

Philco Radio & Television Corp.

Model: 60

Chassis:

Year: Pre October 1936

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

[Riders Volume 4 - PHILCO 4-30](#)

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MODEL 60
Changes

PHILCO RADIO & TELEVISION CORP.

Model 60

Run No. 2 will include an individual filter condenser section in the form of Part No. 6287-B (.2 mfd.) in addition to Part No. 30-4013 ② already used. This additional unit will be connected between the end terminal of ③ and grounded terminal of ⑥.

Run No. 3 will use a five-section filter condenser bank ②, Part No. 30-4063, in place of Part No. 30-4013. The additional section included will be of .2 mfd. capacity (red and yellow lead) and will be connected to the end terminal of ②.

Effective with Run Number 4, Compensating Condenser ⑩, Part No. 04000-S, and Condenser (.0008 Mfd.) (Green-Orange), Part No. 5878, which was connected across it, have been removed, and a Condenser (.0014 Mfd.) (Red-Red), Part No. 7007, added—between the third terminal (counting clockwise from underside of chassis—Resistor ① is across first and second) of Wave-Band Switch ② and grounded terminal of Condenser ⑦.

The following substitutions of electrolytic condensers are effective with current production:

Position	
②	30-2025, or 7558
④	30-2024, or 7464, or 7557

(These are all of 8.0 Mfd. capacity)

The following additional list prices should be included in the Replacement Parts list:

No. on Figs.	Description	Part No.	List Price
②	Wave Band Switch.....	42-1001	\$0.60
③	Tuning Condenser Assembly.....	31-1006	2.70
④	Antenna Transformer.....	32-1047	.78
⑤	Condenser (.18).....	4989-Z	.24
⑩	Oscillator Transformer.....	32-1048	.78
⑩	1st I. F. Transformer.....	32-1049	.60
⑫	2nd I. F. Transformer.....	32-1050	.60
⑮	Volume Control and "On-Off" Switch.....	33-5006	1.20
⑳	Condenser (Double) (.00011-.015).....	8035-D	.24
㉑	Tone Control.....	30-4008	.54
㉒	Output Transformer.....	32-7019	1.50
㉓	Voice Coil and Cone Assembly.....	36-3014	.60
㉔	Speaker Field, assembled with Pot (S-7).....	36-3037	1.80

The following additional list price should be included in the Replacement Parts list:

No. on Figures	Description	Part No.	List Price
②	Condenser (.01).....	3903-AP	\$0.24

(NOTE: The above list price is effective September 15, 1933).

To give greater selectivity to Model 60, the following changes have been made, effective with Run Number 6:

No. on Figs.	DESCRIPTION	REMOVED (Part Number)	ADDED (Part Number)
⑩	1st, I. F. TRANSFORMER.....	32-1049	32-1304 (Orange Paint)
⑫	2nd, I. F. TRANSFORMER.....	32-1050	32-1305 (Orange Paint)
	COMPENSATING CONDENSER (2nd, I. F. Secondary).....	.....	04000-S*
⑩	COMPENSATING CONDENSER (Osc., L. F.; Broadcast Band)	04000-S	04000-M
⑰	COMPENSATING CONDENSER (1st, I. F. Primary).....	04000-M	04000-A
⑱	COMPENSATING CONDENSER (1st, I. F. Secondary).....	04000-A	04000-M
㉑	COMPENSATING CONDENSER (2nd, I. F. Primary).....	04000-M	04000-A

*1 each of Part No. 3098 Sleeve, W-614 Screw, W-291 Washer, and W-95 Nut, are required for this additional Compensating Condenser.

The Padder Shield, Part No. 29-1131, at ⑩ Compensating Condenser is superseded by Padder Shield, Part No. 29-1416, which is now placed at ⑩ Compensating Condenser.

PHILCO RADIO & TELEVISION CORP.

MODEL 60
Voltage
Parts view
Adjustment

Model 60

THE PHILCO RADIO MODEL 60 is a five-tube superheterodyne receiver, operating upon alternating current and designed for the reception of standard broadcast, and police, airport and aircraft, and amateur radiophone signals. The frequency range is 530-4000 kilocycles. The intermediate frequency is 460 kilocycles. The power consumption is 60 watts. A Type 6A7 tube is used as a combination first detector and oscillator, a Type 78 for intermediate frequency; a Type 75 as second detector and first A. F.; a Type 42 as second A. F. (output), and a Type 80 as rectifier.

Table 1—Tube Socket Data*—A. C. Line Voltage 115 Volts

Circuit	Det. Osc.	I. F.	2nd Det. and 1st A. F.	2nd A. F. (Output)	Rectifier
Type Tube	6A7	78	75	42	80
Filament Volts—F to F...	6.3	6.3	6.3	6.3	4.8
Plate Volts—P to K.....	250	250	170	240	350
Screen Grid Volts—SG to K (6A7-G2-5 to K).....	85	120	.....	245	.....
Control Grid Volts—CG to K (6A7-G4 to K).....	.18	.18	.15	.18	.....
Cathode Volts—K to F...	3.	3.	0	0	.....

6A7-G1 to K=1.4 volts.
6A7-G2 to K=180 volts.
*All the above values were obtained from the underside of the chassis, using test prods and leads with a suitable A. C. voltmeter for filament voltages and a high-resistance multi-range D. C. voltmeter for all other values. The Philco Model 048 All-Purpose Set Tester is highly recommended for this use. Volume control at maximum and station selector at 530 K. C. Readings obtained with a plug-in adaptor will NOT be satisfactory.

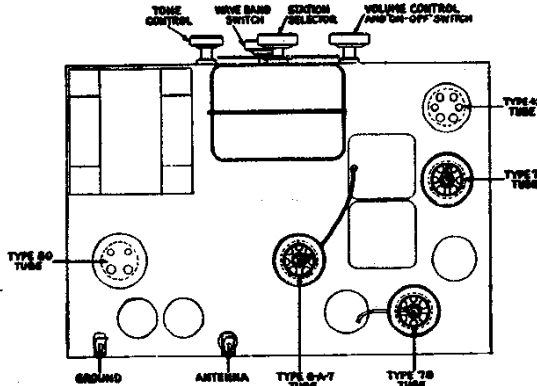


Fig. 1—Top View of Chassis

Table 2—Power Transformer Data

Terminal	A. C. Volts	Circuit	Color
1-2	105-125	Primary	White
3-5	6.3	Filament	Black
6-7	5.0	Filament of 80	Blue
8-10	680	Plates of 80	Yellow
4	.....	Center Tap of 3-5	Black-Yellow Tracer
9	.....	Center Tap of 8-10	Yellow-Green Tracer

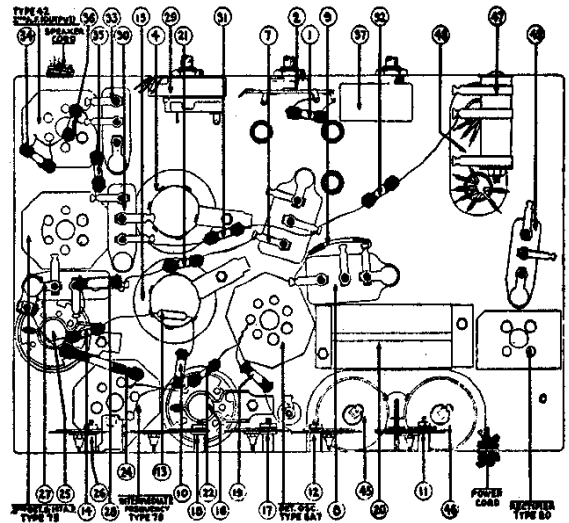


Fig. 2—Bottom View of Chassis Showing Parts

ADJUSTMENT OF MODEL 60

The receivers are accurately adjusted prior to shipment from the factory. Adjustments of the compensating condensers should only be undertaken with proper instructions and equipment available. Your distributor can supply both. The Philco Model 048 All-Purpose Set Tester is highly recommended. It contains an accurately calibrated signal generator.

The adjustment of the compensating condensers is similar to that outlined in Service Bulletin No. 120-C. Location of the several compensating condensers can be learned through reference to Fig. 3 for their electrical location in the receiver, and to Fig. 2 for the physical location of the compensating condensers at the rear of the chassis.

The intermediate frequency compensating condensers first should be adjusted. The intermediate frequency is 460 K. C. These condensers are ⑭, ⑮ and ⑯, accessible from rear of chassis.

Next, the high frequency ⑨ and antenna ⑤ compensating condensers are adjusted. These are mounted upon the tuning condenser assembly ②; ⑥ is nearest front of chassis.

The low frequency compensating condensers are adjusted last. These are ⑰ for Police Band, ⑱ for Broadcast Band, and are at rear of chassis.

The I. F. compensating condensers should be given a final retrimming after these adjustments are completed.



Terminal Arrangement of Tube Sockets, Viewed From Under Side of Chassis

MODEL 60
Schematic
Parts List

PHILCO RADIO & TELEVISION CORP.

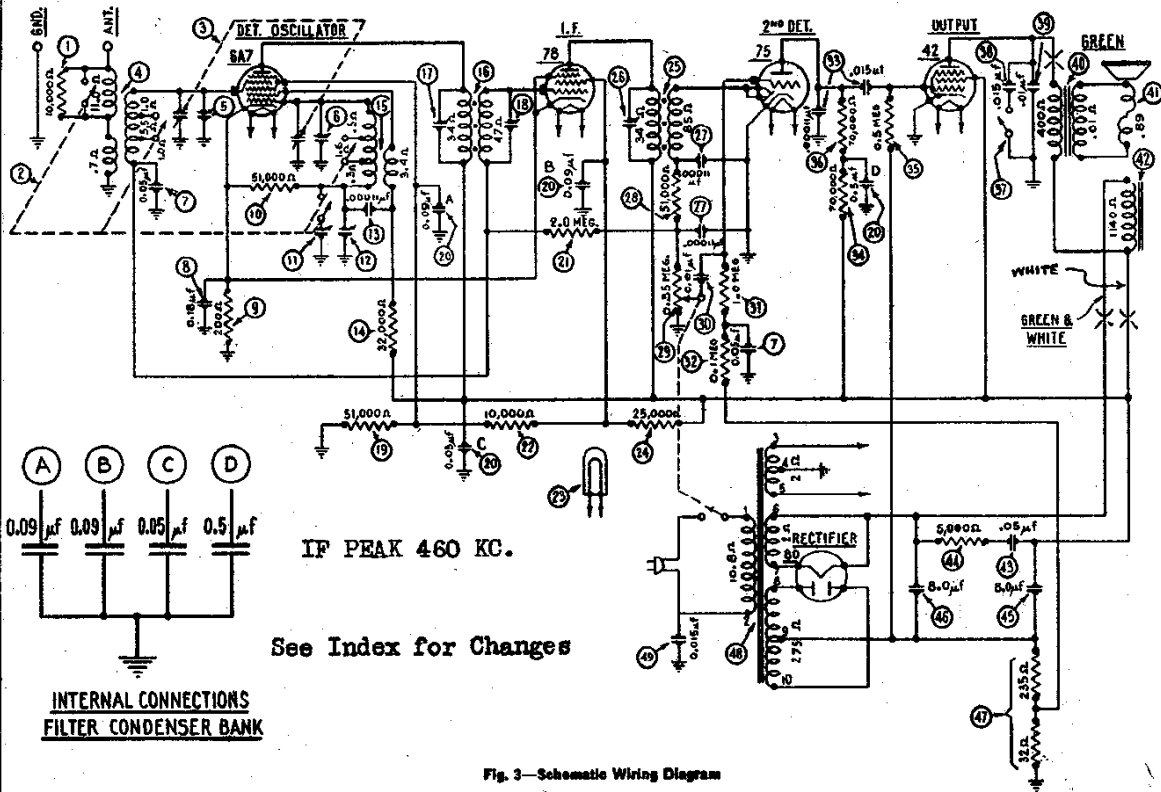


Fig. 3—Schematic Wiring Diagram

NOTE—(2) External connections, Filter Condenser Bank, are:

- (A) 0.09 mfd. section—White-Black-Tracer.
- (B) 0.09 mfd. section—White-Black-Tracer.
- (C) 0.05 mfd. section—Green.
- (D) 0.5 mfd. section—Black.

NOTE—(4) Condenser, and (4) Resistor, are NOT included in current production.

NOTE—A Fixed Condenser (Green-Orange); Part No. 5878; (.0008 mfd.) is connected across (11) in current production.

REPLACEMENT PARTS FOR MODEL 60

No. on Figs.	Description	Part No.	List Price	No. on Figs.	Description	Part No.	List Price
(1)	Resistor (10,000) (Brown-Black-Orange)	4412	.20	(24)	Resistor (25,000) (Red-Green-Orange)	3656	.20
(2)	Wave-Band Switch	42-1001		(25)	Second I. F. Transformer	32-1050	
(3)	Tuning Condenser Assembly	31-1006		(26)	Compensating Cond. (2nd, I. F. Primary)	04000-M	.16
(4)	Antenna Transformer	32-1047		(27)	Condenser (Double) (.00011-.00011)	8035-B	.16
(5)	Compensating Condenser (Ant.; H. F.; Part of (3))			(28)	Resistor (51,000) (Green-Brown-Orange)	4518	.20
(6)	Compensating Condenser (Osc.; H. F.; Part of (3))			(29)	Volume Control and "On-Off" Switch	33-5006	
(7)	Condenser (Double) (.05-.05)	3615-AJ	.25	(30)	Condenser (.01)	3903-AP	
(8)	Condenser (.18)	4989-Z		(31)	Resistor (1.0 meg.) (Brown-Black-Green)	4409	.20
(9)	Resistor (Flexible Wire-Wound) (200) (Red-Black-Brown)	7217	.15	(32)	Resistor (.1 meg.) (White-White-Orange)	4411	.20
(10)	Resistor (51,000) (Green-Brown-Orange)	4518	.20	(33)	Condenser (Double) (.00011-.015)	8035-D	
(11)	Compensating Condenser (Osc.; L. F.; Police Band)	04000-S	.25	(34)	Resistor (70,000) (Violet-Black-Orange)	5335	.20
(12)	Compensating Condenser (Osc.; L. F.; Broadcast Band)	04000-S	.25	(35)	Resistor (.5 meg.) (Yellow-White-Yellow)	4517	.20
(13)	Condenser (.00011)	4519	.18	(36)	Resistor (70,000) (Violet-Black-Orange)	5335	.20
(14)	Resistor (32,000) (Orange-Red-Orange)	5279	.20	(37)	Tone Control	30-4008	
(15)	Oscillator Transformer	32-1048		(38)	Condenser (Part of (29))—(.015)		
(16)	First I. F. Transformer	32-1049		(39)	Condenser (Part of (29))—(.01)		
(17)	Compensating Cond. (1st I. F. Primary)	04000-M	.16	(40)	Output Transformer	32-7019	
(18)	Compensating Cond. (1st I. F. Secondary)	04000-A	.12	(41)	Voice Coil and Cone Assembly	36-3014	
(19)	Resistor (51,000) (Green-Brown-Orange)	4518	.20	(42)	Speaker Field, assembled with Pot (S-7)	36-3037	
(20)	Filter Condenser Bank	30-4013	.65	(43)	Condenser (Electrolytic) (8.0)	7558	1.25
(21)	Resistor (2. meg.) (Red-Black-Green)	5872	.20	(44)	Condenser (Electrolytic) (8.0)	7558	1.25
(22)	Resistor (10,000) (Brown-Black-Orange)	4412	.20	(45)	Resistor (Wire-Wound)	7998	.15
(23)	Pilot Lamp (Station Selector)	6608	.12	(46)	Power Transformer (50-60)	8046	3.00
				(47)	Condenser (.015)	3793-W	.16
				(48)	Tube Shield	28-1107	.10
					Four-Prong Tube Socket	7544	.06
					Six-Prong Tube Socket	7547	.10
					Seven-Prong Tube Socket	27-8005	.10

MODELS 60, 89, 144
Changes

PHILCO RADIO & TELEV. CORP.

Model 60

Effective August 1st, resistors ⑩ and ⑪ in wiring diagram of Model 60, Bulletin No. 164 will be changed from Part No. 4518 ($\frac{1}{2}$ watt) to Part No. 6098 ($\frac{1}{3}$ watt). These changes are made to facilitate wiring in assembly.

Starting with Run No. 7, the following changes will be made. Note that a Wave Trap is added, necessitating several changes; other changes are to improve sensitivity.

Part No. (Fig. 3)	Remove	Add	Location
		38-6073 Wave Trap	In series with antenna post
⑩	4989-Z Condenser		
⑪	7217 Resistor	33-8010 (Bias Resistor, 300 Ohms, flex.)	Refer to Schematic Diagram
		33-8016 (Bias Resistor, 400 Ohms)	From 78 Cathode to Ground
		30-4020 (Condenser .05 Mfd. Tubular)	From 78 Cathode to Ground
⑫	3656 (25,000 Ohms)	33-1027 (39,000 Ohms)	Refer to Schematic Diagram
⑬	4412		
⑭	4518 (5,000 Ohms) $\frac{1}{2}$ Watt	6099 (99,000 Ohms) $\frac{1}{3}$ Watt	Refer to Schematic Diagram
⑮	4517	6097	Refer to Schematic Diagram
⑯	04000M	04000J	Refer to Schematic Diagram
⑰	30-4063 (.05-.09-.09-.5-2) (.2 section not used)	30-4217 (.05-.09-.09-.5)	(Filter block)

Model 89

Effective with Run No. 13 compensating condenser ⑱ on diagram (1st I. F. primary) will be a Part No. 31-6024 instead of 04000M previously used.

The new condenser is of an improved construction which eliminates possibility of "frequency drift" or breakdown.

Starting with Run No. 14, Model 89 will use a type 77 tube as detector-oscillator instead of the type 36 tube previously used. This change results in more stable performance of the oscillator.

In addition to requiring the use of a six-hole socket for the detector oscillator tube instead of the 5-hole previously used, the following changes are required:

Part ⑲, No. 6208 resistor (15,000 ohms) is replaced by No. 33-1114 (8,000 ohms).

Part ⑳, No. 8174-B condenser (.09 and .0007 Mfd.) is replaced by No. 8322-B (.09 and .0014).

Model 144

Effective with Run No. 6, electrolytic condenser ㉑ (see Bulletin No. 193) will be changed from part No. 30-2020 to 30-2026. Same capacity (6 mfd.), higher working voltage.

Starting with Run No. 7, Part ㉒ filter choke in Model 144 will be a 32-7018 instead of No. 5930 which has been used. This change is to adjust factory material lists and does not affect value of choke or performance of set.

The part number of the Shadowmeter to be used on the Model 144 will be 45-1106 instead of 6497 as listed on Bulletin 193. Change to identify in production.

On Fig. 3 (Schematic) fixed condenser ㉓ used in the bass compensation circuit, should be marked .02 Mfd. (Part No. 30-4113). The list of parts on Page 3 of Service Bulletin 193 gives this part number and value, which is correct.

CHANGES IN MODELS

Since Publication of Each Service Bulletin

Grouped under each model and arranged according to date . . . All models included . . . August 1st to December 31st, 1935.

The second column on each page gives the "Run Number" of the set at the time of the change (where this information was available from our records). The Run Number is stamped on the top of the chassis with a rubber stamp and is the lefthand number in the rectangle.

The Code Number of the set is given on the chassis name plate or name label (at rear of chassis).

MODEL 29

Approximate Date of Change	Run No.	CHANGES
11-1-35		No. ④ on base view of Fig. 4 should be ⑤. No. ⑤ next to ④ on base view of Fig. 4 should be ⑥.

MODEL 54

Approximate Date of Change	Run No.	CHANGES												
9-1-35	14	<table border="1"> <thead> <tr> <th></th> <th>Old Part No.</th> <th>New Part</th> </tr> </thead> <tbody> <tr> <td>Condenser ②</td> <td>3793-AG</td> <td>3793-AM</td> </tr> <tr> <td>Condenser ④</td> <td>3615-BF</td> <td>3615-BY</td> </tr> <tr> <td>Condenser ⑤</td> <td>8085-F</td> <td>8085-T</td> </tr> </tbody> </table>		Old Part No.	New Part	Condenser ②	3793-AG	3793-AM	Condenser ④	3615-BF	3615-BY	Condenser ⑤	8085-F	8085-T
	Old Part No.	New Part												
Condenser ②	3793-AG	3793-AM												
Condenser ④	3615-BF	3615-BY												
Condenser ⑤	8085-F	8085-T												

MODEL 60

Approximate Date of Change	Run No.	CHANGES															
10-1-35	11	Tube Shield and Tube Shield Base Nos. 28-2726 and 28-2725 for the 6A7 Tube will no longer be necessary.															
		<table border="1"> <thead> <tr> <th></th> <th>Old Part No.</th> <th>New Part No.</th> </tr> </thead> <tbody> <tr> <td>Resistor ①</td> <td>5872 (1/2 watt) 2 meg.</td> <td>33-1025 (1/2 watt)</td> </tr> <tr> <td>Resistor ②</td> <td>4409 (1/2 watt) 1 meg.</td> <td>33-1096 (1/2 watt)</td> </tr> <tr> <td>Resistor ③</td> <td>4411 (1/2 watt) 99,000 ohms</td> <td>6099 (1/2 watt)</td> </tr> <tr> <td>Resistor ④, ⑤</td> <td>5385 (1/2 watt) 70,000 ohms</td> <td>33-1115 (1/2 watt)</td> </tr> </tbody> </table>		Old Part No.	New Part No.	Resistor ①	5872 (1/2 watt) 2 meg.	33-1025 (1/2 watt)	Resistor ②	4409 (1/2 watt) 1 meg.	33-1096 (1/2 watt)	Resistor ③	4411 (1/2 watt) 99,000 ohms	6099 (1/2 watt)	Resistor ④, ⑤	5385 (1/2 watt) 70,000 ohms	33-1115 (1/2 watt)
	Old Part No.	New Part No.															
Resistor ①	5872 (1/2 watt) 2 meg.	33-1025 (1/2 watt)															
Resistor ②	4409 (1/2 watt) 1 meg.	33-1096 (1/2 watt)															
Resistor ③	4411 (1/2 watt) 99,000 ohms	6099 (1/2 watt)															
Resistor ④, ⑤	5385 (1/2 watt) 70,000 ohms	33-1115 (1/2 watt)															

MODEL 116 (Code 121 and 122)

Approximate Date of Change	Run No.	CHANGES																				
8-1-35	..	Adjustment of high frequency end of broadcast band should be made at 1500 K. C. (1.5 M. C. on the Philco 083 scale) instead of 1600 K. C.																				
	5	There will be an addition of resistor and condenser assembly. Replace Condenser No. 6287DU ② with 6287-ODU. The latter is impregnated with the new high melting point wax.																				
		<table border="1"> <thead> <tr> <th>Remove</th> <th>No. on Schematic Code 121</th> <th>No. on Schematic Code 122</th> <th>Install</th> </tr> </thead> <tbody> <tr> <td>80-4886 (.00125 mfd.)</td> <td>②</td> <td>②</td> <td>38-6978</td> </tr> <tr> <td>5337 (1000 ohms)</td> <td>③</td> <td>③</td> <td></td> </tr> <tr> <td>32-1114 (8000 ohms)</td> <td>④</td> <td>④</td> <td></td> </tr> <tr> <td>80-1028 (.003 mfd.)</td> <td>⑤</td> <td>⑤</td> <td>7801</td> </tr> </tbody> </table>	Remove	No. on Schematic Code 121	No. on Schematic Code 122	Install	80-4886 (.00125 mfd.)	②	②	38-6978	5337 (1000 ohms)	③	③		32-1114 (8000 ohms)	④	④		80-1028 (.003 mfd.)	⑤	⑤	7801
Remove	No. on Schematic Code 121	No. on Schematic Code 122	Install																			
80-4886 (.00125 mfd.)	②	②	38-6978																			
5337 (1000 ohms)	③	③																				
32-1114 (8000 ohms)	④	④																				
80-1028 (.003 mfd.)	⑤	⑤	7801																			

Approximate Date of Change	Run No.	CHANGES									
9-1-35	9	This change made to eliminate frequency drift.									
		<table border="1"> <thead> <tr> <th></th> <th>Old Part No.</th> <th>New Part No.</th> </tr> </thead> <tbody> <tr> <td>2nd I. F. Transformer ②</td> <td>32-1734</td> <td>32-1865</td> </tr> </tbody> </table>		Old Part No.	New Part No.	2nd I. F. Transformer ②	32-1734	32-1865			
	Old Part No.	New Part No.									
2nd I. F. Transformer ②	32-1734	32-1865									
	3	Code 122 only									
		<table border="1"> <thead> <tr> <th></th> <th>Old Part No.</th> <th>New Part No.</th> </tr> </thead> <tbody> <tr> <td>Condenser ②</td> <td>30-2011</td> <td>30-2069</td> </tr> <tr> <td>Insulator</td> <td>27-7195</td> <td>27-7194</td> </tr> </tbody> </table>		Old Part No.	New Part No.	Condenser ②	30-2011	30-2069	Insulator	27-7195	27-7194
	Old Part No.	New Part No.									
Condenser ②	30-2011	30-2069									
Insulator	27-7195	27-7194									

MODEL 116 (Code 121 and 122)

Approximate Date of Change	Run No.	CHANGES
11-1-35	..	Code 122 The grid lead from the 6A3 power tube near the front of the chassis is changed to run over to and parallel with the end of the chassis down as far as condenser ② then over to the input transformer. Change made to prevent audio oscillation.

Code 121, Run No. 9 Code 122, Run No. 11

Part	Schematic No.	Removed									
Resistor	(Code 121) ③ (Code 122) ④	6984 (2000 ohms) 1/2 watt									
	10	Code 121									
	8	Code 122									
		<table border="1"> <thead> <tr> <th>Schematic No.</th> <th>Old Part</th> <th>New Part</th> </tr> </thead> <tbody> <tr> <td>Tuning Condenser Assembly ②</td> <td>31-1606</td> <td>31-1607</td> </tr> <tr> <td>Dial Mask and Hub Assembly</td> <td>31-1575</td> <td>29-5186</td> </tr> </tbody> </table>	Schematic No.	Old Part	New Part	Tuning Condenser Assembly ②	31-1606	31-1607	Dial Mask and Hub Assembly	31-1575	29-5186
Schematic No.	Old Part	New Part									
Tuning Condenser Assembly ②	31-1606	31-1607									
Dial Mask and Hub Assembly	31-1575	29-5186									

12-1-35

Code 121, Run No. 12

Code 122, Run No. 10

Part	Schematic No.	Removed
Input Transformer ②	32-7447	32-7057

Change ② Resistor (10,000 ohm) to ②a
September Change Notices indicated a change in the 2nd I. F. Transformer ②. The Part No. of the new Transformer is 32-1864 and the corresponding Compensating Condenser Part No. is 31-6067.

MODEL 116X and 116B

Approximate Date of Change	Run No.	CHANGES
8-1-35	..	Add bezel frame gasket No. 27-7973. Remove Rubber Bumper No. 27-4150 to prevent microphonics. Remove Bezel Light Guard No. 27-8001 on Codes 121 and 122.

MODEL 610

Approximate Date of Change	Run No.	CHANGES
8-1-35	7	Tube Shield and Tube Shield Base on the 6A7 tube will not be necessary. Remove Part No. 28-2726 and 28-2725.
10-1-35	8	Part No. 6096 (5000 ohms) ② Resistor and Part No. 33-1206 (20 ohms) ② Resistor will not be used. In eliminating Resistor ②, shunt a wire across the terminals from which it is disconnected.
11-1-35	..	Reverse numbers ② and ③ shown in Figure 3.