

PHOTOFACT\* Folder



PHILCO  
MODEL 51-934

PHILCO  
MODEL 51-934



VOLUME CONTROL  
ON-OFF SWITCH

TUNING CONTROL

AM-FM  
SWITCH

PHILCO  
MODEL 51-934

PHILCO MODEL 51-934

TRADE NAME	Philco, Model 51-934	
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.	
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna	
TUBES (SIX)	Types 12AU6 FM RF Amp., 12AT7 Converter, 12BA6 1st IF Amp., 12AU6 2nd IF Amp., 19C8 DET-AVC-AF, 50C5 Power Output	
POWER SUPPLY	105-125 Volts AC-DC	RATING .35 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	540-1630KC	FREQ. MOD. 88-108MC

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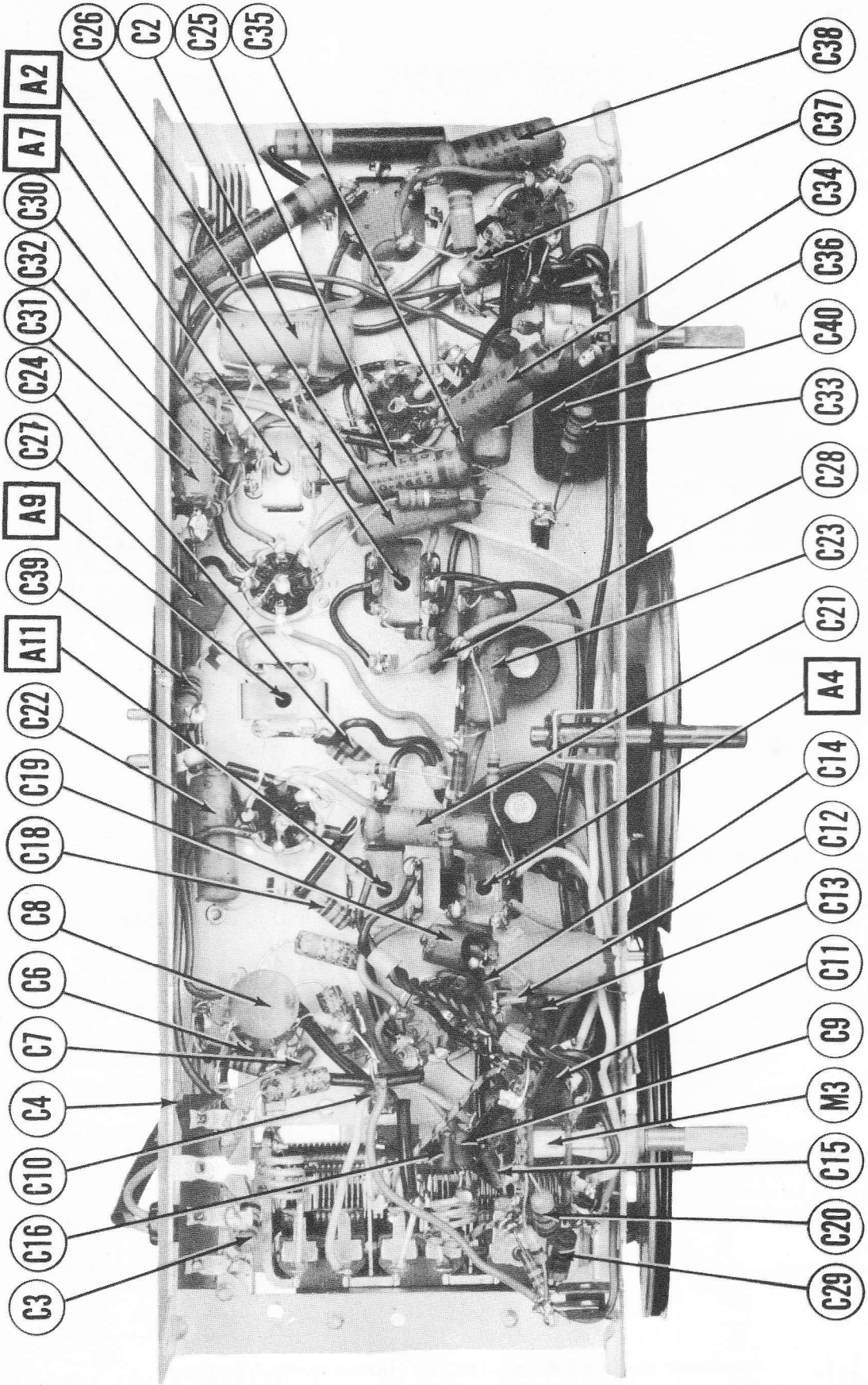
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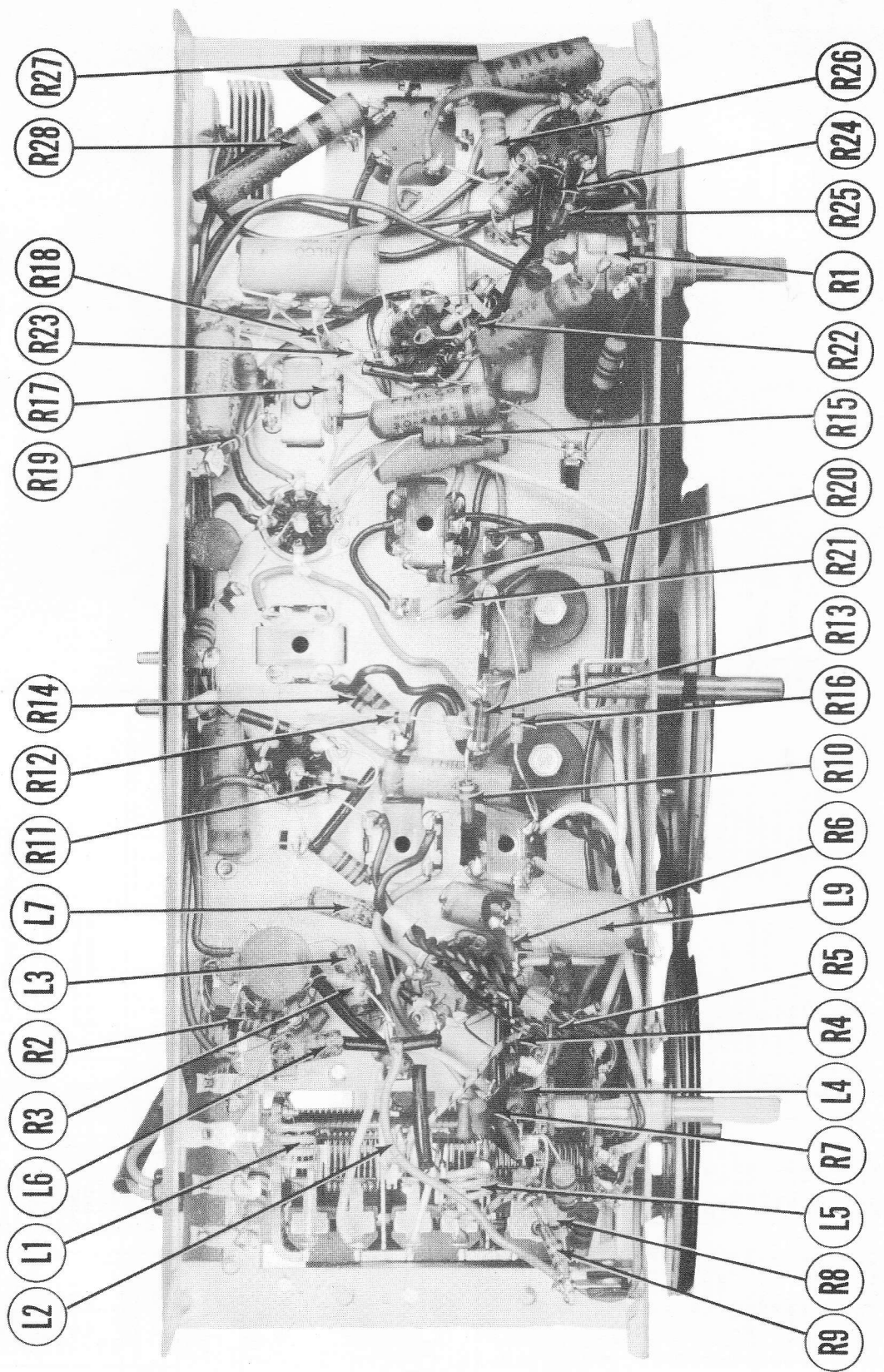
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DATE 7-50

SET 102

FOLDER 10





R27

R28

R18

R23

R17

R19

R14

R12

R11

L7

L3

R2

R3

L6

L1

L2

R26

R24

R25

R1

R22

R15

R20

R21

R13

R16

R10

R6

L9

R5

R4

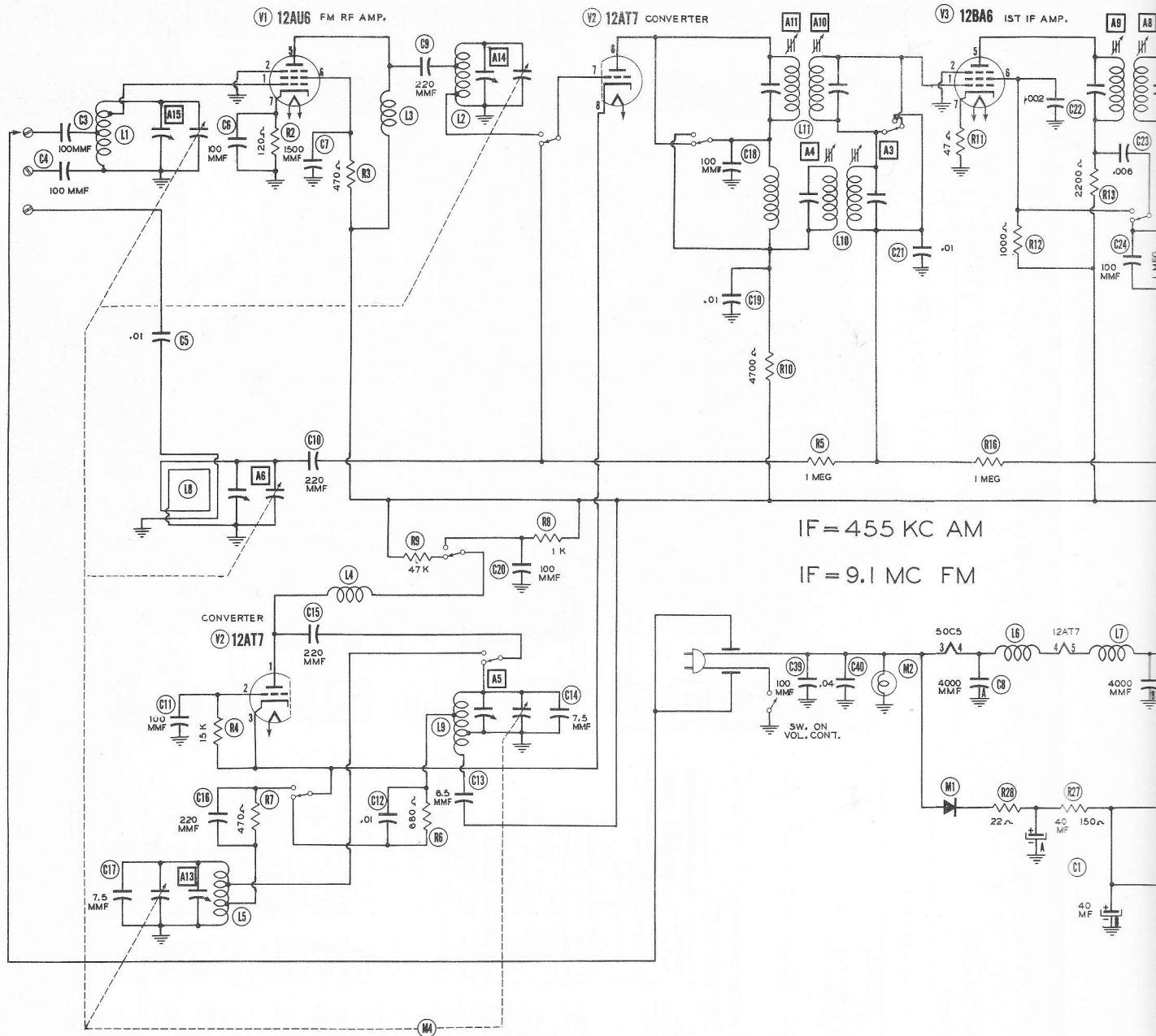
L4

R7

L5

R8





IF = 455 KC AM  
 IF = 9.1 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
† V1	12AU6	0V.	0V.	41VAC	50VAC	105VDC	100VDC	.9VDC		
† V2	12AT7	100VDC	§1.4VDC	2.6VDC	63VAC	50VAC	95VDC	0V.		
# V2	12AT7	42VDC	§-.3VDC	1.6VDC	63VAC	50VAC	105VDC	-1.1VDC		
† V3	12BA6	-.2VDC	0V.	41VAC	29VAC	85VDC	100VDC	.5VDC		
# V3	12BA6	-.3VDC	0V.	41VAC	29VAC	95VDC	105VDC	.5VDC		
† V4	12AU6	-.1VDC	0V.	29VAC	17VAC	100VDC	100VDC	.8VDC		
# V4	12AU6	-.1VDC	0V.	29VAC	17VAC	105VDC	105VDC	.8VDC		
† V5	19C8	-1VDC	-.9VDC	-1VDC	0V.	17VAC	-.6VDC	0V.	-1VDC	70VDC
† V5	19C8	-.4VDC	-.9VDC	-.4VDC	0V.	17VAC	-.6VDC	0V.	-1VDC	70VDC
† V6	50C5	7VDC	.1VDC	117VAC	63VAC	.1VDC	105VDC	115VDC		

# TAKEN IN "AM" POSITION

† TAKEN IN "FM" POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING

1. DC Voltage measurements are at 20,000 ohms measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common.
4. Line voltage maintained at 117 volts for voltages.
5. Nominal tolerance on component values may be  $\pm 10\%$  in voltage and resistance readings.
6. Volume control at maximum, no signal applied.



**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

To set pointer turn tuning gang fully closed and set pointer to last reference mark on low frequency end of dial backplate. Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and chassis.

**AM ALIGNMENT**

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1. .1MFD	High side to pin 7 (Grid) of 12AT7 (V2). Low side to chassis.	455KC (400% Mod.)	AM (fully counter clock-wise)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	Loop	1630KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	Loop	1500KC	"	Adjust for max. output.	"	A6	"

**FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM**

Connect two matched 100KΩ (± 1%) resistor in series from point A to chassis. The junction of these two resistors is alignment point C as shown on the schematic.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4. .1MFD	High side to pin 1 (Grid) of 12BA6 (V3). Low side to chassis.	9.1MC (Unmod.)	FM (CW)	Tuning gang fully open	DC Probe to Point A. Common to chassis.	A7, A8, A9	Adjust for maximum deflection. Attenuate signal generator to maintain a -10 volt reading.
5. .1MFD	High side to pin 7 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6. .1MFD	"	"	"	"	DC Probe to Point B. Common to Point C.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

**FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE**

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4. .1MFD	High side to pin 1 (Grid) of 12BA6 (V3). Low side to chassis.	9.1MC (450KC Sweep)	FM (CW)	Tuning gang fully open	Vert. Amp. to Point A. Low side to chassis.	A7, A8,	Disconnect stabilizer capacitor C2. Adjust for maximum amplitude and symmetry as per fig 1.
5. .1MFD	High side to pin 7 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6. .1MFD	"	"	"	"	Vert. Amp. to Point B. Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 to place 9.1MC at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

**FM RF ALIGNMENT**

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7. Direct	Across antenna terminals.	105MC (Unmod.)	FM (CW)	Set pointer to third reference mark from right hand end of dial backplate.	DC Probe to Point A. Common to chassis.	A13, A14, A15	Adjust for maximum deflection.
8. Direct	"	92MC	"	Set pointer to third reference mark from left hand edge of dial backplate.	"	L5, L2, L1	Expand or compress coil turns in order given for maximum deflection. Repeat steps 7 and 8 until no further improvement can be made.

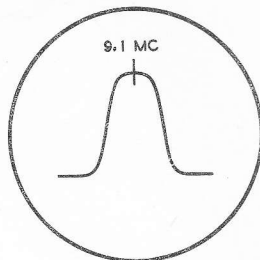


FIG. 1

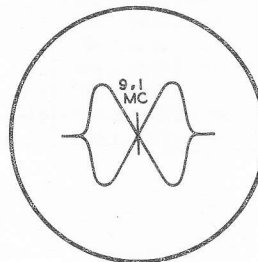


FIG. 2

## PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	FM RF Amp.	12AU6	12AU6	7BK	
V2	Converter	12AT7	12AT7	9A	
V3	1st IF Amp.	12BA6	12BA6	7BK	
V4	2nd IF Amp.	12AU6	12AU6	7BK	
V5	Ratio Det. -DET-AVC-AF	19C8	19C8	9E	
V6	Power Output	50C5	50C5	7CV	

### CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

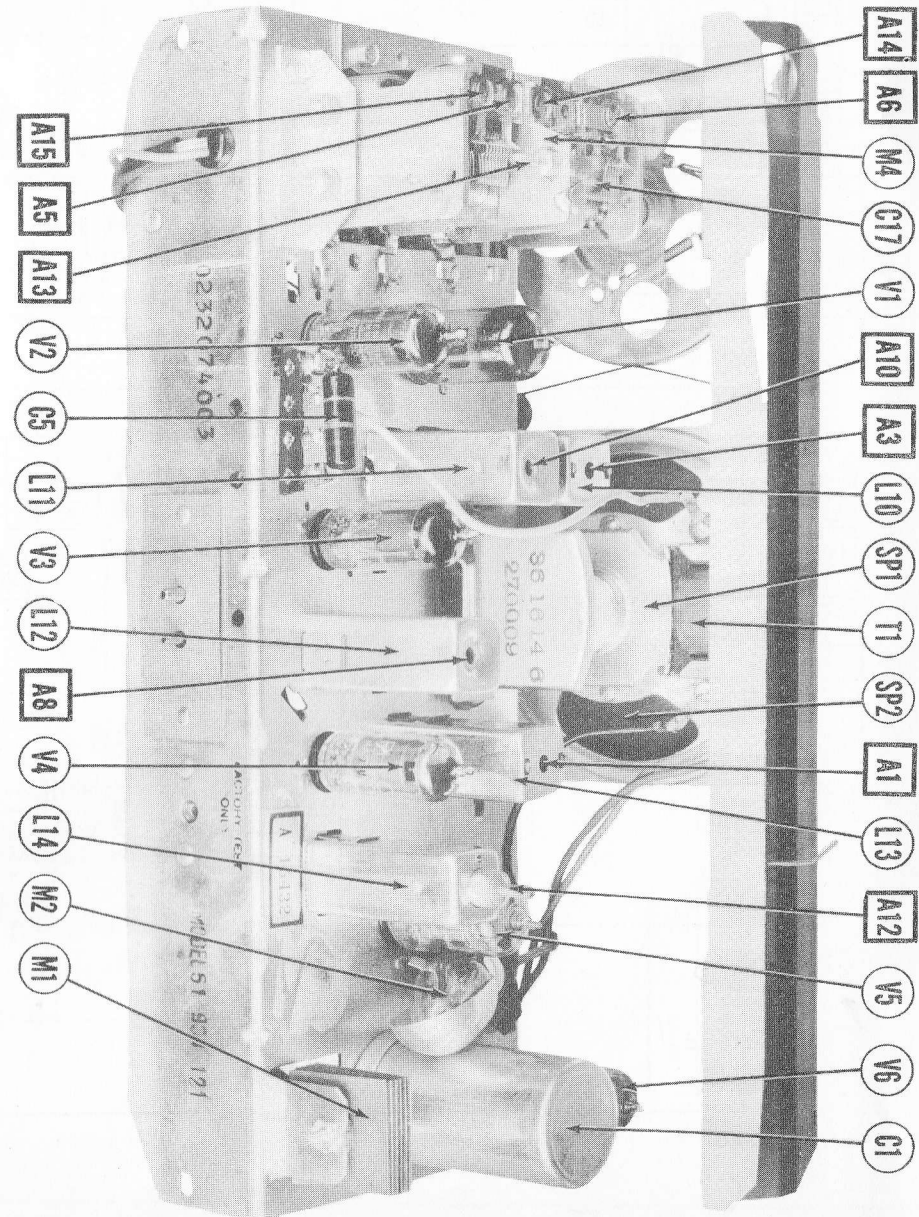
ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	
C1A	40	150	30-2570-46					▲ Filter
B	70	150						■ Filter
C	40	150						▲ Filter
D	25	25						Output Cath. Byp.
C2	2	50	30-2417-7	E26E6		BBR2-50		Stabilizing Cap.
C3	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C4	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C5	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	811-01	TM-11
C6	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C7	1500		62-215001011	GP1500M	D6-152	1W5D15	GP2L-0015	IFM-215
C8A	4000		30-1239	BPD-5	D6-472	D6-472	1D5D4	36C2
B	4000			BPD-5	D6-472	1D5D4		Filament Byp.
C9	220		62-122001001	GP220M	D6-221	5W5T25	GP2K-220	IFM-325
C10	220		62-122001001	GP220M	D6-221	5W5T25	GP2K-220	IFM-325
C11	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C12	.01	100	30-1226-10	P488-01	D6-103	PTE4S1	811-01	TM-11
C13	6.5		30-1224-6	SI6.5DNPO	D2-6.8		NPOK-6.8	
C14	7.5		30-1224-8	SI7.5FN220			N220K-7.5	
C15	220		62-122001001	GP220M	D6-221	5W5T25	GP2K-220	IFM-325
C16	220		62-122001001	GP220M	D6-221	5W5T25	GP2K-220	IFM-325
C17	7.5		30-1224-8	SI7.5DNPO			NPOK-7.5	
C18	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C19	.01	400	30-4572	P488-01	D6-103	PTE4S1	811-01	TM-11
C20	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C21	.01	400	30-4572	P488-01	D6-103	PTE4S1	811-01	TM-11
C22	.002	400	61-0062	P688-002	D6-202	PTE6D2	GP2M-002	TM-22
C23	.006	400	45-3500-7	P488-006	D6-562	PTE6D6	811-005	TM-26
C24	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C25	.002	400	61-0062	P688-002	D6-202	PTE6D2	GP2M-002	TM-22
C26	.01	400	30-4572	P488-01	D6-103	PTE4S1	811-01	TM-11
C27	5000		30-1238-1	BPD-5	D6-502	1D5D5	811-005	29C1
C28	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C29	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C30	330		62-133001001	GP330M	D6-331	5W5T3	GP2K-330	IFM-335
C31	.004	400	61-0179	P688-004	D6-562	PTE6D4	811-005	TM-24
C32	.006	400	45-3500-7	P488-006	D6-562	PTE6D6	811-005	TM-26
C33	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C34	.015	400	61-0108	P488-015	D6-562	PTE4S2	811-005	TM-12
C35	680		62-168001001	GP680M	D6-681	1W5T7	GP2K-680	IFM-37
C36	.006	400	61-0105	P488-006	D6-562	PTE6D6	811-005	TM-26
C37	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C38	.02	400	61-0105	P488-02	D6-101	PTE4S2	811-005	TM-12
C39	100		62-110009001	GP100M	D6-101	5W5T1	GPIK-100	IFM-31
C40	.04	400	45-3500	P488-04		PTE6S4	GPIK-100	TM-14

\* Some models use .006MFD in this application.

### CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
RIA	500KΩ	½	33-5566-20	Q13-133	AM-60-Z	B-60-S	Volume control and switch
B	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to RIA per instructions
C	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to RIA per instructions

## CHASSIS—TOP VIEW





## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PART No.	IRC PART No.	
R2	120Ω		66-1128340		RF Amp. Cathode-Wire Wound
R3	470Ω		66-1478340	BTS-470	RF Amp. Screen
R4	15KΩ		66-3158340	BTS-15K	Conv. Grid
R5	1 Meg.		66-5108340	BTS-1 Meg.	Conv. Grid
R6	680Ω		66-1688340		Parasitic Suppressor
R7	470Ω		66-1478340		Parasitic Suppressor
R8	1000Ω		66-2108340	BTS-1000	FM Conv. Plate
R9	47KΩ		66-3478340	BTS-47K	AM Conv. Plate
R10	4700Ω		66-2478340	BTS-4700	Conv. Plate Decoupling
R11	47Ω		66-0478340	BW- $\frac{1}{2}$ -47	1st IF Amp. Cathode
R12	1000Ω		66-2108340	BTS-1000	1st IF Amp. Screen Decoupling
R13	2200Ω		66-2228340	BTS-2200	1st IF Amp. Plate Decoupling
R14	1 Meg.		66-1058340	BTS-1 Meg.	2nd IF Amp. Grid
R15	120Ω		66-1128340		2nd IF Amp. Cathode-Wire Wound
R16	1 Meg.		66-5108340	BTS-1 Meg.	AVC Network
R17	470Ω		66-1478340	BTS-470	2nd IF Amp. Decoupling
R18	47KΩ		66-3478340	BTS-47K	Ratio Det. Diode Load
R19	47KΩ		66-3478340	BTS-47K	De-emphasis
R20	47KΩ		66-3478340	BTS-47K	Filter
R21	3.3 Meg.		66-5338340	BTS-3.3 Meg.	AVC Diode Load
R22	10 Meg.		66-6108340	BTS-10 Meg.	AF Amp. Grid
R23	470KΩ		66-4478340	BTS-470K	AF Amp. Plate
R24	470KΩ		66-4478340	BTS-470K	Output Grid
R25	150Ω		66-1158340	BW- $\frac{1}{2}$ -150	Output Cathode
R26	470Ω	1	66-1474340	BTA-470	Filter
R27	150Ω	2	66-1185340	BW-2-150	Filter-Wire Wound
R28	22Ω	2	66-0225340		Surge Limiting-Wire Wound

### TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2400Ω	3.5Ω	220Ω	.6Ω	Part of SP1	A-3332 ①	A-3025 ①	RO-2	① Bend mounting tabs down.

### SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.5Ω	32-1614-6	ST-113 ② MOD. P4-X	4A07 ②	② Remount output transformer.
SP2	CONE DIA.	V. C. DIA.				
	4"	9/16"				

### R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
L1	FM Ant.	0Ω		32-4415-1		
L2	FM RF	0Ω		32-4416-1		
L3	RF Choke	3.1Ω		32-4422-10		3.3 microhenries
L4	RF Choke	3.1Ω		32-4422-10		3.3 microhenries
L5	FM Osc.	0Ω		32-4414-1		
L6	Fl. Choke	1.9Ω		32-4422-8		2.2 microhenries
L7	Fl. Choke	1.9Ω		32-4422-8		2.2 microhenries
L8	Loop Ant.	.8Ω	4Ω	32-4052-49		
L9	AM Osc.	10.5Ω		32-4458		Taps at 4Ω and 3.1Ω
L10	1st AM IF	5Ω	12.5Ω	32-4258-3A		
L11	1st FM IF	.2Ω	.2Ω	32-4372A	16-3487	
L12	2nd FM IF	2.2Ω	2.2Ω	32-4372-2A	16-3487	
L13	2nd AM IF	16.5Ω	16.5Ω	32-4240A	16-6770	
L14	Ratio Det. Trans.	3.5Ω	.5Ω	32-4310-1A		

## PARTS LIST AND DESCRIPTIONS (Continued)

### SELENIUM RECTIFIER

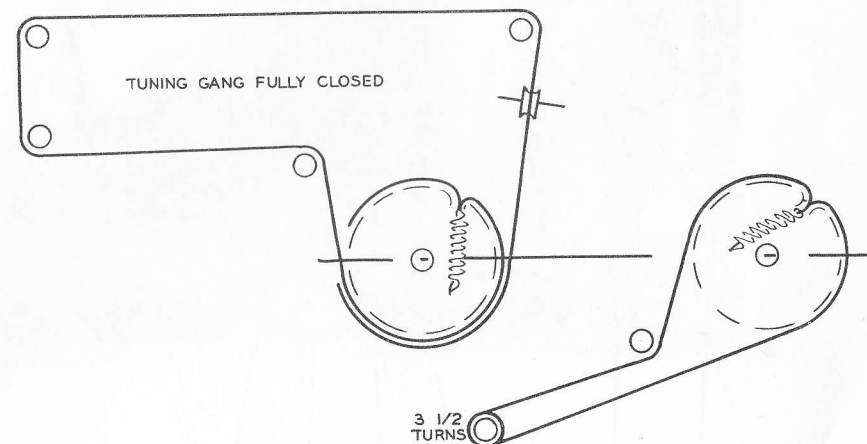
ITEM No.	RATING	REPLACEMENT DATA		NOTES
	CURRENT	PHILCO PART No.	SYLVANIA PART No.	
M1	.075ADC	34-8003-1	NC-5	

### DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M2	Screw	120			34-2605		Type 120 Volt, 7 Watt

### MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Switch	42-1924	
M4	2 Gang Var. Cap.	31-2756	Band (26-292MMF, 15-197MMF)
A13	Trimmer	31-6511	FM Osc. Adj.
	Cabinet	10796	
	Dial Scale	54-5089	
	Knob	54-4774-2	FM-AM
	Knob	54-4774	Tuning
	Knob	54-4774-1	Volume/Off-On
	Dial Pointer	56-5630-23FCP	



DIAL CORD DRIVE