Servicing SYLVANIA for 1974-1975

by Stan Prentiss

R66-3 excerp

THEODORE AUDEL & CO.
a division of
HOWARD W. SAMS & CO., INC.
4300 West 62nd Street
Indianapolis, Indiana 46268

CHAPTER 9

Stereo Component Receivers and Amplifiers (Chassis R53, R66, R73, R74, R75)

Stereo component receivers and their combined sound-reproducing mechanisms covered in this chapter are collected in five groups, two of which are similar, and the remainder dissimiliar. Although R74-3 and R75-3 appear virtually identical, there are minor variations in parts and hardware, and the outputs are 25 watts and 50 watts, respectively, per channel.

Workhorse of the group is the R53-3, -4, -7, -8 tuner and amplifier (Fig. 9-1) used in the following four modes:

R53-3—Designed for components with switch-selected ceramic or magnetic phonograph cartridge inputs. Phono separate.

R53-4—For modular stereo units, but does not contain phono switch selector. Phono mounted on top.

R53-7—Same as R53-4 version, but used in modular tape units (11-34423-1).

R53-8—Has same phono as R53-7 type and tape mechanism 11-34422-1.

Music output rating for the R53 series is approximately 15 watts. Models listed are: ACS16, CR2741, MS2722, MST-2736, MST2738, MS3722, MST3736, ACS26, MST2736-3736. Information on the tape cassette 11-34423-1 and deck mechanism is included.

The R66-3 (Fig. 9-2) amounts to an RS4743 receiver, two AS3710 speakers, and a turntable identified as model ACS39. It is a 30-watt/channel system with 8-ohm loads and self-contained amplifiers. Maximum distortion at 20 kHz is only 0.25%. In the service information, a transistor cross-reference chart is provided, in addition to layout and block diagrams. Parts lists for all receivers and peripherals immediately follow the service information.

Receiver-amplifier R73-3 (Fig. 9-3) delivers 15 watts at 20 kHz and can select magnetic phonograph pickup, tape input, and an auxiliary input. Typical hum levels for phonograph auxiliary input, and tape input are 15 mV, and 2 mV rms (auxiliary and tape), respectively. Dial stringing instructions, amplifier block diagram, and code changes are included as well as a full parts list. Schematics for this receiver and all others in Chapter 9 will be found in the foldout section. The model number is RQ3746.

Receiver-amplifiers R74-3 and R75-3 (Figs. 9-4, 9-5) appear, at first glance, to be mirror images of one another, but there are some differences. For instance, R74-3 (Model RQ3747) is rated at 25 watts/channel, while R75-3 (Model RQ3748) is specified at 50 watts/channel. There are also some differences in front-panel controls, chassis heat sinks, and hardware. Both have low-hum, low-distortion amplifiers with high-sensitivity receivers. Transistor replacement charts, full alignment information, and complete parts lists for both sets are included.

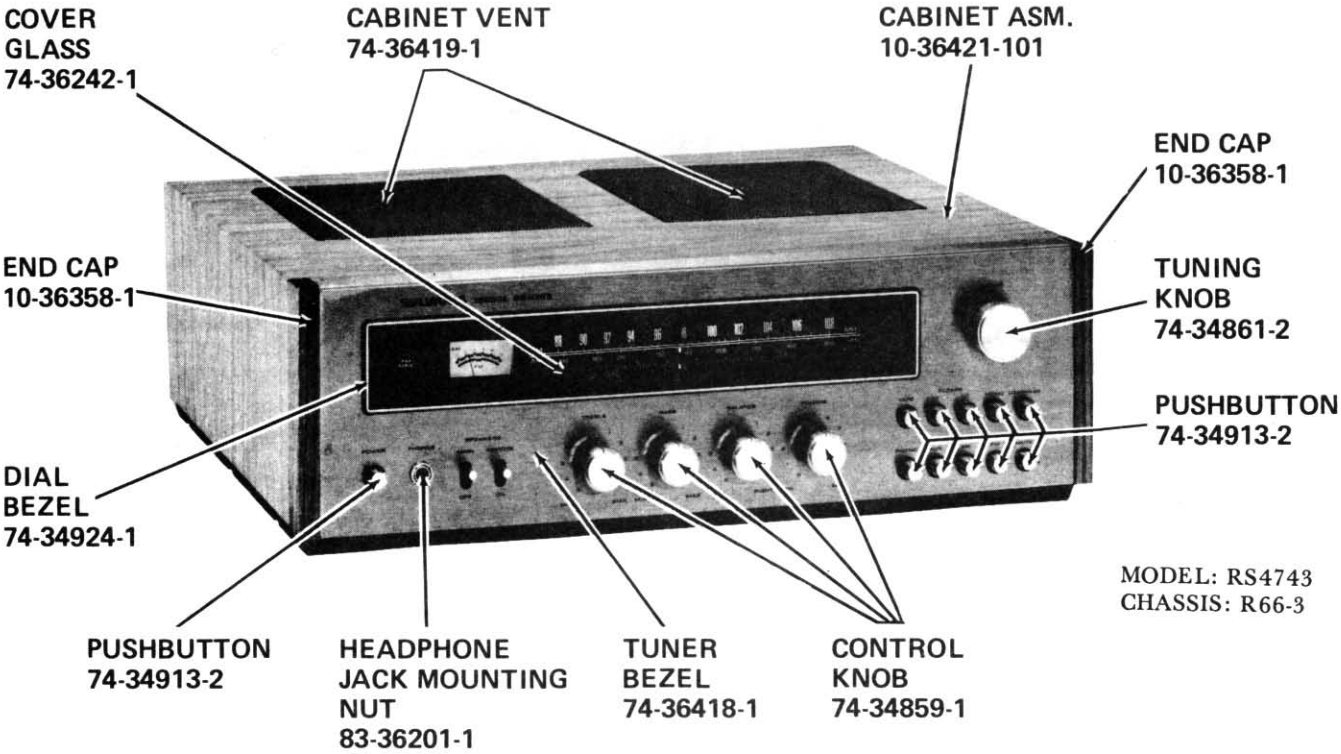


Fig. 9-2. R66-3 receiver and amplifier.

R66 PERFORMANCE ANALYSIS

The R66-3 amplifier is capable of delivering 30 Watts-per-channel (15.49V, R.M.S., measured across 8 ohm load resistors) at a frequency range of 20Hz to 20kHz.

Maintain 120VAC, 60Hz line for all tests.

Use a 30 Watt, 8 ohm non-inductive load across each channel output during amplifier performance tests, unless otherwise noted.

Amplifier IDLE CURRENT is set with the entire chassis at ROOM TEMPERATURE. Make this measurement within 30 seconds after turn-on if possible. Basically, the idle current should NOT be readjusted unless component changes have been made in the Bias Regulator, Driver or Output circuits.

Measure idle current with no input signal and no output load. Adjust R822 for approximately 9 to 11mV across pins LU and LV. Adjust R922 for approximately 9 to 11mV across pins RU and RV.

Since the idle current will drift upward as the amplifier warms up, R822 and R922 should be set ONCE - AND NOT RE-ADJUSTED.

The DC OFFSET voltage is measured across the speaker terminals, no signal input and no output loads. DC offset should read less than ±150mV between main speaker "+" and "-" terminals on each amplifier channel.

HUM AND NOISE:

SWITCH POSITIONS:

Loudness	OFF
High Filter	OFF
Low Filter	OFF

CONTROL SETTINGS:

Volume	MAXIMUM (CLOCKWISE)
Bass	MECHANICALLY CENTERED
Treble	MECHANICALLY CENTERED
Balance	MECHANICALLY CENTERED

Load AUX. and TAPE inputs with 4.7K, 5% resistors.

Load PHONO inputs with 330 ohm, 5% resistors.

Orient AC power plug for minimum hum; read hum level across 8 ohm load resistors. Ignore major meter functions.

SELECT FUNCTION	MAXIMUM HUM LEVEL
AUX.	3mV.
PHONO	40mV.
TAPE	3mV.

R66 PERFORMANCE ANALYSIS (CONT'D)

CHANNEL SEPARATION:

Volume control - At TAP.

Tone and Balance controls - MECHANICAL CENTER.
Mode Switches - off (OUT) position.
Select AUX. function.

Drive ONE Aux. input at a time for an output of 30 Watts (15.49V, R.M.S. - measured across 8 ohm output load resistor). Terminate other AUX. input with 4.7K, 5% load resistor.

Measure UNDRIVEN output in reference to DRIVEN output.

FREQUENCY	CROSSTALK
100Hz	-45 dB, MAX.
1kHz	-45 dB, MAX.
10kHz	-35 dB, MAX.

SENSITIVITY:

Use same set-up as for hum and noise - remove loads from input to be tested.

Test signal source impedance shall be 600 ohms or less.

Drive both channels simultaneously with a 1kHz signal at levels charted to produce the rated (30 WATTS - PER - CHANNEL) output of 15.49V, R.M.S. across 8 ohm load resistor.

Select function as required.

POWER AMP. IN	AUX.	PHONO	TAPE
1.4V. (TYP.)	250mV. (TYP.)	2.2mV. (TYP.)	250mV. (TYP.)

TOTAL HARMONIC DISTORTION:

Switch and control settings are as outlined under HUM and NOISE section.

Test signal source impedance shall be 600 ohms or less. Inject test signals, at frequencies charted, at the AUX. inputs. Select the AUX. function.

Drive both channels simultaneously for an output of 30 Watts per channel (15.49V, R.M.S. - measured across 8 ohm load resistors). Measure distortion at this same point.

FREQUENCY	MAXIMUM DISTORTION
18Hz	.25%
1kHz	.15%
20kHz	.25%

PHONO INPUT OVERLOAD:

Measure distortion at TAPE RECORD JACKS.

Select PHONO function. Maintain output at 10 dB below 30 watts at amplifier outputs with volume control as input signal is increased.

A 1kHz input signal of 60mV MINIMUM should be required to show less than .25% T.H.D. at TAPE RECORD JACKS.

CHANNEL UNBALANCE:

Drive both channels through the AUX. inputs with a 1kHz signal level adjusted for an output level of approximately 1 Watt (2.83V, R.M.S.) measured across 8 ohm load resistors, with controls adjusted as follows:

VOLUME - At Tap.
TONE and BALANCE - Centered.

Select AUX. function. All other FUNCTION and MODE buttons to be in the out (OFF) position.

MAXIMUM channel output difference shall be 4 dB.

TONE CONTROL RANGE:

Drive both channels through the AUX. inputs with a 1kHz input signal level adjusted for an output level of approximately 1 Watt (2.83V, R.M.S.) measured across 8 ohm output load resistors - VOLUME CONTROL AT MAXIMUM.

Bass and Treble controls are to be in the center (FLAT) position for establishing reference output levels. Switch generator to charted frequencies at same output level to measure tone control range.

Select AUX. function. All other FUNCTION and MODE buttons to be in the out (OFF) position.

CONTROL	GENERATOR FREQUENCY	CUT (FULL C.C.W.)	BOOST (FULL C.W.)
BASS	100Hz	-13 dB	+13 dB
TREBLE	10kHz	-12 dB	+11 dB
	±3 dB TOLERANCE		

COMPENSATION:

Use the same set-up as for tone control range. Activating the mode button specified will change the amplifier output level as charted - with an input level adjusted for an output level of approximately 1 Watt. Check loudness compensation at Volume Control tap, Hi Filter and Lo Filter at Maximum Volume.

BUTTON	GENERATOR FREQUENCY	OUTPUT LEVEL CHANGE
HIGH FILTER	20kHz	23 dB Cut, ±3 dB
LOUDNESS	100Hz	6 dB Boost, ±2 dB
LOW FILTER	18Hz	22 dB Cut, ±3 dB

R66 TRANSISTOR CROSS-REFERENCE CHART

SYLVANIA PART NUMBER	- ALL SILICON - TYPE	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	Q304, Q306, Q404, Q406 - Preamplifier. Q602, Q702 - Voltage Amplifier. Q604, Q704 - Filter Amplifier.	225-450	40V	4V	200mW	50mA	1, 2, 3
13-23824-1	NPN	Q8 - First FM IF Amplifier. Q12 - Second FM IF Amplifier.	27-275	35V	3V	180mW	N/A	2,4, 5, 6
13-26386-2	PNP	Q20 - AM Converter.	100-350	15V	4V	200mW	100mA	2, 6
13-28392-1	NPN	Q812, Q912 - DC Amplifier.	90-270	45V	4V	500mW	500mA	2, 7, 8
13-28393-1	PNP	Q814, Q914 - DC Amplifier.	90-270	45V	4V	500mW	500mA	2, 8
13-28654-4	N CHAN. FET	Q608, Q708 - Audio Mute.	N/A	30V	30V	200mW	30mA	9, 13
13-29033-3	NPN	Q16 - Noise Amplifier. Q24 - AM Active Filter & Meter Driver. Q504 - Ripple Reducer. Q808, Q908 - Bias Regulator.	200-400	45V	4V	200mW	N/A	2, 6
13-33175-2	NPN	Q606, Q706 - Voltage Amplifier.	7K-70K	40V	10V	310mW	200mA	2, 6
13-34045-2	NPN	Q22 - AM IF Amplifier.	4-18	12V	3V	250mW	30mA	6
13-34046-1	NPN	Q502 - Regulator Amplifier.	10-150	40V	4V	2.1W	1.5A	10
13-34367-3	PNP	Q802, Q902 - Current Source. Q804, Q806 - Differential Input (MATCHED PAIR) Q904, Q906 - Differential Input (MATCHED PAIR)	See Below	50V	4V	300mW	100mA	2, 6, 11
13-34369-1	PNP	Q6 - FM Oscillator.	20	20V	.85V	N/A	N/A	4
13-34371-1	NPN	Q810, Q910 - Pre-Driver.	90-270	110V	4V	500mW	500mA	2, 12
13-34375-1	N.CHAN. FET	Q4 - FM Mixer.	N/A	N/A	25V	200mW	10mA	9, 13
13-34378-1	N CHAN. FET	Q2 - FM RF Amplifier.	N/A	±20V	-10V	250mW	N/A	13, 14
13-34381-1	NPN	Q302, Q402 - Preamplifier.	225-450	30V	4V	200mW	50mA	2, 6
13-34940-1	NPN	Q18 - AM RF Amplifier.	50-150	30V	4V	200mW	50mA	2, 6
13-36442-1	NPN	Q820, Q920 - Power Output.	25	80V	5V	90W	8A	15
13-36443-1	PNP	Q822, Q922 - Power Output.	25	80V	5V	90W	8A	15
13-36508-1	NPN	Q816, Q916 - Driver	50-360	80V	4V	1W	1A	7
13-36509-1	PNP	Q818, Q918 - Driver.	50-360	80V	4V	1W	1A	7
13-34367-3	DC Current Gain	- Brown Dot 100-160 - Red Dot 150-210 - Orange Dot 200-260 - Yellow Dot 250-310 - Green Dot 300-360						

TRANSISTOR BASING DIAGRAMS

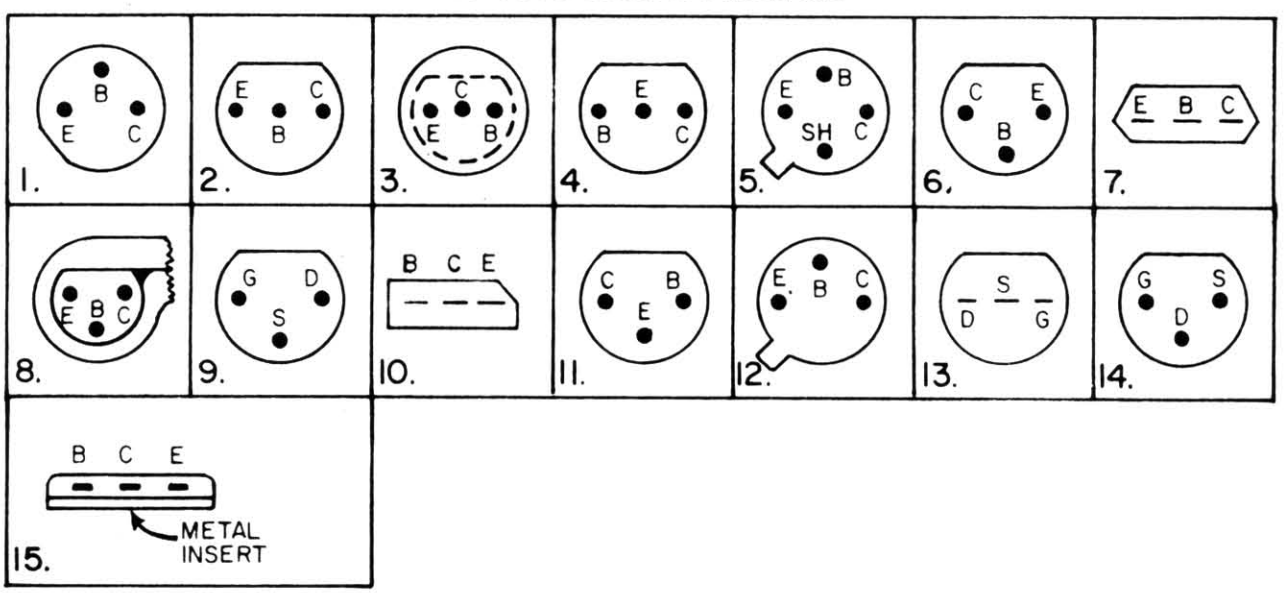


Fig. 9-36. FET and bipolar basing diagrams.

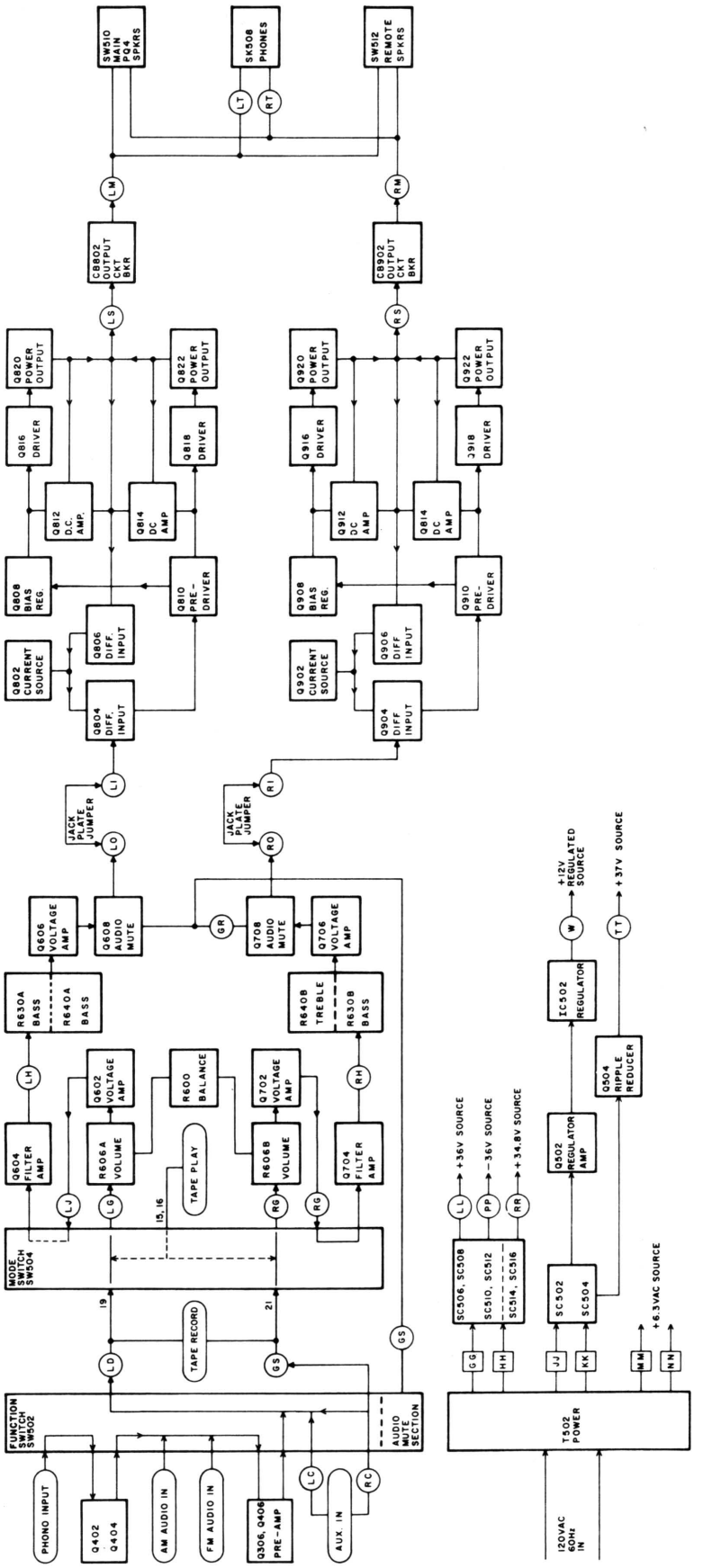


Fig. 9-37. R66 amplifier block diagram.

R66 ALIGNMENT

GENERAL

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

All RF shields must be in place during alignment.

30 Watt, 8 ohm, non-inductive loads are required for each channel output if speaker systems are disconnected during alignment.

ALWAYS KEEP INPUT SIGNALS AT THE LOWEST USEABLE LEVEL DURING ALIGNMENT - unless a specific signal level is indicated. Note the signal generator output attenuator setting at which increased input signal does not increase output signal. Keep the input signal level well below this point.

Set the tuning dial indicator at zero (0) on the logging scale with main tuning gang (C2) set at maximum capacity. Readjusting tuning dial indicator after AM or FM RF alignment will result in incorrect station calibration.

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

EQUIPMENT REQUIRED:

AM:

1. PREFERRED FOR IF - Sweep generator capable of 455kHz signals.
2. AM signal generator capable of 400Hz, 30% modulated accurate signals from 455kHz to 1650kHz.
3. General purpose scope.
4. General purpose DC V.T.V.M.

FM:

1. PREFERRED FOR IF - Sweep generator capable of 88 - 108MHz wide band sweep, as well as narrow band sweep at 106MHz.
2. FM Signal generator capable of accurate signals from 10.6MHz - 10.8MHz, and 87 to 109MHz. (Modulated)
3. General purpose scope, detector probe.
4. General purpose V.T.V.M.
5. Distortion analyzer or 400Hz high pass filter.

MULTIPLEX FM:

1. Multiplex generator with the following capabilities:
   a. Pilot - only signal.
   b. Standard multiplex signal, modulated.
   c. Single channel modulation.
2. Audio oscillator capable of 150mV., R.M.S. output (680 ohm load) at 20-874kHz.
3. Accurate frequency counter.
4. General purpose V.T.V.M.
5. General purpose scope.

— AM ALIGNMENT —

STEP	TUNING INDICATOR SETTING	TEST EQUIPMENT HOOK-UP	GENERATOR FREQUENCY	ADJUSTMENT POINT	ADJUST FOR
	Switch receiver on - Select AM function and check for +12V at pins V and W.				
1	PREFERRED. Tuning gang fully closed.	Radiate 455kHz sweep modulated signal into tuner. Scope to pin ZB.	Wide sweep.	T8, T10	Symmetrical IF Passband.
	NOTE: The preferred IF alignment will yield a better AM distortion figure.				
1	OPTIONAL. Tuning gang fully closed.	Radiate 455kHz modulated signal into tuner. Scope to either L or R Tape Record Jack.	455kHz - 30% 400Hz modulation.	T8, T10	Maximum recovered audio.
2	1400kHz	Radiate signal into tuner. Scope to either L or R Tape Record Jack.	1400kHz - 30% 400Hz modulation.	C28, C2K, C2H	Maximum recovered audio.
3	600kHz		600kHz - 30% 400Hz modulation.	L36, L34, L30	Maximum recovered audio.

Reduce 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 from 535kHz to 1650kHz.

R66 FM ALIGNMENT

STEP	TUNING INDICATOR SETTING	TEST EQUIPMENT HOOK-UP	GENERATOR FREQUENCY	ADJUSTMENT POINT	ADJUST FOR
	Switch receiver on. Select FM function and check for +12V at pins W and Y.				
1	PREFERRED. 106MHz.	Sweep generator to FM antenna terminals. Scope to pin B. Use detector probe.	88-108MHz sweep modulated signal.	C76, C2D, C2B	MAXIMUM response at 106MHz marker.
			Narrow sweep down.	T12	Symmetrical IF passband.
2	90MHz			L10, L8, L6	MAXIMUM response at 90MHz marker.
	Repeat steps 1 and 2 until indicated dial frequencies are correct at 90MHz and 106MHz.				
1	ALTERNATE 106MHz.	Signal generator to FM antenna terminals. Scope to pin B. Use detector probe.	106MHz, 100% 400Hz modulation.	C76, T12, C2D, C2B.	MAXIMUM response.
2	90MHz.		90MHz, 100%, 400Hz modulation.	L10, L8, L6	
	Repeat steps 1 and 2 until indicated dial frequencies are correct at 90MHz and 106MHz.				
3	106MHz	Signal generator to FM antenna terminals. Scope to L or R Tape Record Jack.	106MHz, 100%, modulation.	C76, C2D, C2B.	MAXIMUM recovered audio.
4	90MHz	Use low level signal so that noise is present on recovered audio - REDUCE signal as required.	90MHz, 100%, modulation.	L10, L8, L6.	
	Repeat steps 3 and 4 until maximum sensitivity with correct dial calibration are achieved. Continue to reduce signal level to achieve maximum sensitivity.				
5	98MHz	Signal generator to FM antenna inputs. Scope to L or R Tape Record Jacks.	98MHz, 100%, 400Hz modulation. Use 100uV signal.	L18	MAXIMUM recovered audio.
6	98MHz	As above - use distortion analyzer or 400Hz high pass filter.		L18	MINIMUM distortion.
7				R46 (Meter Zero)	Centered deflection.
8			Reduce signal level to 1.8uV.	T12	MINIMUM noise on peaks of recovered audio.

When correctly aligned, this receiver will tune through a signal from 87.5MHz to 108.5MHz.

R66 MULTIPLEX ALIGNMENT

STEP	TUNING INDICATOR SETTING	TEST EQUIPMENT HOOK-UP	GENERATOR FREQUENCY	ADJUSTMENT POINT	ADJUST FOR
Switch receiver ON. Select FM and STEREO functions. Check for +12V at pins W and Y.					
1	Tune receiver to generator.	Multiplex generator to FM antenna terminals. Scope or Meter to test point ZC.	1000uV, "L" only Stereo signal.	T4 T6	MAXIMUM 38kHz.
2		Move scope to R. Tape Record Jack. Multiplex generator - as above.		R54	MINIMUM signal on RIGHT channel.
3		Generator and Scope - as above. ENABLE MUTE SWITCH. Audio generator to pin FL.	1uV FULL STEREO signal. 20,874Hz at 150mV, R.M.S. COUNTED.	L54	MINIMUM 20,874Hz at L. Tape Jack.
4		Multiplex generator - as above. Scope to L. Tape Record Jack. Audio Generator to pin FR.	As above.	L52	MINIMUM 20,874Hz at R. Tape Jack.

TRANSISTOR LAYOUT DIAGRAM

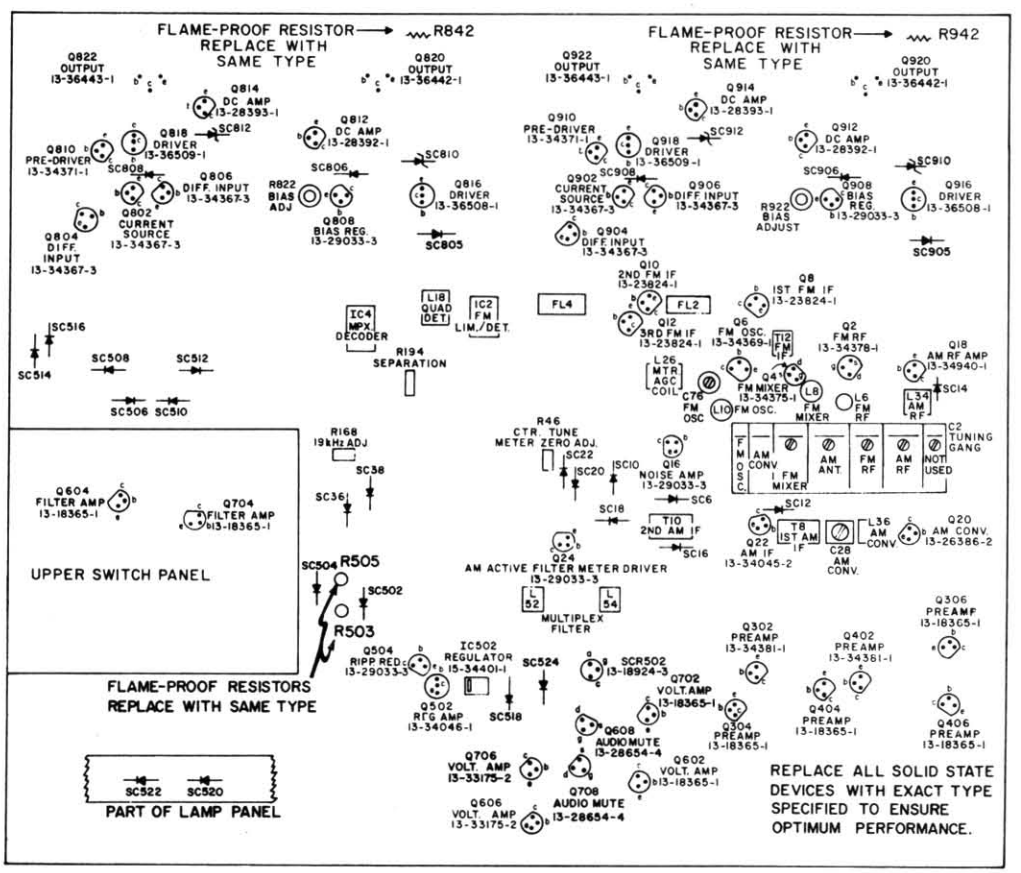


Fig. 9-38. Panel semiconductor parts locations.

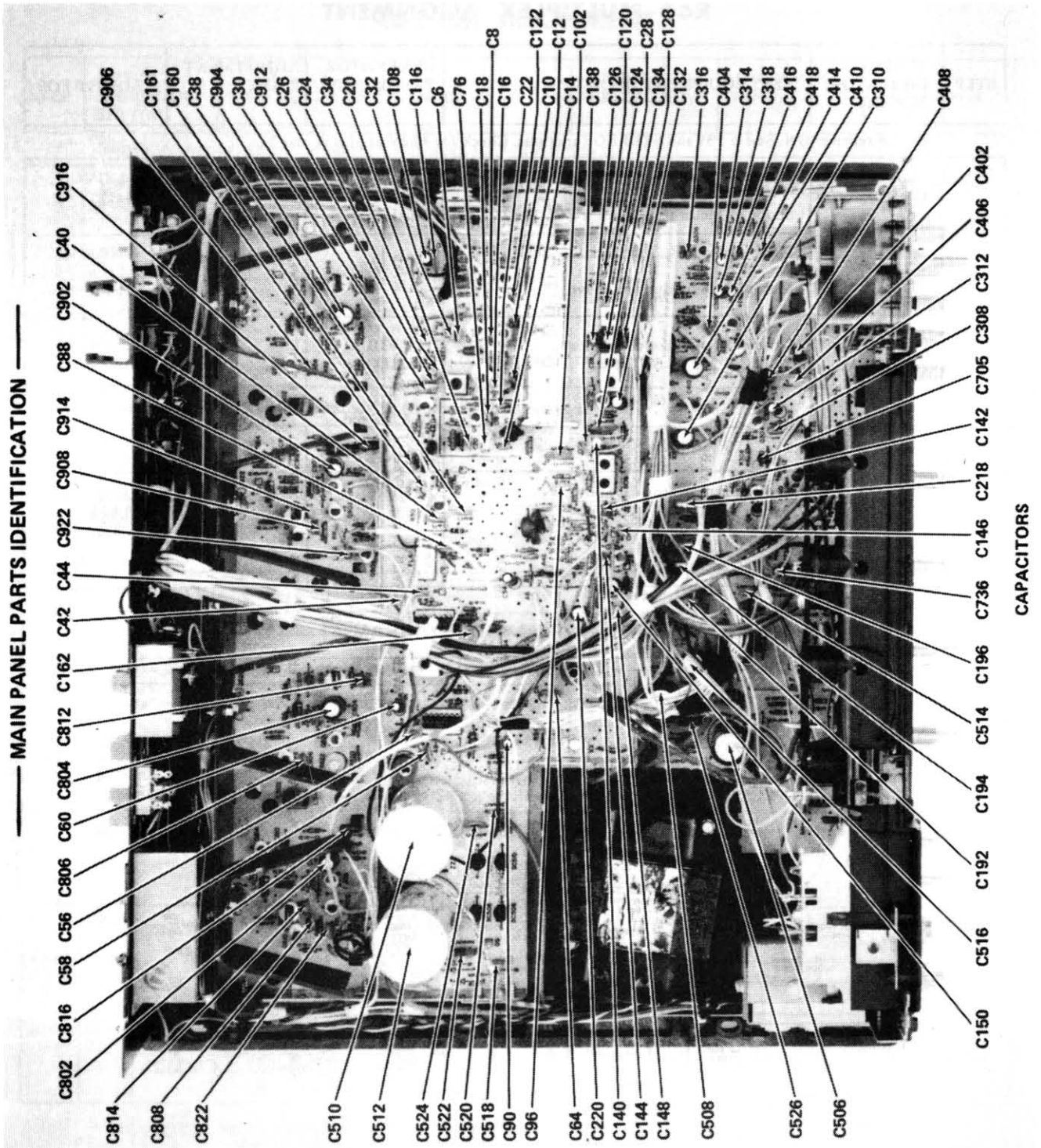


Fig. 9-39. R66 main-panel capacitors.

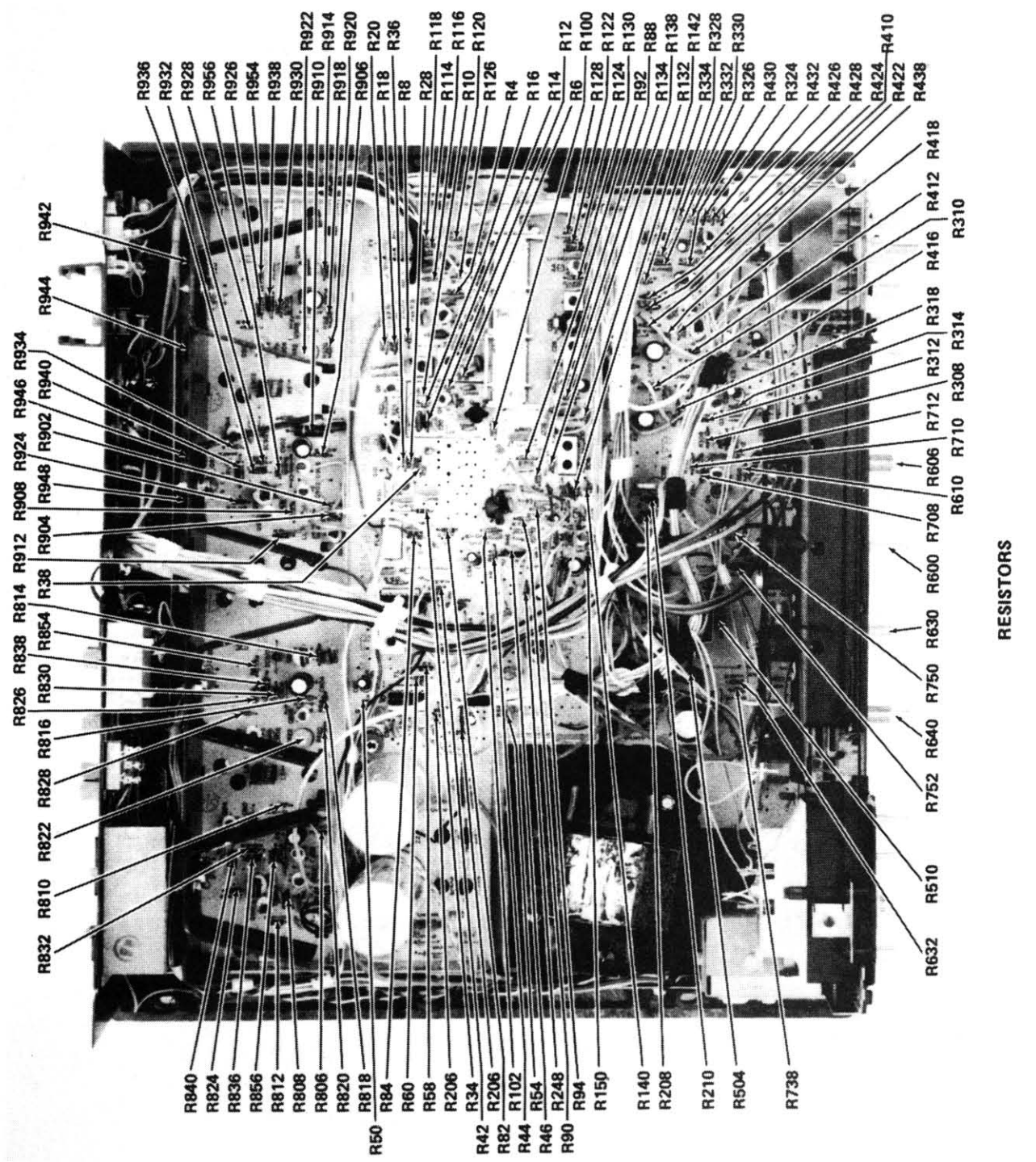


Fig. 9-40. R66 main-panel resistors.

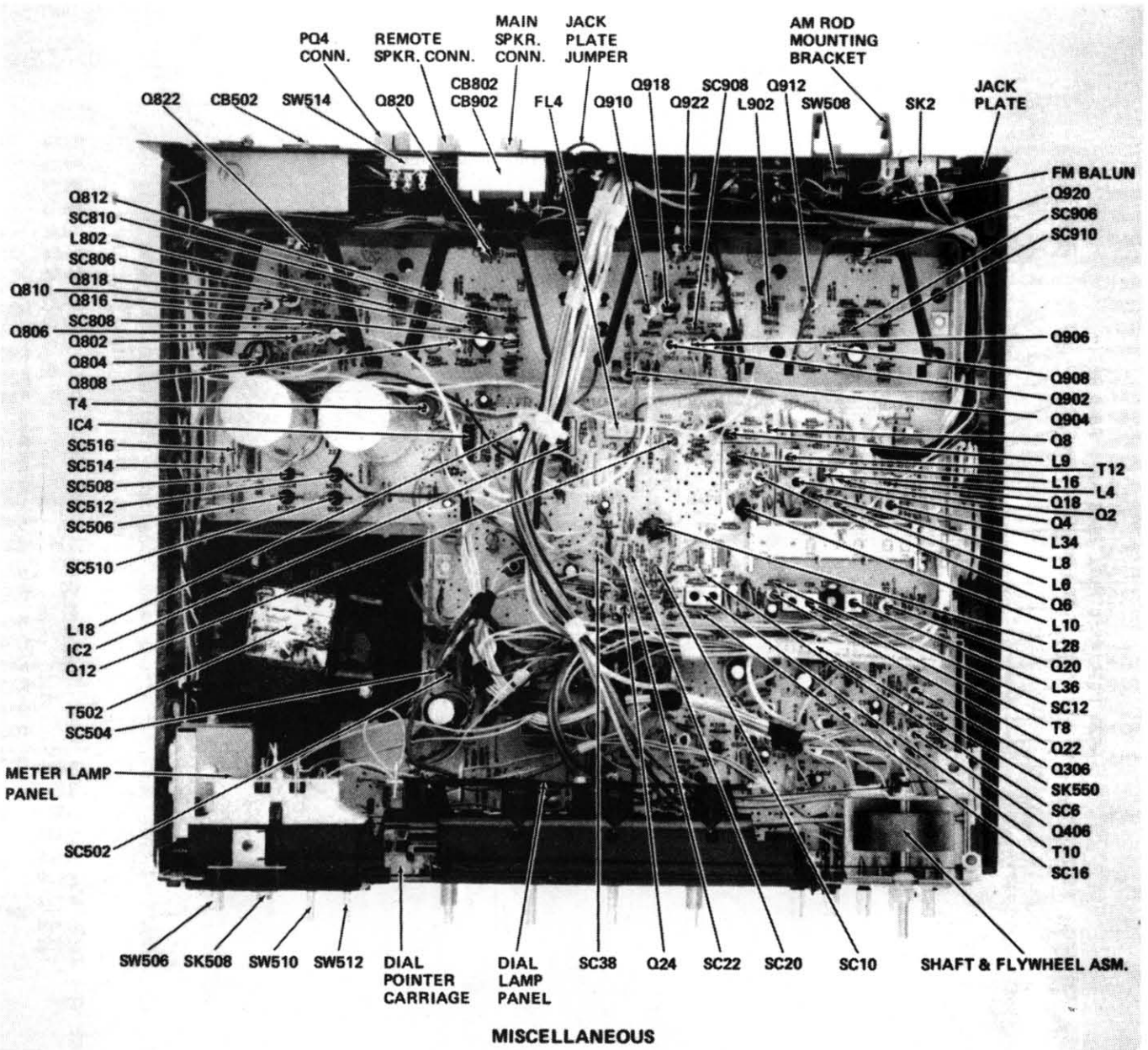


Fig. 9-41. R66 transistors and coils.

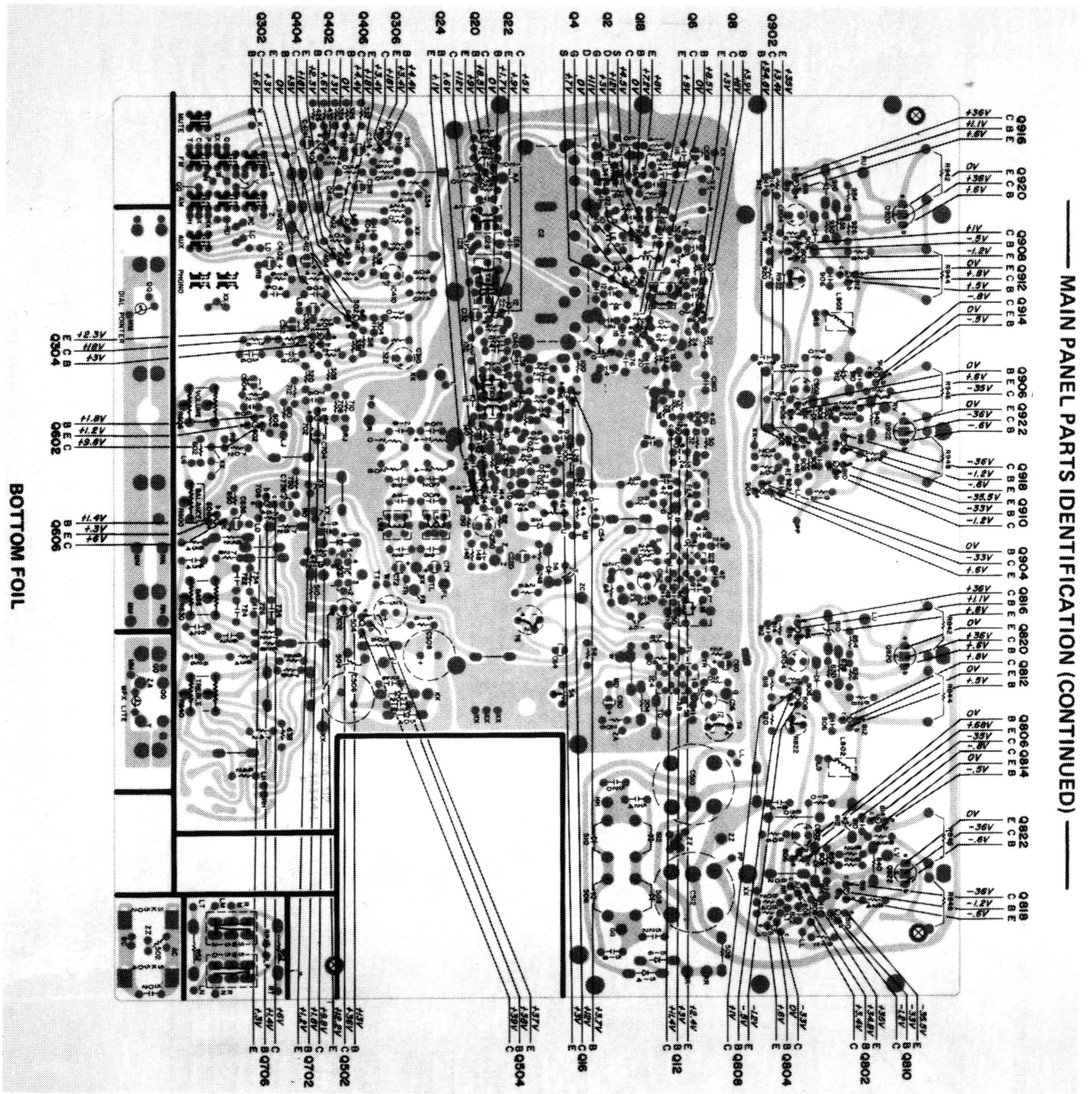


Fig. 9-42. R66 transistor voltages.

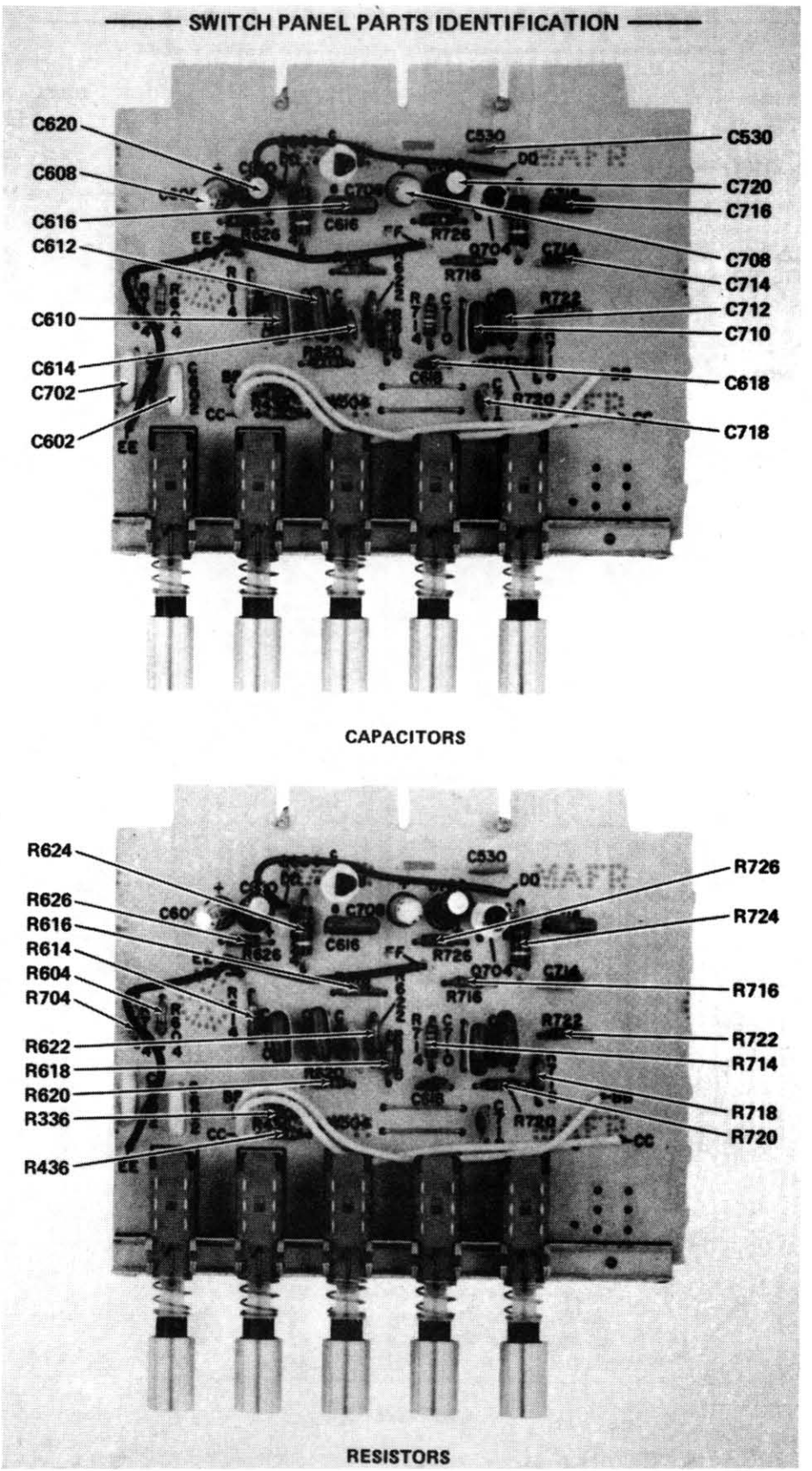


Fig. 9-43. R66 capacitors and resistors on switch panel.

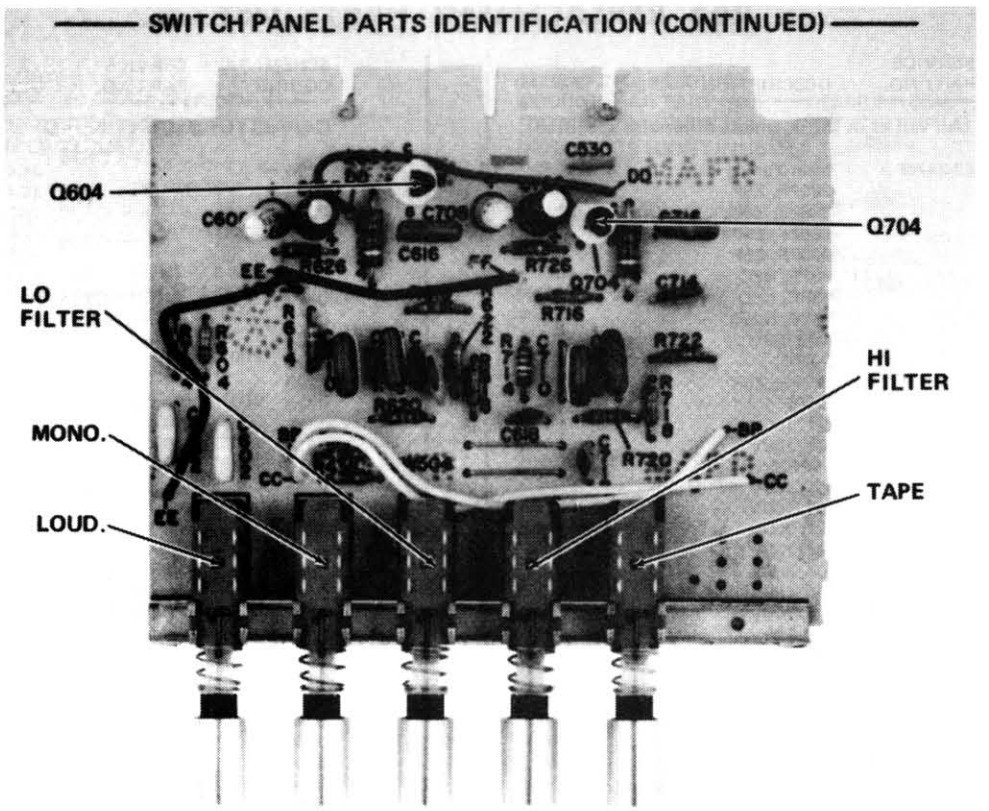


Fig. 9-44. R66 switch-panel parts.

R66 REPLACEMENT PARTS LIST

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
CAPACITORS (All values in MFD, unless otherwise specified)		
C2	42-34768-1	Main Tuning Gang
C3		330PF, Z5P
C4		330PF, Z5P
C6		330PF, Z5P
C8		330PF, Z5P
C10		10PF, NPO
C12		15PF, NPO
C14		18PF, N220
C16		.01, 100V
C18		3.3PF
C20		330PF, Z5P
C22		3.3PF
C24		.01, 100V
C26		.01, 100V
C28	42-34941-1	15PF Trimmer
C30		.01, 100V
C32		.01, 100V
C34		.01, 100V
C37		.01, 100V
C38		.01, 100V
C40		.01, 100V
C42		.01, 100V
C44		.01, 100V
C47		.02, 100V
C48		100PF, Z5P
C49		56PF, NPO
C50		.01, 100V
C52		330PF, Z5P
C54	41-32477-46	5/25V Electrolytic
C56	40-28121-1	1000PF, 50V Polystyrene
C58		820PF, Z5P
C60	41-32477-46	5/25V Electrolytic
C64	40-28121-4	2500PF, 50V Polystyrene
C72	41-32477-46	5/25V Electrolytic
C74	41-32477-46	5/25V Electrolytic
C76	42-18146-1	Ceramic Trimmer
C88		.05, 50V
C90	41-32477-46	5/25V Electrolytic
C92	41-32477-85	1/50V Electrolytic
C96		.01, 100V
C98		.01, 100V
C100		100PF, Z5P
C102		.05, 50V
C104		330PF, Z5P
C108	41-32477-33	10/15V Electrolytic
C114		4700PF, Z5U
C116		.05, 50V
C118		.02, 100V
C120		.01, 100V
C122		15PF, NPO
C124		.01, 100V
C126	40-10285-50	390PF - Polystyrene
C128		22PF, NPO
C132	41-32477-33	10/15V Electrolytic
C134		.05, 50V
C136		33PF, N150
C138		.05, 50V
C140	41-32477-86	2/50V Electrolytic
C142		180PF, Z5P
C144		560PF, Z5P
C146		270PF, Z5P
C148		.047
C150	41-32477-9	100/6V Electrolytic
C160		.01, 100V
C161		.01, 100V
C162		.01, 100V
C164		.01, 100V
C188		.018 Early Production
C188		.022
C190		.018 Early Production
C190		.022
C192		.0047
C194		.0022

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
CAPACITORS (CONTINUED)		
C196		.0047
C198		.0047
C200		.0022
C202		.0047
C216		.022
C218		.022
C220	41-32477-36	50/15V Electrolytic
C302	41-32477-46	5/25V Electrolytic
C304		220PF, Z5P
C306		.039
C308		.15
C310	41-32477-37	100/15V Electrolytic
C312	41-32477-85	1/50V Electrolytic
C314	41-32477-85	1/50V Electrolytic
C316		220PF, Z5P
C318	41-32477-46	5/25V Electrolytic
C402	41-32477-46	5/25V Electrolytic
C404		220PF, Z5P
C406		.039
C408		.15
C410	41-32477-37	100/15V Electrolytic
C412	41-32477-85	1/50V Electrolytic
C414	41-32477-85	1/50V Electrolytic
C416		220PF, Z5P
C418	41-32477-46	5/25V Electrolytic
C502	43-33245-5	.005, 150V
C504	43-98665-6	.005, 150VAC
C506	41-32477-95	500/50V Electrolytic
C508	41-32477-95	500/50V Electrolytic
C510	41-36386-1	5000/40V Electrolytic
C512	41-36386-1	5000/40V Electrolytic
C514		.01, 100V
C516	41-32477-93	100/50V Electrolytic
C518		.01, Z5U
C520		.01, Z5U
C522		.01, Z5U
C524		.01, Z5U
C526		.01, Z5U
C528		.01, Z5U
C530		.01, 100V
C532	41-32477-33	10/15V Electrolytic
C534	41-32477-33	10/15V Electrolytic
C536	41-32477-85	1/50V Electrolytic
C602		.047
C604	41-32477-85	1/50V Electrolytic
C605	41-32477-85	1/50V Electrolytic
C606		.0022, Z5U
C608	41-32477-86	2/50V Electrolytic
C610		.1
C612		.1
C614		1200PF, Z5P
C616		.1
C618		560PF, Z5P
C620	41-32477-47	10/25V Electrolytic
C622		.033
C624		.033
C626		820PF, Z5P
C634		.1
C636	41-32477-46	5/25V Electrolytic
C637		820PF, Z5P
C702		.047
C704	41-32477-85	1/50V Electrolytic
C705	41-32477-85	1/50V Electrolytic
C706		.0022, Z5U
C708	41-32477-86	2/50V Electrolytic
C710		.1
C712		.1
C714		1200PF, Z5P
C716		.1, 150V
C718		560PF, Z5P
C720	41-32477-47	10/25V Electrolytic
C722		.033
C724		.033

REPLACEMENT PARTS LIST (CONTINUED)

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
CAPACITORS (CONTINUED)		
C726		820PF, Z5P
C734		.1
C736	41-32477-46	5/25V Electrolytic
C737		820PF, Z5P
C802	41-32477-36	50/15V Electrolytic
C804	41-32477-90	25/50V Electrolytic
C805		.01, Z5U
C806		220PF, Z5P
C807		5000PF, 100V
C808		33PF, N150
C809		5000PF, 100V
C810		220PF, Z5P
C812		100PF, Z5P
C814		100PF, Z5P
C816		.1
C822		33PF, N150 - Early Production
C822		5.6PF, N150
C902	41-32477-36	50/15V Electrolytic
C904	41-32477-90	25/50V Electrolytic
C905		.01, Z5U
C906		220PF, Z5P
C907		5000PF, 100V
C908		33PF, N150
C909		5000PF, 100V
C910		220PF, Z5P
C912		100PF, Z5P
C914		100PF, Z5P
C916		.1
C922		33PF, N150 - Early Production
C922		5.6PF, N150
RESISTORS (All carbon, 1/4W, 5%, unless otherwise specified)		
R2		560 ohm
R4		10K
R6		3.3K
R8		1K
R10		4.7K
R12		270 ohm
R14		22K
R16		10K
R18		5.6K
R20		13K
R22		330 ohm
R24		390 ohm
R26		100 ohm
R28		13K
R34		390 ohm
R36		5.6K
R38		330 ohm
R40		330 ohm
R42		15K
R44		820 ohm
R46	37-14576-5	1K Variable - FM Meter Zero
R48		1K
R50		150 ohm
R52		4.7K
R54	37-14576-15	330 ohm Variable - Separation
R56		220 ohm
R58		3.9K
R60		3.9K
R80		100K
R82		330K, 10% - Early Production
R82		330K
R84		10K
R86		120K
R88		100K
R90		120K
R92		100K
R94		47K
R98		1K
R100		10K
R102		22K

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
RESISTORS (CONTINUED)		
R112		1K
R114		22K
R116		82K
R118		1.8K
R120		560 ohm
R122		10K
R124		22K
R126		120K
R128		4.7K
R130		33 ohm, 10%
R132		150K
R134		33K
R136		470 ohm
R138		3.3K
R140		10K
R142		150K
R144		100K
R146		100K
R148		10K
R150		18K
R152		4.7K
R204		200 ohm, 1/2 Watt
R206		1K
R208		3.9K
R210		6.2K
R212		3.9K
R214		6.2K
R246		330K, 10% - Early Production
R246		330K
R248		100K
R304		1.5K
R308		220K
R310		82 ohm, 1/2 Watt - Early Production
R310		82 ohm
R312		15 ohm
R314		22K
R316		1.8K
R318		68K
R320		4.7K
R322		220 ohm
R324		470K, 10% - Early Production
R324		470K
R326		47K
R328		820K
R330		2.7K
R332		560 ohm
R334		470K, 10% - Early Production
R334		47K
R336		4.7K
R338		560 ohm
R404		1.5K
R408		220K
R410		82 ohm, 1/2 Watt - Early Production
R410		82 ohm
R412		15 ohm
R414		22K
R416		1.8K
R418		68K
R420		4.7K
R422		220 ohm
R424		470K, 10% - Early Production
R424		470K
R426		47K
R428		820K
R430		2.7K
R432		560 ohm
R434		470K, 10% - Early Production
R434		47K
R436		4.7K
R438		560 ohm
R502		3.3 meg, 1/2 Watt, 10%
R503	36-34727-36	4.7 ohm, 2 Watt, NON-FLAMMABLE
R504		120 ohm, 2 Watt, 10%

REPLACEMENT PARTS LIST (CONTINUED)

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
RESISTORS (CONTINUED)		
R505	36-34727-36	4.7 ohm, 2 Watt, NON-FLAMMABLE
R506		68 ohm, 1/2 Watt, 10%
R508		2.7K, 1/2 Watt, 10%
R510		1 ohm, 1/2 Watt, 10%
R512		3.9K
R514		2.2K
R516		12K
R518	36-62454-37	33 ohm, 5 Watt
R522		1K
R524		1K
R526		82 ohm
R528		82 ohm
R530		1.8K
R532		47K
R534		1K
R600	37-34909-3	100K Balance Control
R602		12K
R603		68K
R604		10K
R606	37-34289-8	Dual 100K Volume Control
R608		120K
R609		120K
R610		15K
R612		680 ohm
R614		330K, 10% - Early Production
R614		330K
R616		15K
R618		27K
R620		33K
R622		27K
R624		1.8 meg, 1/2 Watt, 10%
R626		5.6K
R628		10K
R630	37-34289-10	Dual 100K Bass Control
R632		10K
R634		47K
R638		68K
R642		68K
R646	37-34289-9	Dual 100K Treble Control
R650		3.3K
R652		2.7 meg, 1/2 Watt, 10%
R654		1 meg
R656		10K
R702		12K
R703		68K
R704		10K
R708		120K
R709		120K
R710		15K
R712		680 ohm
R714		330K, 10% - Early Production
R714		330K
R716		15K
R718		27K
R720		33K
R722		27K
R724		1.8 meg, 1/2 Watt, 10%
R726		5.6K
R728		10K
R732		10K
R734		47K
R738		68K
R742		68K
R750		3.3K
R752		2.7 meg, 1/2 Watt, 10%
R754		1 meg
R756		10K
R802		100K
R804		10K
R806		1K
R808		680 ohm
R809		2.2K
R810		10K

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
RESISTORS (CONTINUED)		
R811		2.2K
R812		2.2K
R814		3.3K
R816		3.3K
R818		1.8K
R820		680 ohm - Early Production
R820		470 ohm
R822	37-33717-6	330 ohm Variable - Bias Adjust
R824		120 ohm
R826		33K
R828		1.5K
R830		1K
R832		1K
R834		1.5K
R836		33K
R838		100 ohm, 1/2 Watt, 10%
R840		100 ohm, 1/2 Watt, 10%
R842	36-34727-6	.22 ohm, W/W - NON-FLAMMABLE
R844	36-14764-20	.22 ohm, W/W
R846	36-14764-20	.22 ohm, W/W
R848	36-14764-20	.22 ohm, W/W
R850		10 ohm, 1 Watt, 10%
R852		390 ohm, 1 Watt, 10%
R854		15K
R856		15K
R902		100K
R904		10K
R906		1K
R908		680 ohm
R909		2.2K
R910		10K
R911		2.2K
R912		2.2K
R914		3.3K
R916		3.3K
R918		1.8K
R920		680 ohm - Early Production
R920		470 ohm
R922		330 ohm Variable - Bias Adjust
R924		120 ohm
R926		33K
R928		1.5K
R930		1K
R932		1K
R934		1.5K
R936		33K
R938		100 ohm, 1/2 Watt, 10%
R940		100 ohm, 1/2 Watt, 10%
R942	36-34727-6	.22 ohm, W/W NON-FLAMMABLE
R944	36-14764-20	.22 ohm, W/W
R946	36-14765-20	.22 ohm, W/W
R948	36-14764-20	.22 ohm, W/W
R950		10 ohm, 1 Watt, 10%
R952		390 ohm, 1 Watt, 10%
R954		15K
R956		15K
COILS AND TRANSFORMERS		
L2	22-28072-3	Ferrite Bead
L4	50-11376-5	3.3UH Filter
L6	50-34409-4	FM RF Coil
L8	50-34409-8	FM Mixer Coil
L9	50-34059-10	1.8UH Peaking Coil
L10	50-34409-7	FM Oscillator Coil
L12	22-28072-3	Ferrite Bead
L16	50-34939-6	27UH Peaking Coil
L18	50-34411-1	Quadrature Detector Coil
L20	50-34939-6	27UH Peaking Coil
L22	50-34939-6	27UH Peaking Coil
L28	50-18789-3	5.7MH Choke
L30	27-34851-1	AM Rod Antenna
	86-34774-1	Rod Antenna Holder

REPLACEMENT PARTS LIST (CONTINUED)

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
COILS & TRANSFORMERS (CONTINUED)		
	86-34777-1	Rod-to-Bracket Adaptor
L32	22-28072-2	Ferrite Bead
L34	50-34938-1	AM RF Coil
L36	50-34936-1	AM Oscillator Coil
L38	22-28072-2	Ferrite Bead
L40	22-28072-2	Ferrite Bead
L42	22-28072-2	Ferrite Bead
L50	22-28072-2	Ferrite Bead
L52	50-36552-4	Multiplex Filter
L54	50-36552-4	Multiplex Filter
L502	22-28072-2	Ferrite Bead
L602	50-15318-19	820UH Peaking Coil
L604	22-28072-2	Ferrite Bead
L702	50-15318-19	820UH Peaking Coil
L704	22-28072-2	Ferrite Bead
L802	50-36391-1	3.6UH Audio Choke
L804	22-28072-2	Ferrite Bead
L806	22-28072-2	Ferrite Bead
L902	50-36391-1	3.6UH Audio Choke
L904	22-28072-2	Ferrite Bead
L906	22-28072-2	Ferrite Bead
T2	50-89962-6	FM Balun
T4	50-34407-2	19kHz Coil
T6	50-34407-2	38kHz Coil
T8	50-34937-1	First AM IF
T10	50-34937-1	Second AM IF
T12	50-34952-1	FM Mixer
T502	55-36549-1	Power Transformer
SOLID STATE DEVICES		
FL4	26-34156-101	Ceramic Filter - BLACK DOT
	26-34156-102	Ceramic Filter - BLUE DOT
	26-34156-103	Ceramic Filter - RED DOT
	26-34156-104	Ceramic Filter - ORANGE DOT
	26-34156-105	Ceramic Filter - WHITE DOT
IC2	15-34452-1	FM Limiter/Detector
IC4	15-34379-1	Multiplex Decoder
IC502	15-34401-1	Regulator
Q2	13-34378-1	FM RF Amplifier
Q4	13-34375-1	FM Mixer
Q6	13-34369-1	FM Oscillator
Q8	13-23824-1	First FM IF
Q12	13-23824-1	Second FM IF
Q16	13-29033-3	Noise Amplifier
Q18	13-34940-1	AM RF Amplifier
Q20	13-26386-2	AM Converter
Q22	13-34045-2	AM IF Amplifier
Q24	13-29033-3	AM Active Filter, Meter Driver
Q302	13-34381-1	Preamp
Q304	13-18365-1	Preamp
Q306	13-18365-1	Preamp
Q402	13-34381-1	Preamp
Q404	13-18365-1	Preamp
Q406	13-18365-1	Preamp
Q502	13-34046-1	Regulator Amp
Q504	13-29033-3	Ripple Reducer
Q602	13-18365-1	Voltage Amp
Q604	13-18365-1	Filter Amp
Q606	13-33175-2	Voltage Amp
Q608	13-28654-4	Audio Mute
Q702	13-18365-1	Voltage Amp
Q704	13-18365-1	Filter Amp
Q706	13-33175-2	Voltage Amp
Q708	13-28654-4	Audio Mute
Q802	13-34367-3	Current Source
Q804	13-34367-3	Differential Input (Matched)
Q806	13-34367-3	Differential Input (Matched)
Q808	13-29033-3	Bias Regulator
Q810	13-34371-1	Pre-Driver
Q812	13-28392-1	DC Amplifier
Q814	13-28393-1	DC Amplifier
Q816	13-36508-1	Driver

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
SOLID STATE DEVICES (CONTINUED)		
Q818	13-36509-1	Driver
Q820	13-36442-1	Output
Q822	13-36443-1	Output
Q902	13-34367-3	Current Source
Q904	13-34367-3	Differential Input (Matched)
Q906	13-34367-3	Differential Input (Matched)
Q908	13-29033-3	Bias Regulator
Q910	13-34371-1	Pre-Driver
Q912	13-28392-1	DC Amplifier
Q914	13-28393-1	DC Amplifier
Q916	13-36508-1	Driver
Q918	13-36509-1	Driver
Q920	13-36442-1	Output
Q922	13-36443-1	Output
SC2	13-17596-5	Diode
SC6	13-17596-5	Diode
SC10	13-17596-5	Diode
SC12	1N295	Diode
SC14	13-17596-5	Diode
SC16	13-17596-5	Diode
SC18	1N295	Diode
SC20	13-17596-5	Diode
SC22	13-17596-5	Diode
SC36	13-17596-5	Diode
SC38	13-17596-5	Diode
SC502	13-17174-2	Diode
SC504	13-17174-2	Diode
SC506	13-29165-1	Diode
SC508	13-29165-1	Diode
SC510	13-29165-1	Diode
SC512	13-29165-1	Diode
SC514	13-17596-5	Diode
SC516	13-17596-5	Diode
SC518	13-17596-5	Diode
SC520	13-17596-9	Diode
SC522	13-17596-9	Diode
SC524	13-17596-9	Diode
SC805	13-17596-10	Diode
SC806	13-17596-9	Diode
SC808	13-17596-9	Diode
SC810	13-33187-16	27 Volt Zener
SC812	13-33187-16	27 Volt Zener
SC905	13-17596-10	Diode
SC906	13-17596-9	Diode
SC908	13-17596-9	Diode
SC910	13-33187-16	27 Volt Zener
SC912	13-33187-16	27 Volt Zener
SCR502	13-18924-3	Silicon Controlled Rectifier
	72-34063-1	IC Socket - 14 pin, Staggered Base
	72-34063-2	IC Socket - 16 pin, Staggered Base
	86-28669-3	Mica Insulator, 1/2" x 3/4"
	70-32519-2	Speed Clip - Transistor Mtg.
	72-27200-7	Transistor Socket - Large 3 pin
	72-27200-5	Transistor Socket - Small 3 pin
	72-14607-2	Transistor Socket - TO 3
MISCELLANEOUS PARTS		
CB502	29-33346-17	Circuit Breaker - 2.75 Amp
CB802	29-33346-16	Circuit Breaker - 1.9 Amp
CB902	29-33346-16	Circuit Breaker - 1.9 Amp
PL2	73-10302-39	AM Antenna Connector Kit
SK2	73-10302-37	AM Antenna Connector Kit (at Jack Plate)
SK502	73-34307-2	AUX. AC Outlet
SK504	73-34307-2	AUX. AC Outlet
SK506	73-34307-2	Switched AUX. AC Outlet
SK508	73-26338-3	HEADPHONE Jack
SK514	73-34786-1	Dual PHONO IN Socket
SK518	73-34786-1	Dual AUX. IN Socket
SK520	73-34786-1	Dual TAPE RECORD Socket
SK522	73-34786-1	Dual TAPE PLAY Socket
SK528	73-34786-1	Dual PREAMP OUT Socket

— REPLACEMENT PARTS LIST (CONTINUED) —

SCHEMATIC CODING	SERVICE PART NO.	DESCRIPTION
MISCELLANEOUS PARTS (CONTINUED)		
SK530	73-34786-1	Dual AMP IN Socket
SK550	86-14395-5	P. C. Panel Edge Connector Kit
SW502	33-36404-2	FUNCTION Switch Asm. - Complete
	33-35745-6	AM or FM Switch Section only
	33-35745-13	AUDIO MUTE Switch Section only
	33-35745-4	AUX. Switch Section only
	33-35745-1	MUTE Switch Section only
	33-35745-11	PHONO Switch Section only
SW504	33-36403-3	MODE Switch Asm. - Complete
	33-35745-1	SINGLE Switch Section - SW504
SW506	33-34917-2	AC POWER Switch
SW508	33-16011-7	MAG.-CERAMIC Switch (Jack Plate)
SW510	33-34953-2	MAIN SPKR. Switch
	70-32627-2	Mounting Screw - SW510
SW512	33-34953-2	REMOTE SPKR. Switch
	70-32627-2	Mounting Screw - SW512
SW514	33-16011-7	PQ4 SPKR. Switch (Jack Plate)
	73-33071-41	AC Power Cord
	27-34851-1	AM Rod Antenna
	86-34774-1	AM Rod Mounting Bracket
	86-34777-1	AM Rod Mounting Bushing
	73-34927-1	Antenna Terminal
	86-34386-3	Antenna Terminal Insulator
	74-36213-4	Chassis Base
	74-36257-3	Dial - Calibration
	70-98939-3	Dial - Cord Pulley, 3/8" Dia.
	70-98939-2	Dial - Cord Pulley, 5/8" Dia.
	77-41699-4	Dial - Cord Tension Spring
	86-34757-1	Dial - Drive Pulley
	30-26288-1	Dial - Lamp - No. 259
	73-36258-1	Dial - Lamp Terminal
	74-36259-1	Dial - Overlay
	74-36218-2	Dial - Pointer
	86-36227-1	Dial - Pointer Carriage
	86-36273-1	Dial - Pointer Carriage Filter
	30-34803-1	Dial - Pointer Lamp - No. 0406
	70-99257-4	Dial Mounting Clip
	03-36263-1	Dial Tuning Shaft & Flywheel Asm.
	76-36254-1	Dial Tuning Shaft Bearing
	70-14098-1	Dial Tuning Shaft Bearing (Nylon)
	81-36214-1	Dial Tuning Shaft Sleeve Bushing
	74-36407-2	Jack Plate
	83-34776-1	Jack Plate Jumper (Preamp Out. - Amp. In)
	73-34959-1	Jack Plate Panel (Quad. Spkr. Conn.)
	30-36246-1	Stereo Indicator Lamp, No. 2820-8
	70-16003-8	Stereo Lamp Mounting Grommet
	25-34802-3	Tuning Meter
	74-36311-1	Tuning Meter Filter
	30-26288-1	Tuning Meter Lamp, No. 259
	86-36232-1	Tuning Meter Lamp Holder
	70-26679-1	Tuning Meter Mounting Clip

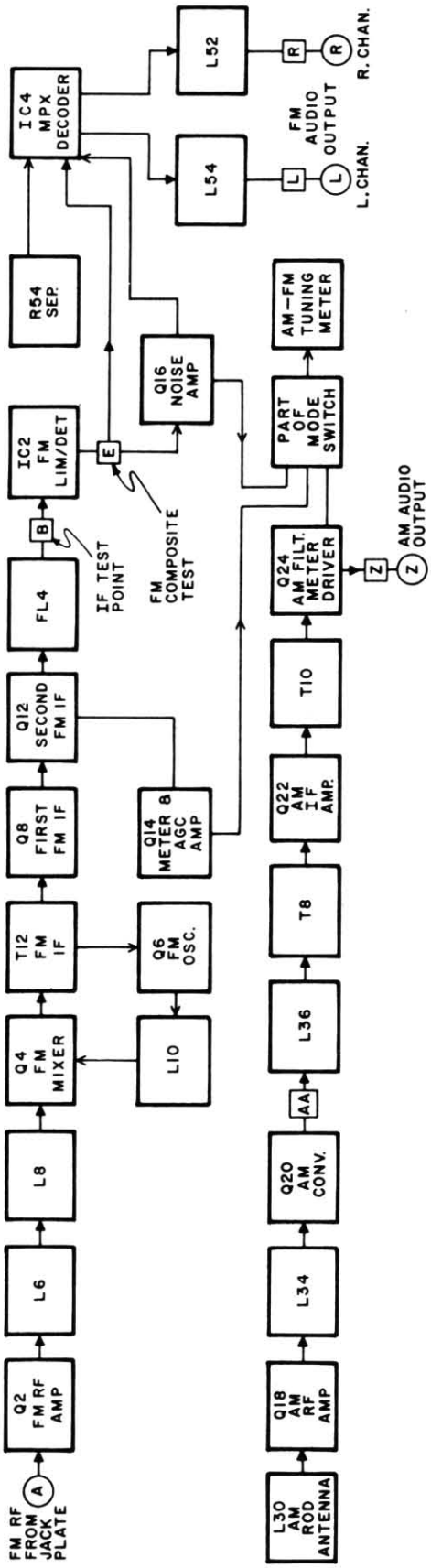
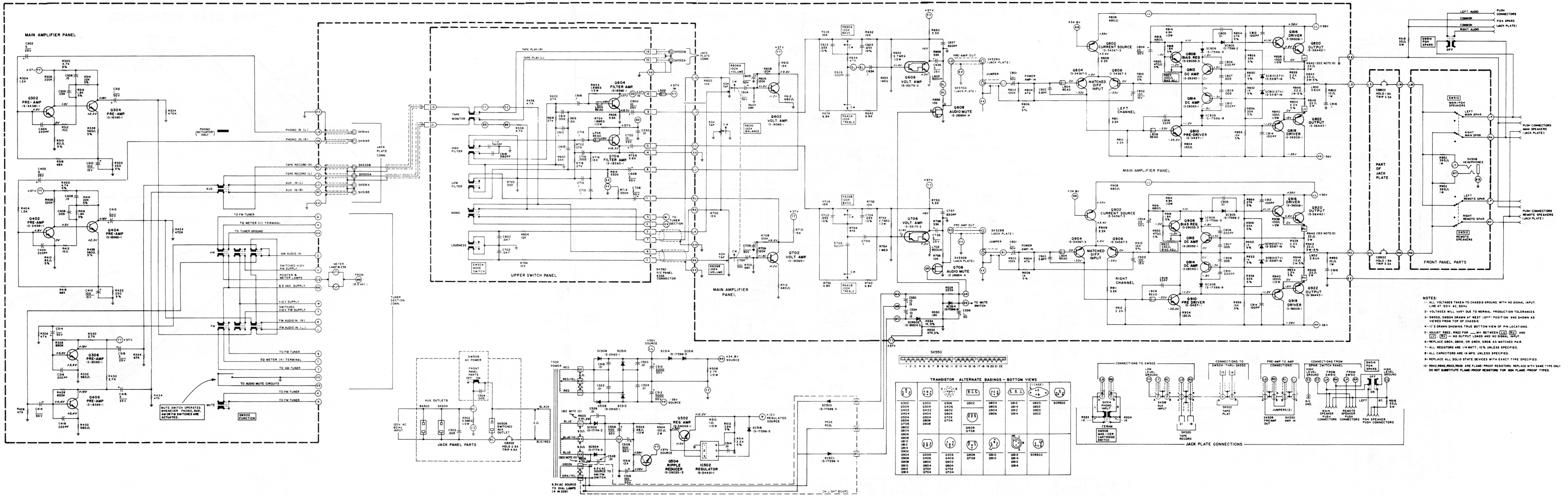


Fig. 9-45. R66 block diagram.



NOTES:

1- ALL VOLTAGES TAKEN TO CHASSIS GROUND, WITH NO SIGNAL INPUT. LINE AT 120V. AC, 60Hz

2- VOLTAGES WILL VARY DUE TO NORMAL PRODUCTION TOLERANCES.

3- SW502, SW504 DRAWN AT REST (OFF) POSITION AND SHOWN AS VIEWED FROM TOP OF CHASSIS.

4- IC'S DRAWN SHOWING TRUE BOTTOM VIEW OF PIN LOCATIONS.

5- ADJUST R822, R922 FOR ___ MV. BETWEEN LU, RU AND LV, RV — NO OUTPUT LOADS AND NO SIGNAL INPUT.

6- REPLACE Q804, Q806, OR Q904, Q906 AS MATCHED PAIR.

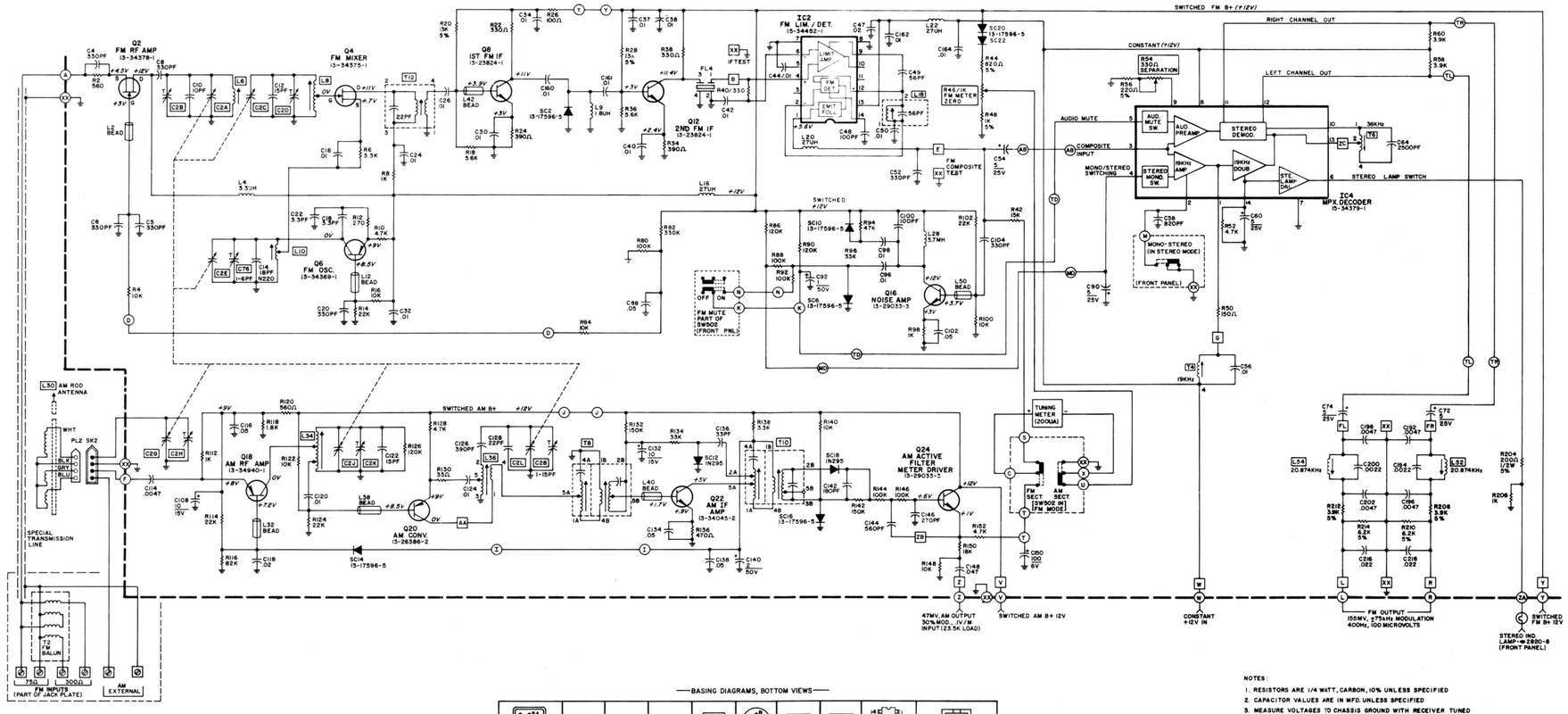
7- ALL RESISTORS ARE 1/4 WATT, 10% UNLESS SPECIFIED.

8- ALL CAPACITORS ARE IN MFD. UNLESS SPECIFIED.

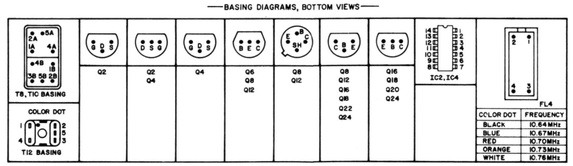
9- REPLACE ALL SOLID STATE DEVICES WITH EXACT TYPE SPECIFIED.

10- R842, R942, R503, R505 ARE FLAME-PROOF RESISTORS. REPLACE WITH SAME TYPE ONLY DO NOT SUBSTITUTE FLAME-PROOF RESISTORS FOR NON FLAME-PROOF TYPES.

R66 AMPLIFIER SCHEMATIC DIAGRAM.



—BASING DIAGRAMS, BOTTOM VIEWS—



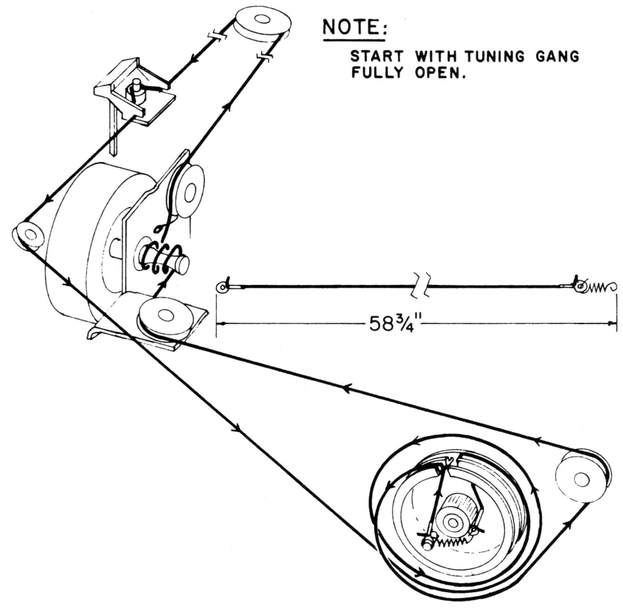
NOTES:

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 120 VAC
4. ROUND CONNECTIONS (K) 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

R66 DIAL STRINGING.

NOTE:

START WITH TUNING GANG FULLY OPEN.



R66 TUNER SCHEMATIC DIAGRAM.