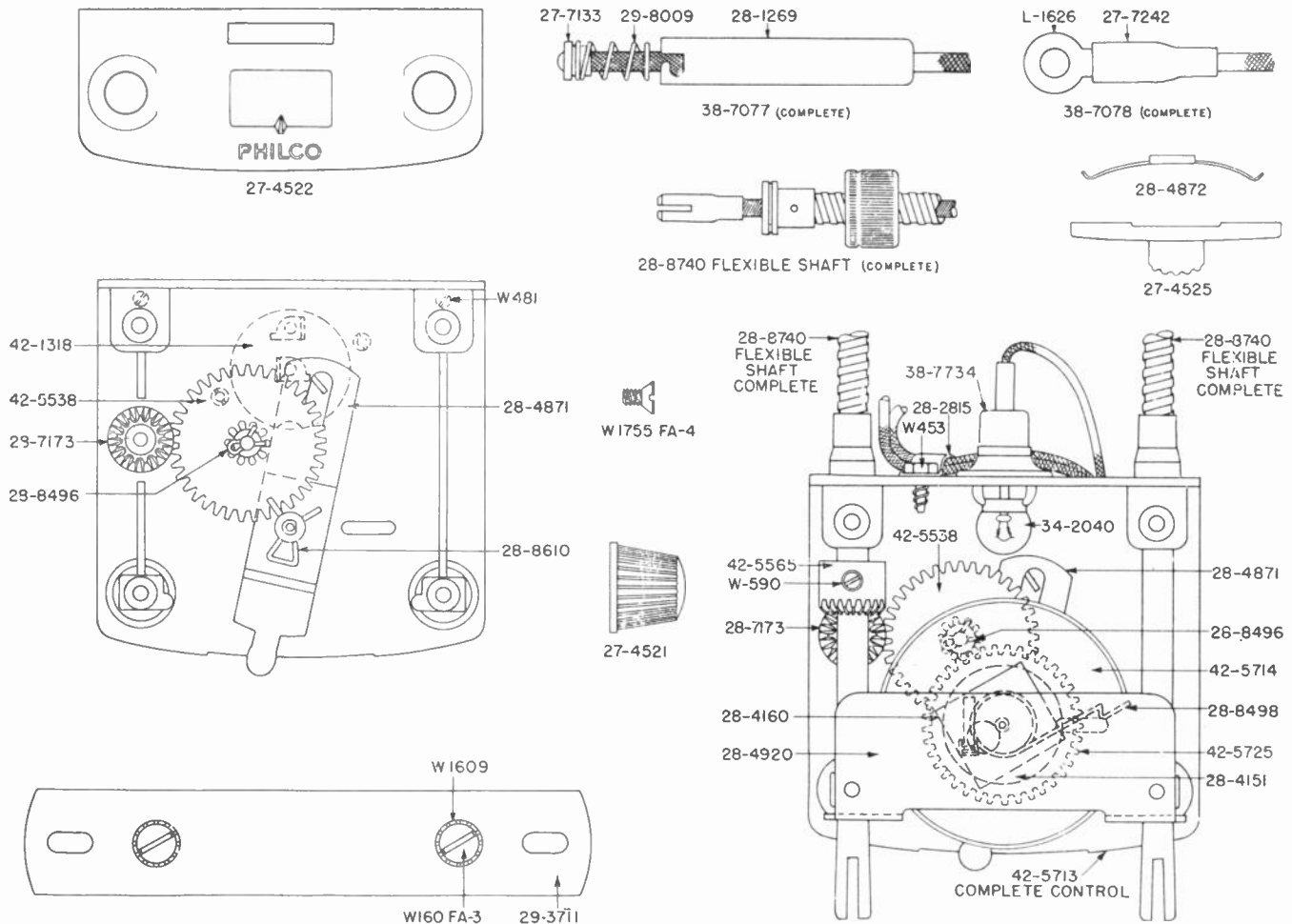
Item No.	Description	Part No.	No. used per Instrument	Item No.	Description	Part No.	No. used per Instrument
1	Control Knob	35-2083	1	20	Spindle Lock Pin	35-2187	1
2	Spring (Control Knob)	35-2164	1	21	Coupling Assembly (Motor Turntable Spindle)	45-6098	1
3	Parallel Switch Cover		1	22	Motor Bracket	35-2100	1
4	Clutch Pawl Spring	35-2102	1	23	Worm Gear	35-2179	1
5	Motor Spacer	35-2097	3	24	Ball Bearing Retainer Assembly	35-2177	1
6	1 1/2" x 3/16" - 24 Bolt		4	25	Worm Thrust Washer	35-2178	2
	Selector Blade Guide Arm and Link Assembly (See Note "A" below) (Later Production)	35-2135	3	26	Motor (110 volts, 60 cycle)	35-1177	1
7	Guide Arm Link Spring	35-2138	3		(110 volts, 25 cycle)	35-1201	1
8	Motor Guide Studs	35-2185	2		(110 volts, 50 cycle)	35-1196	1
9	Rubber Grommet	35-2186	2		(110-220 volts, 50 cycle)	35-1209	1
10	Spacer	35-2099	7		(110-220 volts, 60 cycle)	35-1210	1
11	Rubber Grommet	35-2098	7	27	Motor Adjusting Screw		1
12	Special Nut ("U" Shaped Spacer)	56-1670	4		Note "A"—The following parts from 28 to 32 were used on Early Production Changers.		
13	Spring (Small-Bottom Springs)	28-8961	4	28	Selector Blade Guide Arm and Link Assem. (Early Production)	35-2105	3
14	Spring (Large-Top Springs)	28-8962	4	29	Link Pins (Early Production)	35-2151	3
	Mounting Bolts	W-359	4	30	Link Pin (Early Production)	35-2151	3
15	Guide Arm Return Spring (Later Production)	28-8963	3	31	Link Pin Spr. (Early Production)	28-8966	3
16	Record Friction Spring	35-2088	1	32	Guide Arm Return Spring (Early Production)	28-8963	3
17	Turntable Spindle	35-2087	1				
18	Turntable Hub	45-6097	1				
19	Turntable	35-3039	1				

FIGURE 3, PAGE 121

BOTTOM VIEW OF RECORD CHANGER, PART NO. 35-1176

Item No.	Description	Part No.	No. used per Instrument	Item No.	Description	Part No.	No. used per Instrument
1	Tone Arm Locator Shoe (10 inch, Records)		1	22	Drive Pinion	35-2192	1
2	Tone Arm Locator Shoe (12 inch, Records)		1	23	Segment Arm Assembly	35-2120	1
3	Spring	35-2153	1	24	Connecting Link	35-2193	1
4	Spring	28-8964	1	25	Segment Connecting Link	35-2194	1
5	Set Lever Assembly	35-2188	1	26	Segment Stop Bracket	35-2195	1
6	Parallel Switch Assembly	42-1555	1	27	Drive Segment Assembly	35-2090	1
7	Spring	28-8965	1		"U" Washer	35-2106	1
8	Tone Arm Brake Lever Assembly (Early Production)	35-2133	1	28	Drive Pinion		1
	(Later Production)	35-2176	1	29	Clutch Throwout Bracket Assembly		1
9	Drive Link Assembly	35-2189	1		Mounting Screws	W-2183	1
10	Drive Drum Assembly	35-2152	1	30	Clutch Housing Assembly (Clutch Assem. Complete with Housing)	35-2103	1
11	Bevel Gear	35-2076	1		Clutch Housing	35-1218	1
12	Tone Arm and Lever Assembly	35-2167	1		Clutch Pawl	315-1039	1
13	Trip Trigger Assembly (Tone Arm Lever Assembly)	35-2085	1	31	Control Shaft and Cam Assembly	35-2162	1
14	Tone Arm Trip Shoe	35-2190	1	32	Drive Crank Assembly	35-2196	1
15	Springs	35-2154	2	33	Main Drive Gear	35-2197	1
16	Transmission Frame	35-2191	1	34	Main Segment	35-2198	1
17	Muting Switch Assembly	35-2171	1	35	Control Cam Bracket Assembly	35-2163	1
18	Cancel Button Bracket	35-2084	1		Spring (Cam Bracket)	35-2170	1
19	Electro Magnet	42-1552	1	36	Tone Arm Locator Assembly	35-2145	1
20	Shaft	35-2077	1	37	Drive Drum Gear (Part of No. 10, Fig. 3)		1
	Pins for Drive Shaft (Large) Motor End	45-6100	1	38	Toggle Bar	35-2199	1
	(Small) Clutch End	45-6101	2	38	Toggle Bar Spring	35-2200	1
21	Worm Gear Assembly	45-2786	1	39	Bracket (Brake Lever Shoe)	35-2142	1
					Female Plug and Cable (2 prong)	41-3522	1

STANDARD CONTROL---MODELS 826, 827, 827K, 828 and 828K



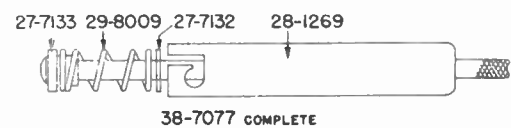
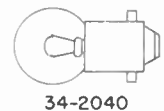
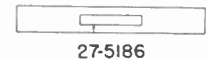
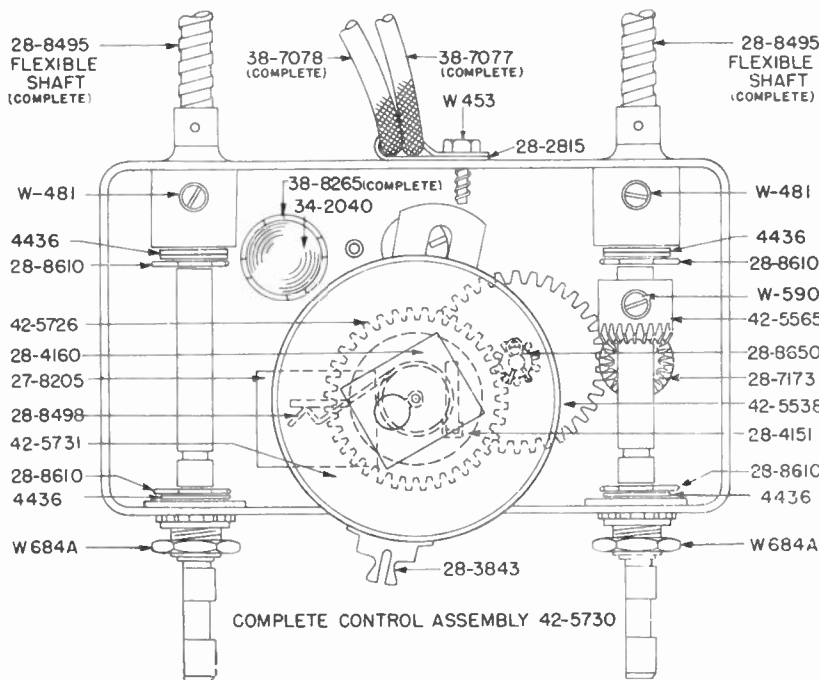
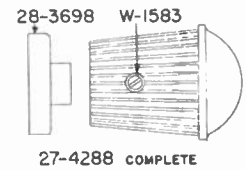
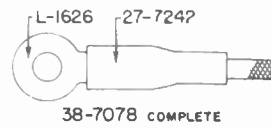
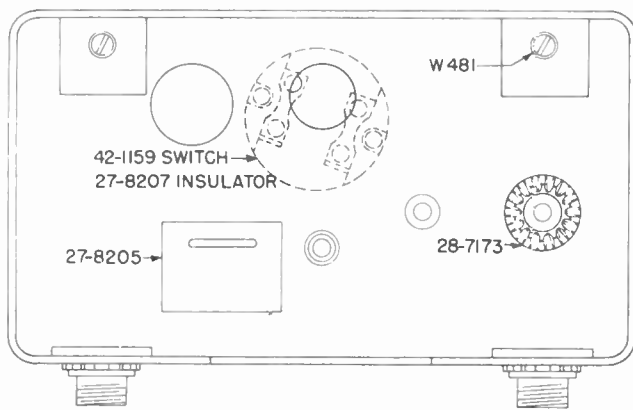
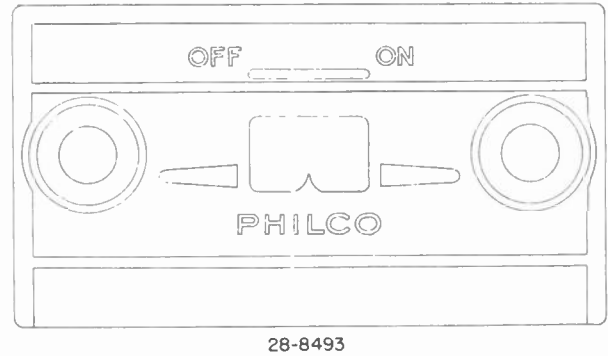
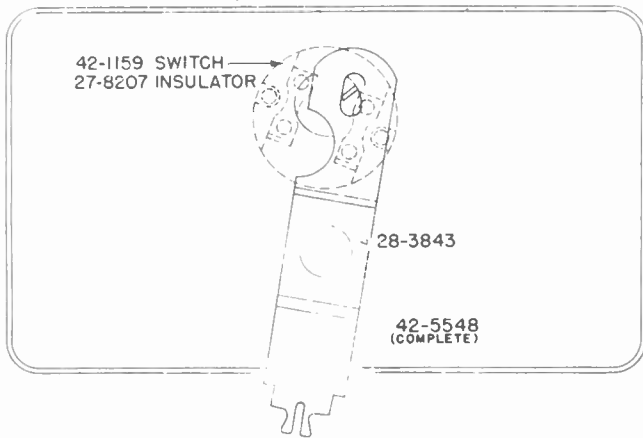
PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE
L-1626	Lug	8 .01
W-160FA3	Screw (Bklt. mtg.)	per 100 .30
W-453	Screw	per 100 1.80
W-481	Screw	per 100 2.00
W-590	Screw	per 100 2.00
W-681FA3	Nut	per 100 1.25
W-1433	Washer	per 100 .50
W-1609	Lockwasher	per 100 .50
W-1755FA1	Screw (Cover mtg.)	per 100 .30
W436	Washer	per 100 1.50
27-4288	Knob	.15
27-4314	Knob	.04
27-4521	Knob	.10
27-4522	Cover	.75
27-4525	Switch Lever Knob	.10
27-5186	Light Shield	.01
27-7133	Ferrule	.01
27-7242	Insulator	per 100 .40
27-8205	Shield	per 100 .50
28-1269	Fuse Housing	.01
28-2650	Washer	per 100 .15
28-2815	Clamp	.01
28-3698	Knob Base	.01
28-4151	Friction Washer	.01
28-4160	Friction Spring	.01
28-4871	Switch Lever	*
28-4872	Switch Knob Retaining Spring	.02

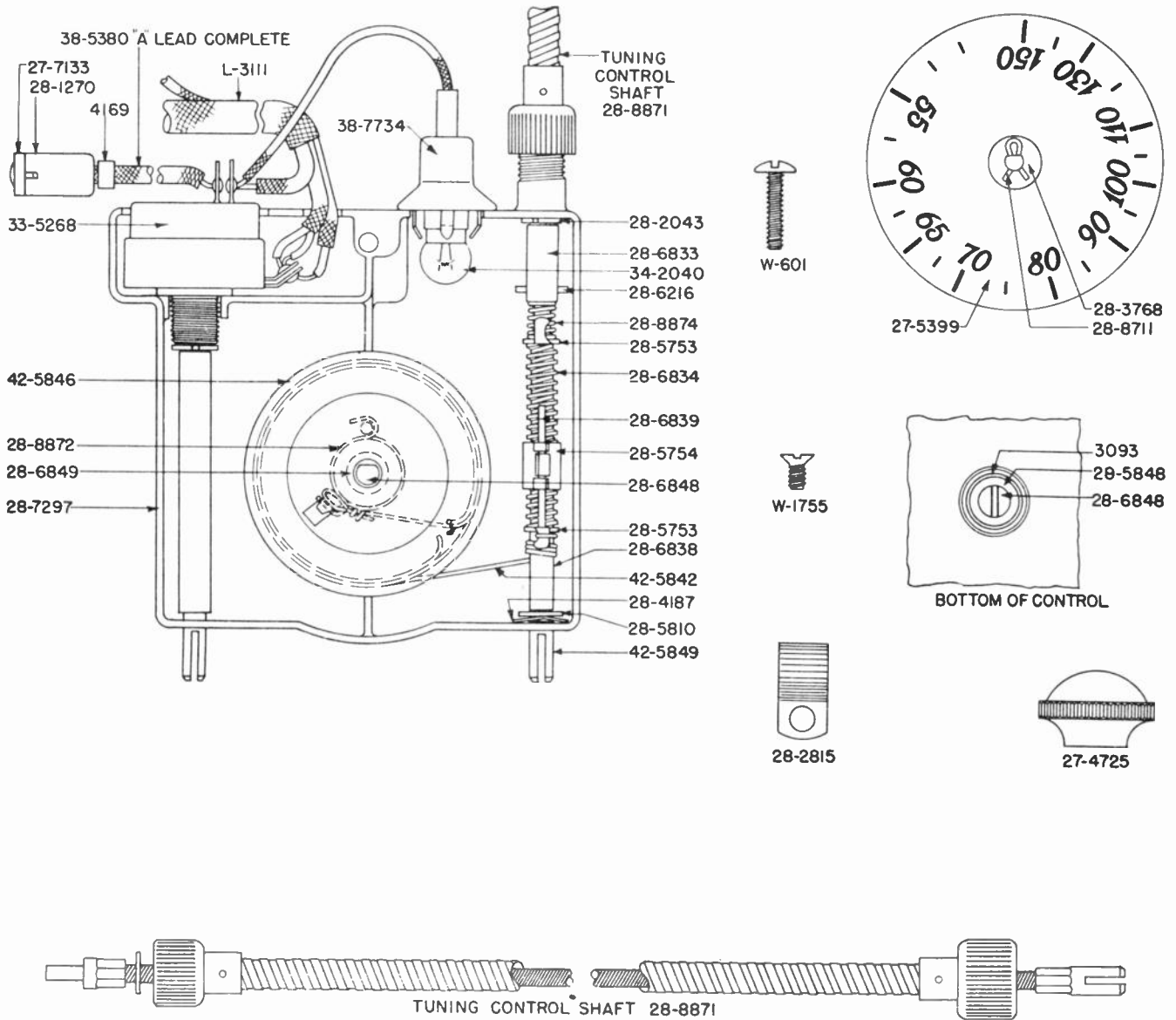
PART NUMBER	DESCRIPTION	LIST PRICE
28-4896	Bezel Plate	.10
28-4920	Shaft Bearing Plate	*
28-7173	Miter Gear	.10
28-8495	Flexible Shaft	1.15
28-8496	Spring	.05
28-8498	Anti-back Lash Spring	.10
28-8610	Spring	.03
28-8653	Spring	.02
28-8740	Flexible Shaft	1.00
29-3711	Bracket	.02
29-8009	Spring	per 100 .50
34-2040	Pilot Lamp	.07
38-7077	Fuse Lead Assembly	.15
38-7078	Ammeter Lead Assembly	.15
38-7734	Pilot Lamp Assembly	.35
38-8205	Pilot Lamp Assembly	.30
42-1318	On & Off Switch	.40
42-5538	Intermediate Gear Assembly	.15
42-5548	Cover Assembly	.65
42-5549	Miter Gear Assembly	.15
42-5713	Standard Control	6.75
42-5714	Scale Assembly	.35
42-5725	Drum Drive Gear Assembly	*
42-5726	Drum Gear and Shaft Assembly	*
42-5730	Chevrolet Control	6.00
42-5731	Scale Assembly	.30

*Prices not available at this time.

CHEVROLET CONTROL---MODELS 826, 827, 827K, 828 and 828K



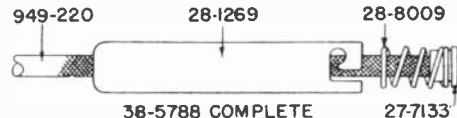
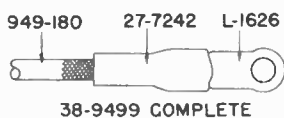
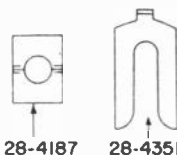
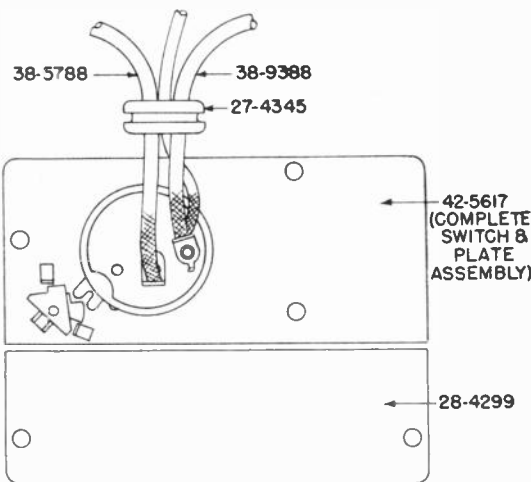
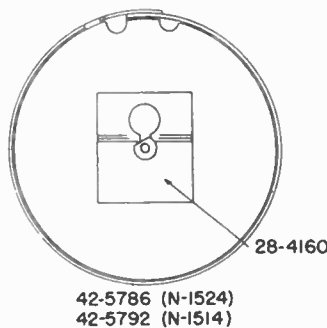
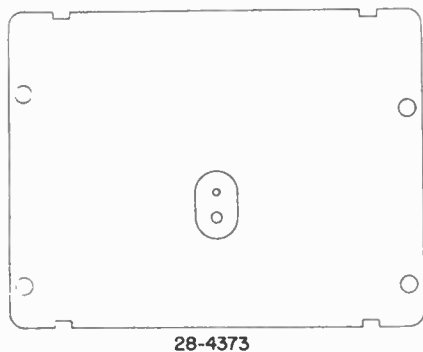
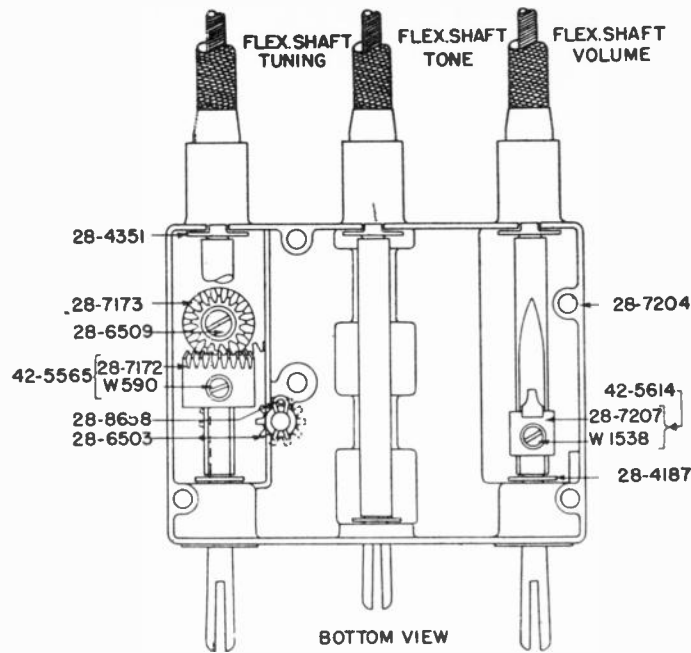
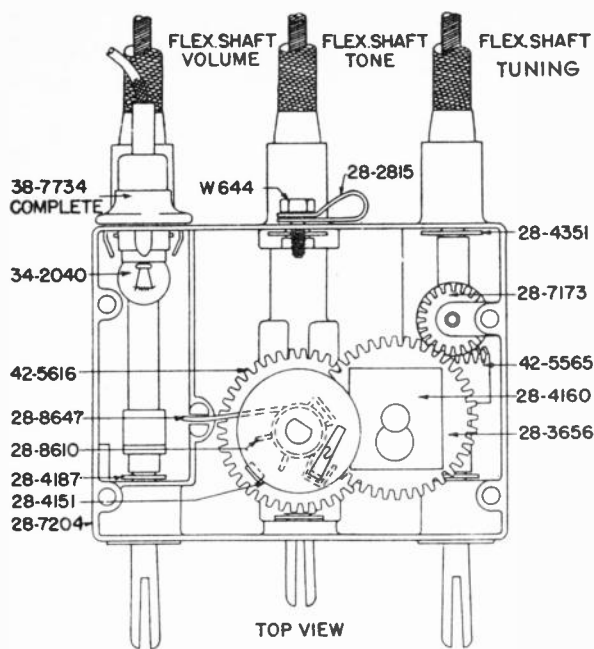
STANDARD CONTROL---MODELS 926, 927 and 928K



PARTS LIST

PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
L-3111	Cable	28-4500	Washer	28-7298	Top Cover
W-601	Screw	28-5753	Stop	28-8711	Spring
W-1755	Screw	28-5754	Gear Follower	28-8871	Flexible Shaft
3093	Washer	28-5810	Washer	28-8872	Anti Backlash Spring
4169	Washer	28-5848	Washer	28-8874	Spring
27-4265	Rubber Sleeve	28-6216	Pin	33-5268	Volume Control & Switch Assembly
27-4725	Knob	28-6833	Tuning Shaft End	34-2040	Pilot Lamp
27-5399	Dial	28-6834	Gear	38-5380	"A" Lead
27-7133	Ferrule	28-6838	Bushing	38-7734	Pilot Lamp Assembly
28-1270	Housing	28-6839	Pin	42-5840	Control Assembly
28-2043	Washer	28-6848	Dial Shaft	42-5842	Cord
28-2815	Clamp	28-6849	Dial Spacing Bushing	42-5846	Drum
28-4187	Washer	28-7297	Bottom Cover	42-5849	Tuning Shaft & Knob End Assembly

NASH CONTROL---MODELS N-1514 and N-1524



28-8813 TUNING CONTROL SHAFT (N-1524)
28-8815 TUNING CONTROL SHAFT (N-1514)

28-8814 VOLUME CONTROL SHAFT (N-1524)
28-8816 VOLUME CONTROL SHAFT (N-1514)

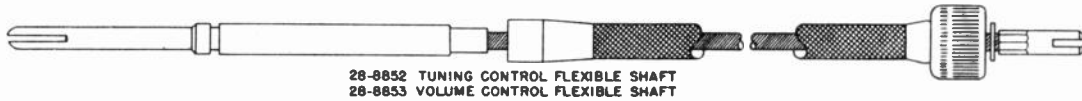
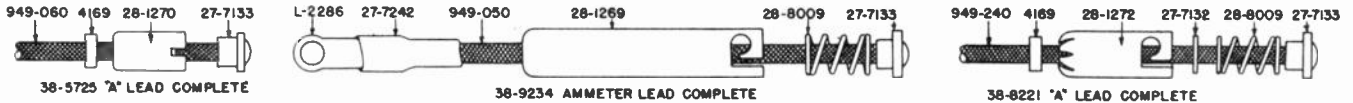
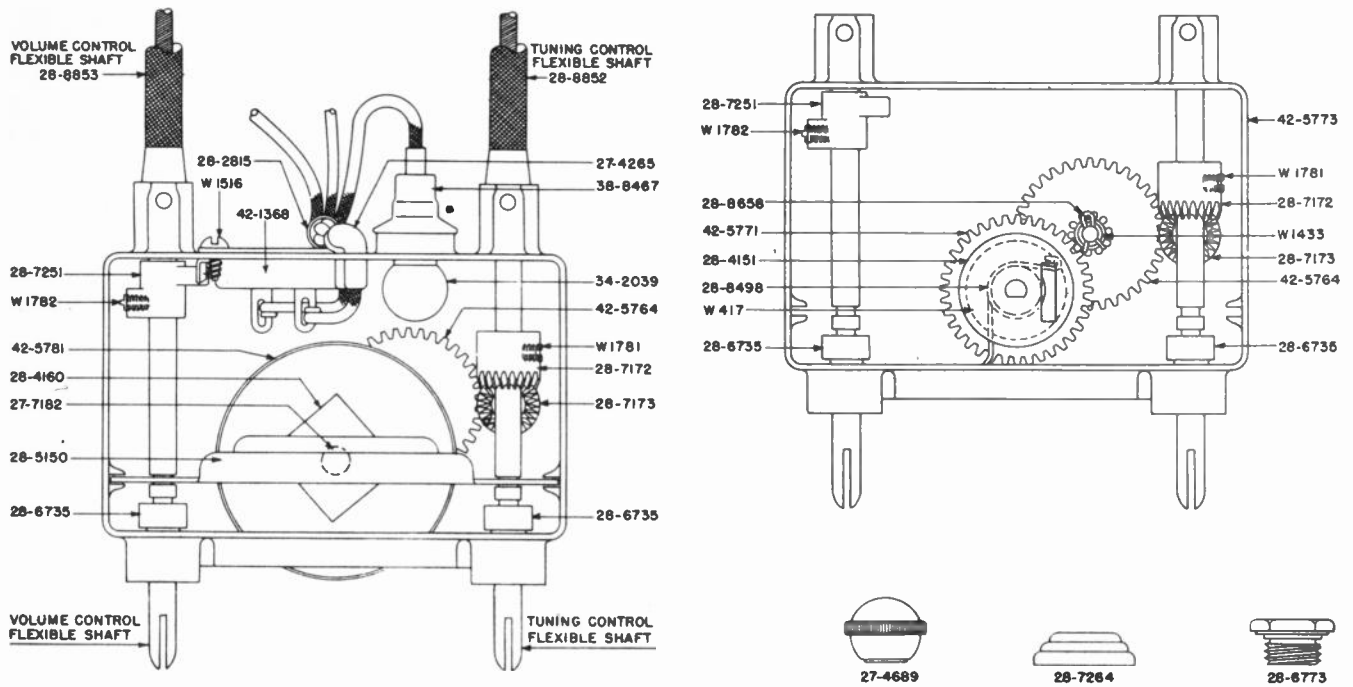
28-8798 TONE CONTROL SHAFT (N-1524)
28-8817 TONE CONTROL SHAFT (N-1514)

PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

Part No.	Description	List Price	Part No.	Description	List Price	Part No.	Description	List Price
L-1626	Lug	.02	28-4299	Cover	.03	28-8798	Tone Shaft (N-1524)	1.00
W-590	Screw	per 100 2.00	28-4351	Shaft Retainer	.01	28-8813	Tuning Shaft (N-1524)	1.00
W-641	Screw	per 100 1.50	28-4373	Cover	.10	28-8814	Volume Shaft (N-1524)	1.00
W-1516	Screw	per 100 1.30	28-4639	Tone Knob	*	28-8815	Tuning Shaft (N-1514)	1.00
W-1538	Screw	per 100 1.80	28-4690	Tuning & Volume Knob	1.80	28-8816	Volume Shaft (N-1514)	1.00
27-4345	Grommet	.02	28-6503	Gear	.05	28-8817	Tone Shaft (N-1514)	1.00
27-7133	Terminal	.01	28-6509	Screw	.03	34-2040	Pilot Lamp	.09
27-7242	Sleeve	per 100 .40	28-6558	Gland Nut	.25	38-5788	"A" Lead	*
28-1269	Fuse Housing	.01	28-7172	Miter Gear	.10	38-7734	Pilot Lamp Assembly	.35
28-2650	Washer	per 100 .15	28-7173	Miter Idler Gear	.10	38-9388	"A" Lead	.20
28-2815	Clamp	.01	28-7204	Housing	.50	42-5565	Miter Gear Assembly	.15
28-3656	Gear	.02	28-7207	Switch Arm	.05	42-5616	Switch Arm Assembly	.15
28-4151	Friction Washer	.02	28-8009	Spring	per 100 .50	42-5616	Drum Shaft & Gear	.10
28-4160	Spring	.01	28-8610	Spring	.03	42-5617	On-Off Switch	.40
28-4184	Knob Base	.02	28-8647	Anti-back Lash Spring	.02	42-5786	Dial Assembly (N-1524)	.35
28-4187	Washer	.01	28-8658	Spring	.03	42-5792	Dial Assembly (N-1514)	.40

* Prices not available at this time.

STUDEBAKER CONTROL---MODEL S-1516

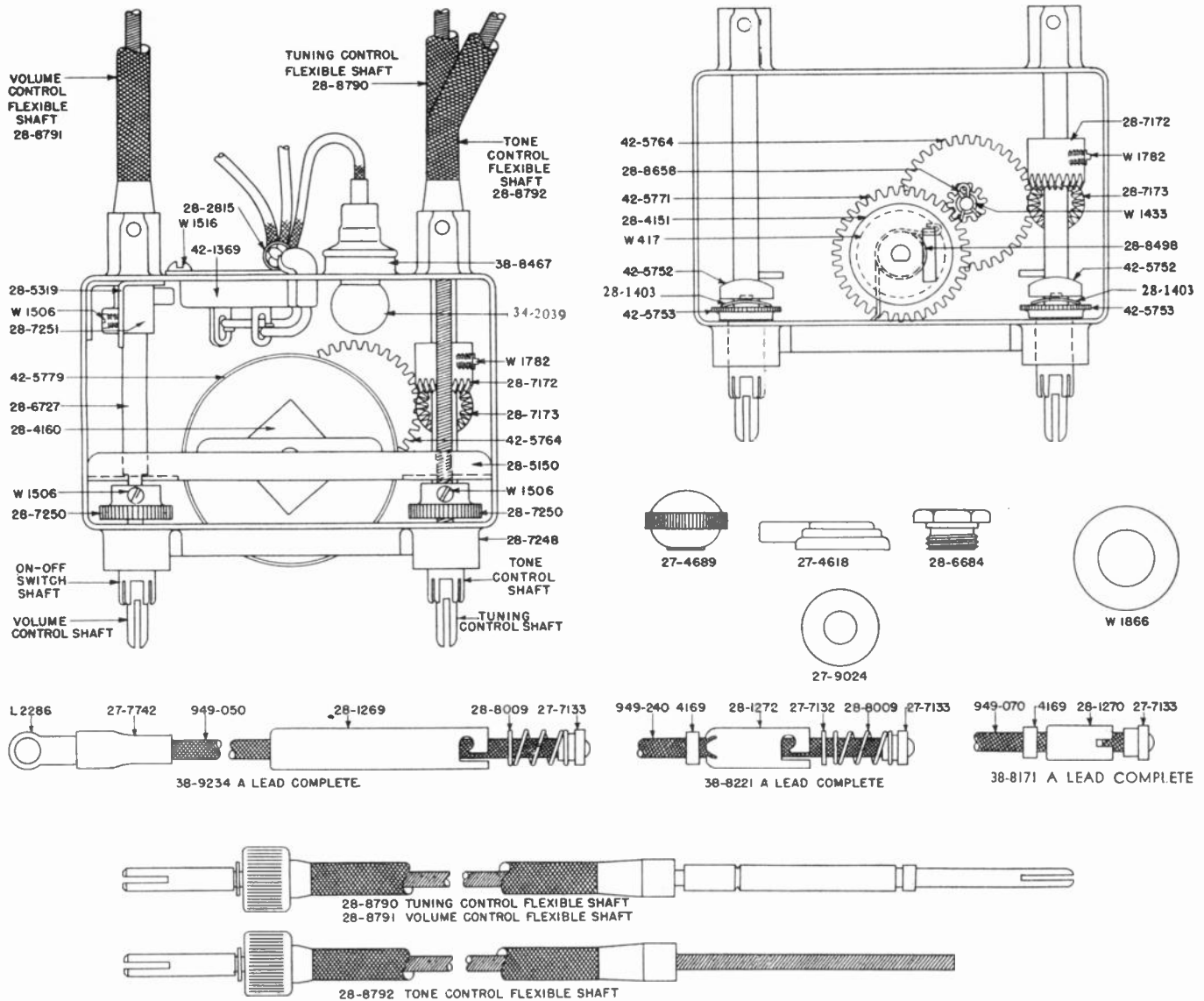


PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE
L-2286	Lug	.02	28-6773	Gland Nut	*
W-417	Washer	per 100 .50	28-7172	Miter Drive Gear	.10
W-1433	Washer	per 100 .15	28-7173	Miter Gear	.10
W-1516	Screw	per 100 1.30	28-7251	Switch Lever	.15
W-1781	Set Screw	per 100 2.00	28-7264	Knob-base	.20
W-1782	Set Screw	per 100 2.50	28-8009	Spring	per 100 .50
4169	Washer	per 100 1.20	28-8498	Anti-back Lash Spring	.10
27-4285	Sleeve	per 100 1.25	28-8658	Spring	.03
27-4689	Tuning and Volume Knob	.15	28-8852	Tuning Shaft	.90
27-7132	Washer	per 100 .40	28-8853	Volume Shaft	.90
27-7133	Ferrule	.01	34-2039	Pilot Lamp	.09
27-7182	Felt Washer	per 100 .30	38-5725	"A" Lead	*
27-7242	Sleeve	per 100 .40	38-8221	"A" Lead	.20
28-1269	Fuse Housing	.01	38-8467	Pilot Lamp Assembly	.30
28-1270	Housing	.01	38-9234	Ammeter Lead	*
28-1272	Housing	per 100 .85	42-1368	On-Off Switch	.35
28-2815	Clamp	.01	42-5764	Intermediate Gear Assembly	.20
28-4151	Washer	.02	42-5771	Drum Shaft and Gear Assembly	.15
28-4160	Spring	.01	42-5773	Housing and Stud Assembly	.85
28-5150	Shaft Retainer Plate	.05	42-5781	Dial Assembly	.35
28-6735	Bushing	*			

* Prices not available at this time.

STUDEBAKER CONTROL---MODEL S-1526

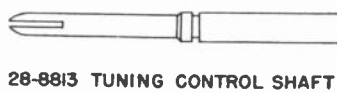
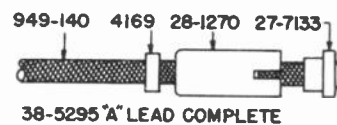
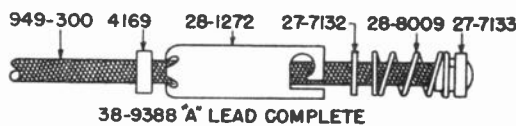
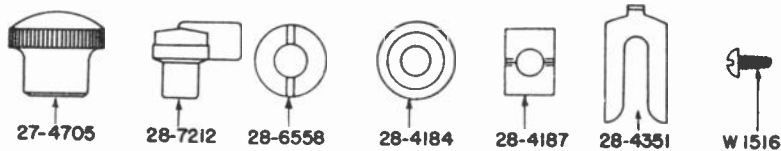
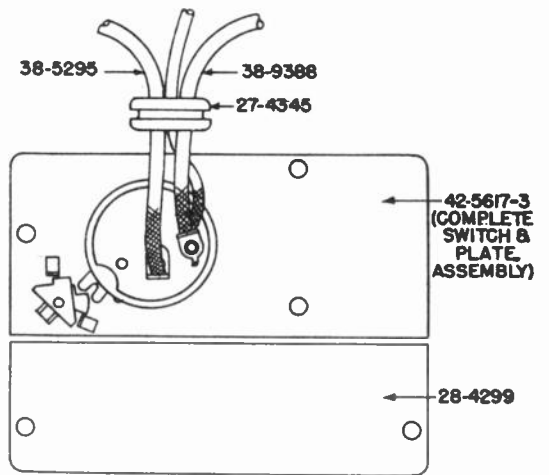
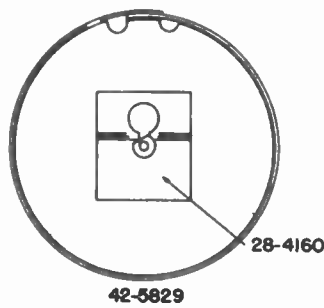
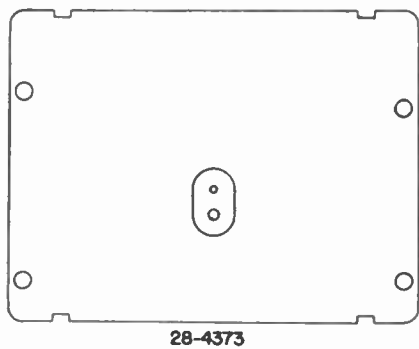
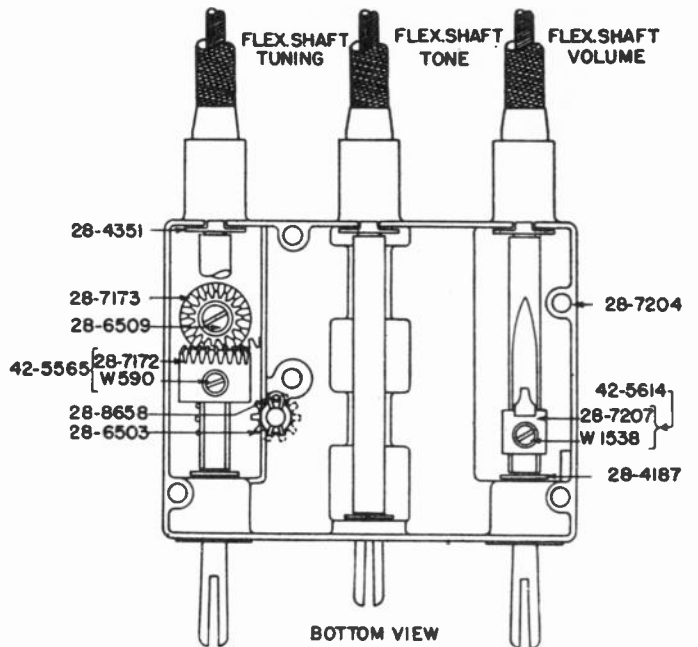
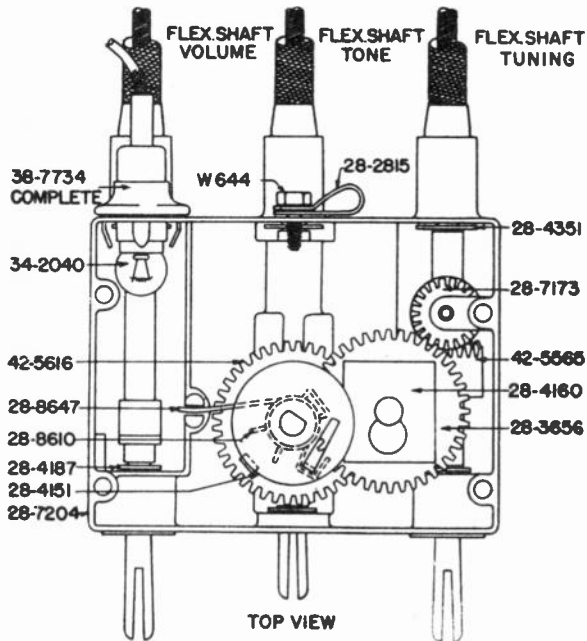


PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE
L-2286	Lug	\$.02	28-5319	Switch Stop	*
W-417	Washer	per 100 .50	28-6684	Gland Nut	.10
W-1433	Washer	per 100 .15	28-6727	Switch Operating Shaft	*
W-1506	Set Screw	per 100 1.60	28-7172	Miter Gear	.10
W-1516	Screw	per 100 1.30	28-7173	Miter Idler Gear	.10
W-1782	Set Screw	per 100 2.50	28-7248	Control Housing	*
W-1866	Washer	per 100 1.00	28-7250	Gear	.10
4169	Rubber Washer	per 100 1.20	28-7251	Switch Lever	.15
27-4618	Switch & Tone Knob	.25	28-8009	Spring	per 100 .50
27-4689	Tuning & Volume Knob	.15	28-8498	Anti Backlash Spring	.10
27-7132	Washer	per 100 .40	28-8658	Spring	.03
27-7133	Ferrule	.01	28-8790	Tuning Shaft	.90
27-7182	Felt Washer	per 100 .30	28-8791	Volume Shaft	.90
27-7742	Sleeve	*	28-8792	Tone Shaft	.90
27-9024	Washer	per 100 .40	34-2039	Pilot Lamp	.08
28-1269	Fuse Housing	.01	38-8171	"A" Lead	.10
28-1270	Housing	.01	38-8221	"A" Lead	.20
28-1272	Housing	per 100 .85	38-8467	Pilot Lamp Assembly	.30
28-1403	Spring	per 100 1.25	38-9234	"A" Lead	*
28-2815	Clamp	.01	42-1369	On-Off Switch	.35
28-4151	Friction Washer	.02	42-5752	Retainer	.15
28-4160	Friction Spring	.01	42-5753	Gear & Sleeve	.20
28-5149	Cover	.10	42-5764	Intermediate Gear	.20
28-5150	Plate	.05	42-5771	Drum Shaft & Gear	.15
			42-5779	Scale Assembly	.35

*Prices not available at this time.

GRAHAM CONTROL---MODEL G-1528

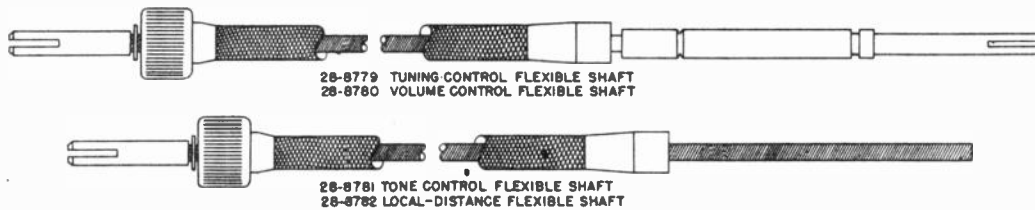
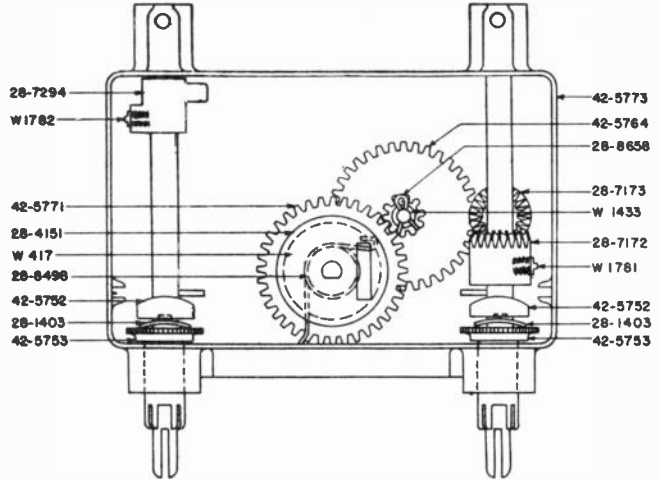
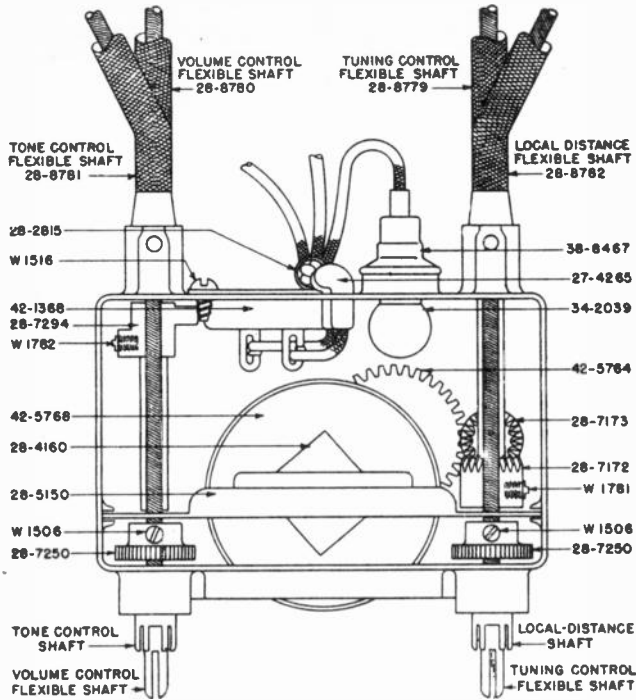


PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

Part No.	Description	List Price	Part No.	Description	List Price	Part No.	Description	List Price
W-590	Screw	per 100 \$2.00	28-4160	Spring	.01	28-8610	Spring	.03
W-644	Screw	per 100 1.50	28-4184	Knob Base	.02	28-8647	Anti-back Lash Spring	.02
W-1516	Screw	per 100 1.30	28-4187	Washer	.01	28-8658	Spring	.03
W-1538	Screw	per 100 1.80	28-4299	Cover	.03	28-8798	Tone Shaft	1.00
4169	Washer	per 100 1.20	28-4351	Shaft Retainer	.01	28-8813	Tuning Shaft	1.00
27-3345	Grommet	.02	28-4373	Cover	.10	28-8864	Volume Shaft	*
27-4705	Tuning & Volume Knob	.20	28-6503	Gear	.05	34-2040	Pilot Lamp	.09
27-7132	Washer	per 100 .40	28-6509	Screw	.03	38-5295	"A" Lead	.15
27-7133	Terminal	.01	28-6558	Gland Nut	.25	38-7734	Pilot Lamp Assembly	.35
28-1270	Housing	.01	28-7172	Miter Gear	.10	38-9388	"A" Lead	.20
28-1272	Housing	per 100 .85	28-7173	Miter Idler Gear	.10	42-5565	Miter Gear Assembly	.15
28-2815	Clamp	.01	28-7204	Housing	.50	42-5614	Switch Arm Assembly	.15
28-3656	Gear	.02	28-7207	Switch Arm	.05	42-5616	Drum Shaft & Gear	.10
28-4151	Friction Washer	.02	28-7212	Tone Knob	.25	42-5617-3	On-Off Switch	.40
			28-8009	Spring	per 100 .50	42-5829	Dial Assembly	*

* Prices not available at this time.

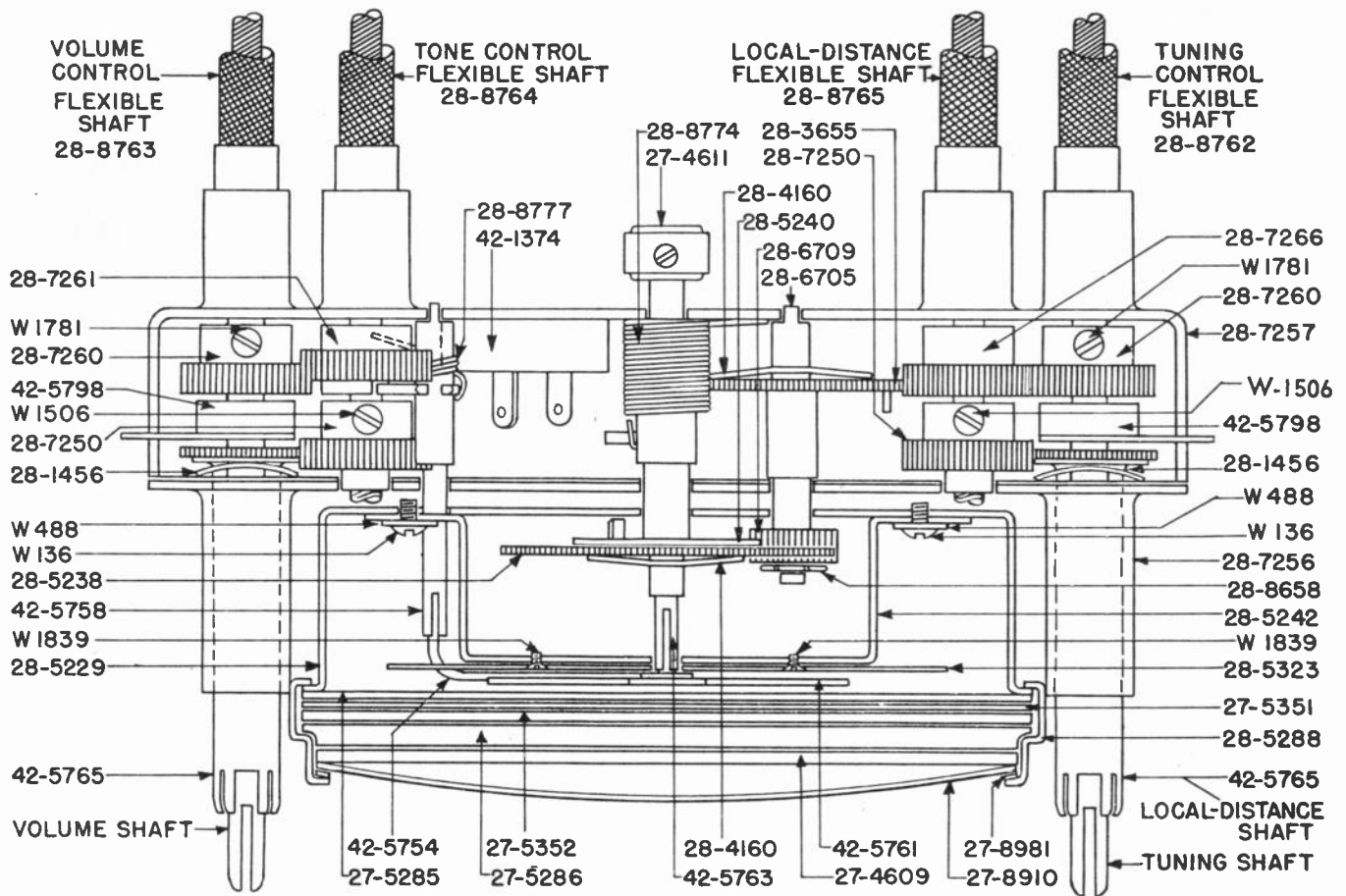
PACKARD CONTROL---MODEL P-1530



PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE
W-117	Washer	per 100 .50	28-7249	Tone and Local Distance Knob	.20
W-1433	Washer	per 100 .15	28-7250	Gear	.10
W 1506	Set Screw	per 100 1.80	28-7294	Switch Lever	.15
W-1516	Screw	per 100 1.30	28-8009	Spring	per 100 .50
W-1781	Set Screw	per 100 2.00	28-8498	Anti Back Lash Spring	.10
W-1782	Set Screw	per 100 2.50	28-8658	Spring	.03
4169	Washer	per 100 1.20	28-8779	Tuning Control Flexible Shaft	1.00
27-4265	Sleeve	per 100 1.25	28-8780	Volume Control Flexible Shaft	.90
27-4688	Tuning and Volume Knob	.20	28-8781	Tone Control Flexible Shaft	.90
27-7132	Washer	per 100 .40	28-8782	Local Distance Control Flexible Shaft	1.00
27-7133	Ferrule	.01	34-2039	Pilot Lamp	.09
27-7182	Felt Washer	per 100 .30	38-5778	"A" Lead	.10
27-9024	Washer	per 100 .40	38-7993	"A" Lead	.20
28-1270	Housing	.01	38-8467	Pilot Lamp Assembly	.30
28-1272	Housing	.01	42-1368	On-Off Switch	.35
28-1403	Spring Washer	per 100 1.25	42-5752	Retainer and Sleeve Assembly	.15
28-2815	Clamp	.01	42-5753	Gear and Sleeve Assembly	.20
28-4151	Washer	.02	42-5764	Intermediate Gear Assembly	.20
28-4160	Spring	.01	42-5768	Dial Assembly	.35
28-5149	Cover	.10	42-5771	Drum Shaft and Gear Assembly	.15
28-5150	Shaft Retainer Plate	.05	42-5773	Housing and Stud Assembly	.85
28-6684	Gland Nut	.10			
28-7172	Miter Drive Gear	.10			
28-7173	Miter Gear	.10			

PACKARD CONTROL---MODEL P-1535



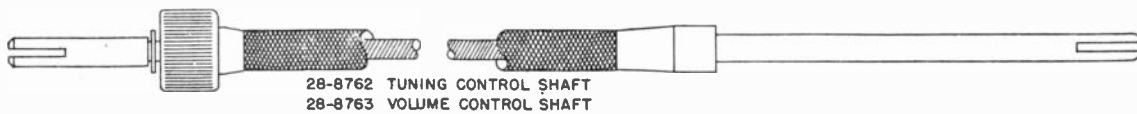
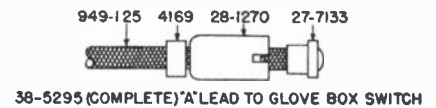
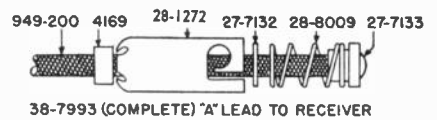
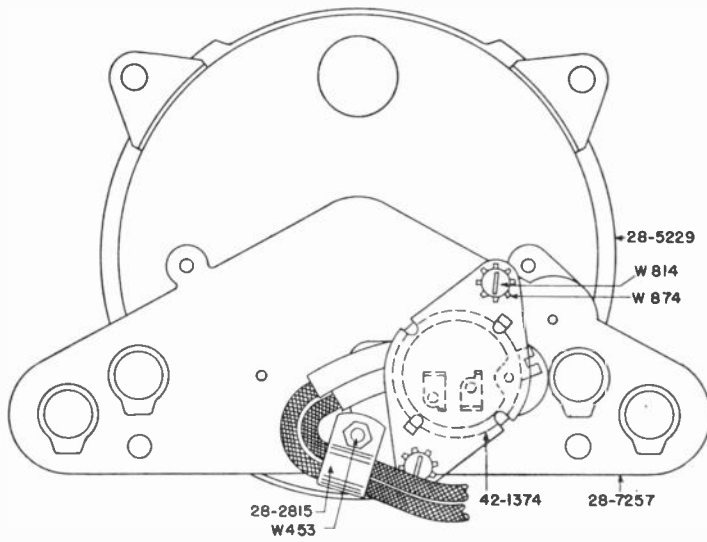
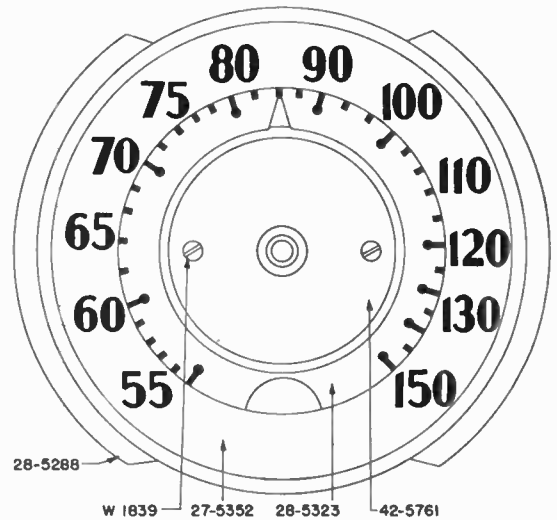
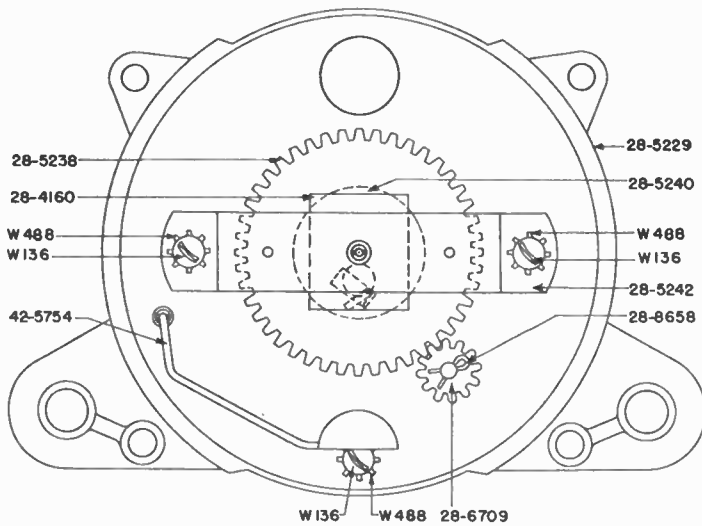
PARTS LIST AND PRICES

(Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE
4169	Rubber Washers	per 100 \$1.20	28-5240	Washer	*
W-136	Screw	per 100 .60	28-5242	Bracket	*
W-453	Screw	per 100 1.80	28-5288	Bezel	.40
W-488	Lockwasher	per 100 .35	28-5323	Face	.10
W-775	Button	per 100 1.50	28-6705	Intermediate Gear	*
W-814	Screw	per 100 .75	28-6709	Dial Gear (small)	.10
W-874	Lockwasher	per 100 .50	28-7250	Gear	*
W-1506	Set Screw	per 100 1.60	28-7255	Tone and Local Distance Knob	.35
W-1781	Set Screw	per 100 2.00	28-7256	Control Shaft Cover	*
W-1839	Screw	per 100 1.25	28-7257	Back Housing	*
949-125	Wire	*	28-7260	Gear	*
949-200	Wire	*	28-7261	Switch Gear	*
27-4609	Gasket	.10	28-7266	Idle Gear	*
27-4611	Pointer Knob	*	28-8009	Spring	per 100 .50
27-4687	Tuning and Volume Knob	*	28-8658	Spring	.03
27-5285	Retainer	.50	28-8762	Tuning Shaft	1.00
27-5286	Glass Retainer	*	28-8763	Volume Shaft	1.00
27-5351	Gasket	per 100 2.00	28-8764	Tone Control	1.00
27-5352	Dial Face Glass	.60	28-8765	Local - Distance Shaft	1.00
27-7132	Washer	per 100 .40	28-8774	Anti Back-lash Spring	*
27-7133	Ferrule	.01	28-8777	Spring	*
27-8910	Glass	.25	38-5295	"A" Lead	.15
27-8981	Front Gasket	*	38-7993	"A" Lead	.20
28-1270	Housing	.01	42-1374	On-Off Switch	.35
28-1272	Housing	per 100 .85	42-5754	Signal Panel Assembly	*
28-1456	Spring Washer	per 100 .75	42-5758	Signal Panel Shaft	*
28-2815	Clamp	.01	42-5761	Pointer Assembly	*
28-3655	Drive Gear	*	42-5763	Pointer Shaft Assembly	.25
28-4160	Friction Spring	.01	42-5765	Gear and Sleeve Assembly	.20
28-5229	Dial Cover	*	42-5798	Friction Gear Assembly	*
28-5238	Dial Gear (large)	*			

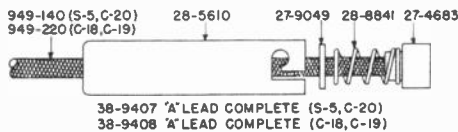
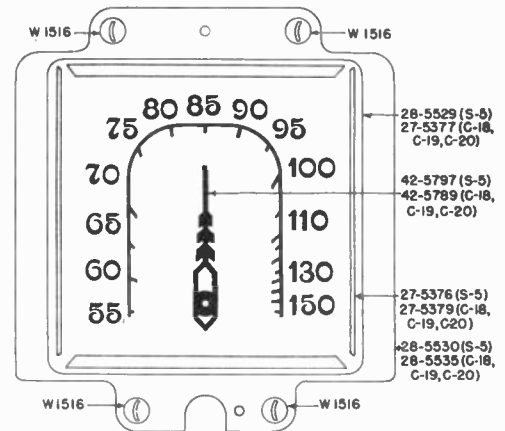
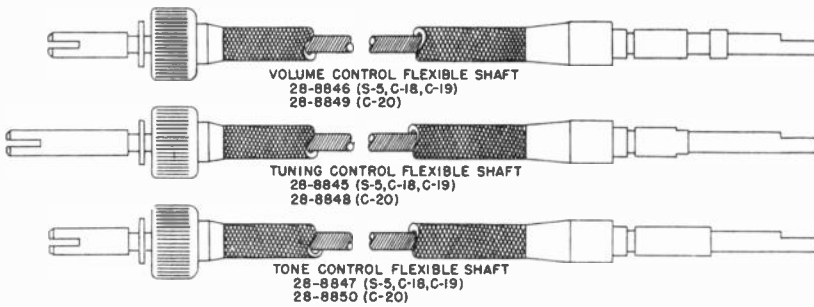
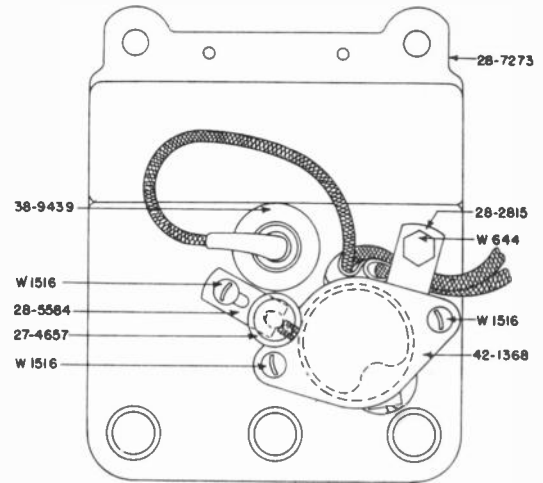
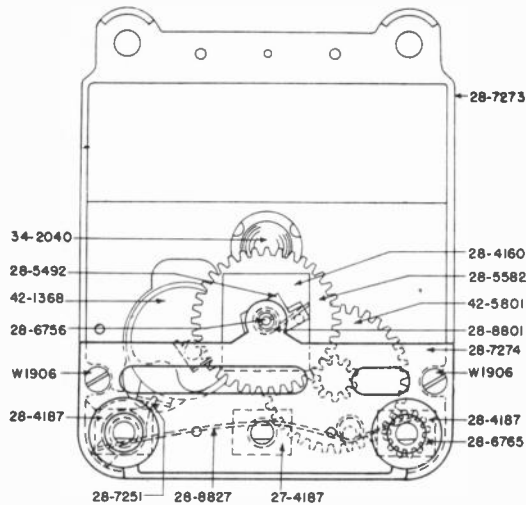
*Prices not available at this time.

PACKARD CONTROL---MODEL P-1535



CHRYSLER AND DESOTO CONTROL---MODEL C-1550

Chrysler C-18, C-19 and C-20; DeSoto S-5

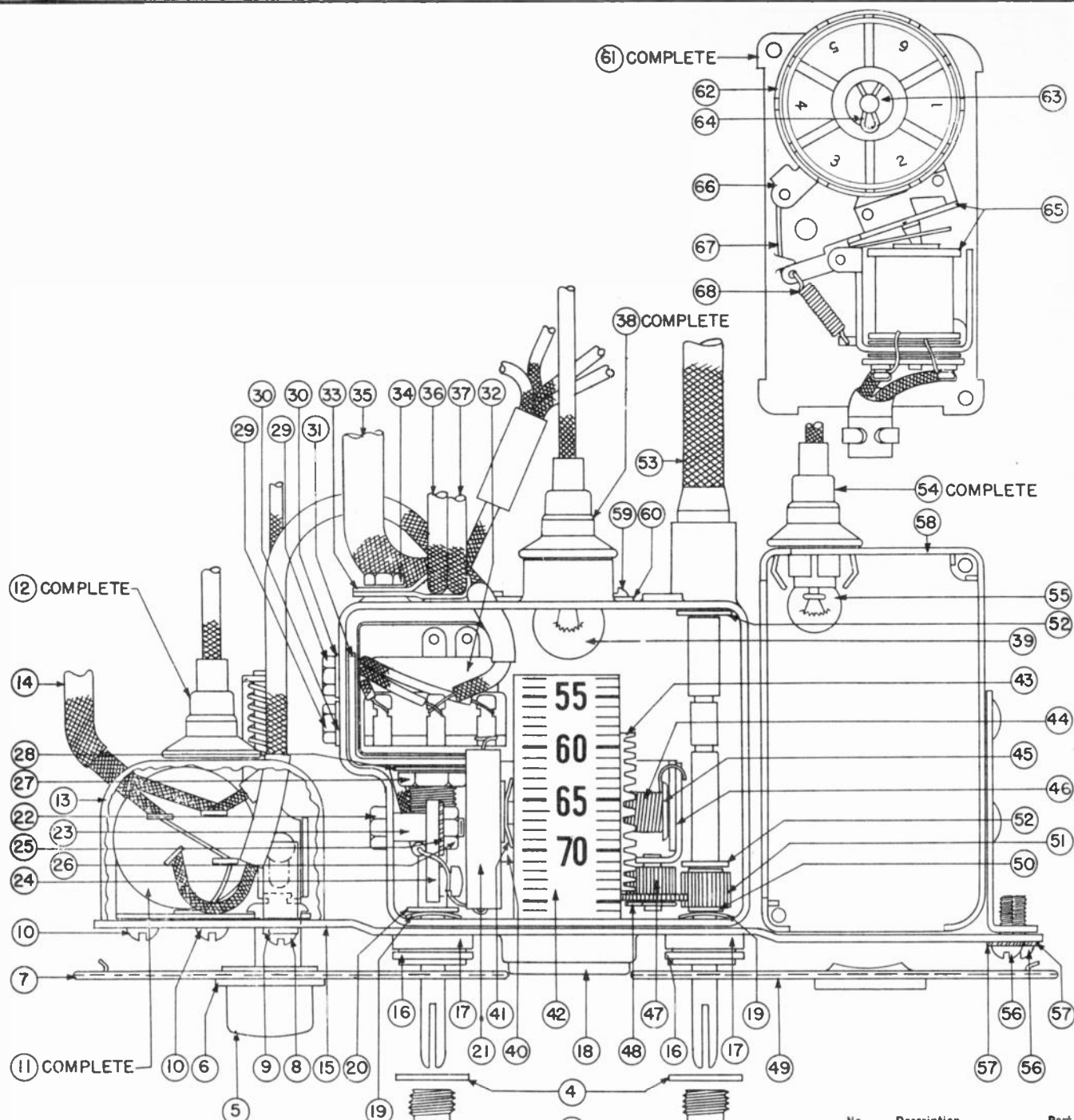


PARTS LIST AND PRICES (Prices Subject to Change Without Notice)

PART NUMBER	DESCRIPTION	LIST PRICE	PART NUMBER	DESCRIPTION	LIST PRICE
W-644	Screw	per 100 \$1.50	28-5610	Fuse Housing	.05
W-1516	Screw	per 100 1.30	28-6756	Pointer Shaft	*
W-1906	Screw	*	28-6785	Drive Gear	*
27-4657	Knob	*	28-6788	Gland Nut	.20
27-4661	Tuning & Volume Knob (S-5)	.25	28-6820	Gland Nut	*
27-4662	Tuning & Volume Knob (C-18, C-19)	.25	28-7251	Switch Lever	.15
27-4663	Tuning & Volume Knob (C-20)	.30	28-7273	Control Housing	*
27-4667	Tone Knob (S-5)	.20	28-7274	Cover	*
27-4668	Tone Knob (C-18, C-19)	.20	28-8801	Anti-back Lash Spring	*
27-4669	Tone Knob (C-20)	.25	28-8827	Spring	*
27-4683	Ferrule	.03	28-8841	Spring	.01
27-5376	Dial (S-5)	*	28-8845	Tuning Shaft (S-5, C-18, C-19)	*
27-5377	Dial (C-18, C-19, C-20)	*	28-8846	Volume Shaft (S-5, C-18, C-19)	*
27-5379	Glass (C-18, C-19, C-20)	.35	28-8847	Tone Shaft (S-5, C-18, C-19)	*
27-9049	Washer	per 100 .80	28-8848	Tuning Shaft (C-20)	*
28-2815	Clamp	.01	28-8849	Volume Shaft (C-20)	*
28-4160	Spring	.01	28-8850	Tone Shaft (C-20)	*
28-4187	Washer	.01	34-2040	Pilot Lamp	.09
28-5492	Pointer Stop	*	38-9407	'A' Lead	*
28-5529	Dial (S-5)	.50	38-9408	'A' Lead	*
28-5530	Dial Retainer (S-5)	*	38-9439	Pilot Lamp Assembly	*
28-5535	Glass Retainer (C-18, C-19, C-20)	*	42-1368	On-Off Switch	.35
28-5582	Gear	*	42-5789	Pointer (C-18, C-19, C-20)	.15
28-5584	Plate	*	42-5797	Pointer (S-5)	*

* Prices not available at this time.

PACKARD CONTROL---MODEL P-1617



No.	Description	Part No.
1	Tuning & Volume Knob	27-4687
2	Knob Base	28-4184
3	Gland Nut	57-0026
4	Washer	28-5435
5	Push Button Knob	55-0173
6	Light Shield	55-0198
7	Left Bezel	57-0273
8	Screw	W1516
9	Bracket	57-0599
10	Screw	W1516
11	Push Button Switch (complete)	77-0175
12	Pilot Lamp Assembly	38-7734
13	Push Button Housing	57-0532
14	Automatic Cable	95-0031
15	Plate	57-0262
16	Nut	W124
17	Nut	57-0547
18	Bezel	57-0008
19	Washer	28-4187
20	Washer	57-0228
21	Condenser	61-0020
22	Screw	W-2002
23	Spacer	6223
24	Panel	03103

No.	Description	Part No.
25	Washer	W181
26	Nut	W124
27	Nut	W684
28	Washer	W1624
29	Screw & Washer	W2150
30	Washer & Screw	W2150
31	Bracket	57-0251
32	Volume Control & On-Off Switch	67-0004-1
33	Clamp	57-0470

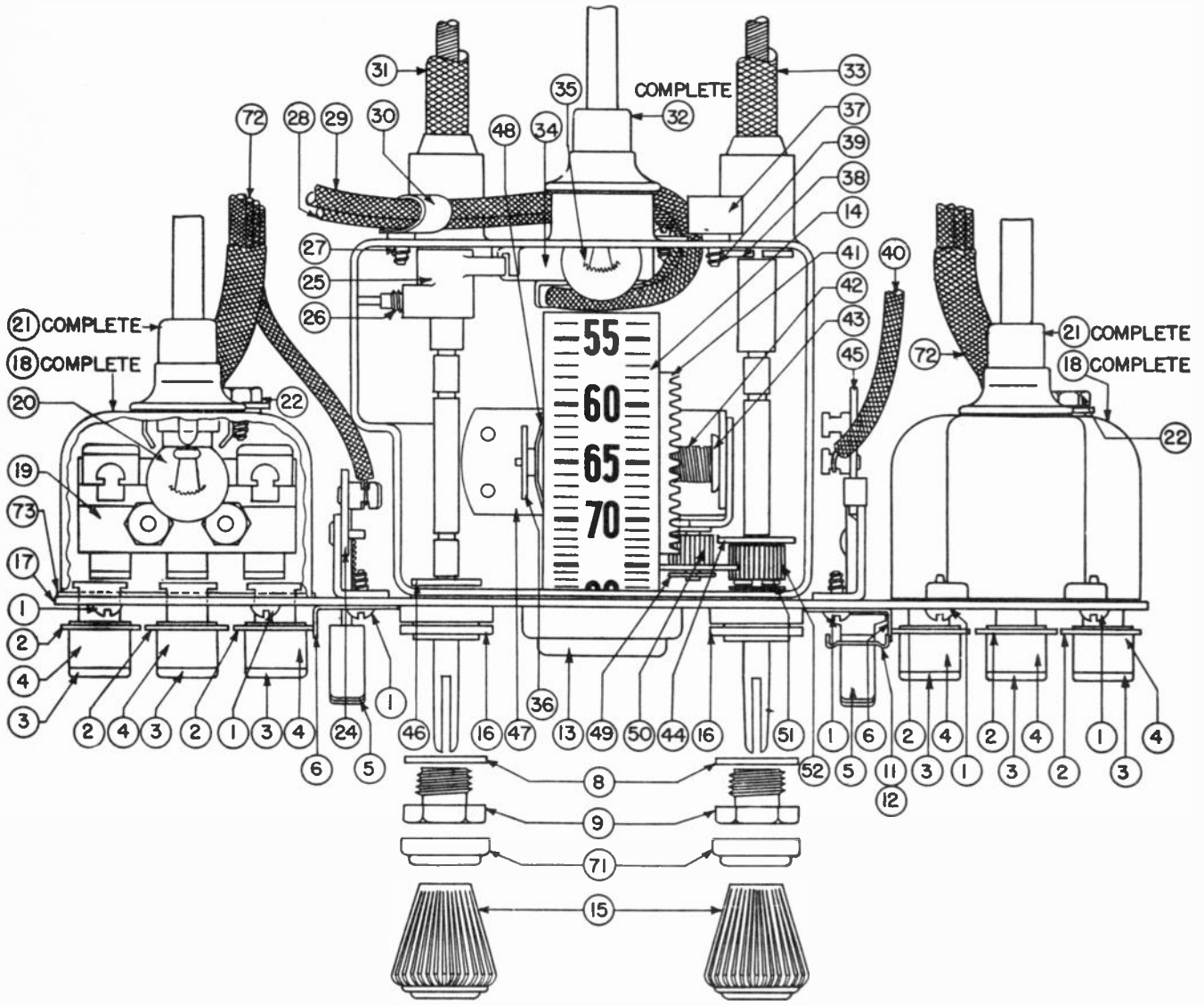
PARTS LIST

No.	Description	Part No.
34	Screw	W644
35	Cable	95-0026
36	"A" Lead	38-8183
37	"A" Lead	95-0015
38	Pilot Lamp Assembly	38-7734
39	Pilot Lamp Assembly	34-2040
40	Bracket	57-0150
41	Washer	28-4160
42	Dial	85-0035
43	Gear	57-0013

No.	Description	Part No.
44	Anti Back Lash Spring	57-0151
45	Eyelet	W739
46	Bracket	57-0150
47	Gear	85-0054
48	Spring	28-8496
49	Right Bezel	57-0274
50	Washer	28-5990
51	Gear	57-0050
52	Washer	57-0228
53	Flexible Shaft	57-0468
54	Pilot Lamp Assembly	38-7734
55	Pilot Lamp	34-2040
56	Screw	W1852
57	Washer	W488
58	Cover	415-1017
59	Screw	W814
60	Cover	57-0469
61	Station Indicator (complete)	85-0047
62	Indicator	55-0197
63	Washer	W495FA3
64	Spring	28-8711FA3
65	Solenoid	77-0227
66	Stop	415-1038
67	Stop Spring	415-1007
68	Spring	415-1005

128K

PACKARD CONTROL---MODEL P-1630



Top View

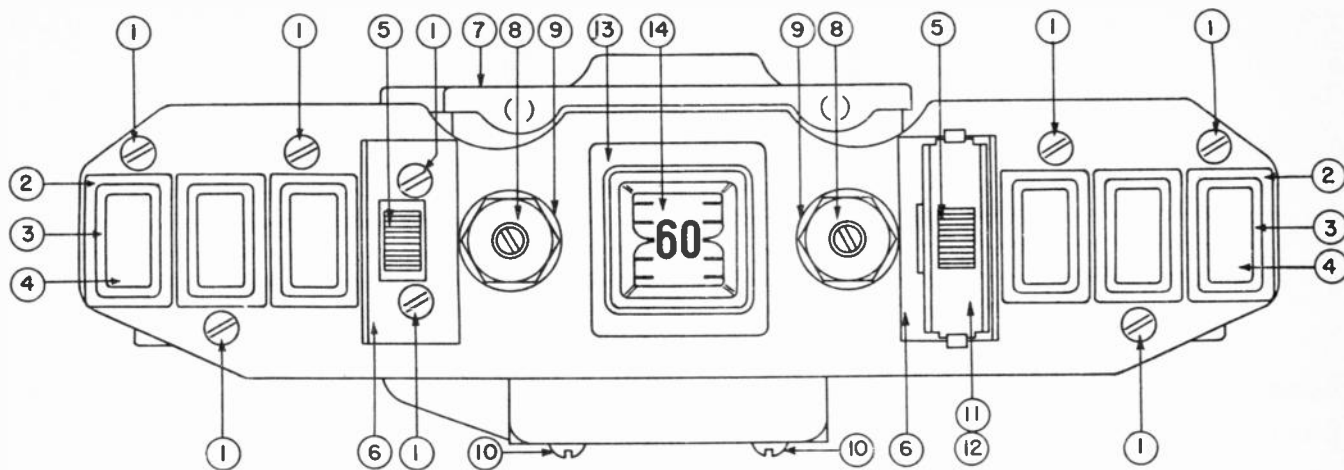
PARTS LIST

No.	Description	Part No.
①	Set Screw	W-1516
②	Light Shield	55-0198
③	Push Button Cover	57-0029
④	Push Button	55-0005
⑤	Tone and Return to Manual Knob	55-0004
⑥	Light Shield	57-0563
⑦	Washer	28-5435
⑧	Gland Nut	57-0026
⑨	Indicator Plate (1700-1-2 car)	57-0025
⑩	Indicator Plate (1703-5 car)	57-0585
⑪	Indicator Plate (1700-1-2 car)	57-0586
⑫	Dial Bezel	57-0008
⑬	Dial Assembly	85-0019
⑭	Tuning & Volume Knob	27-4687
⑮	Washer	57-0615
⑯	Mounting Plate	57-0166

No.	Description	Part No.
⑰	Push Button Switch (Complete)	77-0024
⑱	Push Button Switch	77-0022
⑲	Pilot Lamp	34-2039
⑳	Pilot Lamp Assembly	38-8467
㉑	Screw	W644
㉒	Return to Dial Switch	77-0025
㉓	Switch Lever	28-7251
㉔	Switch Lever Screw	W1782
㉕	Screw	W644
㉖	"A" Lead	95-0015
㉗	"A" Lead	38-8183
㉘	Clamp	28-2815
㉙	Volume Shaft	57-0117
㉚	Pilot Lamp Assembly	38-8467
㉛	Tuning Shaft	57-0116
㉜	On-Off Switch	85-0009
㉝	Pilot Lamp	34-2039
㉞	Dial Bracket Assembly	412-1019

No.	Description	Part No.
㉟	Clamp	28-4998
㊱	Spring	28-4187
㊲	Screw	W644
㊳	Tone Control Cable	77-0029
㊴	Shaft and Gear Assembly	412-1017
㊵	Anti Back Lash Spring	57-0151
㊶	Brass Eyelet	W739
㊷	Washer	28-4685
㊸	Tone Control Switch	77-0026
㊹	Spring	28-4187
㊺	Dial Bracket Assembly	412-1019
㊻	Spring	28-4160
㊼	Spring	28-8496
㊽	Gear	85-0054
㊾	Washer	28-4187
㊿	Drive Gear	57-0050
1	Dress Washers	28-4184
2	Automatic Cable	77-0028
3	Button Lock	57-0609

PACKARD CONTROL---MODEL P-1630



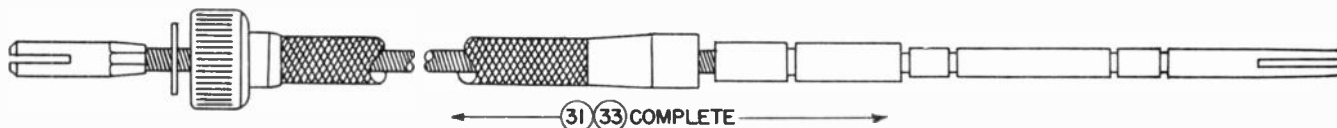
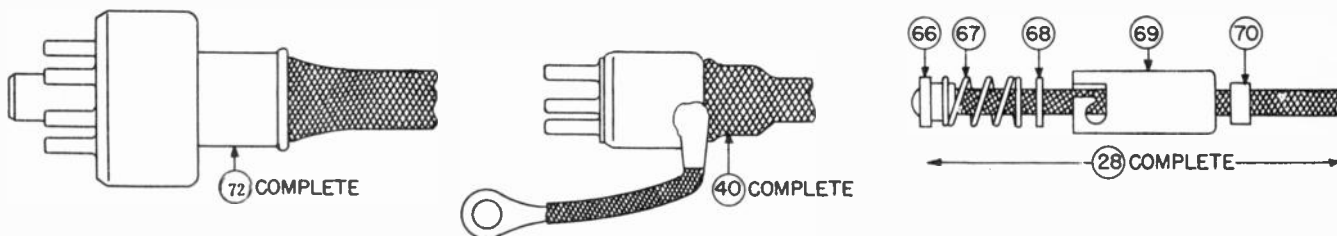
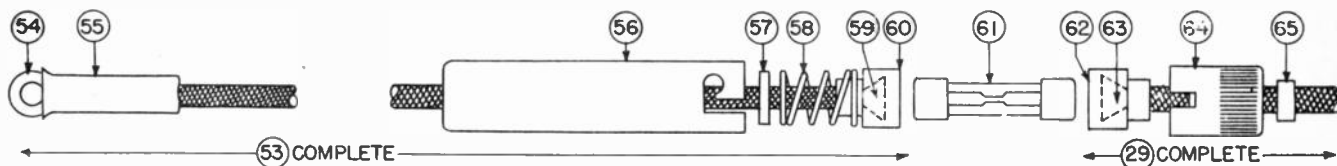
Front View

PARTS LIST

No.	Description	Part No.
①	Set Screw	W-1516
②	Light Shield	55-0198
③	Push Button Cover	57-0029
④	Push Button	55-0005
⑥	Tone and Return to Manual Knob	55-0004

No.	Description	Part No.
⑦	Light Shield	57-0563
⑧	Cover	57-0152
⑨	Washer	28-5435
⑩	Gland Nut	57-0026
⑪	Screw	W1516

No.	Description	Part No.
⑫	Indicator Plate (1700-1-2 car)	57-0025
⑬	Indicator Plate (1703-5 car)	57-0585
⑭	Indicator Plate (1703-5 car)	57-0586
⑮	Dial Bezel	57-0008
⑯	Dial Assembly	85-0019



Cables, "A" Lead and Flexible Shaft

PARTS LIST

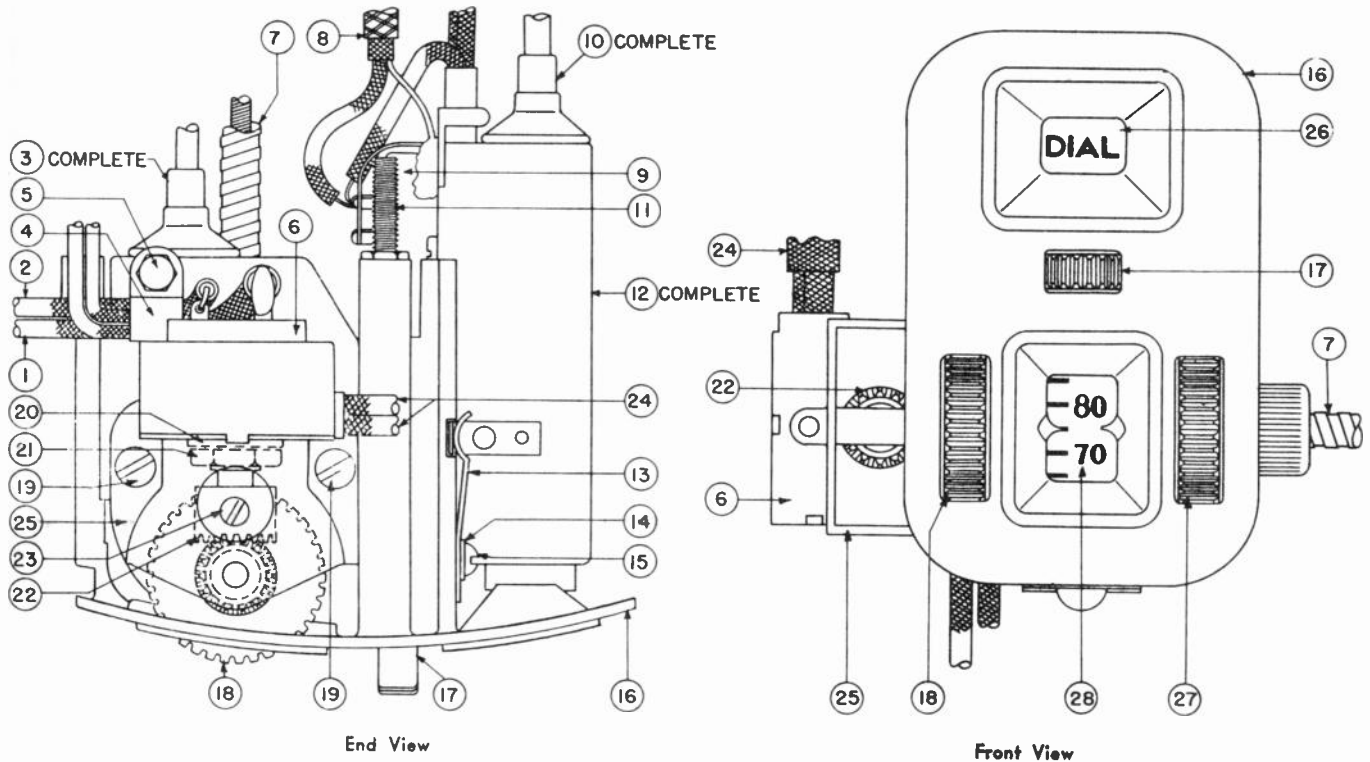
No.	Description	Part No.
①	"A" Lead	38-8183
②	"A" Lead	95-0015
③	Volume Shaft	57-0117
④	Tuning Shaft	57-0116
⑤	Tone Control Cable	77-0029
⑥	Ammeter Lead	77-0052
⑦	Terminal	L-1166
⑧	Sleeve	27-7242

No.	Description	Part No.
⑨	Fuse Housing	28-5610
⑩	Washer	27-9049
⑪	Spring	28-8841
⑫	Terminal	28-5609
⑬	Ferrule	27-4683
⑭	Fuse	45-2559
⑮	Ferrule	27-4683
⑯	Terminal	28-5609

No.	Description	Part No.
⑰	Housing	28-5608
⑱	Rubber Washer	W169
⑲	Ferrule	27-7133
⑳	Spring	28-8009
㉑	Washer	27-7132
㉒	Housing	28-1272
㉓	Rubber Washer	4169
㉔	Automatic Cable	77-0028

128M

LINCOLN ZEPHYR CONTROL---MODEL L-1660



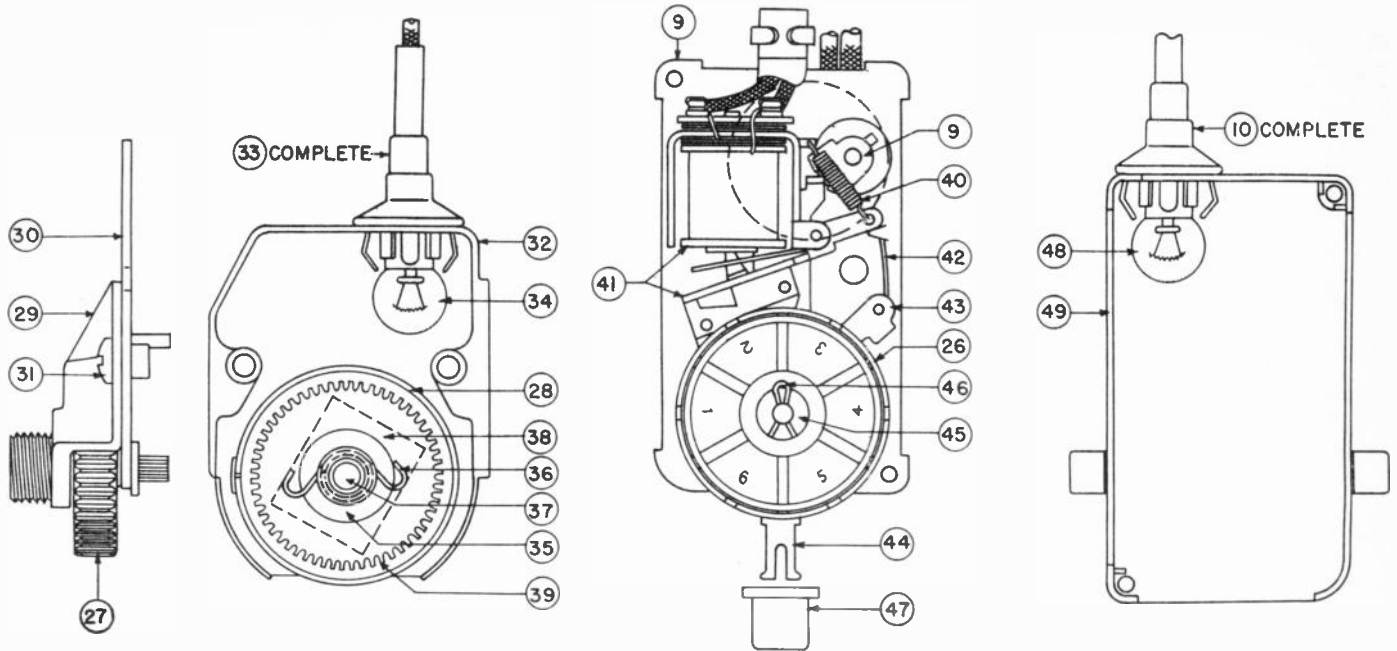
PARTS LIST

No.	Description	Part No.
①	"A" Lead	41-3387
②	"A" Lead	38-7621
③	Pilot Lamp Assembly	38-7213
④	Clamp	28-2815FA1
⑤	Screw	WG14FA1
⑥	Volume Control and On-Off Switch	67-0009
⑦	Flexible Shaft	57-0491
⑧	Automatic Cable	95-0034
⑨	Base and Switch Assembly	415-1012

No.	Description	Part No.
⑩	Pilot Lamp Assembly	38-8265
⑪	Stud	57-0493
⑫	Station Selector Complete	85-0041
⑬	Spring	57-0485
⑭	Washer	W874
⑮	Screw	W219FA1
⑯	Bezel Assembly	57-0372
⑰	Push Button Knob	55-0184
⑱	Volume Control Knob	77-0232
⑲	Screw	W91

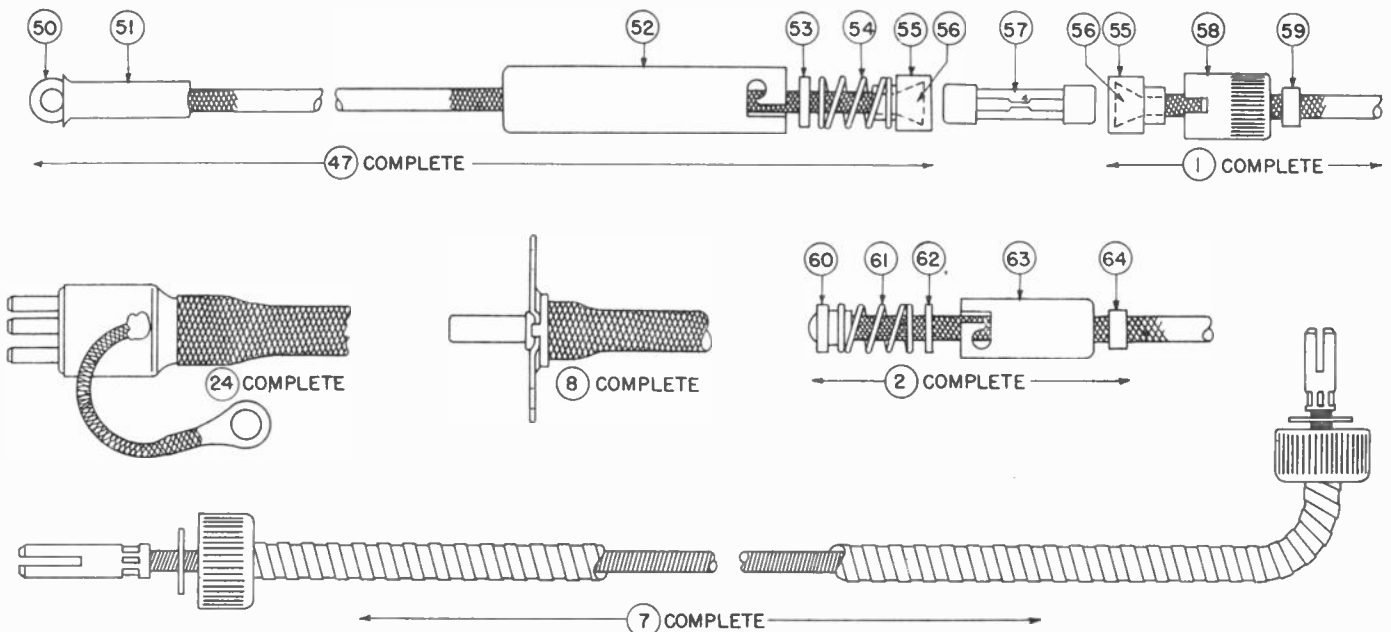
No.	Description	Part No.
⑳	Washer	W181
㉑	Nut	W684
㉒	Gear	28-7172
㉓	Screw	W590
㉔	Volume Control Cable	95-0036
㉕	Cover	57-0482
㉖	Station Selector	415-1009
㉗	Tuning Control Knob	77-0250
㉘	Scale Assembly	85-0040

LINCOLN ZEPHYR CONTROL---MODEL L-1660



PARTS LIST

No.	Description	Part No.	No.	Description	Part No.	No.	Description	Part No.
①	Base and Switch Assembly	415-1012	⑤	Pilot Lamp Assembly	38-7213	④	Spring	415-1007
②	Pilot Lamp Assembly	38-8265	⑥	Pilot Lamp	34-2039	⑤	Stop	415-1008
③	Station Selector	415-1009	⑦	Spring Stop	57-0409	⑥	Shaft — Part of ①	
④	Tuning Control Knob	77-0250	⑧	Spring	57-0456	⑦	Washer	AW495FA3
⑤	Scale Assembly	85-0040	⑨	Shaft	57-0408	⑧	Spring	28-8711FA3
⑥	Cover Plate	57-0457	⑩	Friction Spring	28-4160	⑨	Ammeter Lead	38-9408
⑦	Plate	57-0458	⑪	Gear	57-0452	⑩	Pilot Lamp	34-2040
⑧	Screw	W91FA1	⑫	Spring	415-1005	⑪	Cover	415-1034
⑨	Cover	57-0492	⑬	Solenoid	77-0227			



Cables, "A" Lead and Flexible Shaft

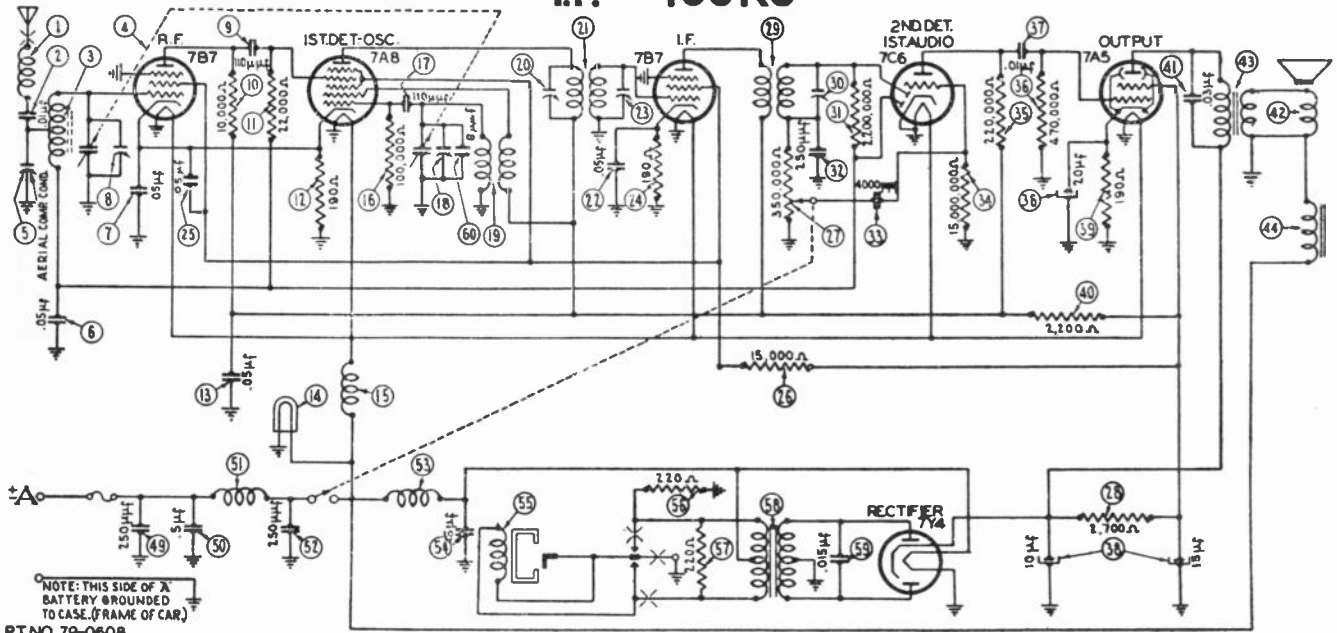
PARTS LIST

No.	Description	Part No.	No.	Description	Part No.	No.	Description	Part No.
①	"A" Lead	41-3387	⑤	Sleeve	27-8366	③	Housing	28-5608
②	"A" Lead	38-7821	⑥	Fuse Housing	28-5610	④	Washer	4169
③	Flexible Shaft	57-0491	⑦	Washer	27-9049	⑤	Ferrule	27-7133
④	Automatic Cable	95-0034	⑧	Spring	28-8841	⑥	Spring	28-8009
⑤	Volume Control Cable	95-0036	⑨	Ferrule	27-4683	⑦	Washer	27-7132
⑥	Ammeter Lead	38-9408	⑩	Terminal	28-5609	⑧	Housing	28-1272
⑦	Terminal	L-1841	⑪	Fuse	45-2559	⑨	Washer	4169

MODEL AR-1

MODEL AR-1 SCHEMATIC

I.F. = 455KC

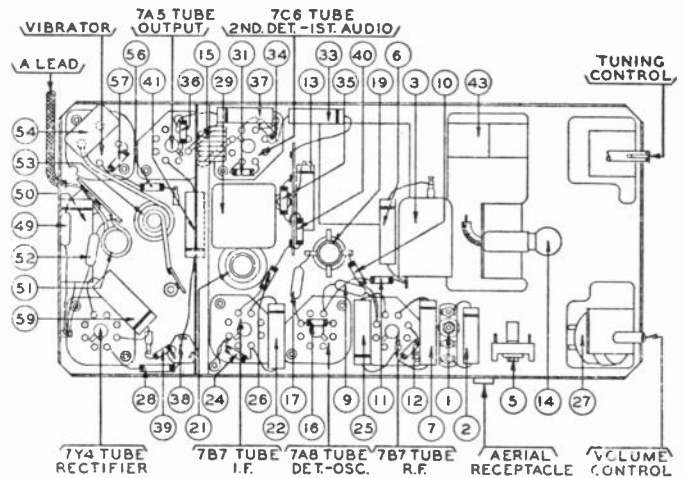


NOTE: THIS SIDE OF A BATTERY IS GROUNDED TO CASE (FRAME OF CAR)
PT. NO. 79-0608

Aligning Procedure will be found on page 165.

PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0102	54	Resistor (470,000 ohms)	33-447154
2	Condenser (.01 mfd.)	61-0114	55	Condenser (.01 mfd.)	61-0114
3	Antenna Transformer	65-0195	56	Filter Condenser (10-15-20 mfd.)	61-0089
4	Tuning Condenser	63-0028	57	Resistor (190 ohms)	33-119336
5	Aerial Compensator	63-0030	58	Resistor (2200 ohms)	33-222334
6	Condenser (.05 mfd.)	61-0101	59	Condenser (.03 mfd.)	61-0119
7	Condenser (.05 mfd.)	61-0111	60	Cone and Voice Coil (For 73-0027-1)	91-0076
8	First Padder (on Tun. Cond.)		61	Cone and Voice Coil (For 73-0027-2)	91-0077
9	Condenser (110 mmfd.)	30-1031	62	Output Transformer	65-0258
10	Resistor (10,000 ohms)	33-310154	63	Field Coil (not replaceable)	
11	Resistor (22,000 ohms)	33-222154	64	Condenser (250 mmfd.)	61-0033
12	Resistor (190 ohms)	33-119336	65	Condenser (.5 mfd.)	61-0106
13	Condenser (.05 mfd.)	61-0111	66	"A" Choke	32-1644
14	Pilot Lamp	69-0004	67	Condenser (250 mmfd.)	61-0033
15	Filament Choke	65-0158	68	Vibrator Choke	65-0204
16	Resistor (100,000 ohms)	33-10154	69	Condenser (.5 mfd.)	61-0106
17	Condenser (110 mmfd.)	30-1031	70	Vibrator	83-0025
18	Second Padder (on Tun. Cond.)		71	Resistor (220 ohms)	33-122334
19	Oscillator Transformer	65-0194	72	Resistor (220 ohms)	33-122331
20	Padder (Pri. 1st I.F. Trans.)		73	Power Transformer	65-0185
21	First I.F. Transformer	65-0191	74	Condenser (.015 mfd.)	61-0138
22	Padder (Sec. 1st I.F. Trans.)	61-0111	75	Condenser (.8 mmfd.)	30-1106
23	Resistor (190 ohms)	33-119336	76	Drive Cord (1 1/2")	55-0588
24	Condenser (.05 mfd.)	61-0111	77	Drive Cord (5/8")	55-0589
25	Resistor (15,000 ohms)	33-315154	78	Drive Cord (1 3/8")	55-0652
26	Volume Control (350,000 ohms)		79	Drive Cord (7/8")	55-0653
27	In On-Off Switch	67-0020	80	Tuning Shaft	57-0802FA3
28	Resistor (2,700 ohms)	33-227434	81	Speaker	73-0027
29	Second I.F. Transformer	65-0192	82	Tube Side Cover	318-1964
30	Padder (Sec. 2nd I.F. Trans.)		83	Wiring Side Cover	77-0337
31	Resistor (2,200,000 ohms)	33-522154	84	Pointer	57-1421
32	Condenser (250 mmfd.)	61-0033	85	Dial	77-0526
33	Condenser (4000 mmfd.)	61-0128	86	Tuning and Volume Knob	55-0547
34	Resistor (15,000,000 ohms)	33-615154	87	Window Crystal	55-0501
35	Resistor (220,000 ohms)	33-422154	88	Back Strap (Radio Mtg.)	28-5998FA3

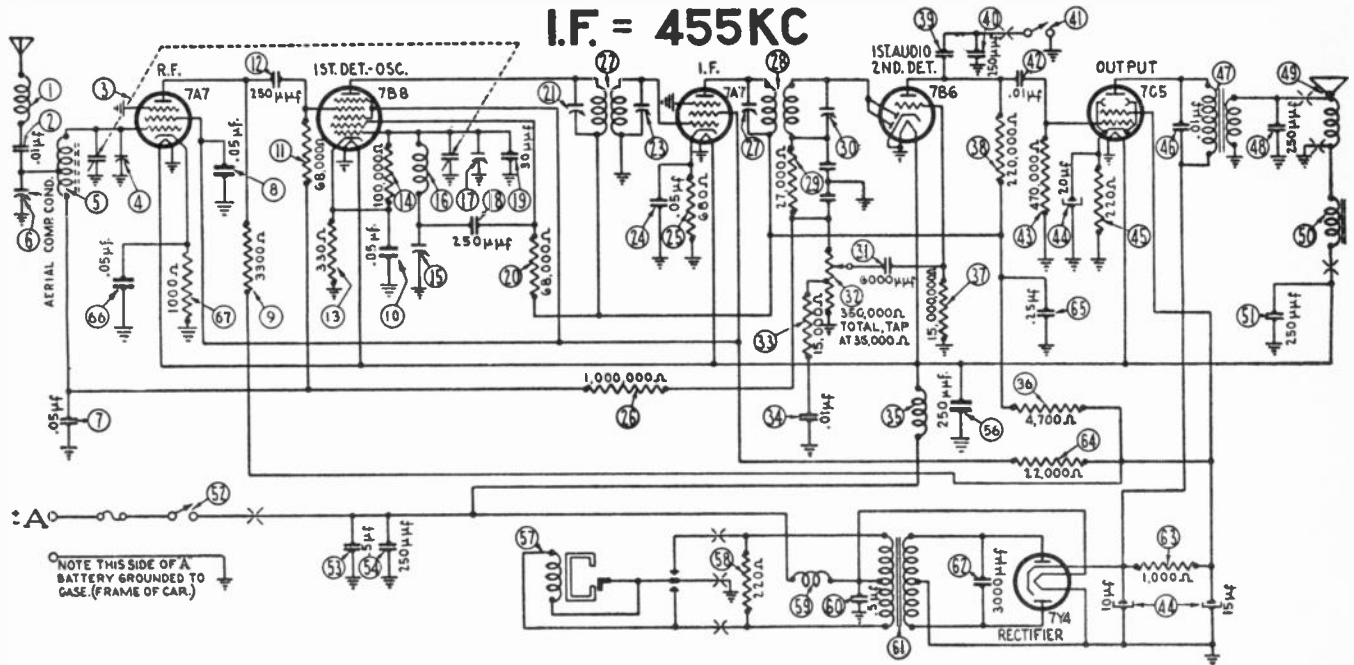


No.	Description	Part No.	No.	Description	Part No.
89	Mounting Bracket (Radio Mtg.)	57-0812FC45	91	Upper Aerial Stanchion Kit	45-1438
90	Interference Condenser	30-4007	92	Lower Aerial Stanchion Kit	45-1437
91	Distributor Resistor	33-1196	93	Aerial Rod (48")	57-1248
92	Nut (Radio Mtg.)	W98FA3	94	Aerial Rod (66")	57-1249
93	Bolt (Radio Mtg.)	W1318FA3	95	Aerial Rod (94")	57-1247
94	Nut (Radio Mtg.)	W1532FA3	96	All Aerial Parts Used in Part Nos. 91-0109, 91-0110 and 91-0111 Cowl Aerial	
95	Screw (Radio Mtg.)	97-0082FA3			

MODEL AR-4

MODEL AR-4 SCHEMATIC

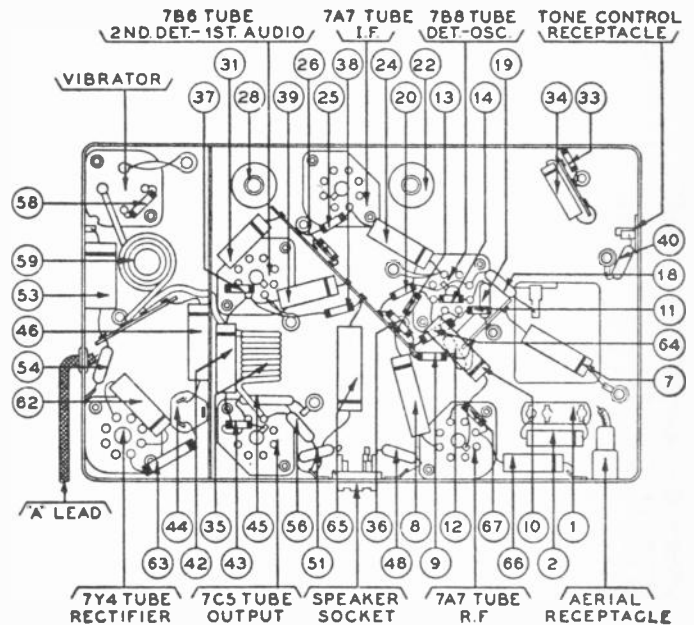
I.F. = 455 KC



Aligning Procedure will be found on page 165.

PARTS LIST — AR-4

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0102	28	Resistor (220 ohms)	33-122438
2	Condenser (.01 Mfd.)	61-0014	29	Condenser (.01 Mfd.)	61-0124
3	Tuning Condenser	63-0047	30	Output Transformer	65-0317
4	Antenna Padder (on Tun. Cond.)	61-0101	31	Condenser (250 Mmfd.)	61-0033
5	Antenna Transformer	65-0323	32	Replacement Cone	
6	Aerial Compensator	77-0545	33	(For 73-0045-2 Speaker)	91-0086
7	Condenser (.05 Mfd.)	61-0101	34	(For 73-0045-3 Speaker)	91-0126
8	Condenser (.05 Mfd.)	61-0101	35	(For 73-0047-2 Speaker)	91-0086
9	Resistor (3,300 ohms)	33-233334	36	(For 73-0047-3 Speaker)	91-0126
10	Condenser (.05 Mfd.)	61-0101	37	Field Coil	Not Replaceable
11	Resistor (68,000 ohms)	33-368154	38	Condenser (250 Mmfd.)	61-0033
12	Condenser (250 Mmfd.)	61-0033	39	On-Off Switch	85-0112
13	Resistor (330 ohms)	33-133336	40	Condenser (.5 Mfd.)	61-0106
14	Resistor (100,000 ohms)	33-410154	41	Condenser (250 Mmfd.)	61-0033
15	Low Frequency Padder	63-0048	42	Condenser (250 Mmfd.)	61-0033
16	Oscillator Transformer	65-0052	43	Vibrator	83-0025
17	Oscillator Padder (on Tun. Cond.)	61-0101	44	Resistor (220 ohms)	33-122334
18	Condenser (250 Mmfd.)	61-0033	45	Vibrator Choke	65-0075
19	Resistor (30 Mmfd.)	60-030337	46	Condenser (.5 Mfd.)	61-0137
20	Resistor (68,000 ohms)	33-368334	47	Power Transformer	65-0318
21	Padder (Pri. 1st I. F. Trans.)	65-0319	48	Condenser (3,000 Mmfd.)	61-0115
22	First I. F. Transformer	65-0319	49	Resistor (1,000 ohms)	33-210434
23	Padder (Sec. 1st I. F. Trans.)	61-0101	50	Condenser (22,000 ohms)	33-322434
24	Condenser (.05 Mfd.)	61-0101	51	Condenser (.25 Mfd.)	61-0125
25	Resistor (680 ohms)	33-168336	52	Condenser (.05 Mfd.)	61-0111
26	Resistor (1,000,000 ohms)	33-510154	53	Resistor (1,000 ohms)	33-210336
27	Padder (Pri. 2nd I. F. Trans.)	65-0052	54	Interference Condenser	30-4007
28	Second I. F. Transformer	65-0320	55	Distributor Resistor	33-1196
29	Resistor (27,000 ohms)	33-327154	56	Fuse	7227
30	Padder (Sec. 2nd I. F. Trans.)	61-0103	57	Hook Bolt (Radio Mtg.)	57-1340FA3
31	Condenser (6,000 Mmfd.)	61-0103	58	Nut (Radio Mtg.)	W55FA3
32	Volume Control		59	Bracket (Control Mtg.)	57-1300FC46
33	(350,000 ohms)	67-0032-1	60	Bracket (Control Mtg.)	57-1301FC46
34	Resistor (15,000 ohms)	33-315154	61	Nut (Control Mtg.)	W124FA3
35	Condenser (.01 Mfd.)	61-0114	62	Screw (Control Mtg.)	W161FA3
36	Filament Choke	32-1804	63	Screw (Control Mtg.)	W1794FA24
37	Resistor (4,700 ohms)	33-247334	64	Cable Clamp	57-1463
38	Resistor		65	Control	85-0115
39	(15,000,000 ohms)	33-615154	66	Tube Side Cover	318-2008
40	Resistor (220,000 ohms)	33-422334	67	Wiring Side Cover	57-1345FC45
41	Condenser (4,000 Mmfd.)	61-0129	68	Vibrator Socket	27-6044
42	Condenser (250 Mmfd.)	61-0033	69	Speaker Socket	55-0443
43	Tone Control Switch	85-0111	70	Loktal Socket	55-0575
44	Condenser (.01 Mfd.)	61-0100	71	Housing	77-0522FC45
45	Resistor (470,000 ohms)	33-447154	72	Drive Cord	55-0935
46	Filter Transformer		73	Tuning & Volume Knob	55-0936
47	(10-15-20 Mfd.)	61-0089	74	Drive Cord Spring	57-1425
48			75	Flexible Shaft (Volume)	57-1384

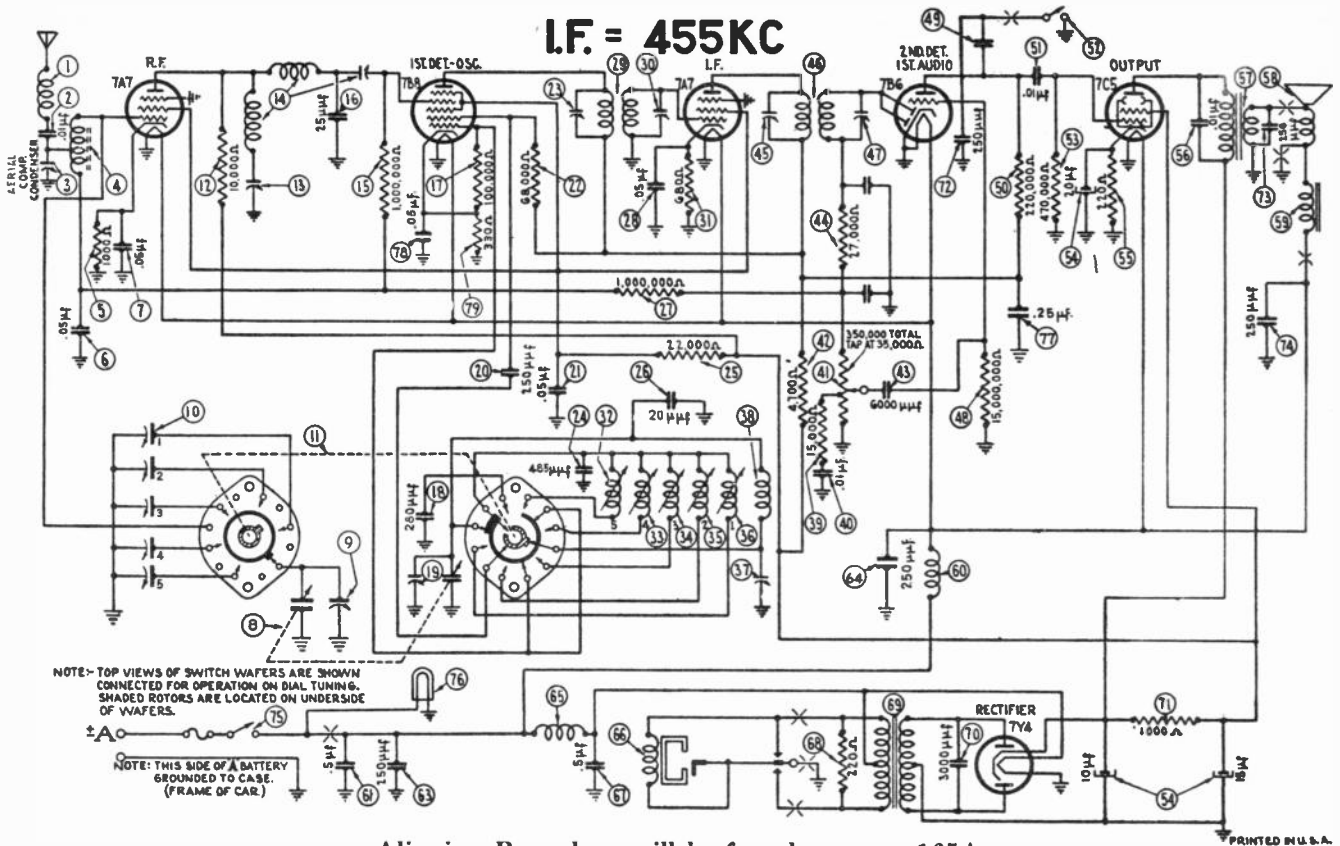


No.	Description	Part No.	No.	Description	Part No.
1	Flexible Shaft (Tuning)	57-1385	91	Aerial Rod (48 3/4")	57-1248
2	Pointer	57-1403FA3	92	Aerial Rod (66")	57-1249
3	Pilot Lamp	69-0004	93	Aerial Rod (94")	57-1247
4	Tone Control Lead	85-0135	94	All Aerial Parts used in Part Nos.	
5	Dial	55-0950	95	91-0109, 91-0110 and 91-0111	
6	Upper Aerial Stanchion Kit	45-1438	96	Cowl Aerial	
7	Lower Aerial Stanchion Kit	45-1437			

MODEL AR-5

MODEL AR-5 SCHEMATIC

I.F. = 455KC



Aligning Procedure will be found on page 165A.

PARTS LIST — AR-5

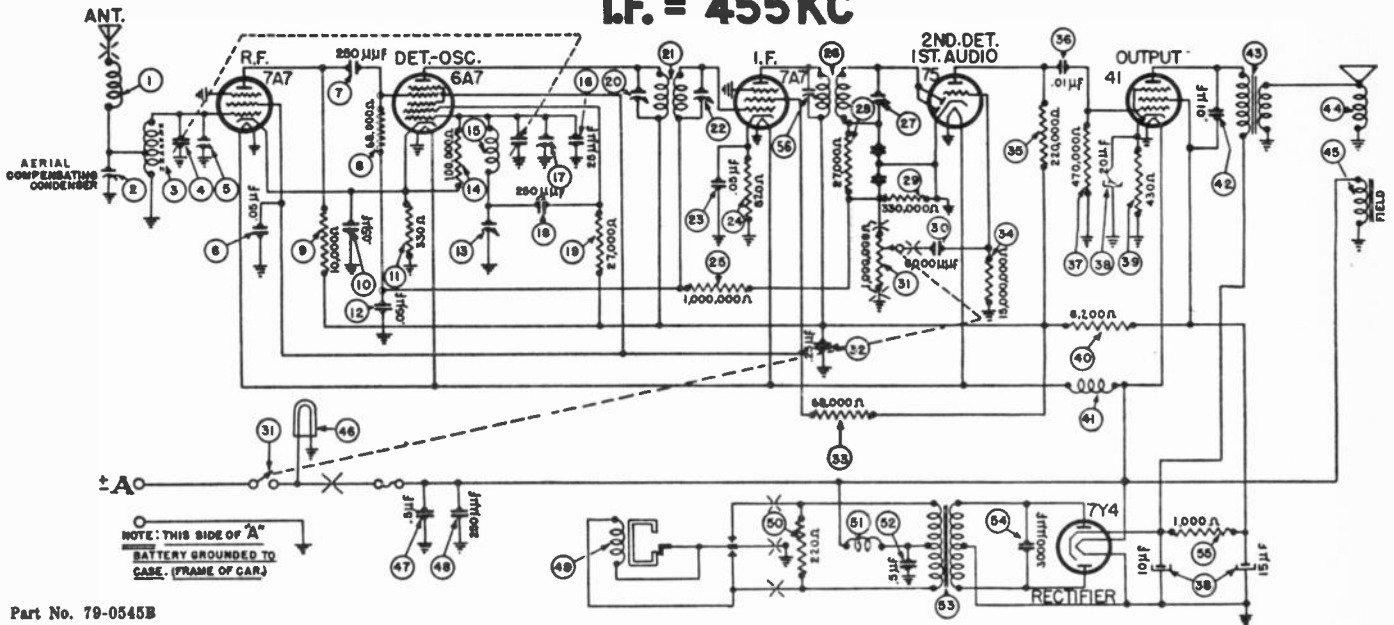
No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0102	32	Resistor (47,000 ohms)	33-247334
2	Condenser (.01 Mfd.)	61-0114	33	Resistor (6,000 Mmfd.)	61-0103
3	Aerial Compensator	Part of 2	34	Resistor (27,000 ohms)	33-327154
4	Antenna Transformer	65-0323	35	Padder (Pri. 2nd I. F. Trans.)	65-0320
5	Resistor (1,000 ohms)	33-210338	36	Second I. F. Transformer	65-0320
6	Condenser (.05 Mfd.)	61-0101	37	Padder (Sec. 2nd I. F. Trans.)	65-0320
7	Condenser (.05 Mfd.)	61-0111	38	Resistor	
8	Tuning Condenser	63-0047	39	(15,000,000 ohms)	33-615154
9	Antenna Padder (on Tun. Cond.)		40	Condenser (4,000 Mmfd.)	61-0129
10	Antenna Padder Assembly	77-0512	41	Resistor (220,000 ohms)	33-422334
11	Wafer Switch	77-0506	42	Condenser (.01 Mfd.)	61-0100
12	Resistor (10,000 ohms)	33-310334	43	Tone Control Switch	85-0111
13	I. F. Wave Trap Padder		44	Resistor (470,000 ohms)	33-447154
14	R. F. Transformer	65-0321	45	Filter Condenser	
15	Resistor (1,000,000 ohms)	33-510154	46	(10-15-20 Mfd.)	61-0089
16	Condenser (25 Mmfd.)	30-1067	47	Resistor (220 ohms)	33-122438
17	Resistor (100,000 ohms)	33-410154	48	Condenser (.01 Mfd.)	61-0124
18	Silver Mica Condenser		49	Output Transformer	65-0317
19	(280 Mmfd.)	61-0043	50	Replacement Cone	
20	Oscillator Padder (on Tun. Cond.)		51	Field Coil	Not Replaceable
21	Condenser (250 Mmfd.)	61-0033	52	Filament Choke	32-1604
22	Condenser (.05 Mfd.)	61-0101	53	Condenser (.5 Mfd.)	61-0106
23	Resistor (68,000 ohms)	33-388334	54	Condenser (250 Mmfd.)	61-0033
24	Padder (Pri. 1st I. F. Trans.)		55	Condenser (250 Mmfd.)	61-0033
25	Silver Mica Condenser		56	Vibrator Choke	65-0075
26	(485 Mmfd.)	61-0144	57	Vibrator	83-0025
27	Resistor (22,000 ohms)	33-325434	58	Condenser (.5 Mfd.)	61-0137
28	Condenser (15 Mmfd.)	61-0039	59	Resistor (220 ohms)	33-122334
29	Resistor (1,000,000 ohms)	33-510154	60	Power Transformer	65-0318
30	Condenser (.05 Mfd.)	61-0101	61	Condenser (3,000 Mmfd.)	61-0115
31	First I. F. Transformer	65-0319	62	Resistor (1,000 ohms)	33-210434
32	Padder (Sec. 1st I. F. Trans.)		63	Condenser (250 Mmfd.)	61-0033
33	Resistor (680 ohms)	33-168336	64	Condenser (250 Mmfd.)	61-0033
34	Oscillator Transformer		65	Condenser (250 Mmfd.)	61-0033
35	(550 to 1085 KC)	65-0173	66	On-Off Switch	85-0112
36	Oscillator Transformer		67	Pilot Lamp	34-2064
37	(600 to 1165 KC)	65-0172	68	Condenser (.25 Mfd.)	61-0125
38	Oscillator Transformer		69	Condenser (.05 Mfd.)	61-0101
39	(680 to 1240 KC)	65-0171	70	Resistor (330 ohms)	33-133336
40	Oscillator Transformer		71	Hook Bolts	
41	(750 to 1410 KC)	65-0170	72	(Radio Mtg.)	57-1340FA3
42	Oscillator Transformer		73	Nut (Radio Mtg.)	W98FA3
43	(855 to 1580 KC)	65-0169	74	Tube Side Cover	318-1097
44	Low Frequency Padder	63-0048	75	Wiring Side Cover	57-1345FC45
45	Manual Oscillator		76	4 Proog Socket	27-6044
46	Transformer	65-0052			
47	Resistor (15,000 ohms)	33-315154			
48	Condenser (.01 Mfd.)	61-0114			
49	Volume Control				
50	(350,000 ohms)	67-0032-1			

No.	Description	Part No.	No.	Description	Part No.
1	Tuning Shaft	57-1385	1	Aerial Receptacle	
2	Station Indicator Shaft	57-1396	2		
3	Pointer	57-1403FA3	3		
4	Dial	55-0937	4		
5	Station Indicator	77-0514	5		
6	Upper Aerial Stanchion Kit	45-1438	6		
7	Lower Aerial Stanchion Kit	45-1437	7		
8	Aerial Rod (48 3/4")	57-1248	8		
9	Aerial Rod (66")	57-1249	9		
10	Aerial Rod (94")	57-1247	10		
11	Aerial Lead	95-0124	11		
12	All Aerial Parts used in Part Nos.	91-0109, 91-0110 and 91-0111	12		
13	Cowl Aerials		13		

MODEL AR-6

SCHEMATIC MODEL AR-6

I.F. = 455 KC

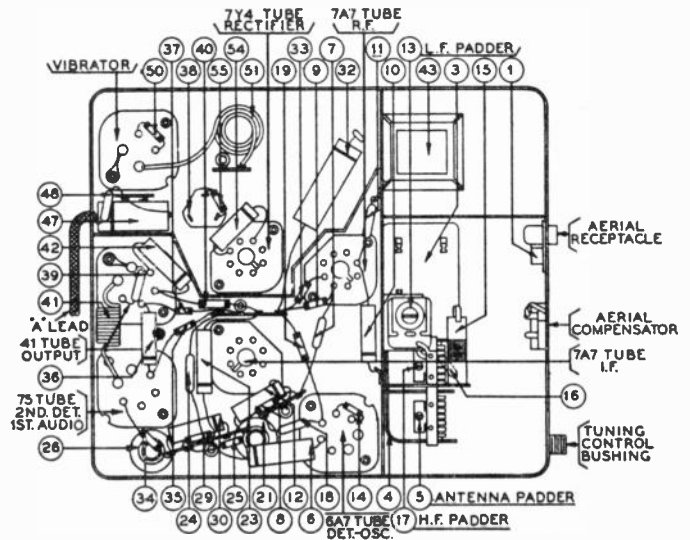


Part No. 79-0545B

Aligning Procedure will be found on page 165A.

PARTS LIST MODEL AR-6

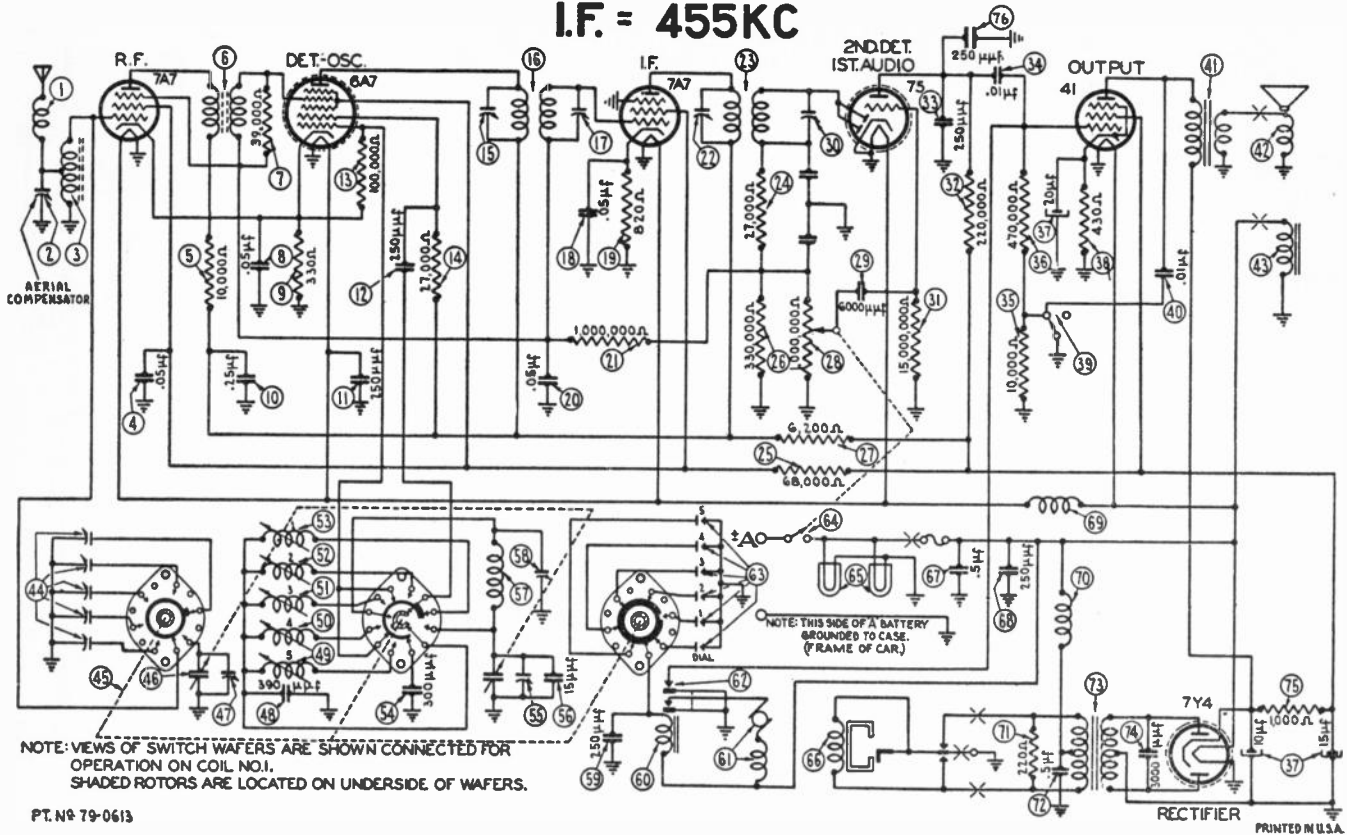
No.	Description	Part No.	No.	Description	Part No.
1	Aerial Choke	65-0102	29	Resistor (470,000 ohms)	33-447154
2	Aerial Padder	31-6248	30	Filter Condenser (10-15-20 Mfd.)	61-0089
3	Antenna Transformer	65-0085	31	Resistor (430 ohms)	33-143438
4	Tuning Condenser	63-0016	32	Resistor (6,200 ohms)	33-262434
5	Aerial Padder (on Tun. Cond.)		33	Filament Choke	32-1644
6	Condenser (.05 Mfd.)	61-0101	34	Condenser (.01 Mfd.)	61-0120
7	Condenser (250 Mmf.)	61-0033	35	Output Transformer	65-0048
8	Resistor (68,000 ohms)	33-368154	36	Cone & Voice Coil	91-0028
9	Resistor (10,000 ohms)	33-310334	37	Field Coil	Not Replaceable
10	Condenser (.05 Mfd.)	61-0101	38	Pilot Lamp	34-2040
11	Resistor (330 ohms)	33-183436	39	Condenser (.5 Mfd.)	61-0108
12	Condenser (.05 Mfd.)	61-0111	40	Condenser (250 Mmf.)	61-0033
13	Low Frequency Padder	31-6230	41	Vibrator	85-0025
14	Resistor (100,000 ohms)	33-410154	42	Resistor (220 ohms)	33-122334
15	Oscillator Transformer	65-0134	43	Vibrator Choke	65-0075
16	Condenser (25 Mmf.)	30-1108	44	Condenser (.5 Mfd.)	61-0137
17	Oscillator Padder (on Tun. Cond.)		45	Power Transformer	65-0159
18	Condenser (250 Mmf.)	61-0033	46	Condenser (3,000 Mmf.)	61-0115
19	Resistor (27,000 ohms)	33-327334	47	Resistor (1,000 ohms)	33-210334
20	Padder (Pri. 1st I. F. Trans.)		48	Padder (Pri. 1st I. F. Trans.)	
21	First I. F. Transformer	65-0044	49	4 Prong Socket	27-8044
22	Padder (Sec. 1st I. F. Trans.)		50	6 Prong Socket	27-8036
23	Condenser (.05 Mmf.)	61-0101	51	7 Prong Socket	27-8037
24	Resistor (820 ohms)	33-182438	52	Loktal Sockets	27-8131
25	Resistor (1,000,000 ohms)	33-510154	53	Volume Control Socket	55-0945
26	Second I. F. Transformer	65-0230	54	Radio Housing	77-0520FC45
27	Padder (Sec. 2nd I. F. Trans.)		55	Speaker Unit	73-0029
28	Resistor (27,000 ohms)	33-327344	56	Front Cover	57-1389FC45
29	Resistor (330,000 ohms)	33-433154	57	"T" Bolt (Radio Mtg.)	28-8181FA3
30	Condenser (6,000 Mmf.)	61-0103	58	Nut (Radio Mtg.)	W518FA1
31	Volume Control (1,000,000 ohms) & On-Off Switch	33-5288	59	Washer (Radio Mtg.)	28-2608FA1
32	Condenser (.25 Mfd.)	61-0125	60	Interference Condenser	30-4007
33	Resistor (68,000 ohms)	33-368334	61	Distributor Resistor	33-1196
34	Resistor (15,000,000 ohms)	33-815154	62	Fuse	7227
35	Resistor (220,000 ohms)	33-422334	63	Standard Control Assembly	85-0117
36	Condenser (.01 Mfd.)	61-0100	64	Dial	55-0304
			65	Flexible Shaft	57-0681



No.	Description	Part No.	No.	Description	Part No.
42	Dial Cable	42-5842	57	Aerial Rod (66")	57-1219
43	Tuning & Volume Knob	27-4689	58	Aerial Rod (94")	57-1247
44	Control Mtg. Bracket	28-5790	59	Aerial Lead	95-0124
45	Control Mtg. Bracket Screws	W1307	All Aerial Parts Used in Part Nos. 91-0109, 91-0110 & 91-0111 Cowl Aerial		
46	Upper Aerial Stanchion Kit	45-1438			
47	Lower Aerial Stanchion Kit	45-1437			
48	Aerial Rod (48 3/4")	57-1248			

MODEL AR-7

I.F. = 455KC

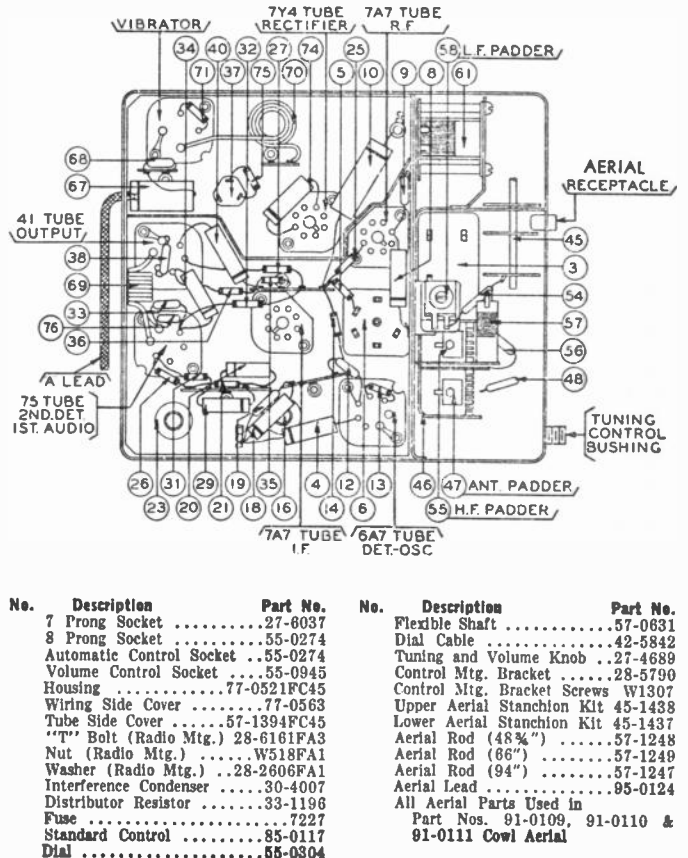


PT. No. 79-0613

Aligning Procedure will be found on page 165B.

PARTS LIST

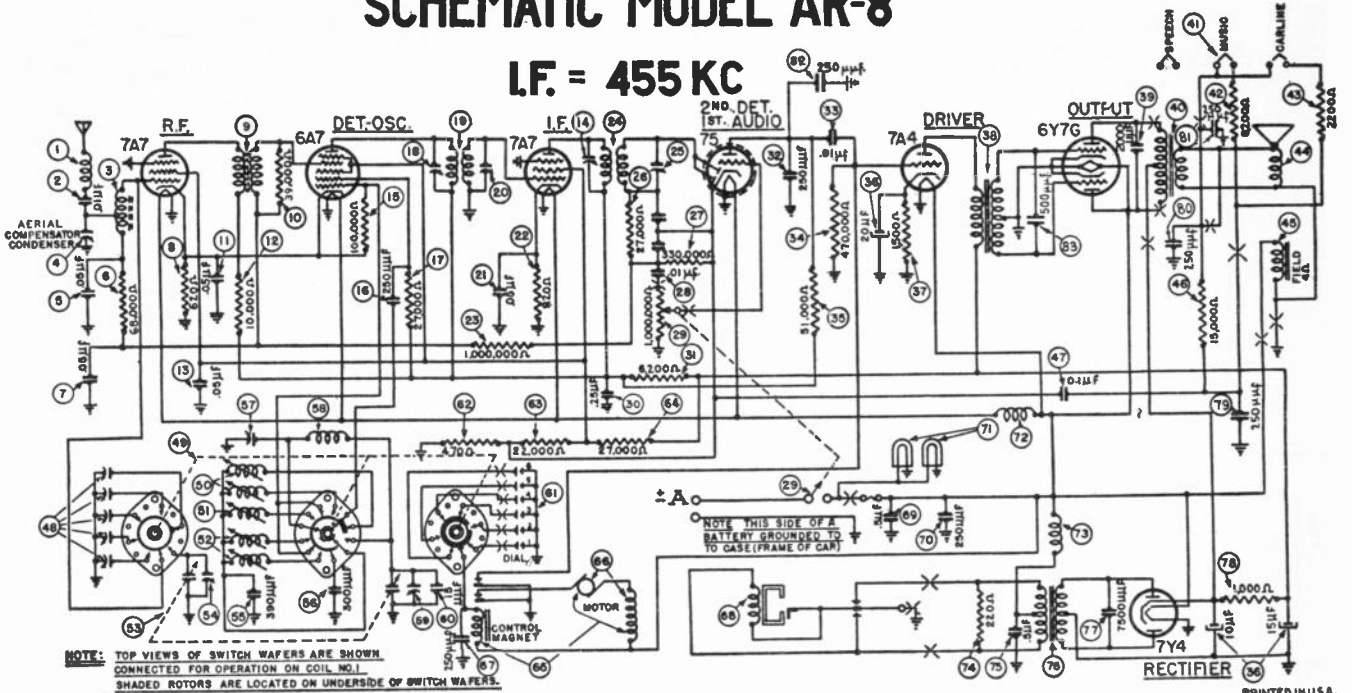
No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	85-0102	27	Cone and Voice Coil	91-0028
2	Aerial Compensator	part of 49	28	Field Coil	(Not Replaceable)
3	Antenna Transformer	85-0085	29	Antenna Padders Assy.	77-0172
4	Condenser (.05 mfd.)	61-0101	30	Wafer Switch	77-0207
5	Resistor (10,000 ohms)	33-310334	31	Tuning Condenser	63-0016
6	R. F. Transformer	65-0009	32	Antenna Padder (on Tun. Cond.)	
7	Resistor (39,000 ohms)	33-338154	33	Silver Mica Condenser	
8	Condenser (.05 mfd.)	61-0101	34	Oscillator Transformer	(390 mmfd.) 61-0031
9	Resistor (330 ohms)	33-133336	35	Oscillator Transformer	(550 to 1000 Kc.) 65-0090
10	Condenser (250 mmfd.)	61-0033	36	Oscillator Transformer	(550 to 1000 Kc.) 65-0090
11	Condenser (250 mmfd.)	61-0033	37	Oscillator Transformer	(750 to 1350 Kc.) 65-0089
12	Resistor (100,000 ohms)	33-410154	38	Oscillator Transformer	(850 to 1580 Kc.) 65-0088
13	Resistor (27,000 ohms)	33-327334	39	Oscillator Transformer	(850 to 1580 Kc.) 65-0088
14	Padder (Pri. 1st I.F. Trans.)		40	Silver Mica Condenser	(300 mmfd.) 61-0003
15	First I. F. Transformer	65-0044	41	H. F. Padder (on Tun. Cond)	
16	Padder (Sec. 1st I.F. Trans.)		42	Condenser (15 mmfd.)	61-0038
17	Condenser (.05 mfd.)	61-0101	43	Oscillator Transformer	(Manual) 65-0134
18	Resistor (820 ohms)	33-182438	44	Low Frequency Padder	31-6230
19	Condenser (.05 mfd.)	61-0111	45	Condenser (250 mmfd.)	61-0033
20	Resistor (15,000,000 ohms)	33-510154	46	Control Magnet	part of 49
21	Padder (Pri. 2nd I.F. Trans.)		47	Motor Assembly	33-262434
22	Second I. F. Transformer	65-0230	48	Relay	part of 49
23	Resistor (27,000 ohms)	33-327154	49	Push Button Switch Assy	85-0114
24	Resistor (68,000 ohms)	33-368334	50	On-Off Switch	part of 49
25	Resistor (330,000 ohms)	33-433154	51	Pilot Lamp	34-2040
26	Resistor (6200 ohms)	33-262434	52	Vibrator	33-0025
27	Volume Control (1,000,000 ohms) and On-Off Switch	33-5268	53	Condenser (.5 mfd.)	61-0106
28	Condenser (6000 mmfd.)	61-0103	54	Condenser (250 mmfd.)	61-0033
29	Padder (Sec. 2nd I.F. Trans.)		55	Filament Choke	32-1644
30	Resistor		56	Vibrator Choke	65-0075
31	(15,000,000 ohms)	33-615154	57	Resistor (220 ohms)	33-122334
32	Resistor (220,000 ohms)	33-422334	58	Condenser (.5 mfd.)	61-0137
33	Condenser (250 mmfd.)	61-0033	59	Power Transformer	65-0326
34	Condenser (.01 mfd.)	61-0120	60	Condenser (3000 mmfd.)	61-0115
35	Resistor (10,000 ohms)	33-310334	61	Resistor (1000 ohms)	33-210334
36	Resistor		62	Condenser (250 mmfd.)	61-0033
37	(470,000 ohms)	33-447154	63	Complete Speaker	73-0014-2
38	Filter Condenser		64	Loktal Socket	27-6131
39	(10-15-20 mfd.)	61-0089	65	4 Prong Socket	27-6044
40	Resistor (430 ohms)	33-143438	66	6 Prong Socket	27-8036
41	Tone Control Switch	85-0102			
42	Condenser (.01 mfd.)	61-0120			
43	Output Transformer	65-0048			



MODEL AR-8

SCHEMATIC MODEL AR-8

LF = 455 KC



PT. NO. 79-0599

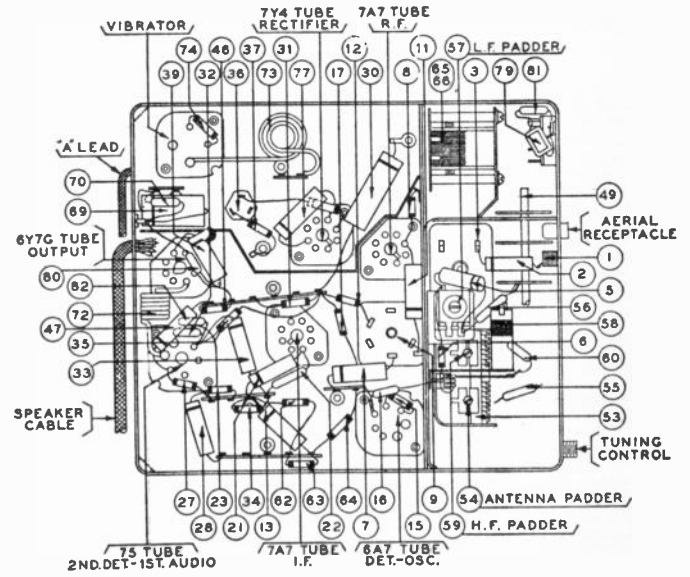
PRINTED IN U.S.A.

Aligning Procedure will be found on page 165B.

PARTS LIST

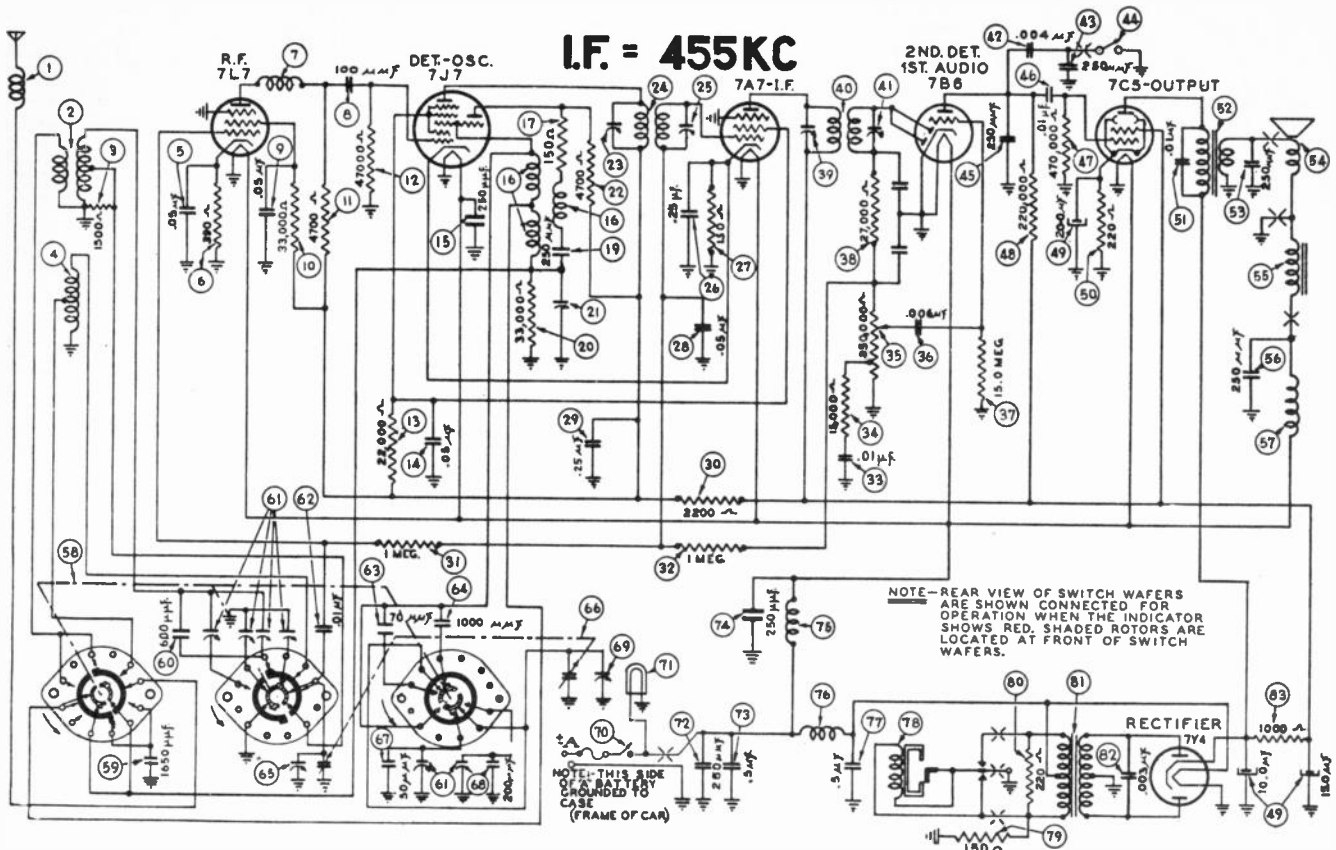
No.	Description	Part No.
1	Antenna Choke	65-0102
2	Condenser (.01 Mfd.)	61-0110
3	Antenna Transformer	65-0085
4	Aerial Compensator	Part of 40
5	Condenser (.05 Mfd.)	61-0111
6	Resistor (68,000 ohms)	33-388154
7	Condenser (.05 Mfd.)	61-0101
8	Resistor (620 ohms)	33-162338
9	R. F. Transformer	65-0009
10	Resistor (39,000 ohms)	33-339154
11	Condenser (.05 Mfd.)	61-0101
12	Resistor (10,000 ohms)	33-310334
13	Condenser (.05 Mfd.)	61-0101
14	Padder (Pri. 2nd I. F. Trans.)	
15	Resistor (100,000 ohms)	33-410334
16	Condenser (250 Mmfd.)	61-0033
17	Resistor (27,000 ohms)	33-327334
18	Padder (Pri. 1st I. F. Trans.)	
19	First I. F. Transformer	65-0044
20	Padder (Sec. 1st I. F. Trans.)	
21	Condenser (.05 Mfd.)	61-0101
22	Resistor (820 ohms)	33-182438
23	Resistor (1,000,000 ohms)	33-510154
24	Second I. F. Transformer	65-0230
25	Padder (Sec. 2nd I. F. Trans.)	
26	Resistor (27,000 ohms)	33-327154
27	Resistor (330,000 ohms)	33-433154
28	Condenser (.01 Mfd.)	61-0114
29	Volume Control (1,000,000 ohms) & On-Off Switch	33-5268
30	Condenser (.25 Mfd.)	61-0125
31	Resistor (6,200 ohms)	33-262434
32	Condenser (250 Mmfd.)	61-0033
33	Condenser (.01 Mfd.)	61-0100
34	Resistor (470,000 ohms)	33-447154
35	Resistor (51,000 ohms)	33-351334
36	Filter Condenser (10-15-20 Mfd.)	61-0089
37	Resistor (1,500 ohms)	33-315334
38	Input Transformer	65-0097
39	Condenser (2,000 Mmfd.)	61-0123
40	Output Transformer	65-0093
41	Reception Control	Part of 40
42	Resistor (8,200 ohms)	33-282334
43	Resistor (3,300 ohms)	33-222334
44	Cone & Voice Coil	45-2653
45	Field Coil	Not Replaceable
46	Resistor (15,000 ohms)	33-315334
47	Condenser (.1 Mfd.)	61-0104
48	Antenna Padder Assy.	77-0172
49	Wafer Switch	77-0207

No.	Description	Part No.
50	Oscillator Transformers (850 to 1580 KC)	65-0088
51	Oscillator Transformer (750 to 1350 KC)	65-0089
52	Oscillator Transformers (550 to 1000 KC)	65-0090
53	Tuning Condenser	63-0018
54	Antenna Padder (on Tun. Cond.)	
55	Silver Mica Condenser (390 Mmfd.)	61-0031
56	Silver Mica Condenser (300 Mmfd.)	61-0003
57	Low Frequency Padder	31-6230
58	Oscillator Transformer (Manual)	65-0134
59	Oscillator Padder (on Tun. Cond.)	
60	Condenser (15 Mmfd.)	61-0038
61	Push Button Switch Assy.	77-0539
62	Resistor (470 ohms)	33-147936
63	Resistor (22,000 ohms)	33-322334
64	Resistor (27,000 ohms)	33-327434
65	Control Magnet	Part of 66
66	Motor & Relay Assy.	77-0229
67	Condenser (250 Mmfd.)	61-0033
68	Vibrator	89-0025
69	Condenser (.5 Mfd.)	61-0106
70	Condenser (250 Mmfd.)	61-0033
71	Pilot Lamp	34-2040
72	Filament Choke	32-1644
73	Vibrator Choke	65-0075
74	Resistor (220 ohms)	33-122334
75	Condenser (.5 Mfd.)	61-0137
76	Power Transformer	65-0095
77	Condenser (7,500 Mmfd.)	61-0127
78	Resistor (1,000 ohms)	33-210434
79	Condenser (250 Mmfd.)	61-0033
80	Condenser (250 Mmfd.)	61-0033
81	Condenser (250 Mmfd.)	61-0033
82	Condenser (500 Mmfd.)	30-1114
83	Complete Speaker & Housing	77-0564
84	Speaker only	73-0016
85	Loktal Socket	27-6131
86	4 Prong Socket	27-6044
87	6 Prong Socket	27-6036
88	7 Prong Socket	27-6037
89	8 Prong Socket	27-6058
90	Automatic Control Socket	55-0274
91	Volume Control Socket	55-0945
92	Housing	77-0521FC45
93	Wiring Side Cover	77-0563



No.	Description	Part No.	No.	Description	Part No.
318-1950	Tube Side Cover		28-5790	Control Mtg. Bracket	
28-6161FA3	"T" Bolt (Radio Mtg.)		W-1307	Control Mtg. Bracket Screws	
W518FA1	Nut (Radio Mtg.)		45-1438	Upper Aerial Stanchion Kit	
28-2606FA1	Washer (Radio Mtg.)		45-1437	Lower Aerial Stanchion Kit	
30-4007	Interference Condenser		57-1248	Aerial Rod (48 3/4")	
33-1196	Distributor Resistor		57-1249	Aerial Rod (66")	
7227	Fuse		57-1247	Aerial Rod (94")	
85-0117	Standard Control		95-0124	Aerial Lead	
55-0304	Dial			All Aerial parts used in Part Nos. 91-0109, 91-0110 and 91-0111	
57-0631	Flexible Shaft				
42-5842	Dial Cable				
27-4689	Tuning & Volume Knob				

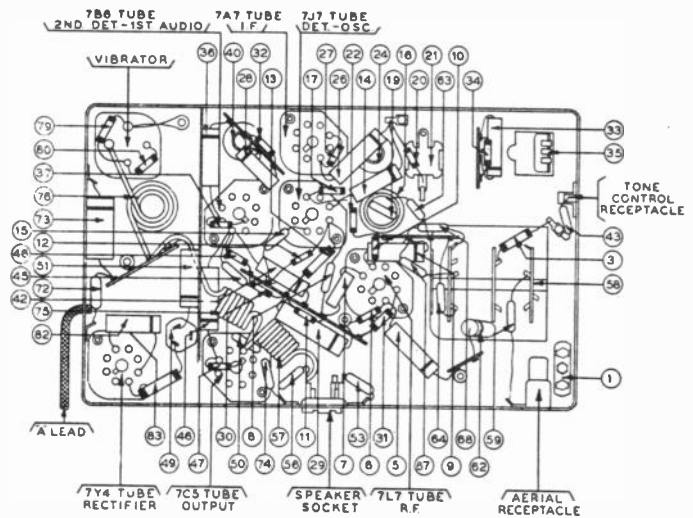
MODEL AR-9



Aligning Procedure will be found on page 166.

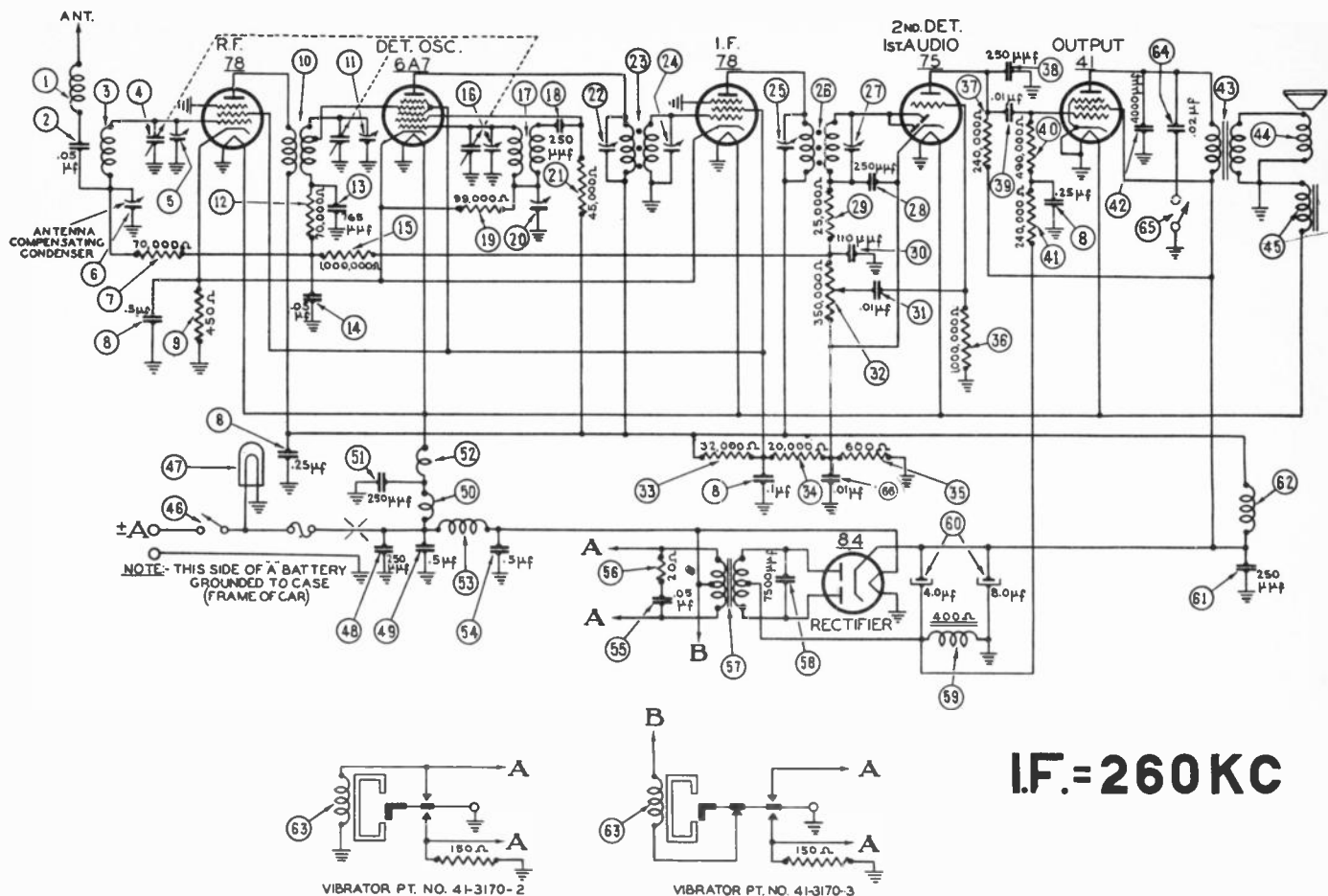
PARTS LIST — AR-9

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0340	21	Tone Control Switch	85-0111
2	Short Wave Antenna		22	Condenser (250 Mmfd.)	61-0033
3	Transformer	65-0341	23	Condenser (.01 Mfd.)	61-0100
4	Resistor (1500 ohms)	33-215334	24	Resistor (470,000 ohms)	33-447154
5	Broadcast Antenna		25	Resistor (220,000 ohms)	33-422334
6	Transformer	65-0085	26	Filter Condenser	
7	Condenser (.05 Mfd.)	61-0101	27	(10-15-20 Mfd.)	61-0089
8	Resistor (390 ohms)	33-139336	28	Resistor (220 ohms)	33-122438
9	Choke	65-0337	29	Condenser (.01 Mfd.)	61-0124
10	Condenser (100 Mmfd.)	61-0055	30	Output Transformer	85-0317
11	Condenser (.05 Mfd.)	61-0111	31	Condenser (250 Mmfd.)	61-0033
12	Resistor (33,000 ohms)	33-333334	32	Replacement Cone	
13	Resistor (4700 ohms)	33-247334	33	(For 73-0045-2 Speaker)	91-0086
14	Resistor (47,000 ohms)	33-347334	34	(For 73-0045-3 Speaker)	91-0126
15	Resistor (22,000 ohms)	33-322434	35	(For 73-0047-2 Speaker)	91-0086
16	Condenser (.05 Mfd.)	61-0101	36	(For 73-0047-3 Speaker)	91-0126
17	Condenser (250 Mmfd.)	61-0033	37	Field Coil	Not Replaceable
18	Oscillator Transformer	65-0339	38	Condenser (250 Mmfd.)	61-0033
19	Resistor (150 ohms)	33-115334	39	Choke	32-1644
20	Condenser (250 Mmfd.)	61-0033	40	Wafer Switch	77-0567
21	Resistor (33,000 ohms)	33-333334	41	Silver Mica Condenser	
22	Low Frequency Padder	63-0048	42	(1650 Mmfd.)	5877
23	Resistor (4,700 ohms)	33-247334	43	Silver Mica Condenser	
24	Padder (Pri. 1st I. F. Trans.)	61-0111	44	(600 Mmfd.)	60-160314
25	First I. F. Transformer	65-0338	45	Padder Assembly	77-0569
26	Padder (Sec. 1st I. F. Trans.)	61-0112	46	Condenser (.01 Mfd.)	61-0110
27	Condenser (.25 Mfd.)	61-0112	47	Condenser (70 Mmfd.)	61-0146
28	Resistor (150 ohms)	33-115334	48	Condenser (1000 Mmfd.)	61-0079
29	Resistor (.05 Mfd.)	61-0111	49	Antenna Padder (on Tun. Cond.)	
30	Condenser (.25 Mfd.)	61-0125	50	Tuning Condenser	63-0050
31	Resistor (2200 ohms)	33-222434	51	Condenser (50 Mmfd.)	61-0140
32	Resistor (1,000,000 ohms)	33-510154	52	Condenser (200 Mmfd.)	61-0141
33	Resistor	33-510154	53	Oscillator Padder (on Tun. Cond.)	
34	Condenser (.01 Mfd.)	61-0114	54	On-Off Switch	85-0112
35	Resistor (15,000 ohms)	33-15154	55	Pilot Lamp	34-2039
36	Volume Control	67-0032-2	56	Condenser (250 Mmfd.)	61-0033
37	Condenser (6000 Mmfd.)	61-0103	57	Condenser (.5 Mfd.)	61-0137
38	Resistor	33-615154	58	Condenser (.250 Mmfd.)	61-0333
39	Resistor (27,000 ohms)	33-327154	59	"A" Choke	32-1604
40	Padder (Pri. 2nd I. F. Trans.)	65-0320	60	Vibrator Choke	65-0075
41	Second I. F. Transformer	65-0320	61	Condenser (.5 Mfd.)	61-0137
42	Padder (Sec. 2nd I. F. Trans.)	61-0129	62	Vibrator	83-0025
43	Condenser (4000 Mmfd.)	61-0129	63	Resistor (150 ohms)	33-115334
44	Condenser (250 Mmfd.)	61-0033	64	Resistor (220 ohms)	33-122334
			65	Power Transformer	65-0313
			66	Condenser (3000 Mmfd.)	61-0115
			67	Resistor (1000 ohms)	33-210434



No.	Description	Part No.	No.	Description	Part No.
77	Housing	77-0533FC45	91	Station Indicator	77-0572
78	Speaker Socket	35-0443	92	Hook Bolts	
79	Loktal Socket	35-0575	93	(Radio Mtg.)	57-1340FA3
80	Vibrator Socket	27-6044	94	Nut (Radio Mtg.)	W98FA3
81	Tube Side Cover	318-2034	95	Control Mtg. Bracket	57-1300FC46
82	Wiring Side Cover	57-1345FC45	96	Control Mtg. Bracket	57-1301FC45
83	Control Unit	85-0121	97	Cable Clamp	57-1429
	Drive Cord	55-0935	98	Upper Aerial Stanchion Kit	45-1438
	Tun. & Vol. Knob	55-0936	99	Lower Aerial Stanchion Kit	45-1437
	Volume Shaft	57-1384	100	Aerial Rod (94")	57-1247
	Tuning Shaft	57-1385	101	Aerial Lead	95-0149
	Dial	55-0993	102	All Aerial parts used in Part No.	91-0144 Cowl Aerial
	Push Button Shaft	57-1386			
	Pointer	57-1403-FA3			

MODEL N-1514

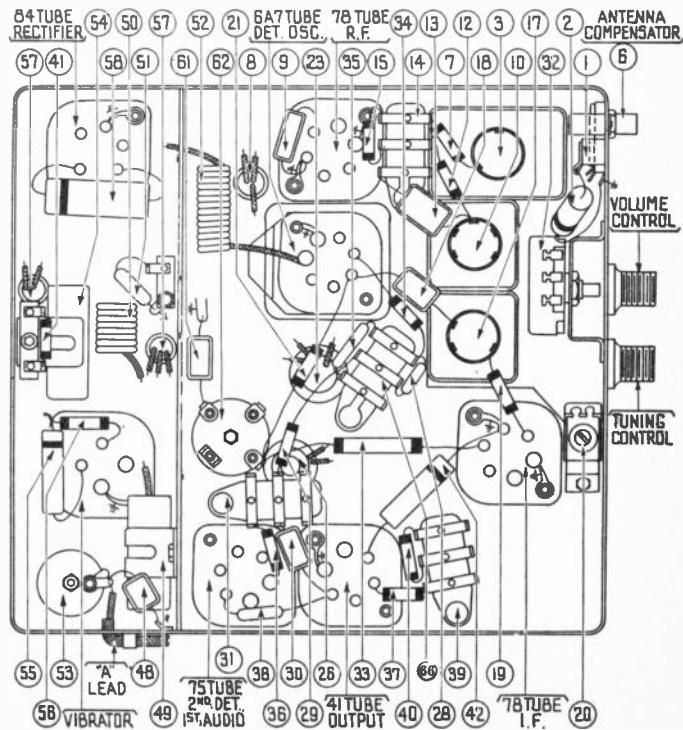


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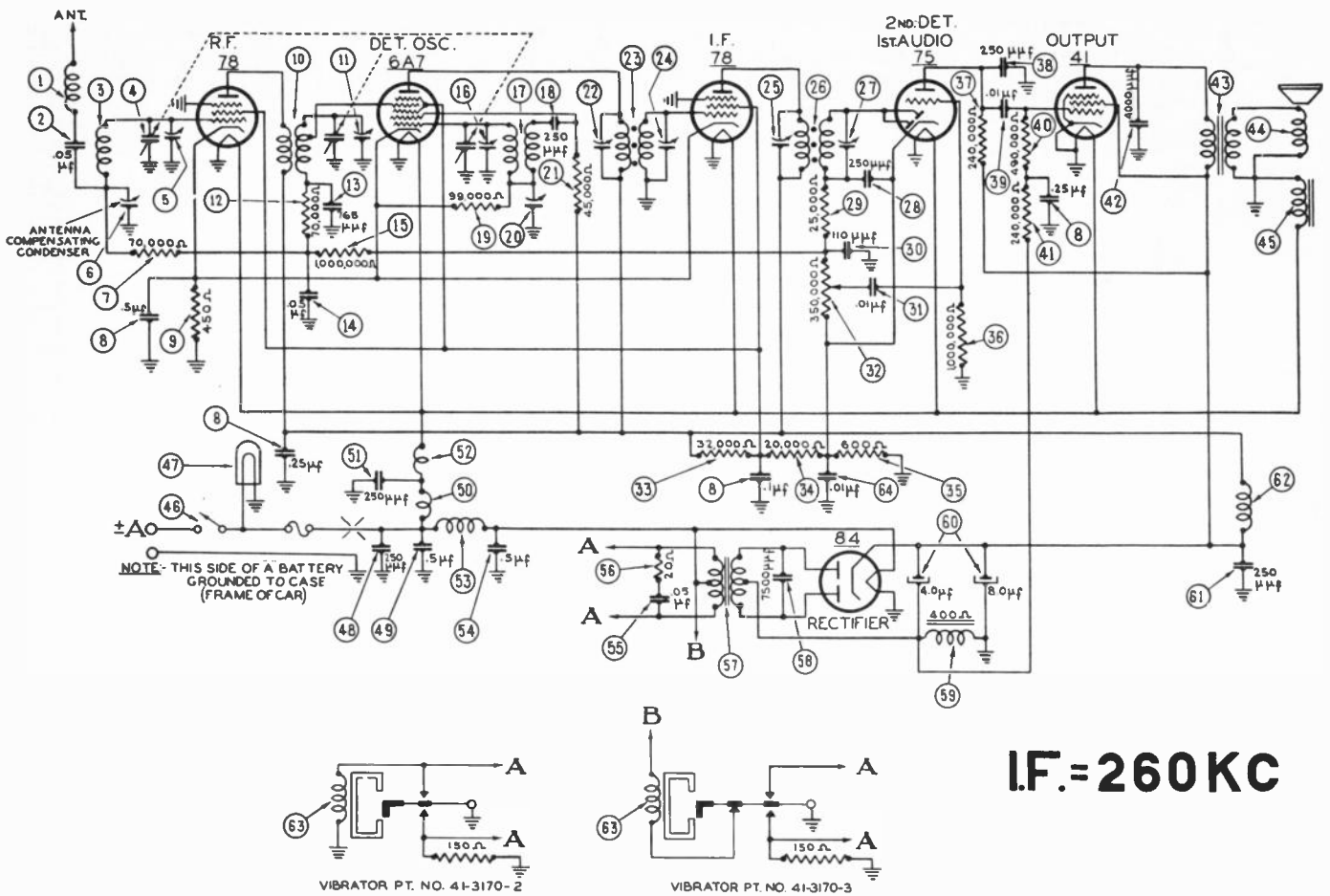
Aligning Procedure will be found on page 167.

MODEL N-1514 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-1956	45	Field Coil	32-9236
2	Condenser (.05 mfd.)	30-4444	46	On & Off Switch	42-5617
3	Antenna Transformer	32-2516	47	Pilot Lamp	34-2040
4	Tuning Condenser	32-2516	48	Condenser (250 mmfd.)	30-1032
5	First Padder (on Tun. Cond.)	31-6102	49	Condenser (.5 mfd.)	30-4015
6	Antenna Compensator	31-6082	50	"A" Choke	32-1604
7	Resistor (70,000 ohms)	33-370344	51	Condenser (250 mmfd.)	30-1032
8	Condenser (.01-1-25-25-.5 mfd.)	30-4511	52	Filament Choke	32-2039
9	Resistor (450 ohms)	33-1218	53	Vibrator Choke	32-2535
10	R. F. Transformer	32-2307	54	Condenser (.5 mfd.)	30-4015
11	Second Padder (on Tun. Cond.)	31-6102	55	Condenser (.05 mfd.)	30-4444
12	Resistor (70,000 ohms)	33-370344	56	Resistor (20 ohms)	33-020344
13	Condenser (.765 mmfd.)	30-1069	57	Power Transformer	32-7550
14	Condenser (.05 mfd.)	3615-OSG	58	Condenser (7,500 mmfd.)	30-4420
15	Resistor (1,000,000 ohms)	33-510344	59	Filter Choke	32-7545
16	Third Padder (on Tun. Cond.)	31-6102	60	Filter Condenser (4-8 mfd.)	30-2150
17	Oscillator Transformer	32-2308	61	Condenser (250 mmfd.)	30-1032
18	Condenser (250 mmfd.)	30-1032	62	"B" Choke	32-1281
19	Resistor (99,000 ohms)	33-399344	63	Vibrator (OPTIONAL)	41-3170-2
20	Low Frequency Padder	31-6102	64	Condenser (.02 mfd.)	30-4419
21	Resistor (45,000 ohms)	33-345344	65	Tone Control Switch	42-1145-2
22	Padder (Pri. 1st I. F. Trans.)	31-6102	66	Condenser (.01 mfd.)	3903-OSG
23	First I. F. Transformer	32-2026		Receiver Housing	38-9230
24	Padder (Sec. 1st I. F. Trans.)	31-6102		Four Prong Socket	27-6044
25	Padder (Pri. 2nd I. F. Trans.)	31-6102		Five Prong Socket	27-6035
26	Second I. F. Transformer	32-2027		Six Prong Socket	27-6036
27	Padder (Sec. 2nd I. F. Trans.)	31-6102		Seven Prong Socket	27-6037
28	Condenser (250 mmfd.)	30-1032		Tuning Control Shaft	28-8815
29	Resistor (25,000 ohms)	33-325344		Volume Control Shaft	28-8816
30	Condenser (110 mmfd.)	30-1031		Tone Control Shaft	28-8817
31	Condenser (.01 mfd.)	3903-OSU		Tuning & Volume Knob	27-4690
32	Volume Control	33-5139		Knob	27-4639
33	Resistor (32,000 ohms)	33-332434		Knob Base	28-4184
34	Resistor (20,000 ohms)	33-320344		Gland Nut	28-6558
35	Resistor (600 ohms)	33-1212		Scale Assembly	42-5792
36	Resistor (1,000,000 ohms)	33-510344		Fuse	7227
37	Resistor (240,000 ohms)	33-424344		Fuse Insulator	27-7729
38	Condenser (250 mmfd.)	30-1032		Tee Bolt (Rec. Mtg.)	
39	Condenser (.01 mfd.)	3903-OSU		Side	28-6161
40	Resistor (490,000 ohms)	33-449344		Bottom	28-6268
41	Resistor (240,000 ohms)	33-424344		Nut (Rec. Mtg.)	W518
42	Condenser (4,000 mmfd.)	30-4185		Distributor Resistor	33-1196
43	Output Transformer	32-7495		Interference Condenser	30-4007
44	Cone & Voice Coil	36-3586		Interference Condenser	30-4307
				Interference Condenser	30-4663



MODEL S-1516

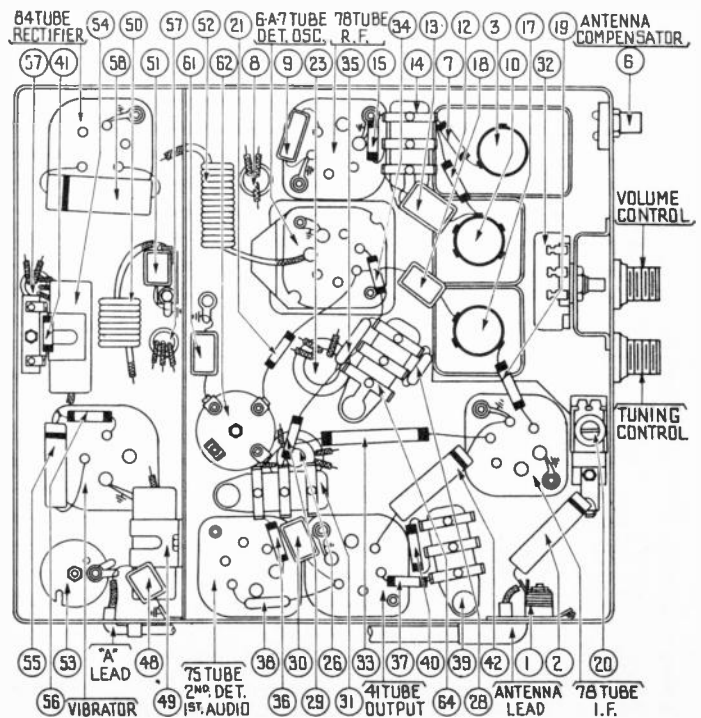


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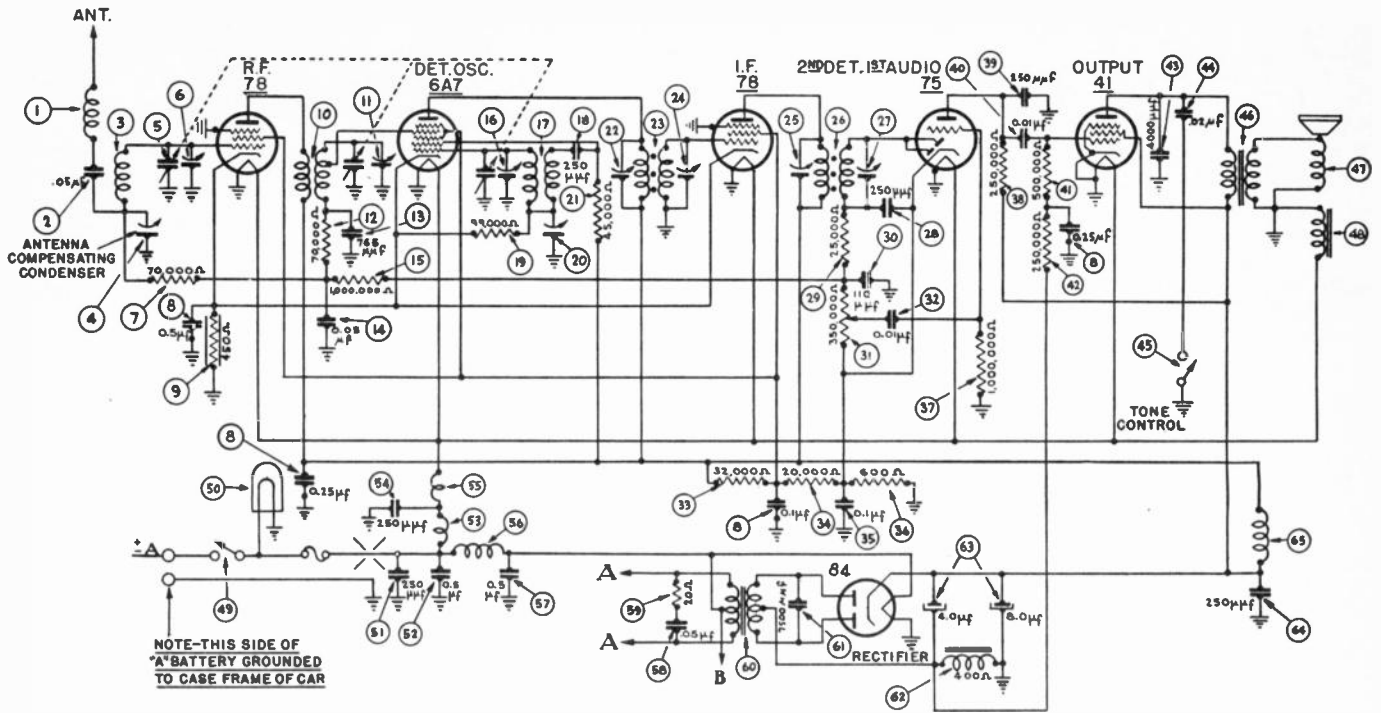
Aligning Procedure will be found on page 167.

MODEL S-1516 PARTS LIST

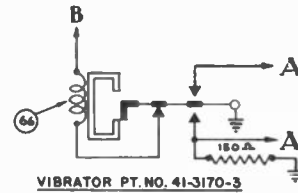
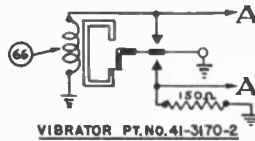
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①	Antenna Choke	32-2344	⑩	Resistor (490,000 ohms)	33-449344
②	Condenser (.05 mfd.)	30-4444	⑪	Resistor (210,000 ohms)	33-424344
③	Antenna Transformer	32-2516	⑫	Condenser (4,000 mmfd.)	30-4185
④	Tuning Condenser	31-1930	⑬	Output Transformer	32-7495
⑤	First Padder (on Tun. Cond.)		⑭	Cone & Voice Coil	36-3586
⑥	Antenna Compensator	31-6082	⑮	Field Coil	32-9236
⑦	Resistor (70,000 ohms)	33-370344	⑯	On & Off Switch	42-1368
⑧	Condenser (.01-.1-.25-.25-.5 mfd.)	30-4511	⑰	Pilot Lamp	34-2040
⑨	Resistor (450 ohms)	33-1218	⑱	Condenser (250 mmfd.)	30-1032
⑩	R. F. Transformer	32-2307	⑲	Condenser (.5 mfd.)	30-4015
⑪	Second Padder (on Tun. Cond.)		⑳	"A" Choke	32-1604
⑫	Resistor (70,000 ohms)	33-370344	㉑	Condenser (250 mmfd.)	30-1032
⑬	Condenser (765 mmfd.)	30-1069	㉒	Filament Choke	32-2039
⑭	Condenser (.05 mfd.)	3615-0SG	㉓	Vibrator Choke	32-2535
⑮	Resistor (1,000,000 ohms)	33-510344	㉔	Condenser (.5 mfd.)	30-4015
⑯	Third Padder (on Tun. Cond.)		㉕	Condenser (.05 mfd.)	30-4444
⑰	Oscillator Transformer	32-2308	㉖	Resistor (20 ohms)	33-020344
⑱	Condenser (250 mmfd.)	30-1032	㉗	Power Transformer	32-7550
⑲	Resistor (99,000 ohms)	33-399344	㉘	Condenser (7,500 mmfd.)	30-4120
⑳	Low Frequency Padder	31-6102	㉙	Filter Choke	32-7545
㉑	Resistor (45,000 ohms)	33-345344	㉚	Filter Condenser (4-8 mfd.)	30-2150
㉒	Padder (Pri. 1st I. F. Trans.)		㉛	Condenser (250 mmfd.)	30-1032
㉓	First I. F. Transformer	32-2026	㉜	"B" Choke	32-1281
㉔	Padder (Sec. 1st I. F. Trans.)		㉝	Vibrator (OPTIONAL)	41-3170-2
㉕	Padder (Pri. 2nd I. F. Trans.)		㉞	Condenser (.01 mfd.)	41-3170-3
㉖	Second I. F. Transformer	32-2027	㉟	Receiver Housing	38-2103
㉗	Padder (Sec. 2nd I. F. Trans.)		㊱	Four Prong Socket	27-6044
㉘	Condenser (250 mmfd.)	30-1032	㊲	Five Prong Socket	27-6035
㉙	Resistor (25,000 ohms)	33-325344	㊳	Six Prong Socket	27-6036
㉚	Condenser (110 mmfd.)	30-1031	㊴	Seven Prong Socket	27-6037
㉛	Condenser (.01 mfd.)	3903-0SU	㊵	Tuning Control Shaft	28-8852
㉜	Volume Control (350,000 ohms)	33-5139	㊶	Volume Control Shaft	28-8853
㉝	Resistor (32,000 ohms)	33-332434	㊷	Tuning & Volume Knob	27-4689
㉞	Resistor (20,000 ohms)	33-320344	㊸	Scale Assembly	42-5781
㉟	Resistor (600 ohms)	33-1212	㊹	Fuse	7227
㊱	Resistor (1,000,000 ohms)	33-510344	㊺	Fuse Insulator	27-7729
㊲	Resistor (240,000 ohms)	33-424344	㊻	Inductive Suppressor	32-2250
㊳	Condenser (250 mmfd.)	30-1032	㊼	Interference Condenser	30-4307
㊴	Condenser (.01 mfd.)	3903-0SU	㊽	Distributor Condenser	30-1087



MODEL P-1517



NOTE-THIS SIDE OF "A" BATTERY GROUNDED TO CASE FRAME OF CAR

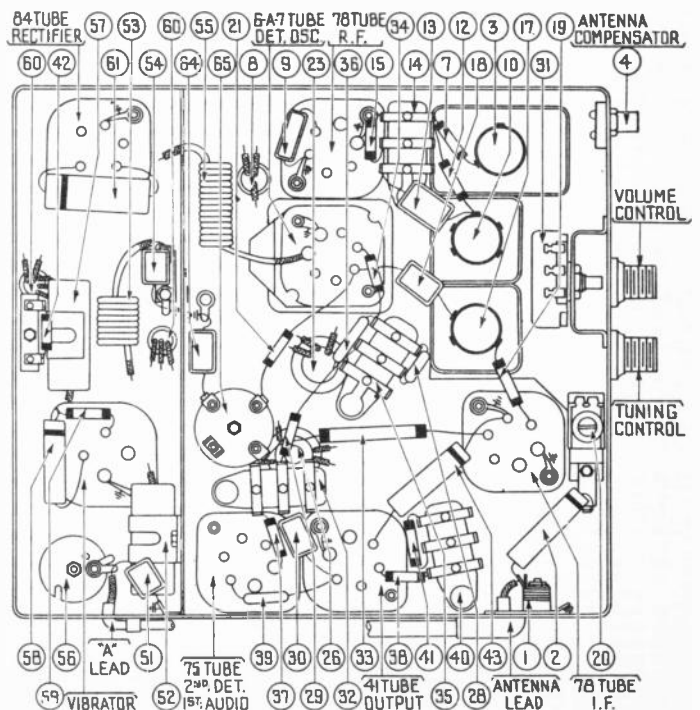


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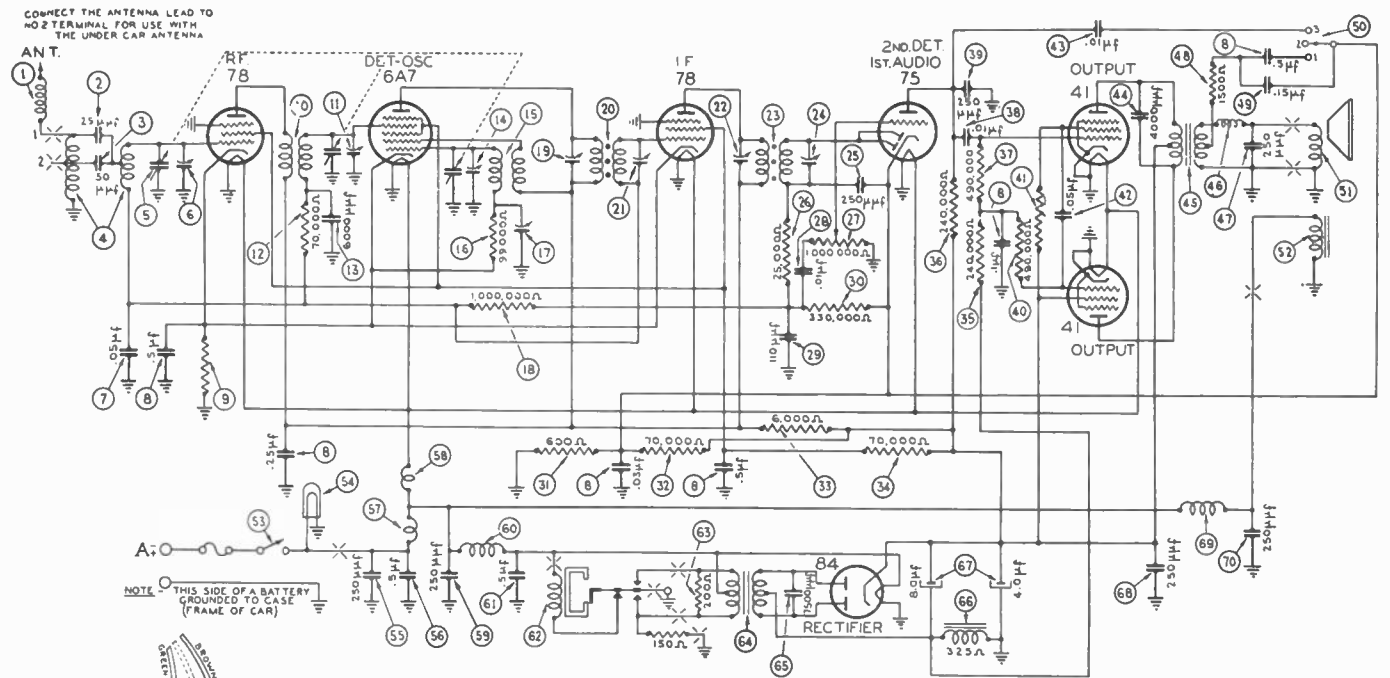
Aligning Procedure will be found on page 167.

PARTS LIST — MODEL P-1517

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-2344	43	Condenser (4,000 mmfd.)	30-4185
2	Condenser (.05 mfd.)	30-4444	44	Condenser (.02 mfd.)	30-4419
3	Antenna Transformer	32-2516	45	Tone Control Switch	42-1383
4	Antenna Compensating Condenser	31-6082	46	Output Transformer	32-7495
5	Tuning Condenser	31-1930	47	Cone & Voice Coil	36-3586
6	First Padder (on Tun. Cond.)	33-370344	48	Field Coil Assembly	36-3597
7	Resistor (70,000 ohms)	33-370344	49	On & Off Switch	42-1368
8	Condenser (1-.25-.25-.5 mfd.)	30-4415	50	Pilot Lamp	34-2039
9	Resistor (450 ohms)	33-1218	51	Condenser (250 mmfd.)	30-1032
10	R. F. Transformer	32-2307	52	Condenser (.5 mfd.)	30-4015
11	Second Padder (on Tun. Cond.)	33-370344	53	"A" Choke	32-2535
12	Resistor (70,000 ohms)	33-370344	54	Condenser (250 mmfd.)	30-1032
13	Condenser (785 mmfd.)	30-1069	55	Filament Choke	32-1604
14	Condenser (.05 mfd.)	3615-08G	56	Vibrator Choke	32-2039
15	Resistor (1,000,000 ohms)	33-510344	57	Condenser (.5 mfd.)	30-4015
16	Third Padder (on Tun. Cond.)	32-2308	58	Condenser (.05 mfd.)	30-4444
17	Oscillator Transformer	32-2308	59	Resistor (20 ohms)	33-020344
18	Condenser (250 mmfd.)	30-1032	60	Power Transformer	32-7550
19	Resistor (99,000 ohms)	33-399344	61	Condenser (7,500 mmfd.)	30-4420
20	Low Frequency Padder	31-6102	62	"B" Filter Choke	32-7545
21	Resistor (45,000 ohms)	33-345344	63	Filter Condenser (4-8 mfd.)	30-2150
22	Padder (Pri. 1st. I. F. Trans.)	33-345344	64	Condenser (250 mmfd.)	30-1032
23	First I. F. Transformer	32-2026	65	"B" Choke	32-1281
24	Padder (Sec. 1st I. F. Trans.)	33-345344	66	Vibrator (OPTIONAL)	41-3170-2
25	Padder (Pri. 2nd I. F. Trans.)	32-2027		Receiver Housing	38-9150
26	Second I. F. Transformer	32-2027		Pilot Lamp Assembly	38-8167
27	Padder (Sec. 2nd I. F. Trans.)	33-345344		Tuning Shaft	28-8783
28	Condenser (250 mmfd.)	30-1032		Volume Shaft	28-8784
29	Resistor (25,000 ohms)	33-325344		Scale Assembly	42-5776
30	Condenser (110 mmfd.)	30-1031		Gland Nut	28-6773
31	Volume Control (350,000 ohms)	33-5139		Four Prong Socket	27-6044
32	Condenser (.01 mfd.)	3903-0SU		Five Prong Socket	27-6035
33	Resistor (32,000 ohms)	33-32434		Six Prong Socket	27-6036
34	Resistor (20,000 ohms)	33-320344		Seven Prong Socket	27-6037
35	Condenser (.01 mfd.)	3903-0SG		Interference Condenser (Dome Light)	30-4007
36	Resistor (600 ohms)	33-1212		Interference Condenser (Generator)	30-4475
37	Resistor (1,000,000 ohms)	33-510344		Distributor Resistor	4851
38	Resistor (250,000 ohms)	33-424344		Fuse	7227
39	Condenser (250 mmfd.)	30-1032		Fuse Insulator	27-7729
40	Condenser (.01 mfd.)	3903-0SU		Tee Bolt (Rec. Mtg.)	28-6268
41	Resistor (500,000 ohms)	33-449344		Nut (Rec. Mtg.)	W-518A
42	Resistor (250,000 ohms)	33-424344			



MODEL N-1524



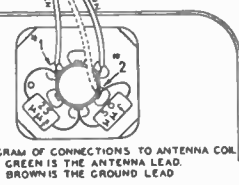
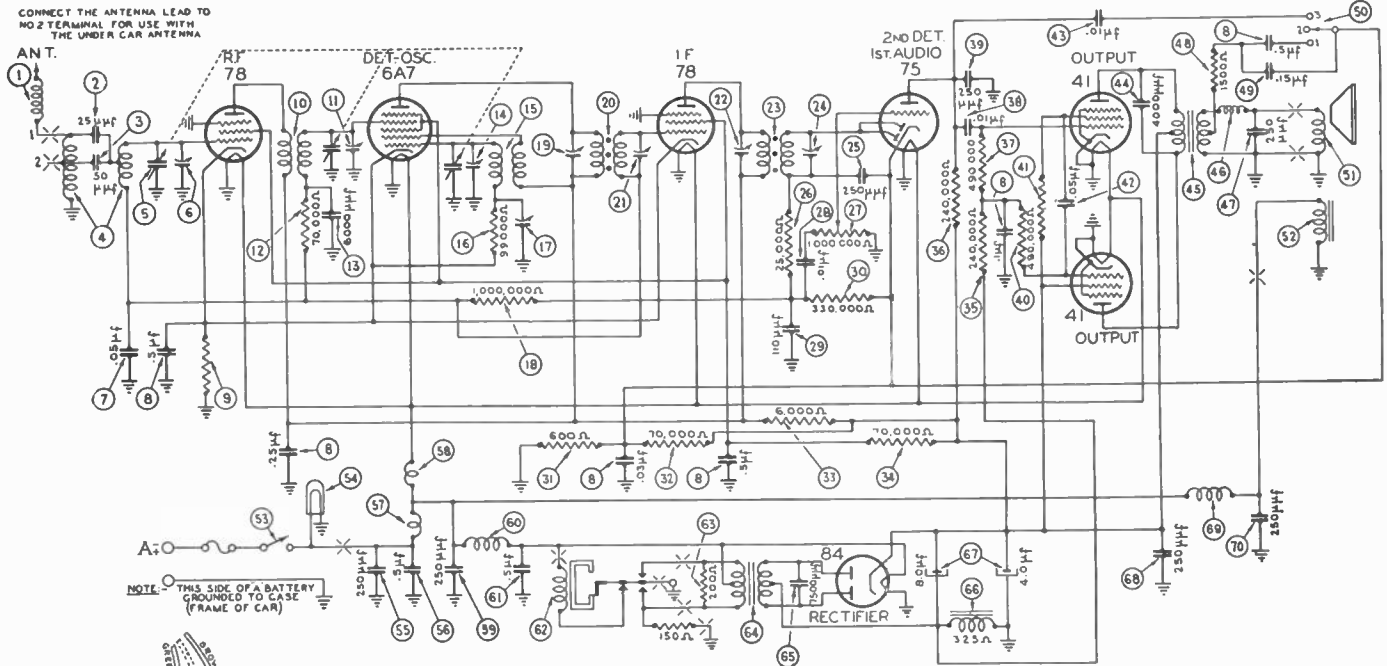
IF.=260KC

Aligning Procedure will be found on page 168.

MODEL N-1524 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-1926	37	Resistor (490,000 ohms)	33-449344
2	Condenser (25 mmfd.)	30-1067	38	Condenser (.01 mfd.)	30-4169
3	Condenser (50 mmfd.)	30-1029	39	Condenser (250 mmfd.)	30-1032
4	Antenna Transformer	32-2895	40	Resistor (490,000 ohms)	33-449344
5	Tuning Condenser	31-2161	41	Resistor (3,500 ohms)	33-235344
6	First Padder (on Tun. Cond.)		42	Condenser (.05 mfd.)	30-4454
7	Condenser (.05 mfd.)	30-4444	43	Condenser (.01 mfd.)	30-4501
8	Condenser (.03-.1-.25-.5-.5 mfd.)	30-4554	44	Condenser (2,000 mmfd.)	30-4177
9	Resistor (550 ohms)	33-1280	45	Output Transformer	32-7928
10	R. F. Transformer	32-2830	46	Choke	32-1374
11	Second Padder (on Tun. Cond.)		47	Condenser (250 mmfd.)	30-1032
12	Resistor (70,000 ohms)	33-370344	48	Resistor (1,500 ohms)	33-215344
13	Condenser (6,000 mmfd.)	30-4467	49	Condenser (.15 mfd.)	30-4191
14	Third Padder (on Tun. Cond.)		50	Tone Control Switch	42-1389
15	Oscillator Transformer	32-2828	51	Cone & Voice Coil	36-3586
16	Resistor (99,000 ohms)	33-399344	52	Field Coil	32-9236
17	Low Frequency Padder	31-6230	53	On & Off Switch	42-5617
18	Resistor (1,000,000 ohms)	33-510344	54	Pilot Lamp	34-3040
19	Padder (Pri. 1st I. F. Trans.)	32-2791	55	Condenser (250 mmfd.)	30-1032
20	Padder (Sec. 1st I. F. Trans.)		56	Condenser (.5 mfd.)	30-4474
21	Padder (Pri. 2nd I. F. Trans.)		57	"A" Choke	32-1374
22	Second I. F. Transformer	32-2793	58	Filament Choke	32-2729
23	Padder (Sec. 2nd I. F. Trans.)		59	Condenser (250 mmfd.)	30-1032
24	Resistor (25,000 ohms)	33-325344	60	Vibrator Choke	32-2812
25	Volume Control (1,000,000 ohms)	33-5245	61	Condenser (.5 mfd.)	30-4474
26	Condenser (.01 mfd.)	30-4479	62	Vibrator	41-3170-3
27	Condenser (110 mmfd.)	30-1031	63	Resistor (200 ohms)	33-120344
28	Resistor (330,000 ohms)	33-433344	64	Power Transformer	32-7911
29	Resistor (600 ohms)	33-1212	65	Condenser (7,500 mmfd.)	30-4420
30	Resistor (70,000 ohms)	33-370444	66	Filter Choke	32-7910
31	Resistor (6,000 ohms)	33-260344	67	Filter Condenser (4-8 mfd.)	30-2258
32	Resistor (70,000 ohms)	33-370344	68	Condenser (250 mmfd.)	30-1032
33	Resistor (240,000 ohms)	33-424344	69	Choke	32-2657
34	Resistor (240,000 ohms)	33-424344	70	Condenser (250 mmfd.)	30-1032
				Receiver Housing	38-2102
				Speaker Cable	41-3376
				Tuning & Volume Knob	27-4690
				Tone Knob	27-4639
				Knob Base	28-4184
				Pilot Lamp Assembly	38-7734
				Distributor Resistor	33-1196
				Interference Condenser	30-4007
				Interference Condenser	30-4562

MODEL S-1526

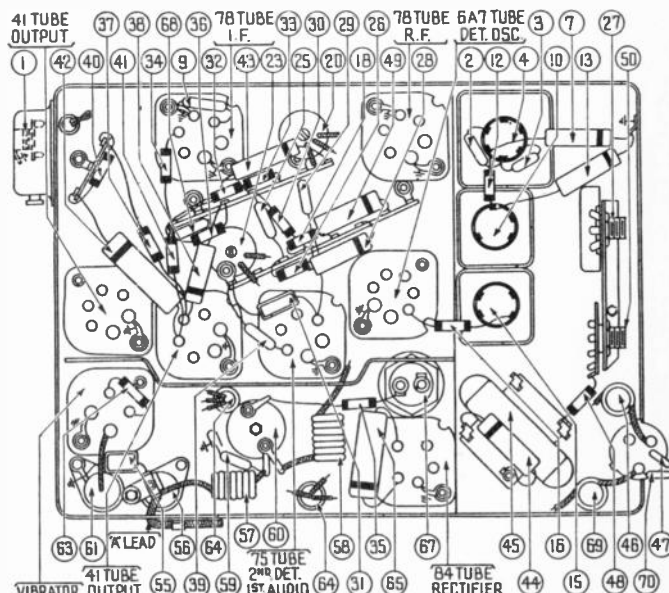


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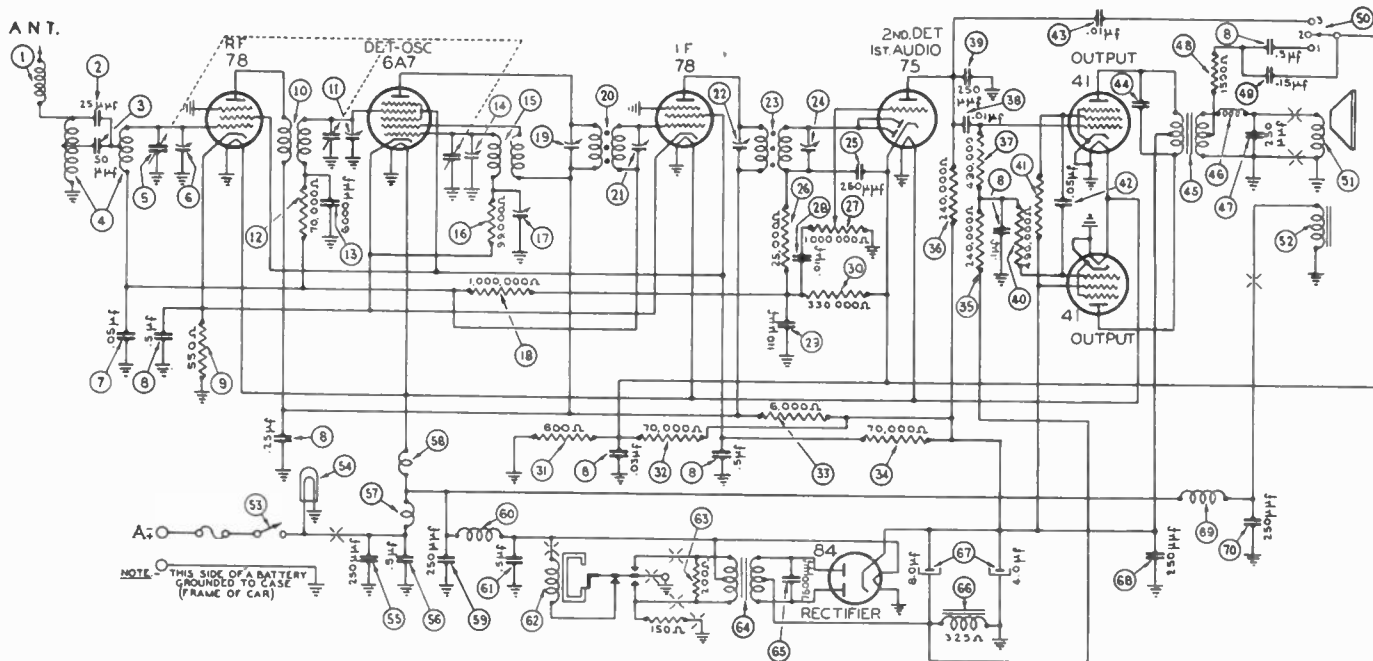
Aligning Procedure will be found on page 168.

MODEL S-1526 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-2063	28	Condenser (250 mmfd.)	30-1032
2	Condenser (25 mmfd.)	30-1067	29	Resistor (490,000 ohms)	33-449344
3	Condenser (50 mmfd.)	30-1029	30	Resistor (3,500 ohms)	33-235344
4	Antenna Transformer	32-2855	31	Condenser (.05 mfd.)	30-4454
5	Tuning Condenser	31-2161	32	Condenser (.01 mfd.)	30-4501
6	First Padder (on Tun. Cond.)	31-2161	33	Condenser (2,000 mmfd.)	30-4177
7	Condenser (.05 mfd.)	30-4444	34	Output Transformer	32-7928
8	Condenser (.03-.1-.25-.5-.5-5 mfd.)	30-4554	35	Choke	32-1374
9	Resistor (550 ohms)	33-1280	36	Condenser (250 mmfd.)	30-1032
10	R. F. Transformer	32-2830	37	Resistor (1,500 ohms)	33-215344
11	Second Padder (on Tun. Cond.)	32-2830	38	Condenser (.15 mfd.)	30-4191
12	Resistor (70,000 ohms)	33-370344	39	Tone Control Switch	42-1389
13	Condenser (6,000 mmfd.)	30-4467	40	Cone & Voice Coil	36-3526
14	Third Padder (on Tun. Cond.)	32-2828	41	Field Coil	32-9236
15	Oscillator Transformer	32-2828	42	On & Off Switch	42-1369
16	Resistor (99,000 ohms)	33-399344	43	Pilot Lamp	34-2039
17	Low Frequency Padder	31-6230	44	Condenser (250 mmfd.)	30-1032
18	Resistor (1,000,000 ohms)	33-510344	45	Condenser (.5 mfd.)	30-4474
19	Padder (Pri. 1st I. F. Trans.)	32-2791	46	"A" Choke	32-1374
20	First I. F. Transformer	32-2791	47	Filament Choke	32-2720
21	Padder (Pri. 2nd I. F. Trans.)	32-2791	48	Condenser (250 mmfd.)	30-1032
22	Second I. F. Transformer	32-2791	49	Vibrator Choke	32-2812
23	Padder (Sec. 2nd I. F. Trans.)	32-2791	50	Condenser (.5 mfd.)	30-4474
24	Condenser (250 mmfd.)	30-1032	51	Vibrator	41-3170-3
25	Resistor (250,000 ohms)	33-325344	52	Resistor (200 ohms)	33-120344
26	Volume Control (1,000,000 ohms)	33-5251	53	Power Transformer	32-7911
27	Condenser (.01 mfd.)	30-4479	54	Condenser (7,500 mmfd.)	30-4420
28	Condenser (110 mmfd.)	30-1031	55	Filter Choke	32-7910
29	Resistor (330,000 ohms)	33-433344	56	Filter Condenser (4-8 mfd.)	30-2258
30	Resistor (800 ohms)	33-1212	57	Condenser (250 mmfd.)	30-1032
31	Resistor (70,000 ohms)	33-370444	58	Choke	32-2657
32	Resistor (6,000 ohms)	33-260344	59	Condenser (250 mmfd.)	30-1032
33	Resistor (70,000 ohms)	33-370344	60	Receiver Housing	38-2058
34	Resistor (240,000 ohms)	33-424344	61	Four Prong Socket	27-6044
35	Resistor (240,000 ohms)	33-424344	62	Five Prong Socket	27-6035
36	Resistor (490,000 ohms)	33-449344	63	Six Prong Socket	27-6036
37	Condenser (.01 mfd.)	30-4514	64	Seven Prong Socket	27-6037
38			65	Inductive Suppressor	32-2250
39			66	Interference Condenser	30-4007
40			67	Fuse	7227
41			68		
42			69		
43			70		
44					
45					
46					
47					
48					
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50					



MODEL G-1528

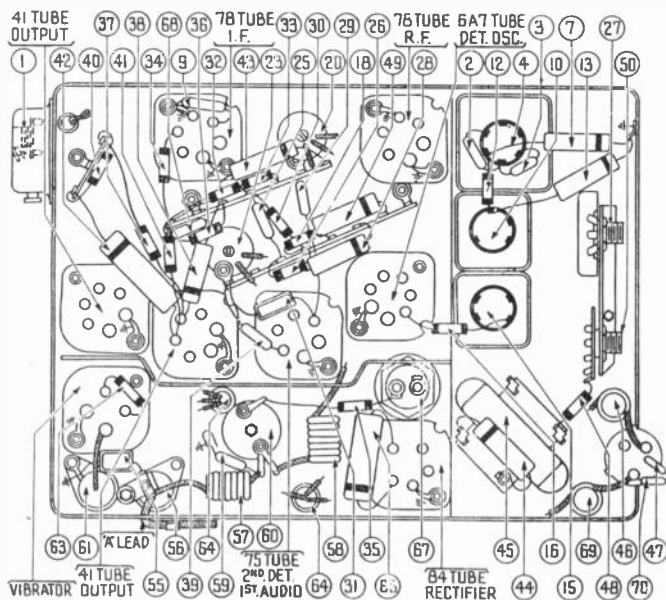


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Aligning Procedure will be found on page 168.

MODEL G-1528 PARTS LIST

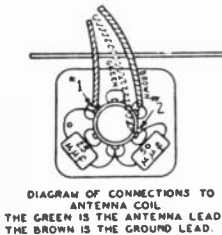
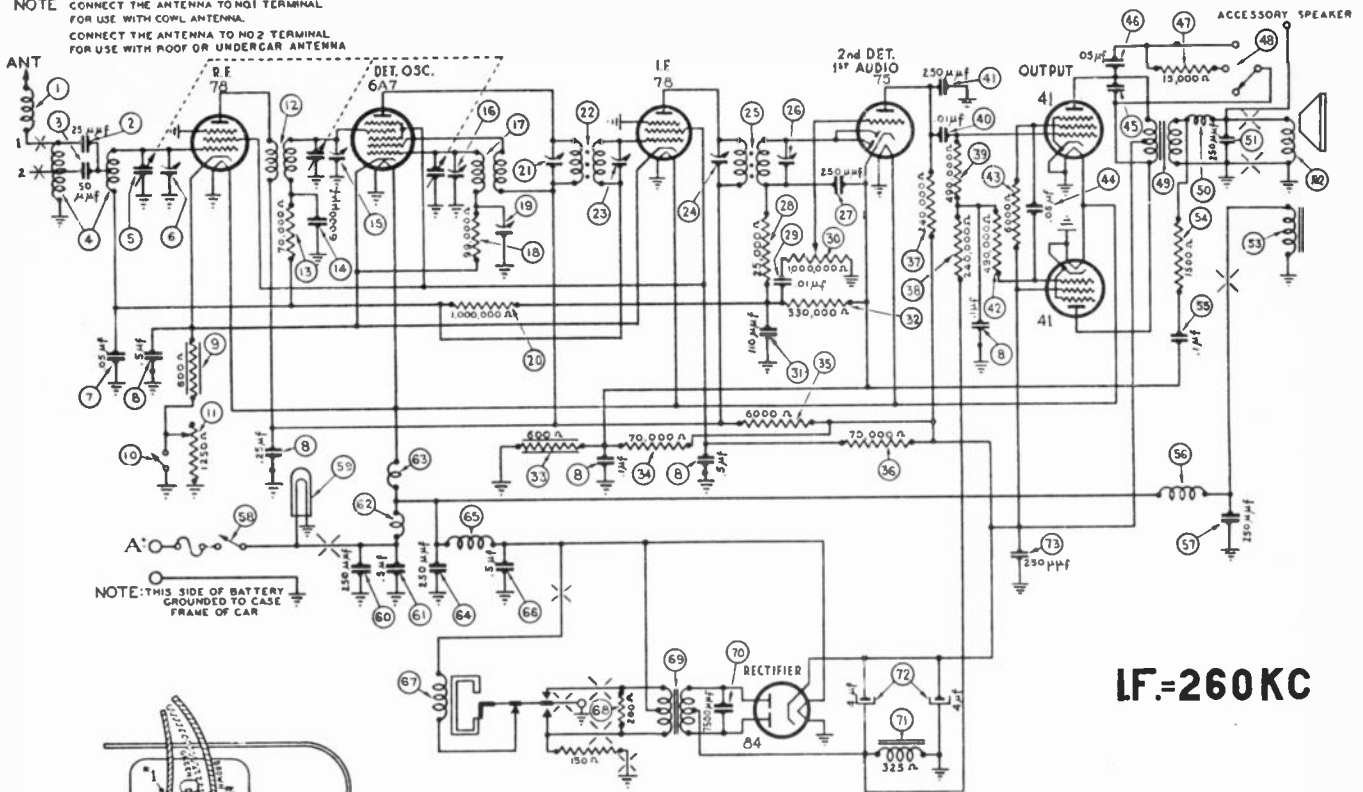
No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-2063	30	Condenser (250 mmfd.)	30-1032
2	Condenser (25 mfd.)	30-1067	31	Resistor (490,000 ohms)	33-419344
3	Condenser (50 mmfd.)	30-1029	32	Resistor (3,500 ohms)	33-235344
4	Antenna Transformer	32-2936	33	Condenser (.05 mfd.)	30-4454
5	Tuning Condenser	31-2161	34	Condenser (.01 mfd.)	30-4501
6	First Padder (on Tun. Cond.)	30-4411	35	Condenser (.000 mmfd.)	30-4185
7	Condenser (.05 mfd.)	30-4411	36	Output Transformer	32-7928
8	Condenser (.03-.1-.25-.5-.5 mfd.)	30-4554	37	Choke	32-1371
9	Resistor (550 ohms)	33-155331	38	Condenser (250 mmfd.)	30-1032
10	R. F. Transformer	32-2830	39	Resistor (1,500 ohms)	33-215344
11	Second Padder (on Tun. Cond.)	33-370344	40	Condenser (.15 mfd.)	30-4191
12	Resistor (70,000 ohms)	33-370344	41	Tone Control Switch	42-1389
13	Condenser (6,000 mmfd.)	30-4467	42	Cone and Voice Coil	15-2608
14	Third Padder (on Tun. Cond.)	32-2828	43	Field Coil	32-9263
15	Oscillator Transformer	33-399344	44	On and Off Switch	42-56173
16	Resistor (59,000 ohms)	33-399344	45	Pilot Lamp	34-2030
17	Low Frequency Padder	31-6230	46	Condenser (250 mmfd.)	30-1032
18	Resistor (1,000,000 ohms)	33-510344	47	Condenser (.5 mfd.)	30-4474
19	Padder (Pri. 1st I. F. Trans.)	32-2791	48	"A" Choke	32-1374
20	First I. F. Transformer	32-2791	49	Filament Choke	32-2729
21	Padder (Sec. 1st I. F. Trans.)	32-2793	50	Condenser (250 mmfd.)	30-1032
22	Padder (Pri. 2nd I. F. Trans.)	32-2793	51	Vibrator Choke	32-2812
23	Second I. F. Transformer	32-2793	52	Condenser (.5 mfd.)	30-4474
24	Padder (Sec. 2nd I. F. Trans.)	32-2793	53	Vibrator	41-3170-3
25	Condenser (250 mmfd.)	33-325344	54	Resistor (200 ohms)	33-120344
26	Resistor (25,000 ohms)	33-325344	55	Power Transformer	32-7911
27	Volume Control	33-5245	56	Condenser (7,500 mmfd.)	30-4420
28	Condenser (.01 mfd.)	30-4470	57	Filter Choke	32-7910
29	Condenser (110 mmfd.)	30-1031	58	Filter Condenser (1.8 mfd.)	30-2258
30	Resistor (330,000 ohms)	33-433344	59	Condenser (250 mmfd.)	30-1032
31	Resistor (600 ohms)	33-160331	60	Choke	32-2657
32	Resistor (70,000 ohms)	33-370344	61	Condenser (250 mmfd.)	30-1032
33	Resistor (6,000 ohms)	33-260344	62	Receiver Housing	38-2179
34	Resistor (70,000 ohms)	33-370344	63	Four Prong Socket	27-6044
35	Resistor (240,000 ohms)	33-424344	64	Five Prong Socket	27-6035
36	Resistor (240,000 ohms)	33-424344	65	Six Prong Socket	27-6036
37	Resistor (240,000 ohms)	33-424344	66	Seven Prong Socket	27-6037
38	Resistor (490,000 ohms)	33-449344	67	Inductive Suppressor	32-2250
39	Condenser (.01 mfd.)	30-4514	68	Interference Condenser	30-4007
40	Condenser (250 mmfd.)	30-1032	69	Fuse	7227



No.	Description	Part No.	No.	Description	Part No.
27-7729	Fuse Insulator	27-7729	36-4034	Speaker Cable	36-4034
28-8813	Tuning Control Shaft	28-8813	38-9463	Speaker Mtg. Plate	38-9463
28-8864	Volume Control Shaft	28-8864	27-4705	Tuning & Volume Knob	27-4705
28-8798	Tone Control Shaft	28-8798	28-7212	Tone Knob	28-7212
42-5829	Scale Assembly	42-5829	28-4184	Knob Base	28-4184

MODEL P-1530

NOTE CONNECT THE ANTENNA TO NO1 TERMINAL FOR USE WITH COWL ANTENNA. CONNECT THE ANTENNA TO NO2 TERMINAL FOR USE WITH ROOF OR UNDERCAR ANTENNA

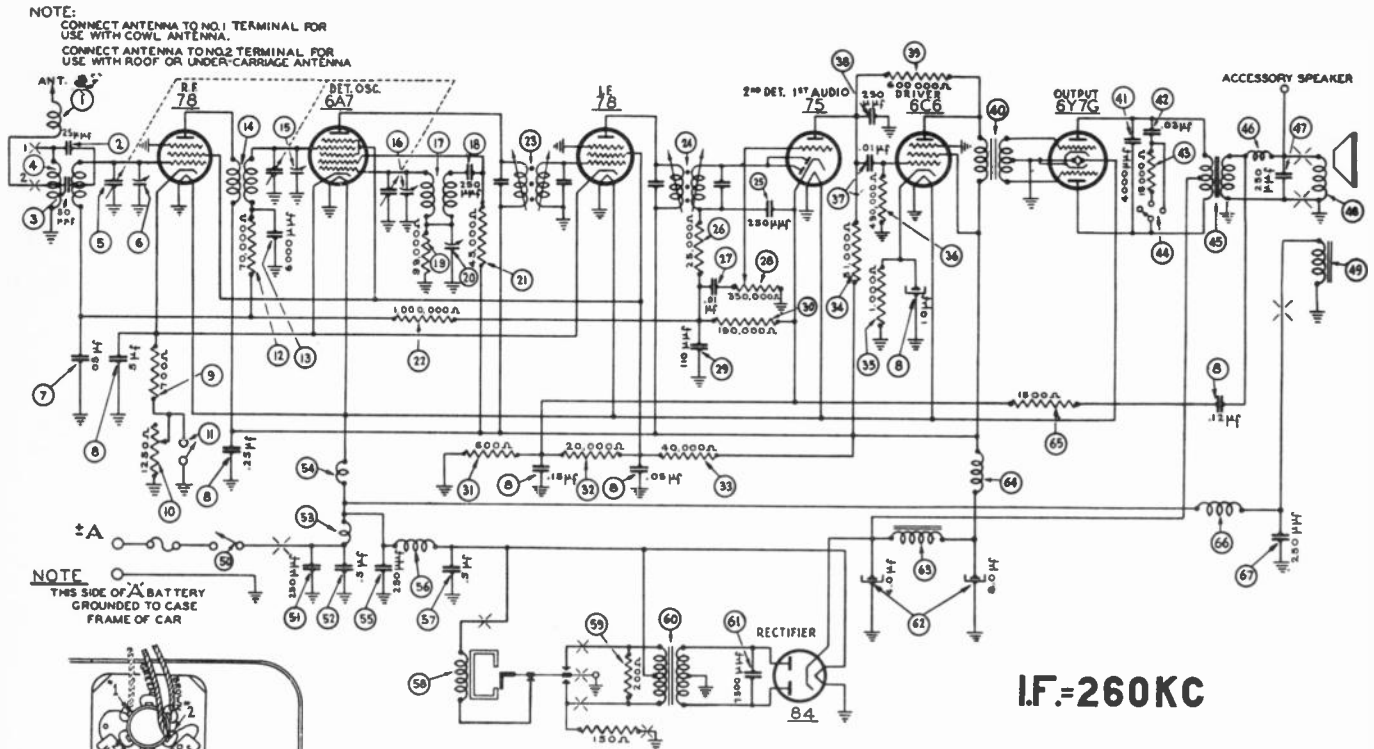


Aligning Procedure will be found on page 168.

PARTS LIST — MODEL P-1530

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-2063	41	Condenser (250 mmfd.)	30-1032
2	Condenser (25 mmfd.)	30-1067	42	Resistor (490,000 ohms)	33-149344
3	Condenser (50 mmfd.)	30-1029	43	Resistor (6,000 ohms)	33-260344
4	Antenna Transformer	32-2833	44	Condenser (.05 mfd.)	30-4454
5	Tuning Condenser	31-2111	45	Condenser (4,000 mmfd.)	30-4185
6	First Padder (on Tun. Cond.)	30-4495	46	Condenser (.05 mfd.)	30-4495
7	Condenser (.05 mfd.)	30-4444	47	Resistor (15,000 ohms)	33-315344
8	Condenser (1.1, 1-25-.5-5 mfd.)	30-4547	48	Tone Control Switch	42-1377
9	Resistor (600 ohms)	33-1212	49	Output Transformer	32-7909
10	Sensitivity Switch	42-1378	50	Choke	32-1374
11	Sensitivity Control	33-5248	51	Condenser (250 mmfd.)	30-1032
12	R. F. Transformer	32-2830	52	Cone & Voice Coil	36-3159
13	Resistor (70,000 ohms)	33-370344	53	Complete Speaker (A50)	36-1371
14	Condenser (6,000 mmfd.)	30-4445	54	Field Coil Assembly	36-3513
15	Second Padder (on Tun. Cond.)	30-4479	55	Resistor (1,500 ohms)	33-215344
16	Third Padder (on Tun. Cond.)	32-2828	56	Condenser (.1 mfd.)	30-4499
17	Oscillator Transformer	33-399344	57	"B" Choke	32-2812
18	Resistor (99,000 ohms)	33-325344	58	Condenser (250 mmfd.)	30-1032
19	Low Frequency Padder	31-6230	59	On & Off Switch	42-1368
20	Resistor (1,000,000 ohms)	33-510344	60	Pilot Lamp	34-2039
21	Padder (Pri. 1st I. F. Trans.)	32-2791	61	Condenser (250 mmfd.)	30-1032
22	First I. F. Transformer	32-2791	62	Condenser (.5 mfd.)	30-4474
23	Padder (Sec. 1st I. F. Trans.)	32-2793	63	Condenser (.5 mfd.)	32-1644
24	Padder (Pri. 2nd I. F. Trans.)	32-2793	64	Filament Choke	32-2720
25	Second I. F. Transformer	32-2793	65	Condenser (250 mmfd.)	30-1032
26	Padder (Sec. 2nd I. F. Trans.)	30-1032	66	Vibrator Choke	32-2812
27	Condenser (250 mmfd.)	30-1032	67	Condenser (.5 mfd.)	30-4474
28	Resistor (25,000 ohms)	33-325344	68	Vibrator	41-3170-3
29	Condenser (.01 mfd.)	30-4479	69	Resistor (200 ohms)	33-120344
30	Volume Control (1,000,000 ohms)	33-5245	70	Power Transformer	32-7911
31	Condenser (110 mmfd.)	30-1031	71	Condenser (7,500 mmfd.)	30-4420
32	Resistor (330,000 ohms)	33-433344	72	"B" Filter Choke	32-7910
33	Resistor (600 ohms)	33-1212	73	Filter Condenser (4-1 mfd.)	30-2257
34	Resistor (70,000 ohms)	33-370344	74	Condenser (250 mmfd.)	30-1032
35	Resistor (6,000 ohms)	33-260344	75	Receiver Housing	38-2056
36	Resistor (70,000 ohms)	33-370344	76	Pilot Lamp Assembly	38-8167
37	Resistor (240,000 ohms)	33-424344	77	Tuning Shaft	28-8779
38	Resistor (240,000 ohms)	33-424344	78	Volume Shaft	28-8780
39	Resistor (490,000 ohms)	33-449344	79	Tone Shaft	28-8781
40	Condenser (.01 mfd.)	30-4514	80	Local Distance Shaft	28-8782
41	Condenser (250 mmfd.)	30-1032	81	Accessory Speaker Socket	38-8803
42	Resistor (490,000 ohms)	33-149344	82	Speaker Socket	27-6030
43	Resistor (6,000 ohms)	33-260344			
44	Condenser (.05 mfd.)	30-4454			
45	Condenser (4,000 mmfd.)	30-4185			
46	Condenser (.05 mfd.)	30-4495			
47	Resistor (15,000 ohms)	33-315344			
48	Tone Control Switch	42-1377			
49	Output Transformer	32-7909			
50	Choke	32-1374			
51	Condenser (250 mmfd.)	30-1032			
52	Cone & Voice Coil	36-3159			
53	Complete Speaker (A50)	36-1371			
54	Field Coil Assembly	36-3513			
55	Resistor (1,500 ohms)	33-215344			
56	Condenser (.1 mfd.)	30-4499			
57	"B" Choke	32-2812			
58	Condenser (250 mmfd.)	30-1032			
59	On & Off Switch	42-1368			
60	Pilot Lamp	34-2039			
61	Condenser (250 mmfd.)	30-1032			
62	Condenser (.5 mfd.)	30-4474			
63	Condenser (.5 mfd.)	32-1644			
64	Filament Choke	32-2720			
65	Condenser (250 mmfd.)	30-1032			
66	Vibrator Choke	32-2812			
67	Condenser (.5 mfd.)	30-4474			
68	Vibrator	41-3170-3			
69	Resistor (200 ohms)	33-120344			
70	Power Transformer	32-7911			
71	Condenser (7,500 mmfd.)	30-4420			
72	"B" Filter Choke	32-7910			
73	Filter Condenser (4-1 mfd.)	30-2257			
74	Condenser (250 mmfd.)	30-1032			
75	Receiver Housing	38-2056			
76	Pilot Lamp Assembly	38-8167			
77	Tuning Shaft	28-8779			
78	Volume Shaft	28-8780			
79	Tone Shaft	28-8781			
80	Local Distance Shaft	28-8782			
81	Accessory Speaker Socket	38-8803			
82	Speaker Socket	27-6030			

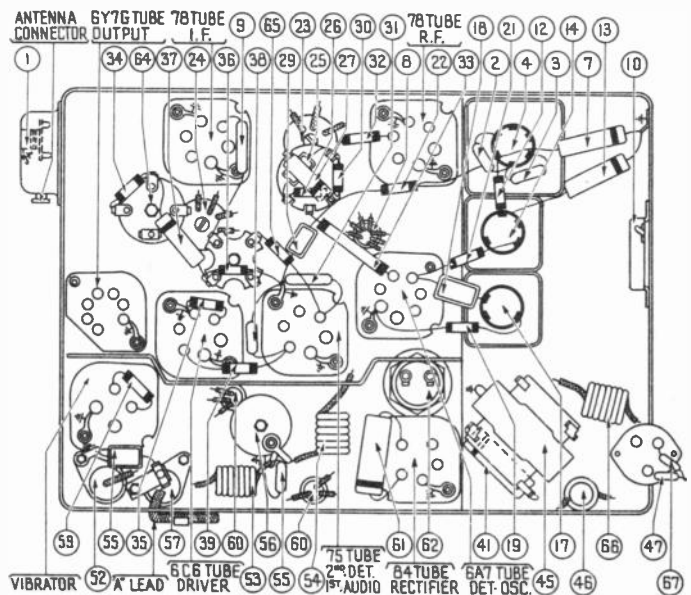
MODEL P-1535



Aligning Procedure will be found on page 167.

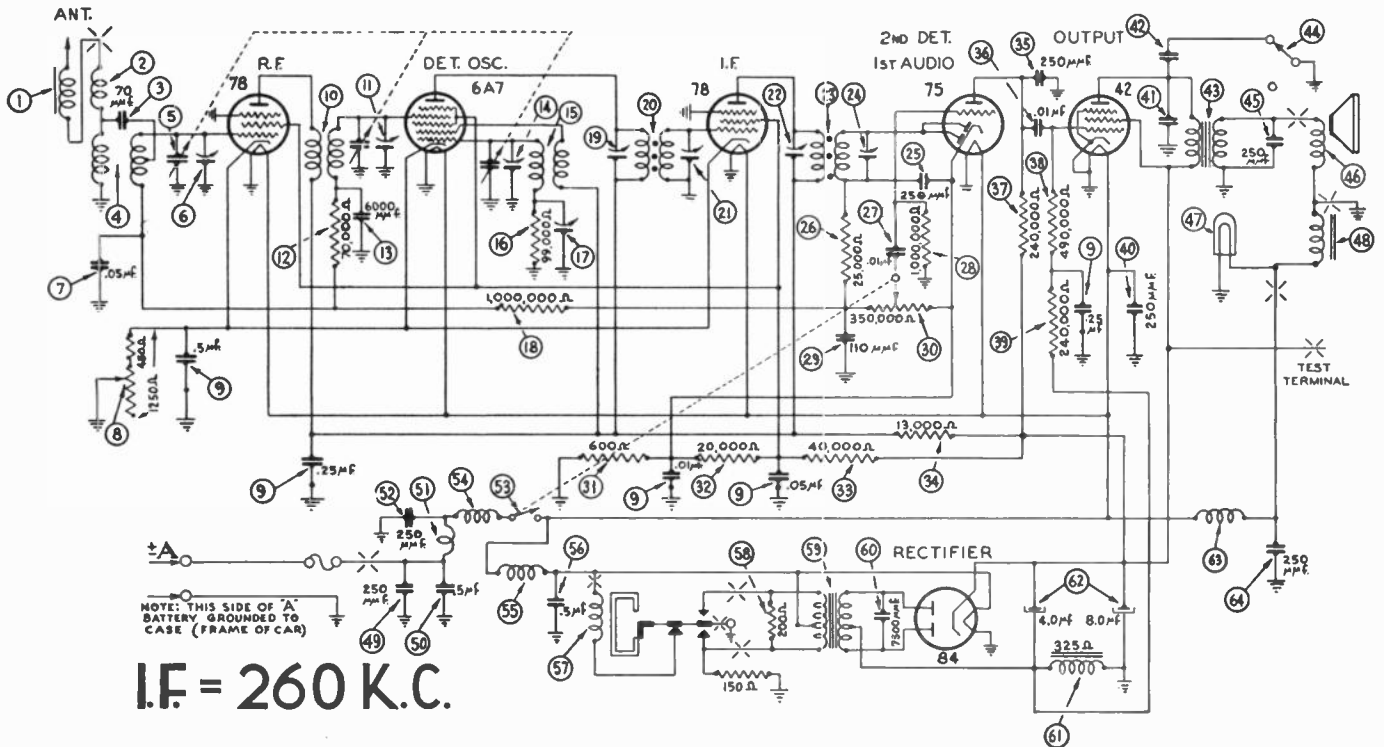
PARTS LIST — MODEL P-1535

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-2063	40	Input Transformer	32-7779
2	Condenser (25 mmfd.)	30-1067	41	Condenser (4,000 mmfd.)	30-4185
3	Condenser (50 mmfd.)	30-1029	42	Condenser (.03 mfd.)	30-4447
4	Antenna Transformer	32-2833	43	Resistor (15,000 ohms)	33-315344
5	Tuning Condenser	31-2111	44	Tone Control Switch	42-1377
6	First Padder (on Tun. Cond.)		45	Output Transformer	32-7778
7	Condenser (.05 mfd.)	30-4444	46	Choke	32-1374
8	Condenser (.05-.12-.15-.25-.5-10 mfd.)	30-4545	47	Condenser (250 mmfd.)	30-1032
9	Resistor (700 ohms)	33-1220	48	Cone & Voice Coil	36-3159
10	Sensitivity Control (1,250 ohms)	33-5248	49	Complete Speaker (A49)	36-1370
11	Sensitivity Control Switch	42-1378	50	Field Coil Assembly	32-7779
12	Resistor (70,000 ohms)	33-370344	51	On-Off Switch	42-1374
13	Condenser (6,000 mmfd.)	30-4467	52	Condenser (250 mmfd.)	30-1032
14	R. F. Transformer	32-2830	53	Condenser (.5 mfd.)	30-4474
15	Second Padder (on Tun. Cond.)		54	"A" Choke	32-1374
16	Third Padder (on Tun. Cond.)		55	Filament Choke	32-1604
17	Oscillator Transformer	32-2829	56	Condenser (250 mmfd.)	30-1032
18	Condenser (250 mmfd.)	30-1032	57	Vibrator Choke	32-2537
19	Resistor (99,000 ohms)	33-399344	58	Condenser (.5 mfd.)	30-4474
20	Low Frequency Padder	31-6230	59	Vibrator	41-3170-3
21	Resistor (45,000 ohms)	33-345344	60	Resistor (200 ohms)	33-120344
22	Resistor (1,000,000 ohms)	33-510344	61	Power Transformer	32-7720
23	First I. F. Transformer	32-2554	62	Condenser (7,500 mmfd.)	30-4420
24	Second I. F. Transformer	32-2556	63	Filter Condenser (4-8 mfd.)	30-2167
25	Condenser (250 mmfd.)	30-1032	64	Filter Choke	32-7811
26	Resistor (25,000 ohms)	33-325344	65	"B" Choke	32-1281
27	Condenser (.01 mfd.)	30-4479	66	Resistor (1,500 ohms)	33-215344
28	Volume Control (350,000 ohms)	33-5246	67	Choke	32-2657
29	Condenser (110 mmfd.)	30-1031	68	Condenser (250 mmfd.)	30-1032
30	Resistor (190,000 ohms)	33-419344	69	Receiver Housing	38-2050
31	Resistor (600 ohms)	33-1212	70	Tuning Shaft	28-8762
32	Resistor (20,000 ohms)	33-320344	71	Volume Shaft	28-8763
33	Resistor (40,000 ohms)	33-340444	72	Tone Shaft	28-8764
34	Resistor (51,000 ohms)	33-351344	73	Local Distance Shaft	28-8765
35	Resistor (1,000 ohms)	33-210344	74	Tuning and Volume Knob	27-4687
36	Resistor (490,000 ohms)	33-449344	75	Switch Knobs	28-7255
37	Condenser (.01 mfd.)	30-4501	76	Accessory Speaker Socket	38-8803
38	Condenser (250 mmfd.)	30-1032	77	Speaker Socket	27-6030
39	Resistor (600,000 ohms)	33-459344	78	Four Prong Socket	27-6044
			79	Five Prong Socket	27-6035
			80	Six Prong Socket	27-6036
			81	Seven Prong Socket	27-6037



No.	Description	Part No.	No.	Description	Part No.
82	Eight Prong Socket	27-6058	88	Tea Bolt (Rec. Mtg.)	28-6268
83	Interference Condenser	30-4007	89	Nut (Rec. Mtg.)	30-4007
84	Interference Condenser	30-4475	90	Mtg. Bracket and Stud (Speaker Mtg.)	28-1546
85	Inductive Suppressor	32-2250	91	Nut (Speaker Mtg.)	W-55
86	Fuse	7227	92	Switch & Lead Assembly	41-3217
87	Fuse Insulator	27-7729			

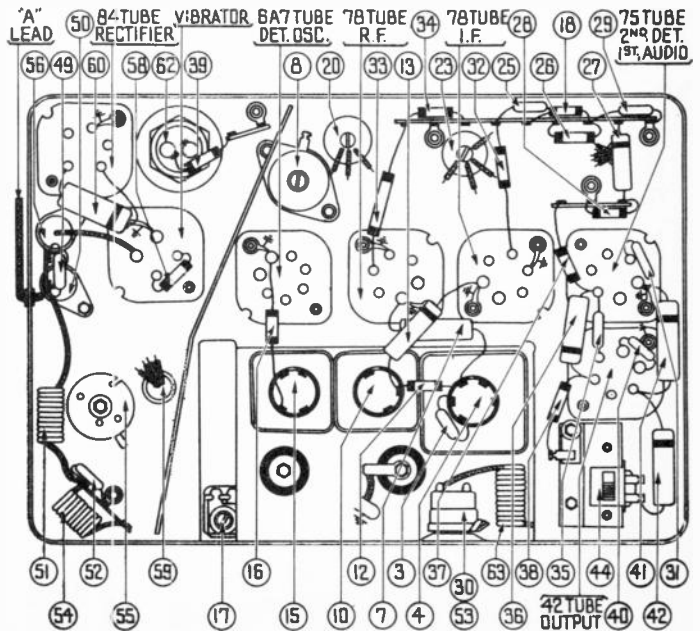
MODEL F-1540



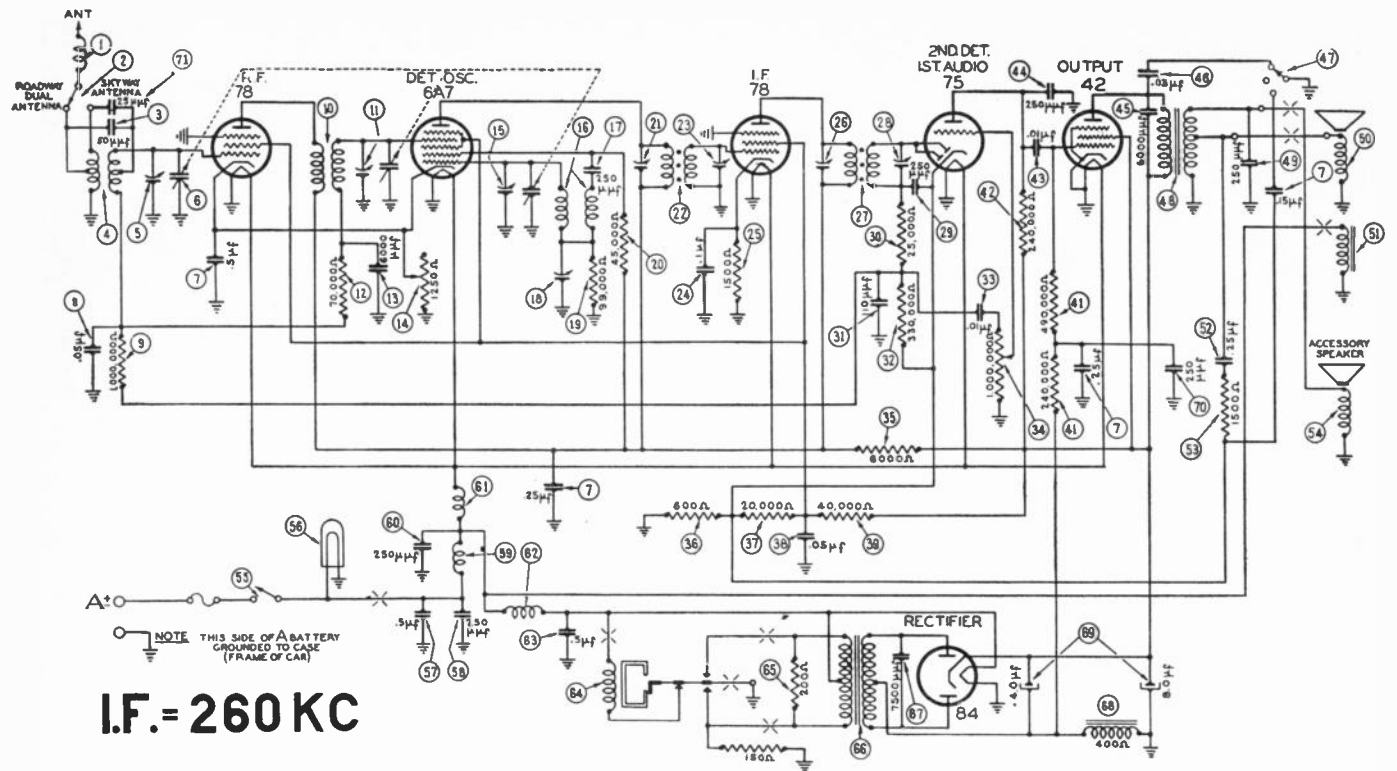
Aligning Procedure will be found on page 169.

MODEL F-1540 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
①	Antenna Lead	41-3386	②⑦	Resistor (240,000 ohms)	33-424344
②	Antenna Choke	32-1372	②⑧	Resistor (190,000 ohms)	33-449344
③	Condenser (.0 mmfd.)	30-1105	②⑨	Resistor (240,000 ohms)	33-424344
④	Antenna Transformer	32-2912	③①	Condenser (2.0 mmfd.)	30-1032
⑤	Tuning Condenser	31-2181	③②	Condenser (.02 mfd.)	30-4495
⑥	First Padder (on Tun. Cond.)	30-4444	③③	Condenser (.02 mfd.)	30-4495
⑦	Condenser (.05 mfd.)	30-4444	③④	Output Transformer	32-7946
⑧	Sensitivity Control	33-5239	③⑤	Tone Control Switch	42-1406
⑨	Condenser (.01-.05-.25-.5 mfd.)	30-4561	③⑥	Condenser (250 mmfd.)	30-1032
⑩	R. F. Transformer	32-2830	③⑦	Cone & Voice Coil	45-2608
⑪	Second Padder (on Tun. Cond.)	33-370344	③⑧	Pilot Lamp	34-2039
⑫	Resistor (70,000 ohms)	33-370344	③⑨	Field Coil Assembly	32-9263
⑬	Condenser (6,000 mmfd.)	30-4467	④①	Condenser (250 mmfd.)	30-1032
⑭	Third Padder (on Tun. Cond.)	33-32828	④②	Condenser (.5 mfd.)	30-4474
⑮	Oscillator Transformer	33-399344	④③	"A" Choke	32-1374
⑯	Resistor (99,000 ohms)	33-399344	④④	Condenser (250 mmfd.)	30-1032
⑰	Low Frequency Padder	31-6239	④⑤	On-Off Switch	33-5260
⑱	Resistor (1,000,000 ohms)	33-510344	④⑥	Filament Choke	32-1644
⑲	Padder (Pri. 1st I. F. Trans.)	32-2286	④⑦	Vibrator Choke	32-2911
⑳	First I. F. Transformer	32-2286	④⑧	Condenser (.5 mfd.)	30-4474
㉑	Padder (Sec. 1st I. F. Trans.)	32-2908	④⑨	Vibrator	41-3170-3
㉒	Padder (Pri. 2nd I. F. Trans.)	30-1032	④⑩	Resistor (200 ohms)	33-120344
㉓	Condenser (250 mmfd.)	30-1032	④⑪	Power Transformer	32-7944
㉔	Resistor (25,000 ohms)	33-325344	④⑫	Condenser (7,500 mmfd.)	30-4420
㉕	Condenser (.01 mfd.)	30-4479	④⑬	"B" Filter Choke	32-7943
㉖	Resistor (1,000,000 ohms)	33-510344	④⑭	Filter Condenser (4-8 mfd.)	30-2205
㉗	Condenser (110 mmfd.)	30-1031	④⑮	Choke	32-1561
㉘	Volume Control	33-5260	④⑯	Condenser (250 mmfd.)	30-1032
㉙	Resistor (800 ohms)	33-160331	④⑰	Four Prong Socket	27-6044
㉚	Resistor (20,000 ohms)	33-320344	④⑱	Five Prong Socket	27-6035
㉛	Resistor (40,000 ohms)	33-340444	④㉑	Six Prong Socket	27-6036
㉜	Resistor (13,000 ohms)	33-313344	④㉒	Seven Prong Socket	27-6037
㉝	Condenser (250 mmfd.)	30-1032	④㉓	Speaker Socket	27-6030
㉞	Condenser (.01 mfd.)	30-4501	④㉔	Receiver Housing	38-9384
			④㉕	Tuning & Volume Knob	27-4697
			④㉖	Dial Assembly	42-5826
			④㉗	Tuning Shaft	28-6795
			④㉘	Volume Shaft	28-8837



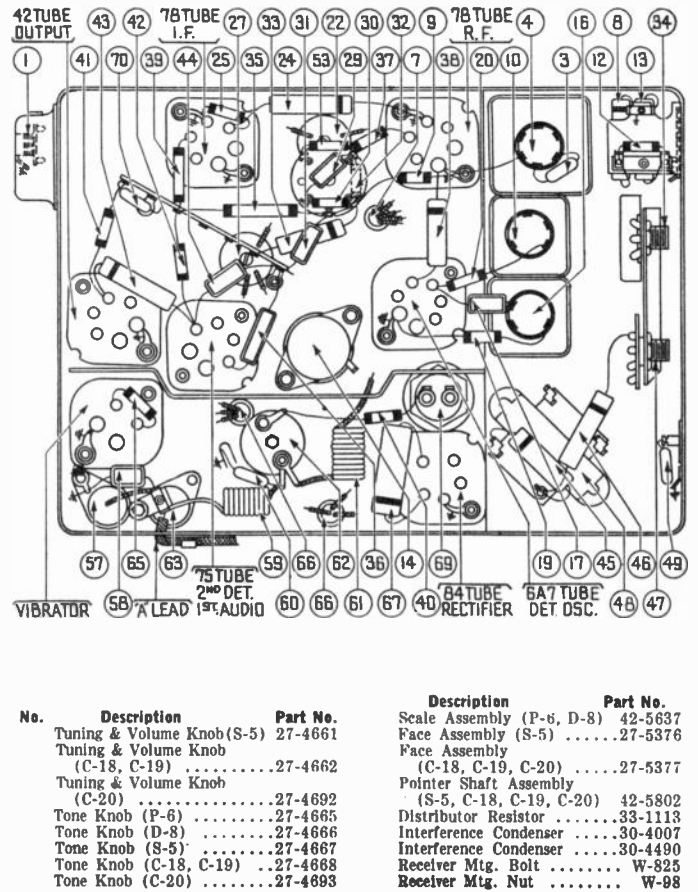
MODEL C-1550



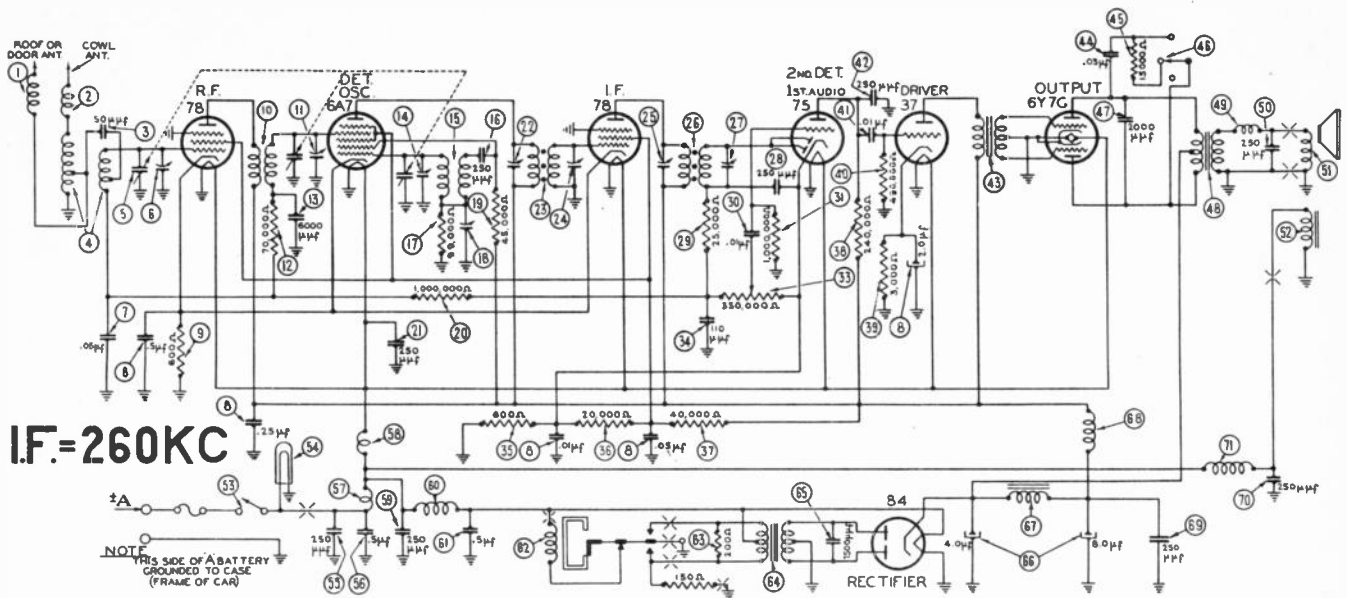
Aligning Procedure will be found on page 169.

MODEL C-1550 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-2063	47	Tone Control Switch	42-1399
2	Antenna Switch	42-1259	48	Output Transformer	32-7942
3	Condenser (50 mmfd.)	30-1029	49	Condenser (250 mmfd.)	30-1032
4	Antenna Transformer	32-2433	50	Cone & Voice Coil	45-2607
5	First Padder (on Tun. Cond.)		51	Field Coil Assembly	36-4012
6	Tuning Condenser	31-2169	52	Complete Speaker (K-50)	36-1376
7	Condenser (.15-.25-.25-.5 mfd.)	30-4557	53	Condenser (.25 mfd.)	30-4557
8	Condenser (.05 mfd.)	30-4444	54	Resistor (1,500 ohms)	33-215344
9	Resistor (1,000,000 ohms)	33-510344	55	Accessory Speaker	36-1281
10	R. F. Transformer	32-2231	56	On-Off Switch	42-1368
11	Second Padder (on Tun. Cond.)		57	Pilot Lamp	34-2040
12	Resistor (70,000 ohms)	33-370344	58	Condenser (.5 mfd.)	30-4474
13	Condenser (6,000 mmfd.)	30-4467	59	Condenser (250 mmfd.)	30-1032
14	Sensitivity Control	33-5261	60	"A" Choke	32-1374
15	Third Padder (on Tun. Cond.)		61	Condenser (250 mmfd.)	30-1032
16	Oscillator Transformer	32-2232	62	Filament Choke	32-2729
17	Condenser (250 mmfd.)	30-1032	63	Vibrator Choke	32-2812
18	Low Frequency Padder	31-6056	64	Condenser (.5 mfd.)	30-4474
19	Resistor (99,000 ohms)	33-399344	65	Vibrator	41-3170-3
20	Resistor (45,000 ohms)	33-345344	66	Resistor (200 ohms)	33-120344
21	Padder (Pri. 1st I. F. Trans.)		67	Power Transformer	32-7911
22	First I. F. Transformer	32-2286	68	Condenser (7,500 mmfd.)	30-4420
23	Padder (Sec. 1st I. F. Trans.)		69	Filter Choke	32-7722
24	Condenser (.1 mfd.)	30-4499	70	Filter Condenser (4-8 mfd.)	30-2179
25	Resistor (1,500 ohms)	33-215344	71	Condenser (250 mmfd.)	30-1032
26	Padder (Pri. 2nd I. F. Trans.)		72	Condenser (25 mmfd.)	30-1067
27	Second I. F. Transformer	32-2167	73	Receiver Housing	38-2123
28	Padder (Sec. 2nd I. F. Trans.)		74	Accessory Speaker Socket	27-6025
29	Condenser (250 mmfd.)	30-1032	75	Four Prong Base Socket	27-6044
30	Resistor (25,000 ohms)	33-325344	76	Five Prong Base Socket	27-6035
31	Condenser (110 mmfd.)	30-1031	77	Six Prong Base Socket	27-6036
32	Resistor (330,000 ohms)	33-433344	78	Seven Prong Base Socket	27-6037
33	Condenser (.01 mfd.)	30-4479	79	Receiver Mtg. Plate	28-4650
34	Volume Control		80	Fuse	45-2559
35	Resistor (6,000 ohms)	33-260344	81	Tuning Shaft (P-6, D-8)	28-8842
36	Resistor (600 ohms)	33-1212	82	Tuning Shaft	
37	Resistor (20,000 ohms)	33-320344	83	(S-5, C-18, C-19)	28-8845
38	Condenser (.05 mfd.)	30-4444	84	Tuning Shaft (C-20)	28-8848
39	Resistor (40,000 ohms)	33-340444	85	Volume Shaft (P-6, D-8)	28-8843
40	Resistor (240,000 ohms)	33-424344	86	Volume Shaft	
41	Resistor (490,000 ohms)	33-449344	87	(S-5, C-18, C-19)	28-8846
42	Resistor (240,000 ohms)	33-424344	88	Volume Shaft (C-20)	28-8849
43	Condenser (.01 mfd.)	30-4501	89	Tone Shaft (P-6, D-8)	28-8849
44	Condenser (250 mmfd.)	30-1032	90	Tone Shaft	
45	Condenser (6,000 mmfd.)	30-4024	91	(S-5, C-18, C-19)	28-8847
46	Condenser (.03 mfd.)	30-4560	92	Tone Shaft (C-20)	28-8850
			93	Tuning & Volume Knob (P-6)	27-4659
			94	Tuning & Volume Knob (D-8)	27-4660



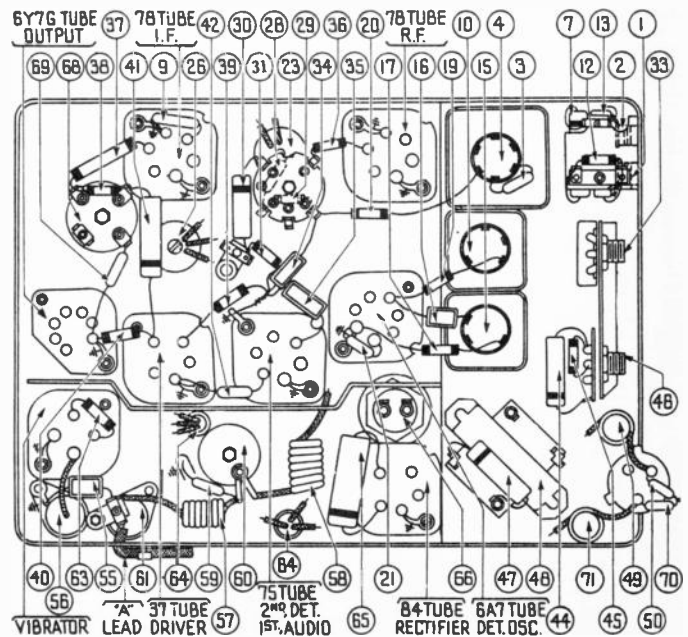
MODEL L-1560



Aligning Procedure will be found on page 167.

MODEL L-1560 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	38-8106	44	Condenser (.03 mfd.)	30-4447
2	Antenna Choke	38-8106	45	Resistor (15,000 ohms)	33-315344
3	Condenser (50 mmfd.)	30-1029	46	Tone Control Switch	42-1377
4	Antenna Transformer	32-2914	47	Condenser (2,000 mmfd.)	30-4177
5	Tuning Condenser	31-2161	48	Output Transformer	32-7778
6	First Padder (on Tun. Cond.)	30-4444	49	Choke	32-1374
7	Condenser (.05 mfd.)	30-4444	50	Cone & Voice Coil	36-3159
8	Condenser (.01-.05-.25-.5-2 mfd.)	30-4493	51	Field Coil Assembly	36-3513
9	Resistor (600 ohms)	33-1212	52	On & Off Switch	42-1369
10	R. F. Transformer	32-2830	53	Pilot Lamp	34-2039
11	Second Padder (on Tun. Cond.)	30-4467	54	Condenser (250 mmfd.)	30-1032
12	Resistor (70,000 ohms)	33-370344	55	Condenser (.5 mfd.)	30-4474
13	Condenser (6,000 mmfd.)	30-4467	56	"A" Choke	32-1374
14	Third Padder (on Tun. Cond.)	30-4467	57	Filament Choke	32-2729
15	Oscillator Transformer	32-2829	58	Condenser (250 mmfd.)	30-1032
16	Condenser (250 mmfd.)	30-1032	59	Vibrator Choke	32-2537
17	Resistor (99,000 ohms)	33-399344	60	Condenser (.5 mfd.)	30-4474
18	Low Frequency Padder	31-6230	61	Vibrator	41-3170-3
19	Resistor (45,000 ohms)	33-345344	62	Resistor (200 ohms)	33-120344
20	Resistor (1,000,000 ohms)	33-510344	63	Power Transformer	32-7720
21	Condenser (250 mmfd.)	30-1032	64	Condenser (7,500 mmfd.)	30-4420
22	Padder (Pri. 1st I. F. Trans.)	32-2791	65	Filter Condenser (4-8 mfd.)	30-2167
23	First I. F. Transformer	32-2791	66	Filter Choke	32-7811
24	Padder (Sec. 1st I. F. Trans.)	32-2793	67	"B" Choke	32-1281
25	Padder (Pri. 2nd I. F. Trans.)	32-2793	68	Condenser (250 mmfd.)	30-1032
26	Second I. F. Transformer	32-2793	69	Condenser (250 mmfd.)	30-1032
27	Padder (Sec. 2nd I. F. Trans.)	30-1032	70	Choke	32-2657
28	Condenser (250 mmfd.)	30-1032	71	Receiver Housing	38-9340
29	Resistor (25,000 ohms)	33-320344	72	Four Prong Socket	27-6044
30	Condenser (.01 mfd.)	30-4479	73	Five Prong Socket	27-6035
31	Resistor (1,000,000 ohms)	33-510344	74	Six Prong Socket	27-6036
32	Volume Control (350,000 ohms)	33-5246	75	Seven Prong Socket	27-6037
33	Condenser (110 mmfd.)	30-1031	76	Octal Base	27-6087
34	Resistor (600 ohms)	33-160331	77	Fuse	7227
35	Resistor (20,000 ohms)	33-320344	78	Fuse Insulator	27-7729
36	Resistor (40,000 ohms)	33-340444	79	Tuning Shaft	28-8821
37	Resistor (240,000 ohms)	33-424344	80	Volume Shaft	28-8822
38	Resistor (3,000 ohms)	33-230344	81	Tone Shaft	28-8823
39	Resistor (490,000 ohms)	33-449344	82	Scale Assembly	42-5803
40	Condenser (.01 mfd.)	30-4145	83	Tuning & Volume Knob	27-4691
41	Condenser (250 mmfd.)	30-1032	84	Knob Base	28-7284
42	Input Transformer	32-7779	85	Switch Lever	28-7255



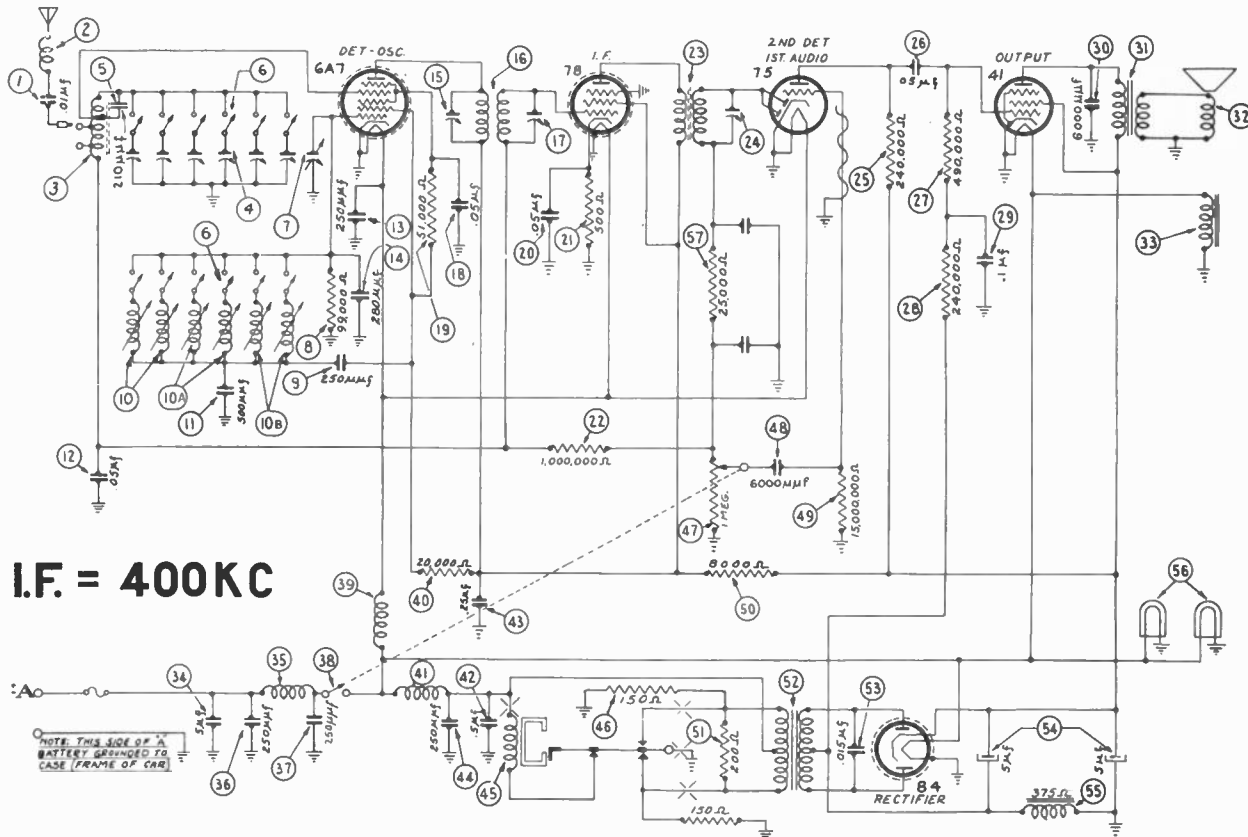
MODEL C-1606

SKY JACK
SKYWAY ANTENNA
POSITION
ROAD JACK
ROADWAY ANTENNA
POSITION



NOTE:
IF ROADWAY ANTENNA IS USED REMOVE
THE PIN FROM THE JACK LABELED SKY
AND INSERT IT INTO THE JACK LABELED ROAD

MODEL C-1606 SCHEMATIC

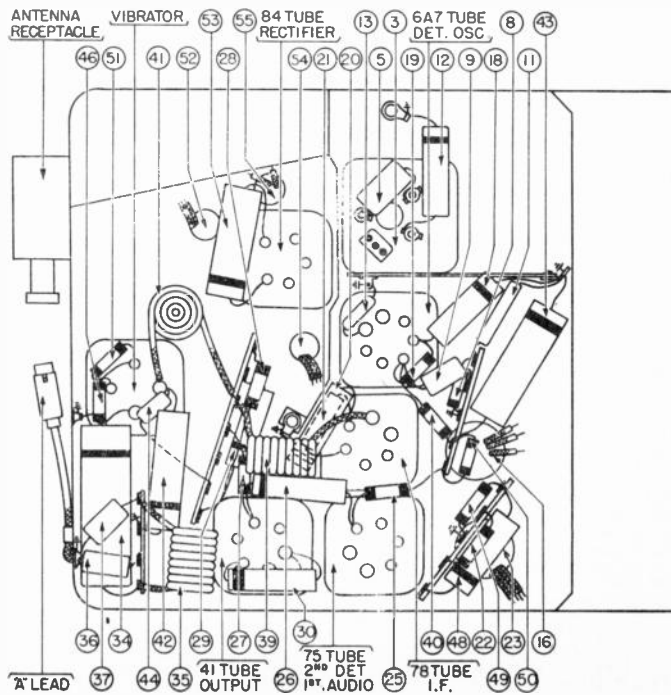


I.F. = 400KC

Aligning Procedure will be found on page 170.

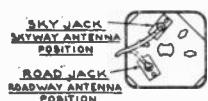
MODEL C-1606 PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Condenser (.01 mfd.)	61-0014	28	On-Off Switch and	67-0010
2	Antenna Choke	65-0102	29	Volume Control	67-0010
3	Antenna Transformer	65-0120	30	Filament Choke	32-1604
4	Antenna Padder Assembly	77-0141	31	Resistor (20,000 ohms)	33-320337
5	Condenser (210 mmfd.)	61-0044	32	Vibrator Choke	65-0075
6	Condenser (.5 mfd.)	61-0033	33	Condenser (.5 mfd.)	30-4565
7	Automatic Switch	85-0046	34	Condenser (.25 mfd.)	30-4446
8	Varactor	63-0019	35	Condenser (250 mmfd.)	61-0033
9	Resistor (90,000 ohms)	33-309337	36	Vibrator	11-3398
10	Condenser (250 mmfd.)	61-0034	37	Resistor (150 ohms)	33-115337
11	Oscillator Transformers	65-0125	38	Volume Control (1,000,000 ohms)	67-0010
12	Oscillator Transformers	65-0126	39	and On-Off Switch	67-0010
13	Oscillator Transformers	65-0127	40	Condenser (6,000 mmfd.)	30-4445
14	Condenser (500 mmfd.)	61-0027	41	Resistor	33-615347
15	Condenser (.05 mfd.)	30-4444	42	Resistor (8,000 ohms)	33-280337
16	Condenser (250 mmfd.)	61-0033	43	Resistor (200 ohms)	33-120337
17	Condenser (280 mmfd.)	61-0043	44	Power Transformer	65-0072
18	Padder (Pri. 1st I. F. Trans.)	65-0118	45	Condenser (.015 mfd.)	61-0030
19	Padder (Sec. 1st I. F. Trans.)	65-0119	46	Filter Condenser (5-5 mfd.)	61-0022
20	Condenser (.05 mfd.)	30-4444	47	Filter Choke	65-0073
21	Resistor (51,000 ohms)	33-351337	48	Pilot Lamps	34-2064
22	Condenser (.05 mfd.)	30-4444	49	Resistor (25,000 ohms)	33-325237
23	Resistor (500 ohms)	33-150438	50	Tuning and Volume Knob	55-0161
24	Resistor	33-510337	51	Push Button Knob	55-0206
25	Second I. F. Transformer	65-0111	52	Station Tab Holder	57-0227FA7
26	Padder (Sec. 2nd I. F. Trans.)	65-0122	53	Push Button Bezel	57-0327FA7
27	Resistor (240,000 ohms)	33-424337	54	Oscillator Coil Bezel	57-0508FA7
28	Condenser (.05 mfd.)	30-4123	55	Oscillator Coil Bezel	57-0509FA7
29	Resistor (490,000 ohms)	33-449337	56	Cover	57-0509FA7
30	Resistor (240,000 ohms)	33-424437	57	Fuse	45-2559
31	Condenser (.05 mfd.)	30-4123	58	Call Letter Kit	81-0025
32	Resistor (490,000 ohms)	33-449337	59	Fuel Gauge Resistor	67-0011
33	Resistor (240,000 ohms)	33-424437	60	Interference Condenser	30-4490
34	Condenser (.1 mfd.)	61-0023	61	Antenna Lead (Cowl)	95-0065
35	Condenser (6,000 mmfd.)	30-4504	62	Bracket (Set Mtg.)	57-0502FA1
36	Output Transformer	65-0071	63	Bolt (Set Mtg.)	97-0034
37	Cone Kit	91-0043	64	Nut (Set Mtg.)	W55
38	Field Coil	Not Replaceable	65	Bolt	97-0024
39	Condenser (.5 mfd.)	30-4565	66	Nut	W1667
40	"A" Choke	32-1374	67	Condenser (250 mmfd.)	61-0033
41	Condenser (250 mmfd.)	61-0033	68	Condenser (250 mmfd.)	61-0033



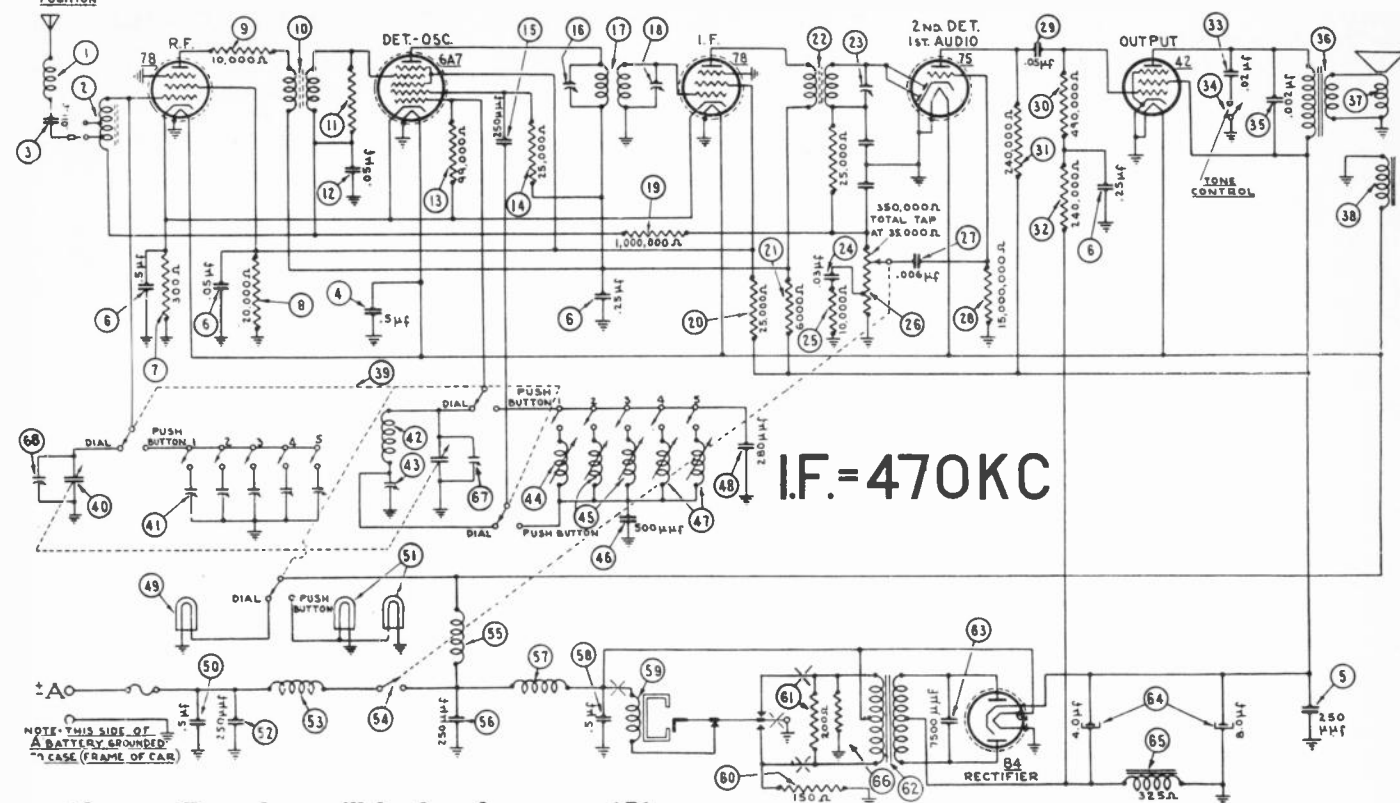
MODEL C-1608

MODEL C-1608 SCHEMATIC



IMPORTANT

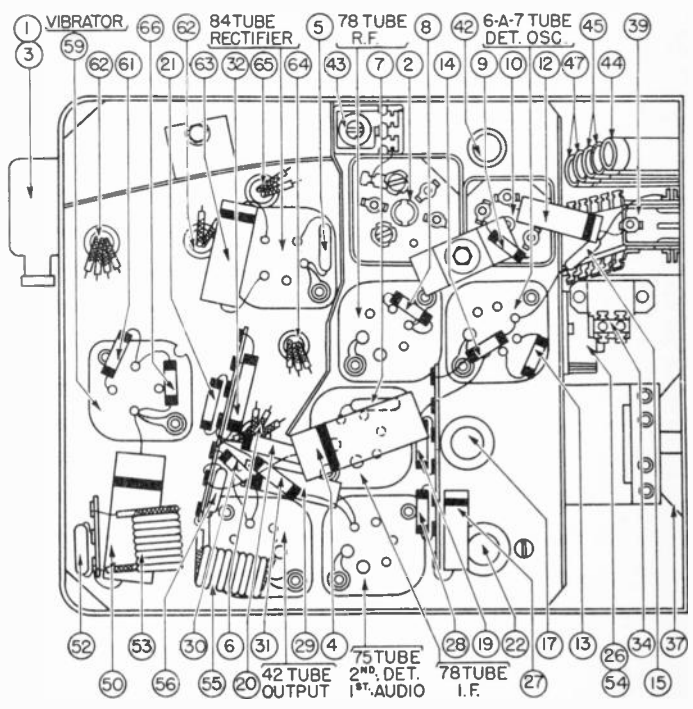
NOTE: IF ROADWAY ANTENNA IS USED REMOVE THE PIN FROM THE JACK LABELED SKY AND INSERT IT INTO JACK LABELED ROAD



Aligning Procedure will be found on page 171.

PARTS LIST

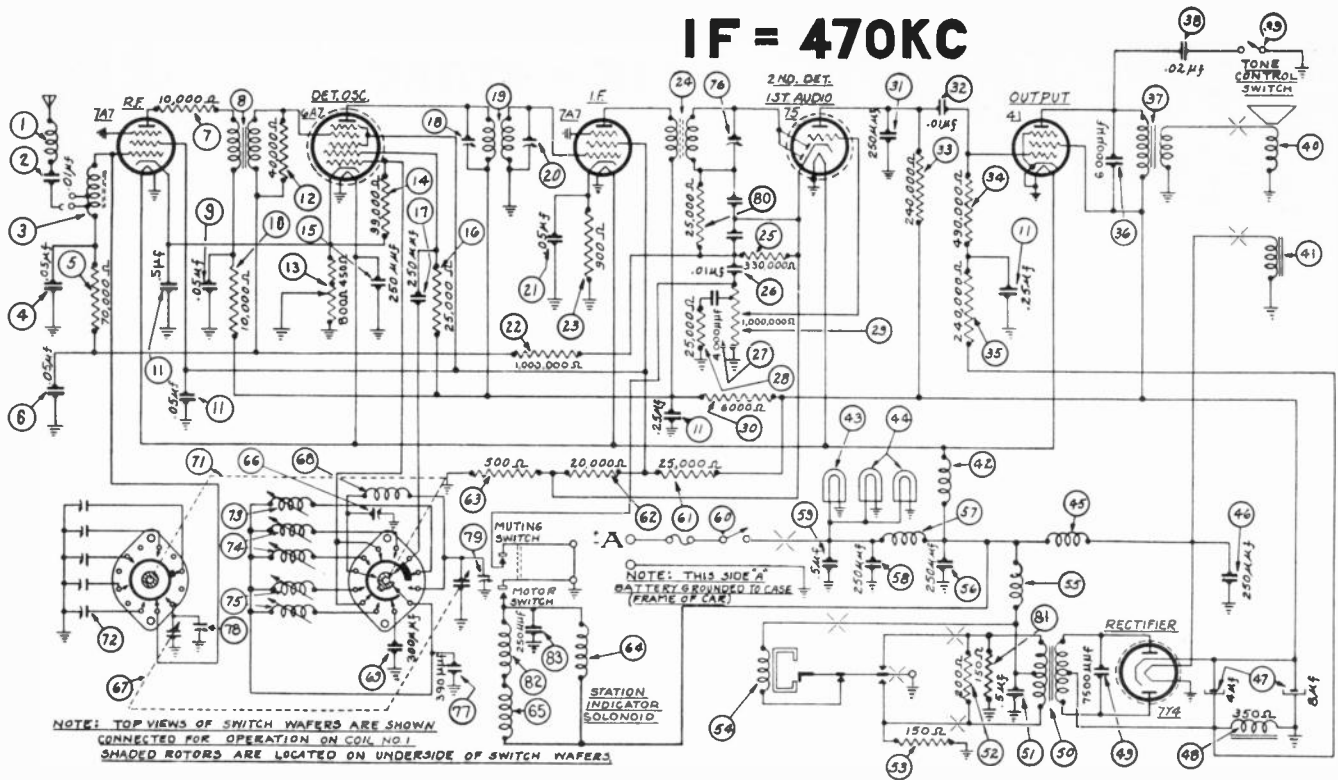
No.	Description	Part No	No.	Description	Part No.
1	Antenna Choke	65-0026	44	Oscillator Transformer (High Freq.)	65-0038
2	Antenna Transformer	65-0021	45	Oscillator Transformer (Med. Freq.)	65-0039
3	Condenser (.01 mfd.)	61-0014	46	Condenser (500 mmfd.)	61-0027
4	Condenser (.5 mfd.)	30-4565	47	Osc. Transformer (Low Freq.)	65-0004
5	Condenser (250 mmfd.)	61-0033	48	Condenser (280 mmfd.)	61-0010
6	Condenser (.05-.25-.25-.5 mfd.)	61-0008	49	Pilot Lamp	34-2039
7	Resistor (300 ohms)	33-130438	50	Condenser (.5 mfd.)	30-4565
8	Resistor (20,000 ohms)	33-320337	51	Pilot Lamps	34-2040
9	Resistor (10,000 ohms)	33-310337	52	Condenser (250 mmfd.)	61-0033
10	R. F. Transformer	65-0009	53	"A" Choke	32-1644
11	Resistor (39,000 ohms)	33-339137	54	Volume Control	67-0003
12	Condenser (.05 mfd.)	30-4444	55	On-Off Switch	67-0003
13	Resistor (99,000 ohms)	33-399337	56	Filament Choke	65-0037
14	Resistor (25,000 ohms)	33-325437	57	Condenser (250 mmfd.)	61-0033
15	Condenser (250 mmfd.)	61-0034	58	Vibrator Choke	65-0034
16	Padder (Pri. 1st I. F. Trans.)	65-0041	59	Condenser (.5 mfd.)	30-4465
17	First I. F. Transformer	65-0041	60	Vibrator	41-3170
18	Padder (Sec. 1st I. F. Trans.)	65-0041	61	Resistor (150 ohms)	33-115337
19	Resistor (1,000,000 ohms)	33-510337	62	Resistor (200 ohms)	33-120337
20	Resistor (25,000 ohms)	33-325437	63	Power Transformer	65-0033
21	Resistor (6,000 ohms)	33-260337	64	Buffer Condenser (7,500 mmfd.)	30-4567
22	Second I. F. Transformer	65-0043	65	Filter Condenser (4-8 mfd.)	61-0009
23	Padder (Sec. 2nd I. F. Transformer)	65-0043	66	Filter Choke (325 ohms)	65-0035
24	Condenser (.03 mfd.)	30-4449	67	Resistor (150 ohms)	33-115337
25	Resistor (10,000 ohms)	33-310337	68	First Padder on Tun. Cond.	30-4467
26	Volume Control (350,000 ohms)	67-0003	69	Second Padder on Tun. Cond.	30-4467
27	On-Off Switch	67-0003	70	Receiver Housing	77-0096
28	Condenser (6,000 mmfd.)	30-4467	71	Four Prong Socket	27-6044
29	Resistor (15,000,000 ohms)	33-615347	72	Five Prong Socket	27-6035
30	Condenser (.05 mfd.)	30-4518	73	Six Prong Socket	27-6036
31	Resistor (490,000 ohms)	33-449337	74	Seven Prong Socket	27-6037
32	Resistor (240,000 ohms)	33-424437	75	Fuse	45-2559
33	Resistor (240,000 ohms)	33-424337	76	Tuning & Vol. Knob (P7-8)	55-0164
34	Condenser (.02 mfd.)	30-4419	77	Tuning & Vol. Knob (D11-12)	55-0170
35	Tone Control Switch	85-0010	78	Tuning & Vol. Knob (C22)	55-0168
36	Condenser (2,000 mmfd.)	30-4177	79	Tuning & Vpl. Knob (S8)	55-0166
37	Output Transformer	65-0020	80	Push Button & Spring (S8)	55-0167
38	Cone & Voice Coil Kit	91-0028			
39	Field Coil	Not Replaceable			
40	Push Button Switch Assy.	85-0011			
41	Tuning Condenser (manual)	83-0009			
42	Antenna Push Button Padders	77-0091			
43	Oscillator Transformer	65-0031			
44	Low Freq. Padder	31-6230			



No.	Description	Part No.	No.	Description	Part No.
76	Push Button & Spring (P7-8)	55-0165	81	Distributor Resistor Assy.	38-9582
77	Push Button & Spring (C22)	55-0169	82	Interference Cond.	30-4490
78	Push Button & Spring (S8)	55-0166	83	Dial Scale	55-0068
79	Push Button & Spring (D11)	55-0171	84	Glass	55-0332
			85	Pointer	77-0042

MODEL S-1616

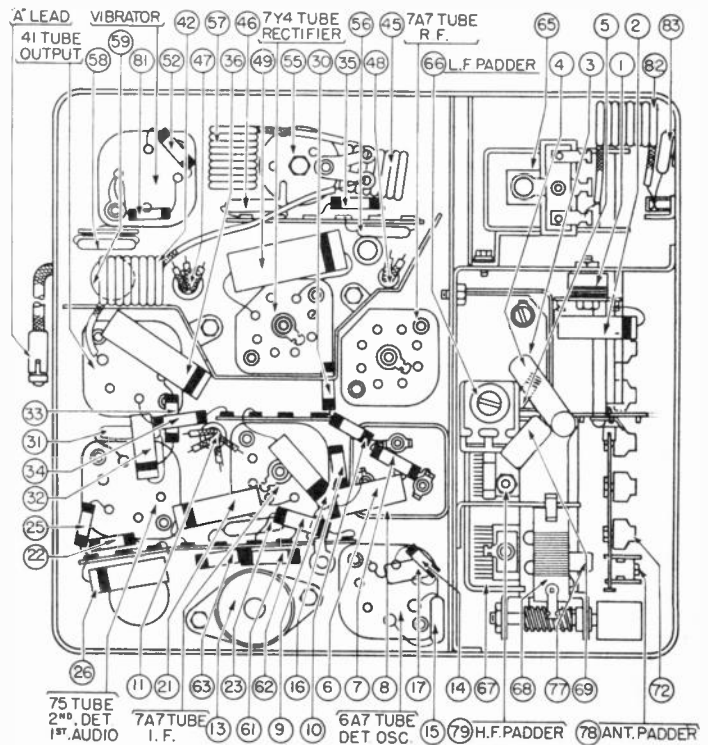
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Aligning Procedure will be found on page 171.

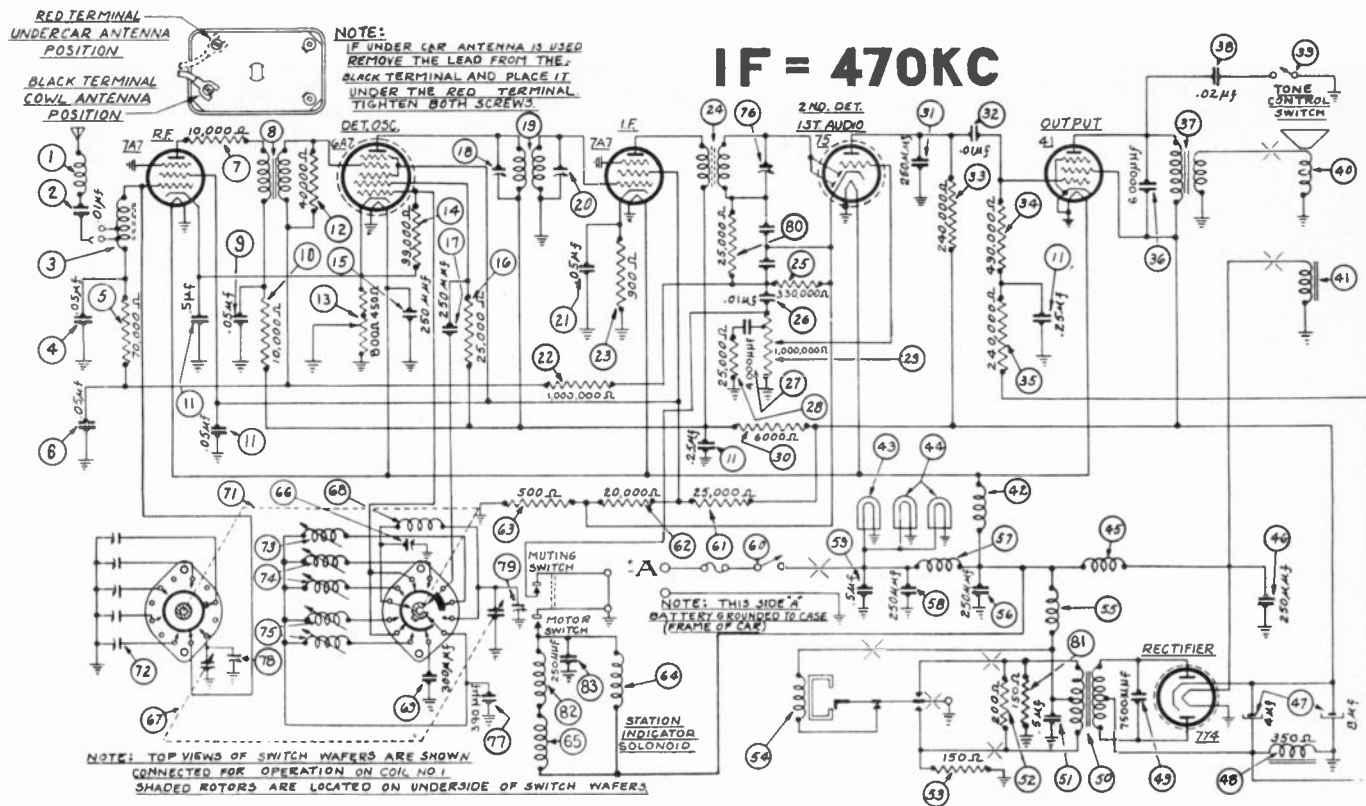
PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0062	31	Condenser (.5 mfd.)	30-4565
2	Condenser (.01 mfd.)	61-0014	32	Resistor (200 ohms)	33-120337
3	Antenna Transformer	65-0047	33	Resistor (150 ohms)	In Vibrator
4	Condenser (.05 mfd.)	30-4444	34	Vibrator	11-3398
5	Resistor (70,000 ohms)	33-370337	35	Vibrator Choke	32-2537
6	Condenser (.05 mfd.)	30-4444	36	Condenser (250 mmfd.)	61-0033
7	Resistor (10,000 ohms)	33-310337	37	V. Choke	65-0057
8	R. F. Transformer	65-0009	38	Condenser (250 mmfd.)	61-0033
9	Condenser (.05 mfd.)	30-4123	39	Condenser (.5 mfd.)	30-4474
10	Resistor (10,000 ohms)	33-310337	40	On-Off Switch and	67-0014-1
11	Condenser (.05-.25-.25-.5 mfd.)	61-0016		Volume Control	opt. 67-0014-2
12	Resistor (40,000 ohms)	33-340137	41	Resistor (25,000 ohms)	33-325437
13	Sensitivity Control	33-3264	42	Resistor (20,000 ohms)	33-320337
14	Resistor (99,000 ohms)	33-399337	43	Resistor (500 ohms)	33-150438
15	Condenser (250 mmfd.)	61-0033	44	Solenoid	77-0227
16	Resistor (25,900 ohms)	33-325337	45	Impulse Motor	77-0259
17	Condenser (250 mmfd.)	30-1038	46	Low Frequency Padder	31-6230
18	Padder (Pri. 1st I. F. Trans.)		47	Tuning Condenser	63-0011
19	First I. F. Transformer	65-0044	48	Oscillator Transformer	65-0058
20	Padder (Sec. 1st I. F. Trans.)		49	Silver Cap Condenser	
21	Condenser (.05 mfd.)	30-4444		(300 mmfd.)	61-0003
22	Resistor (1,000,000 ohms)	33-510337	50	Selector Switch	77-0198
23	Resistor (900 ohms)	33-190438	51	Antenna Padder Assembly	77-0126
24	Second I. F. Transformer	65-0045	52	Oscillator Transformer	
25	Resistor (330,000 ohms)	33-433337		(High Freq.)	65-0049
26	Condenser (.01 mfd.)	61-0014	53	Oscillator Transformer	
27	Condenser (4,000 mmfd.)	61-0020		(Med. Freq.)	65-0050
28	Resistor (25,000 ohms)	33-325337	54	Oscillator Transformer	
29	Volume Control & Switch	67-0014-1		(Low Freq.)	65-0051
30	(1,000,000 ohms)	opt. 67-0014-2	55	Padder (Sec. 2nd I. F. Trans.)	
31	Resistor (6,000 ohms)	33-260337	56	Silver Cap Condenser	
32	Condenser (250 mmfd.)	61-0033		(390 mmfd.)	61-0031
33	Condenser (.01 mfd.)	30-4160	57	First Padder (on Tun. Cond.)	
34	Resistor (240,000 ohms)	33-424337		.....Part of Ant. Padder Assy.	
35	Resistor (240,000 ohms)	33-424337	58	Second Padder (on Tun. Cond.)	
36	Condenser (8,000 mmfd.)	30-4024	59	Resistor (25,000 ohms)	33-325337
37	Output Transformer	65-0048	60	Resistor (150 ohms)	33-153337
38	Condenser (.02 mfd.)	30-4495	61	Choke	32-1644
39	Tone Control Switch	42-1140	62	Condenser (250 mmfd.)	61-0033
40	Cone & Voice Coil Kit	91-0047	63	Dial Assembly	85-0079
41	Field Coil	Not Replaceable		Tone Control and	
42	Filament Choke	65-0057		Automatic Drum	415-1009
43	Pilot Lamp	34-2040		Automatic Push Button	
44	Pilot Lamp	34-2040		(Commander)	55-0100
45	Choke	32-1374		Automatic Push Button	
46	Condenser (250 mmfd.)	61-0033		(President)	55-0172
47	Filter Condenser (4-8 mfd.)	61-0018		Tuning and Volume Knob	
48	Filter Choke	32-7959		(President)	27-4689
49	Condenser (7,500 mmfd.)	30-4567		Tuning and Volume Knob	
50	Power Transformer	65-0046		(Commander)	55-0102
				Flexible Shaft	57-0467



No.	Description	Part No.	No.	Description	Part No.
64	Call Letter Kit	81-0052	79	"T" Bolt (Rec. Mtg.)	28-6161
65	Condenser and Lug Assy.	30-1087	80	Nut (Rec. Mtg.)	W518
66	Interference Condenser	30-4007	81	Automatic Cable	95-0030
67	Distributor Resistor	32-2250	82	Tone and Volume Cable	95-0076

MODEL P-1617

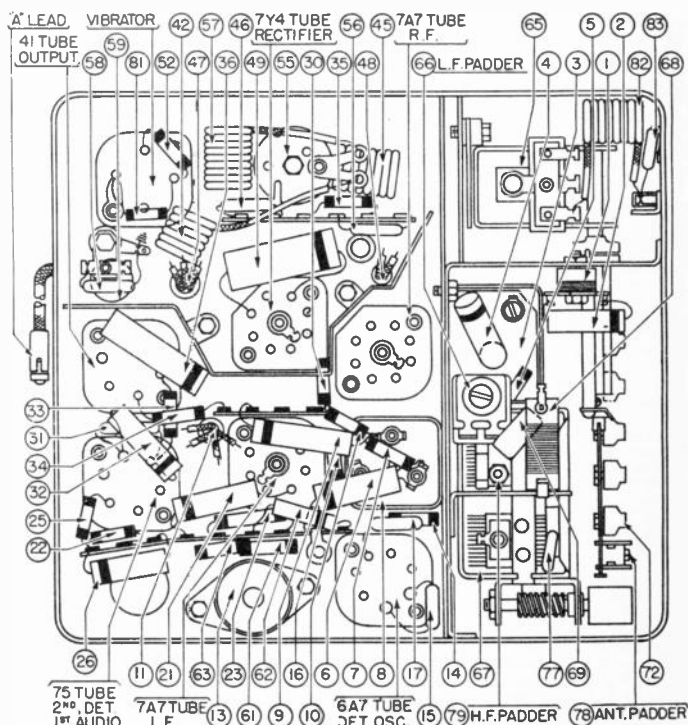


Aligning Procedure will be found on page 171.

PARTS LIST

No.	Description	Part No.
1	Antenna Choke	65-0062
2	Condenser (.01 mfd.)	61-0014
3	Antenna Transformer	65-0017
4	Condenser (.05 mfd.)	30-4444
5	Resistor (70,000 ohms)	33-370337
6	Condenser (.05 mfd.)	30-4444
7	Resistor (10,000 ohms)	33-310337
8	R. F. Transformer	65-0009
9	Condenser (.05 mfd.)	30-4123
10	Resistor (10,000 ohms)	33-310337
11	Condenser (.05-25-.5 mfd.)	61-0016
12	Resistor (40,000 ohms)	33-340137
13	Sensitivity Control	33-5264
14	Resistor (99,000 ohms)	33-399337
15	Condenser (250 mmfd.)	30-1032
16	Resistor (25,000 ohms)	33-325337
17	Condenser (250 mmfd.)	30-1038
18	Padder (Pri. 1st I. F. Trans.)	65-0044
19	First I. F. Transformer	65-0044
20	Padder (Sec. 1st I. F. Trans.)	65-0044
21	Condenser (.05 mfd.)	30-4444
22	Resistor (1,000,000 ohms)	33-510337
23	Resistor (900 ohms)	33-190438
24	Second I. F. Transformer	65-0045
25	Resistor (330,000 ohms)	33-433337
26	Condenser (.01 mfd.)	61-0014
27	Condenser (4,000 mmfd.)	61-0020
28	Resistor (25,000 ohms)	33-325337
29	Volume Control (1,000,000 ohms)	67-0004-1
30	Resistor (6,000 ohms)	33-260337
31	Condenser (250 mmfd.)	30-1032
32	Condenser (.01 mfd.)	30-4169
33	Resistor (240,000 ohms)	33-424337
34	Resistor (490,000 ohms)	33-449337
35	Resistor (240,000 ohms)	33-424337
36	Condenser (6,000 mmfd.)	30-1024
37	Output Transformer	65-0048
38	Condenser (.02 mfd.)	30-4495
39	Tone Control Switch	42-1140
40	Cone & Voice Coil Kit	91-0047
41	Field Coil	Not Replaceable
42	Filament Choke	65-0057
43	Pilot Lamp	34-2040
44	Pilot Lamp	34-2040
45	Choke	32-1374
46	Condenser (250 mmfd.)	30-1032

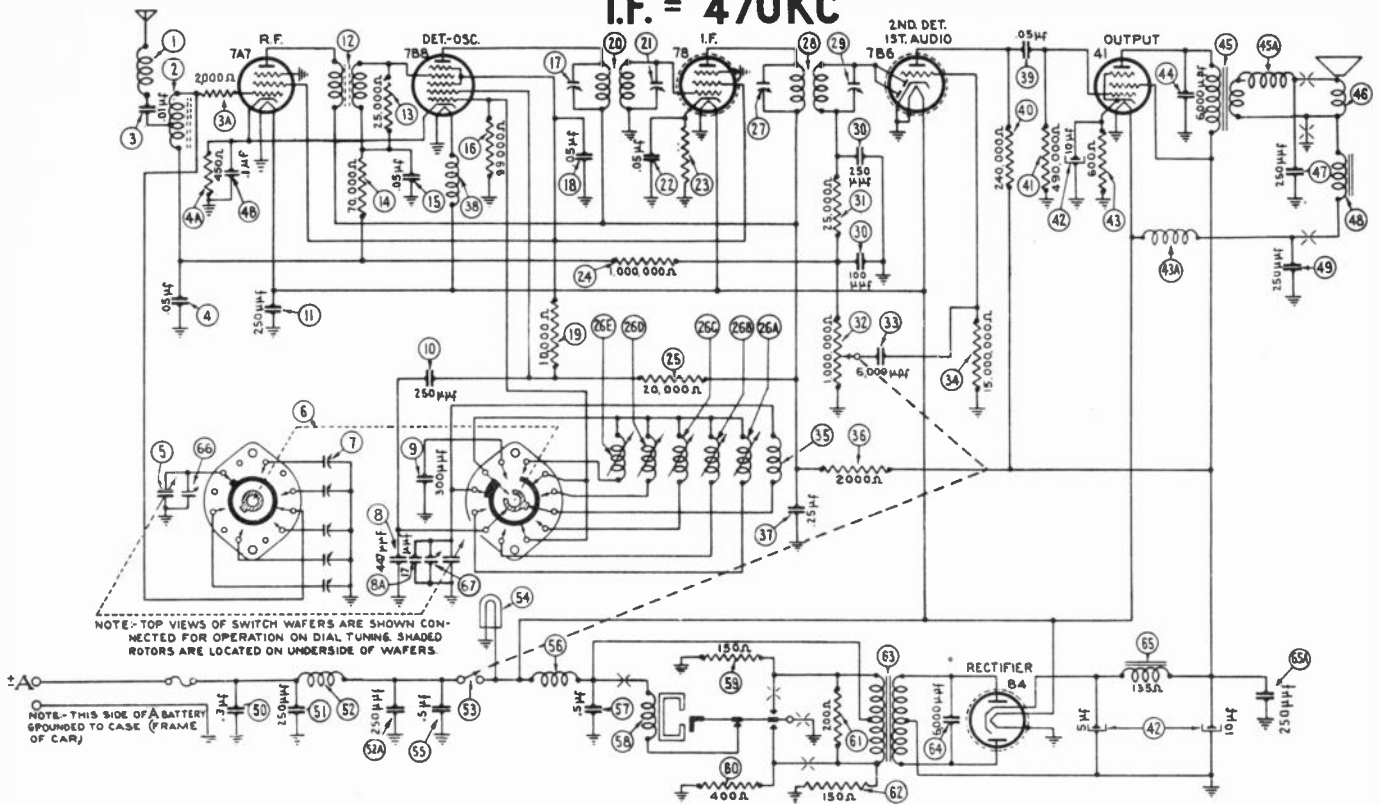
No.	Description	Part No.
47	Filter Condenser (4-8 mfd.)	61-0018
48	Filter Choke	32-7959
49	Condenser (7,500 mmfd.)	30-4567
50	Power Transformer	65-0046
51	Condenser (.5 mfd.)	30-4515
52	Resistor (200 ohms)	33-120337
53	Resistor (150 ohms)	33-1032
54	Vibrator	41-3170
55	Vibrator Choke	32-2537
56	Condenser (250 mmfd.)	30-1032
57	"A" Choke	65-0037
58	Condenser (250 mmfd.)	30-1032
59	Condenser (.5 mfd.)	30-4474
60	On-Off Switch	77-0175
61	Resistor (25,000 ohms)	33-325437
62	Resistor (20,000 ohms)	33-320337
63	Resistor (500 ohms)	33-150438
64	Solenoid	77-0108
65	Impulse Motor	31-6230
66	Low Frequency Padder	63-0011
67	Tuning Condenser	65-0058
68	Oscillator Transformer	61-0003
69	Silver Cap Condenser (300 mmfd.)	77-0198
70	Selector Switch	77-0126
71	Antenna Padder Assembly	65-0040
72	Oscillator Transformer (High Freq.)	65-0050
73	Oscillator Transformer (Med. Freq.)	65-0051
74	Oscillator Transformer (Low Freq.)	65-0051
75	Padder (Sec. 2nd I. F. Trans.)	61-0031
76	Silver Cap Condenser (390 mmfd.)	33-115337
77	First Padder (on Tun. Cond.)	32-1644
78	.....Part of Ant. Padder Assy.	30-1032
79	Second Padder (on Tun. Cond.)	30-4007
80	Resistor (25,600 ohms)	33-4475
81	Resistor (150 ohms)	33-1196
82	Choke	55-0173
83	Condenser (250 mmfd.)	57-0472
84	Interference Condenser	27-4687
85	Interference Condenser	
86	Distributor Resistor	
87	Push Button	
88	Push Button Cover	
89	Tuning & Volume Knob	



No.	Description	Part No.	No.	Description	Part No.
89	Knob Base	28-4184	90	Nut	W518
90	Call Letter Kit	81-0045	91	Station Indicator	85-0047
91	"T" Bolt	28-6268			

MODEL S-1622

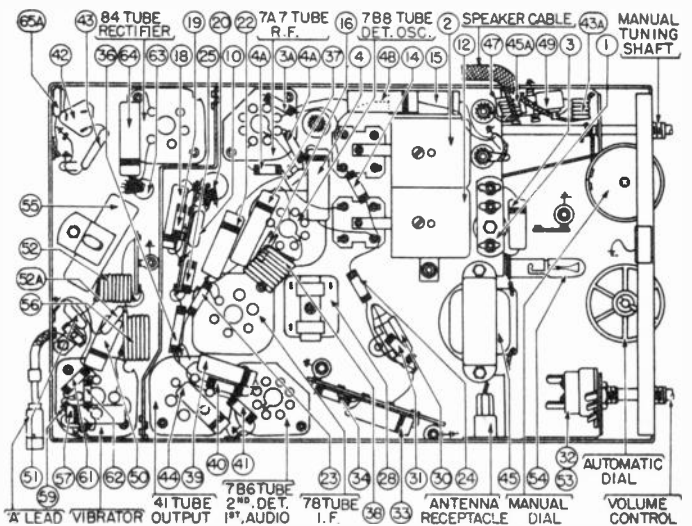
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Aligning Procedure will be found on page 172.

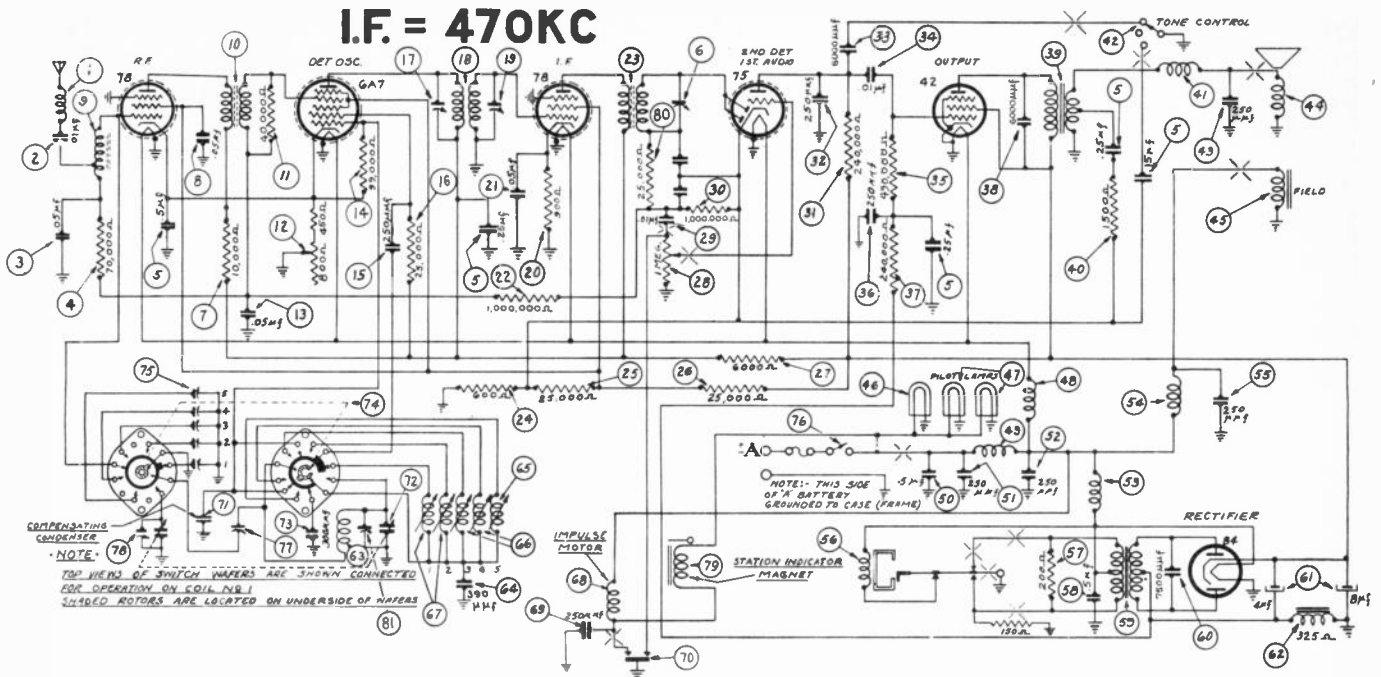
PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0102	20	Resistor (25,000 ohms)	33-325237
2	Antenna Transformer	65-0115	21	Volume Control (1,000,000 ohms)	67-0015
3	Condenser (.01 mfd.)	61-0014	22	Volume Control (1,000,000 ohms) and On-Off Switch	67-0015
3a	Resistor (2,000 ohms)	33-220337	23	Condenser (6,000 mmfd.)	30-4467
4	Condenser (.05 mfd.)	30-4444	24	Resistor	
4a	Resistor (450 ohms)	33-145438	25	(13,000 000 ohms)	33-615337
4b	Resistor (.1 mfd.)	30-4499	26	Oscillator Transformer	65-0134
5	Tuning Condenser	63-0023	27	Resistor (2,000 ohms)	33-220437
6	Wafer Switch	412-1023	28	Condenser (.25 mfd.)	30-4446
7	Antenna Padder Assy.	77-0262	29	Choke	65-0158
8	Silver Mica Condenser (447 mmfd.)	61-0047	30	Condenser (.03 mfd.)	61-0053
8a	Condenser (.17 mmfd.)	61-0039	31	Resistor (240,000 ohms)	33-424337
9	Silver Mica Condenser (300 mmfd.)	61-0003	32	Resistor (490,000 ohms)	33-449337
10	Condenser (250 mmfd.)	30-1038	33	Filter Condenser (5-10-10 mfd.)	61-0050
11	Condenser (250 mmfd.)	61-0033	34	Resistor (600 ohms)	33-160338
12	R. F. Transformer	65-0114	34a	Choke	32-1438
13	Resistor (25,000 ohms)	33-325337	35	Condenser (6,000 mmfd.)	30-4024
14	Resistor (70,000 ohms)	33-370337	36	Output Transformer	65-0147
15	Condenser (.05 mfd.)	30-4444	37	Choke	32-1561
16	Resistor (99,000 ohms)	33-399337	38	Cone and Voice Coil	91-0065
17	Padder (Pri. 1st I. F. Trans.)	65-0139	39	Condenser (250 mmfd.)	61-0033
18	Condenser (.05 mfd.)	30-4569	40	Field Coil	Not Replaceable
19	Resistor (10,000 ohms)	33-310337	41	Condenser (250 mmfd.)	61-0033
20	First I. F. Transformer	65-0148	42	Condenser (.3 mfd.)	61-0056
21	Padder (Sec. 1st I. F. Trans.)	65-0137	43	Condenser (250 mmfd.)	61-0033
22	Condenser (.05 mfd.)	30-4444	44	"A" Choke	32-1644
23	Resistor (1,000 ohms)	33-210337	45	Condenser (250 mmfd.)	61-0033
24	Resistor (1,000,000 ohms)	33-510337	46	On-Off Switch and Volume Control	67-0015
25	Resistor (20,000 ohms)	33-320337	47	Pilot Lamp	34-2064
26	Oscillator Transformer	65-0169	48	Condenser (.5 mfd.)	30-4306
27	Oscillator Transformer	65-0136	49	Vibrator Choke	65-0151
28	Oscillator Transformer	65-0137	50	Condenser (.5 mfd.)	61-0054
29	Oscillator Transformer	65-0138	51	Vibrator	41-3398
30	Oscillator Transformer	65-0139	52	Resistor (150 ohms)	33-115337
31	Padder (Pri. 2nd I. F. Trans.)	65-0149	53	Resistor (400 ohms)	33-140237
32	Second I. F. Transformer	65-0149	54	Resistor (200 ohms)	33-120337
33	Padder (Sec. 2nd I. F. Trans.)	65-0137	55	Resistor (150 ohms)	33-115337
34	Condenser (100-250 mmfd.)	61-0049	56	Power Transformer	65-0152
			57	Condenser (6,000 mmfd.)	61-0052
			58	Filter Choke	65-0150



No.	Description	Part No.	No.	Description	Part No.
35a	Condenser (250 mmfd.)	61-0033	57	Mounting Bracket	57-0667FA3
36	First Padder (on Tun. Cond.)	65-0137	58	Fuse	45-2559
37	Second Padder (on Tun. Cond.)	65-0137	59	"A" Lead	95-0032
			60	Complete Speaker	73-0022
			61	Interference Condenser	30-4007
			62	Distributor Resistor	33-1196
			63	Fuse Gauge Resistor	77-0335
			64	Steering Post Mtg. Strap	77-0336
			65	Bolt	77-0056FA3

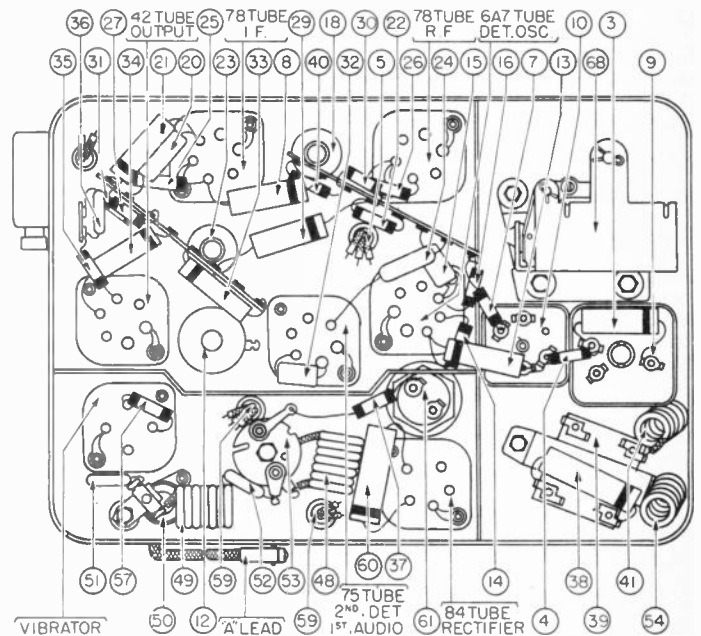
MODELS S-1626 and G-1628



Aligning Procedure will be found on page 172.

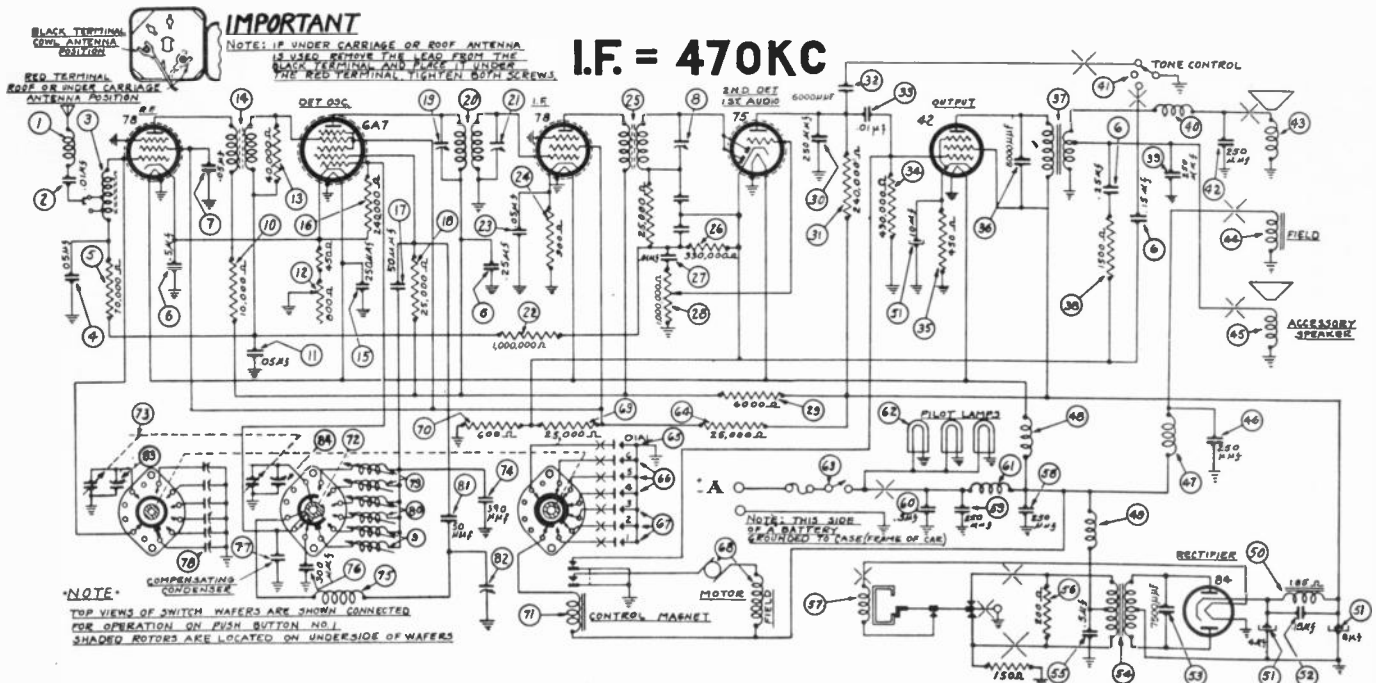
PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
①	Antenna Choke	32-1956	44	Cone and Voice Coil	91-0041
②	Condenser (.01 mfd.)	61-0014	45	Field Coil	Not Replaceable
③	Condenser (.05 mfd.)	30-4569	46	Pilot Lamp	34-2040
④	Resistor (70,000 ohms)	33-370337	47	Pilot Lamp	34-2039
⑤	Condenser (.15-.25-.25-.5 mfd.)	61-0017	48	Filament Choke	32-1604
⑥	Padder (Sec. 2nd I. F. Trans.)	33-310337	49	"A" Choke	32-1644
⑦	Resistor (10,000 ohms)	33-310337	50	Condenser (.5 mfd.)	30-4474
⑧	Condenser (.05 mfd.)	30-4444	51	Condenser (250 mmfd.)	30-1032
⑨	Antenna Transformer	65-0100	52	Condenser (250 mmfd.)	30-1032
⑩	R. F. Transformer	65-0009	53	Vibrator Choke	32-2812
⑪	Resistor (40,000 ohms)	33-339137	54	Choke	32-2657
⑫	Sensitivity Control	33-5264-4	55	Condenser (250 mmfd.)	30-1032
⑬	Condenser (.05 mfd.)	30-4444	56	Vibrator	41-3170
⑭	Resistor (99,000 ohms)	33-339337	57	Resistor (200 ohms)	33-120337
⑮	Condenser (250 mmfd.)	30-1038	58	Condenser (.5 mfd.)	30-4565
⑯	Resistor (25,000 ohms)	33-325337	59	Power Transformer	65-0016
⑰	Padder (Pri. 1st I. F. Trans.)	65-0002	60	Condenser (7,500 mmfd.)	30-4567
⑱	Padder (Sec. 2nd I. F. Trans.)	33-190438	61	Filter Condenser (4-8 mfd.)	30-2295
⑲	Resistor (900 ohms)	30-4569	62	Filter Choke (325 ohms)	32-7910
⑳	Condenser (.05 mfd.)	33-510337	63	Oscillator Transformer	65-0052
㉑	Resistor (1,000,000 ohms)	33-510337	64	Silver Cap Condenser (300 mmfd.)	61-0031
㉒	Second I. F. Transformer	65-0603	65	Oscillator Transformer (Low Freq.)	65-0051
㉓	Resistor (600 ohms)	33-160438	66	Oscillator Transformer (Med. Freq.)	65-0050
㉔	Resistor (25,000 ohms)	33-325337	67	Oscillator Transformer (High Freq.)	65-0049
㉕	Resistor (25,000 ohms)	33-325137	68	Choke	32-1644
㉖	Resistor (6,000 ohms)	33-260337	69	Condenser (250 mmfd.)	30-1032
㉗	Volume Control (1,000,000 ohms) and On-Off Switch	67-0012-1	70	Push Button Switch complete	85-0031
㉘	Condenser (.01 mfd.)	30-4479	71	Thermal Coupling Condenser	61-0011
㉙	Resistor (330,000 ohms)	33-433337	72	Tuning Condenser	63-0012
㉚	Resistor (240,000 ohms)	33-424337	73	Silver Cap Condenser (300 mmfd.)	61-0003
㉛	Condenser (250 mmfd.)	30-1032	74	Wafer Switch	77-0185
㉜	Condenser (6,000 mmfd.)	30-4504	75	Antenna Padder Assembly	77-0035
㉝	Condenser (.01 mfd.)	30-4501	76	On-Off Switch and Volume Control	67-0012-1
㉞	Resistor (490,000 ohms)	33-449337	77	Low Frequency Padder	63-0017
㉟	Condenser (250 mmfd.)	30-1032	78	First Padder (on Tun. Cond.)	77-0120
㊱	Resistor (240,000 ohms)	33-424337	79	Impulse Motor	77-0120
㊲	Condenser (6,000 mmfd.)	30-4024	80	Resistor (25,000 ohms)	33-325337
㊳	Output Transformer	65-0053	81	Second Padder (on Tun. Cond.)	77-0120
㊴	Resistor (1,500 ohms)	33-215337	82	Dial Assembly	85-0020
㊵	Choke	32-1374			
㊶	Tone Control Switch complete	85-0030			
㊷	Condenser (250 mmfd.)	30-1032			



No.	Description	Part No.	No.	Description	Part No.
36	OUTPUT	36	75 TUBE	2ND DET 1ST AUDIO	61
37	OUTPUT	37	64 TUBE	RECTIFIER	4
38	OUTPUT	38	4		39
39	OUTPUT	39	54		54
40	OUTPUT	40			
41	OUTPUT	41			
42	TUBE	42			
43	TUBE	43			
44	TUBE	44			
45	TUBE	45			
46	TUBE	46			
47	TUBE	47			
48	TUBE	48			
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93	TUBE	93			

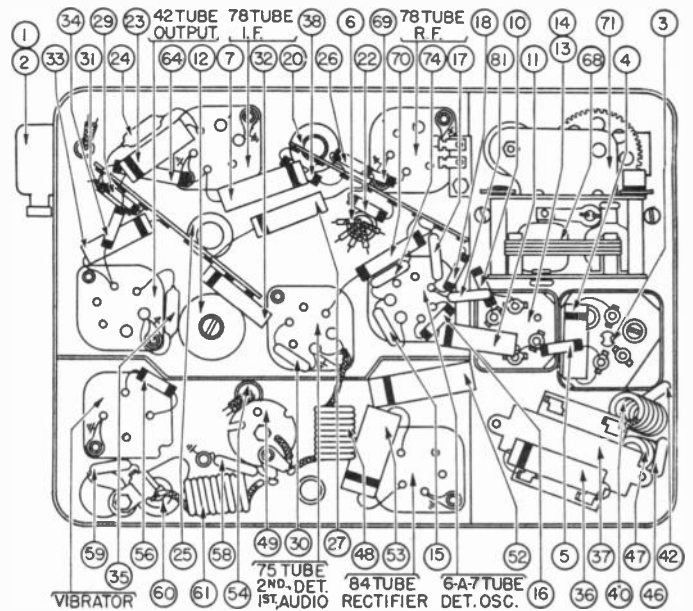
MODEL P-1630



Aligning Procedure will be found on page 173.

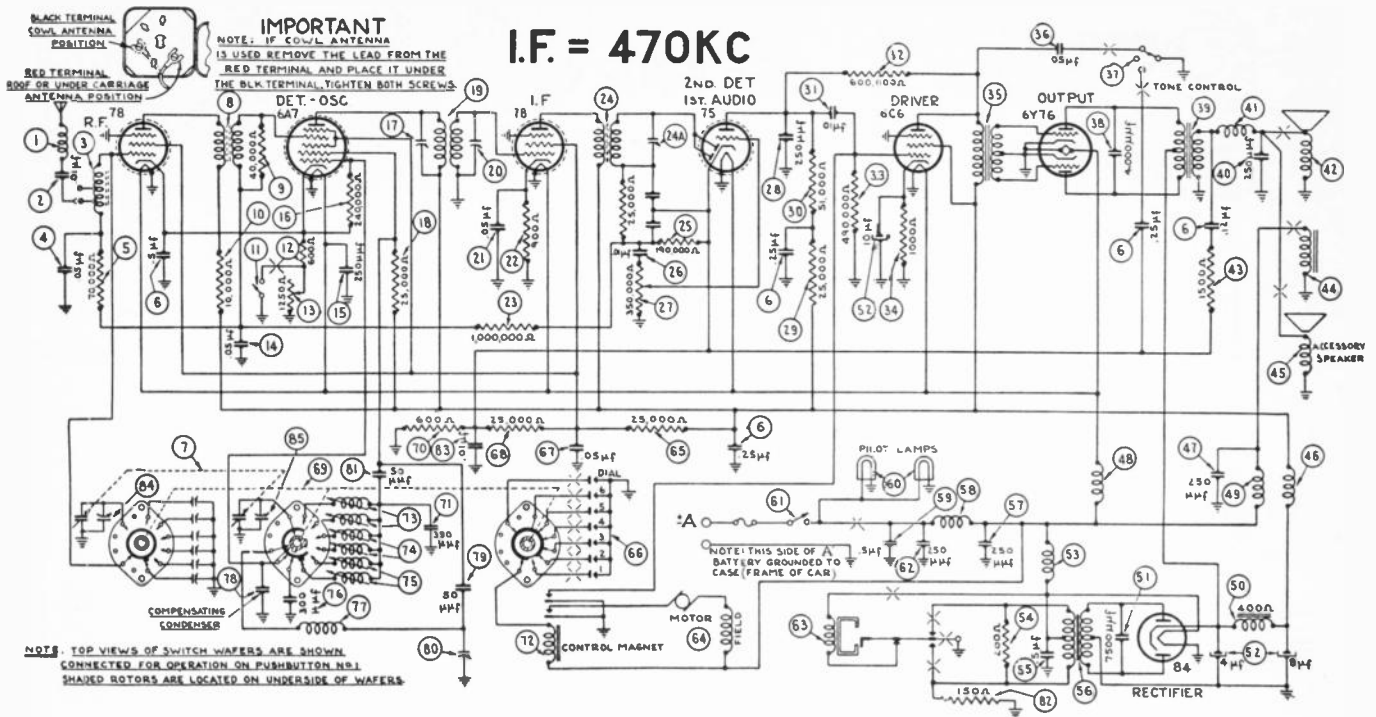
PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-1956	42	Condenser (250 mmfd.)	30-1032
2	Condenser (.01 mfd.)	61-0014	43	Cone & Voice Coil	91-0047
3	Antenna Transformer	65-0008	44	Field Coil Assembly..Not Replaceable	
4	Condenser (.05 mfd.)	30-4560	45	Accessory Speaker	36-1384
5	Resistor (70,000 ohms)	33-370337	46	Condenser (250 mmfd.)	30-1032
6	Condenser (.15-.25-.25-.5 mfd.)	61-0013	47	Choke	32-2657
7	Condenser (.05 mfd.)	30-4123	48	Filament Choke	32-1604
8	Padder (Sec. 2nd I. F. Trans.)		49	Vibrator Choke	32-2537
9	Oscillator Transformers (High Freq.)	65-0004	50	Filter Choke	65-0022
10	Resistor (10,000 ohms)	33-310337	51	Filter Condenser (4-8-10 mfd.)	61-0012
11	Condenser (.05 mfd.)	30-4444	52	Condenser (.15 mfd.)	30-4571
12	Sensitivity Control (1,250 ohms)	33-5264-4	53	Condenser (7,500 mmfd.)	30-4567
13	Resistor (40,000 ohms)	33-340337	54	Power Transformer	65-0016
14	R. F. Transformers	65-0009	55	Condenser (.5 mfd.)	30-4565
15	Condenser (250 mmfd.)	30-1032	56	Resistor (200 ohms)	33-120337
16	Resistor (240,000 ohms)	33-424337	57	Vibrator	41-3170
17	Condenser (50 mmfd.)	30-1101	58	Condenser (250 mmfd.)	30-1032
18	Resistor (25,000 ohms)	33-325337	59	Condenser (250 mmfd.)	30-1032
19	Padder (Pri. 1st I. F. Trans.)		60	Condenser (.5 mfd.)	30-4474
20	First I. F. Transformer	65-0002	61	"A" Choke	32-1644
21	Padder (Sec. 1st I. F. Trans.)		62	Pilot Lamp	34-2040
22	Resistor (1,000,000 ohms)	33-510337	63	On-Off Switch	85-0009
23	Condenser (.05 mfd.)	30-4560	64	Resistor (25,000 ohms)	33-325437
24	Resistor (900 ohms)	33-190438	65	Padder & Bracket Assembly	77-0017
25	Second I. F. Transformer	65-0003	66	Push Button Switch	77-0024
26	Resistor (330,000 ohms)	33-433337	67	Push Button Switch	77-0024
27	Condenser (.01 mfd.)	30-4479	68	Motor	83-0001
28	Volume Control (1,000,000 ohms)	67-0002	69	Resistor (25,000 ohms)	33-325337
29	Resistor (6,000 ohms)	33-260337	70	Resistor (600 ohms)	33-160438
30	Condenser (250 mmfd.)	30-1032	71	Motor & Relay Assembly	77-0178
31	Resistor (240,000 ohms)	33-424337	72	Switch Mechanism Assembly	77-0034
32	Condenser (6,000 mmfd.)	30-4504	73	Tuning Condenser	63-0003
33	Condenser (.01 mfd.)	30-4501	74	Silver Cap Condenser (390 mmfd.)	61-0031
34	Resistor (490,000 ohms)	33-449337	75	Oscillator Transformer (300 mmfd.)	65-0007
35	Resistor (450 ohms)	33-145438	76	Silver Cap Condenser (300 mmfd.)	61-0003
36	Condenser (6,000 mmfd.)	30-4024	77	Thermal Compensating Condenser	61-0011
37	Output Transformer	65-0024	78	Antenna Padders	77-0017
38	Resistor (1,500 ohms)	33-215337	79	Oscillator Transformer (Low Freq.)	65-0006
39	Condenser (250 mmfd.)	30-1032	80	Oscillator Transformer (Medium Freq.)	65-0005
40	Choke	32-1374			
41	Tone Control Switch	77-0026			



No.	Description	Part No.	No.	Description	Part No.
81	Condenser (50 mmfd.)	30-1101	77	Return to Dial Switch	77-0025
82	Low Frequency Padder	31-6230	78	Tone Control Switch	77-0026
83	First Padder on Tun. Cond.		79	On-Off Switch	85-0009
84	Second Padder on Tun. Cond.		80	Tuning & Volume Knob	27-4687
85	Interference Condenser	30-4007	81	Knob Base	28-4184
86	Interference Condenser	30-4475	82	"T" Bolt (Rec. Mtg.)	28-6268
87	Distributor Resistor	33-1196	83	Nuts (Rec. Mtg.)	W518
88	Push Buttons	85-0027	84	Call Letter Kit	81-0018

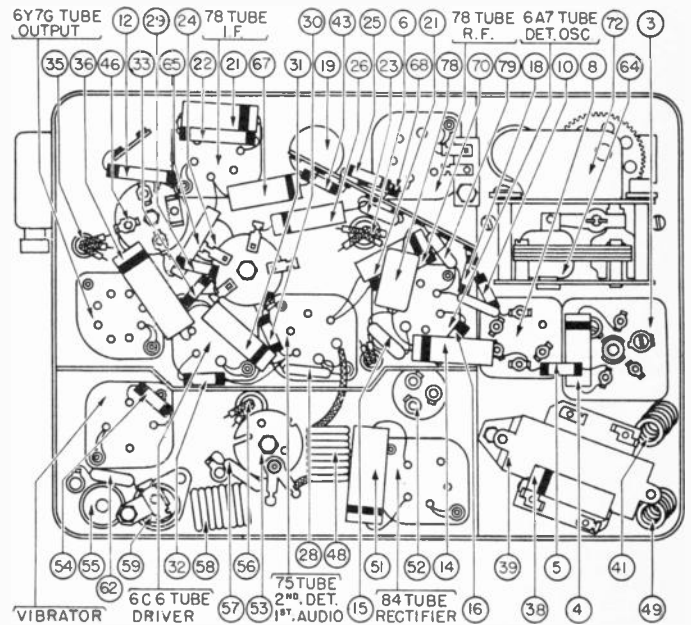
MODEL P-1635



Aligning Procedure will be found on page 173.

PARTS LIST

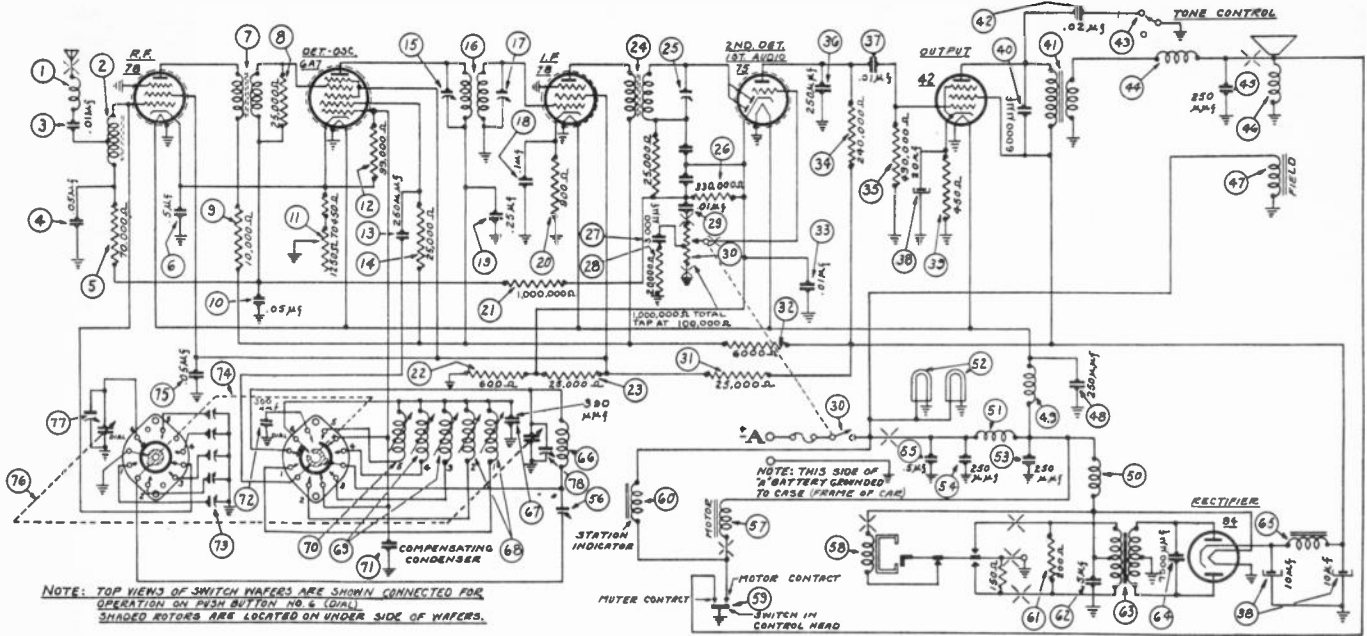
No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-1956	29	Cone and Voice Coil	91-0048
2	Condenser (.01 mfd.)	61-0014	30	Resistor (1,500 ohms)	33-215337
3	Antenna Transformer	65-0008	31	Field Coil	Not Replaceable
4	Condenser (.05 mfd.)	30-4569	32	Accessory Speaker	73-0019
5	Resistor (10,000 ohms)	33-370337	33	"B" Choke	32-1281
6	Condenser (1.250 ohms)	61-0019	34	Condenser (250 mmfd.)	30-1032
7	Tuning Condenser	63-0003	35	Filament Choke	32-1604
8	R. F. Transformer	65-0009	36	Choke	32-2657
9	Resistor (40,000 ohms)	33-339137	37	Filter Choke	32-7811
10	Resistor (10,000 ohms)	33-310337	38	Condenser (7,500 mmfd.)	30-4567
11	Local-Distant Switch	42-1429	39	Filter Condenser	61-0012
12	Resistor (300 ohms)	33-160438	40	Vibrator (Choke)	32-2537
13	Sensitivity Control	(1,250 ohms)	41	Resistor (200 ohms)	32-120337
14	Condenser (.05 mfd.)	33-5248-4	42	Condenser (.5 mfd.)	30-4474
15	Condenser (.05 mfd.)	30-4444	43	Power Transformer	32-7720
16	Condenser (250 mmfd.)	30-1032	44	Condenser (250 mmfd.)	30-1032
17	Resistor (240,000 ohms)	33-42433	45	"A" Choke	32-1644
18	Padder (Pri. 1st I. F. Trans.)	33-325337	46	Condenser (.5 mfd.)	30-4474
19	Resistor (25,000 ohms)	33-325337	47	Pilot Lamp	34-2064
20	First I. F. Transformer	65-0002	48	On-Off Switch	42-1374
21	Padder (Sec. 1st I. F. Trans.)	30-4569	49	Condenser (250 mmfd.)	30-1032
22	Resistor (.05 mfd.)	30-4569	50	Vibrator	41-3170
23	Resistor (900 ohms)	33-190438	51	Motor	83-0001
24	Resistor (1,000,000 ohms)	33-510337	52	Resistor (25,000 ohms)	33-325437
25	Second I. F. Transformer	65-0003	53	Push Button Switch	85-0017
26	Padder (Sec. 2nd I. F. Trans.)	33-419337	54	Condenser (.05 mfd.)	30-4444
27	Resistor (190,000 ohms)	33-319337	55	Resistor (25,000 ohms)	33-325337
28	Condenser (.01 mfd.)	30-4479	56	Rotary Switch Assembly	77-0174
29	Volume Control	(350,000 ohms)	57	Resistor (600 ohms)	33-160438
30	Condenser (250 mmfd.)	67-0005	58	Silver Cap Condenser	(390 mmfd.)
31	Resistor (25,000 ohms)	33-325337	59	Motor and Relay Assembly	77-0178
32	Resistor (51,000 ohms)	33-351337	60	Oscillator Transformer	(Low Freq.)
33	Condenser (.01 mfd.)	30-4501	61	Oscillator Transformer	(Med. Freq.)
34	Resistor (800,000 ohms)	33-460337	62	Oscillator Transformer	(High Freq.)
35	Resistor (490,000 ohms)	33-449337	63	Silver Cap Condenser	(300 mmfd.)
36	Resistor (1,000 ohms)	33-210337	64	Oscillator Transformer	(65-0007)
37	Input Transformer	32-7720	65	Thermal Comp. Condenser	61-0011
38	Condenser (.05 mfd.)	30-4012	66	Condenser (50 mmfd.)	30-1101
39	Tone Control Switch	42-1430	67	Low Frequency Padder	31-6230
40	Condenser (4,000 mmfd.)	30-4185	68	Condenser (50 mmfd.)	80-1101
41	Output Transformer	32-7778			
42	Condenser (250 mmfd.)	30-1032			
43	Choke	32-1004			



No.	Description	Part No.	No.	Description	Part No.
70	Resistor (150 ohms)	33-115337	71	Tuning and Volume Knob	27-4687
71	Condenser (.01 mfd.)	30-4479	72	Return to Dial Switch	Part of 28
72	First Padder (on Tun. Cond.)	33-449337	73	Switch Knob	28-7255
73	Second Padder (on Tun. Cond.)	33-449337	74	Call Letter Kit	81-0024
74	Resistor (25,000 ohms)	33-325337	75	"T" Bolt (Set Mtg.)	28-6161
75	Antenna Padder Assembly	77-0017	76	Nut (Set Mtg.)	W518
76	Interference Condenser	30-4007	77	Stud (Speaker Mtg.)	28-6088
77	Interference Condenser	30-4475	78	Nut (Speaker Mtg.)	W55
78	Distributor Suppressor	32-2250	79	Dial Face Glass	55-0014
79	Push Button	55-0021	80	Pointer	57-0238
80	Return to Manual Button	55-0096			

MODEL F-1640

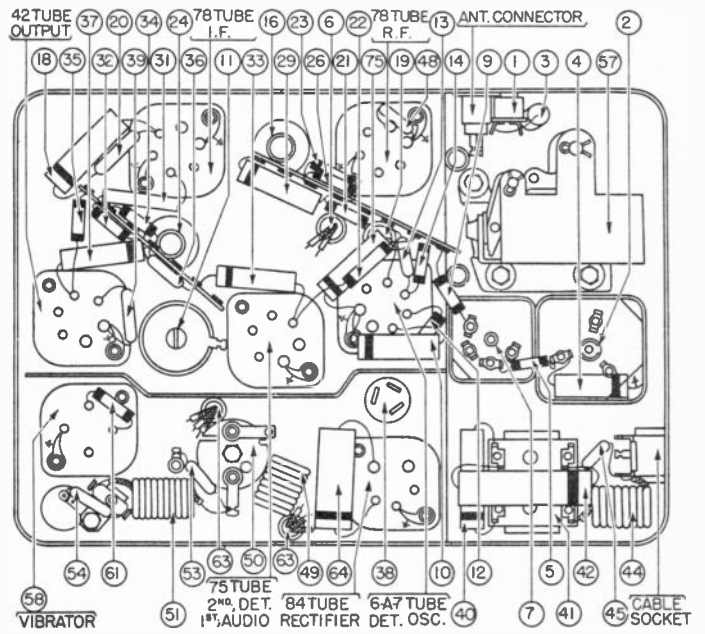
MODEL F-1640 SCHEMATIC I.F.=470KC



Aligning Procedure will be found on page 174.

PARTS LIST

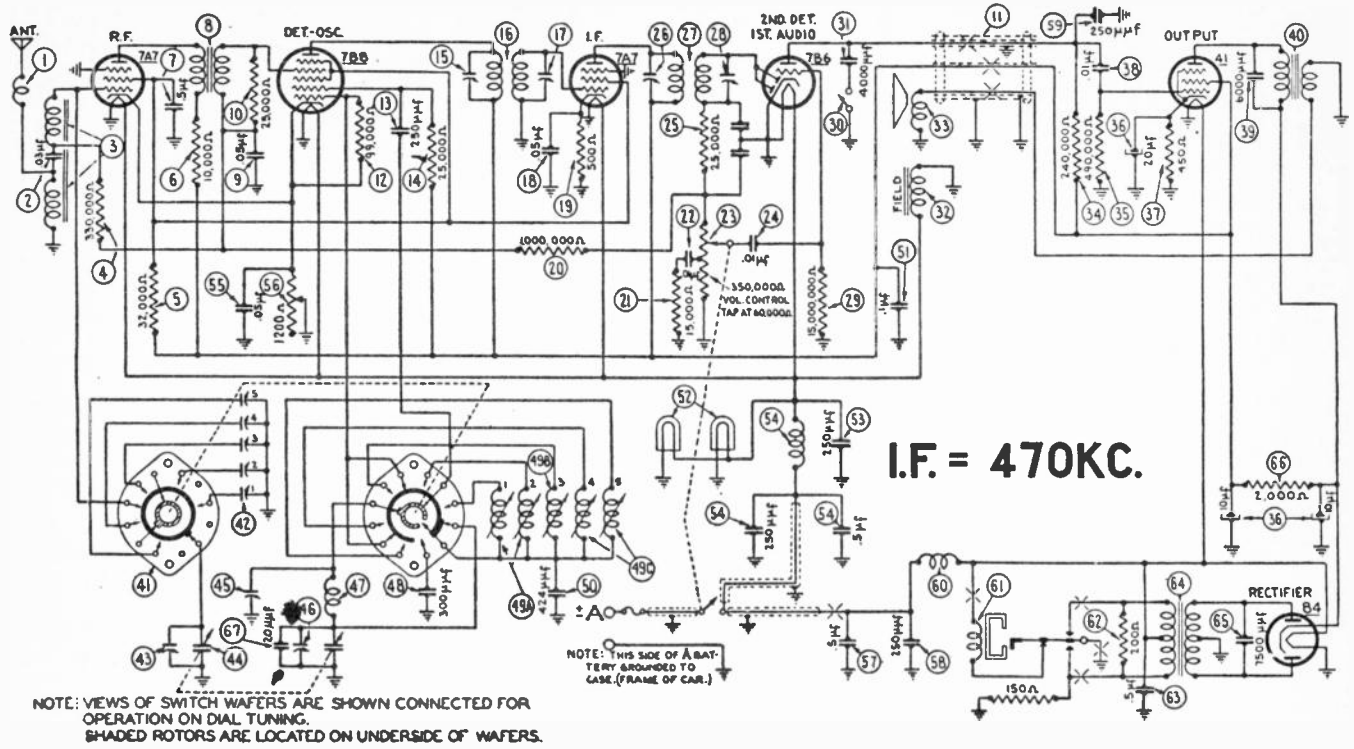
No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	32-1956	49	Condenser (.02 mfd.)	30-4495
2	Antenna Transformer	65-0079	50	Tone Control Switch	42-1406
3	Condenser (.01 mfd.)	61-0014	51	Choke	32-1561
4	Condenser (.05 mfd.)	30-4569	52	Condenser (250 mmfd.)	30-1032
5	Resistor (70,000 ohms)	33-370337	53	Cone & Voice Coil	91-0042
6	Condenser (.5 mfd.)	61-0035	54	Field Coil	Not Replaceable
7	R. F. Transformer	65-0083	55	Condenser (250 mmfd.)	30-1032
8	Resistor (25,000 ohms)	33-325337	56	Filament Choke	32-1604
9	Resistor (10,000 ohms)	33-310337	57	Vibrator Choke	32-2537
10	Condenser (.05 mfd.)	30-4444	58	"A" Choke	32-2477
11	Sensitivity Control	33-52644	59	Pilot Lamp	34-2040
12	Resistor (99,000 ohms)	33-399337	60	Condenser (250 mmfd.)	61-0033
13	Condenser (250 mmfd.)	61-0034	61	Condenser (250 mmfd.)	61-0033
14	Resistor (25,000 ohms)	33-325437	62	Condenser (.5 mfd.)	30-4474
15	Padder (Pri. 1st I. F. Trans.)	65-0002	63	Low Frequency Padder	63-0017
16	First I. F. Transformer	65-0002	64	Impulse Motor	77-0148
17	Padder (Sec. 1st I. F. Trans.)	65-0002	65	Vibrator	41-3398
18	Condenser (.1 mfd.)	30-4122	66	Automatic Control Switch	77-0171
19	Resistor (2.5 mfd.)	61-0036	67	Control Mechanism Coil	
20	Resistor (900 ohms)	33-190438	68	Resistor (200 ohms)	33-120347
21	Resistor (1,000,000 ohms)	33-510437	69	Condenser (.5 mfd.)	30-4565
22	Resistor (600 ohms)	33-160438	70	Power Transformer	65-0016
23	Resistor (25,000 ohms)	33-320337	71	Condenser (7,500 mmfd.)	30-4567
24	Second I. F. Transformer	65-0003	72	Filter Choke	65-0022
25	Padder (Sec. 2nd I. F. Trans.)	65-0003	73	Oscillator Transformer	65-0052
26	Resistor (330,000 ohms)	33-433337	74	Silver Cap Condenser	
27	Resistor (3,000 ohms)	30-4469	75	Oscillator Transformer	
28	Resistor (20,000 ohms)	33-320337	76	Oscillator Transformer	
29	Condenser (.1 mfd.)	30-4479	77	Oscillator Transformer	
30	Volume Control (1,000,000 ohms) & On-Off Switch	67-0008	78	Oscillator Transformer	
31	Resistor (25,000 ohms)	33-325437	79	Oscillator Transformer	
32	Resistor (6,000 ohms)	33-260337	80	Oscillator Transformer	
33	Condenser (.01 mfd.)	30-4479	81	Thermol Coupling Condenser	61-0011
34	Resistor (240,000 ohms)	33-424337	82	Silver Cap Condenser	
35	Resistor (490,000 ohms)	33-449347	83	Antenna Padder Assy.	61-0003
36	Condenser (250 mmfd.)	30-1032	84	Wafer Switch Assy.	77-0185
37	Condenser (.01 mfd.)	30-4501	85	Condenser (.05 mfd.)	30-4569
38	Filter Condenser (10-10-20 mfd.)	61-0028	86	Tuning Condenser	63-0015
39	Resistor (150 ohms)	33-145437	87	First Padder (on Tun. Cond.)	
40	Condenser (6,000 mmfd.)	30-4024	88	Second Padder (on Tun. Cond.)	
41	Output Transformer	65-0077	89	Call Letter Kit	81-0091



No.	Description	Part No.	No.	Description	Part No.
57	Flexible Shaft	57-0425	90	"Tee" Bolt (Rec. Mtg.)	28-6161
85	Dial Assembly	85-0052	91	Nut (Rec. Mtg.)	W518
55	Push Button Knob	55-0196	92	Hook Bolt (Control Mtg.)	97-0043
55	Tuning Control Knob	55-0234	93	Nut (Control Mtg.)	97-0048
55	Volume Control Knob	55-0235	94	Antenna Lead	95-0063

The letter "P" is stamped on the left end of the housing near the top cover on all Ford Philco Model F-1640 Radios.

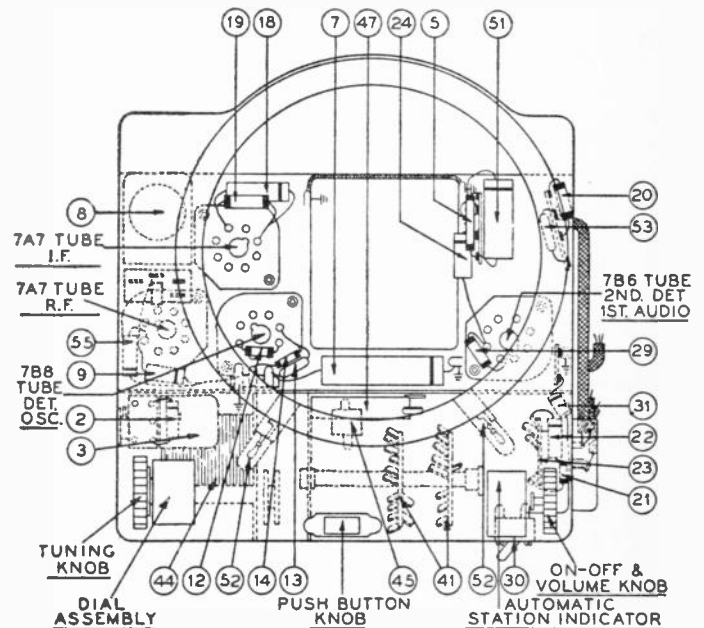
MODEL F-1641



Aligning Procedure will be found on page 174.

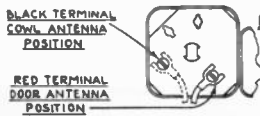
PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0197	41	Condenser (.01 mfd.)	30-4501
2	Condenser (.03 mfd.)	61-0084	42	Condenser (8,000 mmfd.)	61-0052
3	Antenna Transformer	65-0190	43	Output Transformer	65-0180
4	Resistor (330,000 ohms)	33-433237	44	Wafer Switch Assembly	77-0363
5	Resistor (32,000 ohms)	33-332437	45	Antenna Padder Assembly	77-0292
6	Resistor (10,000 ohms)	33-310237	46	First Padder (on Tun. Cond.)	63-0026
7	Condenser (.5 mfd.)	30-4585	47	Tuning Condenser	63-0026
8	R. F. Transformer	65-0189	48	Low Frequency Padder	63-0031
9	Condenser (.05 mfd.)	30-4444	49	Second Padder (on Tun. Cond.)	63-0031
10	Resistor (25,000 ohms)	33-325244	50	Oscillator Transformer (Dial)	65-0007
11	Power Cable	95-0091	51	Silver Mica Condenser (300 mmfd.)	61-0003
12	Resistor (99,000 ohms)	33-399237	52	Oscillator Transformer (1-2)	65-0198
13	Condenser (250 mmfd.)	61-0034	53	Oscillator Transformer (3)	65-0199
14	Resistor (25,000 ohms)	33-325347	54	Oscillator Transformer (4-5)	65-0200
15	Padder (Pri. 1st I. F. Trans.)	33-325347	55	Silver Mica Condenser (424 mmfd.)	61-0067
16	First I. F. Transformer	65-0177	56	Condenser (.1 mfd.)	30-4455
17	Padder (Sec. 1st I. F. Trans.)	30-4569	57	Pilot Lamp	34-2040
18	Condenser (.05 mfd.)	30-4569	58	Condenser (250 mmfd.)	61-0033
19	Resistor (500 ohms)	33-150438	59	"A" Filter Assembly	77-0333
20	Resistor (1,000,000 ohms)	33-510237	60	Condenser (.05 mfd.)	30-4569
21	Resistor (15,000 ohms)	33-315237	61	Sensitivity Control	33-5248
22	Condenser (.01 mfd.)	30-4479	62	Condenser (.5 mfd.)	30-4585
23	Volume Control (350,000 ohms) and on-off switch	67-0018	63	Condenser (250 mmfd.)	61-0033
24	Condenser (.01 mfd.)	30-4479	64	Condenser (250 mmfd.)	61-0033
25	Resistor (25,000 ohms)	33-325344	65	Vibrator Choke	65-0204
26	Padder (Pri. 2nd I. F. Trans.)	65-0178	66	Vibrator	41-3398
27	Second I. F. Transformer	65-0178	67	Resistor (200 ohms)	33-120337
28	Padder (Sec. 2nd I. F. Trans.)	33-615247	68	Condenser (.5 mfd.)	30-4565
29	Resistor (15,000,000 ohms)	33-615247	69	Power Transformer	65-0179
30	Tone Control Switch	85-0093	70	Condenser (7500 mmfd.)	30-4567
31	Condenser (4,000 mmfd.)	30-4456	71	Resistor (2,000 ohms)	33-220537
32	Field Coil	Not Replacable	72	Condenser (20 mmfd.)	30-1038
33	Cone Kit	91-0070	73	Loktal Socket	55-0575
34	Resistor (240,000 ohms)	33-424337	74	Socket	55-0431
35	Resistor (490,000 ohms)	33-449247	75	Drive Cord	55-0428
36	Filter Condenser (10-10-20 mfd.)	61-0028	76	Tuning and Volume Knob	55-0426
37	Resistor (450 ohms)	33-145438	77	Push Button Knob	55-0196
38			78	Dial Assembly (Manual)	85-0091



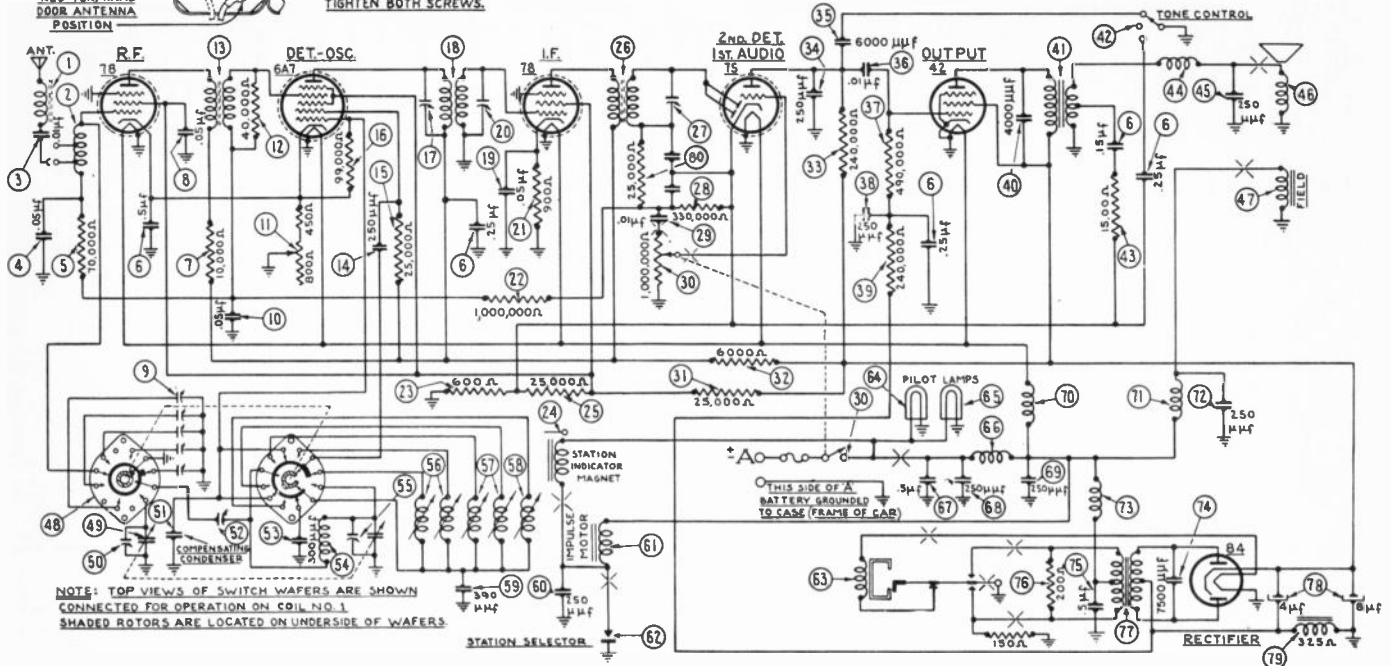
No.	Description	Part No.	No.	Description	Part No.
79	Station Indicator (Automatic)	77-0362	80	Manual Bezel	57-0772
80	Indicator Bezel	57-0773	81	Push Button Bezel	57-0373

MODEL L-1660



NOTE: IF COWL ANTENNA IS USED REMOVE THE LEAD FROM THE RED TERMINAL AND PLACE IT UNDER THE BLACK TERMINAL. TIGHTEN BOTH SCREWS.

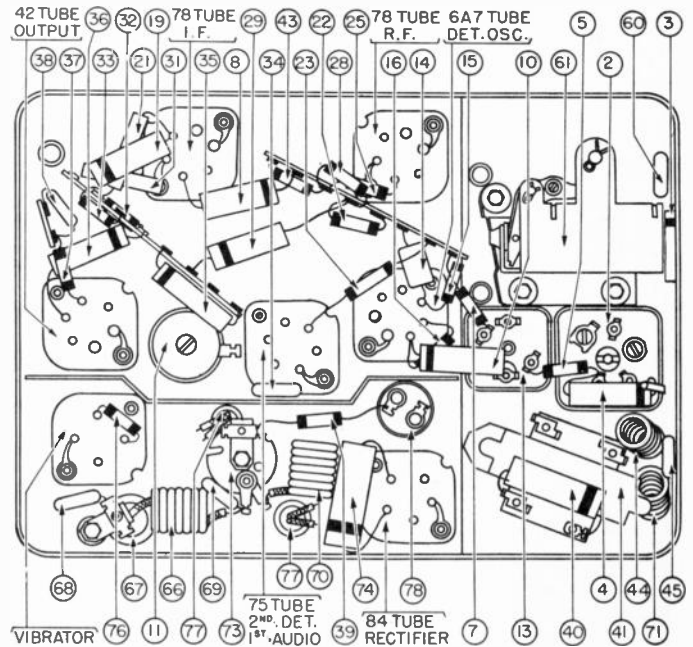
I.F. = 470KC.



Aligning Procedure will be found on page 175.

PARTS LIST

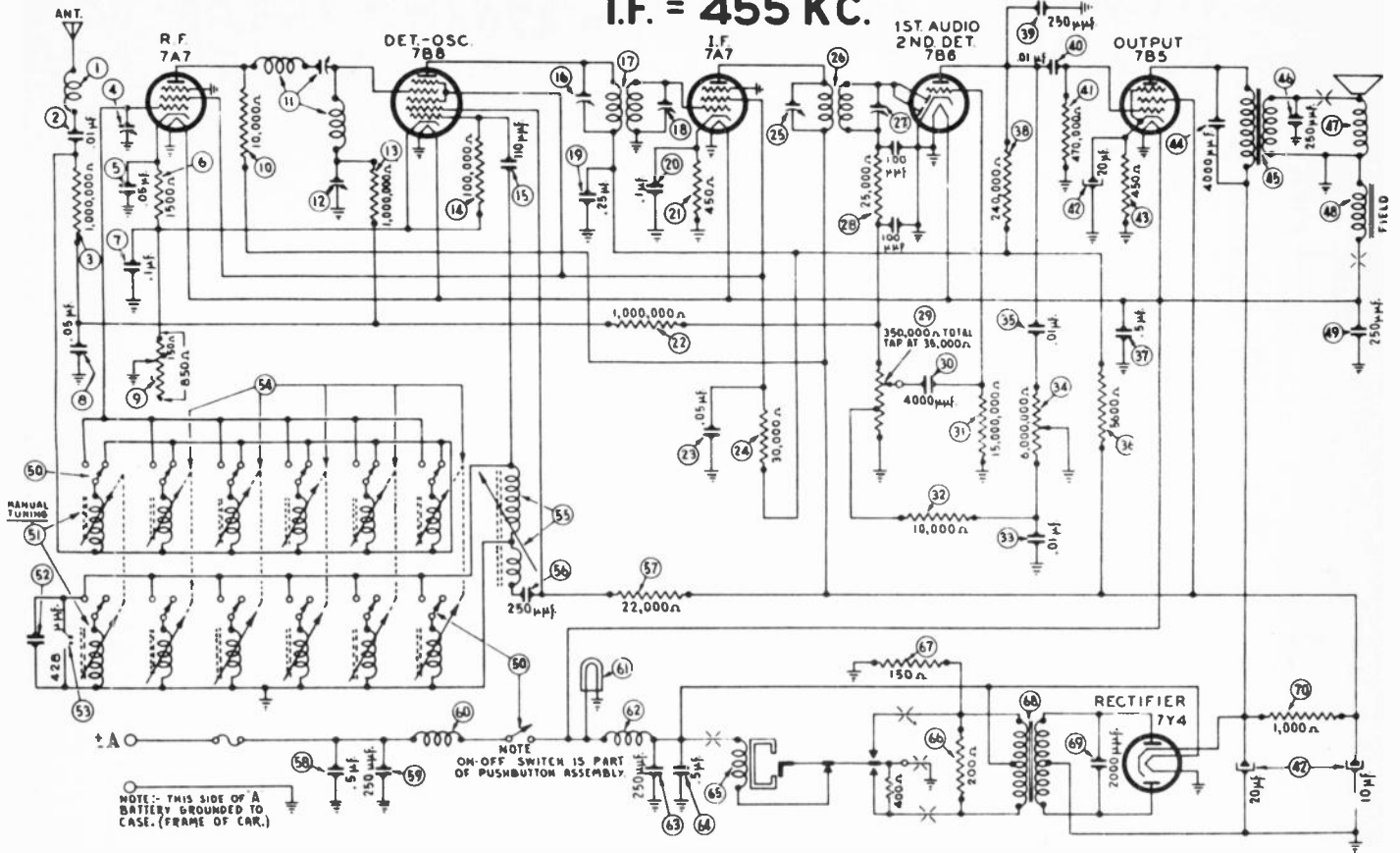
No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0062	31	Resistor (1,500 ohms)	33-215337
2	Antenna Transformer	65-0063	32	Choke	32-1374
3	Condenser (.01 mfd.)	61-0014	33	Condenser (250 mmfd.)	30-1032
4	Condenser (.05 mfd.)	30-4569	34	Cone and Voice Coil Kit	91-0053
5	Resistor (70,000 ohms)	33-370337	35	Field Coil	Not Replaceable
6	Condenser (.15-.25-.25-.5 mfd.)	61-0024	36	Wafer Switch	77-0203
7	Resistor (10,000 ohms)	33-310337	37	Tuning Condenser	63-0012
8	Condenser (.05 mfd.)	30-4444	38	First Padder (on Tun. Cond.)	77-0203
9	Antenna Padder Assembly	77-0035	39	Thermal Compensating Cond.	61-0011
10	Condenser (.05 mfd.)	30-4444	40	Low Frequency Padder	63-0017
11	Sensitivity Control	33-5264-1	41	Silver Cap Condenser (300 mmfd.)	61-0003
12	Resistor (40,000 ohms)	33-339137	42	Oscillator Transformer	65-0032
13	R. F. Transformer	65-0009	43	Second Padder (on Tun. Cond.)	77-0203
14	Condenser (250 mmfd.)	30-1038	44	Oscillator Trans. (High Freq.)	65-0049
15	Resistor (25,000 ohms)	33-325337	45	Oscillator Trans. (Med. Freq.)	65-0050
16	Resistor (99,000 ohms)	33-399337	46	Oscillator Trans. (Low Freq.)	65-0051
17	Padder (Pri. 1st I. F. Trans.)	77-0203	47	Silver Cap Condenser (390 mmfd.)	61-0031
18	First I. F. Transformer	65-0002	48	Condenser (250 mmfd.)	30-1032
19	Condenser (.05 mfd.)	30-4569	49	Impulse Motor	77-0120
20	Padder (Sec. 1st I. F. Trans.)	77-0203	50	Station Indicator Switch	85-0041
21	Resistor (900 ohms)	33-190438	51	Vibrator	41-3170
22	Resistor (1,000,000 ohms)	33-510337	52	Pilot Lamp	34-2039
23	Resistor (600 ohms)	33-160438	53	Second I. F. Transformer	65-0003
24	Solenoid	77-0120	54	Padder (Sec. 2nd I. F. Trans.)	77-0203
25	Resistor (25,000 ohms)	33-325337	55	Condenser (330,000 ohms)	33-433337
26	Second I. F. Transformer	65-0003	56	Condenser (.01 mfd.)	30-4479
27	Padder (Sec. 2nd I. F. Trans.)	77-0203	57	Volume Control (1,000,000 ohms) and On-Off Switch	67-0009
28	Condenser (330,000 ohms)	33-433337	58	Resistor (25,000 ohms)	33-325437
29	Condenser (.01 mfd.)	30-4479	59	Resistor (6,000 ohms)	33-260337
30	Volume Control (1,000,000 ohms) and On-Off Switch	67-0009	60	Resistor (240,000 ohms)	33-424337
31	Resistor (25,000 ohms)	33-325437	61	Condenser (250 mmfd.)	30-1032
32	Resistor (6,000 ohms)	33-260337	62	Condenser (6,000 mmfd.)	30-4504
33	Resistor (240,000 ohms)	33-424337	63	Condenser (.01 mfd.)	30-4501
34	Condenser (250 mmfd.)	30-1032	64	Resistor (490,000 ohms)	33-449337
35	Vibrator Choke	32-2812	65	Condenser (250 mmfd.)	30-1032
36	Choke	32-2657	66	Resistor (240,000 ohms)	33-424337
37	Condenser (250 mmfd.)	30-1032	67	Condenser (4,000 mmfd.)	30-4185
38	Vibrator Choke	32-2812	68	Output Transformer	65-0024
39	Condenser (7,500 mmfd.)	30-4567	69	Tone Control Switch	85-0042
40	Condenser (.5 mfd.)	30-4565			
41	Resistor (200 ohms)	33-120337			
42	Power Transformer	65-0016			
43	Filter Condenser (4-8 mfd.)	30-2295			
44	Filter Choke	32-7910			
45	Resistor (25,000 ohms)	33-325337			
46	Scale Assembly	85-0040			
47	Tuning Control Knob	55-0179			



No.	Description	Part No.	No.	Description	Part No.
55-0180	Volume Control Knob	55-0180	30-4663	Interference Condenser	30-4663
55-0184	Push Button Knob	55-0184	28-6641	"T" Bolt (Rec. Mtg.)	28-6641
57-0491	Tuning Shaft	57-0491	57-0489	Nut (Rec. Mtg.)	57-0489
81-0066	Call Letter Kit	81-0066	W1721	Bolt (Spker. Mtg.)	W1721
30-4564	Interference Condenser	30-4564	W317	Nut (Spker. Mtg.)	W317
30-4181	Interference Condenser	30-4181		Automatic Station Selector	
30-4404	Interference Condenser	30-4404	55-0197	Drum	55-0197
30-4307	Interference Condenser	30-4307			

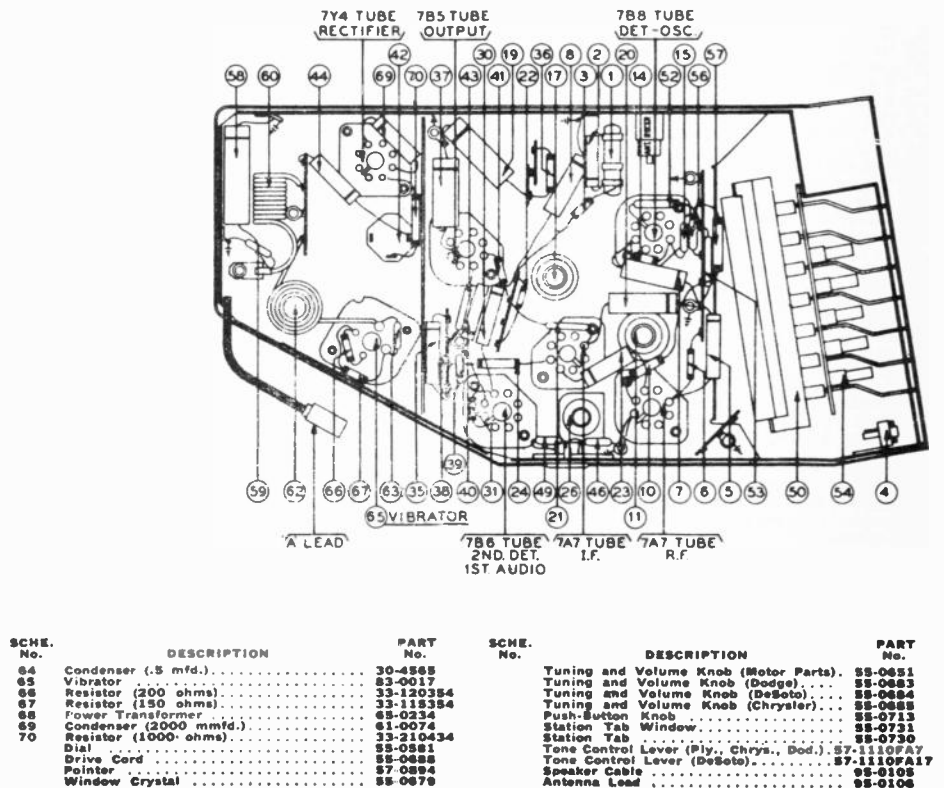
MODEL C-1708

I.F. = 455 KC.

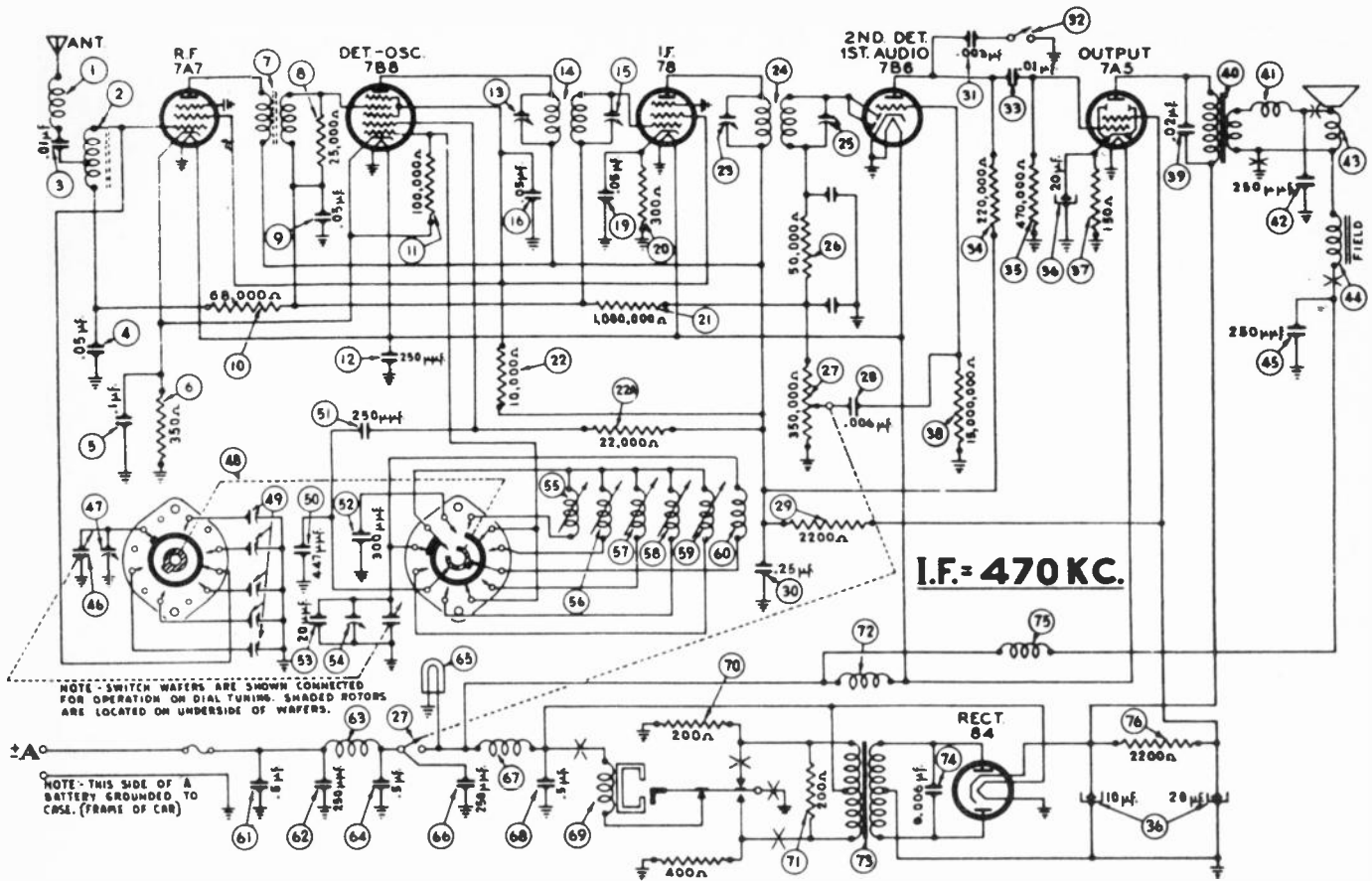


Aligning Procedure will be found on page 176.

SCHE. No.	DESCRIPTION	PART No.
1	Antenna Choke	65-0202
2	Condenser (.01 mfd.)	61-0014
3	Resistor (1,000,000 ohms)	33-510154
4	Antenna Padder	63-0035
5	Condenser (.05 mfd.)	30-4444
6	Resistor (1500 ohms)	33-215334
7	Condenser (.1 mfd.)	30-4499
8	Condenser (.05 mfd.)	30-4444
9	Sensitivity Control (1000 ohms)	67-0025
10	Resistor (10,000 ohms)	33-310454
11	Untuned R. F. Assembly	65-0271
12	I. F. Wave Trap Padder	
13	Resistor (1,000,000 ohms)	33-510154
14	Resistor (100,000 ohms)	33-410154
15	Condenser (.10 mfd.)	30-1031
16	Padder (Pri. 1st I. F. Trans.)	
17	First I. F. Transformer	65-0236
18	Padder (Sec. 1st I. F. Trans.)	
19	Condenser (.25 mfd.)	30-4604
20	Condenser (.1 mfd.)	30-4499
21	Resistor (450 ohms)	33-145438
22	Resistor (1,000,000 ohms)	33-510154
23	Condenser (.05 mfd.)	30-4444
24	Resistor (30,000 ohms)	33-330434
25	Padder (Pri. 2nd I. F. Trans.)	
26	Second I. F. Transformer	65-0237
27	Padder (Sec. 2nd I. F. Trans.)	
28	Resistor (25,000 ohms)	33-325154
29	Volume Control (380,000 ohms)	67-0022
30	Condenser (4000 mmfd.)	30-4334
31	Resistor (15,000,000 ohms)	61-001514
32	Resistor (10,000 ohms)	33-310134
33	Condenser (.01 mfd.)	30-4479
34	Tone Control (8,000,000 ohms)	30-0022
35	Condenser (.01 mfd.)	30-4479
36	Resistor (5000 ohms)	33-256334
37	Condenser (.5 mfd.)	61-0054
38	Resistor (240,000 ohms)	33-443434
39	Condenser (.250 mmfd.)	61-0033
40	Condenser (.01 mfd.)	30-4189
41	Resistor (470,000 ohms)	33-447154
42	Filter Condenser (10-20-20 mfd.)	61-0072
43	Resistor (450 ohms)	33-145438
44	Condenser (.000 mmfd.)	61-0073
45	Output Transformer	65-0235
46	Condenser (.250 mmfd.)	61-0033
47	Cone Kit (For 73-0030-2)	91-0086
48	Cone Kit (For 73-0030-3)	91-0085
49	Field Coil	Not Replaceable
50	Condenser (.250 mmfd.)	61-0033
51	Push-Button and On-Off Switch	65-0097
52	Inductive Tuning Unit	77-0440
53	Thermal Compensator	61-0080
54	Condenser (.428 mmfd.)	61-0082
55	Push-Button Switch and Trans. Assy.	77-0369
56	Oscillator Tracking Coil	65-0229
57	Condenser (.250 mmfd.)	61-0033
58	Resistor (22,000 ohms)	33-322454
59	Condenser (.5 mfd.)	30-4491
60	Condenser (.250 mmfd.)	61-0033
61	"A1" Choke	65-0248
62	Pilot Lamp	34-2039
63	Vibrator Choke	65-0222
64	Condenser (.250 mmfd.)	61-0033



MODEL S-1722



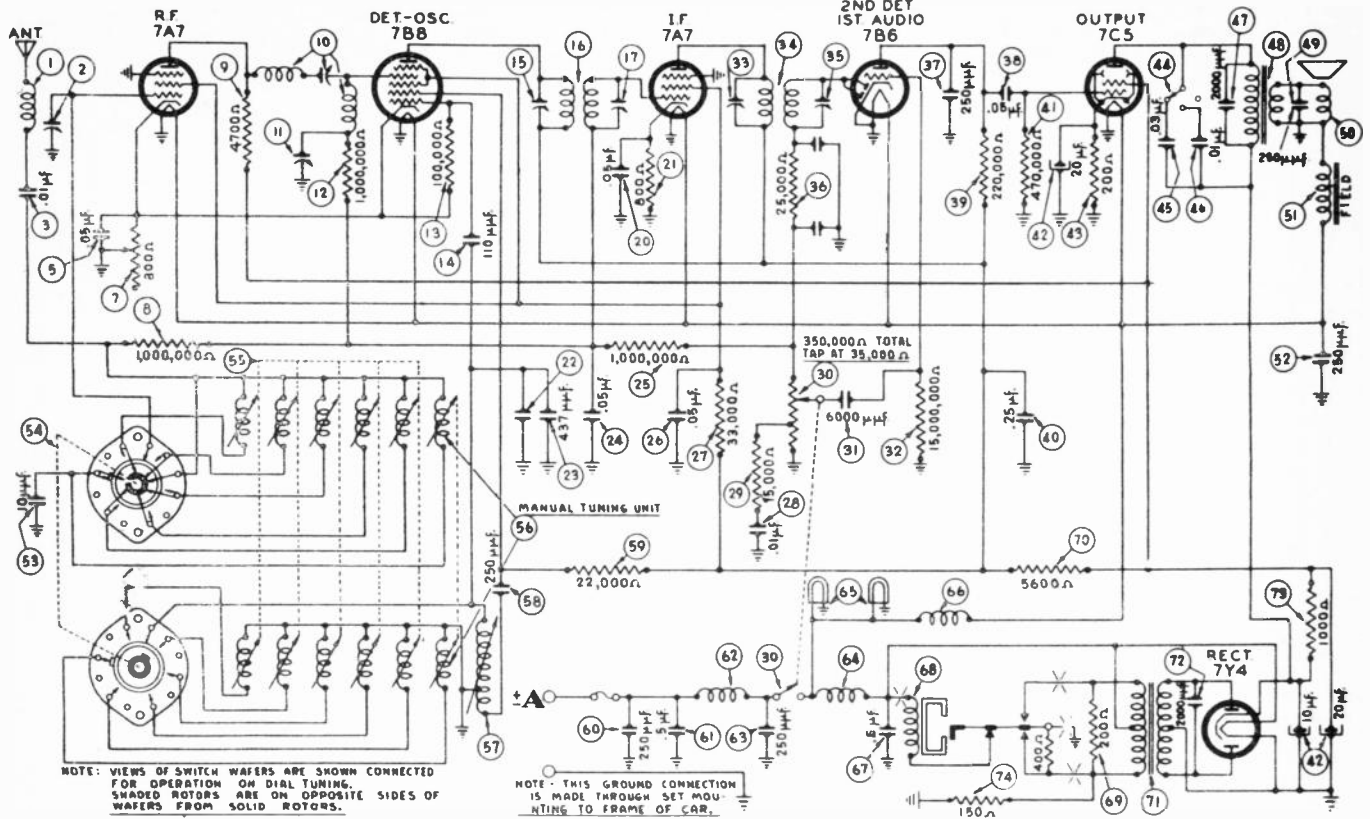
Aligning Procedure will be found on page 176.

PARTS LIST

No.	Description	Part No.	No.	Description	Part No.	No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0102	30	Resistor (15,000,000 ohms)	33-615154	74	Rectifier	61-0077	76	Resistor (2200 ohms)	33-222334
2	Antenna Transformer	65-0115	31	Condenser (.02 mfd.)	61-0077	75	Output Transformer	65-0221	77	Drive Cord	55-0413
3	Condenser (.01 mfd.)	61-0014	32	Output Transformer	65-0221	76	Choke	32-1561	78	Speaker	73-0022
4	Condenser (.05 mfd.)	30-4444	33	Choke	32-1561	77	Condenser (250 mmfd.)	61-0033	79	Call Letter Kit	81-0143
5	Condenser (.1 mfd.)	30-4499	34	Condenser (250 mmfd.)	61-0033	78	Cone and Voice Coil	91-0065	80	Push-Button	55-0412
6	Resistor (350 ohms)	33-135334	35	Field Coil	Not Replaceable	79	Field Coil	Not Replaceable	81	Push-Button	55-0482
7	R. F. Transformer	65-0114	36	Condenser (250 mmfd.)	61-0033	80	Tuning Condenser	63-0023	82	Tuning and Volume Knob	55-0486
8	Resistor (25,000 ohms)	33-325334	37	First Padder (On Tun. Cond.)	61-0033	81	Wafer Switch	412-1023	83	Tuning and Volume Knob	27-4689
9	Condenser (.05 mfd.)	33-410354	38	Wafer Switch	412-1023	82	Antenna Padder Assembly	77-0262	84	Knob Base	28-4184FA8
10	Resistor (68,000 ohms)	33-368354	39	Antenna Padder Assembly	77-0262	83	Sil. Mica Cond. (447 mmfd.)	61-0047	85	Fuel Gauge Resistor	77-0335
11	Resistor (100,000 ohms)	33-410354	40	Sil. Mica Cond. (447 mmfd.)	61-0047	84	Condenser (250 mmfd.)	30-1038	86	Dial Assembly (Manual)	77-0352
12	Condenser (250 mmfd.)	61-0033	41	Condenser (250 mmfd.)	30-1038	85	Padder (Pri. 1st I. F. Trans.)	65-0148	87	Dial Assembly (Automatic)	318-1374
13	Padder (Pri. 1st I. F. Trans.)	65-0148	42	Padder (Sec. 1st I. F. Trans.)	30-4444	86	Condenser (.05 mfd.)	30-4444	88	Radio Mounting Bracket	57-0667FA3
14	First I. F. Transformer	65-0148	43	Condenser (.05 mfd.)	30-4444	87	Resistor (300 ohms)	33-130334	89	Radio Mounting Bracket	57-0670
15	Padder (Sec. 1st I. F. Trans.)	30-4444	44	Resistor (1,000,000 ohms)	33-510154	88	Resistor (1,000,000 ohms)	33-510154	90	Mounting Spacer	57-0729
16	Condenser (.05 mfd.)	30-4444	45	Resistor (10,000 ohms)	33-310334	89	Resistor (10,000 ohms)	33-310334	91	Bezel	57-0670
17	Resistor (300 ohms)	33-130334	46	Resistor (22,000 ohms)	33-322334	90	Padder (Pri. 2nd I. F. Trans.)	61-0033	92	Bezel Gasket and Grille Silk	77-0285
18	Resistor (1,000,000 ohms)	33-510154	47	Padder (Pri. 2nd I. F. Trans.)	61-0033	91	Second I. F. Transformer	65-0214	93	Mounting Spacer	57-0729
19	Resistor (10,000 ohms)	33-310334	48	Second I. F. Transformer	65-0214	92	Padder (Sec. 2nd I. F. Trans.)	30-4444	94	Bezel Gasket and Grille Silk	77-0285
20	Resistor (22,000 ohms)	33-322334	49	Padder (Sec. 2nd I. F. Trans.)	30-4444	93	Resistor (50,000 ohms)	33-350134	95	Steering Col. Ground Strap	77-0336
21	Padder (Sec. 2nd I. F. Trans.)	30-4444	50	Resistor (50,000 ohms)	33-350134	94	Volume Control (350,000 ohms) and On-Off Switch	67-0027			
22	Volume Control (350,000 ohms) and On-Off Switch	67-0027	51	Condenser (6000 mmfd.)	30-4467	95	Condenser (6000 mmfd.)	30-4467			
23	Condenser (6000 mmfd.)	30-4467	52	Resistor (2200 ohms)	33-222334	96	Resistor (2200 ohms)	33-222334			
24	Resistor (2200 ohms)	33-222334	53	Condenser (.25 mfd.)	30-4444	97	Condenser (.25 mfd.)	30-4444			
25	Condenser (.25 mfd.)	30-4444	54	Condenser (3000 mmfd.)	61-0078	98	Condenser (3000 mmfd.)	61-0078			
26	Condenser (3000 mmfd.)	61-0078	55	Tone Control Switch	42-1406	99	Tone Control Switch	42-1406			
27	Tone Control Switch	42-1406	56	Condenser (.01 mfd.)	30-4169	100	Condenser (.01 mfd.)	30-4169			
28	Condenser (.01 mfd.)	30-4169	57	Resistor (220,000 ohms)	33-422334	101	Resistor (220,000 ohms)	33-422334			
29	Resistor (220,000 ohms)	33-422334	58	Resistor (470,000 ohms)	33-447154	102	Resistor (470,000 ohms)	33-447154			
30	Resistor (470,000 ohms)	33-447154	59	Filter Cond. (10-20-20 mfd.)	61-0076	103	Filter Cond. (10-20-20 mfd.)	61-0076			
31	Filter Cond. (10-20-20 mfd.)	61-0076	60	Resistor (150 ohms)	33-115334	104	Resistor (150 ohms)	33-115334			
32	Resistor (150 ohms)	33-115334	61			105					

MODEL S-1726

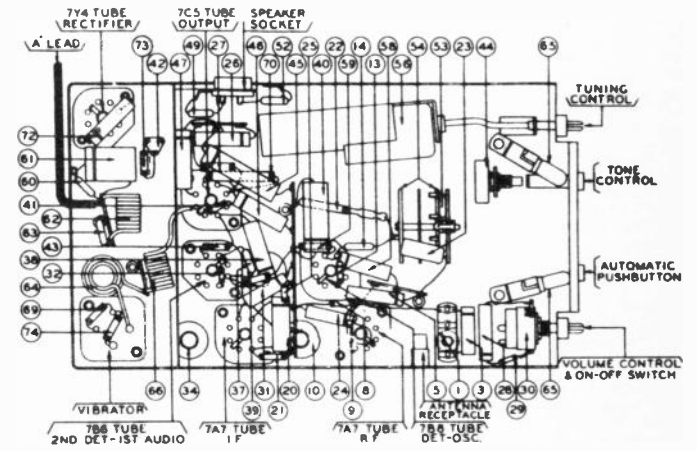
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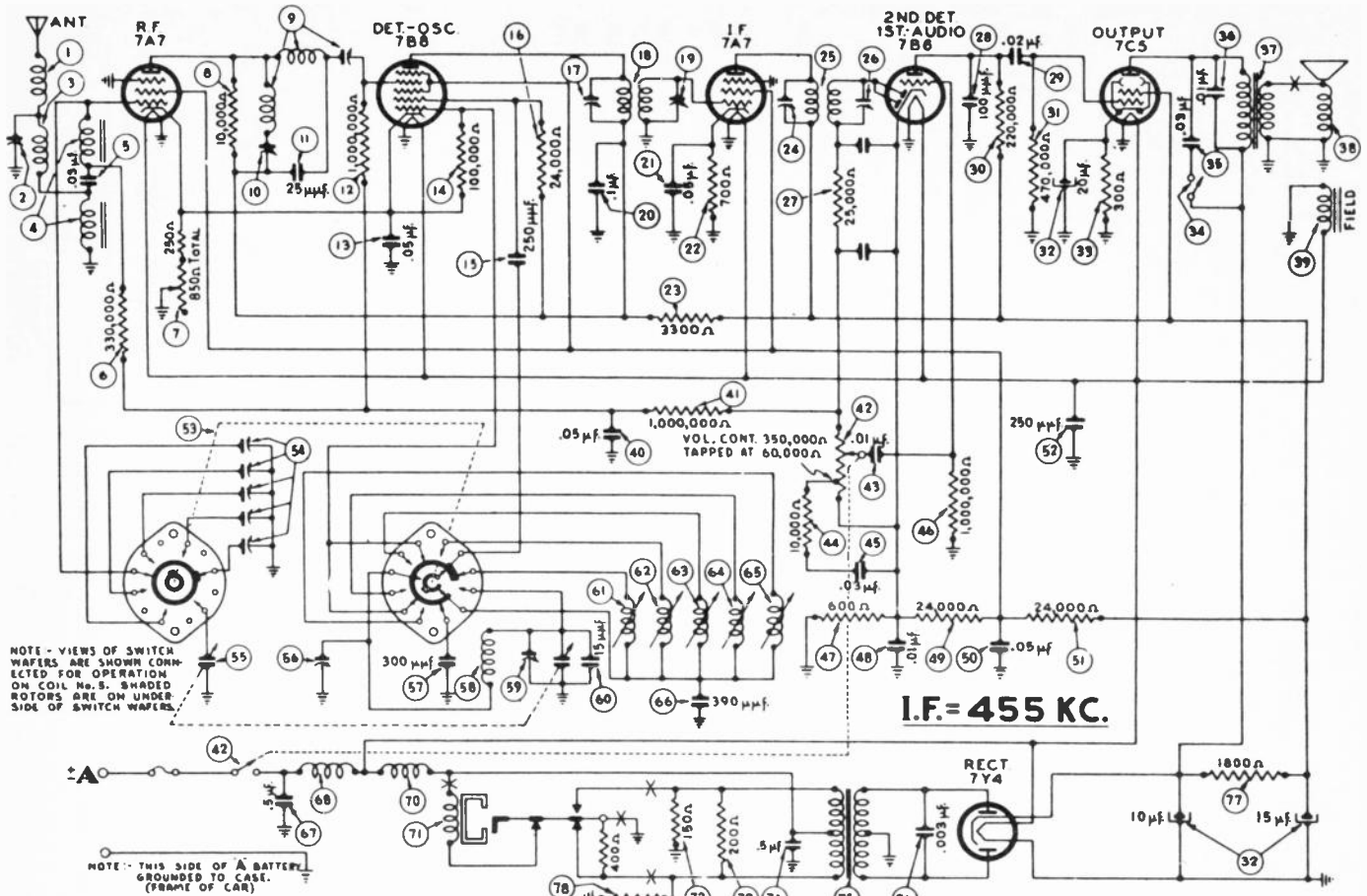
Aligning Procedure will be found on page 177.

PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0102	41	Resistor (470,000 ohms)	33-447154
2	Antenna Padder	63-0035	42	Filter Cond. (10-20-20 mfd.)	61-0089
3	Condenser (.01 mfd.)	61-0014	43	Resistor (200 ohms)	33-120334
4	Condenser (.05 mfd.)	61-0101	44	Tone Control Switch	85-0104
5	Sensitivity Control	67-0025	45	Condenser (.03 mfd.)	61-0126
6	Resistor (1,000,000 ohms)	33-510154	46	Condenser (.01 mfd.)	61-0124
7	Resistor (4700 ohms)	33-247154	47	Condenser (2000 mmfd.)	61-0123
8	R. F. Transformer	65-0276	48	Output Transformer	65-0277
9	I. F. Wave Trap Padder	33-510154	49	Condenser (250 mmfd.)	61-0033
10	Resistor (1,000,000 ohms)	33-510154	50	Replacement Cone	
11	Resistor (100,000 ohms)	33-410154	51	(For 73-0038-4 Speaker)	91-0101
12	Condenser (110 mmfd.)	30-1031	52	(For 73-0038-2 Speaker)	91-0102
13	Padder (Pri. 1st I. F. Trans.)	65-0274	53	Field Coil	Not Replaceable
14	First I. F. Transformer	65-0274	54	Condenser (250 mmfd.)	61-0033
15	Padder (Sec. 1st I. F. Trans.)	61-0101	55	Condenser (10 mmfd.)	61-0065
16	Condenser (.05 mfd.)	61-0101	56	Wafer Switch	318-1782
17	Resistor (800 ohms)	33-180334	57	Push-Button Trans. Assy.	77-0412
18	Thermal Compensator	61-0080	58	Inductive Tuning Unit	77-0469
19	Sil. Mica Cond. (437 mmfd.)	61-0071	59	Oscil. Tracking Coil	65-0270
20	Condenser (.05 mfd.)	61-0101	60	Condenser (250 mmfd.)	61-0033
21	Resistor (1,000,000 ohms)	33-510154	61	Resistor (22,000 ohms)	33-322334
22	Condenser (.05 mfd.)	61-0101	62	Condenser (250 mmfd.)	61-0033
23	Resistor (33,000 ohms)	33-333434	63	Condenser (.5 mfd.)	61-0106
24	Condenser (.01 mfd.)	61-0110	64	"A" Choke	32-1644
25	Resistor (15,000 ohms)	33-315154	65	Condenser 250 mmfd.)	61-0033
26	Volume Control (350,000 ohms)	67-0028	66	Vibrator Choke	65-0075
27	and On-Off Switch	67-0028	67	Pilot Lamps	34-2064
28	Condenser (6000 mmfd.)	61-0103	68	Filament Choke	32-1374
29	Resistor (15,000,000 ohms)	33-615154	69	Condenser (.5 mfd.)	61-0107
30	Padder (Pri. 2nd I. F. Trans.)	65-0275	70	Vibrator	83-0017
31	Second I. F. Transformer	65-0275	71	Resistor (200 ohms)	33-120334
32	Padder (Sec. 2nd I. F. Trans.)	61-0101	72	Resistor (5600 ohms)	33-256154
33	Resistor (25,000 ohms)	33-325334	73	Power Transformer	65-0272
34	Condenser (250 mmfd.)	61-0033	74	Condenser (2000 mmfd.)	61-0074
35	Condenser (.05 mfd.)	61-0122	75	Resistor (1000 ohms)	33-210434
36	Resistor (220,000 ohms)	33-422334	76	Resistor (150 ohms)	33-115334
37	Condenser (.25 mfd.)	61-0125	77	Push-Button	55-0729
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MODEL F-1740

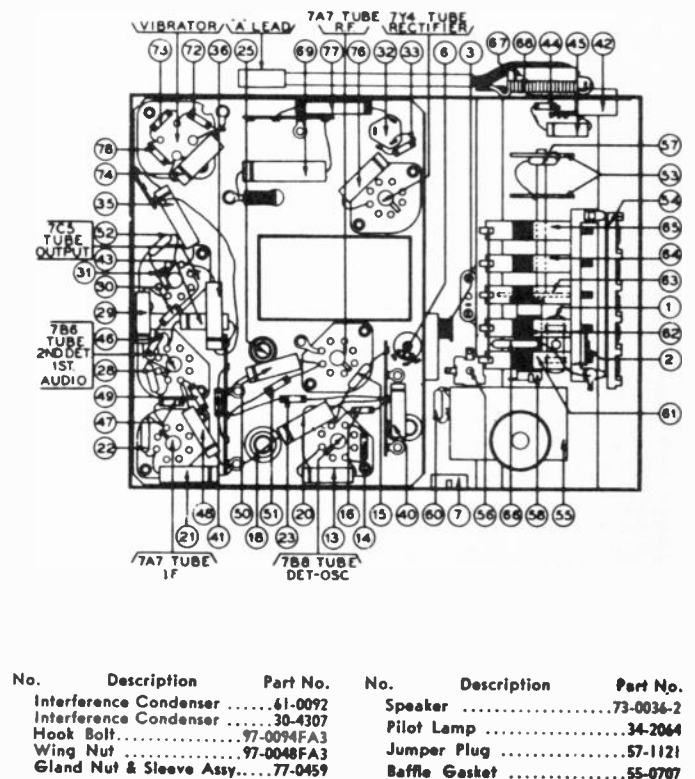


Aligning Procedure will be found on page 177.

PARTS LIST

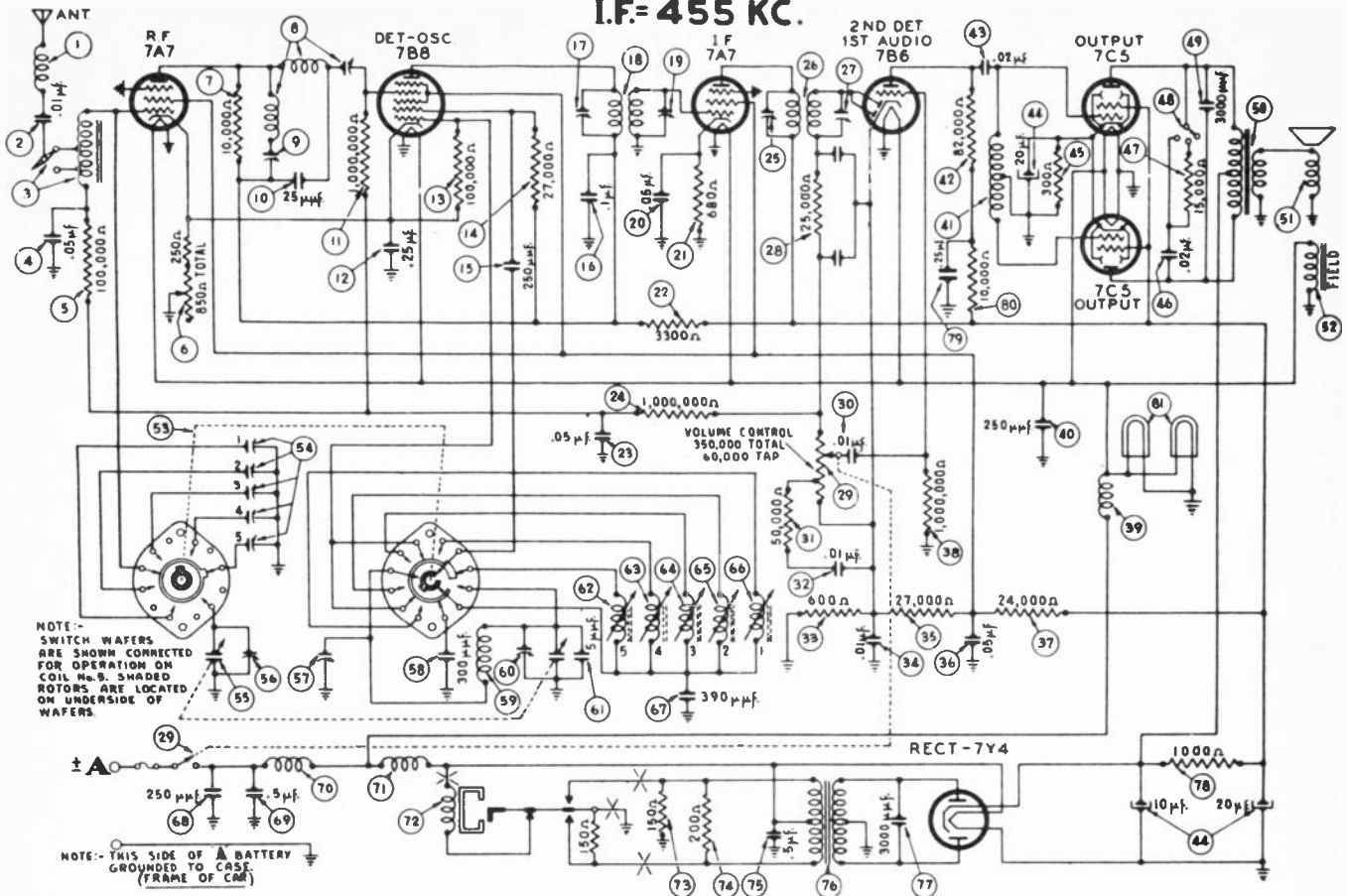
No.	Description	Part No.
1	Antenna Choke	65-0283
2	Antenna Padder	Part of 2
3	Antenna Choke	65-0282
4	Antenna Transformer	65-0268
5	Condenser (.03 mfd.)	61-0064
6	Resistor (330,000 ohms)	33-433234
7	Sensitivity Control	67-0029
8	Resistor (10,000 ohms)	33-310334
9	R. F. Transformer	65-0267
10	I. F. Wave Trap Padder (Part of 9)	
11	Condenser (25 mmfd.)	30-1108
12	Resistor (1,000,000 ohms)	33-510234
13	Condenser (.05 mfd.)	30-4569
14	Resistor (100,000 ohms)	33-410154
15	Condenser (250 mmfd.)	61-0034
16	Resistor (24,000 ohms)	33-324334
17	Padder (Pri. 1st I. F. Trans.)	
18	First I. F. Transformer	65-0265
19	Padder (Sec. 1st I. F. Trans.)	
20	Condenser (.1 mfd.)	30-4455
21	Condenser (.05 mfd.)	30-4569
22	Resistor (700 ohms)	33-170438
23	Resistor (3300 ohms)	33-233334
24	Padder (Pri. 2nd I. F. Trans.)	
25	Second I. F. Transformer	65-0264
26	Padder (Sec. 2nd I. F. Trans.)	
27	Resistor (25,000 ohms)	33-325234
28	Condenser (100 mmfd.)	30-1031
29	Condenser (.02 mfd.)	30-4481
30	Resistor (220,000 ohms)	33-422334
31	Resistor (470,000 ohms)	33-447154
32	Filter Cond. (10-15-20 mfd.)	61-0089
33	Resistor (300 ohms)	33-130438
34	Tone Control Switch	42-1406-6
35	Condenser (.03 mfd.)	30-4447
36	Condenser (.01 mfd.)	30-4381
37	Output Transformer	65-0279
38	Replacement Cone	91-0086
39	Field Coil	Not Replaceable
40	Condenser (.05 mfd.)	30-4569
41	Resistor (1,000,000 ohms)	33-510154
42	Vol. Cont. & On-Off Switch	67-0026
43	Condenser (.01 mfd.)	61-0014

No.	Description	Part No.
44	Resistor (10,000 ohms)	33-310154
45	Condenser (.03 mfd.)	61-0061
46	Resistor (1,000,000 ohms)	33-510154
47	Resistor (600 ohms)	33-160334
48	Condenser (.01 mfd.)	30-4479
49	Resistor (24,000 ohms)	33-324334
50	Condenser (.05 mfd.)	30-4569
51	Resistor (24,000 ohms)	33-324434
52	Condenser (250 mmfd.)	61-0033
53	Wafer Switch	77-0397
54	Antenna Padder Assembly	77-0391
55	Tuning Condenser	63-0036
56	Low Frequency Padder	63-0037
57	Sil. Mica Cond. (300 mmfd.)	61-0003
58	Oscillator Trans. (Manual)	65-0252
59	H. F. Padder (on Tuning Cond.)	
60	Condenser (15 mmfd.)	61-0038
61	Oscil. Trans. (900-1580 K.C.)	65-0255
62	Oscil. Trans. (750-1300 K.C.)	65-0256
63	Oscil. Trans. (580-1050 K.C.)	65-0257
64	Oscil. Trans. (580-1050 K.C.)	65-0257
65	Sil. Mica Cond. (390 mmfd.)	61-0031
66	Condenser (.5 mfd.)	61-0084
67	"A" Choke	Part of 2
68	Vibrator Choke	Part of 2
69	Vibrator	83-0017
70	Resistor (150 ohms)	33-115334
71	Resistor (200 ohms)	33-120334
72	Condenser (.5 mfd.)	61-0083
73	Power Transformer	65-0278
74	Condenser (3000 mmfd.)	61-0059
75	Resistor (1800 ohms)	33-218534
76	Resistor (150 ohms)	33-115334
77	Drive Cord	55-0881
78	Indicator Scale (P. B.)	55-0495
79	Dial Scale (Manual)	55-0821
80	Manual Control Knob	55-0705
81	Volume Control Knob	55-0706
82	Push-Button	55-0704
83	Bezel	55-0754
84	Bezel Screws	97-0101
85	Interference Condenser	61-0040



MODELS L-1760 and L-1761

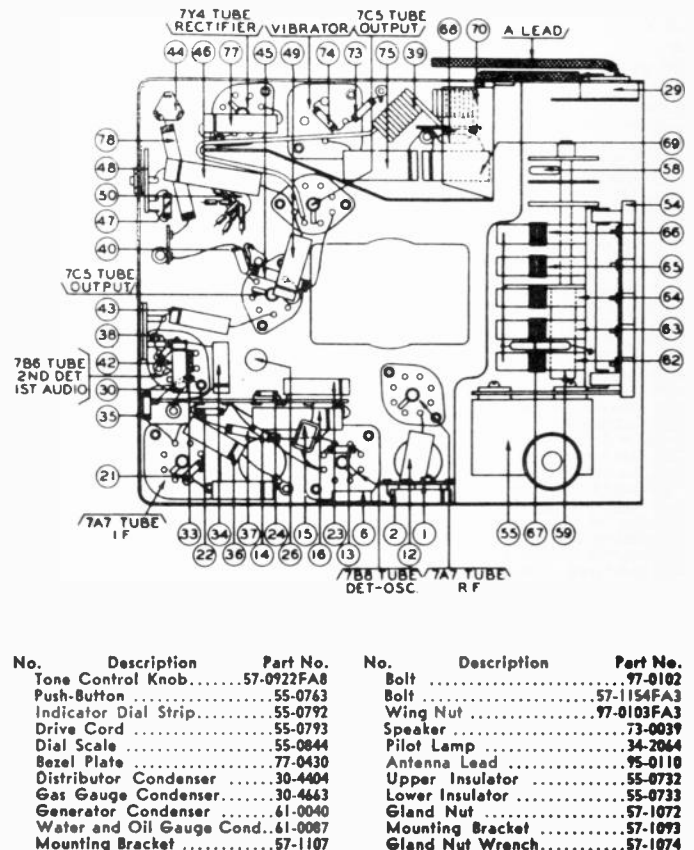
I.F. = 455 KC.



Aligning Procedure will be found on page 178.

PARTS LIST

No.	Description	Part No.	No.	Description	Part No.
1	Antenna Choke	65-0168	65	Condenser (.02 mfd.)	30-4481
2	Condenser (.01 mfd.)	61-0014	66	Filter Cond. (10-20-20 mfd.)	61-0086
3	Antenna Transformer	65-0306	67	Resistor (300 ohms)	33-130436
4	Condenser (.05 mfd.)	30-4569	68	Condenser (.02 mfd.)	30-4419
5	Resistor (100,000 ohms)	33-410334	69	Resistor (15,000 ohms)	33-315354
6	Sensitivity Control	67-0029	70	Tone Control Switch	85-0106
7	Resistor (10,000 ohms)	33-310334	71	Condenser (3000 mmfd.)	30-4469
8	R. F. Transformer	65-0305	72	Output Transformer	65-0295
9	I. F. Wave Trap Padder		73	Replacement Cone	
10	Condenser (25 mmfd.)	33-1108		(For 73-0039-2 Speaker)	91-0113
11	Resistor (1,000,000 ohms)	33-510234		(For 73-0039-4 Speaker)	91-0114
12	Condenser (.25 mfd.)	61-0088	74	Field Coil	Not Replaceable
13	Resistor (100,000 ohms)	33-410334	75	Wafer Switch	77-0408
14	Resistor (27,000 ohms)	33-327334	76	Antenna Padder Assembly	77-0391
15	Condenser (250 mmfd.)	61-0034	77	Tuning Condenser	63-0036
16	Condenser (.1 mfd.)	30-4455	78	First Padder (On Tuning Cond.)	
17	Padder (Pri. 1st I. F. Trans.)		79	Low Frequency Padder	63-0037
18	First I. F. Transformer	65-0303	80	Sil. Mica Cond. (300 mmfd.)	61-0003
19	Padder (Sec. 1st I. F. Trans.)		81	Manual Oscil. Transformer	65-0301
20	Condenser (.05 mfd.)	30-4444	82	Second Padder (On Tun. Cond.)	
21	Resistor (680 ohms)	33-168334	83	Condenser (15 mmfd.)	61-0038
22	Resistor (3300 ohms)	33-233354	84	Oscil. Trans. (900-1580 K.C.)	65-0255
23	Condenser (.05 mfd.)	30-4569	85	Oscil. Trans. (900-1580 K.C.)	65-0255
24	Resistor (1,000,000 ohms)	33-510154	86	Oscil. Trans. (750-1300 K.C.)	65-0254
25	Padder (Pri. 2nd I. F. Trans.)		87	Oscil. Trans. (550-1050 K.C.)	65-0257
26	Second I. F. Transformer	65-0304	88	Oscil. Trans. (550-1050 K.C.)	65-0257
27	Padder (Sec. 2nd I. F. Trans.)		89	Sil. Mica Cond. (390 mmfd.)	61-0031
28	Resistor (25,000 ohms)	33-325234	90	Condenser (250 mmfd.)	61-0033
29	Volume Control (350,000 ohms)		91	Condenser (.5 mfd.)	61-0063
30	and On-Off Switch	67-0026	92	"A" Choke	32-1644
31	Condenser (.01 mfd.)	61-0014	93	Vibrator Choke	Part of 9
32	Resistor (50,000 ohms)	33-347134	94	Vibrator	83-0017
33	Condenser (.01 mfd.)	30-4479	95	Resistor (150 ohms)	33-115354
34	Resistor (600 ohms)	33-160334	96	Resistor (200 ohms)	33-120354
35	Condenser (.01 mfd.)	30-4479	97	Condenser (.5 mfd.)	61-0083
36	Resistor (27,000 ohms)	33-327334	98	Power Transformer	65-0294
37	Condenser (.05 mfd.)	30-4444	99	Condenser (3000 mmfd.)	61-0059
38	Resistor (24,000 ohms)	33-324434	100	Resistor (1000 ohms)	33-210554
39	Resistor (1,000,000 ohms)	33-510154	101	Condenser (.25 mfd.)	61-0125
40	Choke	65-0300	102	Resistor (10,000 ohms)	33-310334
41	Condenser (250 mmfd.)	61-0033	103	Pilot Lamps	34-2044
42	Input Transformer	65-0293	104	Volume Control Knob	55-0748
43	Resistor (82,000 ohms)	33-382334	105	Manual Control Knob	55-0750



ALIGNING PROCEDURE---AUTO RADIO MODELS

ALIGNING PROCEDURES

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

EQUIPMENT

Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Signal Generator, 027 Philco Vacuum tube voltmeter and set tester or audio output meter, 45-2610 Padding screw driver.

VACUUM TUBE VOLTMETER

The Model 027 Vacuum tube voltmeter is an extremely sensitive and accurate test instrument and is recommended for use when aligning and adjusting auto radios. Connect the negative (—) terminal of the Vacuum Tube Voltmeter to the high side (ungrounded side) of the volume control. Connect the positive (+) terminal to the radio housing. Connect the "AC" cord to a 110 volt AC socket. Press the VTVM button and the 10 volt button. Turn the "Set Zero Ohms — VTVM" control clockwise until a click is heard. Allow the tubes to heat up for a few minutes. Short the 150 meg. VTVM terminals and adjust the "Set Zero 150 meg." control until the meter reads zero on the 0-10 range scale (bottom scale): The needle will deflect from left to right.

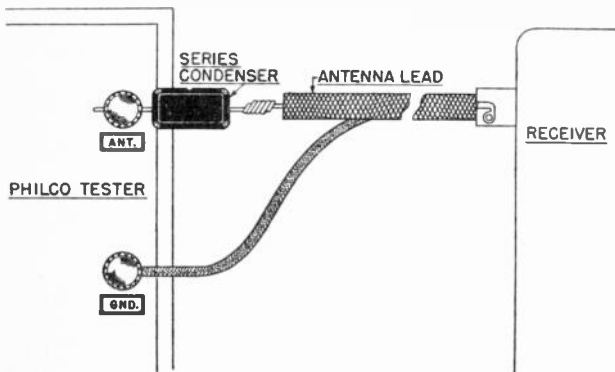


FIGURE 1

AUDIO OUTPUT METER

If an audio output meter is used, connect the leads across the voice coil of the speaker. Use the 0-30 volt scale.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.

GENERAL

When adjusting the aerial stage of a Philco Auto Radio Receiver on the test bench, the correct dummy aerial, specified for that particular Model; must be used. Figure 163 shows the construction and the connection of the dummy aerial as used with practically all Models. Exceptions to this are listed in the adjustment procedure when required. Complete information for properly adjusting each Model is listed on the following pages.

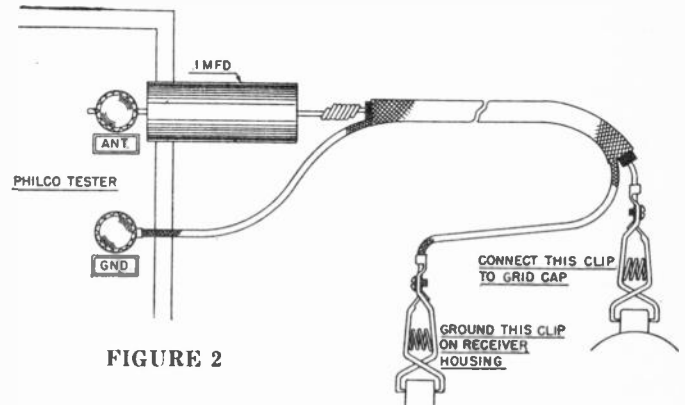


FIGURE 2

When the aerial stage adjustment is made with the Receiver installed in a car, the Receiver aerial lead must be connected to the car aerial in the usual manner. The signal generator output lead should be connected to a wire placed near the car aerial but not connected to it.

This procedure should be followed when adjusting the aerial stage in any Philco Auto Radio Receiver.

Some of the later Philco Auto Radios have an additional aerial compensator which is used to match the aerial stage of the Receiver to the car aerial. This compensator must be adjusted after the radio is installed in the car and connected to the car aerial. Follow the special Receiver Installation Instructions regarding this compensator.

DUMMY AERIAL

The dummy aerial consists of the standard Philco aerial lead, Part No. 41-3191 and a series condenser, connected as shown in Fig. 1. The value of the condenser varies with the different radio models, and is given in the special adjustment procedure. The proper condenser must be used in order to make the correct adjustments.

There are a few exceptions to this construction of the aerial. These exceptions are covered individually where referred to in the adjusting procedure.

DUMMY CAPACITY

The .1 mfd. condenser referred to in the adjustment procedure under the heading "Dummy Capacity" is a blocking condenser in the lead connecting the signal generator output to the grid of the I. F., oscillator and R. F. tubes. Use this dummy capacity as directed and as shown in Figure 2 above.

ALIGNING PROCEDURE MODEL AR-1

OPERATIONS	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	ADJUST THE AERIAL COMPENSATOR ⑥ TWO TURNS FROM TIGHT				
2	455 K.C.	To Aerial Receptacle on Radio	.1 mfd.	Note 1	30 23 20 30 23 20
3	1580 K.C.	To Aerial Receptacle on Radio	30 mmfd. See Note 2	Note 1	15
4	1400 K.C.	To Aerial Receptacle on Radio	30 mmfd. See Note 2	Set tuning condenser at 1400 K.C.	8 Note 3
5	1200 to 1400 K.C.	Note 4	Note 4	Note 4	6

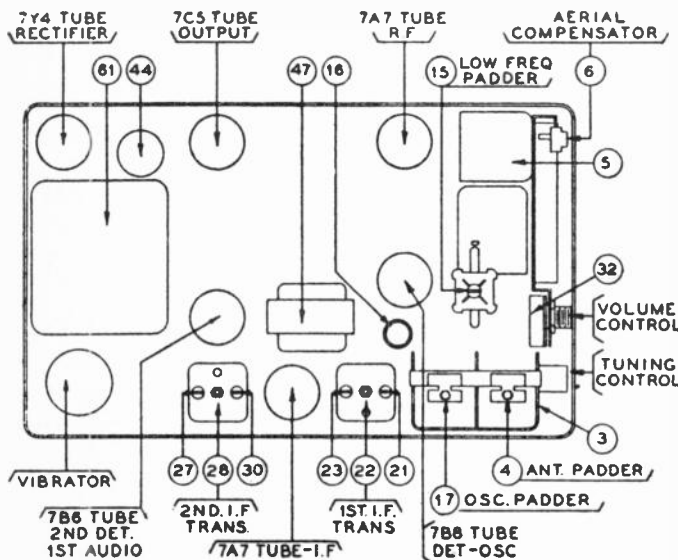
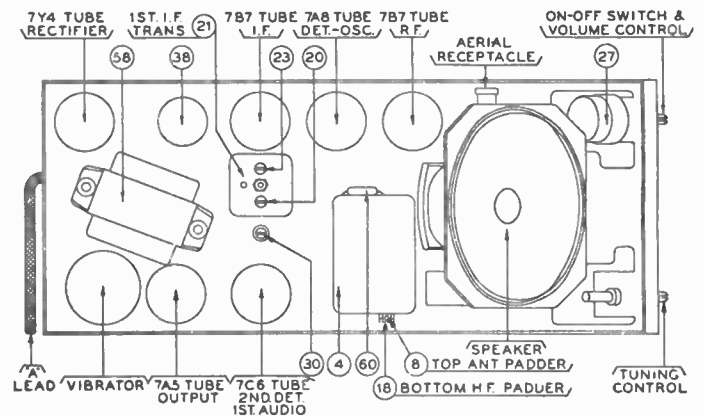
Make all adjustments for maximum reading on the output meter.

NOTE 1 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 2 — Connect the aerial lead, Part No. 41-3191, to the aerial receptacle in the radio. Connect a 30 mmfd. Condenser in series between the signal generator and the aerial lead.

NOTE 3 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

NOTE 4 — When installing the radio in the car, follow the instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 K. C. on the control scale. Remove the plug button on the side of the radio and adjust the aerial compensator ⑤ for maximum signal.



MODEL AR-4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the aerial lead, Part No. 41-3191, to the aerial receptacle in the radio. Connect a 10 Mmfd. Condenser in series between the signal generator and the aerial lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

NOTE 5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Adjust the aerial compensator ⑥ for maximum signal.

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	ADJUST THE AERIAL COMPENSATOR ⑥ TWO TURNS FROM TIGHT				
2	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	30 27 25 21 30 27 25 21
3	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	17
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	4 Note 4
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	Note 3
6	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	17
7	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	4 Note 4
8	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	Note 3
9	1200 to 1400 K.C.	Note 5	Note 5	Note 5	6

ALIGNING PROCEDURE MODEL AR-5

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	PUSH IN THE RIGHT KNOB ON THE CONTROL UNTIL "D" APPEARS IN THE STATION INDICATOR WINDOW AND STATIONS CAN BE TUNED IN BY MANUAL TUNING. ADJUST THE AERIAL COMPENSATOR ③ TWO TURNS FROM TIGHT.				
2	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳
3	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	⑰ Min.
4	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⑱
5	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⑩ Note 4
6	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⑳ Note 3
7	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⑰
8	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⑩ Note 4
9	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⑳ Note 3
10	1200 to 1400 K.C.	Note 5	Note 5	Note 5	⑩ ⑰ ⑱ ⑲ ⑳

Make all adjustments for maximum reading on the output meter.

NOTE 1— Connect the aerial lead, Part No. 41-3191, to the aerial receptacle in the radio. Connect a 10 Mmfd. Condenser in series between the signal generator and the aerial lead.

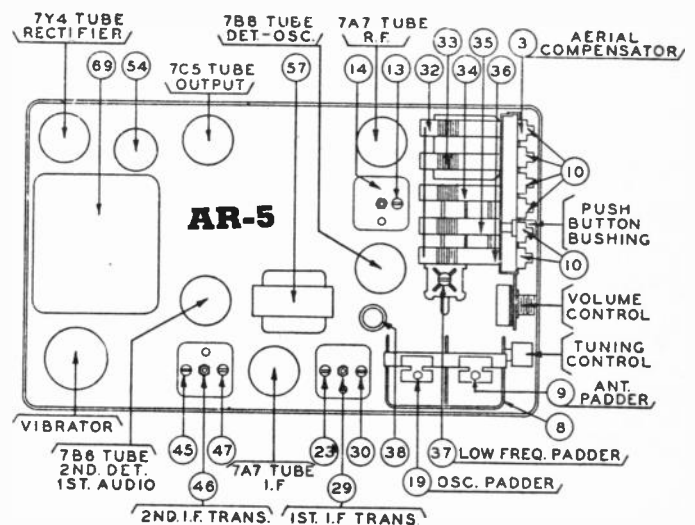
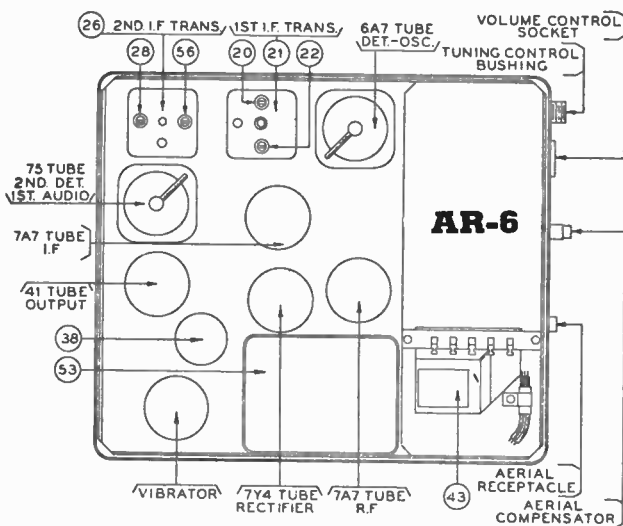
NOTE 2— Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3— Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4— When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

NOTE 5— When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the aerial compensator ③ for maximum signal.

NOTE 6— When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Adjust the aerial compensator ③ for maximum signal.



MODEL AR-6

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	ADJUST THE AERIAL COMPENSATOR ③ TWO TURNS FROM TIGHT				
2	455 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	⑳ ⑲ ⑱ ⑲ ⑳ ⑲ ⑲ ⑲ ⑲ ⑲
3	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⑰
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⑩ Note 4
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⑰ Note 3
6	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⑰
7	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⑩ Note 4
8	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⑰ Note 3
9	1200 to 1400 K.C.	Note 6	Note 6	Note 6	⑩ ⑰ ⑱ ⑲ ⑳

ALIGNING PROCEDURE MODEL AR-7

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	PRESS THE RETURN TO DIAL BUTTON UNTIL STATIONS CAN BE TUNED IN BY MANUAL TUNING. ADJUST THE AERIAL COMPENSATOR ② TWO TURNS FROM TIGHT.				
2	455 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭⑮⑯⑰⑱⑲
3	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⑳
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	㉑ Note 4
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	㉒ Note 3
6	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	㉓
7	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	㉔ Note 4
8	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	㉕ Note 3
9	1200 to 1400 K.C.	- Note 5	Note 5	Note 5	㉖

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the aerial lead, Part No. 41-3191, to the aerial receptacle in the radio. Connect a 50 Mmfd. Condenser in series between the signal generator and the aerial lead.

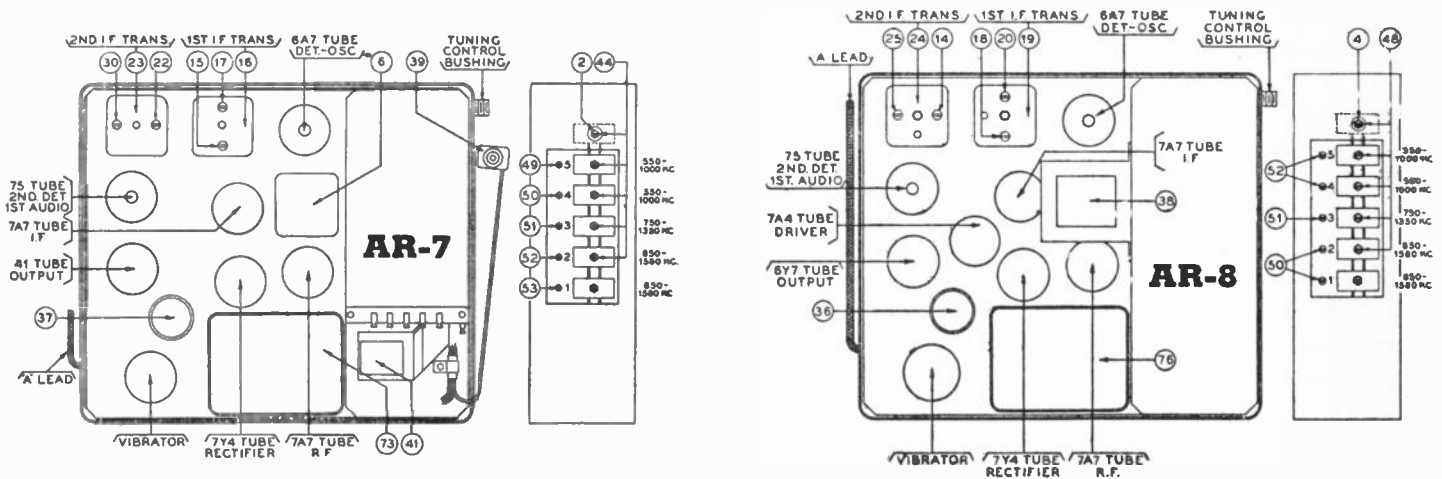
NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

NOTE 5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the aerial compensator ② (See Figure 3) for maximum signal.

NOTE 6 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the aerial compensator ② (See Figure 3) for maximum signal.



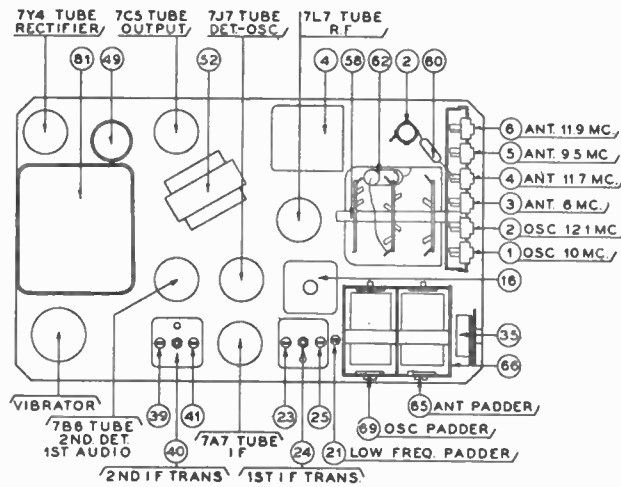
MODEL AR-8

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	PRESS THE RETURN TO DIAL BUTTON UNTIL STATIONS CAN BE TUNED IN BY MANUAL TUNING. ADJUST THE AERIAL COMPENSATOR ④ TWO TURNS FROM TIGHT.				
2	455 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	㉗⑸⑹⑺⑻⑼⑽⑾⑿⓫⓬⓭⓮⓯⓰⓱⓲⓳⓴⓵⓶⓷⓸⓹⓺⓻⓼⓽⓾⓿
3	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⓿
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⓿ Note 4
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⓿ Note 3
6	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	⓿
7	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	⓿ Note 4
8	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	⓿ Note 3
9	1200 to 1400 K.C.	Note 6	Note 6	Note 6	⓿

ALIGNING PROCEDURE

MODEL AR-9

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	PUSH IN THE RIGHT HAND KNOB ON THE CONTROL UNTIL THE BLACK DOT APPEARS IN THE BAND INDICATOR WINDOW AND STATIONS CAN BE TUNED IN BY MANUAL TUNING.				
2	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	ⓐ ⓑ ⓓ ⓔ
3	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	ⓐ
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	ⓑ
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	ⓓ
6	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	ⓑ
7	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	ⓐ
8	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	ⓓ



INSTRUCTIONS FOR ADJUSTING SHORT WAVE PADDERS

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
PUSH IN THE RIGHT HAND KNOB ON THE CONTROL UNTIL THE "RED" DOT APPEARS IN THE BAND INDICATOR WINDOW					
1	10 M.C.	To Aerial Receptacle on Radio	Note 1	Note 2	ⓐ OSC. 10 M.C.
2	9.5 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 9.5 M.C. Signal	ⓑ ANT. 9.5 M.C.
3	6 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 6 M.C. Signal	ⓓ ANT. 6 M.C.
PUSH IN THE RIGHT HAND KNOB ON THE CONTROL UNTIL THE "WHITE" DOT APPEARS IN THE BAND INDICATOR WINDOW					
1	12.1 M.C.	To Aerial Receptacle on Radio	Note 1	Note 2	ⓐ OSC. 12.1 M.C.
2	11.9 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 11.9 M.C. Signal	ⓑ ANT. 11.9 M.C.
3	11.7 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 11.7 M.C. Signal	ⓓ ANT. 11.7 M.C.
4	OPERATIONS 2 AND 3 ARE IMPORTANT AND MUST BE REPEATED UNTIL MAXIMUM SIGNAL IS RECEIVED				

Make all adjustments for maximum reading on the output meter.

NOTE 1—Connect the aerial lead, Part No. 41-3191, to the aerial receptacle in the radio. Connect a 10 mmfd. Condenser in series between the signal generator and the aerial lead.

NOTE 2—Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3—Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust

the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4—When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

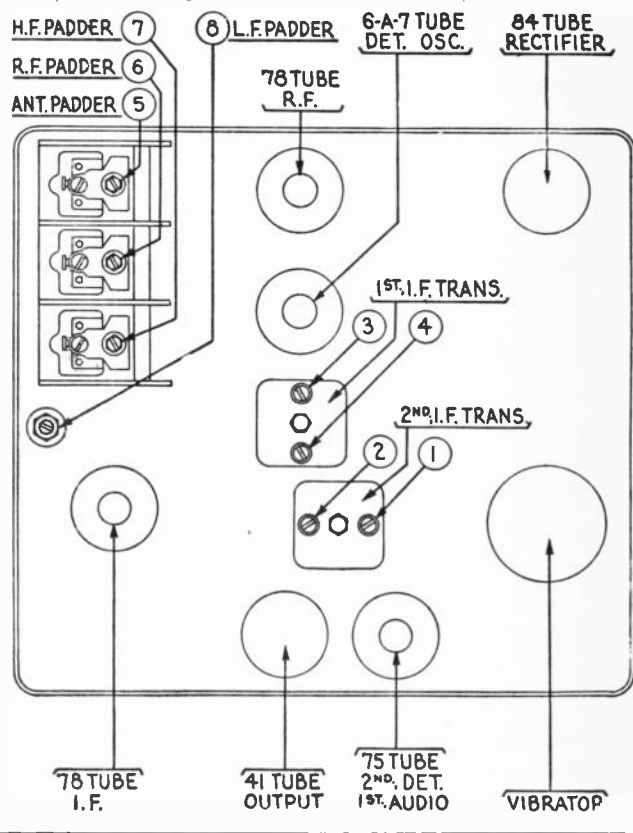
MODELS N-1514, S-1516 and P-1517

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	260 K. C.	To Grid of 78 Tube—I.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	1 - 2
2	260 K. C.	To Grid of 6A7 Tube	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	3 - 4 1 - 2
3	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	7 - 6
4	580 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condenser at 580 K. C.	8 Note 2
5	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condenser at 1550 K. C.	7
6	1400 K. C.	Note 7	Note 7	No Antenna Connection Set Tuning Condenser at 1400 K. C.	6 - 5

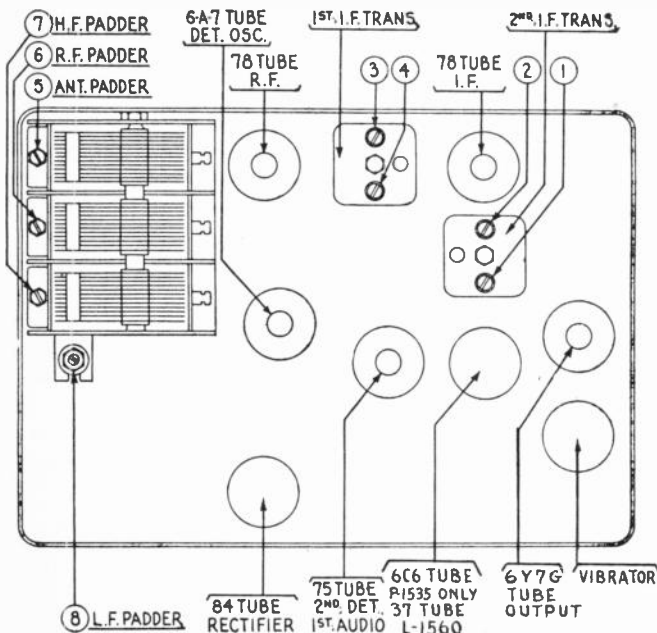
Adjust for maximum reading on the output meter.

NOTE 2 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 7 — Use the standard antenna, Part No. 41-3191, connected directly to the ANT terminal of the signal generator. No dummy capacity is required.



MODELS P-1535 and L-1560



Adjust for maximum reading on the output meter.

NOTE 1 — Turn the condenser rotor plates completely out of mesh. Use a piece of bond letter-head paper as a gauge between the heel of the rotor plates and the stator plates and turn the condenser plates in mesh until they strike against the paper.

NOTE 2 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser

back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — Connect the Antenna lead, Part No. 41-3191, to the Antenna receptacle on the Receiver in series with the correct dummy capacity. For the P-1535 use a 250 mmfd. Condenser. For the L-1560 (cowl antenna) use 20 mmfd. Condenser. For the L-1560 (roof or door antenna) use a 700 mmfd. Condenser.

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	260 K. C.	To Grid of 78 Tube—I.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	1 - 2
2	260 K. C.	To Grid of 6A7 Tube	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	3 - 4 1 - 2
3	1500 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Note 1	7 - 6
4	580 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condensers at 580 K. C.	8 Note 2
5	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condensers at 1550 K. C.	7
6	1400 K. C.	Note 4	Note 4	No Antenna Connection Set Tuning Condensers at 1400 K. C.	6 - 5

ALIGNING PROCEDURE

MODELS N-1524, S-1526, G-1528 and P-1530

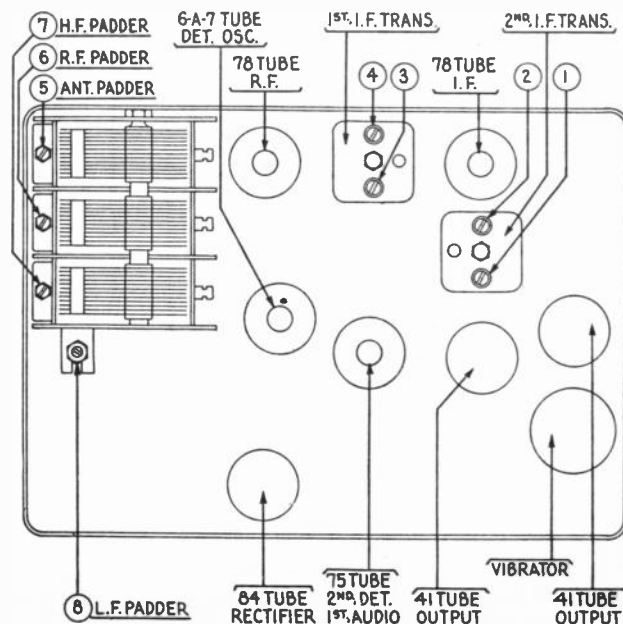
OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	260 K. C.	To Grid of 78 Tube—I.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	1 - 2
2	260 K. C.	To Grid of 6A7 Tube	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	3 - 4 1 - 2
3	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Note 1	7 - 6
4	580 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condensers at 580 K. C.	8 Note 2
5	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	Set Tuning Condensers at 1550 K. C.	7
6	1400 K. C.	Note 4 Connect Antenna Lead to Cowl Antenna Receptacle	Note 4	Set Tuning Condensers at 1400 K. C.	6 - 5

Adjust for maximum reading on the output meter.

NOTE 1 — Turn the condenser rotor plates completely out of mesh. Use a piece of bond letterhead paper as a gauge between the heel of the rotor plates and the stator plates and turn the condenser plates in mesh until they strike against the paper.

NOTE 2 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle on the Receiver in series with the correct dummy capacity condenser. For the N-1524, S-1526, G-1528 and P-1530 use cowl aerial lead. When using the undercar antenna use 180 mmfd. condenser.



MODEL C-1550

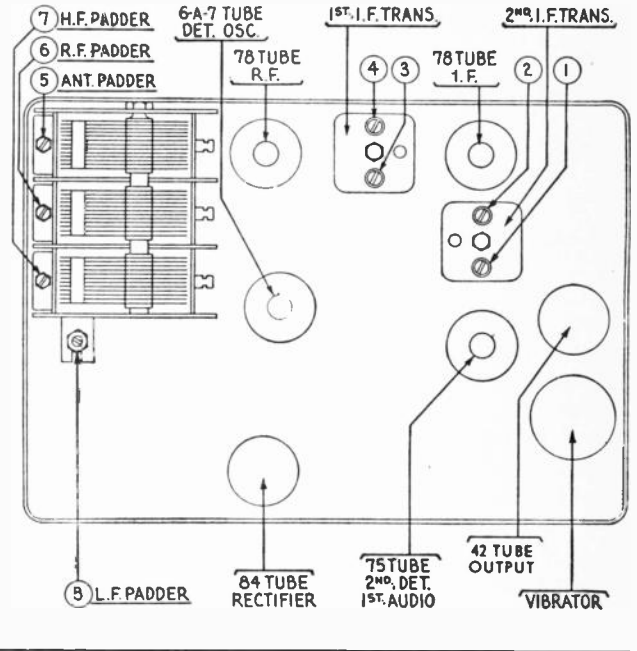
OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	260 K. C.	To Grid of 78 Tube—I.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	1 - 2
2	260 K. C.	To Grid of 6A7 Tube	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	3 - 4 1 - 2
3	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Note 1	7 - 6
4	580 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condenser to 580 K. C.	8 Note 2
5	1550 K. C.	To Grid of 78 Tube—R.F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condenser to 1550 K. C.	7
6	1400 K. C.	Note 4	Note 4	Set Tuning Condenser to 1400 K. C.	6 - 5

Adjust for maximum reading on the output meter.

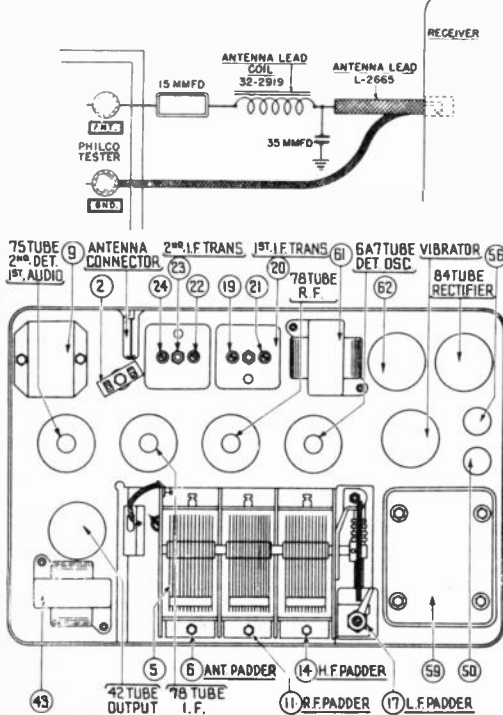
NOTE 1—Turn the condenser rotor plates completely out of mesh. Use a piece of bond letterhead paper as a gauge between the heel of the rotor plates and the stator plates and turn the condenser plates in mesh until they strike against the paper.

NOTE 2—Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 3—Use the standard antenna lead connected directly to the output terminal of the signal generator. (Turn the Antenna selector switch to the Skyway Antenna position.)



MODEL F-1540



Make all adjustments for maximum reading on the output meter.

NOTE 1—See Note 1 Model C-1550.

NOTE 2—Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 3—When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	260 K. C.	To grid of 6A7 Tube	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	24 23 21 19
2	1500 K. C.	To Grid of 78 R. F. Tube	.1 Mfd. Condenser in Series with Generator Lead	Note 1	14 11
3	580 K. C.	To Grid of 78 R. F. Tube	.1 Mfd. Condenser in Series with Generator Lead	Set Tuning Condenser at 580 K. C.	17 Note 2
4	1550 K. C.	To Grid of 78 R. F. Tube	.1 Mfd. Condenser in Series with Generator Lead	Turn Tuning Condenser Plates Out of Mesh to 1500 K. C.	14
5	1400 K. C.	To Antenna Receptacle on Radio	See illustration above	Set Tuning Condenser at 1400 K. C.	11 6 Note 3

ALIGNING PROCEDURE

MODEL C-1606

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	400 K.C.	To Grid of 6A7 Tube	.5 Mfd.	Turn Variator to the Indexed Position	(24) (17) (15)
2	950 to 1500 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 1 and adjust No. 1 Antenna Padder and No. 1 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
3	950 to 1500 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 2 and adjust No. 2 Antenna Padder and No. 2 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
4	750 to 1250 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 3 and adjust No. 3 Antenna Padder and No. 3 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
5	750 to 1250 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 4 and adjust No. 4 Antenna Padder and No. 4 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
6	550 to 950 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 5 and adjust No. 5 Antenna Padder and No. 5 Oscillator Coil (Fig. 4)	Note 2 Fig. 4
7	550 to 950 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Press Push Button No. 6 and adjust No. 6 Antenna Padder and No. 6 Oscillator Coil (Fig. 4)	Note 2 Fig. 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 25 Mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note: — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is plugged into the "SKY" socket of the Antenna Transformer.

*When the undercar is used, connect the antenna lead, Part No. 41-3191 to the antenna receptacle in the Radio. Connect a 250 Mmfd. condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is plugged into the "ROAD" socket of the antenna transformer.

NOTE 2 — The antenna padder screw is on the right, the oscillator coil screw is on the left (see Figure 4).

ALL ADJUSTMENTS MUST BE REPEATED.

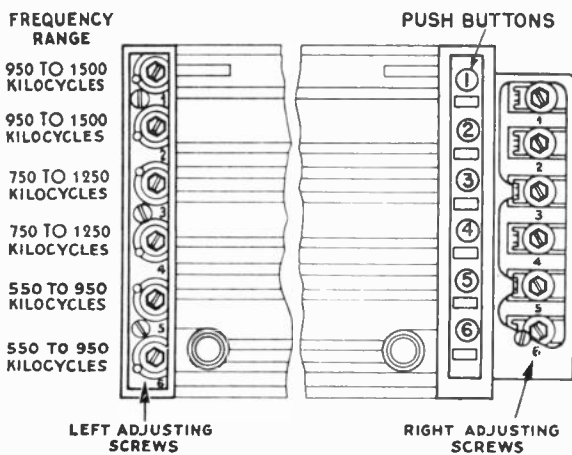
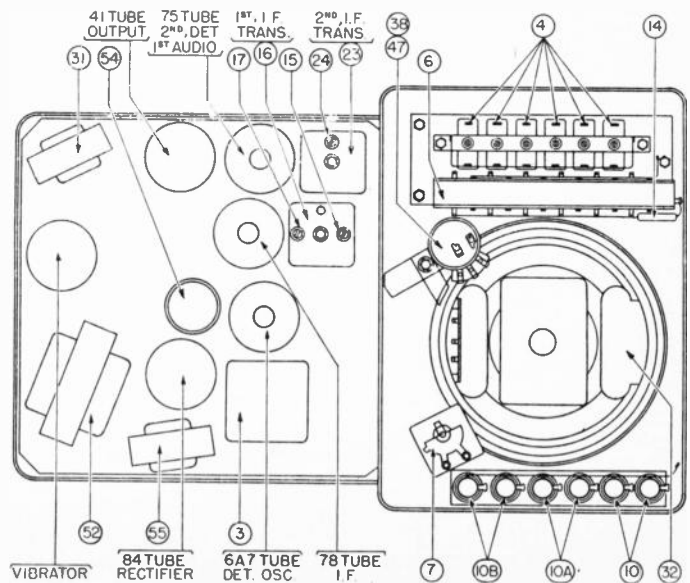


FIG. 4



MODEL C-1608

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	PADDER ADJUST
	FREQUENCY	CONNECTION			
1		Press the "DIAL" button and stations can be tuned in by "DIAL" tuning.			
2	470 K.C.	To Grid of 6A7 Tube	.5 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(23) (16) (18)
3	1580 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Note 2	(67)
4	1400 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(68) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(43) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Note 2	(67)
7	1400 K.C.	To Antenna Receptacle on Radio	*25 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(68) Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1—Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 25 mmfd. Condenser in series between the signal generator and the antenna lead.

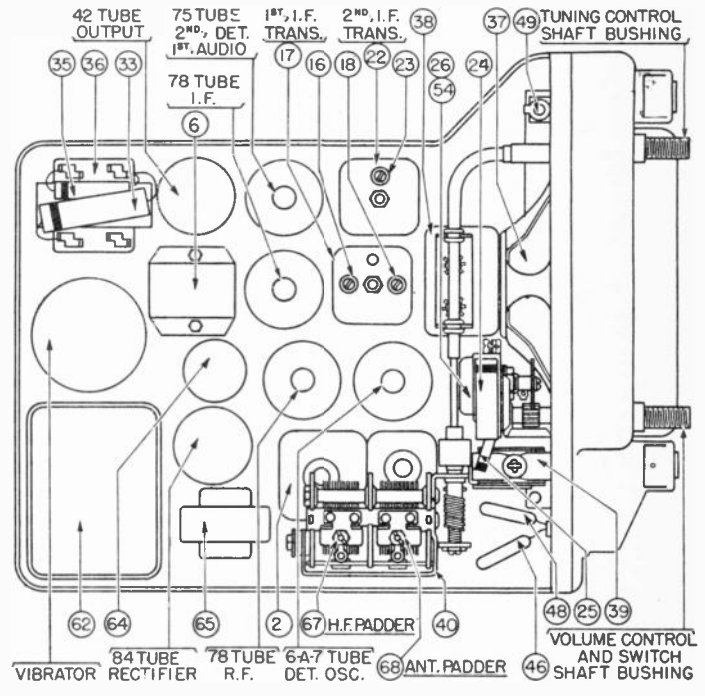
Special Note—When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is plugged into the "sky" socket of the Antenna Transformer.

*When the undercar is used, connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the Radio. Connect a 250 mmfd. condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is plugged into the "ROAD" socket of the antenna transformer.

NOTE 2—Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3—Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4—When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.



Make all adjustments for maximum reading on the output meter.

NOTE 1—Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 20 mmfd. Condenser in series between the signal generator and the antenna lead.

Special Note—When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the black terminal of the Antenna Transformer.

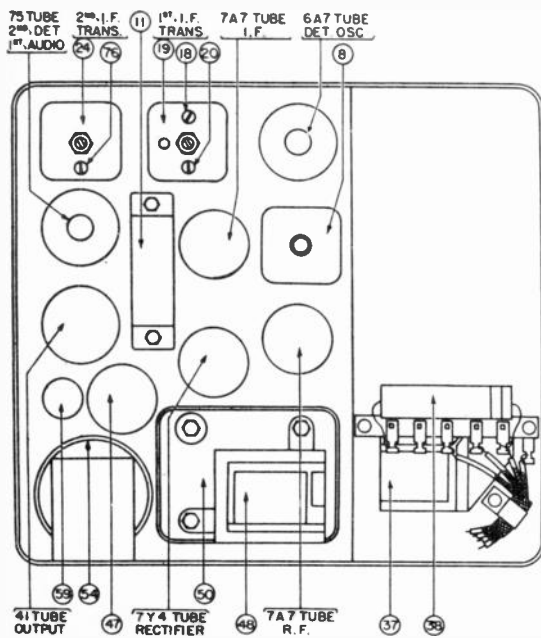
*When the undercar or roof antenna is used, connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the Radio. Connect a 250 mmfd. condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is connected to the red terminal of the antenna transformer.

NOTE 2—Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3—Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4—When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

MODEL P-1617



OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1		Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning			
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(76) (20) (18)
3	1580 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Note 2	(71)
4	1400 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(72) Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	(73) Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Note 2	(71)
7	1400 K.C.	To Antenna Receptacle on Radio	*20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	(72) Note 4

ALIGNING PROCEDURE

MODEL S-1622

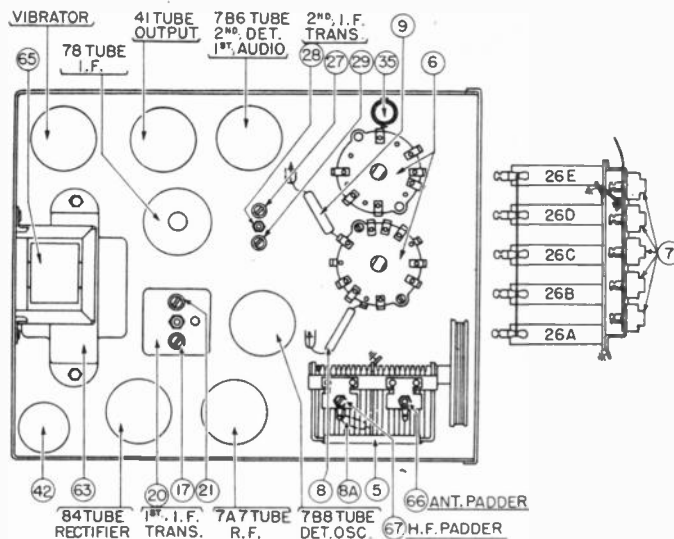
OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1		Press the Automatic Station Selector button until "DIAL" appears in the window		and stations can be tuned in by Manual Tuning.	
2	470 K.C.	To Grid 78 I. F. Tube	.5 Mfd.	Note 2	
3	470 K.C.	To Antenna Receptacle on Radio	35 Mmfd. See Note 1	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	29 27 21 17
4	1580 K.C.	To Antenna Receptacle on Radio	35 Mmfd. See Note 1	Note 2	87
5	1500 K.C.	To Antenna Receptacle on Radio	35 Mmfd. See Note 1	Set Tuning Condenser at 1500 K.C.	88 Note 3

Make all adjustments for maximum reading on the output meter.

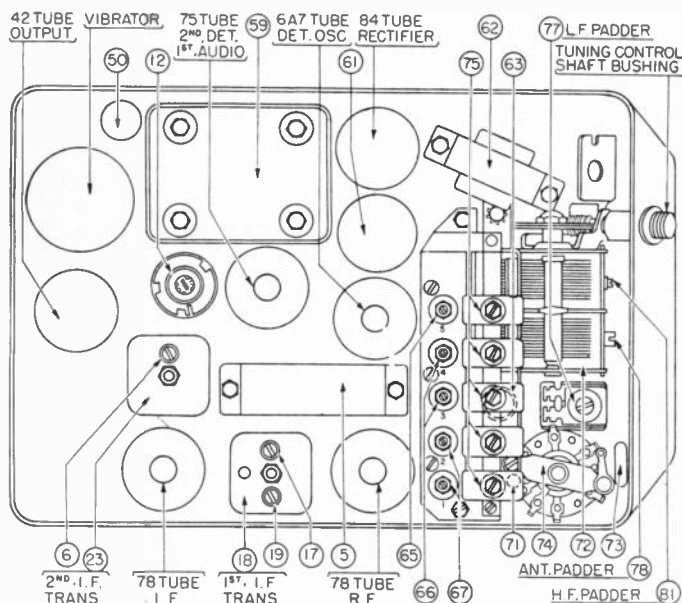
NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 35 mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.



MODELS S-1626, G-1628



Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 20 mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1		Press the Automatic Station Selector button until "DIAL" appears in the window		and stations can be tuned in by Manual Tuning.	
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	6 19 17
3	1580 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Note 2	81
4	1400 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	78 Note 4
5	580 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	77 Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Note 2	81
7	1400 K.C.	To Antenna Receptacle on Radio	20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	78 Note 4

MODEL P-1630

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	Press the return to dial button until stations can be tuned in by manual tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	8 19 21
3	1580 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Note 2	84
4	1400 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	88 Note 4
5	580 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	82 Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Note 2	84
7	1400 K.C.	To Antenna Receptacle on Radio	* 20 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	88 Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765 (Model P-1630), 41-3191 (Model P-1635) to the antenna receptacle in the radio. Connect a 20 mmfd. (Model P-1630) or 250 mmfd. (Model P-1635) Condenser in series between the signal generator and the antenna lead.

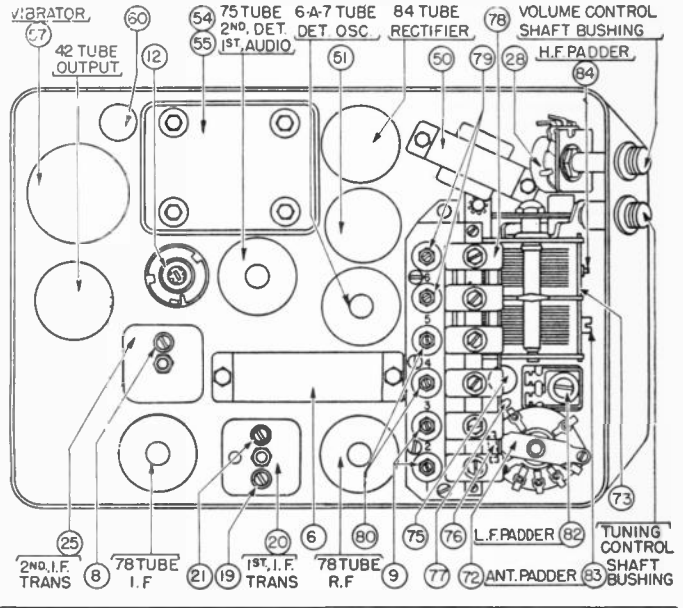
Special Note — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the black terminal of the Antenna Transformer.

*When the undercar or roof antenna is used, connect the antenna lead, Part No. 41-3191 (Model P-1630) or L-2765 (Model P-1635) to the antenna receptacle in the Radio. Connect a 250 mmfd. (Model P-1630) or 20 mmfd. (Model P-1635) condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is connected to the red terminal of the antenna transformer.

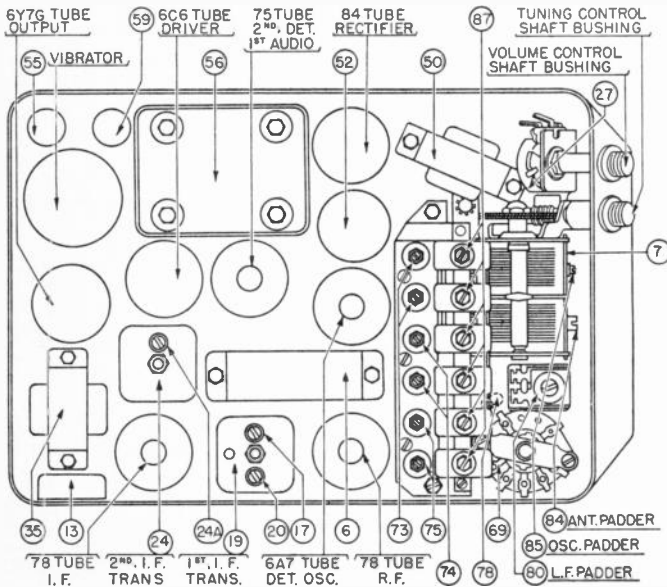
NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.



MODEL P-1635



Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. L-2765 (Model P-1630), 41-3191 (Model P-1635) to the antenna receptacle in the radio. Connect a 20 mmfd. (Model P-1630) or 250 mmfd. (Model P-1635) Condenser in series between the signal generator and the antenna lead.

Special Note — When the cowl antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the black terminal of the Antenna Transformer.

*When the undercar or roof antenna is used, connect the antenna lead, Part No. 41-3191 (Model P-1630) or L-2765 (Model P-1635) to the antenna receptacle in the Radio. Connect a 250 mmfd. (Model P-1630) or 20 mmfd. (Model P-1635) condenser in series between the signal generator and the antenna lead. Be sure the lead to the antenna transformer is connected to the red terminal of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	Press the return to dial button until stations can be tuned in by manual tuning.				
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	24 A 20 17
3	1580 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Note 2	85
4	1400 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	84 Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	80 Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Note 2	85
7	1400 K.C.	To Antenna Receptacle on Radio	*250 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	84 Note 4

ALIGNING PROCEDURE

MODEL F-1640

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning				
2	470 K.C.	To Grid of 6A7 Tube	.5 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	25 15 17
3	1580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Note 2	79
4	1400 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	77 Note 4
5	580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	24 Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Note 2	79
7	1400 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	77 Note 4

Make all adjustments for maximum reading on the output meter.

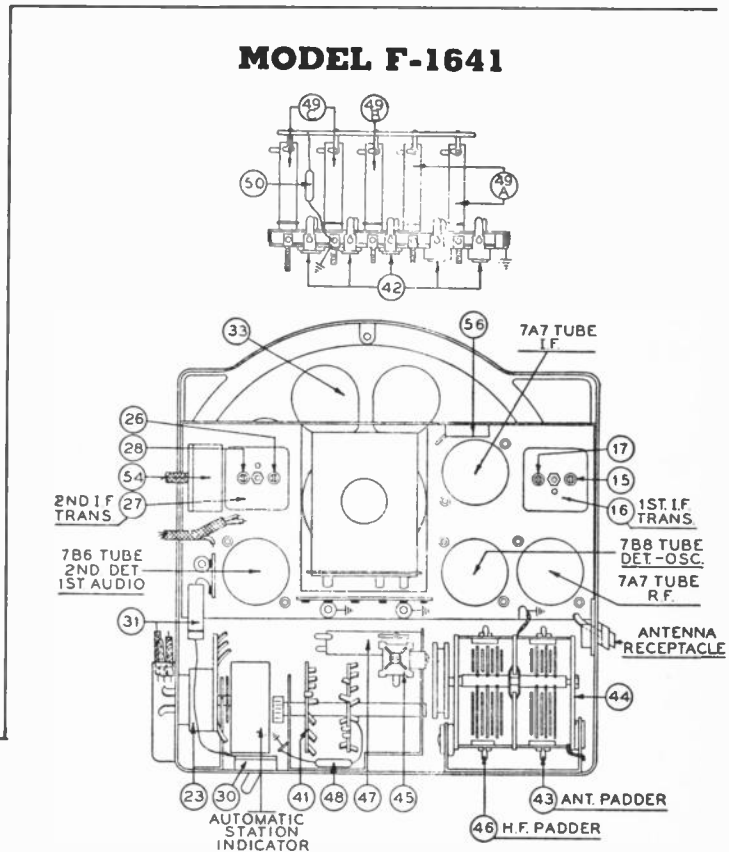
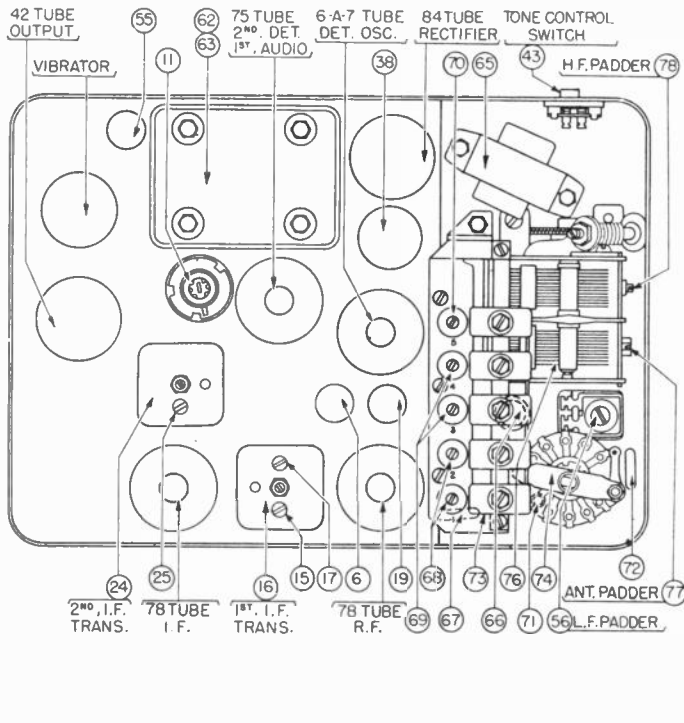
NOTE 1 — Connect the antenna lead, Part No. 95-0063, to the antenna receptacle in the radio. Connect a 30 mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune

the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.



OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning				
2	470 K.C.	To Antenna Receptacle on Radio	.5 Mfd.	Note 2	28 26 17 15 28 26
3	1580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Note 2	46 43 Note 4
4	580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	45 Note 3
5	1580 K.C.	To Antenna Receptacle on Radio	30 Mmfd. See Note 1	Note 2	46

ALIGNING PROCEDURE

MODEL L-1660

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1				Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.	
2	470 K.C.	To Grid of 6A7 Tube	.1 Mfd.	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	27 26 17
3	1580 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Note 2	55
4	1400 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	50 Note 4
5	580 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Set Tuning Condenser at 580 K.C.	52 Note 3
6	1580 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Note 2	55
7	1400 K.C.	To Antenna Receptacle on Radio	*800 Mmfd. See Note 1	Set Tuning Condenser at 1400 K.C.	54 Note 4

Make all adjustments for maximum reading on the output meter.

NOTE 1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 800 Mmfd. Condenser in series between the signal generator and the antenna lead.

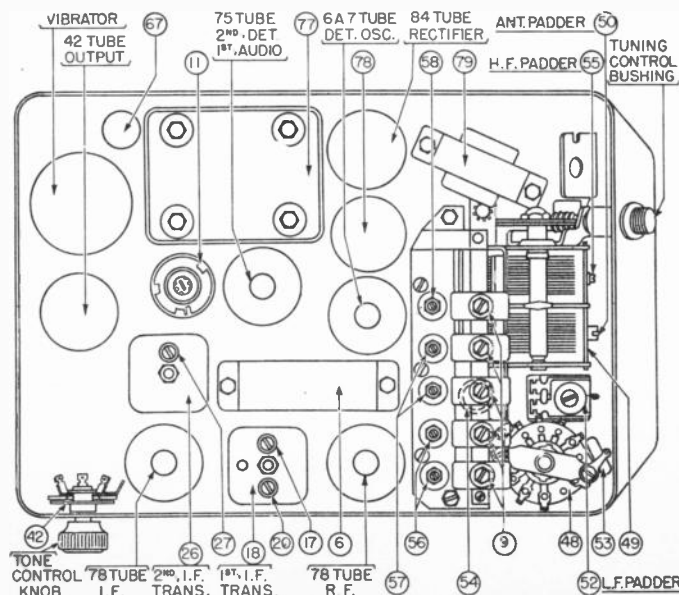
Special Note: — When the tire compartment door antenna is used follow the above procedure. Be sure the lead to the antenna transformer is connected to the red terminal of the Antenna Transformer.

*When the cowl antenna is used, connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the Radio. No dummy capacity is necessary. Be sure the lead to the antenna transformer is connected to the black terminal of the antenna transformer.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency paddler. Tune the condenser to the signal and adjust the paddler for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the paddler for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.



ALIGNING PROCEDURE

MODEL C-1708

OPERATIONS	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
Press the "DIAL" button and stations can be tuned in by "DIAL" tuning					
1	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 1	(27) (25) (18) (16) (27) (23) (18) (16)
2	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 1	(12) minimum
3	1400 K. C.	To Antenna Receptacle on Radio	20 mmfd. Note 2	Set tuning control at 1400 K. C.	(4)
4	580 K. C.	To Antenna Receptacle on Radio	20 mmfd. Note 2	Set tuning control at 580 K. C.	(56) Note 3
5	1400 K. C.	To Antenna Receptacle on Radio	20 mmfd. Note 2	Set tuning control at 1400 K. C.	(4) Note 4

Make all adjustments for maximum reading on the output meter unless otherwise specified.

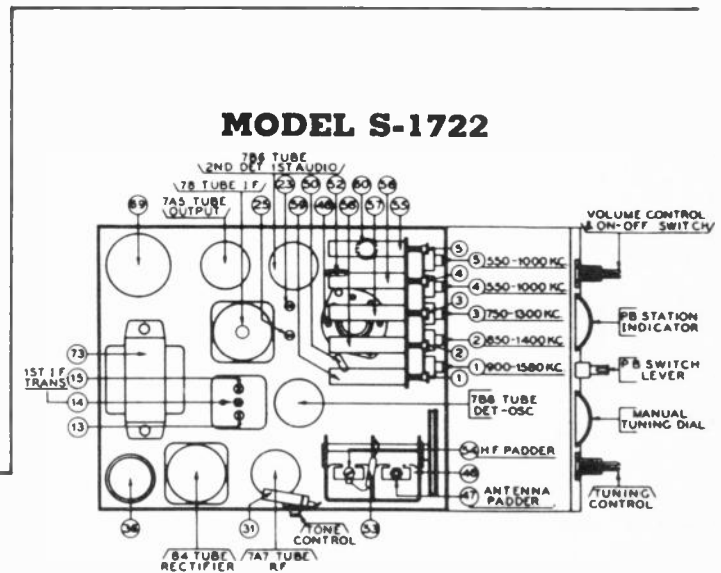
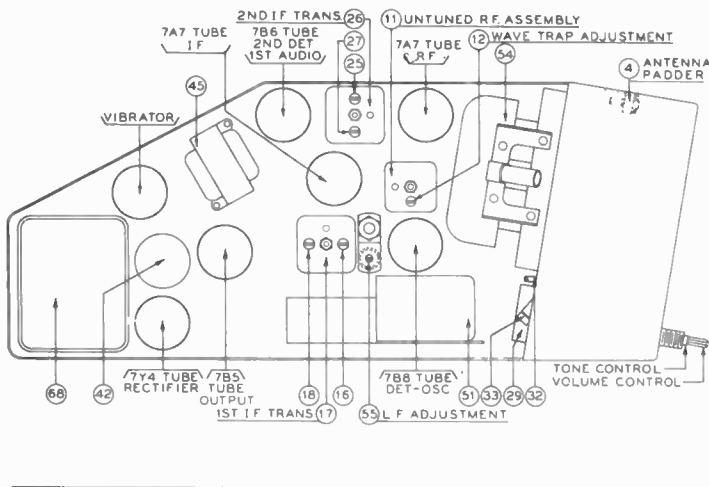
NOTE 1—Turn the tuning control knob clockwise as far as it will go.

NOTE 2—Connect the Chrysler Antenna lead, Part No. 95-0106, to the antenna receptacle on the radio. Connect a 20 mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 3—Rotate the tuning control when adjusting the Low Frequency screw (5). Tune to the signal and adjust

the screw for maximum output. Turn the tuning control knob slightly, first one way then the other, for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4—When the Antenna Stage adjustment is made with the Radio installed in the car, the Radio Antenna lead must be connected to the Cowl Antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna lead but not connected to it and adjust padder (4) for maximum signal at 1400 K. C.



OPERATIONS	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.				
2	470 K. C.	To Grid of 7B I. F. Tube	.5 mfd.	Note 6	(25) (23)
3	470 K. C.	To Antenna Receptacle on Radio	.5 mfd.	Note 6	(15) (13)
4	1580 K. C.	To Antenna Receptacle on Radio	35 mmfd. See Note 5	Note 2	(54)
5	1360 K. C.	To Antenna Receptacle on Radio	35 mmfd. See Note 5	Set tuning condenser at 1360 K. C.	(47) Note 7

NOTE 5—Connect the antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect a 35 mmfd. Condenser in series between the signal generator and the antenna lead.

NOTE 6—Turn the condenser rotor plates completely out of mesh as far as it will go.

NOTE 7—When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

ALIGNING PROCEDURE

MODEL S-1726

OPERATIONS	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
Press the automatic push button until "DIAL" appears in the window and stations can be tuned in by manual tuning					
1	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 1	Ⓢ Ⓣ Ⓡ Ⓟ Ⓢ Ⓣ Ⓡ Ⓟ
2	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 1	Ⓡ minimum
3	1400 K. C.	To Antenna Receptacle on Radio	30 mmfd. Note 2	Set tuning control at 1400 K. C.	Ⓢ
4	580 K. C.	To Antenna Receptacle on Radio	30 mmfd. Note 2	Set tuning control at 580 K. C.	Ⓡ Note 3
5	1400 K. C.	To Antenna Receptacle on Radio	30 mmfd. Note 2	Set tuning control at 1400 K. C.	Ⓢ Note 4

Make all adjustments for maximum reading on the output meter unless otherwise specified.

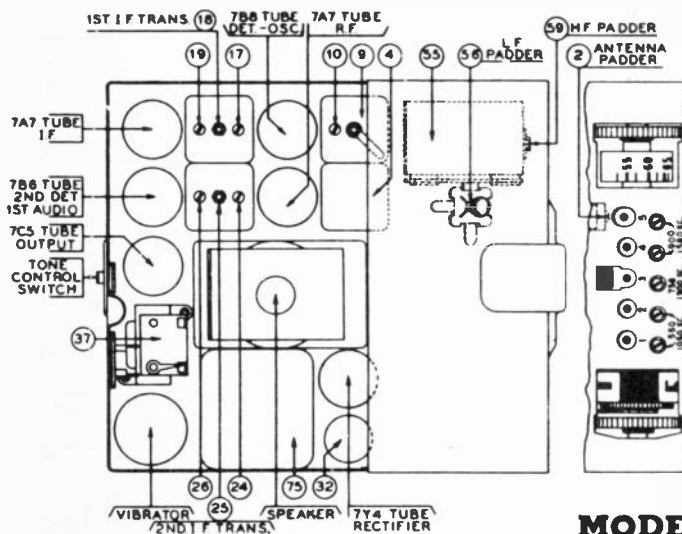
NOTE 1 — Turn the tuning control knob clockwise as far as it will go.

NOTE 2 — Connect the Antenna lead, Part No. 95-0120, to the antenna receptacle on the radio. Connect a 30 mmfd. Condenser in series between the signal generator and the antenna lead. Ground the shield pigtail to the signal generator.

NOTE 3 — Rotate the tuning control when adjusting the Low Frequency screw Ⓡ. Tune to the signal and adjust the screw for maximum output. Turn the tuning control knob slightly, first one way then the other, for maximum output. Repeat this procedure until no further improvement is noticed.

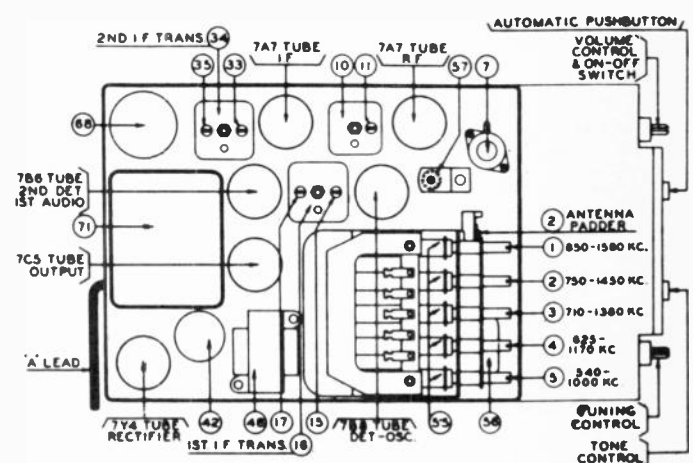
NOTE 4 — When the Antenna Stage adjustment is made with the Radio installed in the car, the Radio Antenna lead must be connected to the Cowl Antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna lead but not connected to it and adjust padder Ⓢ for maximum signal at 1400 K. C.

MODEL F-1740



MODEL F-1740

MODEL S-1726



OPERATIONS	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
Press the Automatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.					
1	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 2	Ⓢ Ⓣ Ⓡ Ⓟ Ⓢ Ⓣ Ⓡ Ⓟ
2	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 2	Ⓡ Minimum
3	1580 K. C.	To Antenna Receptacle on Radio	See Note 1	Note 2	Ⓢ
4	1400 K. C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K. C.	Ⓢ
5	580 K. C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K. C.	Ⓡ Note 3
6	1580 K. C.	To Antenna Receptacle on Radio	See Note 1	Note 2	Ⓢ
7	1400 K. C.	To Antenna Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K. C.	Ⓢ Note 4

ALIGNING PROCEDURE

MODELS L-1760 and L-1761

OPERATIONS	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
Press the Rotomatic Station Selector button until "DIAL" appears in the window and stations can be tuned in by Manual Tuning.					
1	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 2	②⑦ ②⑤ ①⑨ ①⑦ ②⑦ ②⑤ ①⑨ ①⑦
2	455 K. C.	To Antenna Receptacle on Radio	.1 mfd.	Note 2	⑨ Minimum
3	1580 K. C.	To Antenna Receptacle on Radio	See Note 1 *830 mmfd.	Note 2	⑥①
4	1360 K. C.	To Antenna Receptacle on Radio	See Note 1 *830 mmfd.	Set Tuning Condenser at 1360 K. C.	⑤④
5	590 K. C.	To Antenna Receptacle on Radio	See Note 1 *830 mmfd.	Set Tuning Condenser at 590 K. C.	⑤⑦ Note 3
6	1580 K. C.	To Antenna Receptacle on Radio	See Note 1 *830 mmfd.	Note 2	⑥①
7	1360 K. C.	To Antenna Receptacle on Radio	See Note 1 *830 mmfd.	Set Tuning Condenser at 1360 K. C.	⑤④ Note 4

Make all adjustments for maximum reading on the output meter unless otherwise specified.

NOTE 1 — Connect the antenna lead part number 95-0120 to the antenna receptacle on the radio. Connect an 830 mmfd. condenser in series between the antenna lead and the signal generator. Ground the shield pigtail on the antenna lead to the signal generator.

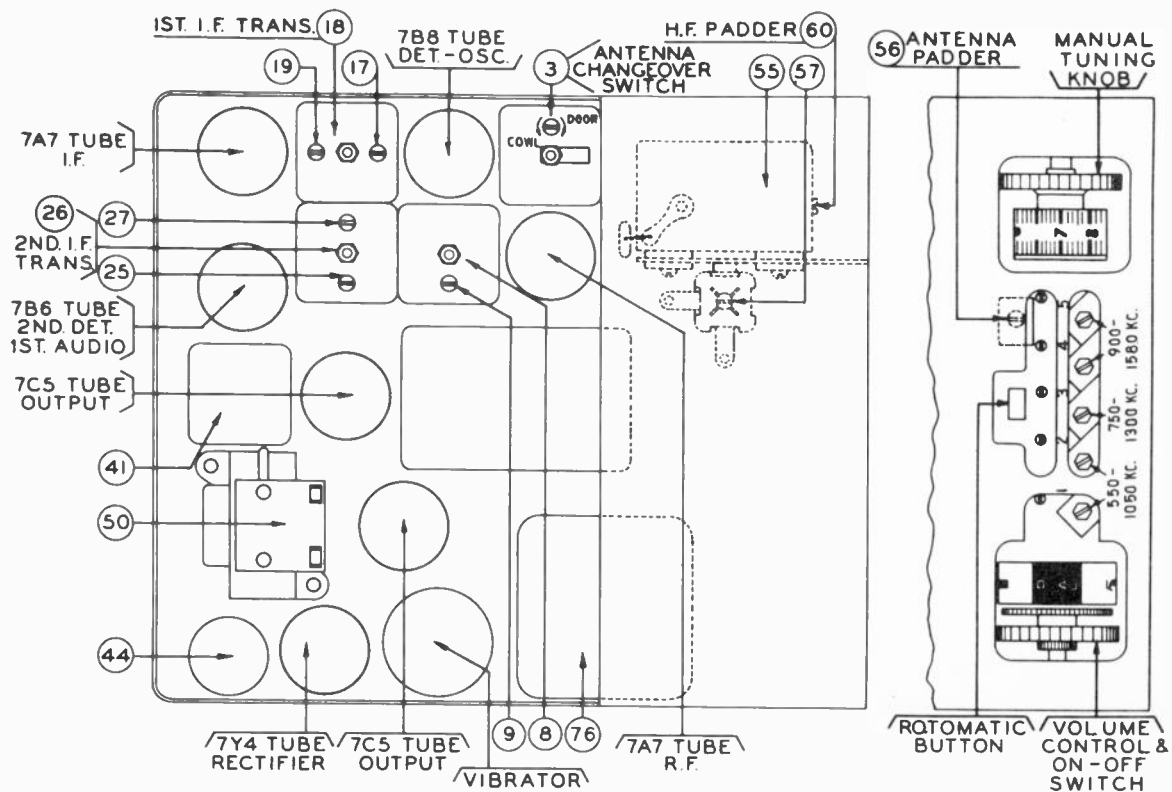
* When the tire compartment door antenna is used follow the above procedures. Be sure the antenna switch ③ is turned clockwise.

When the cowl antenna is used, connect the antenna lead, part number 95-0120, to the antenna receptacle in the radio. Connect a 45 mmfd. condenser in series between the antenna lead and signal generator. Ground the shield pigtail on the antenna lead to the signal generator. Be sure the antenna switch ③ is turned counter-clockwise.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.



SETTING UP ELECTRIC TUNING

MODEL C-1606

Turn on the Receiver and allow it to operate for TWENTY MINUTES or longer if possible. During this time, proceed with the following:

1. Remove the instrument panel cover plate over the station adjusting screws (right side) (see illustration for Model C-1606). This cover is held on by spring clips and can be easily pried off. Remove the pilot lamp assembly from over the adjusting screws by loosening the screw holding it in place.

Remove the cover plate over the adjusting screws on the left side. See illustration for Model C-1606.

2. Select and remove from the call letter sheets, 6 call letter tabs of popular stations received in the area where the customer intends to operate the radio, selecting stations within the range of each button as shown in illustration for Model C-1606. Reference to programs published in your local newspaper aids in quick selection of stations.

3. Place the call letter tabs in the retainer in the order of the station frequency with station tab of lowest frequency at the bottom.

Example: Station WEAJ whose frequency is 660 K. C. in the bottom (No. 6) retainer, and station WJZ whose frequency is 760 K. C. in the second from the bottom, etc.

Snap the station tab retainer back in place.

ADJUSTING ELECTRIC TUNING SCREWS —

4. Be sure the variator control is in the "Detent" (center) position before making any adjustments. A definite center point will be found where the control comes to a slight stop if the control is turned left or right.

5. With a small screw driver turn the bottom adjusting screw (No. 6) in the left column, to the right or left until the station whose call letters are in the bottom retainer is heard. Turning the adjusting screw to the right reduces the frequency, and turning to the left increases the frequency. Then adjust the corresponding screw in the right column, turning right or left until maximum volume is had. The adjustment on strong signals can be made best inside a shielded area such as a steel building, or under a viaduct.

Continue the above procedure with each button upward in order of frequency and each pair of corresponding adjusting screws until all 6 stations are set up and are received correctly when their particular buttons are pressed. The whole adjustment MUST be repeated to be sure the settings are correct.

The Receiver may be set up before installing in the car, but FINAL adjustments must be made with the radio operating on the antenna in the car.

Eight hundred call letter tabs in sheet form are furnished so that at least six popular radio broadcasting stations can be selected.

BE SURE AND SAVE THE UNUSED CALL LETTERS, GIVING THEM TO THE OWNER AS THEY MAY BE NEEDED AT SOME FUTURE TIME IF THE RADIO IS TO BE OPERATED IN A DIFFERENT AREA WHERE THE LOCAL STATIONS ARE NOT THE SAME.

FREQUENCY RANGE

950 TO 1500
KILOCYCLES

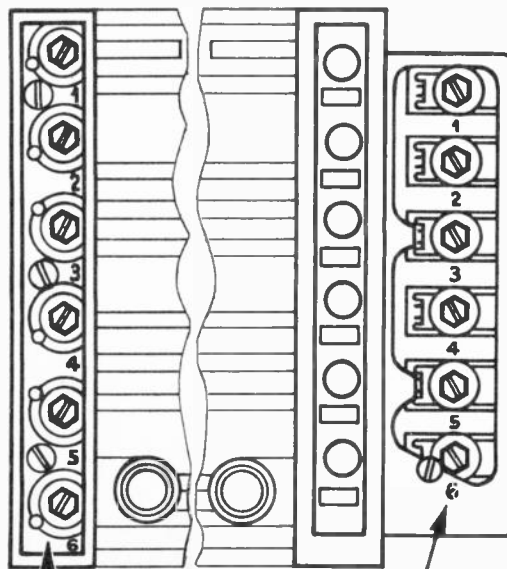
950 TO 1500
KILOCYCLES

750 TO 1250
KILOCYCLES

750 TO 1250
KILOCYCLES

550 TO 950
KILOCYCLES

550 TO 950
KILOCYCLES



LEFT ADJUSTING
SCREWS

RIGHT ADJUSTING
SCREWS

ADJUSTING SCREWS AND FREQUENCY RANGE

MODEL C-1608

Turn on the Radio and allow it to operate for TWENTY minutes before making adjustments. If adjustments are made while outside temperatures are quite low, or if the Radio has been stored in a cold place, it is advisable that the Radio be allowed to warm up at least THIRTY minutes before proceeding with adjustments.

1. Remove the instrument panel cover plate over the station adjusting screw. Remove the pilot lamp assembly from over the adjusting screws by loosening the screws holding it in place.

2. Select and remove from the call letter sheets, five call letter tabs of popular stations received in the area where the customer intends to operate the radio, selecting stations within the range of each button as shown in illustration for Model C-1608. Reference to programs published in your local newspapers aids in quick selection of stations.

3. Place the call letter tabs in the retainer in the order of the station frequency with station tab of lowest frequency at the bottom.

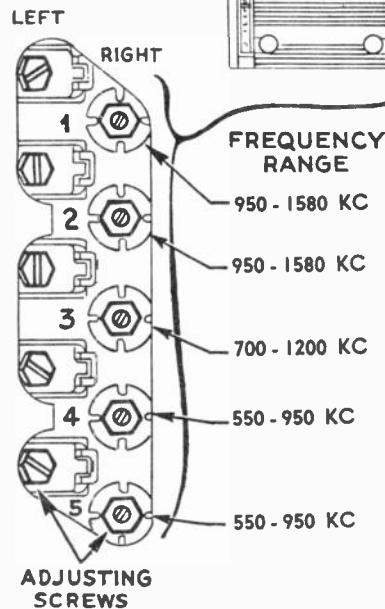
Example: Station WEAJ whose frequency is 660 K. C. in the bottom (No. 5) retainer, and station WJZ whose frequency is 760 K. C. in the second from the bottom, etc.

Snap the station tab retainer back in place.

4. Push in the top button—"Dial". This adjusts the Receiver so that tuning may be done with the manual tuning control knob in the conventional manner.

5. Tune in with the manual tuning control knob, the station whose call letters are in the bottom retainer and note the program. Now push in the button corresponding to these call letters.

REMOVE THIS COVER PLATE ON
INSTRUMENT PANEL FOR
ACCESS TO ADJUSTING SCREWS



ADJUSTING SCREWS AND FREQUENCY RANGE

With a small screw driver turn the bottom adjusting screw (No. 5) in the right column, to the right or left until the same station is heard. Then adjust the corresponding screw in the left column, turning right or left until maximum volume is had. If in doubt as to the station, push the "Dial" button and recheck. The adjustment on strong signals can be made best inside a shielded area such as a steel constructed building, or under a viaduct.

Continue the above procedure with each button upward in order of frequency and each pair of corresponding adjusting screws until all five stations are set up and are received correctly when their particular buttons are pressed. It is advisable to repeat the whole adjustment to be sure the settings are correct.

The Receiver may be set up before installing in the car, but FINAL adjustments must be made with the radio operating on the antenna in the car.

Eight hundred call letter tabs in sheet form are furnished so that at least five popular radio broadcasting stations can be selected anywhere in the United States.

BE SURE AND SAVE THE UNUSED CALL LETTERS, GIVING THEM TO THE OWNER AS THEY MAY BE NEEDED AT SOME FUTURE TIME IF THE RADIO IS TO BE OPERATED IN A DIFFERENT AREA WHERE THE LOCAL STATIONS ARE NOT THE SAME.

SETTING UP AUTOMATIC TUNING

MODEL S-1616

INSTALLING CALL LETTERS IN AUTOMATIC TUNING DIAL

One of the "A" leads on the back of the control head must be connected so that the current is supplied to operate the automatic control dial. Insert the fuse in the fuse housing in the separate "A" lead (supplied in the radio package), and connect to the "A" lead on the control. The eyelet end of this lead should be connected to the terminal of the Gas Gauge nearest the center of the car.

1—Select and remove from the Call Letter Sheets, the Call Letters of five popular stations in the area in which the radio is to be operated and that comes within the frequency range of the positions on the dial as shown in Illustration for Model S-1616.

2—If the section of the dial in which the tab marked "DIAL" is not at the indicator window, push the Automatic Station Selector until it is in position in the indicator window. The control must be held against the edge of the instrument panel in order to complete the electrical circuit.

3—Push the Automatic Station Selector once more and No. 1 section of the dial will rotate to the front. Insert in this position the call letter tab of the station having the highest kilocycle frequency.

EXAMPLE: The No. 1 position may have the call letters of a station operating on 1400 kilocycles; the No. 2 position, a station operating on 1050 kilocycles, etc.

4—Repeat this procedure until all five call letter tabs selected are inserted in the dial in the order of their frequency. Be sure and record the call letters with respect to their position on the dial for use in setting up the adjusting screws.

5—The control unit should now be completely installed. Remove the trim panel covering the control openings and place the control unit in position in the back of the instrument panel. Insert the bezel windows in the bezel plate, and apply the bezel plate to the front of the panel. The control and bezel are assembled to the instrument with gland nuts. Using the special gland nut wrench provided, tighten the nuts and then apply the two knobs.

SETTING UP THE RECEIVER FOR AUTOMATIC TUNING

Before setting up the Receiver for automatic tuning, it is necessary to synchronize the automatic dial to the Receiver as follows:

Try to tune in a station with the tuning control knob. If no station can be picked up, push the automatic station selector button until the position is found where stations can be tuned in. This is the "DIAL" position. Remove the automatic control cable from the Receiver and again push the automatic station selector button until the word "DIAL" appears in the dial window. The automatic control cable should then be replaced in its socket on the Receiver and secured with the two self threading screws supplied.

1—Turn the Receiver on and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic tuning adjusting screws. This plate is on the control end of the Receiver and can easily be pried off.

2—Push the automatic station selector button until the word "DIAL" is at the indicator window. Tune in the station whose call letters are in the No. 5 position on the dial (the lowest frequency station) and note the program. Push the automatic selector button five times and this station's call letters will appear at the indicator window.

IMPORTANT—Start adjustments with low frequency screws.

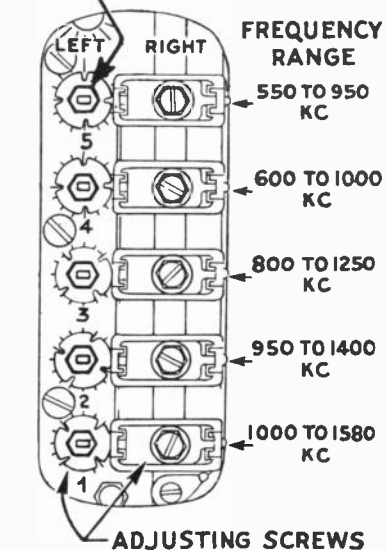
3—With a small screwdriver, turn the No. 5 adjusting screw (See Illustration for Model S-1616) in the left column to the right or left until the station is tuned in. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

4—Press the automatic station selector button until "DIAL" again is at the indicator window and tune in the station whose call letters are in the No. 4 position on the automatic dial (the next higher frequency). Press the automatic button four times and adjust the number 4 set of adjusting screws to this station.

Repeat this procedure until each of the five pairs of adjusting screws has been tuned to its respective station.

It is NECESSARY that the setting of the adjusting screws be repeated to be sure they are properly set so that maximum performance may be had.

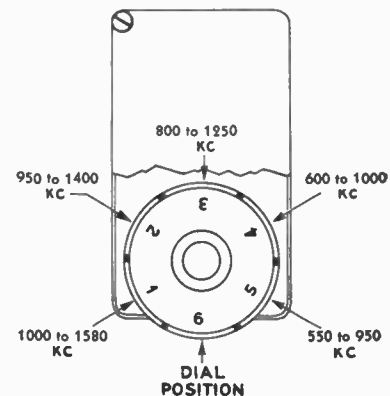
TURN ADJUSTING SCREWS COUNTER CLOCKWISE TO INCREASE AND CLOCKWISE TO DECREASE FREQUENCY.



VIEW OF AUTOMATIC ADJUSTING SCREWS

Be sure and save the unused call letters giving them to the owner as they may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

If the Stations set up on the Automatic Tuning Dial should at some time tune in at the wrong position, the dial can be easily synchronized to the radio as follows:



PHANTOM VIEW OF THE AUTOMATIC-DIAL SHOWING POSITIONS ON DIAL AND FREQUENCY RANGE OF EACH

- 1—Find "DIAL" position as explained in the second Paragraph under "Setting up the Receiver for Automatic Tuning."
- 2—Remove the automatic cable from the socket on the end of the Receiver.
- 3—Press the automatic station selector button until "DIAL" appears in the Automatic Window.
- 4—Replace automatic cable.

SETTING UP AUTOMATIC TUNING

MODEL P-1617

PREPARING FOR AUTOMATIC TUNING ADJUSTMENTS

Turn on the Receiver and allow it to operate for TWENTY minutes before starting this procedure.

1—Try to tune in a station with the manual tuning control knob. If no station is received, press the Automatic Station Selector button and again try to tune in a station. Repeat if necessary until the Automatic Station Dial has rotated to a point where stations may be tuned in with the manual tuning knob. This point will be the "DIAL" position of the Automatic Station Selector and call letters may now be inserted in the dial.

2—Remove the right knob, gland nut cover, gland nut and bezel.

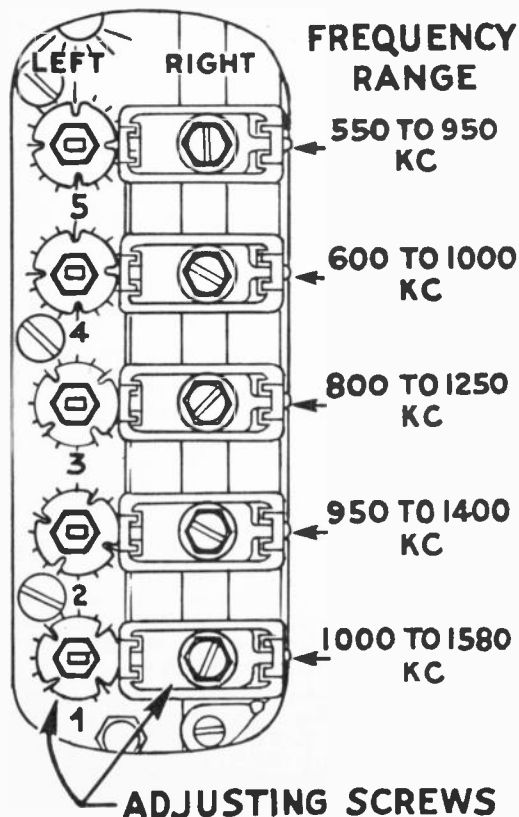
Remove the pilot lamp assembly from the automatic dial housing.

Remove the two screws in the front right side of the automatic dial housing. (These screws can be seen thru the opening in the instrument panel when the bezel is removed.)

3—Remove the Automatic Control Dial and assembly from the control units and drop it down below the edge of the instrument panel so that the dial is accessible.

4—Select and remove from the call letter sheets, the call letters of five popular stations received in the area in which the radio is to be operated, and that come within the frequency range of the adjusting screws as shown in Illustration for Model P-1617: Also remove the tab marked "DIAL."

5—Insert the "DIAL" tab in the slot in the dial which is now at the front. (The position just located by being able to tune in a station).



6—Hold the dial assembly against the edge of the instrument panel to complete the electrical connection and press the Automatic Station Selector button once. The dial will now rotate one position. The front slot is for the call letters of the station with the highest frequency in kilocycles.

Press the Selector button once more and insert the call letters of the station with the next highest frequency in kilocycles.

EXAMPLE: The first position may have a station operating on 1400 kilocycles; the second position, station operating on 1050 kilocycles, etc.

Repeat this procedure until all five station call letter tabs selected are inserted in the dial in the order of their frequencies. Be sure to record the call letters with respect to their position on the dial for use in setting up adjusting screws.

7—Replace dial assembly, dial assembly screws, bezel, gland nut, and knob.

8—Remove the plate on the end of the Receiver which covers the adjusting screws. This is held by snap springs and can easily be pried off.

AUTOMATIC TUNING ADJUSTMENTS

It is necessary to adjust the "LOW" frequency adjusting screws first.

Push the Automatic Selector Button until the word "DIAL" appears in the dial window. Tune in the broadcast station whose call letters are in the No. 5 position on the automatic dial (the lowest frequency station) and note the program.

Push the Automatic Selector Button five times and this station's call letters will appear in the dial window.

With a small screwdriver, turn the No. 5 adjusting screw in the left column to the right or left until the same station is tuned in. See illustration for Model P-1617. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

Press the Automatic Selector Button until "DIAL" again appears in the window and tune in the station whose call letters are in the No. 4 position. Then press the automatic selector button four times and adjust the No. 4 set of adjusting screws.

Repeat this procedure until all five parts of adjusting screws have been set on their respective station. It is NECESSARY to recheck the setting of the adjusting screws to be sure they are properly set so that maximum performance may be had. Stations may be set up before installing the Receiver but final adjustment must be made with the radio operating on the antenna in the car.

If at any time the Stations set up on the Automatic Tuning Dial should tune in at the wrong position, the dial can be easily synchronized to the radio as follows:

1—Find "DIAL" position as explained in Paragraph 1, under "Preparing for Automatic Tuning Adjustments."

2—Remove the automatic cable from the socket on the end of the Receiver.

3—Press the Automatic Station Selector button until "DIAL" appears in the Automatic Window.

4—Replace automatic cable.

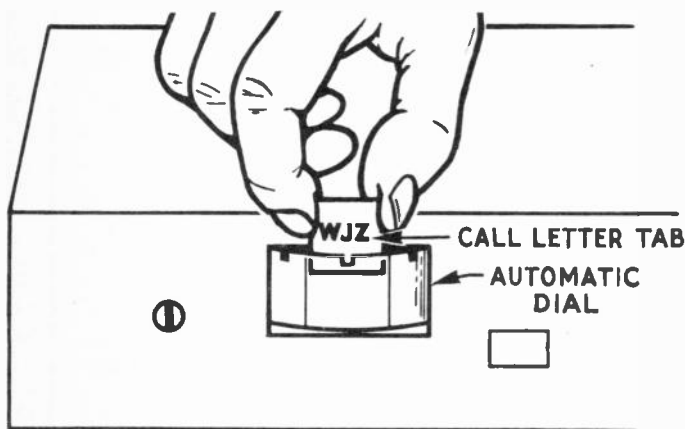
SETTING UP AUTOMATIC TUNING

MODELS S-1622 and S-1722

INSTALLING CALL LETTERS

Before installing the Receiver, the Call Letters of the stations which are to be tuned in automatically must be inserted in the Automatic Dial. See Illustration, Models S-1622, S-1722. Select and remove from the Call Letter Sheets, the Call Letters of five popular stations received in the area in which the radio is to be operated and that come within the frequency range of the adjusting screws as shown in Illustration Models S-1622, S-1722. Each of the adjusting screws cover the portion of the broadcast band as indicated in Illustration, Models S-1622, S-1722. It is important, therefore, that only such stations be selected as can be tuned in in the range as covered by each screw.

Push the Automatic Station Selector until the word "DIAL" is at the front. This is the starting point. Push the Automatic Station Selector once more and the first position of the dial will be at the front. Insert in this position the call letter tab of the station having the highest frequency in kilocycles. Insert in back of each tab one of the clear celluloid tabs. Press the Automatic Station Selector button once more and insert the call letters of the station with the next highest frequency in kilocycles in the second position.

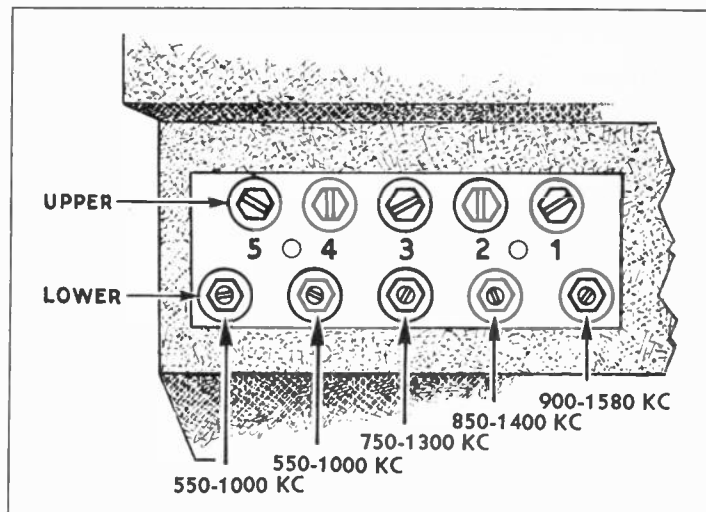


Installing Call Letter Tabs

EXAMPLE—The first position may have the call letters of a station operating on 1400 kilocycles; the second position, a station operating on 1050 kilocycles, etc. Repeat this procedure until all five call letter tabs selected are inserted in the dial in the order of their frequency. Be sure and record the call letters with respect to their position on the dial for use in setting up the adjusting screws.

1—Turn the Receiver on and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic tuning adjusting screws. This plate is on the front of the Receiver and is removed by removing two screws.

2—Push the Automatic Station Selector button until the word "DIAL" is at the indicator window. Tune in the station whose call letters are in the first position on the dial (the highest frequency station) and note the program. Push the Automatic Selector button once and this station's call letters will appear at the indicator window.



3—With a small screwdriver, turn the No. 1 adjusting screw (See Illustration, Models S-1622, S-1722) in the lower column, to the right or left until this station is tuned in. Now adjust the corresponding screw in the upper column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

When adjusting for Automatic Tuning on strong local stations the antenna rod should be all the way down and the adjustments made with the car in a shielded area, such as in a steel constructed building or under a viaduct. This is necessary in order to obtain a weak signal so the adjustments can be accurately made.

4—Press the Automatic Station Selector button until "DIAL" again is at the indicator window and tune in the station whose call letters are in the second position on the automatic dial (the next lowest frequency). Press the automatic button two times and adjust the number 2 set of adjusting screws.

Repeat this procedure until each pair of the five pairs of adjusting screws has been tuned to its respective station.

IT IS NECESSARY THAT THE SETTING OF THE ADJUSTING SCREWS BE REPEATED TO BE SURE THEY ARE PROPERLY SET SO THAT MAXIMUM PERFORMANCE MAY BE HAD.

Be sure and save the unused call letters giving them to the owner as they may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

SETTING UP AUTOMATIC TUNING

MODELS P-1630 and P-1635

MODEL P-1630

1—First turn on the Receiver and allow it to operate for twenty minutes before making the adjustments. During this interval proceed with the other operations as follows:

2—Select and remove from the printed call letter sheet, call letters of six popular stations received in the area in which the radio is to be operated. Select the stations within the range of each button as shown in Illustration for Model P-1630.

3—Remove the knobs, gland nut covers and gland nuts. Loosen the two end mounting screws so the control assembly may be moved back to remove the bezels. Remove the bezel plates. (If the set is not yet installed, disregard the above).

4—Remove Chrome Caps from Push Buttons by pulling off. Insert a celluloid window and a call letter in each cap and install on the buttons as follows:

The cap with the call letters of the station having the lowest kilocycle frequency, should be placed on the extreme left button (No. 6). The next highest frequency call letters in second form extreme left (No. 5 position). Proceed in like manner from left to right with the remaining call letters in the order of their frequency.

EXAMPLE—A station broadcasting on 600 K. C. on No. 6 button, 750 K. C. on No. 5 button, 1000 K. C. on No. 4 button, etc.

Push control head back in place. Apply bezels, gland nuts and cover, and knobs. Tighten end mounting screws.

5—Remove the small cover plate on the front of the Receiver housing by prying off with a screw driver. This makes accessible the six pairs of screw adjustments for aligning the circuits to the frequency of the stations selected for automatic tuning.

6—Push in the small button (See Figure 1) marked "RETURN TO DIAL TUNING" until the mechanism stops and the Receiver is operating with the conventional tuning knob. Place the tone lever in the brilliant position.

7—Tune in with the manual tuning knob the station whose call letters are in the No. 6 button. Note the program and push in this button. With a small screw driver turn the screw in the left row opposite No. 6 (See Illustration for Model P-1630) to the right or left until the same station is heard. Now adjust the screw in the right row opposite No. 6, for maximum volume. If in doubt about the correct station, push the "Return to Manual" button and recheck.

Continue the same procedure with No. 5, 4, 3, 2, and 1 buttons in this rotation, until all six stations whose call letters are on the buttons can be tuned in by pushing their respective buttons. Replace the cover plate.

The Receiver and control may be set up before being installed in the car, but FINAL adjustments must be made with the radio operating on the antenna in the car.

Be sure to save, and give to the owner, the unused call letters from the printed sheet as they may be required at a new location at some future time.

MODEL P-1635

1—First turn on the Receiver and allow it to operate for TWENTY minutes before making the adjustments.

2—Select and remove from the printed call letter sheet, call letters of six popular stations received in the area in which the radio is to be operated. Select the stations within the range of each button as shown in Illustration, Model P-1635.

3—Remove the chrome caps covering the push buttons by prying them off gently with a small screw driver. Place the screw driver blade between the button face and rim of the chrome cap. Care must be taken not to bend the caps or lose the small piece of celluloid in each cap.

4—The buttons are arranged around the outer edge of the dial. The upper right button is No. 1, the middle button is No. 2, and the lower right button is No. 3. No. 4 is the lower left button, No. 5 is the middle button and No. 6 is the upper left button.

Place the call letter tab of the broadcast station having the lowest frequency in the No. 6 button cap and replace the cap

on the button. Put the tab of the station whose frequency is next highest, in No. 5 button cap and proceed in a like manner with the remaining buttons in a counter-clockwise direction.

EXAMPLE—A station broadcasting on 600 K. C. on No. 6 button, 750 K. C. on No. 5 button, 1000 K. C. on No. 4 button, etc.

5—Remove the small cover plate on the front of the Receiver housing by prying it off with a screw driver. This makes accessible the six pairs of screw adjustments for aligning the circuits to the frequency of the stations selected for automatic tuning. (See Illustration for Model P-1635).

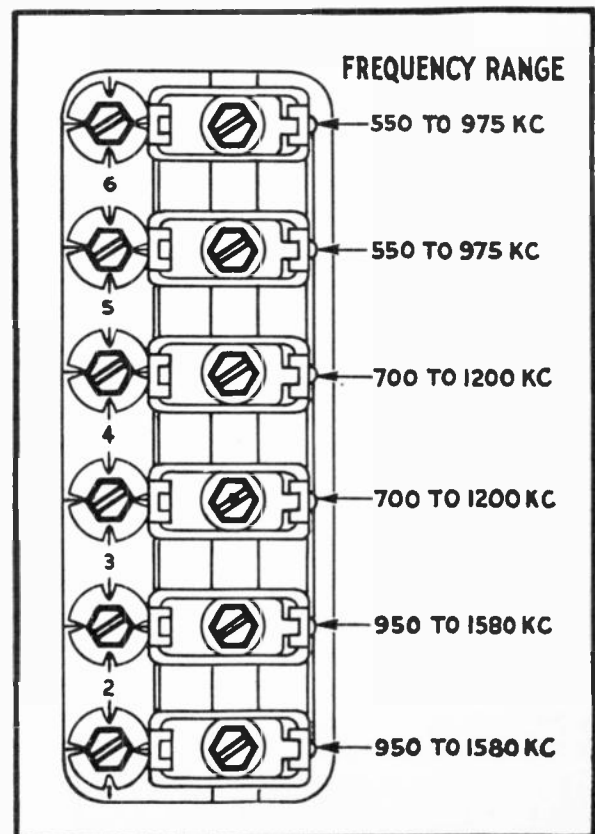
6—Push in the small round button marked "RETURN TO DIAL TUNING" until the mechanism stops and the Receiver is operating with the conventional tuning knob. Place the "Local-Distance" lever in the "DISTANCE" position and the tone lever in the "High" position.

7—Tune in with the manual tuning knob the station whose call letters are on the No. 6 button. Note the program and push in the No. 6 button. With a small screw driver turn the screw in the LEFT row opposite No. 6 (See Illustration for Model P-1635) to the right or left until the same station is heard. Now adjust the screw in the RIGHT row opposite No. 6 for maximum volume. If in doubt about the correct station, push the "RETURN TO DIAL TUNING" button and recheck.

Continue the foregoing procedure with Nos. 5, 4, 3, 2, and 1 buttons in rotation, until all six stations whose call letters are on the buttons can be tuned in by pushing their respective buttons. Replace the cover plate.

The Receiver and control may be set up before being installed in the car but FINAL adjustment must be made with the radio operating on the antenna in the car.

Be sure to save, and give to the owner, the unused call letters from the printed call letter sheet as they may be required at a new location as some future time.



ADJUSTING SCREWS AND FREQUENCY RANGE

SETTING UP AUTOMATIC TUNING

MODELS S-1626 and G-1628

SETTING UP THE RECEIVER FOR AUTOMATIC TUNING

Select and remove from the Call Letter Sheets, the Call Letters of five popular stations received in the area in which the radio is to be operated and that come within the frequency range of the adjusting screws as shown in Illustration for Models S-1626, G-1628. Also remove the tab marked "DIAL."

Insert the "DIAL" tab in the slot in the dial which is at the front.

Hold the control against the edge of the instrument panel in order to complete the electrical circuit and push the automatic selector button. The dial will rotate one position. Insert in the dial, the call letter tab of the station having the highest frequency in kilocycles. Press the selector button once more and insert the call letters of the station with the next highest frequency in kilocycles.

EXAMPLE—The first position may have the call letters of a station operating on 1400 kilocycles; the second position, a station operating on 1050 kilocycles, etc. Repeat this procedure until all five call letter tabs selected are inserted in the dial in the order of their frequency. Be sure and record the call letters with respect to their position on the dial for use in setting up the adjusting screws.

Before setting up the Receiver for automatic tuning, it is necessary to synchronize the automatic dial to the Receiver as follows:

Try to tune in a station with the tuning control knob. If no station can be picked up, push the automatic station selector button until the position is found where stations can be tuned in. This is the "DIAL" position. Remove the automatic control cable from the Receiver and again push the automatic station selector button until the word "DIAL" appears in the dial window. The automatic control cable should then be replaced in its socket on the Receiver and secured with the two self threading screws supplied.

1—Turn the Receiver on and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic tuning adjusting screws. This plate is on the front of the Receiver and can easily be pried off.

2—Push the automatic station selector button until the word "DIAL" is at the indicator window. Tune in the station whose call letters are in No. 5 position on the dial (the lowest frequency station) and note the program. Push the automatic selector button five times and this station's call letters will appear at the indicator window.

3—With a small screwdriver, turn the No. 5 adjusting screw (See Illustration for Models S-1626, S-1628) in the left column to the right or left until the station is tuned in. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

4—Press the automatic station selector button until "DIAL" again is at the indicator window and tune in the station whose call letters are in the No. 4 position on the automatic dial (the next higher frequency). Press the automatic button four times and adjust the number 4 set of adjusting screws.

Repeat this procedure until each of the five pairs of adjusting screws has been tuned to its respective station.

It is **NECESSARY** that the setting of the adjusting screws be repeated to be sure they are properly set so that maximum performance may be had.

Be sure and save the unused call letters, giving them to the owner as they may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

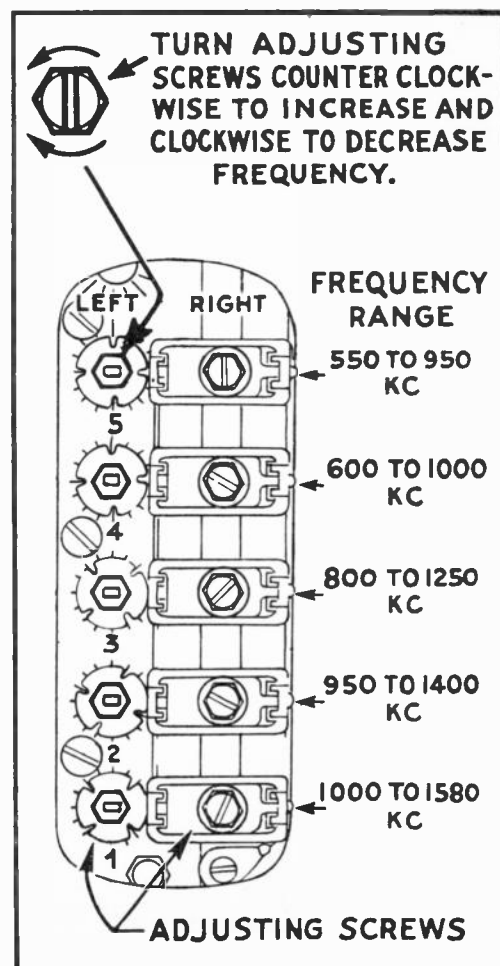
If the Stations set up on the Automatic Tuning Dial should at some time tune in at the wrong position, the dial can be easily synchronized to the radio as follows:

1—Find "DIAL" position as explained in the second Paragraph under "Setting up the Receiver for Automatic Tuning."

2—Remove the automatic cable from the socket on the end end of the Receiver.

3—Press the automatic station selector button until "DIAL" appears in the Automatic Window.

4—Replace automatic cable.



VIEW OF AUTOMATIC ADJUSTING SCREWS

SETTING UP AUTOMATIC TUNING

MODEL F-1640

The Automatic Dial is shipped less the call letters so that call letters of stations desired by the customer may be installed.

TO INSTALL CALL LETTERS—

1. Remove the Automatic Dial Assembly in the right end of the control from the Control housing. It is installed in the control like a drawer and can easily be pulled out from the rear of the control.

2. Turn on the Receiver so that current is supplied to operate the Automatic Dial, but do not advance the volume.

3. Select and remove from the call letter sheets the station call letter tabs of five popular stations received locally and that come within the frequency range of the positions on the dial as shown in illustration for Model F-1640. Reference to the radio section of the local newspaper will be helpful.

4. If the section of the dial in which the tab marked "DIAL" is not at the indicator window, push the Automatic Station Selector until it is in position in the indicator window.

5. Push the Automatic Station Selector once more and No. 1 section of the dial will rotate to the front. Insert in this position the call letter tab of the station having the highest kilocycle frequency. Insert in front of the tab one of the small celluloid tabs which you will find attached to the call letter sheets.

FOR EXAMPLE—Stations may have been selected that operated on 1500, 1350, 1000, 850 and 700 kilocycles. The call letters of the station operating on 1500 kilocycles would be inserted in the No. 1 position in the dial.

6. Push the Station Selector again and No. 2 position on the dial will be in front. Insert in this position the call letter tab of the station having the second highest kilocycle frequency and the celluloid tab. Referring to the Example, we find this is a station operating on 1350 kilocycles.

7. Repeat in like manner the insertion of call letters in positions 3, 4 and 5 on the dial, installing the call letters in the order of their frequency.

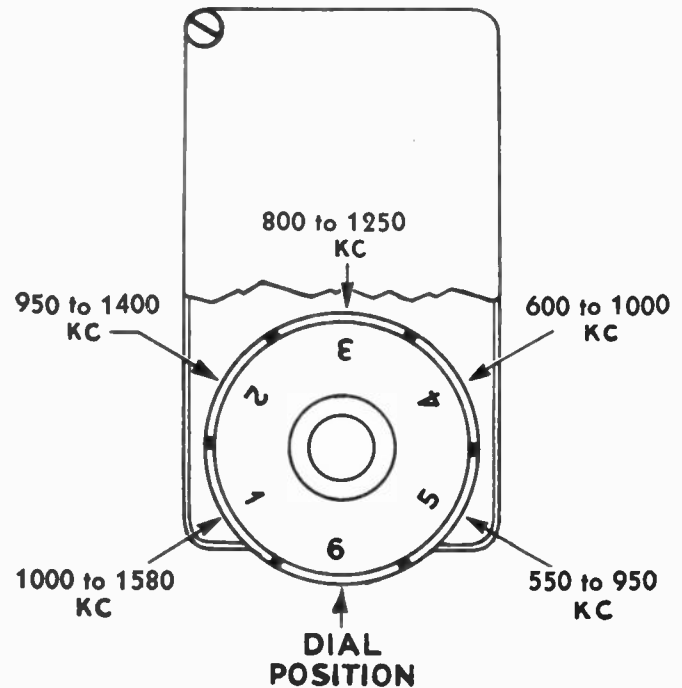
8. Replace the Automatic Dial Assembly in the Control Unit.

Before setting up the Receiver for automatic tuning, it is necessary to synchronize the Automatic dial to the Receiver as follows:

Turn on the Receiver and try to tune in a station with the Manual Tuning Control. If no station can be picked up, push the Automatic Station Selector until a position is found where stations can be tuned in. This is the "DIAL" position. Remove

WEAK SIGNAL FROM THE STATION SO THAT THE CIRCUIT WILL BE SHARPLY TUNED TO THE PARTICULAR STATION. BECAUSE OF THE STRENGTH OF THE SIGNAL FROM STRONG LOCAL STATIONS IT IS NECESSARY THAT THE ANTENNA ROD BE REMOVED FROM THE ANTENNA WHILE THESE ADJUSTMENTS ARE MADE SO THAT A MINIMUM OF SIGNAL WILL BE RECEIVED AND THUS ASSURE SHARP ADJUSTMENTS OF THE CIRCUITS.

1. Turn the Receiver "ON" and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic



PHANTOM VIEW OF THE AUTOMATIC-DIAL

tuning adjusting screws. This plate is on the front of the Receiver and can easily be pried off.

2. Push the Automatic Station Selector until the word "DIAL" is at the Automatic Dial Window. Tune in the station whose call letters are in the No. 5 position on the dial (the lowest frequency station—see dial illustration), and note the program so that it can be identified. Push the Automatic Station Selector five times and this station's call letters will appear at the Automatic window.

3. With a small screwdriver, turn the No. 5 adjusting screw (see illustration for Model F-1640) in the left column to the right or left until that station is tuned in. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

4. Press the Automatic Station Selector until "DIAL" again is at the Automatic window and tune in the station whose call letters are in the No. 4 position (the next highest frequency) on the Automatic dial. Press the Automatic Station Selector four times to bring the No. 4 station's call letters in view and adjust the No. 4 set of adjusting screws to this station.

Repeat this procedure until each of the five pairs of adjusting screws has been adjusted to its respective station.

It is NECESSARY that the setting of the adjusting screws be repeated in the order given to be sure they are properly set for maximum performance.

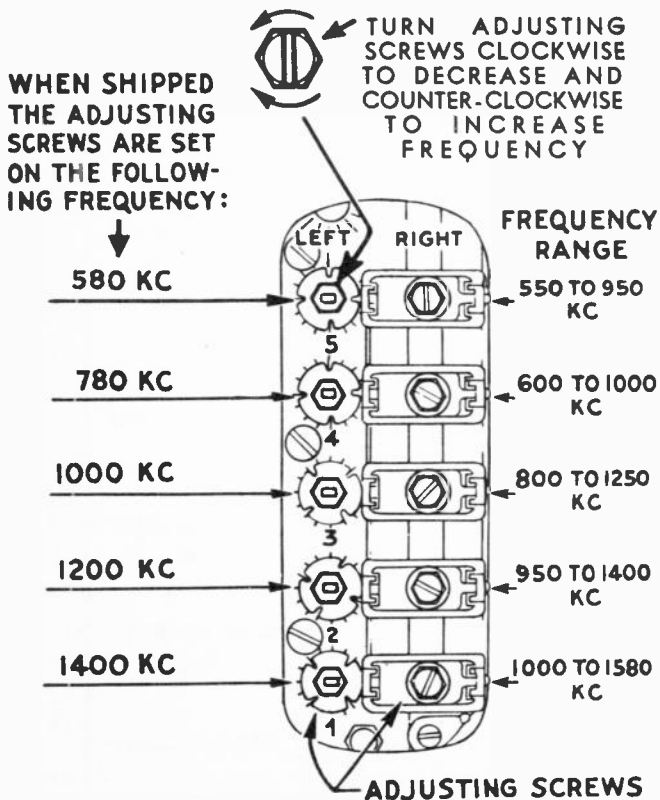
The call letters may be installed and the radio adjusted to the stations whose call letters are on the Automatic dial before the Receiver is installed in the car, but final adjustments to the adjusting screws must be made with the radio installed in the car and operating with the car antenna.

Be sure and save the unused call letters and give them to the owner. They may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

If the Stations set up on the Automatic Tuning Dial should at some time tune in at the wrong position, the dial can be easily synchronized to the radio as explained above.

1400 KILOCYCLE ADJUSTMENT—

Tune the Receiver manually to a weak station at or near 1400 kilocycles on the dial. If there is no station at that point then turn the volume control up until atmospheric background noise is heard. Remove the LARGE snap button on the end of the Receiver and adjust the trimmer by rotating the trimmer nut left or right until the station or background noise is loudest.



VIEW OF AUTOMATIC ADJUSTING SCREWS

the Master Control Cable plug from the Receiver by squeezing the two springs on the plug and pulling out. Push the Automatic Station Selector until the word "DIAL" appears in the dial window. The Master Control Cable plug should then be replaced in its socket on the Receiver.

The adjusting screws in the Receiver can now be adjusted to the stations set up on the Automatic dial. IT IS VERY IMPORTANT THAT THESE ADJUSTING SCREWS BE SET ON A

SETTING UP AUTOMATIC TUNING

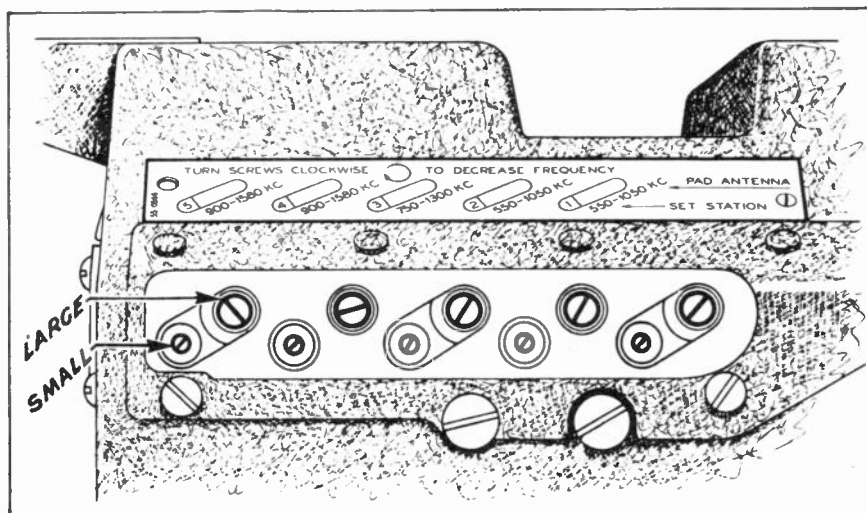
MODEL F-1641

TURN THE RADIO "ON" AND ALLOW IT TO OPERATE FOR AT LEAST TWENTY MINUTES BEFORE MAKING ADJUSTMENTS.

1—Select five popular local stations whose frequencies come within the ranges of the five Automatic Tuning Circuits and list them on the back of the OWNER'S MANUAL under "STATION RECORD," for the Owner's reference, also on the chart above the adjusting screws. List the lowest frequency station as No. "1" and so on down to the highest frequency

the lowest frequency (No. 1 Station) and note the program so that it can be identified. Push the Automatic Station Selector once and No. "1" will appear in the indicator dial.

4—With a small screw driver turn the SMALL No. 1 adjusting screw until this station is tuned in. Then adjust the LARGE No. 1 screw in the other row until maximum volume is heard. IT IS VERY IMPORTANT THAT THESE ADJUSTING SCREWS BE SET ON A WEAK SIGNAL FROM THE STATION SO THAT THE CIRCUIT WILL BE



BOTTOM VIEW OF RADIO SHOWING LOCATION OF ADJUSTING SCREWS

quency which should be No. "5." The range of each Automatic Tuning Circuit is given on the chart above each Automatic Adjusting Screw on the Radio and is also reproduced in the Illustration on this page.

2—Remove the cover plate over the Automatic Adjusting Screws from the bottom of the Radio Housing by removing the two snap buttons holding it in place. There are two rows of adjusting screws—the LARGE ones for antenna adjustment and the SMALL ones for setting the stations.

3—Push the Automatic Station Selector, repeating if necessary until the DIAL appears in the dial window. Then tune in with the manual tuning control the selected station having

SHARPLY TUNED TO THE PARTICULAR STATION. BECAUSE OF THE SIGNAL FROM THE STRONG LOCAL STATIONS IT IS NECESSARY THAT THE ANTENNA ROD BE REMOVED FROM THE ANTENNA WHILE THESE ADJUSTMENTS ARE MADE SO THAT A MINIMUM OF SIGNAL WILL BE RECEIVED AND THUS ASSURE SHARP ADJUSTMENTS OF THE CIRCUITS.

5—Repeat this procedure for the stations selected for the No. 2, 3, 4, and 5 positions in the order given. After all the stations have been adjusted on the Automatic Adjusting Screws this procedure MUST be repeated. This is necessary in order to insure the stations being accurately set up on the adjusting screws.

SETTING UP AUTOMATIC TUNING

MODEL L-1660

INSTALLING CALL LETTERS IN THE "AUTOMATIC" DIAL—

1. Remove the Automatic Dial Assembly from the Control Unit (Upper Unit). Lifting up on the back end of the unit will free it from the spring clips after which it may be pulled out.

2. Push the small push button (Automatic Station Selector) on this unit until the No. 6 section of the dial is at the front as shown in Dial View below. (The Radio must be turned on for the dial to operate.)

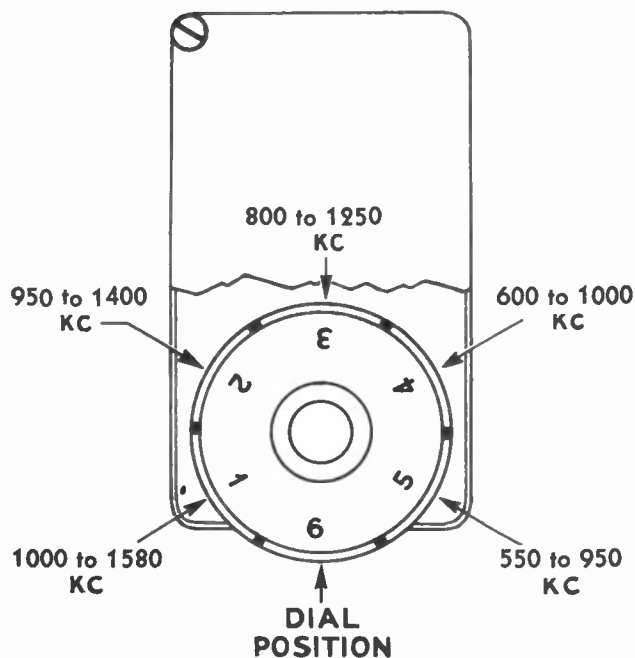
3. Select and remove from the Call Letter sheets the station Call Letter tabs of five popular stations received in that area and that come within the range of each position of the dial as shown in Dial View below. Reference to the local newspaper will be helpful.

4. Push the Automatic Station Selector and the No. 1 section of the dial will be in front. Insert in this section the call letters of the station having the highest kilocycle frequency (1000 to 1580 K. C.), also one of the colored tabs in back of the call letters.

5. Push the Automatic Station Selector button again and No. 2 section will be in front. Insert in this section the call letters of the station having the second highest kilocycle frequency.

Example—A station operating on 1500 K.C. in the No. 1 section.
A station operating on 1320 K.C. in the No. 2 section.

6. Proceed in a like manner until all five station call letters are inserted in the dial in the order of their frequency. Replace the dial assembly in the Control Unit.



PHANTOM VIEW OF THE AUTOMATIC-DIAL SHOWING POSITIONS ON DIAL AND FREQUENCY RANGE OF EACH

7. After all adjustments have been made so that stations are tuned in automatically as their call letters appear in the Automatic Dial window REPEAT the adjustments just made to be sure they were accurate, as the results had will depend upon the care taken with these adjustments.

SETTING UP THE RECEIVER FOR AUTOMATIC TUNING —

Each pair of Automatic adjusting screws must be adjusted to the station whose call letters have been inserted in the Automatic Dial.

Before these adjustments are made it is NECESSARY that the radio be turned on for TWENTY minutes.

Check the "DIAL" position of the Automatic Dial. If stations cannot be tuned in with the Manual Tuning Control when "DIAL" is at the front, push the Automatic Station Selector until a position is found where stations may be tuned in manually. Synchronize the Automatic Dial to the radio by first removing the Automatic Control Cable from its socket on the radio. Then push the Automatic Station Selector until "DIAL" is at the front. Replace the cable in its socket on the receiver.

Check the Manual Tuning Dial to see if stations are received at the right frequency. If not, tune in a station whose frequency is known and while holding the manual tuning control, turn the dial around to the correct frequency with the finger or the rubber on the end of a lead pencil.

ADJUSTING AUTOMATIC ADJUSTING SCREWS —

1. Remove the small cover plate on the front of the Receiver housing by prying off with a screwdriver. This makes accessible the five pair of screw adjustments for aligning the circuits to the stations for automatic tuning.

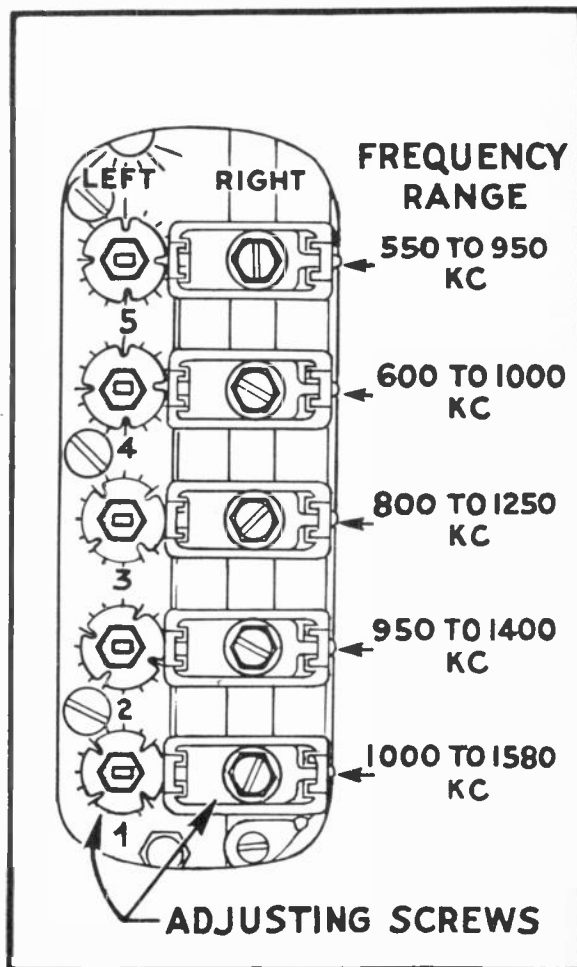
2. With the Automatic Dial in "DIAL" position tune in the station whose call letters are in the No. 5 position (lowest frequency) on the dial and note the program.

3. Press the Automatic Station Selector until the call letters of this station are at the front.

4. With a small screwdriver, turn the No. 5 screw (see illustration) in the left row either left or right until the same station is tuned in. Then turn the screw in the right column either left or right for maximum volume.

5. Return to "DIAL" with the Automatic Station Selector and tune in with the manual control, the station whose call letters are in the No. 4 position on the Automatic Dial and note the program. Then push the Automatic Station Selector until this station's call letters are at the front. Adjust the No. 4 set of adjusting screws to this station.

6. Proceed in like manner until all five sets of adjusting screws have been adjusted to the stations whose call letters have been set up on the Automatic Dial.



VIEW OF AUTOMATIC ADJUSTING SCREWS

SETTING UP ELECTRIC TUNING

MODEL C-1708

1. With the antenna installed and connected, turn on the radio and allow it to operate for TWENTY minutes before making adjustments.

The Receiver must be adjusted with the Skyway antenna fully extended and it is recommended that adjustments be made with the car in a shielded area such as under a viaduct or in a steel constructed building. However best results may be obtained using the new signal Antennuator. This permits setting up nearby local stations on the buttons without having the car in a shielded area.

2. Push in the dial button and tune with manual control a weak station between 1350 and 1500 kilocycles. Pull push buttons off. Adjust the antenna compensator with a screw driver by turning the adjusting screw either to the left or right until maximum volume is reached. See illustration.

3. If numbers on buttons are not desired, select and remove from the call letter sheet, five call letter tabs of popular stations received in the area in which the receiver is to be operated, selecting stations within the range of each button as shown in illustration, Model C-1708. Reference to programs published in your local newspaper aids in quick selection of stations. Remove metal caps to install the tabs in push buttons.

4. Push dial button and tune in the station you have selected for the No. 1 button, identify the program and push in the No. 1 push button shaft. Using a small screw driver, turn the No. 1 adjusting screw (inner screw) and tune in the station selected for this position by turning the screw driver counter-clockwise to increase frequency and clockwise to decrease frequency.

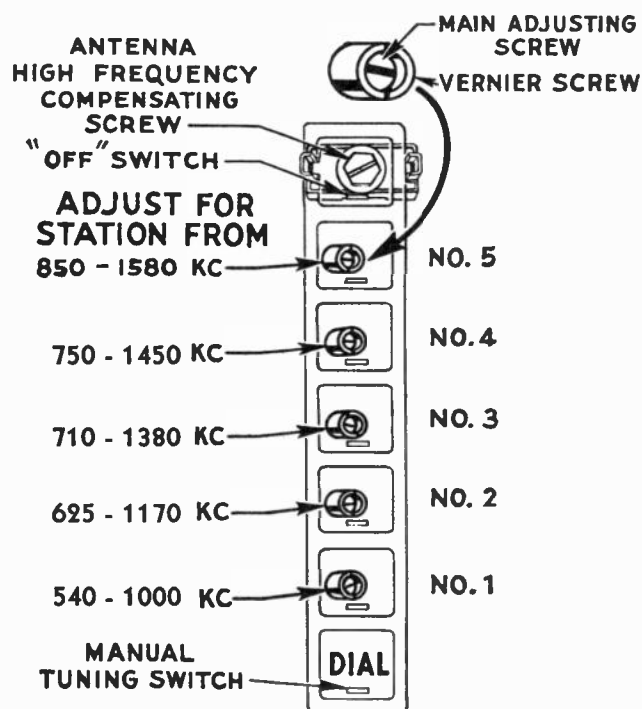
After the station has been tuned in accurately, (see illustration) a finer adjustment can be made by adjusting the vernier screw, which is the outside shell of the adjusting screw. Use a larger screw driver for this operation. Careful adjustment of this screw will insure maximum performance in areas where broadcasting reception is poor.

Proceed in like manner with the adjustment of No. 2, 3, 4 and 5 screws in the order of frequency until all five stations have been tuned in. It is recommended that the above procedure of setting up stations should be repeated in order that accurate adjustments may be insured, for satisfactory reception at some distance from stations.

5. The push buttons may now be replaced on their respective shafts.

The Receiver may be set up before installing in the car, but FINAL adjustments must be made with the radio operating on the antenna in the car. Eight hundred call letter tabs in sheet form are furnished so that at least five popular radio broadcasting stations can be selected.

BE SURE AND SAVE THE UNUSED CALL LETTERS, GIVING THEM TO THE OWNER AS THEY MAY BE NEEDED AT SOME FUTURE TIME IF THE RADIO IS TO BE OPERATED IN A DIFFERENT AREA WHERE THE LOCAL STATIONS ARE NOT THE SAME.



AUTOMATIC ADJUSTING SCREWS

SETTING UP ELECTRIC TUNING

MODEL S-1726

The antenna and touch tuning station adjustments are accessible from the front of the receiver when the two screws holding the cover plate are removed. On cars equipped with the "Climatizer", it will be necessary to remove the screws holding the "Climatizer" control assembly to the lower edge of the instrument panel and drop it down out of the way while making the adjustments.

1—Turn on the radio set and allow it to heat for at least twenty minutes before starting any adjustments.

2—Press the touch control button until the word "DIAL" appears in the "DIAL" window. Tune in a weak station on the manual dial between 1350 and 1500 kilocycles. Now adjust the antenna high frequency compensating screw (See Illustration) until maximum volume is obtained.

3—Select five stations within the frequency range shown over each set of adjusting screws (See Illustration). Remove the call letters for these stations from the call letter tab sheet. Remove the top cover of the set; this exposes the plastic drum into which the tabs should be inserted. It is important to insert these tabs in a definite relationship with respect to frequency in order that tuning adjustments can be made properly. Arrange the tabs in the order of frequency from high to low, placing the highest frequency on the drum immediately next to the dial tab in a counter clockwise direction. Insert the remaining tabs in the order of frequency in this same counter clockwise direction. If the tabs have been inserted correctly, it will be found that when the word "DIAL" shows in the window, the next push of the button will place the call letter for the highest frequency station in the window. Each successive push of the control button will place a next lower frequency station in the window until the series is repeated.

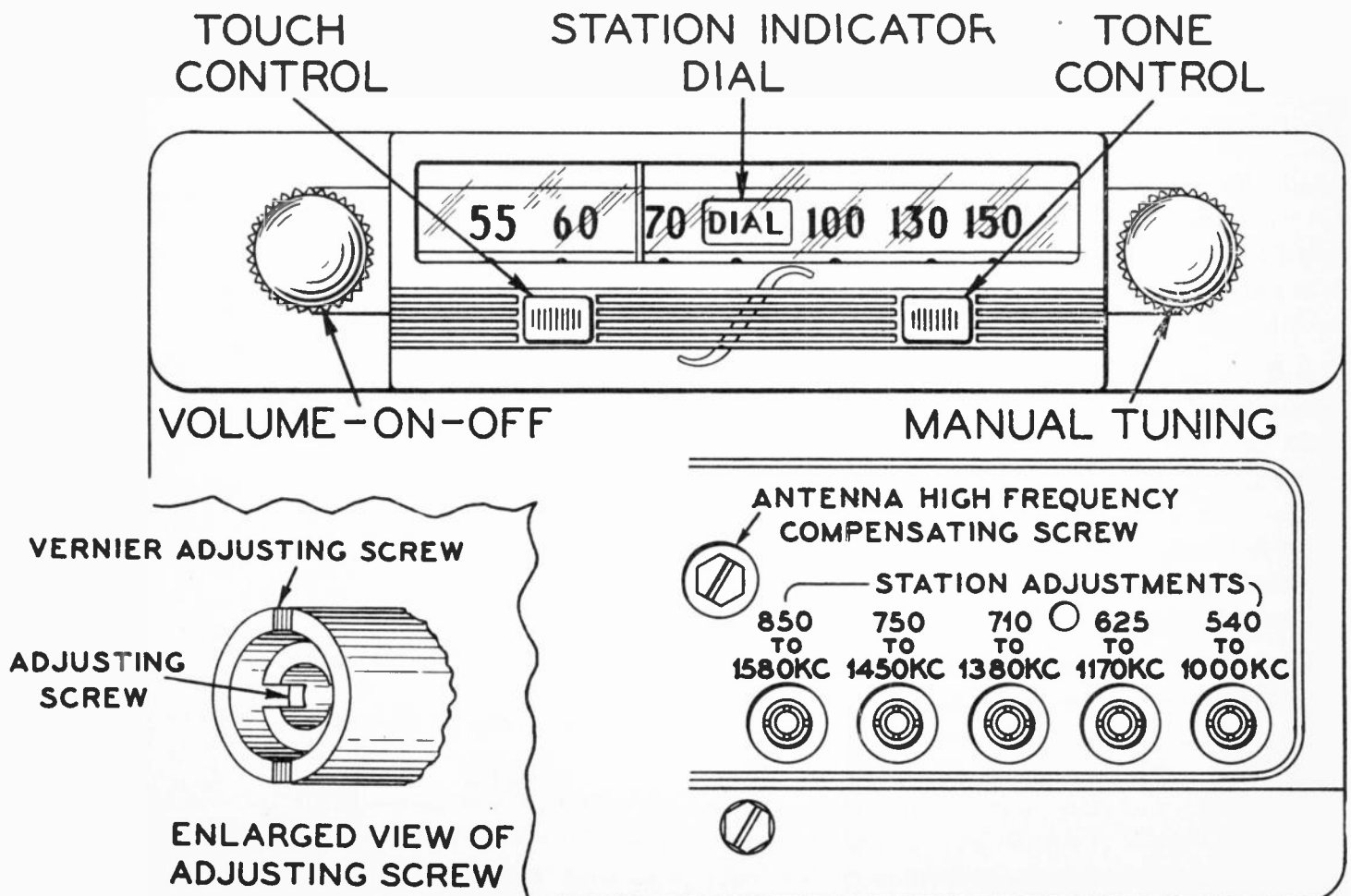
4—With "DIAL" showing in the dial window, manually tune in the station to be set up on push button number 1 and identify the program.

5—Press the touch control button once and adjust the left hand screw using the small end of the special screw driver, until the station identified has been tuned in as accurately as possible. A final adjustment can be made by inserting the large end of the screw driver into the vernier adjusting screw. Careful adjustment of this screw will insure maximum performance in areas where reception is poor. NOTE: Stations of the higher frequencies are tuned in by turning the screws to the left or counter clockwise. Lower frequency stations are tuned by turning to the right or clockwise. Proceed in like manner with the adjustment of each of the remaining stations in the order of frequency until all five stations selected have been tuned in. Because there is some detuning of the coils due to the movements of the cores in adjacent coils, it is necessary to re-check the adjustments again going back from right to left and again re-checking from left to right. This is important for accurate reception while driving at a distance from the broadcasting stations.

6—This final re-checking of adjustments should be made in an area of low signal strength in your service station or in some known "dead" spot where signals can just barely be heard.

7—Replace the cover plate over the adjusting screws and replace the "Climatizer" controls.

BE SURE AND SAVE THE UNUSED CALL LETTERS, GIVING THEM TO THE OWNER AS THEY MAY BE NEEDED AT SOME FUTURE TIME IF THE RADIO IS TO BE OPERATED IN A DIFFERENT AREA WHERE THE LOCAL STATIONS ARE NOT THE SAME.



SETTING UP ROTOMATIC TUNING

MODEL F-1740

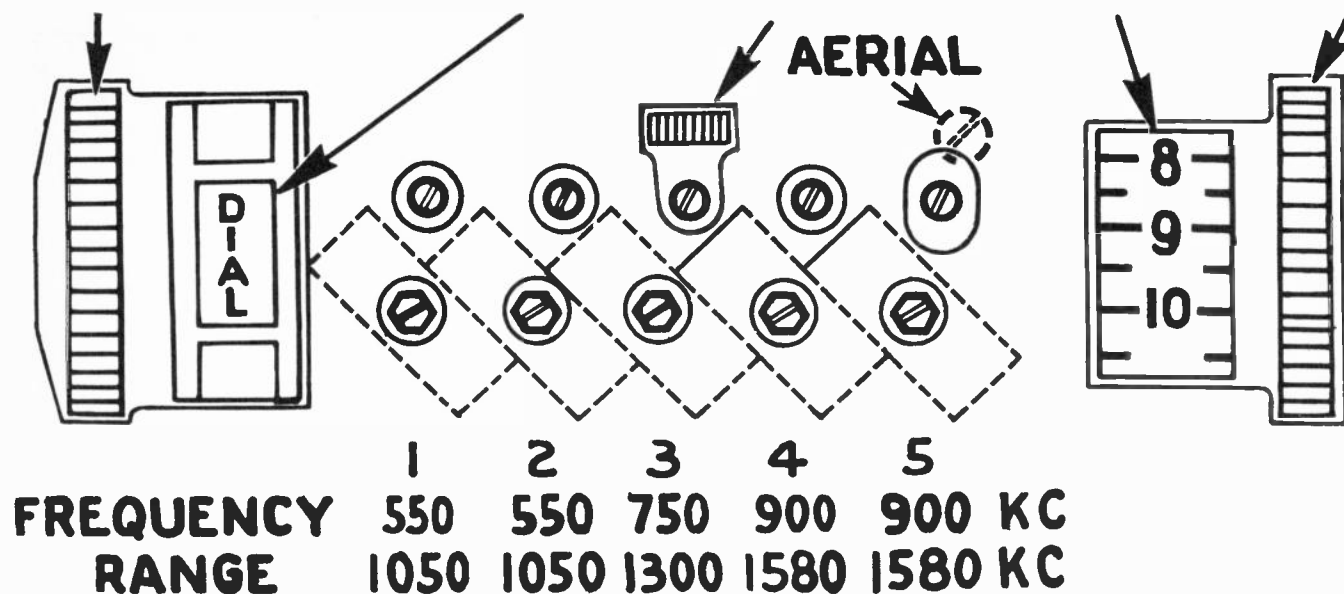
VOLUME CONTROL
& OFF-ON SWITCH

ROTOMATIC
INDICATOR

ROTOMATIC
BUTTON

MANUAL
INDICATOR

MANUAL
CONTROL



MODEL F-1740

The Aerial and Rotomatic adjustments are easily accessible by removing the plastic bezel on the top of the set. This bezel is held by two screws.

1. Turn the radio set on and allow it to heat for at least twenty minutes before starting any adjustments. All adjustments must be made with the aerial fully extended.

2. Press the Rotomatic button until the word "Dial" appears on the Rotomatic indicator. Tune in a weak station on the manual dial between 1300 and 1400 kilocycles. Now adjust the aerial screw (see illustration) until maximum volume is obtained. NOTE: This adjustment must be made first before any Rotomatic adjustments are made; otherwise, mis-tuning will result.

3. Select five stations within the frequency range shown under each set of adjustment screws (see illustration).

4. With "Dial" showing on the Rotomatic indicator, manually tune in the station to be set up on position No. 1 and identify the program.

5. Press the Rotomatic button until No. 1 appears

on the Rotomatic indicator. Now adjust the top screw at position No. 1 until the station selected is brought in with loudest volume. Then adjust the slotted hex screw at the bottom until maximum volume is obtained. NOTE: Stations of the higher frequencies are tuned in by turning the screws to the left or counter-clockwise. Lower frequency stations are tuned by turning to the right or clockwise.

6. Proceed with setting up the remaining four stations in the same manner as described under Paragraphs 4 and 5.

7. Because there is some detuning of the coils due to the movements of the cores in adjacent coils, it is necessary to re-check the adjustments again going back from Position No. 5 to No. 1 and again re-checking from No. 1 to No. 5. This is important for accurate reception while driving at a distance from the broadcasting stations.

8. This final re-checking of adjustments should be made in an area of low signal strength in your service station or in some known "dead" spot where signals can just barely be heard.

SETTING UP ROTOMATIC TUNING

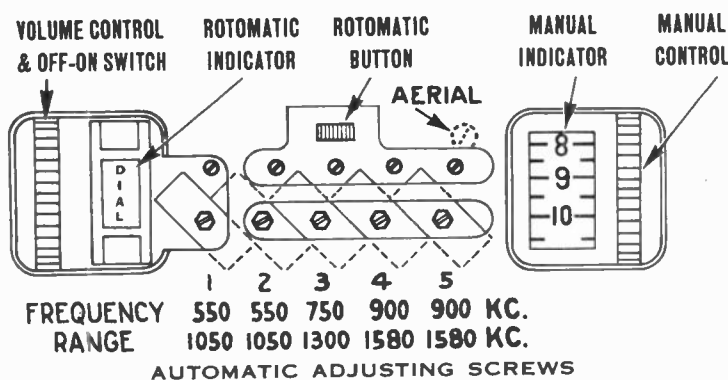
SETTING UP AUTOMATIC TUNING

MODELS L-1760 and L-1761

The Aerial and Rotomatic adjustments are easily accessible through the openings in the instrument panel. (See Illustration).

1—Turn the radio set on and allow it to heat for at least TWENTY minutes before starting any adjustments.

2—Press the Rotomatic button until the word "DIAL" appears in the Rotomatic indicator. Tune in a weak station on the manual dial between 1400 and 1500 kilocycles. Now adjust the aerial screw until maximum volume is obtained. (When the special concealed cowl aerial is used, adjustment should be made with the aerial fully extended.)



3—Select five stations within the frequency range shown under each set of adjustment screws shown in Illustration.

4—With "DIAL" showing on the Rotomatic indicator, manually tune in the station to be set up on position No. 1 and identify the program.

5—Press the Rotomatic button until No. 1 appears on the Rotomatic indicator. Now adjust the top screw at position No. 1 until the station selected is brought in with loudest volume. Then adjust the slotted hex screw at the bottom until maximum volume is obtained. NOTE: Stations of the higher frequencies are tuned in by turning the screws to the left or counter clockwise. Lower frequency stations are tuned by turning to the right or clockwise.

6—Proceed with setting up the remaining four stations in the same manner as described under Paragraphs 4 and 5.

7—Because there is some detuning of the coils due to the movements of the cores in adjacent coils, it is necessary to recheck the adjustments again going back from Position No. 5 to No. 1 and again rechecking from No. 1 to No. 5. This is important for accurate reception while driving at a distance from the broadcasting stations.

8—This final rechecking of adjustments should be made in an area of low signal strength in your service station or in some known "dead" spot where signals can just barely be heard.

9—Should the Special Concealed Cowl Aerial be installed after the original installation, it is absolutely essential that the aerial change-over switch be shifted counter-clockwise and also that all automatic adjustments be made again as described in Paragraphs Nos. 1 to 8 inclusive.

MODELS AR-3 and 933

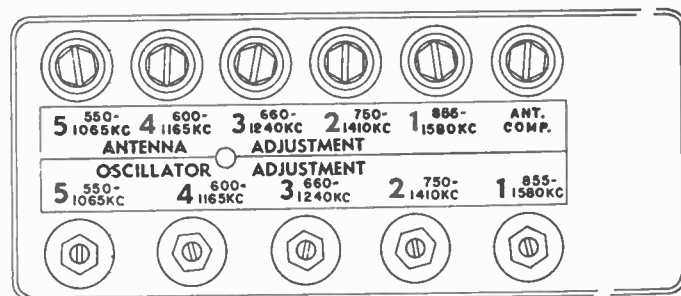
Turn the radio "ON" and allow it to operate for at least TWENTY minutes before making adjustments. Select five popular local stations whose frequencies come within the ranges of the five automatic tuning circuits, and list them on the Owner's Reference Card. List the highest frequency station as 1, and so on down to the lowest frequency station, which should be 5. The range of each automatic tuning circuit is given below:

550 KC to 1065 KC	600 KC to 1165 KC	660 KC to 1240 KC	750 KC to 1410 KC	855 KC to 1580 KC
5	4	3	2	1

Remove the cover plate from the front of the Receiver housing. There are two rows of adjusting screws—the top ones are for the antenna stage adjustments, and the bottom ones are for the oscillator stage adjustments. (See Illustration.)

Tune in with "DIAL" tuning, the selected station having the lowest frequency and note the program so that it can be identified. Operate the push button until "5" appears on the indicator dial. With a small screw driver, turn the lower No. 5 adjusting screw until the proper station is tuned in. Then adjust the No. 5 screw in the upper row until the maximum volume is obtained. These adjustments are very critical and must be made very carefully.

Adjustments should be made with the weakest signal obtainable, preferably with the antenna in the "down" position.



AUTOMATIC ADJUSTING SCREWS

Return to the "DIAL" tuning again and tune in the station selected for the No. 4 position. Operate the push button until "4" appears on the indicator dial. Then adjust the No. 4 adjusting screws until the proper station is tuned in.

Repeat this procedure for the stations selected for No. 3, No. 2 and No. 1 positions in the order given.

Preliminary adjustments may be made before the Receiver is installed in the car, but the final adjustments must be made with the radio installed in the car and operating on the car antenna. Recheck the adjustments carefully before replacing the cover plate.

MODELS 937X, 938KX, AR-7, AR-8

Turn on the radio and allow it to operate for twenty minutes or longer if possible. During this time, proceed as follows:

1. Remove the plate on the end of the radio which covers the adjusting screws. This is held by snap springs and can easily be pried off.

2. Select and remove from the station call letter sheets, five call letter tabs of the popular stations received in the area where the radio will be operated, selecting stations within the range of each button. Reference to programs published in the local newspaper will aid in the quick selection of the proper stations.

3. In Models 937 and 938 place the call letter tabs in the station selector buttons in the order of the station frequencies, with the call letters of the station of lowest frequency at the left.

Example: Place the call letter tab of station WFIL, whose frequency is 560 K. C., in the left button, and the call letter tab of Station WOR, whose frequency is 710 K. C. in the next button, always progressing from left to right.

In Models 937X, 938KX, AR7 and AR8 insert the numbered station indicating tabs in the station selector buttons. List the highest frequency station as 1, and so on down to the lowest frequency station, which should be 5. The range of each automatic tuning circuit in these models is given below:

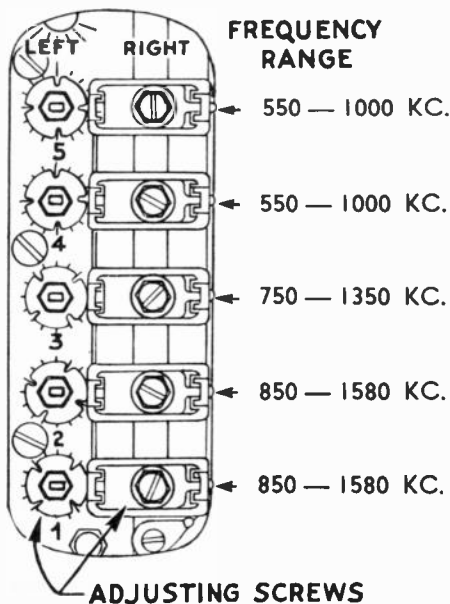
850 KC to 1580 KC	850 KC to 1580 KC	750 KC to 1350 KC	550 KC to 1000 KC	550 KC to 1000 KC
1	2	3	4	5

After the station tabs are inserted the following procedure is used in adjusting any of the above models.

4. Push in the last button — "Dial." This adjusts the Radio so that it can be tuned with the tuning control knob in the conventional manner.

5. Tune in with the dial tuning control knob, the station whose call letters are in the left selector button and note the program. Now push in the selector button corresponding to these call letters.

With a small screw driver, turn the top adjusting screw (number five) in the left column, to the right or left until the



ADJUSTING SCREWS AND FREQUENCY RANGE

same station is tuned in. Then adjust the corresponding screw in the right column, turning right or left until the maximum volume is obtained. If in doubt as to the station, push the "Dial" button and recheck. The adjustment on strong signals can be made best inside a shielded area such as in a reinforced steel building, or under a viaduct.

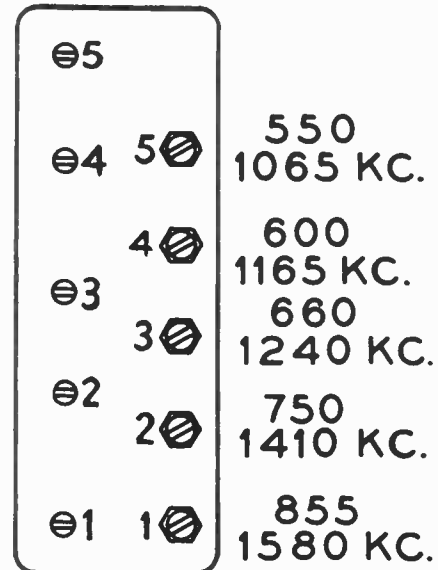
Continue the above procedure for each push button, working from left to right, and adjusting each pair of corresponding

MODEL AR-5

Turn on the radio and allow it to operate for twenty minutes or longer if possible. During this time, proceed as follows:

1. Remove the plate on the end of the radio which covers the adjusting screws. This is held by two screws.

2. Select five popular local stations whose frequencies come within the ranges of the five automatic tuning circuits, and list them on the Owner's Reference Label. List the highest frequency station as 1, and so on down to the lowest frequency station, which should be 5.



ADJUSTING SCREWS AND FREQUENCY RANGE

The range of each automatic tuning circuit is given below:

855 KC to 1580 KC	750 KC to 1410 KC	660 KC to 1240 KC	600 KC to 1165 KC	550 KC to 1065 KC
1	2	3	4	5

3. Push in the right knob until "D" appears in the station indicator window. This adjusts the radio so that it can be tuned with the tuning control knob in the conventional manner.

5. Tune in with the dial tuning control knob, the station having the highest frequency, and note the program. Now push in the right hand knob until No. 1 appears in the station indicator window.

With a small screw driver, turn the bottom adjusting screw (number one) in the left column, to the right or left until the same station is tuned in. Then adjust the corresponding screw in the right column, turning right or left until maximum volume is obtained. If in doubt as to the station, push the right knob until "D" appears and recheck. The adjustment on strong signals can be made best inside a shielded area such as in a reinforced steel building, or under a viaduct.

Continue the above procedure for the stations selected for Nos. 2, 3, 4, and 5 position in the given order, working from left to right, and adjusting each pair of corresponding adjusting screws from the bottom to the top until all five stations are set up. It is advisable to repeat the entire adjustment procedure to be sure the settings are correct.

The automatic tuning adjustments may be made before installing the radio in the car, but FINAL adjustments must be made with the radio installed and operating on the aerial in the car.

adjusting screws from top to bottom until all five stations are set up and are received correctly when their particular buttons are depressed. It is advisable to repeat the entire adjustment procedure to be sure the settings are correct.

The automatic tuning adjustments may be made before installing the radio in the car, but FINAL adjustments must be made with the radio installed and operating on the antenna in the car.

1940 CAR MANUFACTURER'S AERIALS

— PRICES SUBJECT TO CHANGE WITHOUT NOTICE —

CHRYSLER SKYWAY AERIAL FOR MODEL C-1708

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
55-0738	Aerial Ball .....	.05	57-1197	Contact Clip (Left).....	.05
55-0758	Upper Stanchion .....	.25	57-1198FA3	Clip Yolk .....	.05
55-0759	Lower Stanchion .....	.15	57-1199FA3	Lower Stanchion Stud.....	.05
55-0774	Clip Support .....	.10	57-1201FA3	Upper Stanchion Stud.....	.20
55-0826	Prong Guide Washer.....per 100	.50	57-1202FA3	Upper Nut .....	.05
55-0827	Rubber Washer .....	.50	57-1203FA3	Ground Washer .....	.03
55-0828	Rubber Washer .....	.02	95-0106	Aerial Lead	1.25
55-0830	Plug .....	.02	97-0090FA3	Lower Nut	per 100 1.50
55-0856	Plug .....	.02	97-0105FA3	Screw	per 100 .75
57-1140	Aerial Rod	2.25	W286FA3	Lower Lock Washer	per 100 .45
57-1196	Contact Clip (Right).....	.05	W1686FA3	Lower Flat Washer.....	.05

FORD CLOSED CAR INTEGRAL AERIAL (Screw On) FOR MODEL F-1740

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
55-0743	Gland Nut (to radio).....	.15	55-0822	Spacer .....	.01
55-0760	Aerial Knob .....	.25	57-1131	Roof Nut (Inside).....	.15
55-0781	Aerial Head .....	.15	57-1135	Roof Nut (Outside).....	.15
55-0783	Insulating Bushing .....	.05	57-1137	Bezel Ring .....	.10
55-0785	Aerial Grommet .....	.05	77-0447	Roof Tube .....	.50
55-0786	Felt Head Washer.....	.02	77-0452	Telescopic Tube	1.50
55-0811	Felt Washer	per 100 1.25	77-0454	Aerial Tube (Stationary).....	1.00

MERCURY CLOSED CAR INTEGRAL AERIAL (Screw On) FOR MODEL F-1740

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
55-0744	Gland Nut (to radio).....	.15	55-0822	Spacer .....	.01
55-0761	Aerial Knob .....	.25	57-1131	Roof Nut (Inside).....	.15
55-0782	Aerial Head .....	.20	57-1135	Roof Nut (Outside).....	.15
55-0784	Insulating Bushing .....	.05	57-1137	Bezel Ring .....	.10
55-0785	Aerial Grommet .....	.05	77-0448	Roof Tube .....	.50
55-0786	Felt Head Washer.....	.02	77-0453	Telescopic Tube	1.50
55-0811	Felt Washer	per 100 1.25	77-0455	Aerial Tube (Stationary).....	1.15

FORD CLOSED CAR INTEGRAL AERIAL (Push On) FOR MODEL F-1740

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
55-0743	Gland Nut (to radio).....	.15	57-1131	Roof Nut (Inside).....	.15
55-0781	Aerial Head .....	.15	57-1135	Roof Nut (Outside).....	.15
55-0783	Insulating Bushing .....	.05	57-1137	Bezel Ring .....	.10
55-0785	Aerial Grommet .....	.05	77-0447	Roof Tube .....	.50
55-0786	Felt Head Washer.....	.02	77-0454	Aerial Tube (Stationary).....	1.00
55-0811	Felt Washer	per 100 1.25	77-0477	Aerial Knob .....	.25
55-0822	Spacer .....	.01	77-0482	Telescopic Tube	1.50

1940 CAR MANUFACTURER'S AERIALS

— PRICES SUBJECT TO CHANGE WITHOUT NOTICE —

MERCURY CLOSED CAR INTEGRAL AERIAL (Push On) FOR MODEL F-1740

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
55-0744	Gland Nut (to radio).....	.15	57-1131	Roof Nut (Inside).....	.15
55-0782	Aerial Head .....	.20	57-1135	Roof Nut (Outside).....	.15
55-0784	Insulating Bushing .....	.05	57-1137	Bezel Ring .....	.10
55-0785	Aerial Grommet .....	.05	77-0448	Roof Tube .....	.50
55-0786	Felt Head Washer.....	.02	77-0455	Aerial Tube (Stationary).....	1.15
55-0811	Felt Washer	per 100 1.25	77-0478	Aerial Knob .....	.25
55-0822	Spacer .....	.01	77-0483	Telescopic Tube	1.50

FORD OPEN CAR INTEGRAL AERIAL FOR MODEL F-1740

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
27-4710	Aerial Stop .....	.15	57-1137	Bezel Ring .....	.10
28-4696	Set Screw Wrench.....	.10	57-1217	Aerial Lead Extension.....	.50
55-0285	Gasket .....	.03	57-1218	Aerial Extension Spring.....	.10
55-0310	Insulating Nut .....	.25	77-0463	Aerial Lead Rod Assembly.....	.25
55-0743	Gland Nut (to radio).....	.15	77-0493	Rubber Grommet .....	.20
55-0811	Felt Washer	per 100 1.25	91-0119	Aerial Head and Shaft Assembly...	2.50
55-0840	Knob Assembly .....	.45	W1774FA8	Screw (Stop Mounting).....	.10
57-0582	Aerial Rod	1.50	W1944	Screw (Rod Mounting).....	.10

MERCURY OPEN CAR INTEGRAL AERIAL FOR MODEL F-1740

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
28-4696	Set Screw Wrench.....	.10	57-1137	Bezel Ring .....	.10
28-5536	Aerial Rod	1.50	57-1217	Aerial Lead Extension.....	.50
55-0240	Aerial Stop .....	.10	57-1218	Aerial Extension Spring.....	.10
55-0285	Gasket .....	.03	77-0464	Aerial Lead Rod Assembly.....	.25
55-0310	Insulating Nut .....	.25	77-0493	Rubber Grommet .....	.20
55-0744	Gland Nut (to radio).....	.15	91-0119	Aerial Head and Shaft Assembly...	2.50
55-0811	Felt Washer	per 100 1.25	W1944	Screw (Rod Mounting).....	.10
55-0841	Aerial Knob .....	.50			

LINCOLN-ZEPHYR COWL AERIAL FOR MODELS L-1760 and L-1761

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
28-1919	Washer	per 100 1.50	57-1074	Gland Nut Wrench.....	.05
55-0732	Upper Insulator .....	.20	57-1183	Sleeve Bolt .....	.60
55-0733	Lower Insulator .....	.20	57-1234	Aerial Shield .....	.20
55-0734	Gasket .....	.05	95-0110	Aerial Lead	1.00
55-0735	Insulating Washer .....	.05	W-55	Nut	per 100 1.20
57-1071	Aerial Rod	3.00	W-338	Lock Washer	per 100 .45
57-1072	Gland Nut .....	.45	W-644	Screw	per 100 1.50
57-1073	Mounting Bracket .....	.05			

STUDEBAKER CONCEALED AERIAL FOR MODEL S-1722

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
2675	Grommet .....	.03	57-0321	Aerial Rod and Ball.....	3.00
55-0407	Upper Insulator .....	.25	57-0413	Gland Nut Wrench.....	.05
55-0408	Lower Insulator .....	.20	57-0700	Aerial Stop .....	.10
55-0409	Gasket .....	.05	95-0111	Aerial Lead	1.00
57-0318	Gland Nut .....	.20	W-644	Screw	per 100 1.50
57-0320	Mounting Bracket .....	.10			

STUDEBAKER CONCEALED AERIAL FOR MODEL S-1726

PART No.	DESCRIPTION	LIST PRICE	PART No.	DESCRIPTION	LIST PRICE
2675	Grommet .....	.03	57-0320	Mounting Bracket .....	.10
55-0109	Upper Insulator .....	.15	57-0321	Aerial Rod and Ball.....	3.00
55-0110	Lower Insulator .....	.15	57-0413	Gland Nut Wrench.....	.05
55-0119	Gasket .....	.10	95-0120	Aerial Lead	1.00
57-0318	Gland Nut .....	.20	W-644	Screw	per 100 1.50
57-0319	Spacer .....	.10			

INSTALLING THE DIAL CORD

Chrysler Model C-1708

Lincoln Models

L-1760, L-1761

Ford Model F-1740

When installing new dial cords on the custom built radios, follow the procedure given below:

CHRYSLER MODEL C-1708

1. Remove the top cover, bottom cover and front housing.
2. Turn the radio upside down with the control shafts in front.
3. Turn the tuning control shaft **CLOCKWISE** to the stop position.
4. Hook the spring on one end of the cord.
5. Hook a paper clip through the eyelet of the cord to which the spring is attached and fasten the clip to the dial mounting bracket.
6. Place the long end of the cord over the rear wooden pulley. Wrap seven turns of cord **CLOCKWISE** around the back portion of the tuning shaft. Pass the cord through the slot in the collar of the shaft and wrap $\frac{3}{4}$ of a turn **CLOCKWISE** around the shaft in front of the collar. Run the cord over the front wooden pulley and fasten the other end of the cord to the spring. Then force the cord over the metal pulley at the top of the scale bracket.
7. Place the pointer on the dial cord and slide it to the first line above the 1500 mark.
8. Remove the paper clip and recheck the pointer setting, using a broadcast signal or a Philco Signal Generator. Slide the pointer along the dial cord to the correct frequency.
9. Replace the front housing and the top and bottom covers.

FORD MODEL F-1740 — LINCOLN MODELS L-1760 and L-1761

1. Remove the tuning condenser assembly from the front casting of the radio.
2. Remove the dial and shaft assembly from the tuning condenser bracket.
3. Remove the dial drum from the knob and shaft assembly.
4. Place the tuning condenser unit on the bench with the bracket to the back and the metal pulley facing up. The tuning condenser plates must be in mesh.
5. Connect one end of the cord to the link and hook the link on the right tab on the inside of the pulley. Feed the cord through the slot in the pulley and wrap one turn of cord **CLOCKWISE** around the pulley, keeping the cord to the right of the guide pin on the tuning condenser.
6. Hold the dial drum with the left hand and wrap two turns of cord **COUNTER-CLOCKWISE** around the spool, keeping the cord to the left of the pin in the spool. Loop one turn of cord around the pin. Then wrap one turn **COUNTER-CLOCKWISE** around the spool, keeping the cord to the right of the pin in the spool.
7. Place the knob and shaft on the spool, with the pin on the spool nearest to the knob and with the thin washer on the left side of the knob and the thick washer on the right side. Place the shaft in the grooves on the tuning condenser bracket.
8. Bring the cord **COUNTER-CLOCKWISE** around the idler pulley on the bracket and wrap five turns of cord **CLOCKWISE** around the knob shaft. Be sure the washer is against the end of the bracket.
9. Bring the cord **CLOCKWISE** around the pulley on the tuning condenser and connect the end of the cord to the link on the drum.
10. Hook the closed end of the tension spring to the tab on the left side of the pulley and hook the other end to both ends of the cord where it enters the pulley.
11. Replace the tuning condenser assembly.

INSTALLING THE DIAL CORD

Studebaker Models S-1722, S-1726

STUDEBAKER MODEL S-1722

1. Remove the chassis from the housing.
2. Place the Receiver on the bench, right side up and with the shafts to the front.
3. Turn the tuning condenser plates in mesh.
4. Feed the loop on the short end of the cord through the hole in the back of the tuning shaft and pass the free end of the loop through the loop of the cord. Pull the cord tight.
5. Wrap $1\frac{1}{2}$ turns of cord CLOCKWISE around the end of the tuning shaft and then $\frac{3}{4}$ of a turn CLOCKWISE around the tuning condenser drum.
6. Fasten the center loop of the cord to one end of the spring and fasten the other end of the spring in the hole in the drum.
7. Pass the long end of the cord around the idler pulley and through the hole in the sub-base.
8. Hold the cord and turn the radio over with the wiring side showing.
9. Wrap one turn of cord CLOCKWISE around the tuning dial drum.
10. Holding the cord with one hand, turn the tuning shaft CLOCKWISE until the stop position is reached.
11. Wrap $1\frac{1}{2}$ turns of cord COUNTER-CLOCKWISE, around the tuning shaft in back of the front flange.
12. Feed the loop of the cord through the hole in the shaft and pass the free end of cord through the eyelet. The cord must have tension after it is assembled.
13. Assemble the Receiver in the housing.

STUDEBAKER MODEL S-1726

1. Remove the top cover, bottom cover and front housing.
2. Place the Receiver on the bench right side up with the control knobs in front.
3. Turn the tuning shaft clockwise as far as it will go.
4. Loosen the two set screws on the tuning shaft coupling, so that the shaft turns freely.
5. Place the small "U" spring in the slot at the back of the tuning shaft.
6. Hook one of the knotted ends of the cord into one of the hooks on the spring and turn the shaft clockwise until there are eight turns of cord on the shaft between the spring and the front shaft bracket.
7. Hook the remaining end of the cord to the other hook on the spring and turn the shaft counter-clockwise until one turn is wound on the back end of the shaft.
8. Hold the tuning shaft so that it does not turn and place the both cords COUNTER-CLOCKWISE over the two pulleys.
9. Bring the cord under the pointer with the front end of the cord in front of the guide bracket and the back end of the cord in back of the guide bracket.
10. Slide the pointer over to the right end of the guide bracket and place the large "U" spring under the pointer and through the slot, with the hook to the back.
11. With a fine piece of wire as a hook, feed the front end of the cord through the hole in the pointer from the bottom and fasten this loop to the hook on the "U" spring on the pointer.
12. Pull the cord tight and loop it over the pulley on the left end of the pointer guide bracket. Tighten the set screws on the tuning shaft coupling.
13. The pointer can be adjusted to the proper frequency by holding the tuning shaft and sliding the pointer along the guide bracket.
14. Replace the front housing and top and bottom covers.

1939 AND 1940 REPLACEMENT SPEAKERS, CONES AND OUTPUT TRANSFORMERS

1939 CAR MANUFACTURERS AUTO RADIOS

CAR MFR.	Radio Model No.	Speaker No.	List Price	Replacement Cone No.	List Price	Output Transformer No.	List Price
CHRYSLER	C-1606	73-0012-2	\$4.25	91-0043	\$1.40	65-0071	\$1.10
	C-1608	73-0006-2	4.75	91-0028 ¹	1.50	65-0020	1.75
STUDEBAKER	S-1616	73-0005-3	5.00	45-2653 ²	1.75	65-0048	1.25
PACKARD	P-1617	73-0005-3	5.00	45-2653 ²	1.75	65-0048	1.25
STUDEBAKER	S-1622	73-0022-2	4.50	91-0065 ³	1.40	65-0147	1.10
STUDEBAKER	S-1626	73-0007-2	4.75	91-0041	1.40	65-0053	1.50
GRAHAM	G-1628	73-0015-2	4.75	91-0028 ¹	1.50	65-0053	1.50
PACKARD	P-1630	73-0006-3	5.25	45-2653 ²	1.75	65-0024	1.65
PACKARD	P-1635	36-1416-3	5.25	45-2664	1.75	32-7778	1.60
FORD	F-1640	36-1411-3	4.75	45-2653 ²	1.75	65-0077	1.40
		73-0013-2	4.75	91-0042 ⁴	1.75		
FORD	F-1641	73-0026-2	3.75	91-0070	1.50	65-0180	1.25
		73-0026-3	3.75	91-0071	1.50		
LINCOLN-ZEPHYR	L-1660	73-0010-2	5.25	91-0042 ⁴	1.75	65-0024	1.65
		73-0010-3	5.25	45-2653 ²	1.75		

1940 CAR MANUFACTURERS AUTO RADIOS

CHRYSLER	C-1708	73-0030-2	\$5.00	91-0086 ⁵	\$1.50	65-0235	\$1.00
		73-0030-3	5.00	91-0085 ⁶	1.50		
STUDEBAKER	S-1722	73-0022-2	4.50	91-0065 ³	1.40	65-0221	.90
STUDEBAKER	S-1726	73-0038-2	4.50	91-0102	1.40	65-0277	1.25
		73-0038-4	4.50	91-0101	1.40		
FORD	F-1740	73-0036-2	4.25	91-0086 ⁵	1.50	65-0279	1.00
		73-0036-3	4.25	91-0085 ⁶	1.50		
LINCOLN-ZEPHYR	L-1760	73-0039-2	4.75	91-0113 ⁷	1.50	65-0295	1.75
		73-0039-4	4.75	91-0114 ⁸	1.50		
LINCOLN-ZEPHYR	L-1761	73-0039-2	4.75	91-0113 ⁷	1.50	65-0295	1.75
		73-0039-4	4.75	91-0114 ⁸	1.50		

DISTRIBUTOR MODEL AUTO RADIOS

931	73-0027-1	\$3.75	91-0076	\$1.25	65-0258	.90
	73-0027-2	3.75	91-0077	1.25		
932	73-0024-2	4.75	91-0056 ⁹	1.50	65-0221	.90
	73-0024-3	4.75	91-0068 ¹⁰	1.50		
	73-0025-2	5.25	91-0065 ³	1.40		
933	73-0024-2	4.75	91-0056 ⁹	1.50	65-0162	1.25
	73-0024-3	4.75	91-0068 ¹⁰	1.50		
	73-0025-2	5.25	91-0065 ³	1.40		
936 (code 121)	73-0014-2	4.25	91-0028 ¹	1.50	65-0048	1.25
936 (code 122)	73-0029-2	4.25	91-0028 ¹	1.50	65-0048	1.25
937	73-0014-2	4.25	91-0028 ¹	1.50	65-0048	1.25
937X	73-0014-2	4.25	91-0028 ¹	1.50	65-0048	1.25
938K	73-0016-3	7.25	45-2653 ²	1.75	65-0093	1.75
938KX	73-0016-3	7.25	45-2653 ²	1.75	65-0093	1.75

— PRICES SUBJECT TO CHANGE WITHOUT NOTICE —

1 Used in Models	2 Used in Models	3 Used in Models	4 Used in Models	5 Used in Models
C-1608	S-1616 938K	S-1622	F-1640 (73-0013-2)	C-1708 (73-0030-2)
G-1628	P-1617 938KX	S-1722	L-1660 (73-0010-2)	F-1740 (73-0036-2)
936	P-1630	932 (73-0025-2)		
937	F-1640 (36-1411-3)	933 (73-0025-2)		
937X	L-1760 (73-0010-3)			
6 Used in Models	7 Used in Models	8 Used in Models	9 Used in Models	10 Used in Models
C-1708 (73-0030-3)	L-1760 (73-0039-2)	L-1760 (73-0039-4)	932 (73-0024-2)	932 (73-0024-3)
F-1740 (73-0036-3)	L-1761 (73-0039-2)	L-1761 (73-0039-4)	933 (73-0024-2)	933 (73-0024-3)

MEMORANDUM
