

VIKING

Models

RCS 659

RCS 659M

Service Information for 9 Tube AM-FM Stereo Radio-Phono Combination

For Operation on 110-120 Volts A.C. Cycle as Marked.

When writing for Service Information or Parts please quote Model Number, Serial Number and finish of cabinet.
All information printed in this leaflet is up to date as of Dec. 15, 1963. Subsequent changes are covered by bulletin.

SPECIFICATIONS

TUNER PLATTER

Standard Broadcast Range..... 535 to 1650 Kc.
Frequency Modulation Range..... 88 to 109 Mc.
Band Width..... AM 10 Kc. Band Width at 2X Down
18 Kc. Band Width at 10X Down
FM 250 Kc. Band Width at 10X Down

Sensitivity..... AM---14 uv for 100 mv output at Detector
FM--- 2 uv for 20db quieting
4 uv for 30db quieting

I.F. Frequency - AM - 455 Kc/s
FM - 10.7 Mc/s

AMPLIFIER (Specifications per channel)

Frequency Response - 50 cps. to 20,000 cps. \pm 3db
POWER OUTPUT - 20 watts peak. (10 watts per channel)

LEVEL BALANCE CONTROL DUAL ELEMENT FRICTION CLUTCH TYPE

Designed to provide bass and treble boost as follows:

35° removed from CCW position 20 db. lift at 30 C/S
35° removed from CCW position 15 db. lift at 15 Kc/s
65° removed from CCW position 7 db. lift at 30 C/S
65° removed from CCW position 10 db. lift at 15 Kc/s
with reference to 1000 cps.

BASS TONE CONTROL DUAL ELEMENT

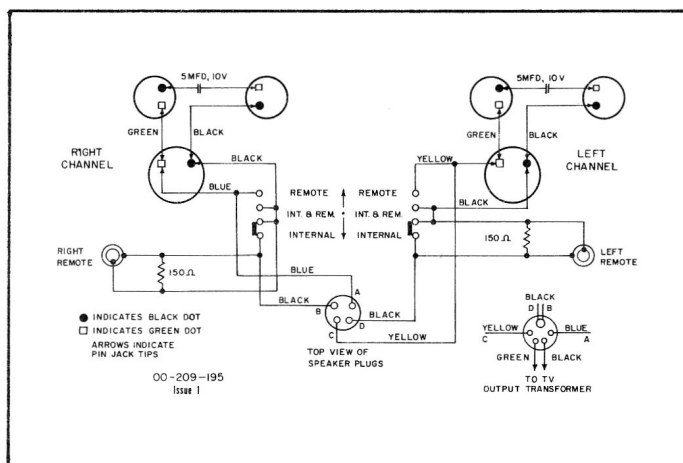
Designed to provide 7 db cut at 50 cps. Covers sound spectrum from 20-1000 cps.

TREBLE TONE CONTROL DUAL ELEMENT

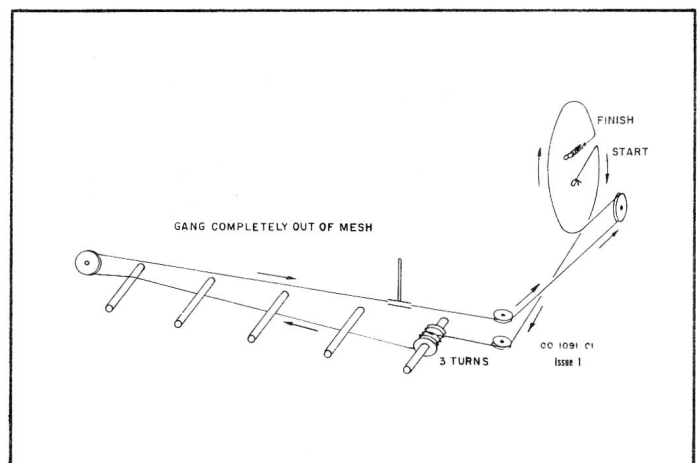
Designed to provide 15 db cut at 10,000 cps. Covers sound spectrum from 1000 to 15,000 cps.

Measurements with tone controls in flat position, level control fully clockwise.

SPEAKER CONNECTIONS



STRINGING DETAIL



EATON'S OF CANADA

AM-FM TUNER ALIGNMENT PROCEDURE

STEP	DUMMY ANTENNA	SIGNAL APPLIED TO	FREQ	MODULATION	BAND SWITCH SETTING	DIAL POINTER SETTING	INDICATING METER	ADJUST	REMARKS	NOMINAL SENSITIVITY
1	.05 uf	Pin #1 V3 6BA6	455 Kc/s	400 C.P.S. AM at 30%	AM	600 Kc/s	AC-VTVM To Point "I"	T7 2nd AM-IF	Adjust for maximum output	3000 uv. for 70 Mv. output
2	.05 uf	Pin #7 V6 6BE6	455 Kc/s	400 C.P.S. AM at 30%	AM	600 Kc/s	AC-VTVM To Point "I"	T5 1st AM-IF	Adjust for maximum output	100 uv. for 70 Mv. output
3	200 uuf	AM Ant. Term. Strip #1	600 Kc/s	400 C.P.S. AM at 30%	AM	600 Kc/s	AC-VTVM To Point "I"	T10 and T9 AM-Osc. & AM Ant.	Connect for long wire ant. Adjust for Max. output***	35 uv. for 70 Mv. output
4	200 uuf	AM Ant. Term. Strip #1	1400 Kc/s	400 C.P.S. AM at 30%	AM	1400 Kc/s	AC-VTVM To Point "I"	C2D and C2B Trimmers	Connect for long wire ant. Adjust for Max. output***	45 uv. for 70 Mv. output
5	Repeat steps 3 and 4, check band coverage at 535 Kc/s - 1650 Kc/s and for tracking at 950 Kc/s.									
6	—	Pin #1 V3 6BA6	10.7 Mc/s	Nil	FM	Point of no inter- ference	DC-VTVM To Point "K"	T6, 3rd. FM-IF	Adjust for maximum meter deflection	10000 uv. for 1V output
7	—	Pin #1 V3 6BA6	10.7 Mc/s	Nil	FM	Point of no inter- ference	DC-VTVM To MX Output	T8 FM Ratio Det. Primary (Bo.t)	Adjust for maximum meter deflection	1250 uv. for 1V output
8	—	Pin #1 V3 6BA6	10.7 Mc/s	Nil	FM	Point of no inter- ference	DC-VTVM To MX Output	T8 FM Ratio Detector Sec'dary (Top)	Adjust for zero voltage. NOTE**	—
9	—	Pin #1 V2 6AU6A	10.7 Mc/s	Nil	FM	Point of no inter- ference	DC-VTVM To Point "K"	T4 2nd FM-IF	Adjust for maximum meter deflection	160 uv. for 1V output
10	—	C1A FM Gang	10.7 Mc/s	Nil	FM	Point of no inter- ference	DC-VTVM To Point "K"	T3, 1st. FM-IF	Adjust for maximum meter deflection	—
11	NOTE *	FM Ant. Term. Strip	90 Mc/s	400 C.P.S. FM 22.5 Kc/s Dev.	FM	90 Mc/s	AC-VTVM To Point "H"	T2 Slug and L3 coil	Adjust for maximum output	3 uv. for 200 Mv. output
12	NOTE *	FM Ant. Term. Strip	106 Mc/s	400 C.P.S. FM 22.5 Kc/s Dev.	FM	106 Mc/s	AC-VTVM To Point "H"	C1D and C1B Trimmers	Adjust for maximum output	3 uv. for 200 Mv. output
13	Repeat steps 11 and 12 until output drops at least 20 db. when mod. is turned off.									

NOTE: To achieve more accurate alignment of FM IF's and ratio detector it is preferable to use a proper sweep generator and oscilloscope.

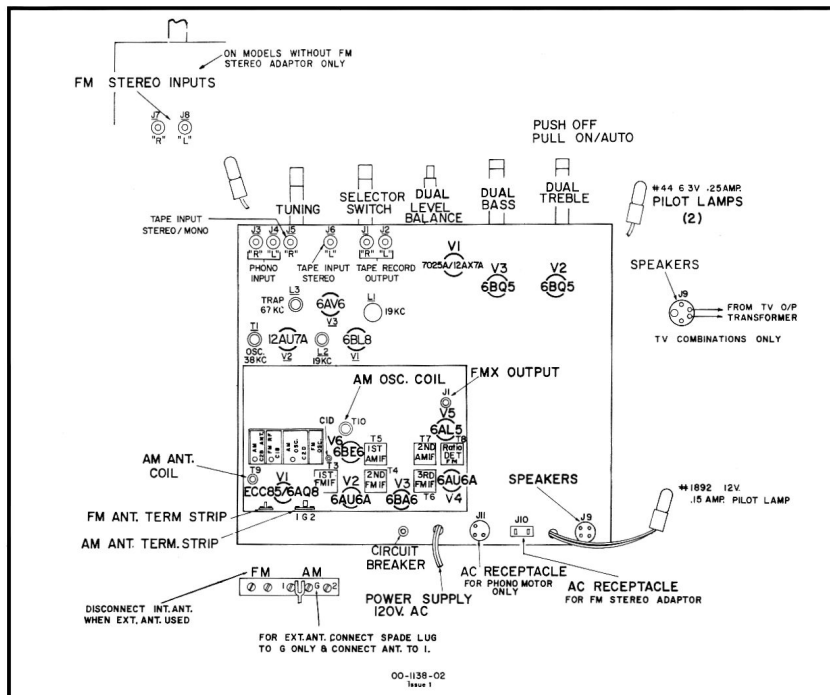
* For FM dummy antenna connect one 150 ohm carbon resistor from grounded side of sig. gen. to antenna terminal and one 120 ohm carbon resistor from hot side of signal generator to antenna terminal.

** With ground lead of DC VTVM connected to two 100 K resistors. To be temporarily connected in series across C31 (4 ufd CAP)

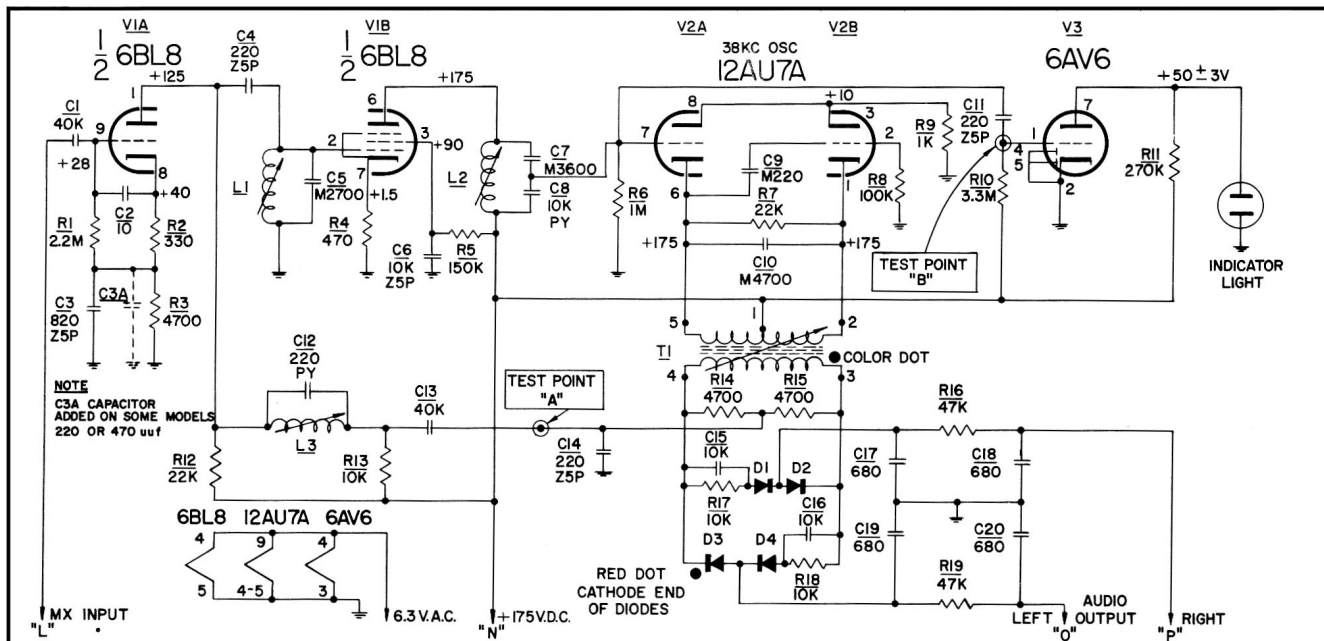
*** For AM-RF alignment purpose. The low impedance loop, installed in the cabinet or its electrical equivalent must be connected to the set as shown in the schematic.

NOTE: Input to set is one half, output reading of signal generator.

CHASSIS LAYOUT



FM STEREO RADIO ADAPTER SCHEMATIC

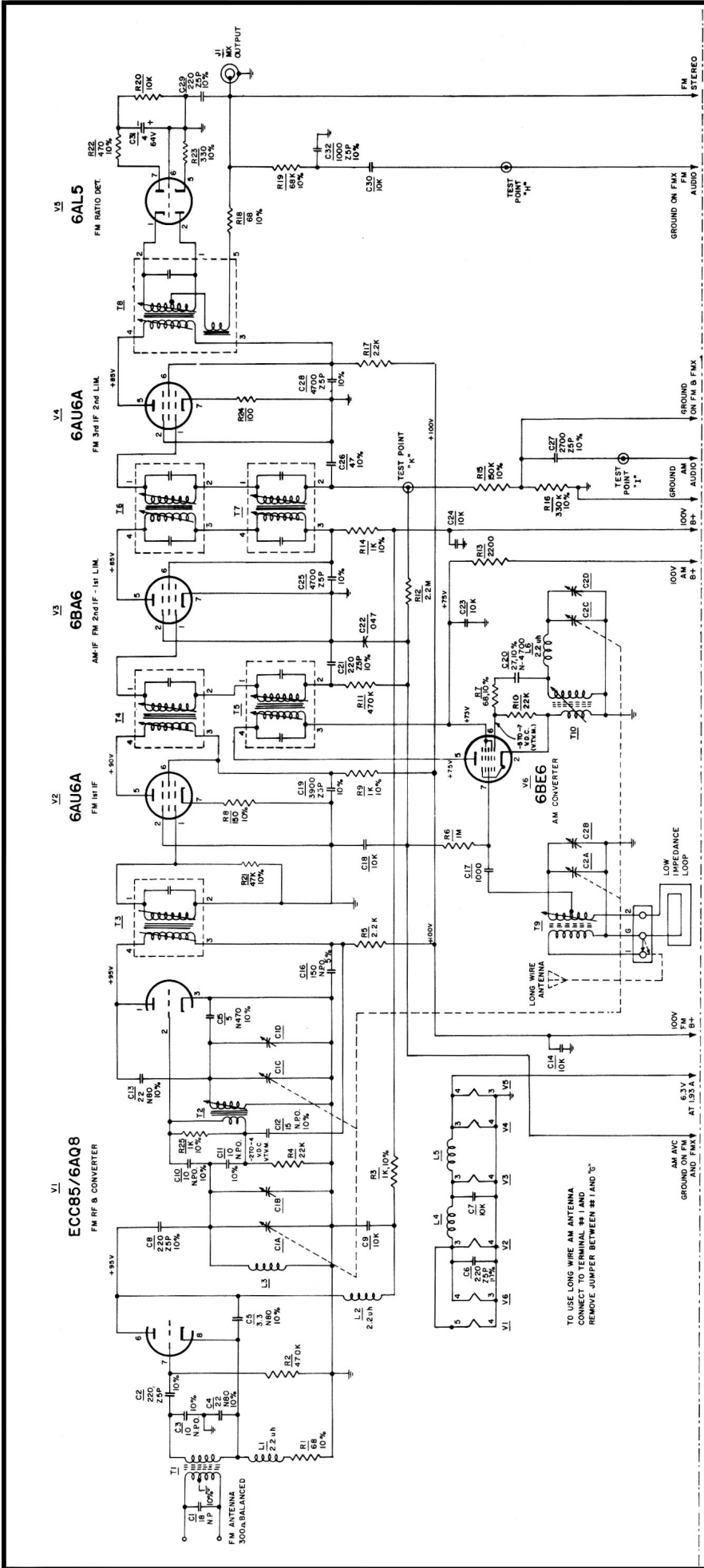


ALIGNMENT - EQUIPMENT, MX GENERATOR, SCOPE, AC-VTVM, AUDIO GENERATOR					
	INPUT	INPUT LEVEL	OUTPUT CONN.	OUTPUT METER	ADJUST
1	67KC ± 1KC	10V - RMS	TEST PT "A"	SCOPE OR AC-VTVM WITH OSC TUBE REMOVED	L3 FOR MINIMUM
2	19KC ± 3CY	200MV	TEST PT "B"	SCOPE OR AC-VTVM	L2 FOR MAX
3	MX GEN. 10% 19KC & LEFT CH. AUDIO ONLY	200MV	LEFT & RIGHT OUTPUTS *	SCOPE WITH OSC. TUBE REPLACED	T1 FOR STEADY PAT. (OSC LOCKED IN)
4	AS ABOVE	1V	AS ABOVE	AS ABOVE	L2 FOR MAXIMUM SEPARATION NOT OVER 1/4 TURN FROM SETTING IN STEP 2
5	REPEAT STEPS 3 AND 4 FOR MAXIMUM SEPARATION				
* THRU ELECTRONIC SWITCH OR MANUAL SWITCH					

LEGEND
RESISTORS
 HALF WATT UNLESS OTHERWISE NOTED.
 10% TOLERANCE UNLESS OTHERWISE NOTED.
 K = 1,000 M = 1,000,000
CAPACITORS
 TUBULAR, CAPACITY IN ufd, & D.C.W.V.
 CURVED LINE OUTSIDE FOIL.
 ELECTROLYTIC, CAPACITY IN ufd, & D.C.W.V.
 CERAMIC, MICA, OR OTHER TYPES WITH NO OBVIOUS OUTSIDE OR GROUNDED SIDE. CAPACITY IN uufd, TOLERANCE IF CRITICAL, & D.C.W.V.

SPECIAL CAPACITORS SUCH AS TEMPERATURE COMPENSATING TYPES ARE IDENTIFIED BY A NOTE AT CAPACITOR LOCATION.
 eg O.F. = OIL FILLED
 S.M. = SILVER MICA
 M = MICA
 N.P. = NON POLARIZED
 P.Y. = POLYSTYRENE

AM-FM TUNER SCHEMATIC



NOTE - FOR ALIGNMENT INSTRUCTIONS SEE DEL DWG 00-1898-02
00-174-01
ISSUE 9

- LEGEND**
- RESISTORS**
- HALF WATT UNLESS OTHERWISE NOTED.
 - 20% 10% 5% 1% 0.5% 0.1% TOLERANCES
 - 100 OHMS
 - 1,000 OHMS
 - 10,000 OHMS
 - 100,000 OHMS
- CAPACITORS**
- TUBULAR CAPACITY IN μ F AND D.C. M.V.
 - CURVED LINE, OUTSIDE FOIL
 - ELECTROLYTIC CAPACITY IN μ F. AND D.C. M.V.
 - CERAMIC, MICA OR OTHER TYPES WITH NO
 - OBVIOUS OUTSIDE OR GROUNDED SIDE.
 - NP = NON POLARIZED.
 - M = MICA
 - S = SILVER MICA
 - P = POLARIZED
 - N4700 = TEMP. COMPENSATION

TO USE LONG WIRE AM ANTENNA
CONNECT TO TERMINAL #1 AND
REMOVE JUMPER BETWEEN #1 AND #2

AM AVC
AND FM AT 6.3V

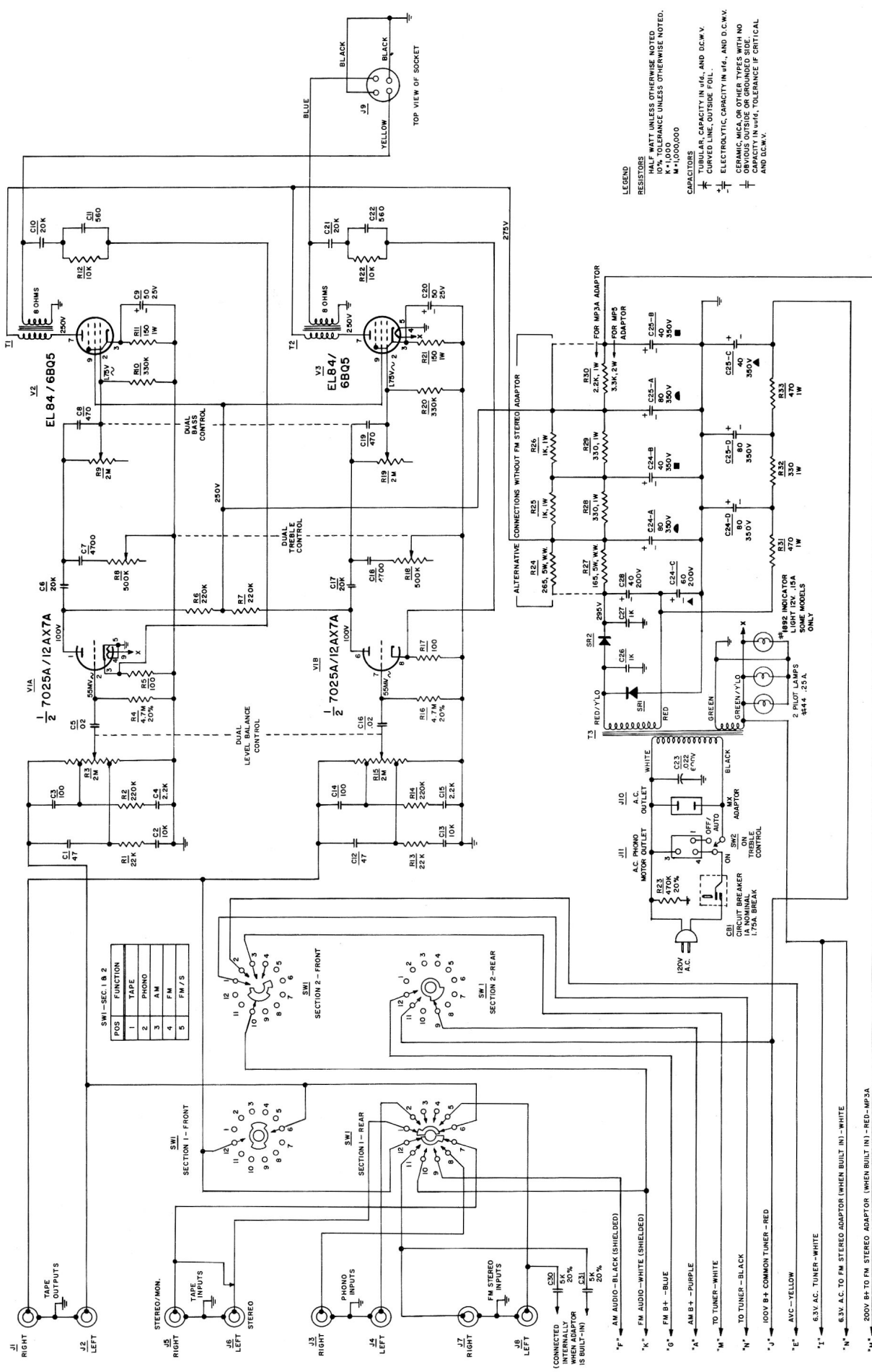
GROUND ON FM AND FM
AUDIO

GROUND ON FM AND FM
AUDIO

GROUND ON FM AND FM
AUDIO

GROUND ON FM AND FM
AUDIO

AMPLIFIER SCHEMATIC



POS	FUNCTION
1	TAPE
2	PHONO
3	A.M.
4	F.M.
5	F.M./S.

LEGEND
RESISTORS
 HALF WATT UNLESS OTHERWISE NOTED
 10% TOLERANCE UNLESS OTHERWISE NOTED.
 M-1000000
 K-1000
 CAPACITORS
 μF - MICROFARAD CAPACITY IN μF, AND D.C.W.V.
 ELECTROLYTIC CAPACITY IN μF, AND D.C.W.V.
 CERAMIC/MICA OR OTHER TYPES WITH NO CAPACITY IN μF.
 TOLERANCE IF CRITICAL AND D.C.W.V.

00-593-01
 133H 2

- J1 RIGHT TAPE OUTPUTS
- J2 LEFT TAPE OUTPUTS
- J3 RIGHT STEREO/MON. TAPE INPUTS
- J4 LEFT STEREO TAPE INPUTS
- J5 RIGHT PHONO INPUTS
- J6 LEFT PHONO INPUTS
- J7 RIGHT FM STEREO INPUTS
- J8 LEFT FM STEREO INPUTS
- J9 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J10 A.C. PHONO A.C. MOTION OUTLET
- J11 A.C. PHONO A.C. MOTION OUTLET
- J12 A.C. PHONO A.C. MOTION OUTLET
- J13 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J14 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J15 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J16 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J17 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J18 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J19 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J20 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J21 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J22 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J23 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J24 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J25 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J26 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J27 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J28 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J29 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J30 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J31 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J32 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J33 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J34 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J35 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J36 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J37 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J38 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J39 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J40 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J41 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J42 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J43 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J44 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J45 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J46 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J47 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J48 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J49 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J50 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J51 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J52 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J53 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J54 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J55 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J56 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J57 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J58 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J59 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J60 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J61 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J62 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J63 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J64 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J65 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J66 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J67 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J68 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J69 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J70 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J71 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J72 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J73 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J74 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J75 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J76 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J77 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J78 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J79 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J80 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J81 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J82 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J83 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J84 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J85 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J86 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J87 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J88 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J89 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J90 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J91 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J92 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J93 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J94 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J95 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J96 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J97 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J98 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J99 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)
- J100 120V A.C. (CONNECTED INTERNALLY OR IS BUILT-IN)

SERVICE REPLACEMENT PARTS LIST

RCS 659, RCS 659M

FINAL ASSEMBLY

Part No.	Description
16-120047-01	45 RPM Insert
19-40017-11	Speaker - 4" PM - 4 ohm VC
19-100006-06	Speaker - 10" PM - 8 ohm VC
27-7-03	Pilot Light - 12V - #1892
30-233-06	Control Panel
53-617-04	Level Knob - Level Balance
53-696-01	Knob - Tuning
53-696-02	Knob - Bass, Treble, Selector
53-696-03	Knob - Level Balance

AMPLIFIER CHASSIS ASSEMBLY

Symbol	Part No.	Description
SW1	26-109-01	Selector Switch
	27-1-01	Pilot Lamp - 6-8V #44 .25A
	30-280-01	Dial Scale (RCS 659)
	30-280-02	Dial Scale (RCS 659M)
R27	42-21-65	Resistor - WW - 165 ohm $\pm 10\%$ 5W (models with multiplex adapter)
R24	42-21-87	Resistor - WW - 265 ohm $\pm 10\%$ 5W (models without multiplex adapter)
T3	24-10082-01	Power Transformer - 60 cycle
T3	24-20082-01	Power Transformer - 25 cycle (25 cycle models only)
T1, T2	24-80054-01	Audio Output Transformer 8 ohm VC
CB1	26-65-02	Circuit Breaker
SR1, SR2	28-6-01	Silicon Rectifier - 500 ma
	or	
	28-15-01	Silicon Rectifier - Dual - 500 ma
R3, R15	41-161-04	Control - Dual - Level Balance - 2 meg.
R8, R18	41-218-13	Control Treble - 500K
R9, R19	41-218-08	Control Bass - 2 meg.
C28	44-140-01	Electrolytic - 40 ufd 200V
C24	44-141-01	Electrolytic - 80, 40 ufd, 350 V; 60 ufd 200V; 80 ufd 150V
C25	44-142-01	Electrolytic - 80, 40 ufd, 350 V; 80, 40 ufd 150V
C9, C20	44-40-04	Electrolytic - 50 ufd 25V

TUNER PLATTER ASSEMBLY

Symbol	Part No.	Description
L4, L5	21-300-01	Heater Choke
T10	21-421-01	BC Oscillator Coil
T5, T7	21-432-02	AM IF Transformer - 1st and 2nd
T4	21-433-02	FM IF Transformer - 2nd
T6	21-433-03	FM IF Transformer - 3rd
T3	21-433-04	FM IF Transformer - 1st
L1, L2, L6	21-439-02	RF Choke 2.2 uh
T1	21-471-01	FM Antenna Matching Transformer
T9	21-480-01	BC Antenna Coil
T8	21-485-01	Ratio Detector
T2	21-486-01	FM Oscillator Coil
L3	21-487-01	FM RF Coil
C1D	45-36-01	FM Trimmer
	45-52-04	AM FM Gang Condenser
C31	44-88-01	Electrolytic - 4 ufd 64V

FM STEREO RADIO ADAPTER PLATTER ASSEMBLY

Symbol	Part No.	Description
D1, D2, D3, D4	14-504-01	Diode 1N541
L1, L2, L3	21-334-03	Horizontal Stabilizing Coil
T1	21-493-01	38 Kc Oscillator Coil
C5	47-22725-23	Condenser - Dipped Mica - 2700 uufd $\pm 5\%$ 300V
C7	47-23625-33	Condenser - Dipped Mica 3.6K uufd $\pm 5\%$ 300V
C12	48-102215-05	Condenser - Polystyrene - 220 uufd $\pm 5\%$ 500V
C9	47-22211-13	Condenser - Dipped Mica - 220 uufd $\pm 10\%$ 500V
C8	48-101031-01	Condenser - Polystyrene - 10K uufd 125V $\pm 10\%$
C10	47-24725-33	Condenser - Dipped Mica - 4.7K uufd 300V $\pm 5\%$

CHANGER ASSEMBLY

Part No.	Description
16-90025-02	Garrard AT6 Changer - 60 cycle
16-120052-01	Garrard Multipurpose Pickup Case
16-220002-03	Phono Motor Alliance - 25 cycle (25 cycle models only)
16-250026-02	Astatic 233D Cartridge
16-120028-09	Replacement Styli - Astatic N50SD