SERVICE INFORMATION AND PARTS LIST *for the*

MODELS | RCS 658 | RCS 658M

VIKING

8 TUBE AM-FM STEREO RADIO PHONOGRAPH COMBINATION CONSOLE

For operation on 110-120 Volts A.C. Cycle as marked

When writing for Service Information and/or parts, please quote Model and Serial Number as found on the license label. Always order service parts by part number. Part numbers are positive identification which ensures fast service and avoids unnecessary delays.

All information printed in this leaflet is up to date as of June 22, 1963. Subsequent changes are covered by bulletin.

Specifications

AM-FM TUNER

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

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

AMPLIFIER (Specifications per channel)

Frequency Response - 30 cps. to 20,000 cps. ± 3db
POWER OUTPUT - 5 watts peak ± 1db

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

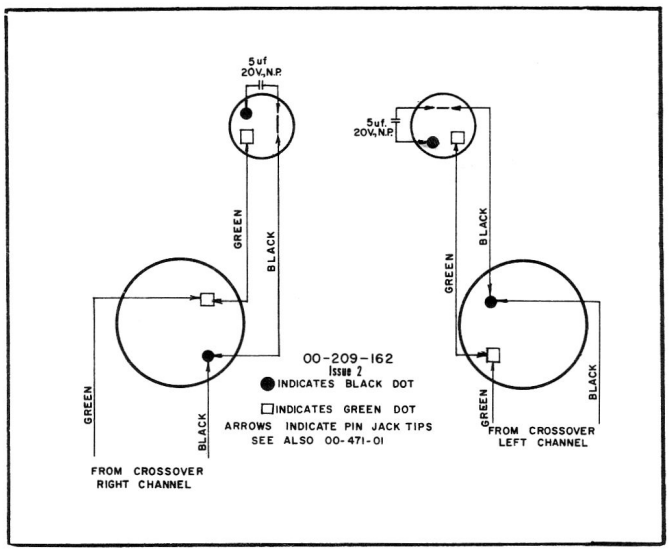
Designed to provide 7 db cut at 50 cps. Covers sound spectrum from 20-1000 cps.

TREBLE TONE CONTROL DUAL ELEMENT

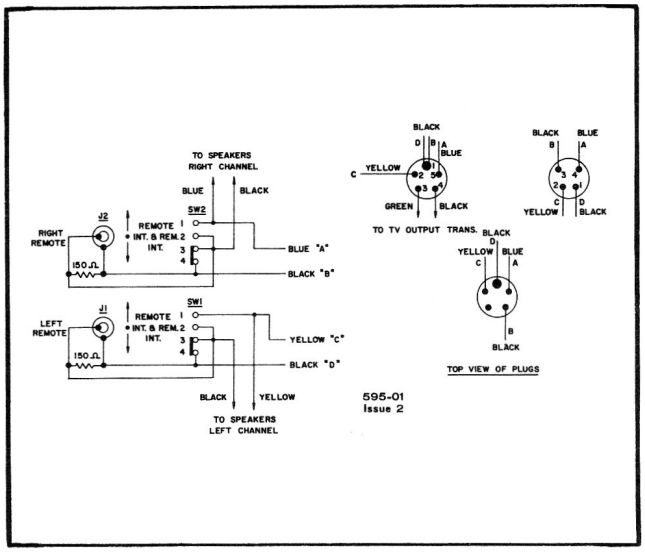
Designed to provide 15 db cut at 10,000 cps. Covers sound spectrum from 1000 to 15,000 cps.

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

SPEAKER CONNECTIONS



CROSSOVER NETWORK



EATON'S OF CANADA

54-1476-02 500 12/63 D.E.I. PRINTED IN 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 12BE6	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	390 ohms	AM Ant. Term. Strip	1400 Kc/s	400 C.P.S. AM at 30%	AM	1400 Kc/s	AC-VTVM To Point "I"	C2D and C2B Trimmers		20 uv for 70 Mv. output
4	390 ohms	AM Ant. Term. Strip	600 Kc/s	400 C.P.S. AM at 30%	AM	600 Kc/s	AC-VTVM To Point "I"	T10 AM-Osc.		Check for tracking
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 Interference	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 Interference	DC-VTVM To MX output	T8 FM Ratio Det. Primary (Bot)	Adjust for maximum meter deflection	1250 uv for 1V output
8	-	Pin #1 V3 6BA6	10.7 Mc/s	Nil	FM	Point of no Interference	DC-VTVM To MX output	T8 FM Ratio Det. Secondary (Top)	Adjust for zero voltage. NOTE**	----------
9	-	Pin #1 V2 6AU6A	10.7 Mc/s	Nil	FM	Point of no Interference	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 Interference	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 Deviation	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 Deviation	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.									3.0 uv

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

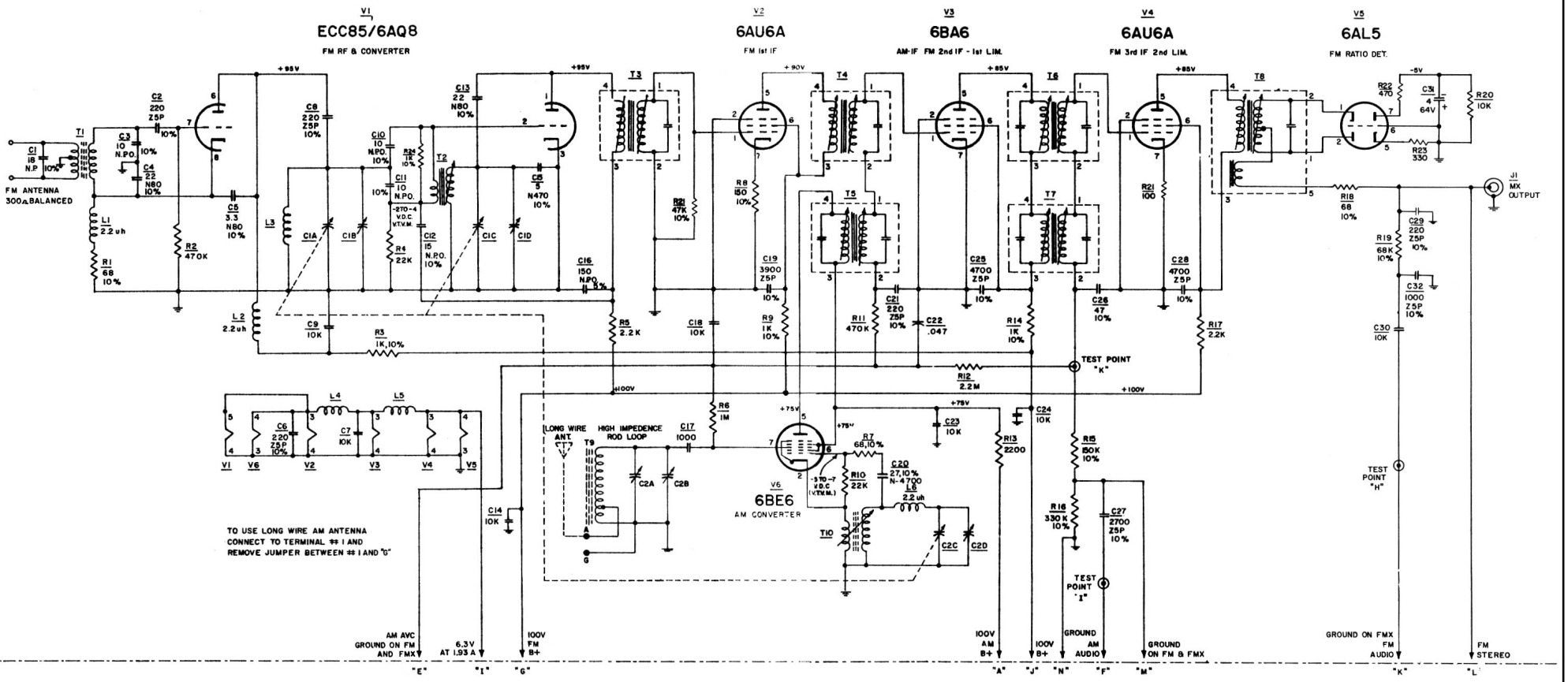
* For FM dummy antenna connect one 150 ohm carbon resistor from grounded side of sig. gen. to antenna terminal and one 120 ohm carbon resistor from hot side of signal generator to antenna terminal.
NOTE: Input to set is one half, output reading of signal generator.

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

NOTE: THE CHASSIS IS DIRECTLY CONNECTED TO THE LINE AND AN ISOLATION TRANSFORMER MUST BE USED FOR ALIGNING AND TESTING.

00-1958-02
Issue 2

AM-FM TUNER SCHEMATIC



LEGEND

RESISTORS

HALF WATT UNLESS OTHERWISE NOTED.
20% TOL. " " "
K = 1,000 OHMS
M = 1,000,000 OHMS

CAPACITORS

- TUBULAR, CAPACITY IN ufd, AND D.C.W.V. CURVED LINE, OUTSIDE FOIL.
- ELECTROLYTIC. CAPACITY IN ufd., AND D.C.W.V.
- CERAMIC, MICA OR OTHER TYPES WITH NO OBVIOUS OUTSIDE OR GROUNDED SIDE. CAPACITY IN uufd, TOL. IF CRITICAL, AND D.C.W.V.

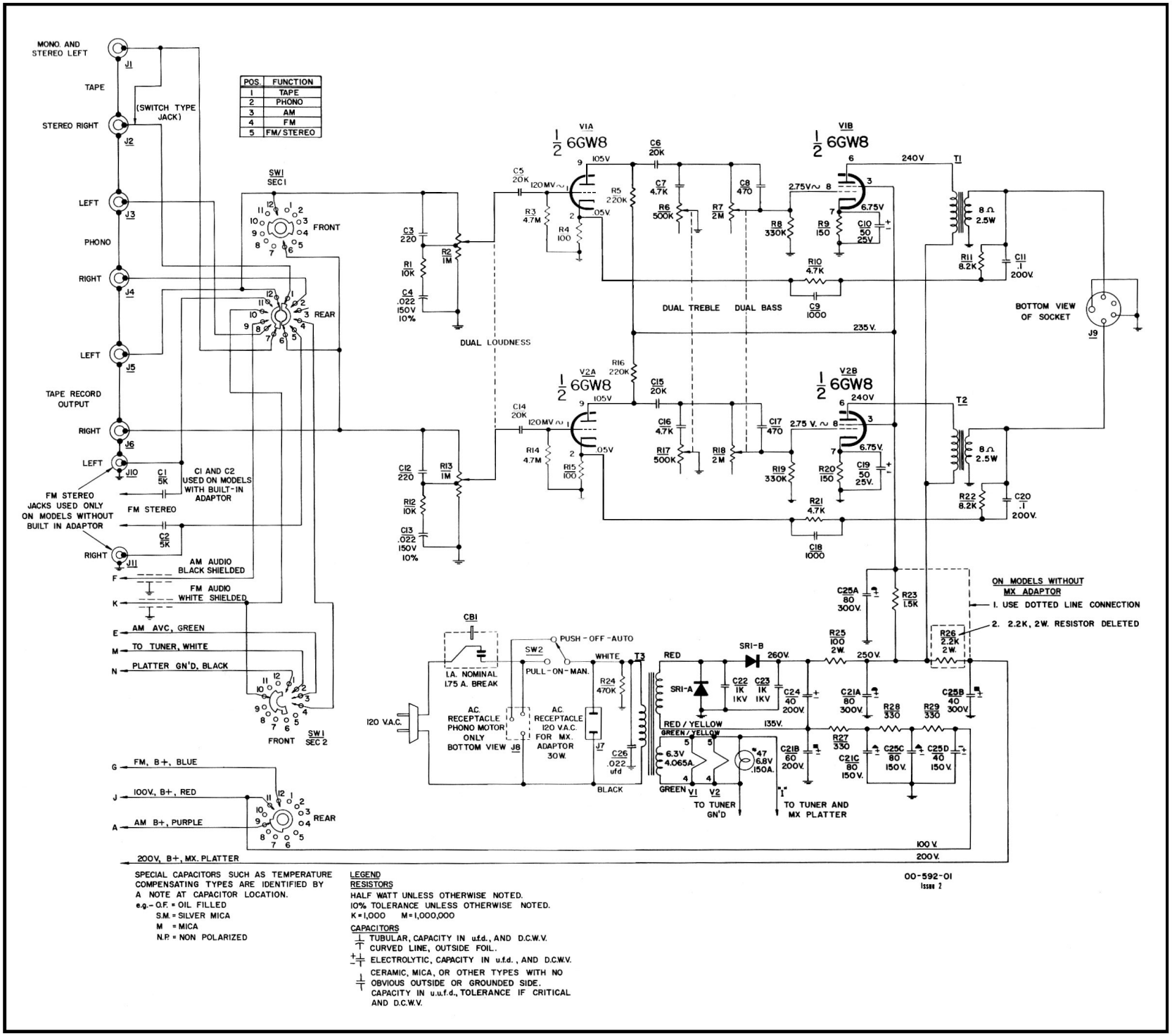
SPECIAL CAPACITORS SUCH AS TEMPERATURE COMPENSATING TYPES ARE IDENTIFIED BY A NOTE AT CAPACITOR LOCATION.

e.g. O.F. = OIL FILLED
M = MICA
S.M. = SILVER MICA
N.P. = NON POLARIZED.
N.P.O. = NEG. POS. ZERO
N 4700 = TEMP. COMPENSATION

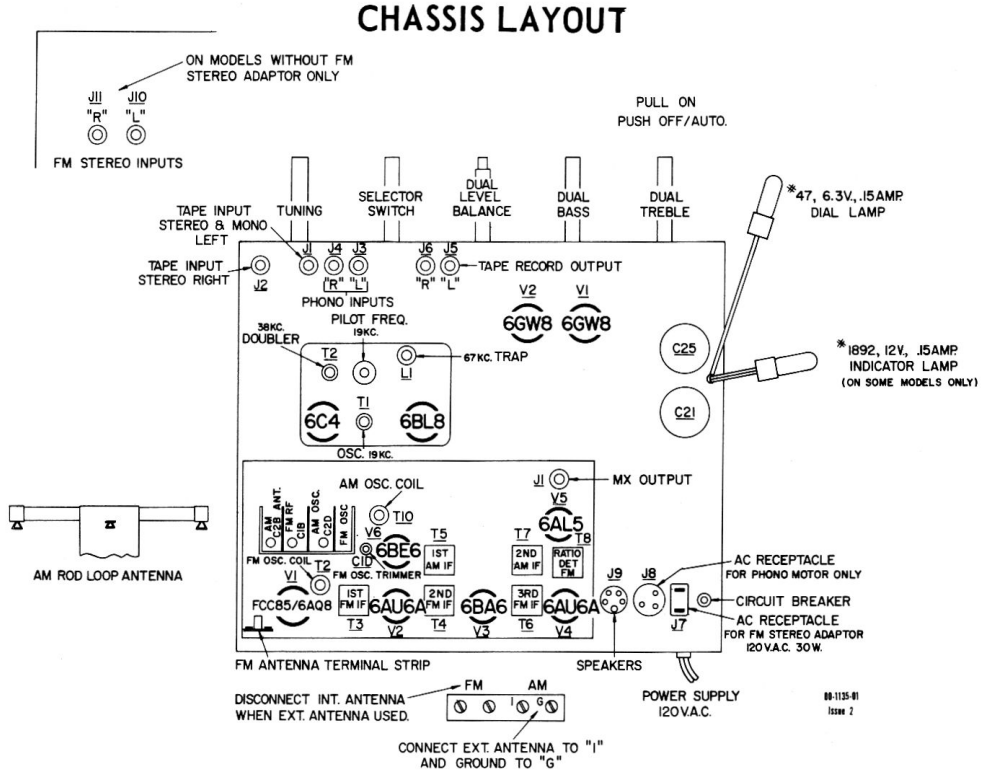
NOTE - FOR ALIGNMENT INSTRUCTIONS SEE D.E.I. DWG 00-1958-02

00-474-02
Issue 2

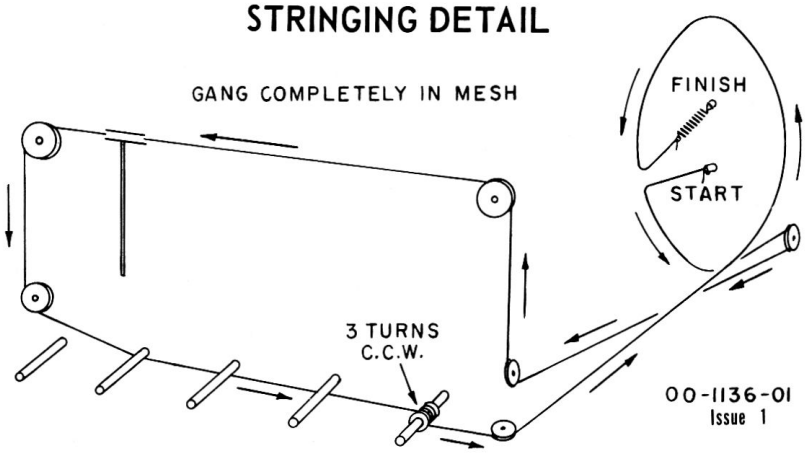
AMPLIFIER SCHEMATIC



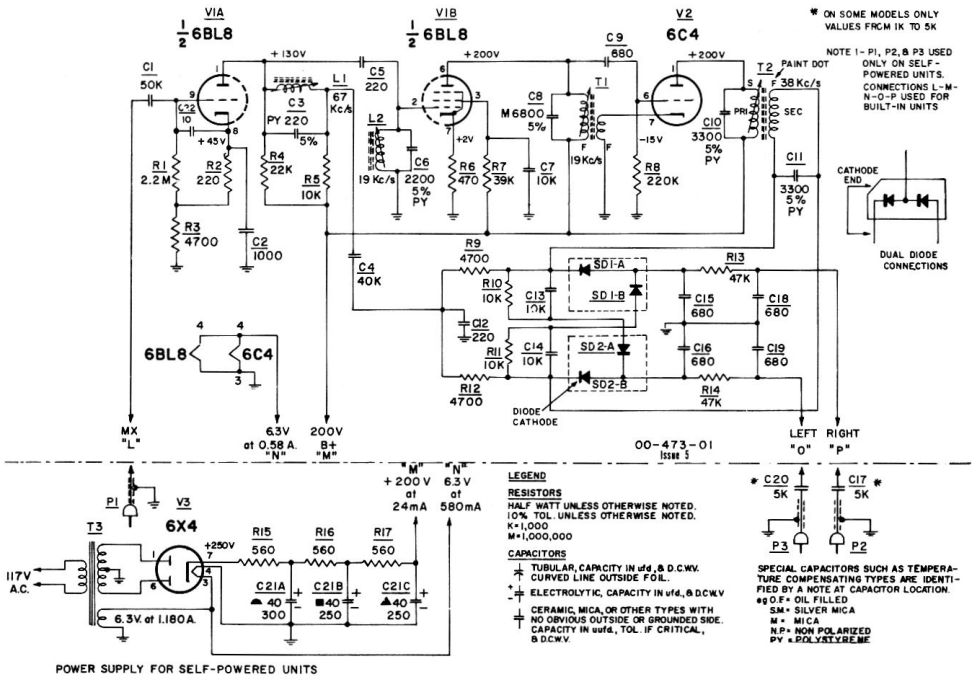
CHASSIS LAYOUT



STRINGING DETAIL



FM STEREO ADAPTER SCHEMATIC ("M" MODELS ONLY)



STEREO RADIO ADAPTER ALIGNMENT INSTRUCTIONS

EQUIPMENT REQUIRED

1. Multiplex Generator.
2. Audio Generator accurately calibrated at 67 Kc.
3. Audio scope and electronic switch or double beam scope.

ALIGNMENT INSTRUCTIONS

1. Remove 6C4 oscillator tube.
2. Connect audio generator to input of multiplex adapter and set generator at 67 Kc.
3. Connect scope to the junction of R9 and R12.
4. Adjust 67 Kc trap L1 for minimum pattern on scope.
5. Remove audio generator and connect multiplex generator to input of multiplex adapter. Set generator at 19 Kc.
6. Connect the scope input to pin number 6 on the 6C4 socket using a low capacity probe.
7. Adjust L2 and T1 for maximum scope pattern.
8. Replace 6C4 tube.
9. Connect scope to junction of R9 and R10.
10. Adjust 38 Kc coil T2 for maximum scope pattern.
11. Check multiplex generator as follows:
    (a) Connect output of generator to input of scope.
    (b) Adjust the generator to provide a multiplex signal modulated on one channel only. 19 Kc pilot signal must be switched off.
    (c) Observe the scope waveform. If the generator is adjusted properly, the scope pattern will be an audio sine wave envelope of 38 Kc with a straight base line.
    (d) If pattern is not correct, adjust generator according to instructions received with the instrument.
12. Connect the multiplex generator output to the adapter input.
13. Connect the outputs of the adapter to the inputs on the electronic switch.
14. Connect the output of the electronic switch to the scope inputs.
    NOTE: If an electronic switch is not available, a manual switching arrangement may be used.
15. Adjust generator for composite signal with one channel audio and 19 Kc pilot. Total system modulation should be 80 to 90 percent.
16. With the generator output adjusted to a medium level, approximately one volt, adjustment of oscillator coil T1 will produce three peaks. One peak will appear on one scope trace and two peaks on the other. The setting of the slug producing the single peak on one scope trace is correct and most stable.
17. Replace the base plate.
18. Increase signal input to between five and ten volts (or maximum on the generator).
19. Adjust 19 Kc coil L2 for maximum audio output on correct trace found in item 16.
20. Reduce signal to 200 millivolts or just above the point where multiplex adapter oscillator loses sync.
21. Adjust oscillator coil T1 for peak on correct trace found in item 16. Signal on correct trace should be maximum possible and signal on the other trace should be minimum.
22. Repeat steps 18, 19, 20 and 21 until no further improvement is noted. (Separation on the average unit should measure 20 db minimum).

SERVICE REPLACEMENT PARTS LIST

FINAL ASSEMBLY

Part No.	Description
16-120047-01	45 RPM Inserts
16-40015-02	Speaker - 4" P.M. - 8 ohm V.C.
19-80007-03	Speaker - 8" P.M. - 8 ohm V.C.
27-7-03	Indicator Light - 12V - .12A #1892
30-273-01	Control Panel
53-699-01	Knob - Tuning
53-699-05	Knob - Treble, Bass, Selector
53-699-06	Knob - Level Balance
53-617-03	Switch Knob - Level Balance

AMPLIFIER ASSEMBLY

Symbol	Part No.	Description
T3	24-10087-01	Power Transformer - 60 cycle
T3	24-20087-01	Power Transformer - 25 cycle (25 cycle models only)
T1, T2	24-80035-05	Audio Output Transformer - 8 ohm V.C.
CB1	26-65-02	Circuit Breaker - 1.0 Amp
SW1	26-109-01	Selector Switch
	27-2-01	Pilot Lamp - 6-8 V# 47 .15A
SR1, SR2	28-15-01	Dual Silicon Rectifier
OR	28-6-01	Silicon Rectifier
R7, R18	41-121-08	Control - Bass - 2 meg
R2, R13	41-122-09	Control - Level Balance - 1 meg
R6, R17, SW2	41-164-03	Control - Treble (500 K) and AC Switch
C14, 19	44-40-04	Electrolytic - Single - 50 ufd x 25V
C24	44-140-01	Electrolytic - Single 40 ufd x 200V
C21	44-153-01	Electrolytic - Triple - 80, 60, 80 ufd x 300, 200, 150V
C25	44-154-01	Electrolytic - Quadruple - 80, 40 ufd x 300V; 80, 40 ufd x 150V
C4, C13	48-12231-01	Condenser - Metallized Paper Tubular - .022 ufd 150V ± 10%

TUNER PLATTER CHASSIS 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, 2, 6	21-439-02	RF Choke 2.2 uh
T1	21-471-01	FM Antenna Matching Transformer
T8	21-485-01	Ratio Detector
T2	21-486-01	FM Oscillator Coil
L3	21-487-01	FM RF Coil
C31	44-88-01	Electrolytic Single 4 ufd x 64V
	45-36-01	FM Trimmer
	45-52-06	AM-FM Gang Condenser
	51-40-01	Rod Loop Antenna

STEREO RADIO ADAPTER PLATTER ASSEMBLY

Symbol	Part No.	Description
SD1, 2	14-503-03	Dual Diode
L1, L2	21-334-03	Horizontal Stabilizing Coil
T2	21-482-01	38 Kc Doubler Coil
T1	21-483-01	19 Kc Oscillator Coil
C8	47-36825-01	Condenser - Dipped Mica - 6800 uufd ± 5% 300V
C10, 11	48-103325-05	Condenser - Tubular - Polystyrene- 3300 uufd ± 5% 500V
C3	48-102215-05	Condenser - Tubular - Polystyrene - 220 uufd ± 5% 500V

STEREO RADIO ADAPTER PLATTER ASSEMBLY - Continued

C6	48-102225-05	Condenser - Tubular - Polystyrene - 2200 uufd 5% 500V
C1	48-15031-02	Condenser - Metallized Paper Tubular - .05 ufd 150V ± 20%

CHANGER ASSEMBLY

Part No.	Description
16-90024-09	Garrard Autoslim Changer
16-250026-02	Cartridge - Astatic - 233D
16-120028-09	Replacement Styli - Astatic N50SD
16-220002-03	Phono Motor Alliance 25 cy. (25 cycle models only)

NOTES