

# GTE SYLVANIA

INCORPORATED

## FACTORY PREPARED TECHNICAL SERVICE DATA

STEREO HI-FI  
BULLETIN: R64-3  
MODEL: CR2743

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

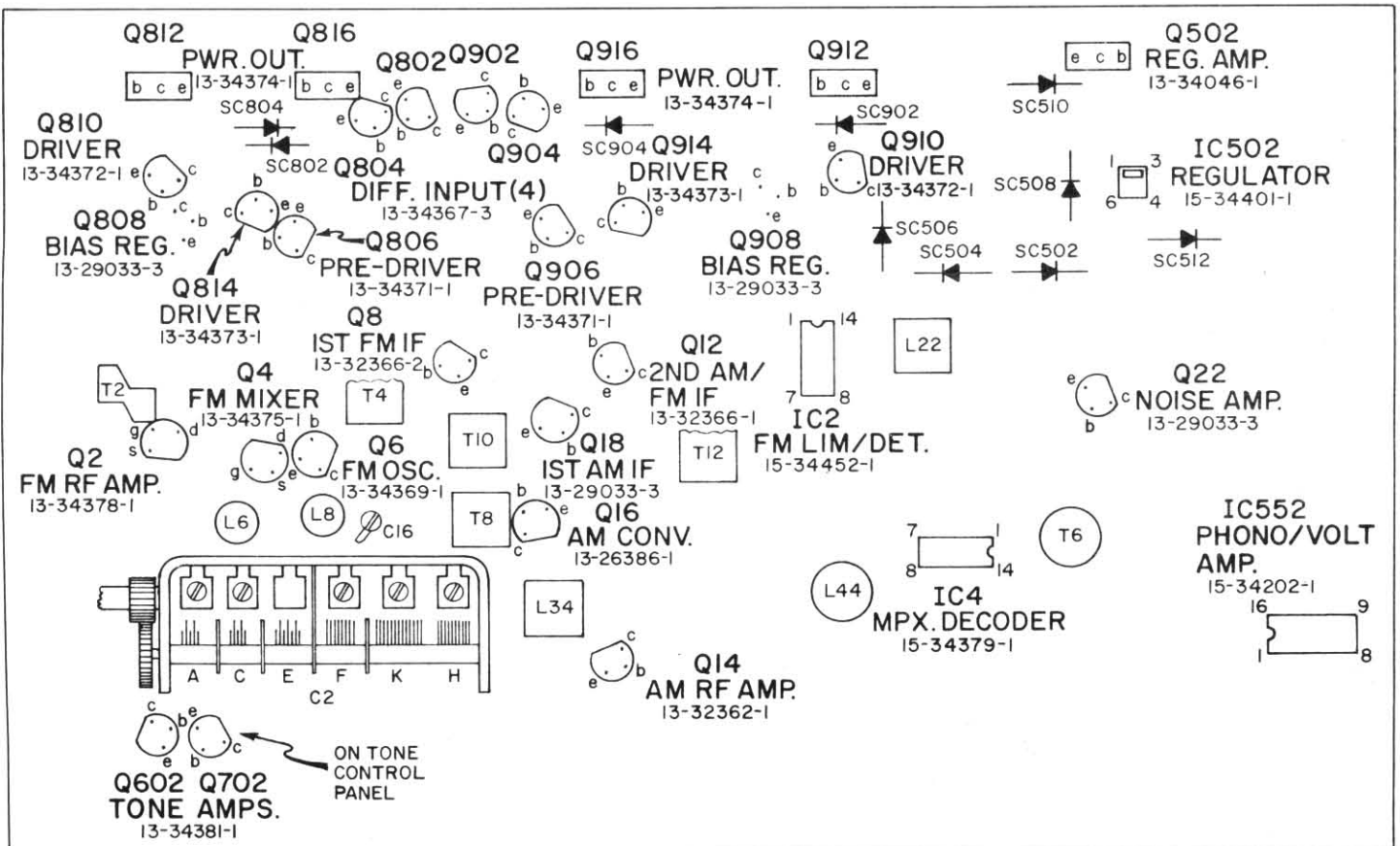
All amplifier and tuner information is contained in this manual.

### REPLACEMENT PARTS LIST

DESCRIPTION	SERVICE PART NO.
Antenna - FM	27-14926-2
Bezel - Control Knob (Bass, Bal., Loud., Treb.)	74-34431-1
Bezel - Cover Glass (Opaque)	74-34171-5
Bezel - Nameplate, Model Number	74-34549-3
Bezel - Spring & Glass Mounting Nut	70-26679-1
Bezel - Stereo Escutcheon	74-34138-2
Bezel - Stereo Lamp Diffuser	74-34344-2
Bezel - Toggle Switch Knob	74-34237-2
Button - Function Select	74-34224-2
Button - Compression Ring	70-84346-14
Cabinet - Plastic Foot	86-91119-3
Cabinet - Top Vent	74-34353-1
Transformer - 9 pin Connector (PL544)	73-10302-34
Transformer - Power (T502)	55-34419-1



### TRANSISTOR LAYOUT DIAGRAM



IMPORTANT: Always use genuine Sylvania replacement parts and tubes.

Price \$1.50

BULLETIN: R64-3

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## CHASSIS REMOVAL CR2743

1. Place cabinet on side. Use suitable protective material to prevent marring cabinet.
2. Remove three (3) screws at bottom rear of cabinet securing jack plate to cabinet. Swing bottom of jack plate away from cabinet bottom and slip plate out of groove at top of cabinet.
3. Remove two (2) screws from bottom of cabinet in front of rear vent slots securing chassis to cabinet.  
Place cabinet in normal position, resting on feet.
4. Identify and disconnect:
  - a. connector between jack plate and chassis.
  - b. connector between power transformer and chassis.
5. Remove Bass, Treble, Loudness and Balance control knobs by pulling straight off.
6. Remove six (6) toggle switch knobs by unscrewing from threaded switch shafts.
7. Remove nuts on Balance, Loudness control and headphone jack bushings. Escutcheon is secured by spring clips - remove by grasping at both ends and pulling straight away

from cabinet.

8. Remove four (4) screws at outer corners of front chassis plate securing chassis to cabinet. Remove chassis through front of cabinet.  
Power transformer is secured to cabinet by four (4) screws through bottom of cabinet.

### DIAL LAMP REPLACEMENT

Remove chassis. Use no. 147 bulb, Sylvania part number 30-26288-1.

### MULTIPLEX LAMP REPLACEMENT

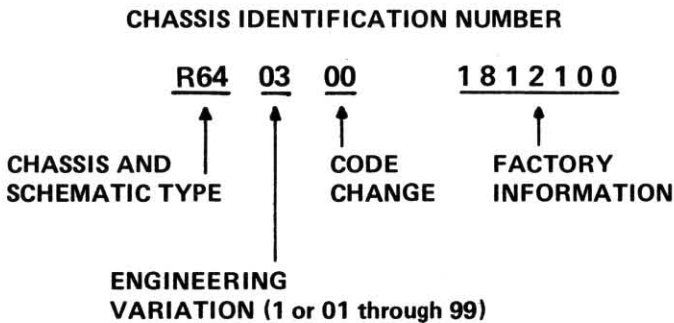
Remove chassis. Use L-12/35 bulb, Sylvania part number 30-34296-1.

### DIAL POINTER LAMP

Remove escutcheon. Gently remove paper cover from front of pointer carriage to expose pointer lamp. Use no. 2112 lamp, Sylvania part number 30-34579-1.

## 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:



### CODE CHANGES

To assist in identifying changes in electrical components, a system of adding a suffix number to the schematic parts coding number is used. All parts changed are indicated on either partial or complete schematics and also in the parts list. For example, a part coded "R100" on the initial diagram, changes to "R100-1" when first revised in value; "R100-2" on the second revision and so on.

### CODE 00

Initial Production.

### CODE 01

REASON: FM Oscillator injection low.

DESCRIPTION: The following changes were made:

1. C156 (.01) removed.
2. C157 (.01) removed.
3. R8 (10K) changed to R8-1 (27K).

NOTE: ALL CODE 00 chassis with this rework prior to CODE CHANGE 01 are identified by a RED stripe through the serial number tag.

### CODE 02

REASON: Maximum volume hum reduction.

DESCRIPTION: The following change was made:

C515 (.1 - 150V) capacitor added from 15V regulator to ground.

NOTE: ALL CODE 01 chassis with this rework prior to CODE CHANGE 02 are identified by a GREEN stripe through the serial number tag.

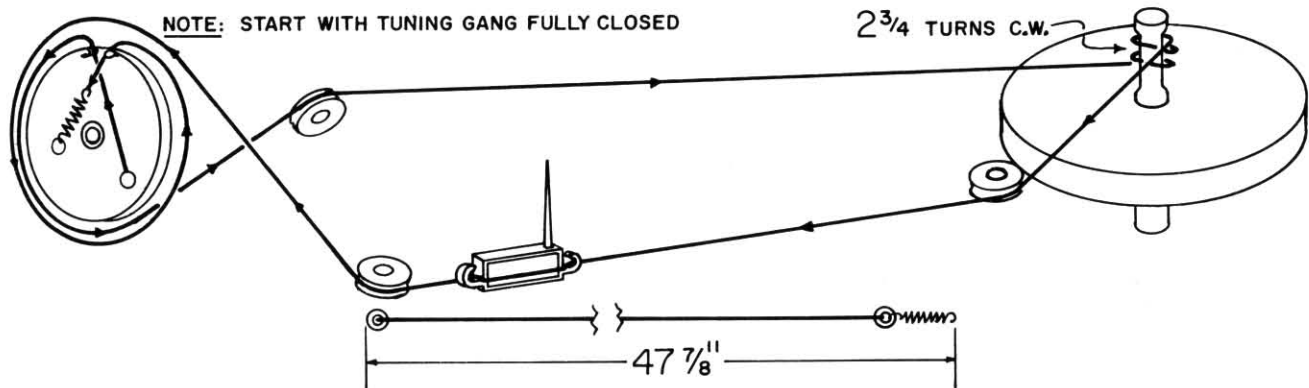
### CODE 03

REASON: Maximum volume hum reduction.

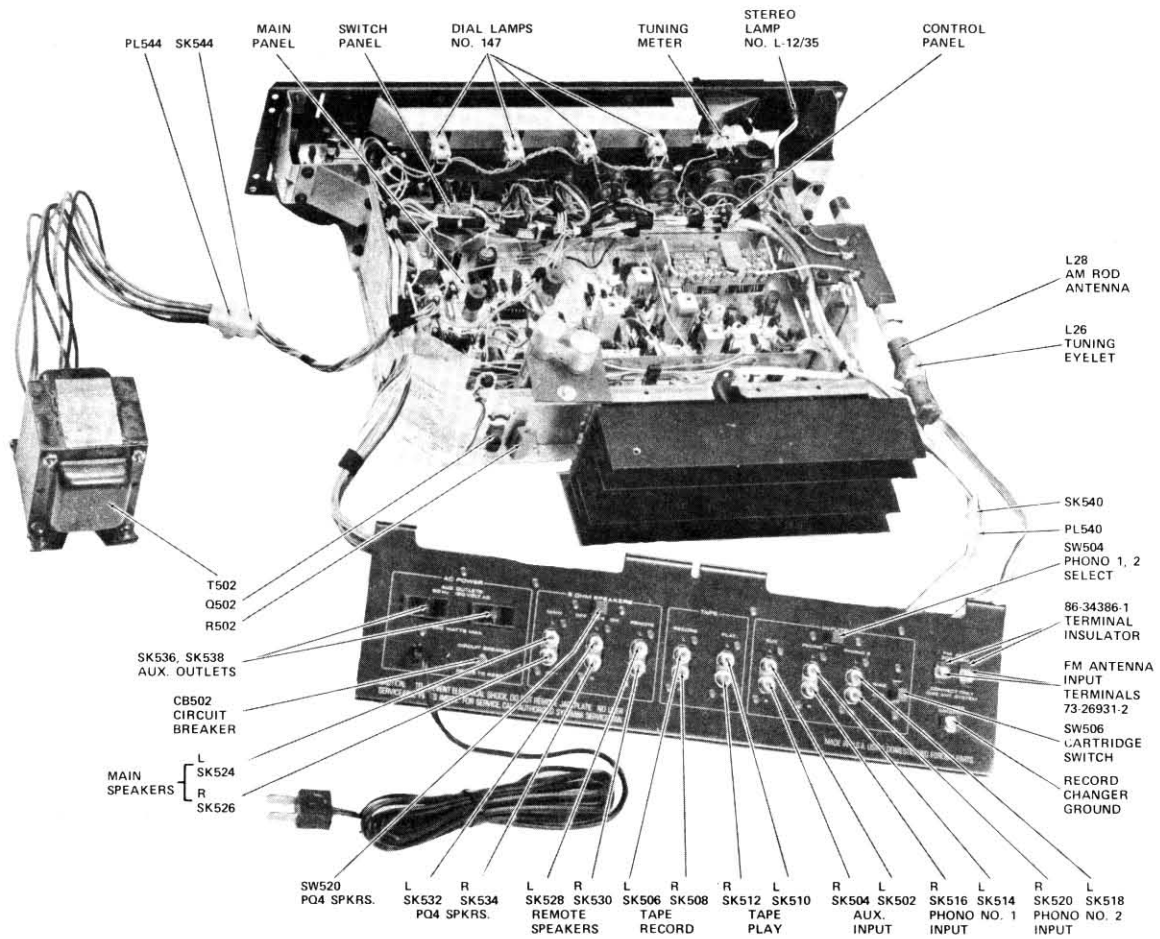
DESCRIPTION: The following change was made:

81-34394-4 heat sink, replaced by 81-34394-3 heat sink. Pilot lamp grounded to point XX on switch panel. Second lead from same point on switch panel run to heat sink.

## DIAL STRINGING



## CHASSIS PARTS IDENTIFICATION

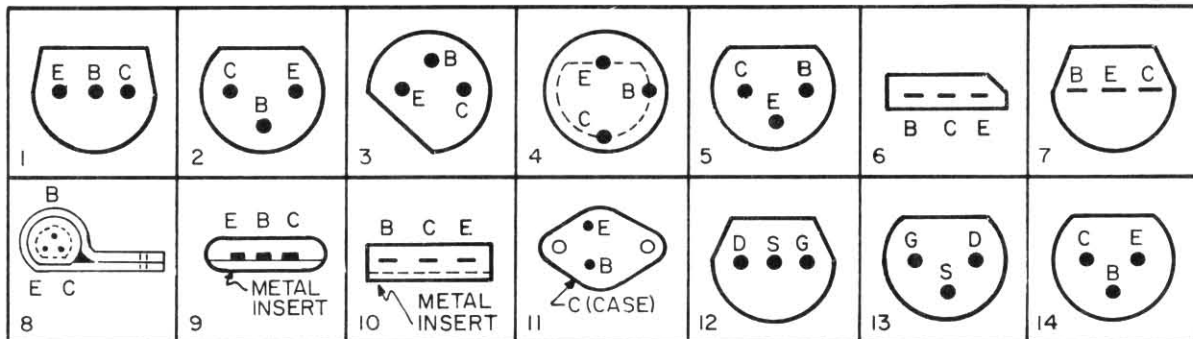


## TRANSISTOR REPLACEMENT GUIDE

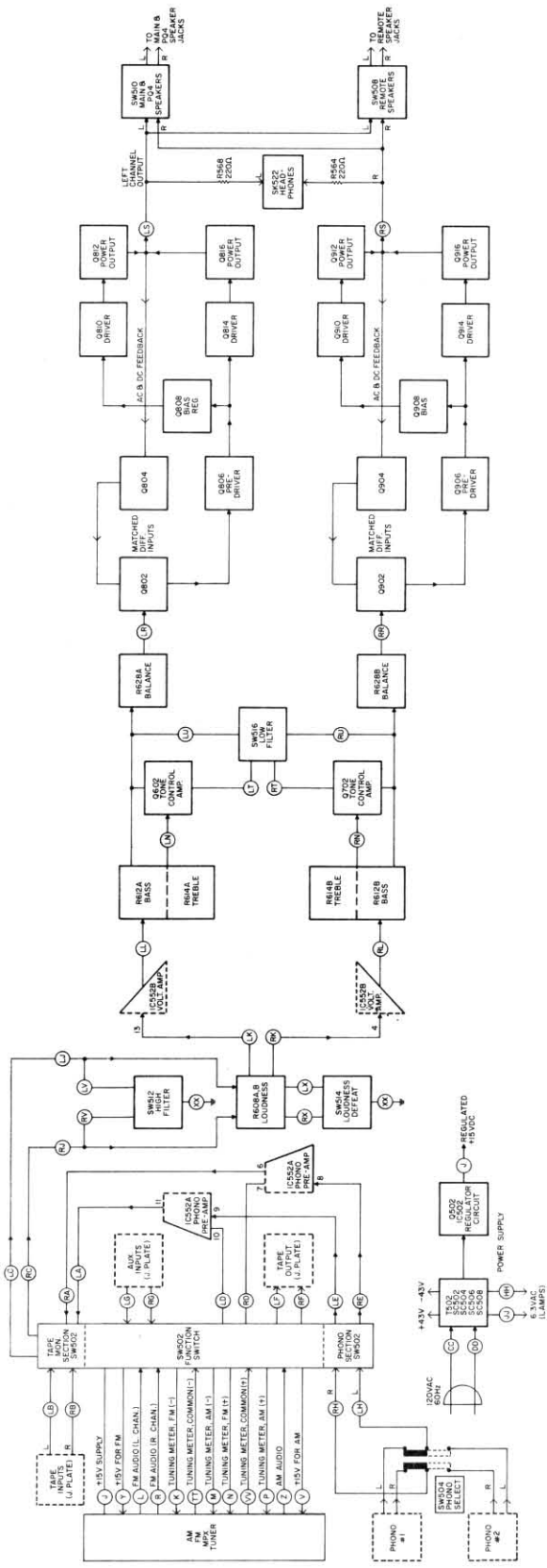
SYLVANIA PART NUMBER	DESCRIPTION ALL SILICON TYPES	APPLICATIONS	DC CURRENT GAIN	EMITTER - COLLECTOR VOLTAGE (MAX.)	EMITTER - BASE (GATE - SOURCE) VOLTAGE (MAX.)	MAXIMUM POWER DISSIPATION @25 DEG. C AMBIENT	IC (MAX.)	BASING
13-26386-1 13-29033-3	PNP NPN	Q16 - AM Converter. Q18 - AM IF Amplifier, Q22 - Noise Amplifier, Q808, Q906 - Bias Regulator.	100-350 200-400	32V 45V	4V 4V	200MW 200MW	100ma. N/A	1, 2 1, 3, 4
13-32362-1 13-32366-1 13-32366-2 13-34046-1 13-34367-3	NPN NPN NPN NPN PNP	Q14 - AM RF Amplifier. Q12 - AM/FM IF Amplifier. Q8 - FM IF Amplifier. Q502 - Regulator Amplifier. Q802, Q804 - Differential Input (Matched Pair) Q902, Q904 - Differential Input (Matched Pair)	30-100 40-120 80-165 10-150 *See Below	20V 30V 30V 40V 50V	4V 4V 4V 4V 4V	210MW 250MW 250MW 12.5W 300MW	N/A 50ma. 50ma. 2A 100ma.	1, 3 5 5 6 1, 2, 5
13-34369-1 13-34371-1 13-34372-1 13-34373-1 13-34374-1 13-34375-1 13-34378-1 13-34381-1	PNP NPN NPN PNP NPN N-Chan. FET N-Chan. FET NPN	Q6 - FM Oscillator. Q806, Q906 - Pre-Driver. Q810, Q910 - Driver Q814, Q914 - Driver Q812, Q816, Q912, Q916 - Power Output Q4 - FM Mixer. Q2 - FM RF Amplifier. Q602, Q702 - Tone Amplifier.	20 Min. 90-270 50-150 50-150 25-100 N/A N/A 225-450	20V 110V 95V 95V 95V N/A N/A 30V	.85V 4V N/A 2V N/A 25V -10V 4V	N/A 500MW 2W 2W N/A 200MW 250MW 200MW	N/A 500ma. 1A 1A 30A 12, 13 12, 13 50ma.	7 1, 6, 8 6, 9, 10 6, 9, 10 11 12, 13 12, 13 1, 2, 14

\*13-34367-3 DC Current Gain: Brown, 100-160; Red, 150-210; Orange, 200-260; Yellow, 250-310; Green, 300-360.

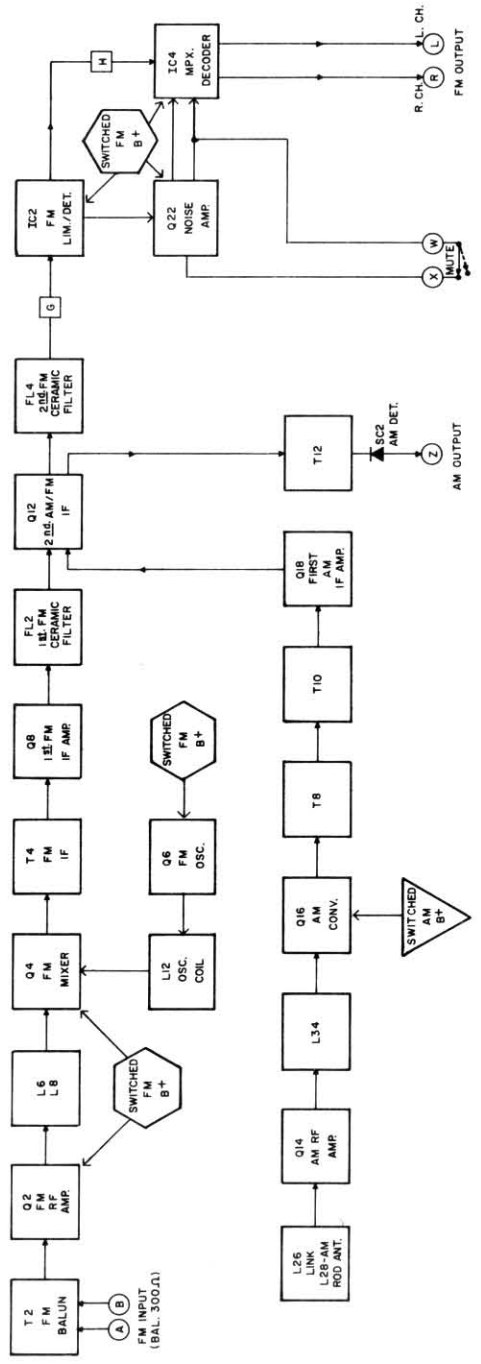
## TRANSISTOR BASING DIAGRAMS



# BLOCK DIAGRAMS



## AMPLIFIER



**REPLACEMENT PARTS LIST**

<u>SCHEMATIC</u> <u>CODING</u>	<u>SERVICE</u> <u>PART NO.</u>	<u>DESCRIPTION</u>
<b>CAPACITORS (All in MFD, unless otherwise specified)</b>		
C2	42-34387-2	Main Tuning Gang
C4		330PF - Z5P
C6		330PF - Z5P
C7		330PF - Z5P
C8		.01 - Z5U
C12		330PF - Z5P
C14		330PF - Z5P
C16	42-18146-1	2-20PF Ceramic Trimmer
C18		8.2PF - N470
C18-1		5.6PF - N150
C22		.01 - 100V
C24		330PF - Z5P
C28		.01 - 100V
C32		.01 - 100V
C34		3.3PF - NPO
C36		3.3PF - NPO
C38		.01 - Z5U
C40		.01 - 100V
C52	41-23762-22	Electrolytic - 25/6V
C54		.05 - 50V
C56		.01 - 100V
C58		.05 - 50V
C60		.01 - Z5U
C66		.01 - Z5U
C68		100PF - Z5P
C72		.02 - 100V
C74		.05 - 50V
C78	41-32477-65	Electrolytic - 100/35V
C82	41-23765-5	Electrolytic - 5/25V
C84	40-10285-8	10,000PF
C86		.05 - 50V
C88		.05 - 50V
C90		.05 - 50V
C92		.01 - 100V
C94		.01 - 100V
C102		.05 - 50V
C104		.05 - 50V
C112		.05 - 50V
C118		.01 - 150V
C122		.05 - 50V
C124		330PF
C126		100PF - Z5P
C128	41-32477-85	Electrolytic - 1/50V
C132	41-32477-46	Electrolytic - 5/25V
C134	41-32477-86	Electrolytic - 2/50V
C136		820PF - Z5P
C138	40-10285-45	2500PF
C142		3300PF - Z5P
C144		3300PF - Z5P
C146	41-23765-16	Electrolytic - 1/25V
C148	41-23765-16	Electrolytic - 1/25V
C152		.05 - 50V
C158		1000PF - Z5P
C302	41-32477-46	Electrolytic - 5/25V
C304	41-32477-48	Electrolytic - 25/25V
C306		.027 - 250V
C308		.1 - 150V
C310	41-32477-46	Electrolytic - 5/25V
C312	41-32477-46	Electrolytic - 5/25V
C314	41-32477-48	Electrolytic - 25/25V
C316		1000PF - Z5P
C318	41-32477-85	Electrolytic - 1/50V
C402	41-32477-46	Electrolytic - 5/25V
C404	41-32477-48	Electrolytic - 25/25V
C406		.027 - 250V
C408		.1 - 150V
C410	41-32477-46	Electrolytic - 5/25V
C412	41-32477-46	Electrolytic - 5/25V
C414	41-32477-48	Electrolytic - 25/25V
C416		1000PF - Z5P
C418	41-32477-85	Electrolytic - 1/50V
C502		.05 - 100V
C504		.05 - 100V

**REPLACEMENT PARTS LIST (CONTINUED)**

<u>SCHEMATIC CODING</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
<b>CAPACITORS (CONTINUED)</b>		
C507	41-34531-1	Electrolytic - 1000/50V
C512	41-32477-67	Electrolytic - 500/35V
C514		.01 - 100V
C515		.1 - 150V
C518	43-98665-6	5000PF - 150VAC
C520	43-98665-6	5000PF - 150VAC
C552		330PF - Z5P
C554		330PF - Z5P
C556	43-98665-6	5000PF - 150VAC
C602		4700PF - 150V
C604		.1 - 150V
C606	41-32477-85	Electrolytic - 1/50V
C608		.047 - 150V
C610		.047 - 150V
C612		820PF - Z5P
C614	41-32477-85	Electrolytic - 1/50V
C616		.15 - 150V
C618		.15 - 150V
C620	41-32477-85	Electrolytic - 1/50V
C622		.01 - 100V
C702		4700PF - 150V
C704		.1 - 150V
C706	41-32477-85	Electrolytic - 1/50V
C708		.047 - 150V
C710		.047 - 150V
C712		820PF - Z5P
C714	41-32477-85	Electrolytic - 1/50V
C716		.15 - 150V
C718		.15 - 150V
C720	41-32477-85	Electrolytic - 1/50V
C722		.01 - 100V
C804	41-32477-48	Electrolytic - 25/25V
C806		10PF - NPO
C808	41-23765-7	Electrolytic - 25/25V
C810	41-32477-93	Electrolytic - 100/50V
C812		330PF - Z5P
C814		330PF - Z5P
C904	41-32477-48	Electrolytic - 25/25V
C906		10PF - NPO
C908	41-23765-7	Electrolytic - 25/25V
C912		330PF - Z5P
C914		330PF - Z5P

**RESISTORS (All 1/2W, Carbon, 10% unless otherwise specified)**

R2		560 ohm
R4		10K
R6		39K
R8		10K
R8-1		27K
R12		22K
R14		8.2K
R16		2.7K
R18		270 ohm
R22		1K
R24		27K
R26		1K
R28		470 ohm
R32		1K
R34		1K
R36		330 ohm
R38		22K
R42		8.2K
R44		1K
R46	37-14576-11	120K Variable
R52		680 ohm
R54		390 ohm
R56		180 ohm
R58		1.5K
R62	37-14576-5	1K Variable
R64		1K
R66		10K
R68		330 ohm

<u>SCHEMATIC CODING</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
<b>RESISTORS (CONTINUED)</b>		
R72	37-14576-5	1K Variable
R74		150 ohm
R76		1K
R78		1K
R82		7.5K, 5%
R84		8.2K
R86		22K
R88		470 ohm, 5%
R92		5.6K
R94		1.5K
R96		1K
R98		330 ohm
R102		22K
R104		33K, 5%
R106		4.3K, 5%
R108		5.6K
R112		8.2K
R114		22K
R116		1K
R118		68K
R122		56K
R124		56K
R126		100K
R128		56 ohm
R130		1K
R132		4.7K
R134		3.9K
R136		3.9K
R138		1K
R144		68K
R146		22K
R148		22K
R150		1K
R152		1K
R302		100K
R304		100 ohm, 5%
R306		2.7K
R308		330 ohm, 5%
R310		3.3K
R402		100K
R404		100 ohm, 5%
R406		2.7K
R408		330 ohm, 5%
R410		3.3K
R502	36-62454-37	33 ohm, 5W
R504		100 ohm
R506		1 ohm
R508		3.9K, 5%
R510		1.6K, 5%
R512		3.3 Meg, 20%
R520		6.8 ohm
R552		220K, 1/4 Watt
R554		220K, 1/4 Watt
R556		10K
R558		10K
R560		1K
R562		1K
R564		220 ohm
R566		82 ohm
R568		220 ohm
R570	36-62454-37	33 ohm, 5 Watt
R572		1K
R604		10K
R606		3.3K
R608	37-34289-4	50K - Dual Loudness Control
R610		10K
R612	37-34289-3	100K - Dual Bass Control
R614	37-34289-3	100K - Dual Treble Control
R616		15K
R618		39K
R620		10K
R622		1.5 Meg, 1/4W - 5%
R624		5.6K, 1/4W - 5%

**REPLACEMENT PARTS LIST (CONTINUED)**

<u>SCHEMATIC CODING</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
<b>RESISTORS (CONTINUED)</b>		
R626		47K
R628	37-34289-2	50K - Dual Balance Control
R630		470K
R704		10K
R706		3.3K
R710		10K
R716		15K
R718		39K
R720		10K
R722		1.5 Meg, 1/4W - 5%
R724		5.6K, 1/4W - 5%
R726		47K
R730		470K
R802		15K
R804		390 ohm, 5%
R806		12K
R808		15K
R810		1K
R812	37-14576-6	250 ohm Variable
R814		270 ohm
R816		220 ohm
R818		100 ohm
R822		3.3K
R824		3.3K
R826		180 ohm
R828		150 ohm
R832		180 ohm
R834		2.7 ohm
R836		2.7 ohm
R902		15K
R904		390 ohm, 5%
R906		12K
R908		15K
R910		1K
R912	37-14576-6	250 ohm Variable
R914		270 ohm
R916		220 ohm
R918		100 ohm
R922		3.3K
R924		3.3K
R926		180 ohm
R932		180 ohm
R934		2.7 ohm
R936		2.7 ohm
<b>SOLID STATE DEVICES</b>		
FL2,FL4	26-34156-101	Ceramic IF Filt. - BLACK DOT
	26-34156-102	Ceramic IF Filt. - BLUE DOT
	26-34156-103	Ceramic IF Filt. - RED DOT
	26-34156-104	Ceramic IF Filt. - ORANGE DOT
	26-34156-105	Ceramic IF Filt. - WHITE DOT
IC2	15-34452-1	Integ. Ckt. - FM Lim./Det.
IC4	15-34379-1	Integ. Ckt. - Mpx. Decoder
IC502	15-34401-1	Integ. Ckt. - Regulator
IC552	15-34202-1	Integ. Ckt. - Preamp
L2,L14	22-28072-3	Bead - Ferrite
L16	22-28072-3	Bead - Ferrite
L17,L18	22-28072-2	Bead - Ferrite
L32,L36	22-28072-2	Bead - Ferrite
L38,L46	22-28072-2	Bead - Ferrite
Q2	13-34378-1	Transistor - FM RF Amp. (FET)
Q4	13-34375-1	Transistor - FM Mixer (FET)
Q6	13-34369-1	Transistor - FM Oscillator
Q8	13-32366-2	Transistor - FM IF Amp
Q12	13-32366-1	Transistor - AM/FM IF Amp
Q14	13-32362-1	Transistor - AM RF Amp
Q16	13-26386-1	Transistor - AM Converter
A18	13-29033-3	Transistor - AM IF Amp
Q22	13-29033-3	Transistor - Noise Amp
Q502	13-34046-1	Transistor - Reg. Amp
Q602	13-34381-1	Transistor - Tone Amp
Q702	13-34381-1	Transistor - Tone Amp

<u>SCHEMATIC CODING</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
<b>SOLID STATE DEVICES (CONTINUED)</b>		
Q802,Q804	13-34367-3	Transistor - Differential Input - Shipped as MATCHED PAIR
Q806	13-34371-1	Transistor - Pre-Driver
Q808	13-29033-3	Transistor - Bias Reg.
Q810	13-34372-1	Transistor - Driver, NPN
Q812	13-34374-1	Transistor - NPN Power Output
Q814	13-34373-1	Transistor - Driver, PNP
Q816	13-34374-1	Transistor - NPN Power Output
Q902,Q904	13-34367-3	Transistor - Differential Input - Shipped as MATCHED PAIR
Q906	13-34371-1	Transistor - Pre-Driver
Q908	13-29033-3	Transistor - Bias Reg.
Q910	13-34372-1	Transistor - Driver, NPN
Q912	13-34374-1	Transistor - NPN Power Output
Q914	13-34373-1	Transistor - Driver, PNP
Q916	13-34374-1	Transistor - NPN Power Output
SC2	1N295	Diode - AM Det.
SC4	13-17596-5	Diode - Noise Rectifier
SC302	13-17596-5	Diode - Overload
SC402	13-17596-5	Diode - Overload
SC502	13-34368-1	Diode - Rectifier
SC504	13-34368-1	Diode - Rectifier
SC506	13-34368-1	Diode - Rectifier
SC508	13-34368-1	Diode - Rectifier
SC512	13-17596-5	Diode - Bias
SC514	13-17174-2	Diode - Bias
SC516	13-17174-2	Diode - Bias
SC802	13-26614-1	Diode - Bias
SC804	13-26614-1	Diode - Bias
SC902	13-26614-1	Diode - Bias
SC904	13-26614-1	Diode - Bias
	86-28669-1	Insulator - Mica
	72-28852-1	Socket - Xistor, In-line 3 pin
	73-27200-7	Socket - Xistor, large 3 pin
	72-27200-5	Socket - Xistor, small 3 pin
	72-34063-1	Socket - IC, 14 pin
	72-34063-4	Socket - IC, 16 pin
	81-29949-1	Speed Clip - Xistor Mounting
<b>COILS AND TRANSFORMERS</b>		
L2	22-28072-3	Bead - Ferrite
L4	50-11378-5	Coil - 3.3UH Filter
L6	50-34409-5	Coil - FM RF
L8	50-34409-2	Coil - FM Mixer
L10	50-15318-1	Coil - 27UH Peaking
L12	50-34409-4	Coil - FM Oscillator
L14,L16	22-28072-3	Bead - Ferrite
L17,L18	22-28072-2	Bead - Ferrite
L22	50-34411-1	Coil - Quad. Detector
L24	50-15318-1	Coil - 27UH Peaking
L26	70-32648-2	Tuning Eyelet - L28
L27	50-10260-4	Coil - 2.2UH Filter
L28	27-34392-1	Iron Core Antenna - AM
L32	22-28072-2	Bead - Ferrite
L34	50-34406-1	Coil - AM RF
L36,L38	22-28072-2	Bead - Ferrite
L42	50-18789-3	Coil - 5.7MH Choke
L44	50-34407-1	Coil - Multiplex 19kHz
L46	22-28072-2	Bead - Ferrite
L802	50-34404-1	Coil - 3.4UH Filter
L902	50-34404-1	Coil - 3.4UH Filter
T2	50-26573-1	Transformer - FM Balun
T4	50-34412-1	Transformer - FM Mixer
T6	50-34407-1	Transformer - Mpx. 38kHz
T8	50-28411-3	Transformer - AM Converter
T10	50-26583-8	Transformer - AM Mixer
T12	50-26583-4	Transformer - AM IF
T502	55-34419-1	Transformer - Power
<b>MISCELLANEOUS PARTS</b>		
CB502	29-33346-10	Circuit Breaker - 2.2A.

## REPLACEMENT PARTS LIST (CONTINUED)

<u>SCHEMATIC CODING</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
<b>MISCELLANEOUS PARTS (CONTINUED)</b>		
I2	30-34296-1	Multiplex Lamp, No. L-12/35
	74-34344-2	Diffuser - Multiplex Lamp
I502,I504	30-26288-2	Dial Lamp - No. 147
I506,I508	30-26288-2	Dial Lamp - No. 147
	73-28247-1	Socket - Dial Lamp
I510	30-34579-1	Pointer Lamp, No. 2112
PL540	73-10302-40	Connector - 4 pin
PL544	73-10302-34	Connector - 9 pin
SK502,SK504	73-98079-2	Dual Socket - AUX. IN
SK506,SK508	73-98079-2	Dual Socket - TAPE RECORD
SK510,SK512	73-98079-2	Dual Socket - TAPE PLAY
SK514,SK516	73-98079-2	Dual Socket - PHONO no. 1 IN
SK518,SK520	73-98079-2	Dual Socket - PHONO no. 2 IN
SK522	73-26338-3	Headphone Jack
SK524,SK526	73-98079-2	Dual Socket - MAIN SPKRS.
SK528,SK530	73-98079-2	Dual Socket - REMOTE SPKRS.
SK532,SK534	73-98079-2	Dual Socket - PQ4 SPKRS.
SK536,SK538	73-34307-2	Outlet - Aux. Power
SK540	73-10302-39	Connector - 4 pin
SK544	73-10302-35	Connector - 9 pin
SW502	33-28756-4	Function Switch Asm. - Complete
	33-35745-1	AFC Switch Section Only
	33-35745-5	AM, FM, PHONO or TAPE Switch Section Only
	33-35745-9	POWER Switch Actuator
	33-35611-2	POWER Microswitch
	33-35745-2	STEREO Switch Section Only
SW504	33-16011-7	Slide Switch - PHONO 1
SW506	33-16011-7	Slide Switch - MAG./CERAMIC
SW508	33-34214-1	Toggle Switch - REM./PQ4 SPKRS.

<u>SCHEMATIC CODING</u>	<u>SERVICE PART NO.</u>	<u>DESCRIPTION</u>
<b>MISCELLANEOUS PARTS (CONTINUED)</b>		
SW510	33-3421401	Toggle Switch - MAIN SPKRS.
SW512	33-34214-1	Toggle Switch - HIGH FILTER
SW514	33-34214-1	Toggle Switch - LOUD. DEFEAT
SW516	33-34214-1	Toggle Switch - LOW FILTER
SW518	33-34214-1	Toggle Switch - MUTE
SW520	33-16011-7	Slide Switch - PQ4 SPKRS.
	73-33071-41	AC Cord
	73-86862-1	Antenna, FM - Push-on Conn.
	73-26931-2	Antenna, FM - Terminal
	86-34386-1	Antenna, FM - Terminal Insulator
	74-34243-2	Dial - Carriage Pointer
	70-98939-1	Dial - Cord Pulley, large
	70-98939-5	Dial - Cord Pulley, small
	74-34577-1	Dial - Glass
	81-34238-1	Dial - Light Shield
	77-41699-4	Dial - Tension Spring
	86-28869-1	Insulator - Mica
	74-34242-3	Jack Plate
	72-34063-1	Socket - IC, 14 pin
	72-34063-4	Socket - IC, 16 pin
	72-28852-1	Socket - Xistor, 3 pin In-line
	72-27200-7	Socket - Xistor, large 3 pin
	72-14607-2	Socket - Power Transistor
	72-27200-5	Socket - Xistor, small 3 pin
	70-14098-1	Thumbwheel - Shaft Bearing, Nylon
	74-28923-3	Thumbwheel - Tuning Asm.
	25-34207-1	Tuning Meter - Asm.
	74-34562-1	Tuning Meter - Diffuser
	86-34236-3	Tuning Meter - Frame

## SERVICING THE STEREO HI-FI AMPLIFIER

Stereo Hi-Fi Amplifier circuits are much easier to service than many other circuits, inasmuch as there are two identical amplifiers right before you for comparison. Use the function switches and controls to locate the trouble area, then pinpoint the defective component within the area.

As an aid to parts identification, blocks of numbers have been assigned to circuits in this chassis - ie:

- 0-200 Block - AM/FM - MULTIPLEX tuner.
- 300 Block - Left channel Phono Preamp.
- 400 Block - Right Channel Phono Preamp.
- 500 Block - Items common to both L & R Channels.
- 600 Block - Left Channel Preamp and Tone Circuits.
- 700 Block - Right Channel Preamp and Tone Circuits.
- 800 Block - Left Channel Power Amplifier Circuit.
- 900 Block - Right Channel Power Amplifier Circuit.

Tuner pins and wire connections are labeled with a single letter whenever possible.

Left and right channel audio amplifier connections are double lettered, with the first letter indicating the channel, ie: LB (Left) or RB (Right).

Visual inspection of components will often disclose overheated parts. A good magnifying glass will be very helpful when checking the printed circuit panel for cracked foil or poor solder joints. Thermal noise may be generated by resistors or transistors that "look like new" as well as other components. Use a heat lamp and aerosol cooler to isolate these troubles.

Remember that schematic voltages are not absolute - they will vary due to normal production tolerances. The primary AC supply (120V, 60Hz) will influence B+ greatly. Compare voltages for the right and left channels when suspecting trouble in

a certain amplifier stage. The use of a modern, high impedance VOM, or preferably, a VTVM is a 'must' for checking transistor voltages. Be very careful with your instrument probes when working on transistor circuits - even a momentary short between Base and Collector can destroy the transistor.

Stage gain may be checked by touching the Collector and then the Base of a transistor with your finger. You will hear a hum from the Collector, and an appreciably louder hum when you touch the Base. Bear in mind that there is no AC voltage gain in the driver and output stages of this amplifier, and also that an inoperative transistor will often pass some signal, but without gain.

A word about replacing solid state devices in these tuner and amplifier circuits - whenever possible, we give the E.I.A. number PROVIDING that the "off-the-shelf" part will restore operation of the instrument to meet factory specifications. However, Sylvania part numbers only are given whenever the transistors or diodes are specifically "paired", or selected for Beta, P.I.V., low noise, etc., and replacement by any "off-the-shelf" item may, or may not, restore operation to meet factory 'specs'.

When servicing Solid State amplifier and tuner circuits, always observe the following rules:

1. BE SURE all test equipment is free from leakage and isolated from the power line.
2. Use non-inductive dummy loads of at least 3 ohms total resistance - 8 ohm loads are nominal. NEVER use single speakers or combinations of speaker systems of less than 3 ohms total impedance. Momentarily shorted or open outputs will not damage the output stages of this amplifier. However, a continuous shorted output condition can cause serious damage within a relatively short period of time.



## SERVICING THE STEREO HI FI AMPLIFIER (CONT'D)

3. Always unplug the power cord from the 120VAC, 60Hz supply before replacing components.
4. Use a low wattage, pencil type iron to ensure minimum heat application. Heat sink each lead on solid state devices. An alligator clip will serve quite well as a heat sink in most cases.
5. Be sure that mounting surfaces for power transistors are

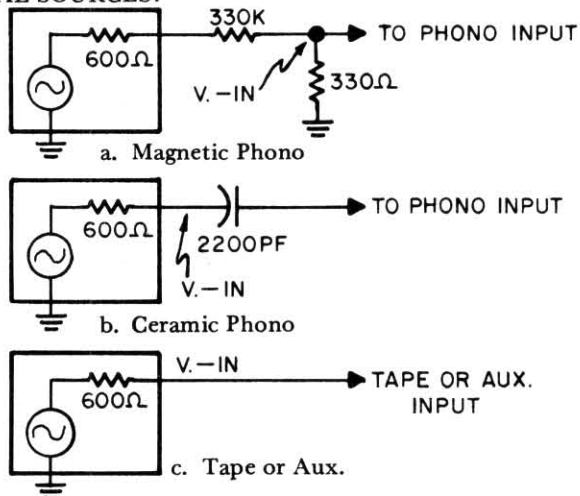
clean and free from burrs. Use silicon grease liberally (both sides of mica insulators when used) when mounting power transistors. Be sure that power transistors are positioned so that the mounting surface is in full, snug contact with the heat sink and that leads clear adjacent chassis or heat sink metal.

## PERFORMANCE ANALYSIS

Use a 50 Watt, 8 ohm non-inductive load across each channel output while checking amplifier performance.

SCRATCH and RUMBLE filters are switched OFF for all tests.

### SIGNAL SOURCES:



### SENSITIVITY AT 1kHz

Select STEREO mode and FUNCTION as required. Drive both channels simultaneously.

Adjust controls as follows:  
 Balance - Mechanical Center.  
 Bass and Treble - Mechanical Center.  
 Loudness - Maximum.

Adjust 1kHz input signal for an amplifier output level of 1 Watt (2.83V RMS measured across 8 ohm load resistors).

Ceramic Phono - 22mV input for 1 Watt output.  
 Magnetic Phono - .31mV input for 1 Watt output.  
 Tape In - 12mV input for 1 Watt output.  
 Aux. In. - 7.3mV input for 1 Watt output.

### DISTORTION

Use same set-up as for sensitivity. Increase 1kHz signal for an amplifier output of 50 Watts (20.0V measured across 8 ohm load resistor). Distortion shall be no more than .5% at 1kHz.

TONE CONTROL RANGE - is measured with signal applied at TAPE inputs.

Adjust controls as follows:  
 Balance - Mechanical Center.  
 Bass and Treble - Mechanical Center, initially.  
 Loudness - Maximum.  
 Select TAPE and STEREO functions.

Adjust 1kHz reference signal input for an output of 1 Watt (2.83V RMS across 8 ohm load resistor).

Control, Gen. Freq.	Cut (Full CCW)	Boost (Full CW)
Bass - 100Hz	-10db, +/-2db	+10db, +/-2db
Treble - 10kHz	-12db, +/-2db	+12db, +/-2db

### CHANNEL BALANCE

Measured with both channels driven. Adjust 1kHz input signal for an amplifier output of 1 Watt (2.83V RMS across 8 ohm load resistor).

Adjust controls as follows:  
 Balance - Mechanical Center.  
 Bass and Treble - Maximum.  
 Loudness - At TAP.  
 Select STEREO function.

MAXIMUM allowable channel unbalance is 4db.

### CHANNEL SEPARATION

Drive ONE AUX. INPUT, terminate second AUX. INPUT.

Adjust controls as follows:  
 Balance - Mechanical Center.  
 Bass and Treble - Mechanical Center.  
 Loudness - At TAP.  
 Select AUX. and STEREO functions.

Adjust signal generator input for an amplifier output of 12.5 Watts (10V RMS measured across 8 ohm load resistor) on DRIVEN channel. Measure crosstalk on terminated channel.

FREQUENCY	CROSSTALK LIMITS
100Hz	40db, Typical
1kHz	35db, Typical
10kHz	30db, Typical

### HUM and NOISE

Terminate PHONO inputs with 330 ohm resistors. Measure Hum and Noise across 8 ohm load resistors.

Adjust controls as follows:  
 Balance - Mechanical Center.  
 Bass and Treble - Mechanical Center.

- A: Select PHONO and STEREO functions.  
 Loudness Control MAXIMUM - 60mV (Typical).  
 Loudness Control MINIMUM - 1mV (Typical).
- B: Select TAPE and STEREO functions.  
 Loudness Control MAXIMUM - 3mV (Typical).
- C: Select AUX. and STEREO functions.  
 Loudness Control MAXIMUM - 40mV (Typical).

## — ALIGNMENT PROCEDURE —

This receiver has been factory aligned with precision laboratory 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 voltage at 120V, 60Hz during alignment.

All RF shields must be in place during alignment.

8 ohm, 50 watt non-inductive loads are required for Left and Right channel amplifier output terminals if speaker systems are disconnected during alignment.

**ALWAYS KEEP SIGNALS AT THE LOWEST USEABLE LEVEL DURING ALIGNMENT, UNLESS OTHERWISE NOTED.** Note the signal generator output attenuator setting at which further input signal does not increase output signal. Keep the input signal level below this point.

Set tuning dial indicator at zero (0) on the logging scale with tuning capacitor (C2) set at maximum capacity. Readjusting tuning dial indicator after AM or FM RF 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:

AM signal generator capable of 400Hz, 30% modulated, accurate signals from 455kHz to 1610kHz.

General purpose scope.

#### FM:

FM signal generator capable of accurate modulated signals from 87.9MHz to 108.5MHz.

General purpose scope.

#### MULTIPLEX FM:

Multiplex generator with the following capabilities:

1. Standard multiplex signal, 1kHz modulation.
2. Single channel modulation.

OSCILLOSCOPE - preferably dual trace.

## — AM ALIGNMENT —

STEP	TUNING INDICATOR SETTING	TEST EQUIPMENT HOOK-UP	GENERATOR FREQUENCY	ADJUSTMENT POINT	ADJUST FOR
<b>IF CIRCUITS</b> Switch receiver on, select AM function and check +15V at pin J. Tune receiver to no signal area near 600kHz, adjust R46 for zero reading on tuning meter.					
1	Near 600kHz, as above.	Radiate RF signal from generator. Scope to pin K, AM audio output, or to Tape Record Jack on Jack Plate (SK506 or SK508).	455kHz, 30% 400Hz modulation.	T12 T10	Maximum 400Hz output.
Repeat for maximum output.					
<b>SENSITIVITY AND BAND SET</b>					
2	1400kHz	Same as step 1, or monitor tuning meter.	1400kHz, 30% 400Hz modulation.	C2G Trimmer C2J Trimmer C2L Trimmer	MAXIMUM 400Hz or MAX. meter deflection and correct dial calibration.
3	600kHz		600kHz, 30% 400Hz modulation.	T8 L34 L26 Grommet	

Reduce input signal level and repeat steps 2 and 3 until maximum sensitivity and correct dial calibration are achieved.

When correctly aligned, this receiver will tune through a signal at 540kHz and 1610kHz.

**FM ALIGNMENT**

STEP	TUNING INDICATOR SETTING	TEST EQUIPMENT HOOK-UP	GENERATOR FREQUENCY	ADJUSTMENT POINT	ADJUST FOR
<p><b>IF CIRCUITS</b></p> <p>Switch receiver on, select FM function and check +15V at pin J. Switch MUTING off.</p>					
1	Near 98MHz, at off-station spot.	Signal generator to FM Antenna Terminals. Scope to pin G - use detector or low-capacity probe.	Approx. 10.7MHz Tune to receiver, use 400Hz, 100% modulation.	T4	MAXIMUM response.
<p>Adjust T4 for HIGHEST PEAK - do NOT adjust for best looking response.</p> <p><b>SENSITIVITY AND BAND SET</b></p>					
2	106MHz	Signal generator to FM Antenna Terminals. Scope to pin H - use de-emphasis or low capacitor probe.	106MHz, 100% modulation.	C2B Trimmer C2D Trimmer C16 Trimmer L22	MAXIMUM response.
3	106MHz	As above. Reduce signal level.		C2B Trimmer C2D Trimmer C16 Trimmer	MAXIMUM response at 106MHz.
4	90MHz		90MHz, 100% modulation.	L6 L8 L12	MAXIMUM response at 90MHz.

Continue to reduce signal level while repeating steps 3 and 4 until maximum sensitivity and correct dial calibration are achieved.

Tune receiver to very weak signal to ensure accurate tuning (90 or 106MHz) - then increase signal input level for 180mV (Approx.) at pin G. Use 100% modulation. Adjust L22 for minimum distortion at pin H.

Tune receiver to off-station around 100MHz. Adjust R62 for tuning meter center zero.

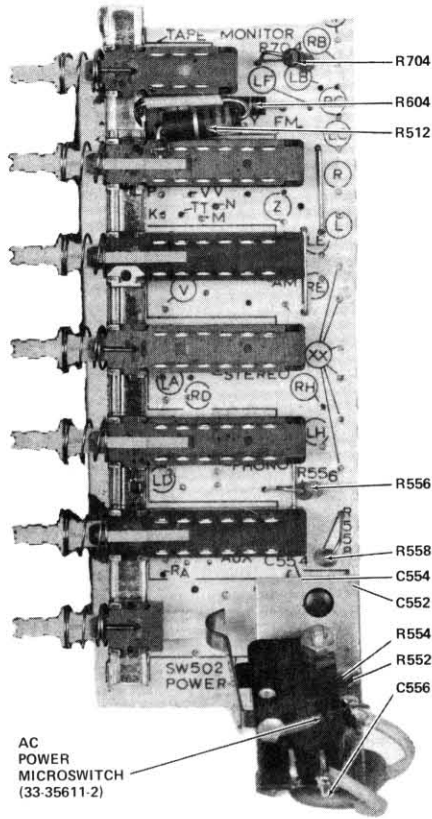
When correctly aligned, this receiver will tune through a signal at 87.9MHz and 108MHz.

**MULTIPLEX ALIGNMENT**

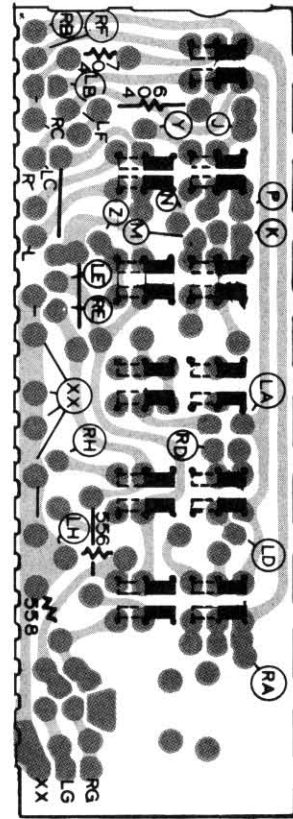
STEP	TUNING INDICATOR SETTING	TEST EQUIPMENT HOOK-UP	GENERATOR FREQUENCY	ADJUSTMENT POINT	ADJUST FOR
<p>Switch receiver on, select FM and Stereo functions. Check +15V at pin J. Switch MUTING off.</p>					
1	Tune to generator. (Zero center tuning meter indication.)	Multiplex generator to FM Antenna Terminals. Scope to pin V.	Use Stereo signal, 1kHz modulation, Left channel only.	L44 T6	MAXIMUM 38kHz.
<p>Switch generator OFF. If necessary, retune receiver to nearest off-station spot on dial. Switch multiplex generator on and tune generator to receiver for zero center tuning meter indication.</p>					
2	As above.	Multiplex generator - as above. Scope to pin L or SK506 (Tape Record, L. on Jack Plate).	As above.	L44 T6	MAXIMUM audio output.
3	As above.	Multiplex generator - as above. Scope to pin R or SK508 (Tape Record, R. on Jack Plate).	As above.	R72	MINIMUM audio output.

Channel separation between pins L and R (or SK506 and SK508) is typically 40db when multiplex circuit is correctly aligned.

**SWITCH PANEL PARTS**

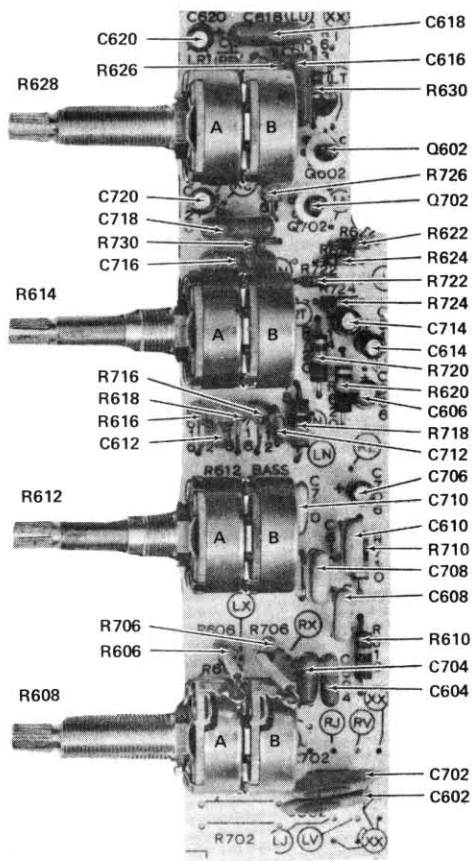


**TOP VIEW**

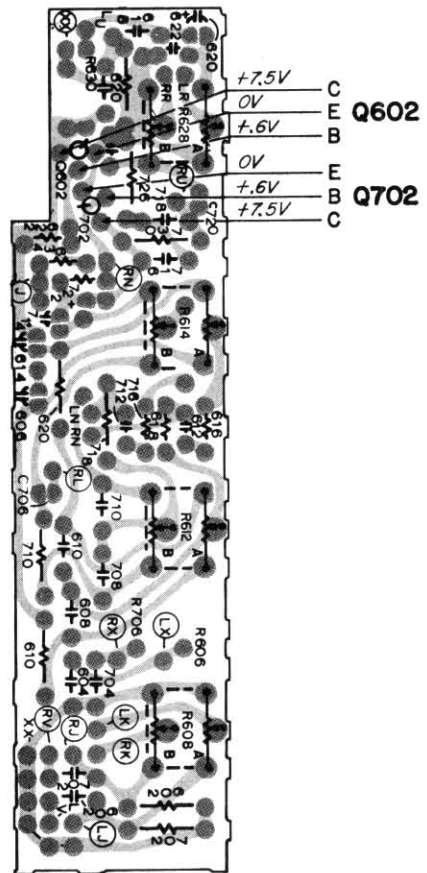


**BOTTOM VIEW**

**TONE CONTROL PANEL PARTS**

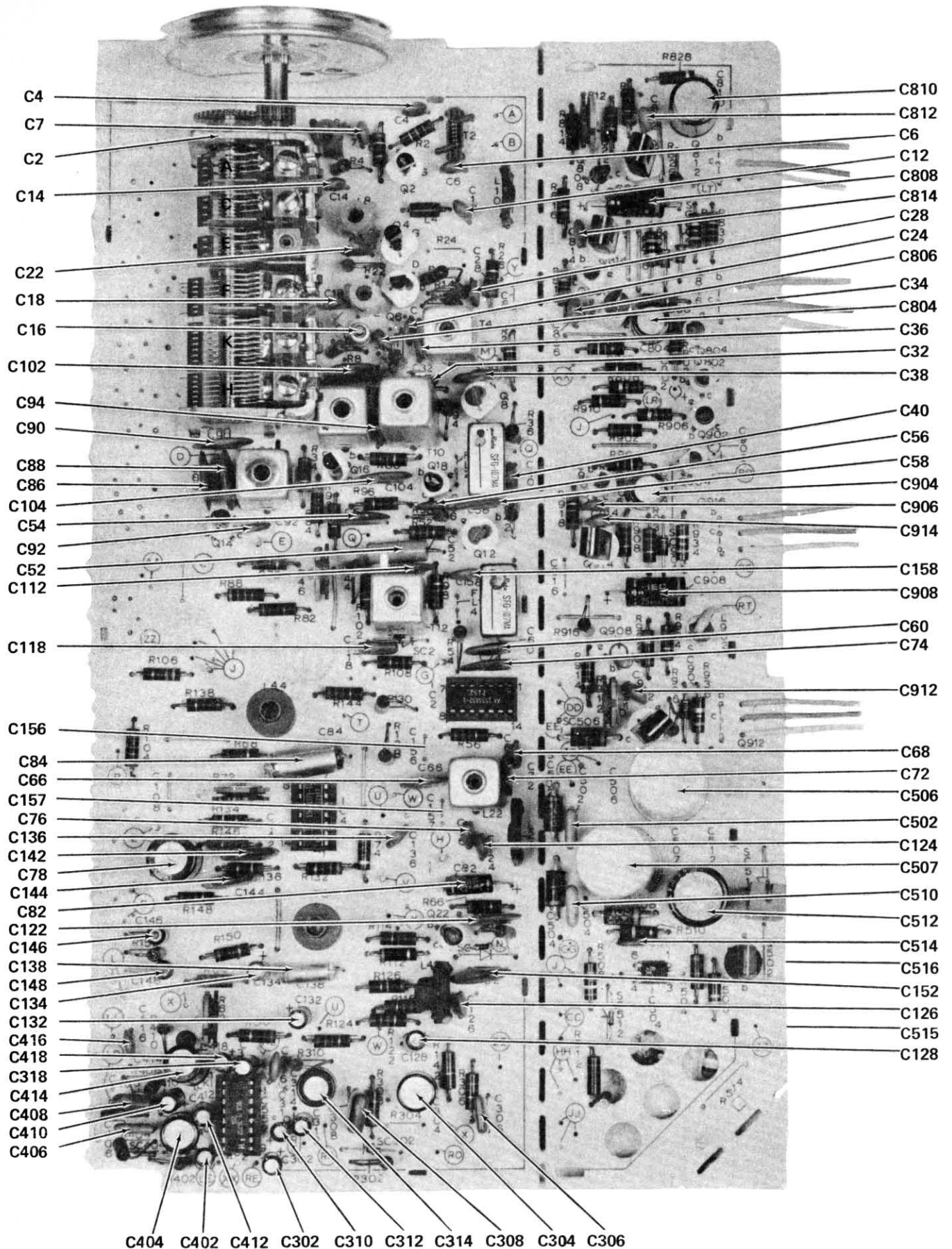


**TOP VIEW**



**BOTTOM VIEW**

— MAIN PANEL ASSEMBLY —



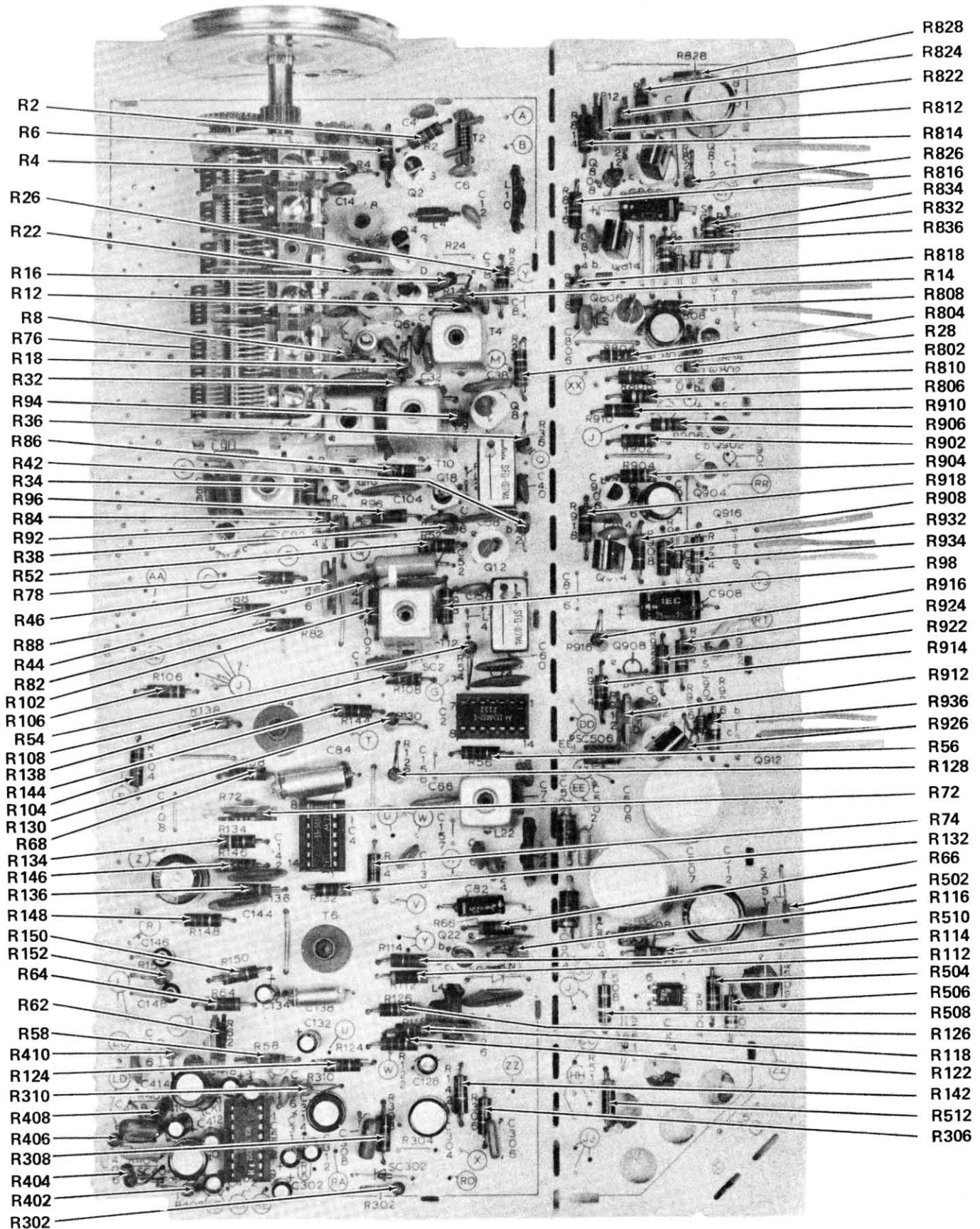
- C4
- C7
- C2
- C14
- C22
- C18
- C16
- C102
- C94
- C90
- C88
- C86
- C104
- C54
- C92
- C52
- C112
- C118
- C156
- C84
- C66
- C157
- C76
- C136
- C142
- C78
- C144
- C82
- C122
- C146
- C138
- C148
- C134
- C132
- C416
- C418
- C318
- C414
- C408
- C410
- C406

- C810
- C812
- C6
- C12
- C808
- C814
- C28
- C24
- C806
- C34
- C804
- C36
- C32
- C38
- C40
- C56
- C58
- C904
- C906
- C914
- C158
- C908
- C60
- C74
- C912
- C68
- C72
- C506
- C502
- C124
- C507
- C510
- C512
- C514
- C516
- C152
- C126
- C515
- C128

- C404
- C402
- C412
- C302
- C310
- C312
- C314
- C308
- C304
- C306

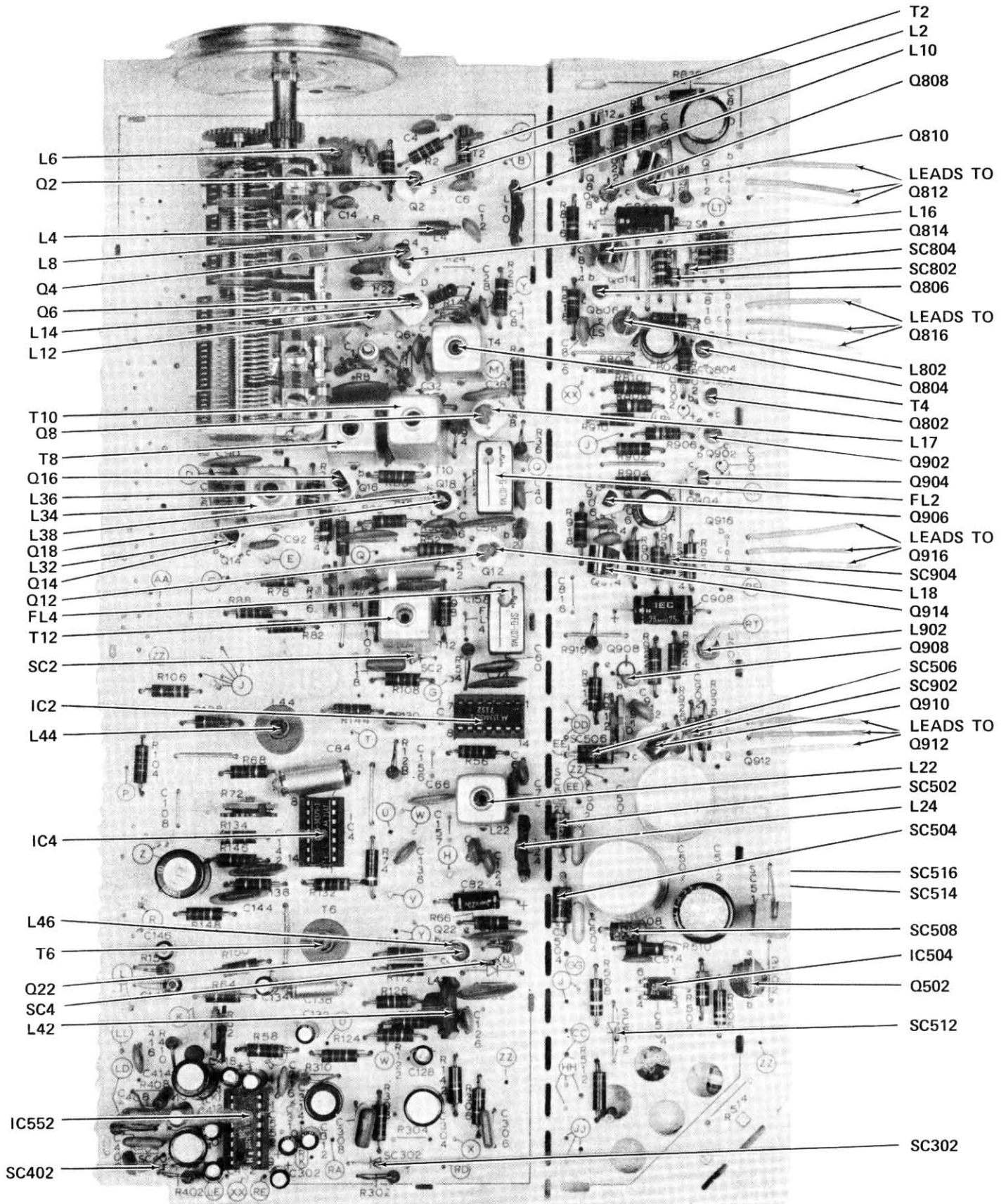
**CAPACITORS**

— MAIN PANEL ASSEMBLY (CONTINUED) —



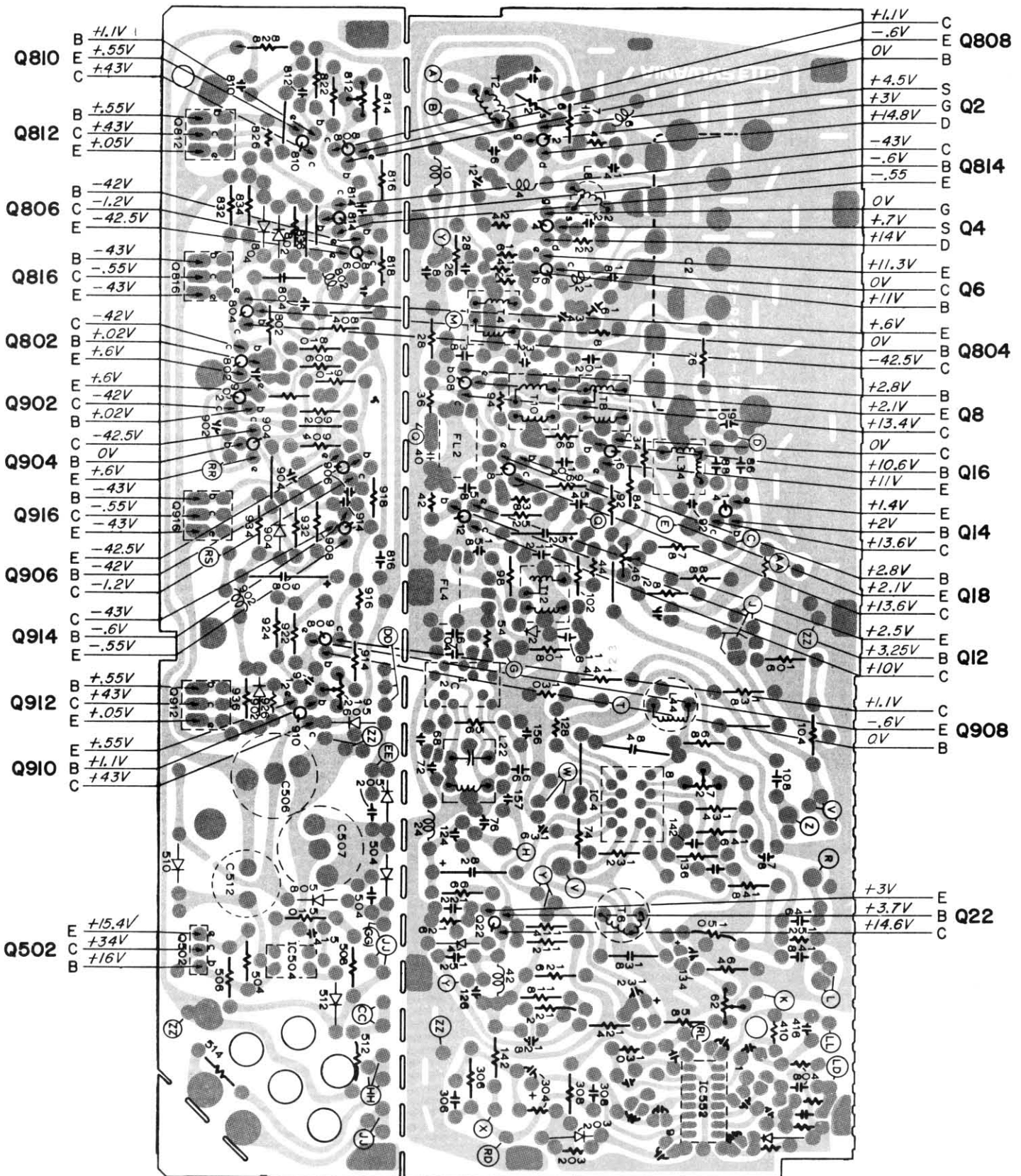
**RESISTORS**

— MAIN PANEL ASSEMBLY (CONTINUED) —



MISCELLANEOUS

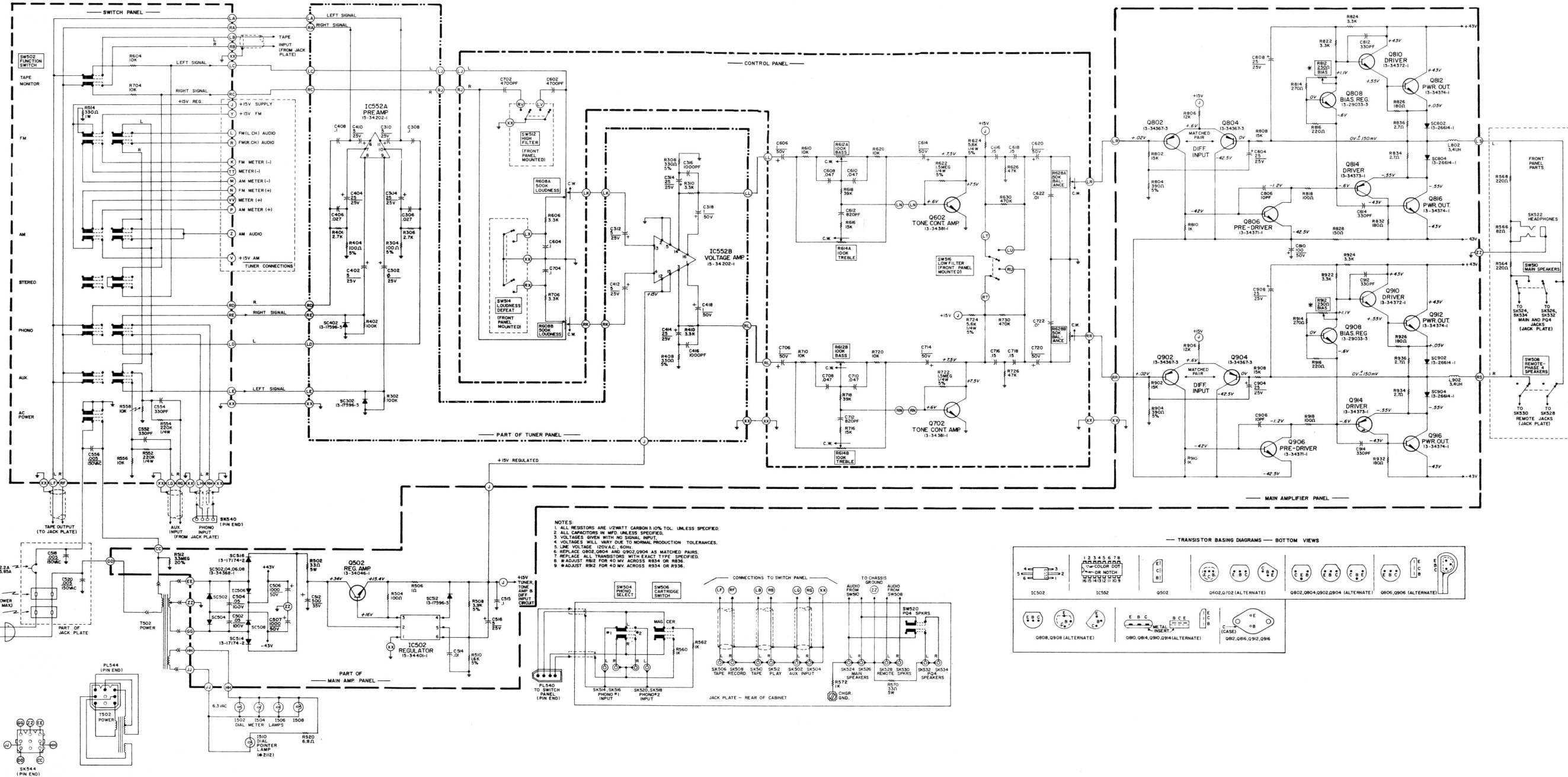
MAIN PANEL ASSEMBLY (CONTINUED)



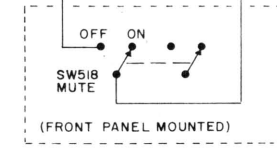
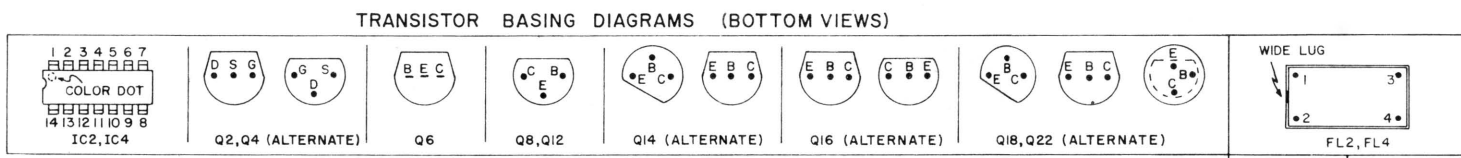
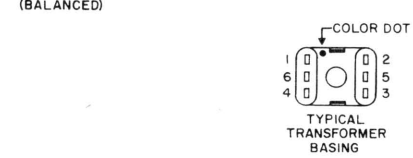
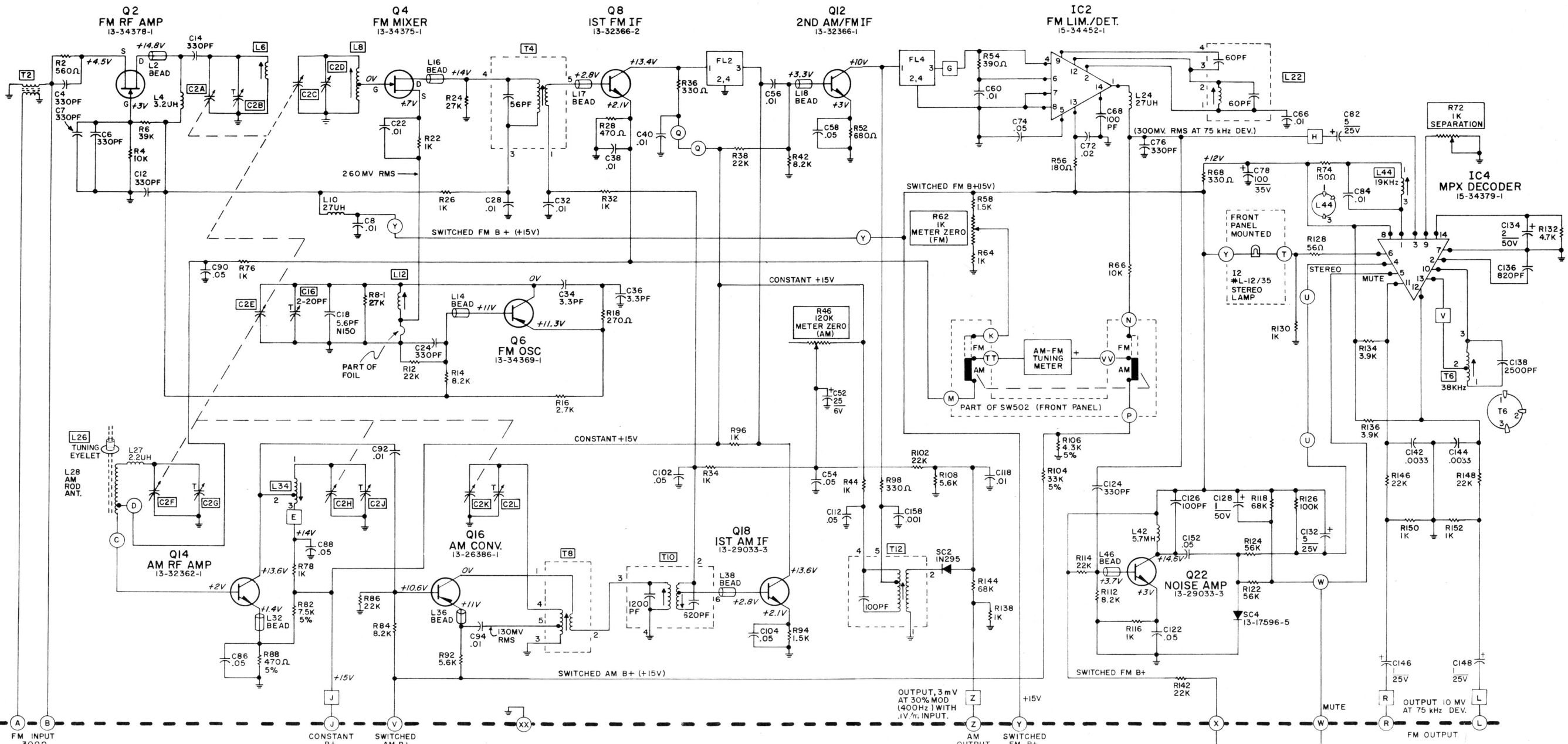
BOTTOM VIEW



SCHMATIC DIAGRAM (AMP)



**SCHEMATIC DIAGRAM (TUNER)**



- NOTES:**
- 1- ALL RESISTORS ARE 1/2 WATT, CARBON, 10% UNLESS SPECIFIED.
  - 2- ALL CAPACITANCES ARE IN MFD. UNLESS SPECIFIED.
  - 3- MAINTAIN LINE AT 120V, 60Hz FOR ALL MEASUREMENTS.
  - 4- VOLTAGES MEASURED TO CHASSIS GROUND.
  - 5- SELECT AM FUNCTION FOR AM VOLTAGES.
  - 6- SELECT FM FUNCTION FOR FM VOLTAGES.
  - 7- TUNE RECEIVER TO OFF-STATION FOR VOLTAGE MEASUREMENTS.
  - 8- VOLTAGES WILL VARY DUE TO NORMAL PRODUCTION TOLERANCES.
  - 9- COIL AND TRANSISTOR BASING DIAGRAMS SHOW BOTTOM VIEWS.
  - 10- SQUARE WIRE PINS (L) ARE TEST POINTS AND WIRE WRAP CONNECTIONS.
  - 11- ROUND CONNECTIONS (O) ARE WIRE HOLES IN P/C PANEL.

COLOR DOT	FREQUENCY
BLACK	10.64MHz
BLUE	10.67MHz
RED	10.70MHz
ORANGE	10.73MHz
WHITE	10.76MHz