

GTE SYLVANIA

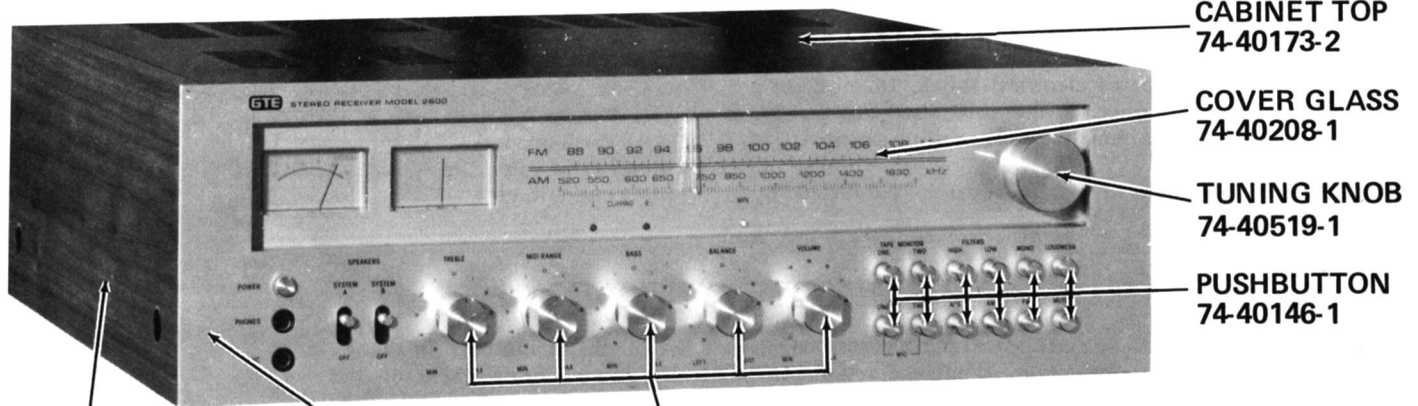
FACTORY PREPARED TECHNICAL SERVICE DATA

STEREO HI-FI
BULLETIN: R26-5
MODEL: GTE 2600

Index on Page 28

SERVICE PUBLICATIONS DEPARTMENT
Entertainment Products Group 700 Ellicott Street - Batavia, N.Y.

This Bulletin introduces the R26-5 chassis and Model GTE 2600.
All amplifier and tuner information is contained in this Bulletin.



BULLETIN: R26-5

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L.H. END PANEL
10-40204-3

BEZEL
74-40222-1

CONTROL KNOB
74-40202-2

CABINET TOP
74-40173-2

COVER GLASS
74-40208-1

TUNING KNOB
74-40519-1

PUSHBUTTON
74-40146-1

MODEL: GTE 2600
CHASSIS: R26-5

— GTE 2600 —

— CABINET REPLACEMENT PARTS LIST —

DESCRIPTION	PART NO.	DESCRIPTION	PART NO.
Antenna - FM	27-14926-2	Cabinet - Plastic Foot	86-91119-6
Bezel - Cover Glass	74-40208-1	- Top	74-40173-2
- External Dial Glass	86-40213-1	Knob - Control	74-40202-2
- Glass Mounting Spacer	86-40332-1	- Set Screw	70-36732-4
- Positioning Pin	70-40219-1	- Tuning	74-40519-1
- Toggle Switch Cover	74-36233-2	Pushbutton	74-40146-1
- Tuner	74-40222-2	Pushbutton Guide - 6 Button	74-40237-1
Cabinet - L.H. End Panel	10-40204-3	- Single Button	74-40237-2
- R.H. End Panel	10-40204-4		

— IMPORTANT NOTICE —

THIS RECEIVER EMPLOYS MANY CIRCUITS, COMPONENTS, AND MECHANICAL PARTS DESIGNED FOR PROTECTION AGAINST FIRE, SHOCK, AND RF INTERFERENCE. FOR CONTINUED SAFETY ANY SERVICING SHOULD BE PERFORMED BY QUALIFIED PERSONNEL AND EXACT SYLVANIA REPLACEMENT PARTS SHOULD BE USED. UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE ALTERED.

IMPORTANT: Avoid mistakes, order Sylvania parts by part number.

Price \$1.75

— PRODUCT SAFETY GUIDELINES FOR ALL PRODUCTS —

CAUTION: Do NOT modify any circuit. Service work should be performed only after you are thoroughly familiar with all of the following safety checks. Risk of potential hazards and injury to the user increases if safety checks are not adhered to.

— SAFETY CHECKS —

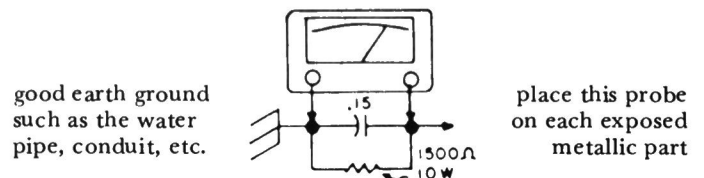
SUBJECT: Fire & Shock Hazard

1. Be sure that all components are positioned in such a way to avoid possibility of shorts to adjacent components. This is especially important on those chassis which are transported to and from the repair shop.
2. Always replace all protective devices such as insulators and barriers after working on a set.
3. Check for damaged insulation on wires including the AC cord.
4. Check across-the-line components for damage and replace if necessary.
5. After re-assembly of the set, always perform an AC leakage test on the exposed metallic parts of the cabinet such as the knobs, antenna terminals, etc. to be sure the set is safe to operate without danger of electrical shock. Do not use a line isolation transformer during this test. Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner:
Connect a 1500 ohm 10 watt resistor, paralleled by

.15MFD AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination 1500 ohm resistor and .15MFD capacitor. Reverse the AC plug on the set and repeat AC voltage measurements again for each exposed metallic part. Voltage measured must not exceed .3 volts R.M.S. This corresponds to 0.2 milliamp AC.

Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

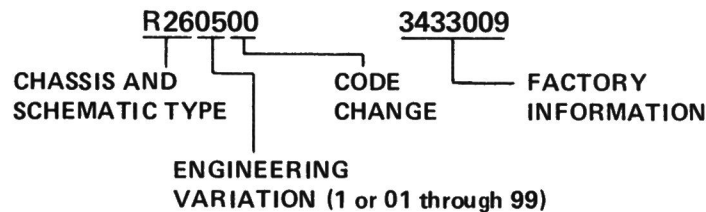
AC VOLTMETER



— CHASSIS IDENTIFICATION —

Chassis Identification consists of two blocks of numbers. In all correspondence relating to a specific model, both blocks of numbers plus the cabinet model number should be given. To associate a chassis with its proper schematic, refer to the number breakdown described below:

CHASSIS IDENTIFICATION NUMBER



— CHASSIS ACCESS —

CHASSIS COVER (CABINET) REMOVAL:

1. Remove 3 screws securing top edge of Jack Plate to cabinet.
2. Remove 2 screws along lower edge of each side of cabinet securing cabinet to chassis.
3. Remove 2 screws securing top of cabinet to front plate.

Lift cover straight up from chassis.

BOTTOM COVER:

The bottom chassis pan is secured to the chassis by 14 screws.

Tilt Jack Plate outward at top for access to Q710, Q720, Q722, Q810, Q820 and Q822.

Amplifier panels, mounted vertically in front of the heatsink, may be tilted forward to make the foil side of the panels more accessible.

Remove the upper screw from each end of the panel mounting bracket. Then, loosen the lower screw at each end; lift and tilt the entire assembly. Caution: failure to re-position this assembly correctly may result in poor dial drive because the idler tension spring is anchored to this bracket.

DIAL LAMP REPLACEMENT:

1. Remove chassis cover (cabinet).
2. Remove bracket immediately to rear of dial pointer carriage (1 screw, each end).

— CHASSIS ACCESS (CONT'D) —

3. Tilt light box and lamp panel asm. away from dial asm.

Use no. 259 bulb, Sylvania part number 30-26288-3 for replacement.

NOTE: Be sure to pass bracket UNDER dial cord and dial pointer leads when replacing bracket.

MPX. INDICATOR, CLIPPING INDICATOR L.E.D.

1. Remove chassis cover (cabinet).
2. L.E.D. and socket are mounted to the front panel under the light box. Remove entire assembly by gently pulling socket

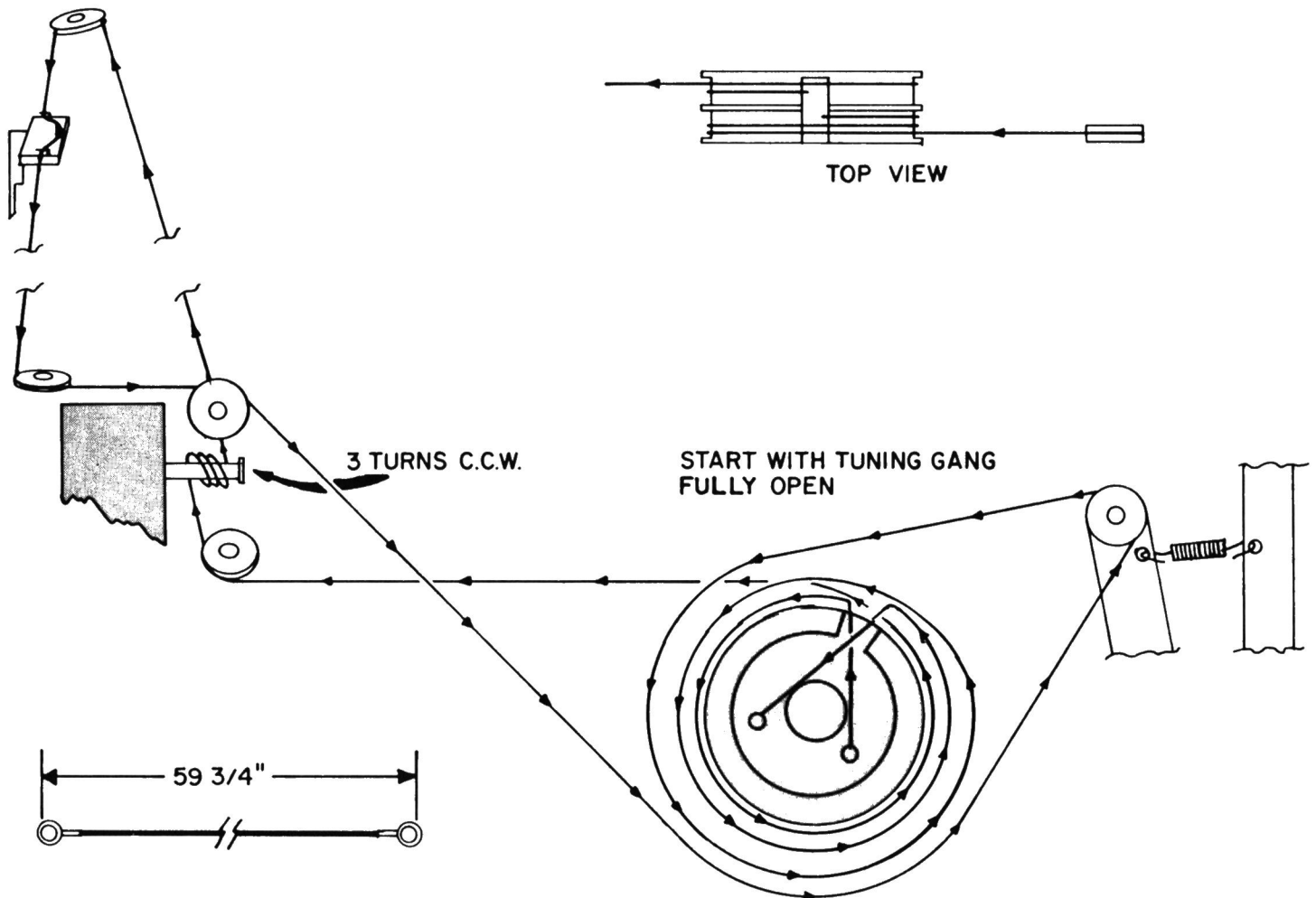
out of mounting hole. Use Sylvania part number 30-40307-1 for replacement.

DIAL POINTER L.E.D.

1. Remove chassis cover (cabinet).
2. Remove Balance, Bass, Mid-Range, Treble, Tuning and Volume control knobs (Allen set screws).
3. Remove 4 screws securing front plate to chassis (2 at top and 2 at bottom of plate).
4. Remove paper cover at top of dial pointer carriage.

Use Sylvania part number 30-40306-1 for replacement.

— DIAL STRINGING —



— PERFORMANCE ANALYSIS —

The R26-5 chassis is designed for operation on a 120V AC, 60Hz power line voltage. It is capable of an output of 70 Watts-per-channel into an 8 ohm non-inductive load.

— PRELIMINARY ADJUSTMENTS —

DC OFFSET

No signal input, volume control MINIMUM, and NO output loads.

Adjust R706, R806 for 0V \pm 20mV at pin 0T - Left and Right power amplifier outputs. This offset voltage will change as the amplifier warms up, but in no case should exceed \pm 50mV after initial adjustment.

IDLE CURRENT

No signal input, volume control MINIMUM, and NO output loads.

Adjust R742, R842 for 18-22mV between pins E1 and E2 on each amplifier panel. Adjust while chassis is warm. Idle current will drift with temperature change, and should not be reset — in no case should the idle current exceed 44mV.

AUDIO PERFORMANCE:

AC Power: 120V AC, 60Hz, maintained at \pm 1/2V.

SIGNAL SOURCE: 600 ohm (MAX. impedance), .01% T.H.D. MAX.

INPUT TERMINATIONS: AUX. - 4.7K
TAPE - 4.7K
PHONO - 330 ohm
MIC. - Self-shorting

OUTPUT LOADS: 8 ohm \pm 1%, 70 Watt, Non-inductive.

CONTROL, SWITCH SETTINGS:

Balance Control - Mechanical Center.
Bass Control - Mechanical Center.
Mid-Range Control - Mechanical Center.
Treble Control - Mechanical Center.
Loudness Control - Full CW (MAX.) unless otherwise specified.
Mode Switches - Off (Out position).
Function Switch - AUX. unless specified.

HUM AND NOISE

1. Use 40Hz, 5 pole Butterworth high pass filter.
2. Select line polarity for minimum hum.
3. Use ground plate under chassis.
4. Terminate all inputs and select functions as required.

VOLUME SETTING	MAX. READING ACROSS 8 OHM LOADS			
	PHONO	MIC.	AUX.	TAPE
MAXIMUM	21mV	21mV	1.2mV	1.2mV
MINIMUM	.9mV	.9mV	.9mV	.9mV

SENSITIVITY AT 1kHz:

Select function as required; terminate unused inputs.

INPUT FOR RATED OUTPUT					RATED OUTPUT
MAG. PHONO	MIC. IN	AUX. IN	TAPE IN	PWR. AMP. IN	OUTPUT TO LOAD
\pm 3dB	\pm 3dB	\pm 2dB	\pm 2dB	\pm 1dB	
2.5mV	2.6mV	250mV	250mV	1.4V	23.67V RMS 8 OHM LOAD

PHONO OVERLOAD

Inject a 1kHz signal for an amplifier output of approximately 1 Watt (2.83V RMS).

Maintain 1 Watt output level with volume control while increasing input signal until output shows .1% THD distortion.

MINIMUM input should be 65mV.

TONE CONTROL RANGE

Adjust a 1kHz input signal for an output level of approximately 1 Watt with tone controls centered. This will be the 0dB reference level.

CONTROL	FRE-QUENCY	CONTROL SETTING	OUTPUT (\pm 3dB)
BASS	100Hz	CW	+11dB
		CCW	-11dB
	1kHz	REFERENCE LEVEL	
MID-RANGE	1kHz	CW	+6.5dB
		CCW	-6.5dB
TREBLE	10kHz	CW	+11dB
		CCW	-13dB

LOUDNESS COMPENSATION

Set volume control on 50% tap.

Inject a 1kHz signal to drive the amplifier for an approximate 1 Watt (2.83V RMS) output. This is the reference level. Change generator frequency to 100Hz - make sure that the 100Hz input level is exactly the same as the 1kHz signal level.

— PERFORMANCE ANALYSIS (CONT'D) —

RESPONSE CONTOUR	LOUDNESS SWITCH	OUTPUT, ± 2 dB	
		100Hz	1kHz
FLAT	OFF (OUT)	0dB	0dB (Ref.)
COMPENSATED	ON (IN)	+8dB	0dB

HI and LO FILTERS

Drive the amplifier for an output level of approximately 1 Watt at 18Hz, 20kHz to establish reference levels. Activate switches as shown to evaluate performance.

SWITCH POSITIONS	LOW FILTER CUT AT 18Hz	HIGH FILTER CUT AT 20kHz
OFF (OUT)	0dB (Ref.)	0dB (Ref.)
ON (IN)	-24dB, ± 3 dB	-22dB, ± 3 dB

CHANNEL SEPARATION

Drive one channel for approximately 1 Watt output. Terminate undriven channel with proper impedance.

FREQUENCY	MINIMUM SEPARATION
100Hz	40dB
1kHz	40dB
10kHz	40dB

The BALANCE CONTROL will attenuate each channel a minimum of 40dB each side of center position.

POWER OUTPUT, DISTORTION

Pre-condition chassis by driving both channels for one hour at 1/3 of rated power (Approx. 23W)

Balance channels for equal output at each test frequency. Measured distortion is for any output level from 1/4 Watt to rated output into 4 or 8 ohm loads.

FREQ. RANGE	OUTPUT/ CHANNEL 4 OHM LOAD	OUTPUT/ CHANNEL 8 OHM LOAD	T.H.D. (MAX.)
18Hz - 20kHz	70W (16.73V, RMS)	70W (23.67V, RMS)	.1% MAX.

SPEAKER PROTECTION

Apply +5V or -5V to the differential amplifier (Q702, Q802 respectively) inputs. Each test voltage should activate the protection relay within 2 seconds. Switch AC power off to reset relay.

LIMITER CIRCUIT

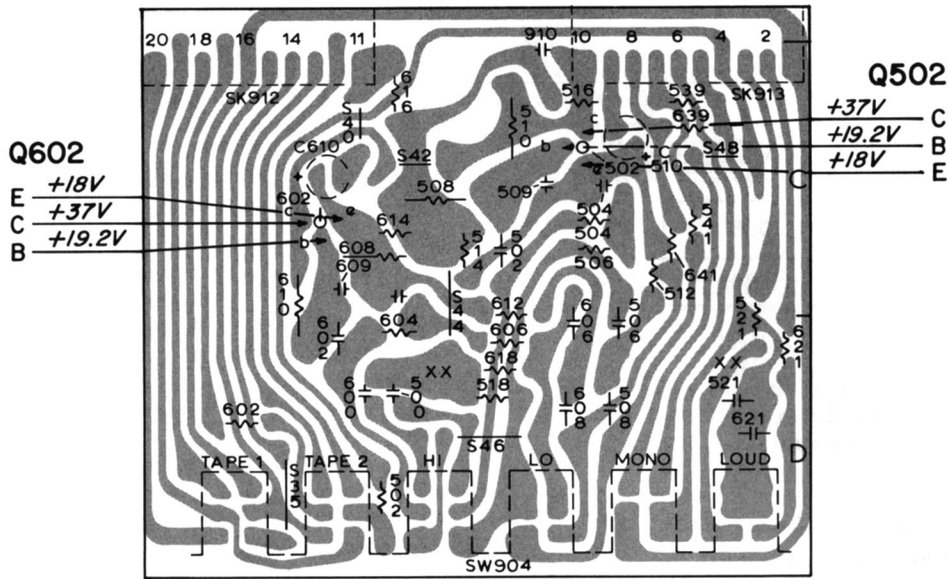
Drive power amplifier to rated output at 1kHz with 8 ohm load. Reduce load impedance to 2 ohms. The output waveform should show marked clipping on both positive and negative signal excursions.

CLIPPING INDICATORS should activate whenever output clipping occurs.

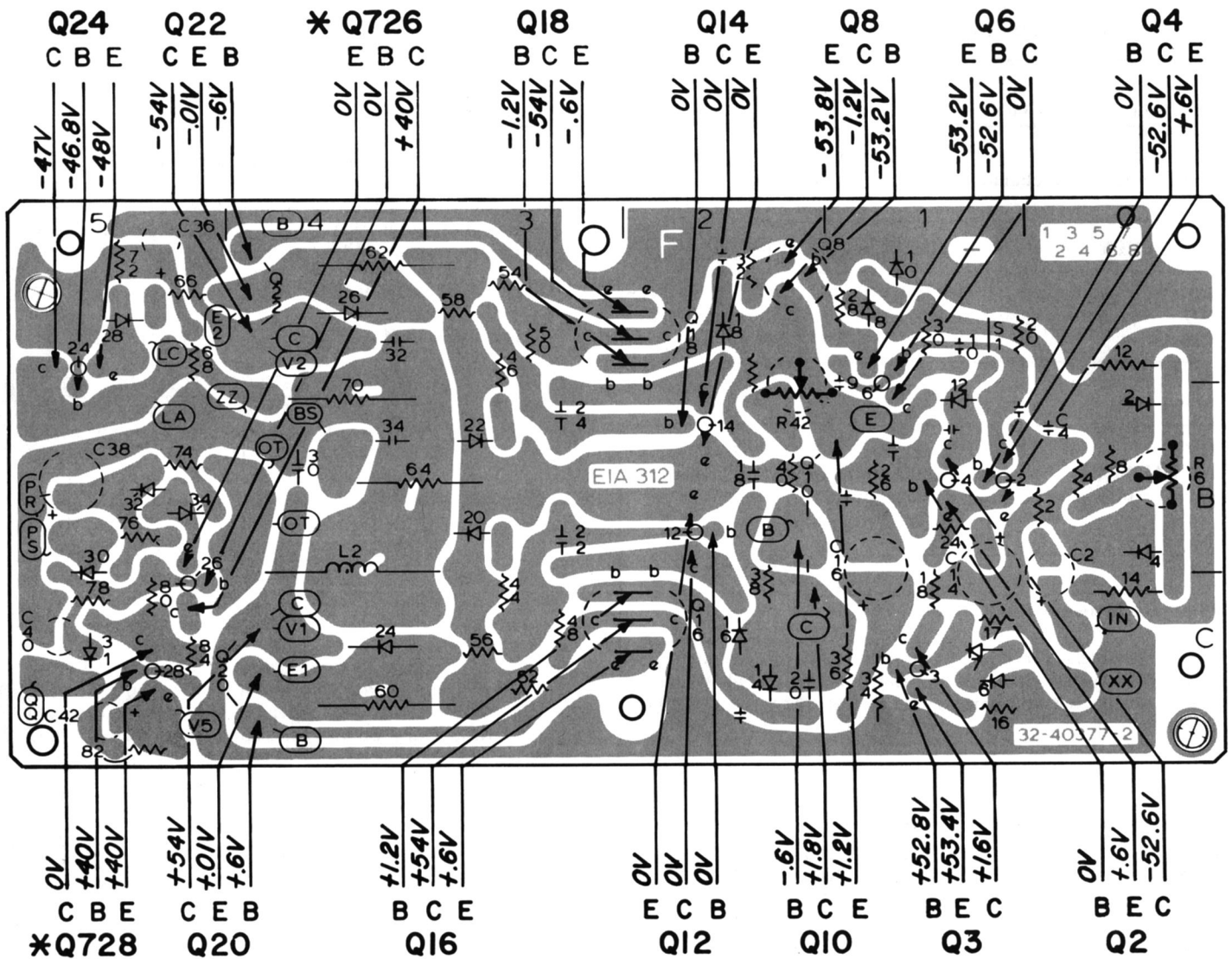
AUDIO MUTE

The mute circuit should attenuate the audio for 5 to 10 seconds when switching the receiver on. When switching between functions, signal levels should be attenuated at least 30dB for a minimum of 1/2 second. Fast signal attenuation should also be observed when switching receiver off.

— UPPER SWITCH PANEL —



— AMPLIFIER PANEL —



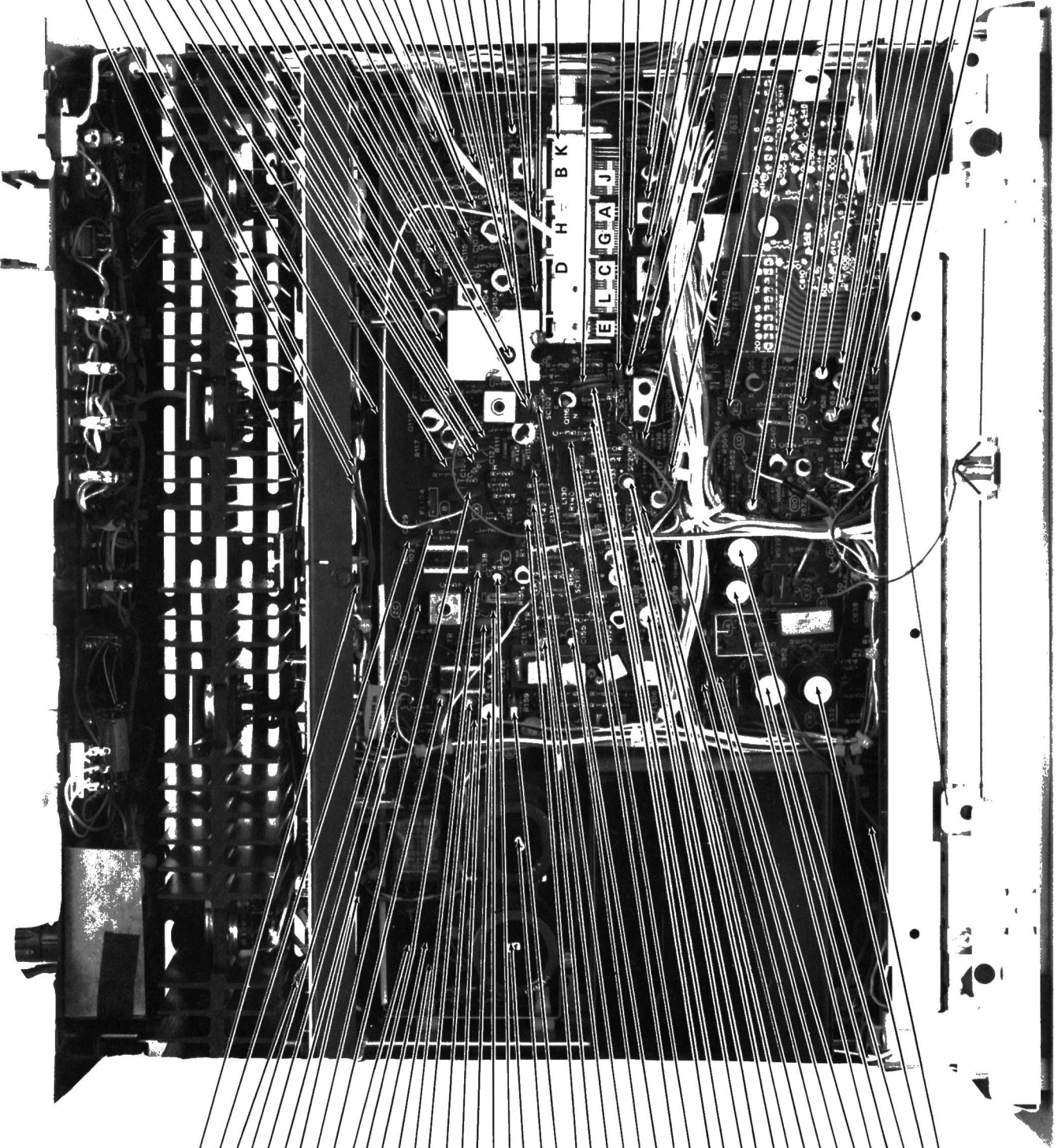
*Q726, Q728 ON LEFT PANEL ONLY. 700 SERIES COMPONENTS, LEFT CHANNEL. 800 SERIES COMPONENTS, RIGHT CHANNEL.

BOTTOM FOIL

— PARTS IDENTIFICATION (CONT'D) —

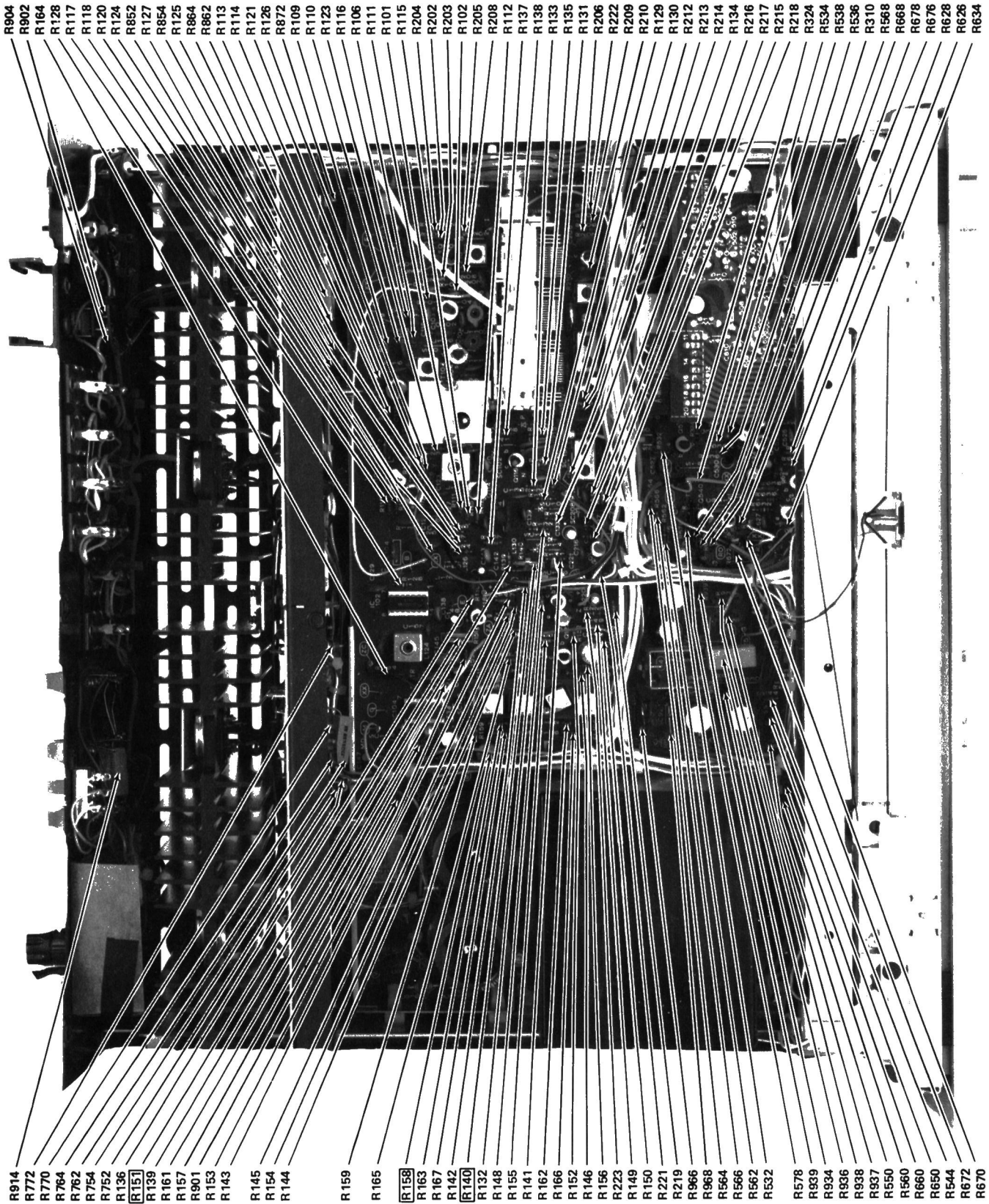
- C812
- C802
- C814
- C816
- C128
- C126
- C127
- C122
- C123
- C118
- C116
- C114
- C119
- C117
- C107
- C115
- C103
- C203
- C102
- C205
- C204
- C202
- C111
- C104
- C105
- C121
- C222
- C109
- C207
- C106
- C2
- C140
- C215
- C208
- C206
- C209
- C211
- C214
- C210
- C213
- C217
- C219
- C316
- C527
- C548
- C921
- C530
- C528
- C524
- C628
- C624
- C627
- C526
- C630

- C738
- C129
- C712
- C130
- C134
- C147
- C718
- C125
- C151
- C938
- C157
- C934
- C936
- C138
- C152
- C153
- C146
- C149
- C145
- C146
- C942
- C940
- C154
- C142
- C156
- C143
- C124
- C155
- C120
- C135
- C139
- C136
- C137
- C144
- C221
- C133
- C220
- C218
- C946
- C223
- C948
- C954
- C950
- C953
- C952
- C918



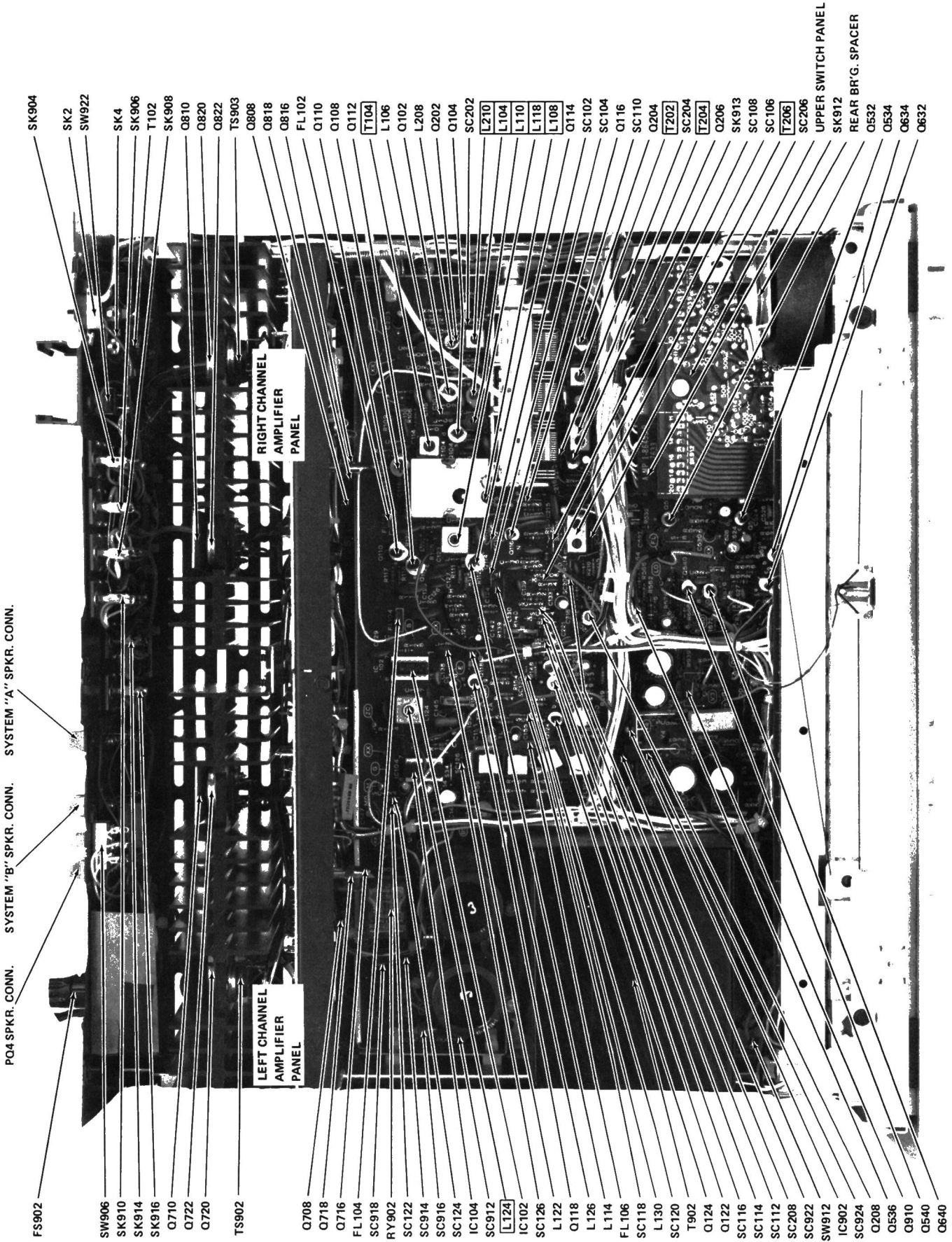
CAPACITORS

— PARTS IDENTIFICATION (CONT'D) —



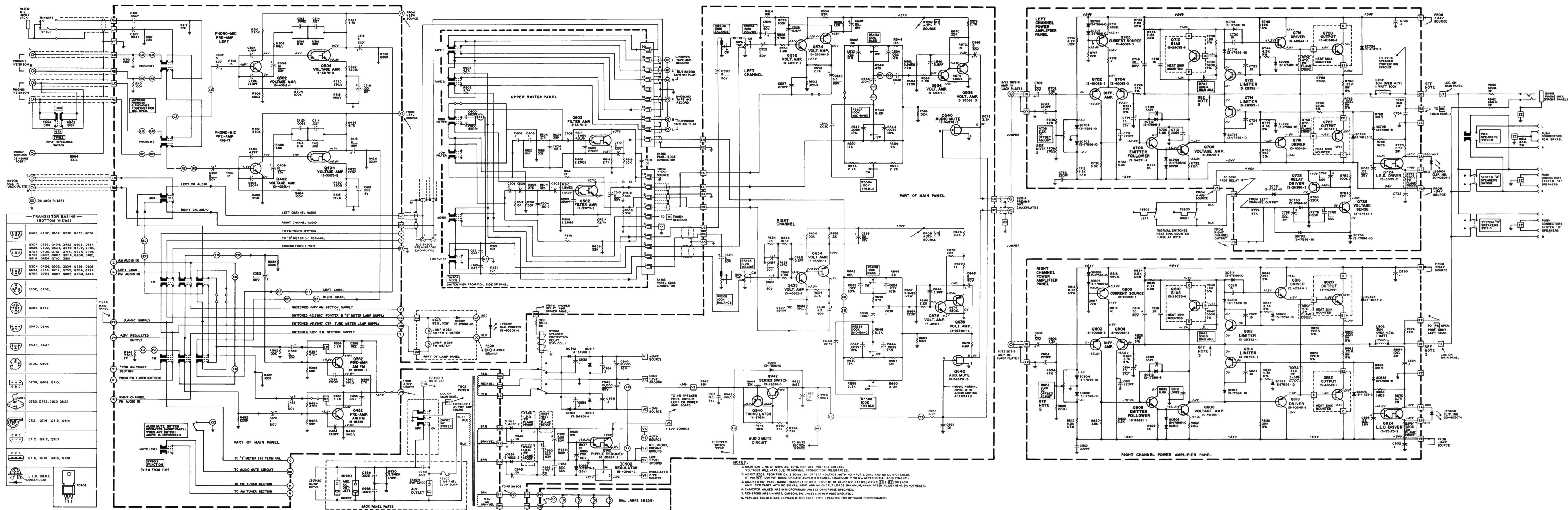
RESISTORS

— PARTS IDENTIFICATION (CONT'D) —

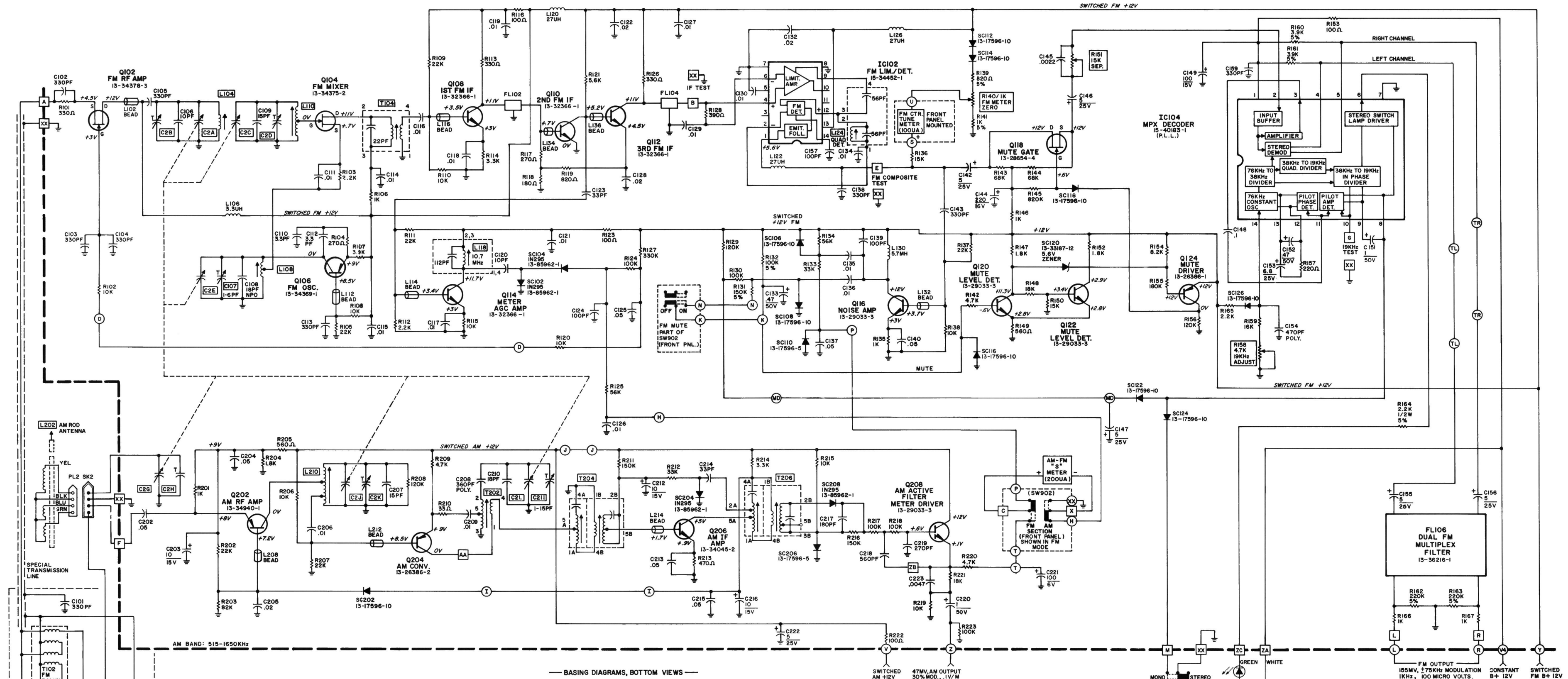


MISCELLANEOUS

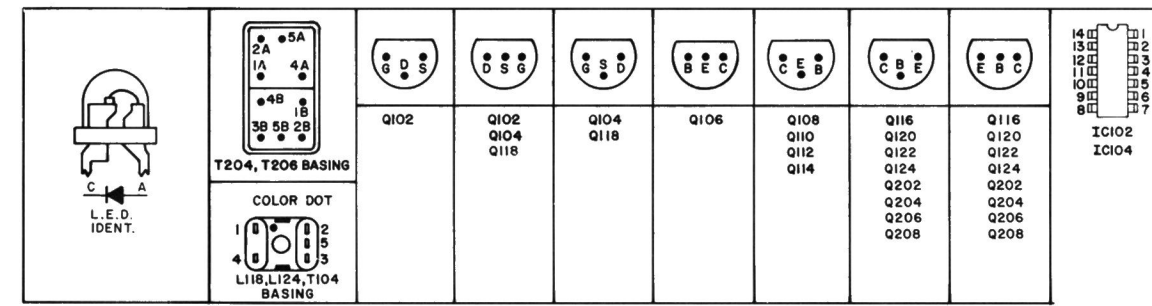
AMPLIFIER SCHEMATIC



TUNER SCHEMATIC



BASING DIAGRAMS, BOTTOM VIEWS

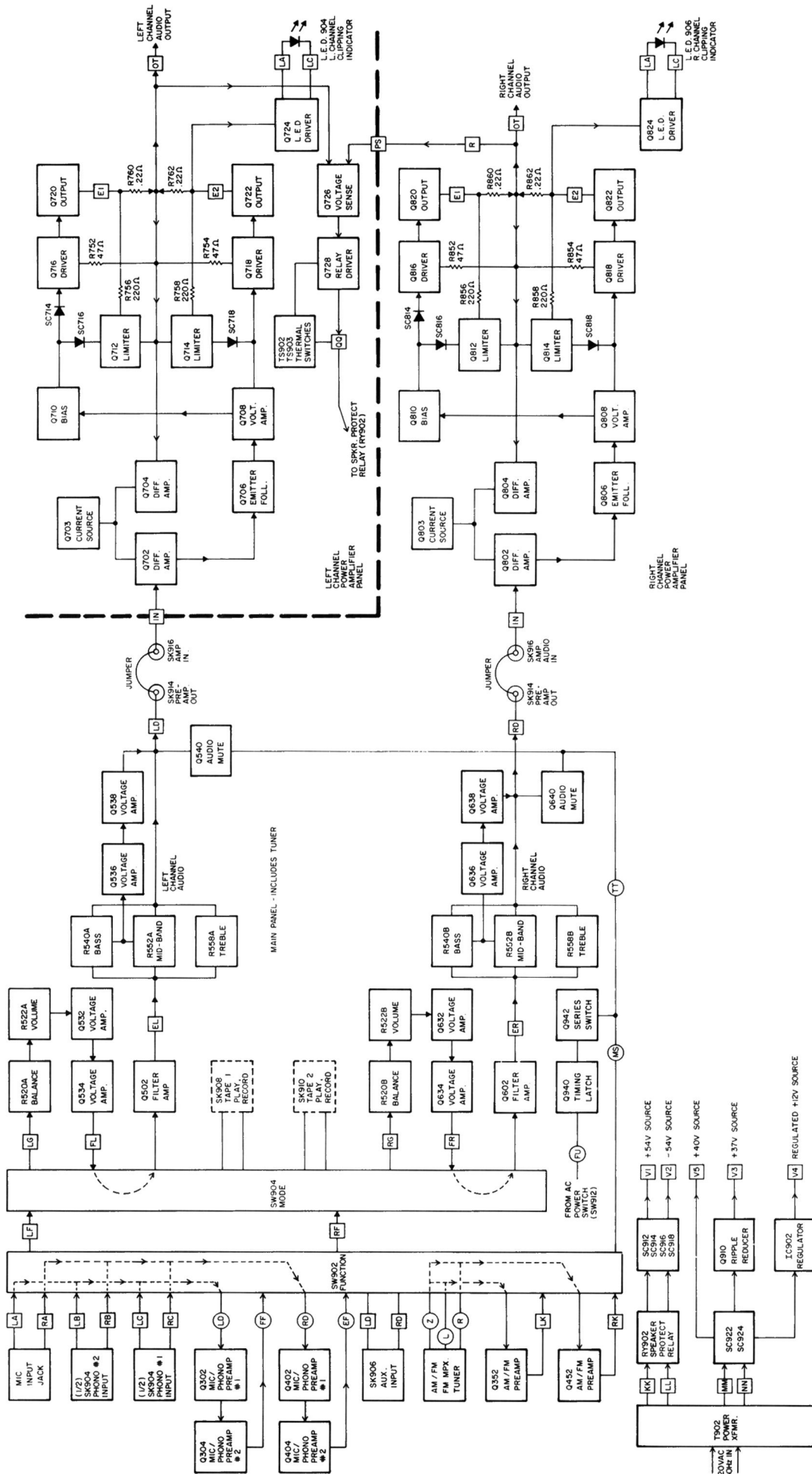


FL102, FL104 NOTE
 BOTH FILTERS MUST BE FROM THE SAME MANUFACTURER AND HAVE THE SAME CENTER FREQUENCY COLOR CODE.

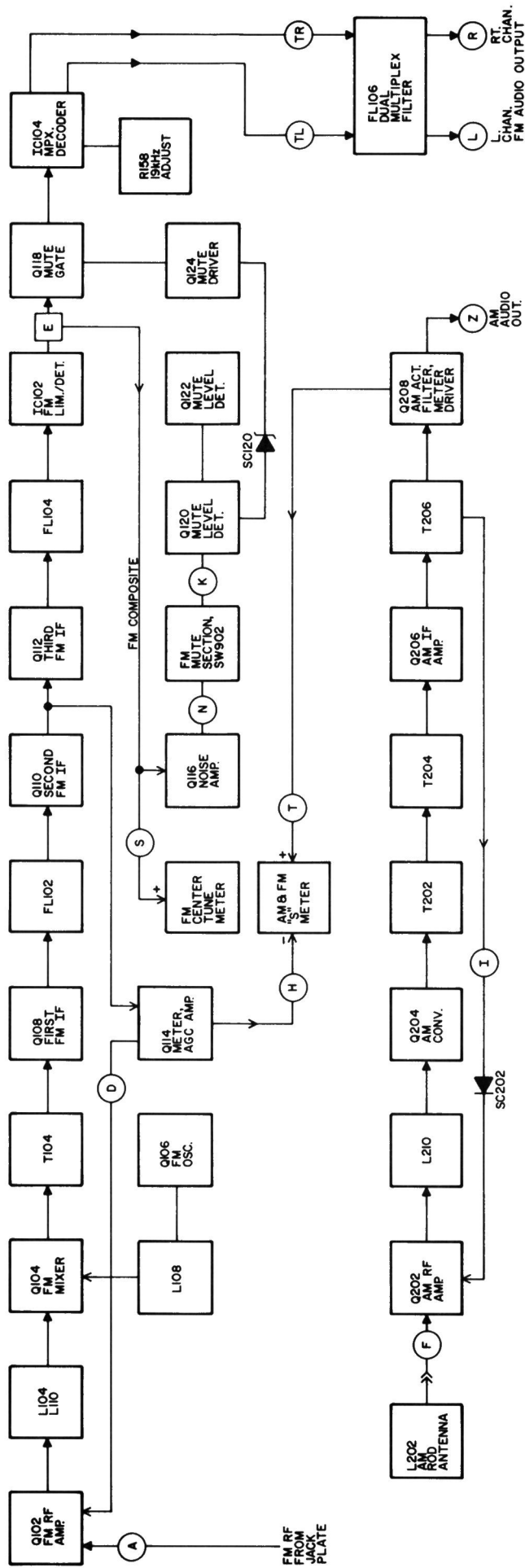
R24-5T
 R26-5T

- NOTES:**
1. RESISTORS ARE 1/4 WATT, CARBON, 10% UNLESS SPECIFIED.
 2. CAPACITOR VALUES ARE IN MFD. UNLESS SPECIFIED.
 3. MEASURE VOLTAGES TO CHASSIS GROUND WITH RECEIVER TUNED OFF-STATION. SELECT AM OR FM FUNCTION AS REQUIRED MAINTAIN LINE AT 120VAC.
 4. ROUND CONNECTIONS (X) ARE WIRE HOLES ONLY.
 5. SQUARE PINS (K) ARE TEST POINTS AND/OR WIRE WRAP CONNECTIONS.
 6. REPLACE SOLID STATE DEVICES WITH EXACT TYPE SPECIFIED FOR OPTIMUM PERFORMANCE.

AMPLIFIER BLOCK DIAGRAM



TUNER BLOCK DIAGRAM



— ALIGNMENT PROCEDURE —

This receiver has been factory aligned using precision equipment. The circuits are quite stable, and not normally subject to frequency drift. Therefore, check all circuits for malfunctions before attempting realignment. Realign ONLY when absolutely necessary.

Maintain line at 120V, 60Hz during alignment.

All RF shields must be in place during alignment.

UNLESS OTHERWISE NOTED, always keep input signals at the lowest useable level during alignment. Note the signal generator output attenuator setting at which further input signal increase does not increase output level. Keep the input signal level well below this point.

Set tuning dial indicator at zero (0) on the logging scale with tuning gang (C2) set at maximum capacity. Readjusting tuning dial indicator after AM or FM alignment will make RF realignment (AM & FM) necessary for correct station calibration.

FM RF and IF sections must be properly aligned before beginning FM Multiplex alignment.

EQUIPMENT REQUIRED:

AM:

Sweep generator capable of a 455kHz sweep modulated signal.

AM signal generator capable of 400Hz, 30% modulated signals from 540Hz to 1610kHz.

General purpose oscilloscope.

FM:

Sweep generator capable of 88MHz to 108MHz sweep modulated signals, 90MHz and 106MHz markers.

FM signal generator capable of 400Hz, 100% modulated signals from 87.5MHz to 108.5MHz.

General purpose oscilloscope, RF Detector probe.

Distortion analyzer.

MULTIPLEX FM:

Multiplex generator with the following capabilities:

1. CW modulation only.
2. LEFT (or RIGHT) channel - only modulated stereo signal.

Counter for 19,050Hz.

General purpose oscilloscope or AC meter.

— AM ALIGNMENT —

STEP	TUNING INDICATOR SETTING	HOOK-UP AND PROCEDURE	GENERATOR FREQUENCY	ADJUST	ADJUST FOR
Switch receiver on. Select AM function and check for +12V at point J.					
1	Tuning Gang fully closed	Sweep generator to AM Antenna terminals (Jack Plate). Scope to Pin ZB on tuner panel.	455kHz Sweep	T204 T206	Symmetrical IF Passband.
2	1400kHz	Signal Generator - Radiate signal to receiver. Scope to L. or R. Tape Record Jacks (Jack Plate).	1400kHz - 30% 400Hz modulation	C211 C2H C2K	Maximum recovered audio and correct calibration.
3	600kHz		600kHz - 30% 400Hz modulation	T202 L210 L202	
Reduce signal level and repeat steps 2 & 3 for maximum sensitivity and correct dial calibration.					
When correctly aligned, this receiver will tune through a signal at 535kHz and 1650kHz.					

— FM ALIGNMENT —

STEP	TUNING INDICATOR SETTING	HOOK-UP AND PROCEDURE	GENERATOR FREQUENCY	ADJUST	ADJUST FOR
Select FM function and check for +12V at points V4 and Y.					
1	106MHz	Sweep generator to FM Antenna terminals. Scope, through RF Det. probe, to pin B on Tuner panel.	88 to 108MHz Sweep, 106MHz marker	C107 C2B C2D T104	Maximum response at marker frequency and correct dial frequency indications
2	90MHz		Sweep as above, use 90MHz marker	L108 L104 L110	
Repeat until indicated dial frequencies are correct at 90MHz and 106MHz.					
3	106MHz	Signal generator to FM Antenna inputs (Jack Plate). Scope to L. or R. Tape Record jack (Jack Plate).	106MHz - 400Hz, 100% modulation	L124	Maximum recovered audio
Use low RF input level, so that "grass" is present on recovered audio for steps 4 and 5.					
4	106MHz	Signal generator to FM Antenna inputs (Jack Plate). Scope to L. or R. Tape Record jack (Jack Plate).	106MHz - 400Hz, 100% modulation	C107 C2B C2D	Maximum recovered audio, and correct dial calibration
5	90MHz		90MHz - 400Hz, 100% modulation	L108 L104 L110	
Continue to reduce signal level and repeat steps 4 & 5 for maximum sensitivity and correct dial calibration.					
6	98MHz (Tune to generator).	Signal generator to FM antenna inputs. Use very low signal input for tuning, then increase input level 1,000uV. Scope to L. Tape Record Jack (Jack Plate). Distortion analyzer to L. Tape Record Jack (Jack Plate).	98MHz - 400Hz, 100% modulation (1kuV level)	L124 L124	Maximum audio Readjust slightly for MINIMUM distortion.
7		With same 1kuV signal input level, adjust R140 for centered FM tuning meter deflection.			
8		As above, adjust L118 for "S" meter maximum deflection.			
When correctly aligned, this receiver will tune through a signal at 87.5MHz and 108.5MHz.					

— MULTIPLEX ALIGNMENT —

STEP	TUNING INDICATOR SETTING	HOOK-UP AND PROCEDURE	GENERATOR FREQUENCY	ADJUST	ADJUST FOR
Select FM and STEREO functions and check for +12V at points V4 and Y.					
1	Tune to Generator	Multiplex generator to FM Antenna inputs (Jack Plate). Frequency counter to pin G on tuner panel.	CW modulation, 1000uV level	R158	COUNTED 19,050Hz, ± 25 Hz.
2		Multiplex generator - as above, but switch to full stereo signal. Scope to Right Tape Record Jack (Jack Plate).	Modulate L. only channel	R151	MINIMUM Right channel output.
With R151 (separation) correctly adjusted, channel separation is typically 40dB at 1kHz.					

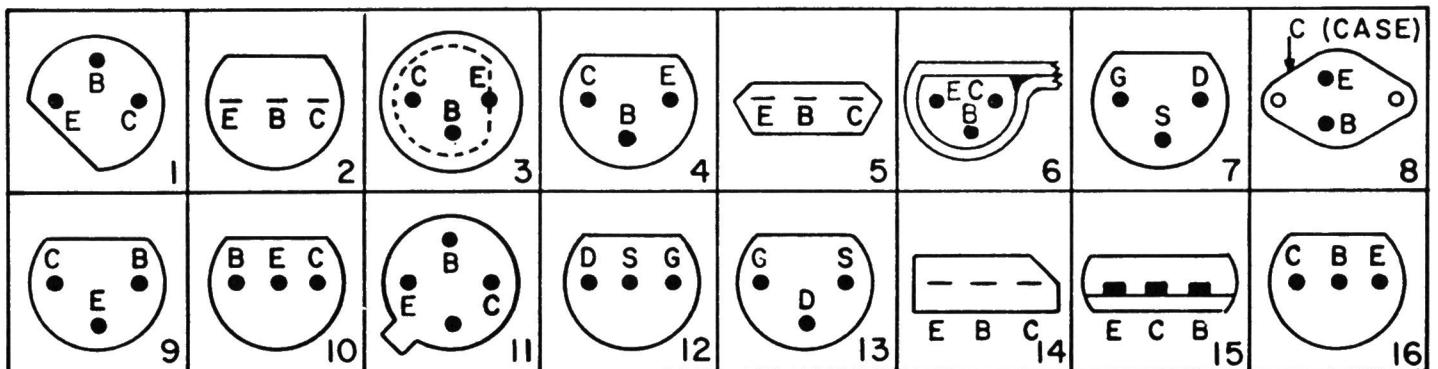
— TRANSISTOR REPLACEMENT GUIDE —

SYLVANIA PART NUMBER	TYPE (ALL SILICON)	APPLICATION	DC CURRENT GAIN	EMITTER - COLLECTOR (DRAIN - SOURCE) VOLTAGE (MAX.) @ 25 DEG. C. AMBIENT	EMITTER - BASE (GATE - SOURCE) VOLTAGE (MAX.) @ 25 DEG. C. AMBIENT	MAXIMUM POWER DISSIPATION @ 25 DEG. C. AMBIENT	IC (GATE CURRENT) MAXIMUM	BASING
13-18365-1	NPN	Q352, Q452 AM/FM Pre-amplifier	225-450	40V	4V	200mW	.25uA	1, 2, 3
13-26386-1	PNP	Q940 Timing Latch	100-350	32V	4V	300mW	100mA	2, 4
13-26386-2	PNP	Q124 Mute Driver	100-350	15V	4V	300mW	100mA	2, 4
13-26386-3	PNP	Q204 AM Converter	100-350	60V	4V	300mW	100mA	2, 4
		Q534, Q538 Voltage Amplifier						
		Q634, Q638 Voltage Amplifier						
		Q728 Relay Driver						
		Q942 Series Switch						
13-27432-1	NPN	Q726 Voltage Sensor	60-400	80V	4V	310mW	N/A	2, 4
13-28392-1	NPN	Q712, Q812 Limiter	90-270	45V	4V	500mW	500mA	2, 5, 6
13-28393-1	PNP	Q714, Q814 Limiter	90-270	45V	4V	500mW	500mA	2, 6
13-28654-4	N. CH. FET	Q118 Mute Gate	N/A	30V	30V	200mW	N/A	7
13-29033-3	NPN	Q116 Noise Amplifier	200-400	45V	4V	300mW	N/A	2, 4
		Q120, Q122 Mute Level Detector						
		Q208 AM Active Filter						
13-29033-6	NPN	Q710, Q810 Bias Regulator	200-400	45V	4V	300mW	N/A	8
13-32366-1	NPN	Q108 1st FM IF Amplifier	40-120	30V	4V	250mW	50mA	9
		Q110 2nd FM IF Amplifier						
		Q112 3rd FM IF Amplifier						
		Q114 Meter, AGC Amplifier						
13-33175-2	NPN	Q304, Q404 Pre-amplifier (Darlington)	7K-70K	40V	10V	310mW	200mA	2, 4
		Q502, Q602 Filter Amplifier (Darlington)						
		Q724, Q824 L.E.D. Driver (Darlington)						
13-34045-2	NPN	Q206 AM IF Amplifier	80-200	12V	3V	250mW	30mA	4
13-34369-1	PNP	Q106 FM Oscillator	20	20V	.85V	N/A	N/A	10
13-34371-1	NPN	Q706, Q806 Emitter Follower	90-270	110V	4V	500mW	500mA	2, 11
13-34375-2	N. CH. FET	Q104 FM Mixer	N/A	N/A	25V	200mW	10mA	7
13-34378-3	N. CH. FET	Q102 FM RF Amplifier	N/A	±25V	-25V	250mW	N/A	12, 13
		Q540, Q640 Audio Mute						
13-34940-1	PNP	Q202 AM RF Amplifier	50-150	30V	4V	200mW	50mA	2, 4
13-35324-1	NPN	Q910 Ripple Reducer (Darlington)	4000	50V	10V	700mW	N/A	5, 14
13-39098-1	NPN	Q708, Q808 Voltage Amplifier	40	180V	7V	1.5W	.5A	14
13-40083-3	PNP	Q702, Q704 MATCHED Differential Input	See Chart	60V	4V	300mW	100mA	2, 4
		Q802, Q804 MATCHED Differential Input						
		Q703, Q803 Current Source						
13-40312-1	NPN	Q302, Q402 Pre-Amplifier	380-800	45V	5V	300mW	100mA	15
		Q532, Q536, Q632, Q636 Voltage Amplifier						
13-40344-1	NPN	Q716, Q816 Driver	40-300	130V	5V	40W	4A	16
13-40345-1	PNP	Q718, Q818 Driver	40-300	130V	5V	40W	4A	15
13-40346-1	NPN	Q720, Q820 Power Output	25-80	140V	5V	250W	40A	8
13-40347-1	PNP	Q722, Q822 Power Output	25-80	140V	5V	250W	40A	8

— 13-40083-2 D.C. CURRENT GAIN —

COLOR DOT	MIN.	MAX.
RED	140	240
ORANGE	200	300
YELLOW	250	375
GREEN	325	450

— BASING DIAGRAMS —



— REPLACEMENT PARTS LIST —

<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
CAPACITORS (All values in MFD unless specified)		
C2	42-34768-1	Tuning Gang
C101		330pF, Z5P
C102		330pF, Z5P
C103		330pF, Z5P
C104		330pF, Z5P
C105		330pF, Z5P
C106		10pF, NPO
C107	42-18146-1	1-6pF, Ceramic Trimmer
C108		18pF, NPO
C109		15pF, NPO
C110		3.3pF, NPO
C111		.01, 100V
C112		3.3pF, NPO
C113		330pF, Z5P
C114		.01, 100V
C115		.01, 100V
C116		.01, 100V
C117		.01, 100V
C118		.01, 100V
C119		.01, 100V
C120		10pF, NPO
C121		.01, 100V
C122		.02, 100V
C123		33pF, N150
C124		100pF, Z5P
C125		.05, 50V
C126		.01, 100V
C127		.01, 100V
C128		.02, 100V
C129		.01, 100V
C130		.01, 100V
C132		.02, 100V
C133	41-39148-64	.47/50V, Electrolytic
C134		.01, 100V
C135		.01, 100V
C136		.01, 100V
C137		.05, 50V
C138		330pF, Z5P
C139		100pF, Z5P
C140		.05, 50V
C142	41-32477-46	5/25V, Electrolytic
C143		330pF, Z5P
C144	41-32477-38	220/16V, Electrolytic
C145		2200pF, 100V
C146	41-32477-46	5/25V, Electrolytic
C147	41-32477-46	5/25V, Electrolytic
C148		.1, 200V
C149	41-32477-37	100/15V, Electrolytic
C151	41-32477-85	1/50V, Electrolytic
C152	41-39148-64	.47/50V, Electrolytic
C153	41-39325-135	6.8/25V, Electrolytic
C154	40-41107-35	470pF, 125V
C155	41-32477-46	5/25V, Electrolytic
C156	41-32477-46	5/25V, Electrolytic
C157		100pF, Z5P
C159		330pF, Z5P
C202		.05, 50V
C203	41-32477-33	10/15V, Electrolytic
C204		.05, 50V
C205		.02, 100V
C206		.01, 100V
C207		15pF, NPO
C208	40-41107-56	360pF, 125V
C209		.01, 100V
C210		18pF, NPO
C211	42-34941-1	15pF, Trimmer
C212	41-32477-33	10/15V, Electrolytic
C213		.05, 50V
C214		33pF, N150
C215		.05, 50V
C216	41-32477-33	10/15V, Electrolytic
C217		180pF, Z5P
C218		560pF, Z5P

<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
CAPACITORS (CONTINUED)		
C219		270pF, Z5P
C220	41-32477-85	1/50V, Electrolytic
C221	41-32477-9	100/6V, Electrolytic
C222	41-32477-46	5/25V, Electrolytic
C223		4700pF, Z5U
C302	41-32477-88	5/50V, Electrolytic
C304		4.7pF, N150
C306		220pF, Z5P
C308	41-32477-47	10/25V, Electrolytic
C310		.0047, 200V
C312		.0082, 200V
C314		.027, 200V
C316	41-32477-88	5/50V, Electrolytic
C318	41-32477-9	100/6V, Electrolytic
C352	41-32477-85	1/50V, Electrolytic
C354		220pF, Z5P
C356		.022, 200V
C358	41-32477-88	5/50V, Electrolytic
C402	41-32477-88	5/50V, Electrolytic
C404		4.7pF, N150
C406		220pF, Z5P
C408	41-32477-47	10/25V, Electrolytic
C410		.0047, 200V
C412		.0082, 200V
C414		.027, 200V
C416	41-32477-88	5/50V, Electrolytic
C418	41-32477-9	100/6V, Electrolytic
C452	41-32477-85	1/50V, Electrolytic
C454		220pF, Z5P
C456		.022, 200V
C458	41-32477-88	5/50V, Electrolytic
C500		560pF, Z5P
C502		.1, 200V
C504		1200pF, Z5P
C506		.1, 200V
C508		.1, 200V
C509		220pF, Z5P
C510	41-32477-88	5/50V, Electrolytic
C520	41-32477-88	5/50V, Electrolytic
C521		.047, 200V
C522	41-32477-85	1/50V, Electrolytic
C524	41-32477-85	1/50V, Electrolytic
C526		5.6pF, N150
C527		270pF, Z5P
C528	41-32477-36	50/15V, Electrolytic
C530	41-32478-87	3.3/50V, Electrolytic
C532		.022, 200V
C534		.022, 200V
C536		.0047, 200V
C538		.1, 200V
C540		.0039, 200V
C542		.0039, 200V
C544		.0039, 200V
C546		3.9pF, N150
C548	41-32477-88	5/50V, Electrolytic
C600		560pF, Z5P
C602		.1, 200V
C604		1200pF, Z5P
C606		.1, 200V
C608		.1, 200V
C609		220pF, Z5P
C610	41-32477-88	5/50V, Electrolytic
C620	41-32477-88	5/50V, Electrolytic
C621		.047, 200V
C622	41-32477-85	1/50V, Electrolytic
C624	41-32477-85	1/50V, Electrolytic
C626		5.6pF, N150
C627		270pF, Z5P
C628	41-32477-36	50/15V, Electrolytic
C630	41-32478-87	3.3/50V, Electrolytic
C632		.022, 200V
C634		.022, 200V
C636		.0047, 200V

— REPLACEMENT PARTS LIST (CONT'D) —

<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>	<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
CAPACITORS (CONTINUED)			RESISTORS (CONTINUED)		
C638		.1, 200V	R111		22K
C640		.0039, 200V	R112		2.2K
C642		.0039, 200V	R113		330 ohm
C644		.0039, 200V	R114		3.3K
C646		3.9pF, N150	R115		10K
C648	41-32477-88	5/50V, Electrolytic	R116		100 ohm
C702	41-32477-88	5/50V, Electrolytic	R117		270 ohm
C704		270pF, Z5P	R118		180 ohm
C709		33pF, N150	R119		820 ohm
C710		.0022, Z5U	R120		10K
C712		220pF, Z5P	R121		5.6K
C714	41-32477-48	25/25V, Electrolytic	R123		100 ohm
C716	41-32477-92	50/50V, Electrolytic	R124		100K
C718		.15, 200V	R125		56K
C720		.15, 200V	R126		330 ohm
C722		.15, 200V	R127		330K
C724		.15, 200V	R128		390 ohm
C730		.1, 200V	R129		120K
C732		.1, 200V	R130		100K
C734		.1, 200V	R131		150K
C736	41-34346-2	.22/25V, Electrolytic	R132		100K
C738	41-32477-37	100/15V, Electrolytic	R133		33K
C740	41-32477-85	1/50V, Electrolytic	R134		56K
C742	41-32477-85	1/50V, Electrolytic	R135		1K
C752		220pF	R136		15K
C802	41-32477-88	5/50V, Electrolytic	R137		22K
C804		270pF, Z5P	R138		10K
C809		33pF, N150	R139		820 ohm
C810		.0022, Z5U	R140	37-14576-5	1K Variable - FM Meter Zero
C812		220pF, Z5P	R141		1K
C814	41-32477-48	25/25V, Electrolytic	R142		4.7K
C816	41-32477-92	50/50V, Electrolytic	R143		68K
C818		.15, 200V	R144		68K
C820		.15, 200V	R145		820K
C822		.15, 200V	R146		1K
C824		.15, 200V	R147		1.8K
C830		.1, 200V	R148		18K
C832		.1, 200V	R149		560 ohm
C834		.1, 200V	R150		15K
C836	41-34346-2	.22/25V, Electrolytic	R151	37-14576-3	15K Variable - Separation
C852		220pF	R152		1.8K
C910		.01, 100V	R153		100 ohm
C918	41-32478-5	100/35V, Electrolytic	R154		8.2K
C920	41-32478-87	3.3/50V, Electrolytic	R155		180K
C921		.01, 100V	R156		120K
C926	43-33245-7	.0022, 125V AC	R157		220 ohm
C928	43-33245-7	.0022, 125V AC	R158	37-33717-3	4.7K Variable - 19kHz Adjustment
C930	43-33245-6	.005, 150V AC (U.L.)	R159		16K
C932		.1, 200V	R160		3.9K
C934		.1, 200V	R161		3.9K
C936		.1, 200V	R162		220K
C938		.1, 200V	R163		220K
C940	41-40436-1	10,000/65V, Electrolytic	R164		2.2K, 1/2W
C942	41-40436-1	10,000/65V, Electrolytic	R165		2.2K
C946		.01, Z5U	R166		1K
C948		.01, Z5U	R167		1K
C950	41-32477-108	220/63V, Electrolytic	R201		1K
C952	41-32477-95	500/50V, Electrolytic	R202		22K
C953	41-32478-94	250/50V, Electrolytic	R203		82K
C954	41-32477-66	220/35V, Electrolytic	R204		1.8K
			R205		560 ohm
			R206		10K
			R207		22K
			R208		120K
			R209		4.7K
			R210		33 ohm
			R211		150K
			R212		33K
			R213		470 ohm
			R214		3.3K
			R215		10K
			R216		150K
			R217		100K
RESISTORS (All 1/4W, Carbon, 5% unless specified)					
R101		330 ohm			
R102		10K			
R103		2.2K			
R104		270 ohm			
R105		22K			
R106		1K			
R107		3.9K			
R108		10K			
R109		22K			
R110		10K			

— REPLACEMENT PARTS LIST (CONT'D) —

<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
RESISTORS (CONTINUED)		
R218		100K
R219		10K
R220		4.7K
R221		18K
R222		100 ohm
R223		100K
R301		100K
R302		1K
R304		100K
R306		120 ohm
R308		68 ohm
R310		220K
R312		22K
R314		9.1K
R316		110K
R318		160 ohm
R320		330 ohm
R322		220 ohm
R324		4.7K
R326		220K
R352		220K
R354		470K
R356		3.9K
R358		68K
R360		560 ohm
R362		100K
R401		100K
R402		1K
R404		100K
R406		120 ohm
R408		68 ohm
R410		220K
R412		22K
R414		9.1K
R416		110K
R418		160 ohm
R420		330 ohm
R422		220 ohm
R424		4.7K
R426		220K
R452		220K
R454		470K
R456		3.9K
R458		68K
R460		560 ohm
R462		100K
R502		4.7K
R504		39K
R506		27K
R508		2.2 meg, 1/2W
R510		1.8 meg, 1/2W
R512		15K
R514		2.7K
R516		33K
R518		33K
R520	37-40451-4	Dual 100K Balance Control
R521		10K
R522	37-40451-1 37-40451-12	Dual 100K Volume Control Mounting Washer - Volume Control
R524		12K
R526		100K
R528		470K
R530		2.2K
R532		390 ohm
R534		2.7K
R536		33K
R538		1.2K
R539		33K
R540	37-40451-2 37-40451-12	Dual 100K Bass Control Mounting Washer - Bass Control
R541		1K
R542		15K

<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
RESISTORS (CONTINUED)		
R544		15K
R546		47K
R548		8.2K
R550		12K
R552	37-40451-2 37040451-12	Dual 100K Mid-Band Control Mounting Washer, Mid-Band Control
R554		12K
R556		2.2K
R558	37-40451-2 37-40451-12	Dual 100K Treble Control Mounting Washer - Treble Control
R560		2.2K
R562		3.9 meg, 1/2W
R564		220K
R566		2.2K
R568		100K
R570		22K
R572		1K
R574		680 ohm
R576		2.7K
R578		3.3K
R602		4.7K
R604		39K
R606		27K
R608		2.2 meg, 1/2W
R610		1.8 meg, 1/2W
R612		15K
R614		2.7K
R616		33K
R618		33K
R621		10K
R624		12K
R626		100K
R628		470K
R630		2.2K
R632		390 ohm
R634		2.7K
R636		33K
R638		1.2K
R639		33K
R641		1K
R642		15K
R644		15K
R646		47K
R648		8.2K
R650		12K
R654		12K
R656		2.2K
R660		2.2K
R662		3.9 mcg, 1/2W
R664		220K
R666		2.2K
R668		100K
R670		22K
R672		1K
R674		680 ohm
R676		2.7K
R678		3.3K
R702		3.3K
R704		47K
R706	37-33717-1	2.2K Variable - D.C. Offset Adjustment
R708		270 ohm
R712		8.2K, 1/2W
R714		8.2K, 1/2W
R716		680 ohm
R717		22K
R718		1K
R720		3.3K
R722		3.3K
R724		2.7K
R726		47K
R728		1K

— REPLACEMENT PARTS LIST (CONT'D) —

SCHEM. CODE	SERVICE PART NO.	DESCRIPTION
RESISTORS (CONTINUED)		
R730		6.8K
R732		22 ohm
R734		2.2K, 1/2W
R736		2.2K, 1/2W
R738		1.8K
R740		560 ohm
R742	37-33717-6	330 ohm Variable - Bias Adjustment
R744		4.3K
R746		4.3K
R748		39K
R750		39K
R752	36-34727-60	47 ohm, 2W (U/L)
R754	36-34727-60	47 ohm, 2W (U/L)
R756		220 ohm
R758		220 ohm
R760	36-40075-109	.22 ohm, 5W
R762	36-40075-109	.22 ohm, 5W
R764		10 ohm, 10%, 2W
R766		100 ohm
R768		1 meg
R770		2.7K, 10%, 2W
R772	36-34727-82	390 ohm, 2W (U/L)
R774		47K
R778		100K
R780		220K
R782		100K
R784		22K
R802		3.3K
R804		47K
R806	37-33717-1	2.2K Variable - D.C. Offset Adjustment
R808		270 ohm
R812		8.2K, 1/2W
R814		8.2K, 1/2W
R816		680 ohm
R817		22K
R818		1K
R820		3.3K
R822		3.3K
R824		2.7K
R826		47K
R828		1K
R830		6.8K
R832		22 ohm
R834		2.2K, 1/2W
R836		2.2K, 1/2W
R838		1.8K
R840		560 ohm
R842	37-33717-6	330 ohm Variable - Bias Adjustment
R844		4.3K
R846		4.3K
R848		3.9K
R850		3.9K
R852	36-34727-60	47 ohm, 2W (U/L)
R854	36-34727-60	47 ohm, 2W (U/L)
R856		220 ohm
R858		220 ohm
R860	36-40075-109	.22 ohm, 5W
R862	36-40075-109	.22 ohm, 5W
R864		10 ohm, 10%, 2W
R866		100 ohm
R868		1 meg
R870		2.7K, 10%, 2W
R872	36-34727-82	390 ohm, 2W (U/L)
R874		47K
R901	36-39824-80	330 ohm, 2W
R902		100K
R904		100K
R914	36-40078-60	33 ohm, 5W
R930		3.3 meg, 10%, 1/2W
R934	36-34727-64	68 ohm, 2W, FLAME-PROOF

SCHEM. CODE	SERVICE PART NO.	DESCRIPTION
RESISTORS (CONTINUED)		
R936	36-40078-82	270 ohm, 5W
R937		1K
R938		12K
R939		180K
R940		82 ohm, 1/2W
R941		330 ohm, 1W
R942		68K
R944		33K
R946		1 meg
R948		100 ohm
R950		33K
R952		1 meg
R954		39K
R956		100 ohm
R958		100K
R960		680 ohm, 10%, 1W
R962		680 ohm, 10%, 1W
R964		33 ohm
R966	36-34727-24	1.5 ohm, 2W, FLAME-PROOF
R968	36-34727-24	1.5 ohm, 2W, FLAME-PROOF
R999		27K

SOLID STATE DEVICES

FL102	26-40359-1	Ceramic IF Filter
FL104	26-40359-1	Ceramic IF Filter
FL106	50-36216-1	Dual Multiplex Filter Module
IC102	15-34452-2	FM Limiter/Detector Chip
IC104	15-40183-1	Multiplex Decoder Chip
IC902	15-40140-2	Regulator Chip
L102	22-28072-3	Ferrite Bead
L112	22-28072-3	Ferrite Bead
L114	22-28072-2	Ferrite Bead
L116	22-28072-2	Ferrite Bead
L132	22-28072-2	Ferrite Bead
L134	22-28072-2	Ferrite Bead
L136	22-28072-2	Ferrite Bead
L208	22-28072-2	Ferrite Bead
L212	22-28072-2	Ferrite Bead
L214	22-28072-2	Ferrite Bead
Q102	13-34378-3	FM RF Amplifier
Q104	13-34375-2	FM Mixer
Q106	13-34369-1	FM Oscillator
Q108	13-32366-1	1st FM IF Amplifier
Q110	13-32366-1	2nd FM IF Amplifier
Q112	13-32366-1	3rd FM IF Amplifier
Q114	13-32366-1	Meter, AGC Amplifier
Q116	13-29033-3	Noise Amplifier
Q118	13-28654-4	Mute Gate
Q120	13-29033-3	Mute Level Detector
Q122	13-29033-3	Mute Level Detector
Q124	13-26386-1	Mute Driver
Q202	13-34940-1	AM RF Amplifier
Q204	13-26386-2	AM Converter
Q206	13-34045-2	AM IF Amplifier
Q208	13-29033-3	AM Active Filter, Meter Driver
Q302	13-40312-1	Phono/Microphone Pre-amplifier
Q304	13-33175-2	Phono/Microphone Pre-amplifier
Q352	13-18365-1	AM/FM Pre-amplifier
Q402	13-40312-1	Phono/Microphone Pre-amplifier
Q404	13-33175-2	Phono/Microphone Pre-amplifier
Q452	13-18365-1	AM/FM Pre-amplifier
Q502	13-33175-2	Filter Amplifier
Q532	13-40312-1	Voltage Amplifier
Q534	13-26386-3	Voltage Amplifier
Q536	13-40312-1	Voltage Amplifier
Q538	13-26386-3	Voltage Amplifier
Q540	13-34378-3	Audio Mute
Q602	13-33175-2	Filter Amplifier
Q632	13-40312-1	Voltage Amplifier
Q634	13-26386-3	Voltage Amplifier
Q636	13-40312-1	Voltage Amplifier

— REPLACEMENT PARTS LIST (CONT'D) —

<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>	<u>SCHEM. CODE</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
MISCELLANEOUS PARTS			MISCELLANEOUS PARTS (CONTINUED)		
FS902	29-37730-17 73-40545-6 74-40546-2	6 1/4 Amp. Slow Blow Fuse Fuseholder - Kit Fuseholder - Overlay	SW910	33-34953-4	SYSTEM "B" Speaker Toggle Switch
LED900	30-40307-1 73-10302-60	L.E.D. (Lamp) - Multiplex Indicator L.E.D. (Lamp) - Indicator Connector Kit	SW912	33-40441-1	AC POWER Pushbutton Switch
LED902	86-40321-1	L.E.D. (Lamp) - Indicator Holder	SW922	33-16011-7	PHONO NO. 1 INPUT IMPEDANCE Slide Switch
LED904	30-40306-1 30-40307-1	L.E.D. (Lamp) - Dial Pointer L.E.D. (Lamp) - Clipping Indicator, Left Channel	TS902	29-34849-4	Thermal Switch (Heatsink)
LED906	30-40307-1 73-10302-60	L.E.D. (Lamp) - Clipping Indicator, Right Channel L.E.D. (Lamp) - Indicator Connector Kit	TS903	29-34849-4 73-33071-73	Thermal Switch (Heatsink) AC Power Cord
PL2	86-40321-1	L.E.D. (Lamp) - Indicator Holder		86-40361-1	AM Antenna Rod Housing
RY902	73-10302-37	AM Rod Antenna Connector Kit		74-36888-1	Antenna Terminal Cap.
SK2	31-40543-1	Relay - Speaker Protection		70-98939-2	Dial - Cord Pulley (1/2')
SK4	73-10302-39	AM Rod Antenna Connector Kit (Jack Plate)		86-34757-1	Dial - Drive Pulley
	73-40352-1	75 ohm FM Antenna Connector		83-34756-1	Dial - Drive Pulley Bushing
	73-16070-45	Tuner Input Cable (SK4 to wire hole "A")		30-26288-3	Dial - Lamp (no. 259)
SK902	73-26338-16	MIC Input Jack		73-36258-2	Dial - Lamp Terminal
SK904	73-34786-2	Quad Phono Socket - PHONO 1 & 2 IN		86-36761-1	Dial - Lamp Terminal Holder
	73-40544-1	Shorting Plug - Phono Socket		74-40272-2	Dial - Pointer
SK906	73-34786-1	Dual Phono Socket - AUX. IN		86-40216-2	Dial - Pointer Carriage
SK908	73-34786-2	Quad Phono Socket - TAPE 1 I/O	LED902	30-40306-1	Dial - Pointer Carriage Light (L.E.D.)
SK910	73-34786-2	Quad Phono Socket - TAPE 2 I/O		74-40189-1	Dial - Retaining Strip, Bottom
SK912	Not Stocked	Panel Edge Connector - Upper Switch Panel		74-40188-2	Dial - Retaining Strip, Left Side
SK913	Not Stocked	Panel Edge Connector - Upper Switch Panel		74-40188-1	Dial - Retaining Strip, Right Side
SK914	73-34786-1	Dual Phono Socket - PREAMP OUT.		74-40331-1	Dial - Retaining Strip, Top
SK916	73-34786-1 83-34776-1	Dual Phono Socket - POWER AMP. IN. Jumper - Preamp Out to Power Amp. In		77-40116-1	Dial - Spring, Cord Tension Idler
SK918	73-26338-13	Headphone Jack		74-40093-4	Dial - Tuning Calibration
SK920	73-34307-2	AUX. AC Outlet - Unswitched		74-40329-1	Jack Plate
SK922	73-34307-2	AUX. AC Outlet - Unswitched		73-40098-1	Quad Speaker Push Terminal Panel
SK924	73-34307-2	AUX. AC Outlet - Switched		74-40201-2	Tuning Meter - Diffuser
SW902	33-40268-3	FUNCTION Pushbutton Switch Asm.		25-40207-2	Tuning Meter - FM Center Tune
SW904	33-40269-1	MODE Pushbutton Switch Asm.		86-40196-1	Tuning Meter - Holder
SW906	33-16011-7	PQ4 Speaker Slide Switch		30-26288-3	Tuning Meter - Lamp (no. 259)
SW908	33-34953-4	SYSTEM "A" Speaker Toggle Switch		70-34347-1	Tuning Meter - Mounting Clip, Tubular
				25-40207-1	Tuning Meter - Signal Strength
				86-40551-1	Tuning Shaft - Bearing Spacer, Front
				86-40551-2	Tuning Shaft - Bearing Spacer, Rear
				74-40192-1	Tuning Shaft - Bushing
				76-40334-1	Tuning Shaft - Flywheel Bearing

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