

Property Imperial Sound.

211

service manual

marantz

model 7T

Stereo Console

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service data for the Marantz Model 7T Stereo Console.

Adjustment information and troubleshooting hints included in this manual are intended for use by the knowledgeable and experienced technician only. All instructions should be read carefully and understood fully before proceeding with any service. No attempt should be made to proceed without a good understanding of the operation of the Stereo Console and an adequate proficiency in the use of test equipment

required for servicing.

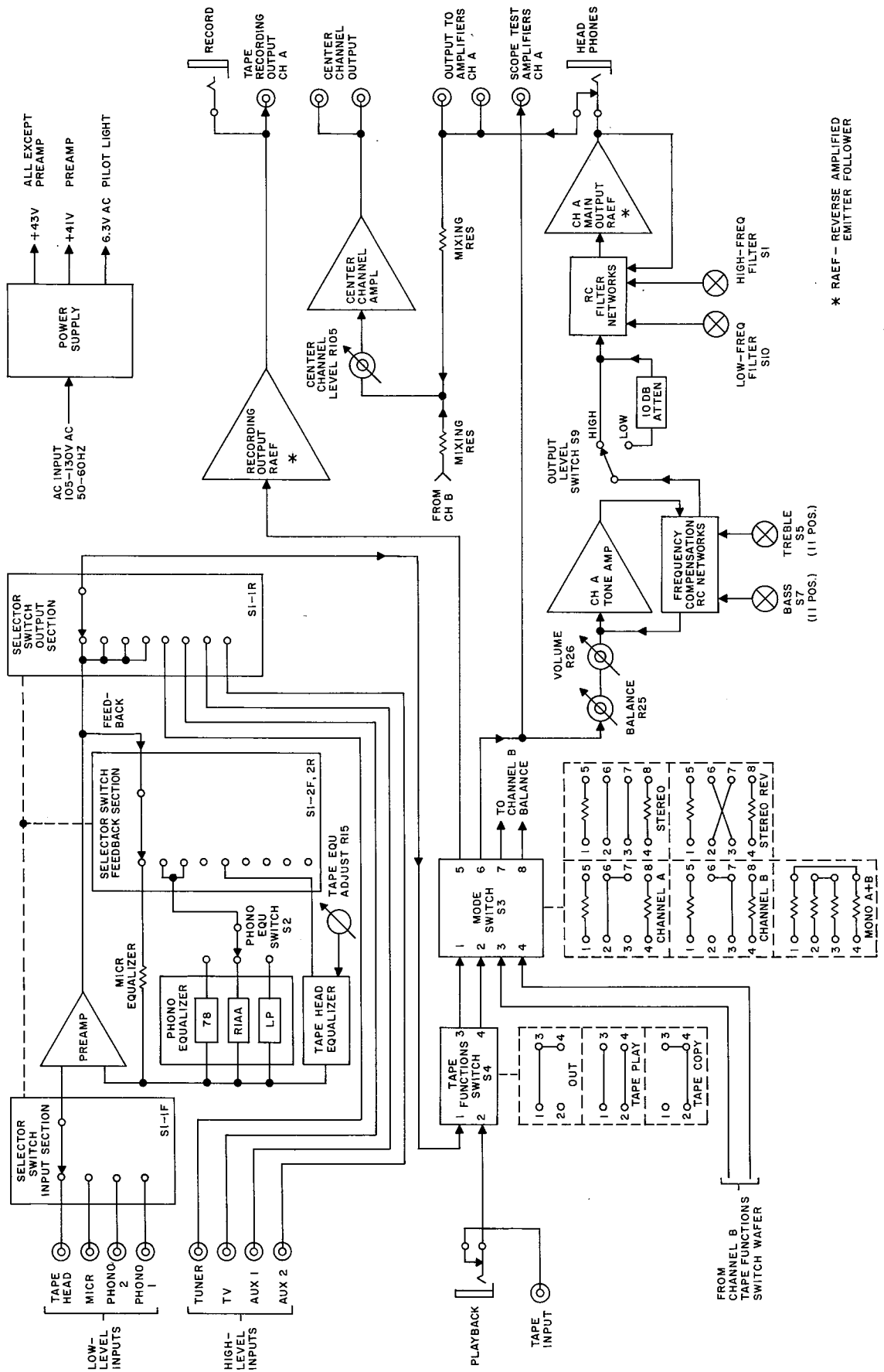
Symptoms (and their remedies) listed in the Troubleshooting Section are those which might occur in some units—based upon information derived from a significant sampling of units in the field. As the Marantz Company becomes aware of other field problems, supplementary service bulletins will be issued to all stations. To improve this service, all problems (and their solutions) not covered in this service manual should be brought to the attention of the Service Manager at the New York City location.

FUNCTIONAL DESCRIPTION

Figure 1 is a simplified block diagram of the Model 7T Stereo Console showing its functional elements and signal flow within the console. The unit consists of two identical channels, common mode switching circuits, common center channel circuits, and a common power supply. For clarity, only channel A and the common circuitry will be described.

SELECTOR switch S1 contains three individual functional sections, which provide input, feedback, and output routing of the signals. Input section 1F selects one of the four low-level inputs and routes the selected signal to the preamp circuit in the low-level amplifier board. Sections 2F and 2R, the feedback sections, function with the preamp. These sections choose an appropriate equalization network to be utilized with the selected input signal. Each feedback network provides precise equalization for the corresponding input signal selected. Output section 1R couples the amplified signal to TAPE FUNCTIONS switch S4. The selected high-level input signal is coupled directly to the TAPE FUNCTIONS switch from the input jack via the output section of the SELECTOR switch. All inputs except the one selected and the tape input are shorted to ground by the input section of S1, thus eliminating any interference from this source.

The preamp consists of Q201, Q203 and Q205 in the low-level amplifier board. The preamp raises the level of all low-level inputs, while introducing the proper equalization necessary for the selected input. The gain vs. frequency response characteristics of the preamp is determined by the equalization network in the feedback loop. In the MICROPHONE position, equalization is accomplished with a single resistor. This sets the preamp gain to 40 db while the frequency response characteristic is held ± 0.1 db from 20 to 2,000 Hz. In the PHONO 1 and PHONO 2 positions, the desired equalization network is chosen by the settings of PHONO EQUALIZER switch S2. The three settings available are 78, R1AA, and LP. Figure 2 shows the relative gain vs. frequency characteristics of the preamp in the three PHONO EQUALIZER switch positions. In the figure, the 0 db reference level corresponds to a gain of 42 db. In the TAPE HEAD position of SELECTOR S1, an adjustable equalization network is switched into the feedback loop. The variable element is TAPE EQU. ADJUST potentiometer R15, located on the rear panel of the unit. This network sets the preamp gain to 42 db at 500 Hz. At frequencies below 500 Hz, the gain is fixed. Frequency response is variable over a range of 13.5 db at 10 KHz. (See figure 2.) Each unit is factory



* RAEF - REVERSE AMPLIFIED EMITTER FOLLOWER

Figure 1. Model 7T Stereo Console, Block Diagram

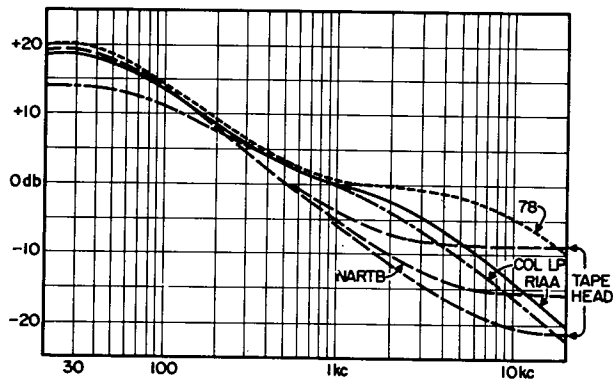


Figure 2. Phono and Tape Equalization Characteristics

et for NARTB equalization. The control is marked
t the NARTB setting and may be returned to that
etting without instruments.

The TAPE FUNCTIONS switch S4, controls the rout-
ng of the selected and tape input signals. The tape
input signal can originate either from the TAPE INPUT
ack on the rear panel of the unit or the PLAYBACK
ack on the unit front panel. In the OUT position, the
selected input signal is fed through the MODE switch
o the tone amplifier and the recording output reverse
mplified emitter follower (RAEF), while the tape
output signal is left open-circuited. In the TAPE PLAY
r monitor position, the selected input signal is ap-
plied only to the recording output RAEF, while the
tape input signal is fed to the tone amplifier. In the
APE COPY position, the selected input signal is
ot processed. The tape input signal is fed to both
e tone amplifier and the recording output RAEF.

Inter-channel switching is controlled by MODE
witch S3. In the CHANNEL A position, only the
annel A input is applied to both tone amplifiers (A
nd B). In the CHANNEL B position, only channel B
puts are processed (by both channels). In MONO
+ B, a resistive mixing network is selected by the
witch contacts. Channel A and channel B inputs are
ixed in equal proportions and applied to both A
nd B tone amplifiers. In the STEREO position, the
annel A and B inputs are fed to their respective
one amplifiers. The STEREO REVERSE position re-
verses the destination, i.e., channel A input is fed to
e B tone amplifier and channel B input is fed to
e A tone amplifier. All signals are available for
onitoring at the SCOPE TEST output jack on the
ar panel.

NOTE

Units having serial numbers between
12501 and 15000 have the MODE switch
placed electrically before the TAPE FUNC-
TIONS switch. On these units, all MODE
functions are available at the RECORD out-
put jack, but only the MONO A + B signal
is available at the tape PLAYBACK jack.

Units having serial numbers below 12501
also have the same electrical configura-
tion, but the MONO A + B signal is not
available at the tape PLAYBACK jack.

The recording output RAEF is a feedback ampli-
fier having low output impedance (approximately 470
ohms) and is used for driving the TAPE RECORDING
OUTPUT jack. The amplifier consists of transistors
Q301 and Q303. It has unity gain (0 db) and a flat
frequency response from 20 to 20,000 Hz.

The relative levels between the channel A and B
signals are adjusted by BALANCE control R25. This
is a full-range dual potentiometer which permits at-
tenuation of either channel to complete cutoff. One
section controls each channel. At the center, both
channels are attenuated equally (for balance). Attenu-
ation is approximately 3 db. In the extreme clock-
wise position, the channel B input is fully attenuated;
channel A passes without attenuation. The opposite
condition exists in the counter-clockwise position.
VOLUME control R26 is also a dual potentiometer,
but both signals are attenuated by the same factor,
in unison. Tracking is maintained within 2 db
throughout the range.

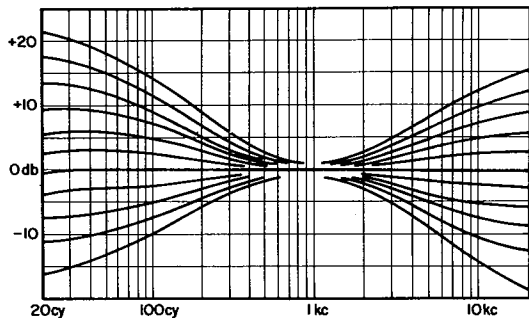


Figure 3. Tone Control Characteristics

The tone amplifier provides high gain and selected frequency compensation for all main channel outputs. The tone amplifier consists of Q401, Q403, and Q405 on the tone amplifier board. Both the BASS and TREBLE controls (S7 and S5) are 11-position switches. In each position an RC network introduces appropriate frequency compensation by altering the characteristics of the tone amplifier feedback loop. With both controls at the center position (straight up), the gain of the tone amplifier is 21.5 db with a flat frequency response from 20 to 20,000 Hz. In other switch positions the overall frequency response is varied. The gain at 1000 Hz, however, does not change. At 10,000 Hz each position of the TREBLE control changes the gain by $2\frac{1}{2}$ db. The BASS control changes the gain of the tone amplifier by 3 db per step at 50 Hz. Frequency response curves for each switch position are shown in figure 3. In this figure, the 0 db reference level corresponds to a gain of 21.5 db.

The signal from the tone amplifier is fed to the main output RAEF. This signal level is attenuated by 10 db when OUTPUT LEVEL switch S9 is in the LOW position.

The main output RAEF is a feedback amplifier also having low output impedance (approximately 470 ohms), and is used for driving the main output cir-

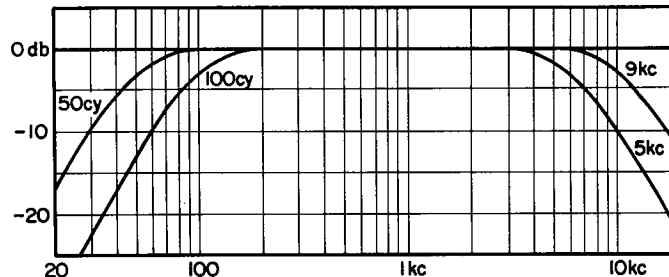


Figure 4. Low-Frequency and High-Frequency Filter Characteristics

cuit (Q501 and Q503). It also operates as a low and high-frequency filter. With LOW-FREQ FILTER switch S10 and HIGH-FREQ FILTER switch S11 in their OUT positions, the main output RAEF has unit gain over the entire audio band. With a filter switcher in, a filter network in the feedback loop attenuates the frequency response of the circuit at a rate of 1 db per octave, while maintaining the 3 db points at the filter frequency designated by the front panel switch position. The LOW-FREQ switch positions are 50 or 100 (Hz); the HIGH-FREQ switch positions are 9 KC and 5 KC. Figure 4 shows the frequency curves resulting from the use of the two filters.

The signals from both channel A and B main outputs are mixed and fed to the center channel amplifier. This amplifier consists of transistors Q505 and Q506 on the main RAEF board. The gain of the amplifier is 10 db. However, the mixing resistors introduce a loss. The overall gain from each main output to the center channel output is 2 db, with the CENTER CHANNEL LEVEL at maximum. The frequency response of the center channel amplifier is flat from 20 to 20,000 Hz, with an output impedance approximately 470 ohms.

The power supply is a conventional full-wave bridge rectifier with a capacitor input filter providing regulated dc voltages to all active functions of the unit. A built-in turn-on delay of 2 to 3 seconds eliminates extraneous turn-on pulses and noises.

TECHNICAL SPECIFICATIONS

Gain—Microphone input to main output	61.5 ± 1.0db*
Phono input to main output	63.5 ± 1.0db*
Tape-Head input to main output	63.5 ± 1.0db*
Phono input to recording output	42.0 ± 0.2db
Microphone input to recording output	40.0 ± 0.2db
High level input to main output	21.5 ± 0.8db*
Frequency Response	±0.5db, 20 to 20,000 Hz.
IM Distortion	0.15% at 10 volts rms equivalent peak output
Total Harmonic Distortion—1 volt @ 2kHz	non-measurable
5 volts @ 2kHz	0.02%
10 volts @ 2kHz	0.03%
Dynamic Range (phono input to recording output) at 1 kHz and at rated distortion	100db, typical
Total Noise	1 micro volt equivalent input
Input Impedance—Phono 1 and Phono 2	47K ohms
Microphone and Tape-Head	approximately 450K
High level	approximately 200K
Equalization, tone control and filter characteristics	As shown in Figures 2, 3, and 4
Power requirements**	105 to 130 volts, rms 50 to 60 Hz 9 watts
Dimensions—Panel Width	15 ³ / ₈ inches
Panel Height	5 ³ / ₄ inches
Depth behind panel	8 inches
Clearance for panel and knobs	7 ⁷ / ₈ inch
Weight—Unit alone	9 pounds
Packed for shipment	11 pounds

* With BALANCE control set to normal position.

** Split primary windings permit adaptation to 210-270 volts.

Specifications subject to change without notice.

TEST EQUIPMENT REQUIRED FOR SERVICING

Table I lists the test equipment required for testing and servicing the Model 7T Stereo Console. If the test equipment listed in the table is not available, suitable equivalents may be used.

TABLE I. TEST EQUIPMENT REQUIRED

Intermodulation Meter	Audio Instrument Model 168A
AC Vacuum Tube Voltmeter	Ballantine Model 300H
Senior Volt-Ohmyst	RCA WV-98C

CONVERSION TO 240 VOLT OPERATION

To convert the amplifier from 120 volt to 240 volt operation, proceed as follows. Figure 5 shows the connections required for operation of power transformer TP8 at both 120 volt and 240 volt operation.

1. Install and secure an insulated standoff terminal (Marantz part number 87-1019) in the spare hole located near the line cord.
2. Secure the terminal with a 6-32 x 1/4-inch machine screw.
3. Connect the black/red and black/white power transformer leads together at this terminal.
4. Cover the voltage rating markings on the chassis and attach a tag (Marantz part number 99-1001) to the line cord. Do not replace the fuse.

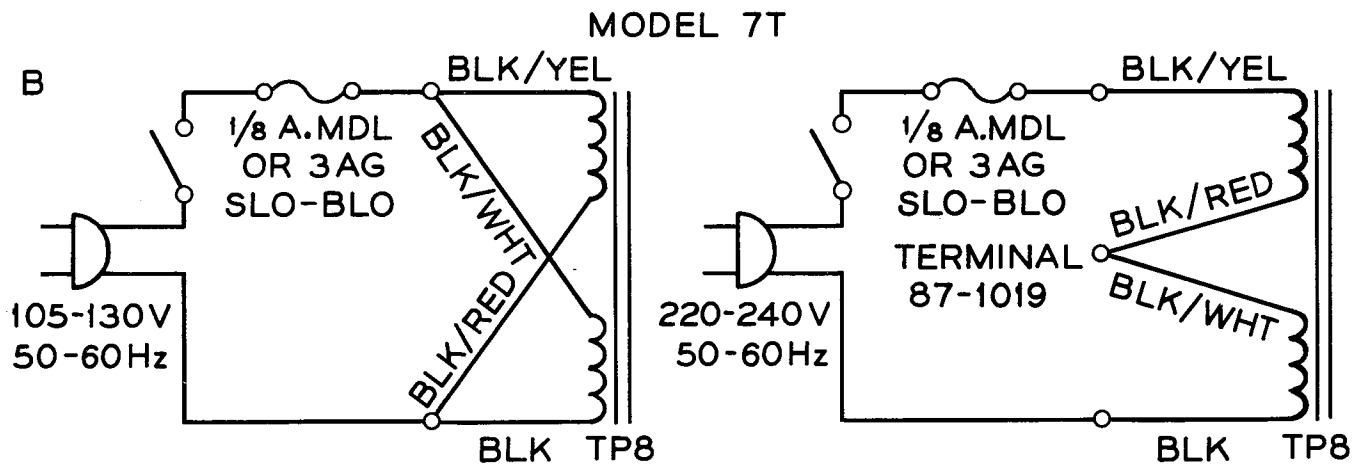


Figure 5. 240 Volt Conversion Diagram

PERFORMANCE VERIFICATION TEST

A. TEST EQUIPMENT. An Intermodulation (IM) Meter and an AC VTVM of the type listed in table I are required to make intermodulation distortion tests of the 7T.

B. IM DISTORTION, HIGH-LEVEL.

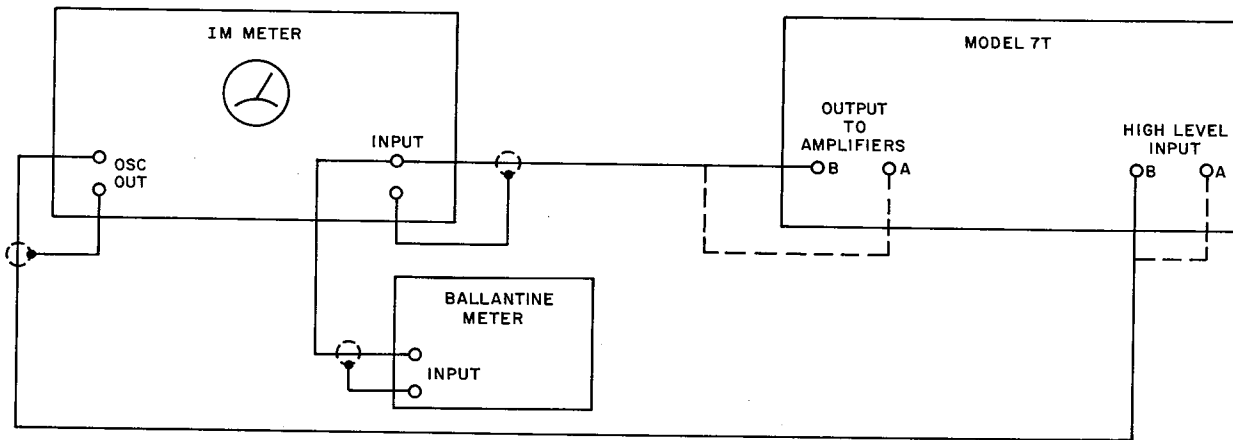
1. Connect the oscillator output of the IM meter to any of the high level input jacks on the 7T, as shown in A of figure 6. Connect the channel B OUTPUT TO AMPLIFIERS jack to the input of the IM meter.
2. Set the VOLUME control to maximum, the BALANCE control to RIGHT ONLY, the tone controls to center position (flat response), the filters to OUT, the MODE switch to CHANNEL B, and the SELECTOR switch to the high level input.
3. Adjust the output level of the IM meter to produce an 8-volt signal at the 7T output jack, as indicated on the VTVM.
4. Set the IM meter function to calibrate and calibrate the meter.
5. Set the IM meter function to read % and read the percent of intermodulation distortion directly on the IM meter. Use the lowest scale possible for the reading. The IM distortion should be no greater than 0.15%.
6. Set the MODE switch and BALANCE control for channel A operation and repeat the procedure to check high-level IM distortion on channel A.

C. IM DISTORTION, LOW-LEVEL

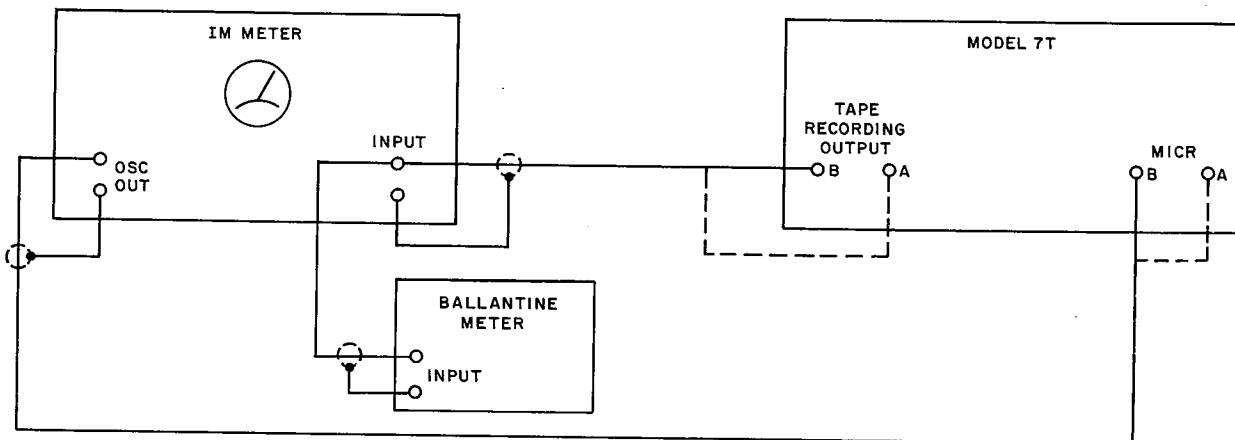
1. Connect the oscillator output of the IM meter to the channel B MICR input jack on the 7T, as shown in B of figure 6. Connect the channel B TAPE RECORDING OUTPUT jack to the input of the IM meter.
2. Set the controls as for high-level test (step B2 above), except set the VOLUME control to minimum and the SELECTOR switch to MICROPHONE.
3. Adjust the output level of the IM meter to

produce an 8-volt signal at the TAPE RECORDING OUTPUT jack, as indicated on the VTVM.

4. Calibrate the IM meter and read the intermodulation distortion as indicated for the high-level test (steps B4 and B5 above). The IM distortion should be no greater than 0.15%.
5. Set the MODE switch and BALANCE control for channel A operation and repeat the procedure to check low-level IM distortion on channel A.



A. IM Distortion Test, High-Level



B. IM Distortion Test, Low-Level

Figure 6. Performance Verification Test Set-up

TROUBLE ANALYSIS

The trouble analysis procedure that follows contains some of the typical trouble symptoms encountered in the field and their remedies. Other field problems will be covered through service bulletins (supplementary to this manual) which will be issued to all stations. Other servicing aids included in this manual are component location illustrations, figure 7, which locates the subassembly boards mounted within the 7T chassis as well as components mounted directly on the chassis. Separate illustrations are provided for each board assembly and major switch

assembly (Figures 8 through 19), which locate the various components on the boards and switches by reference symbol number. Tie points are shown on these drawings as well as input and output points. Voltage data is given prior to the schematic diagrams to enable isolation to the board assembly. Voltage data is also provided for servicing of the board assemblies themselves. Note that all voltage data were taken from a normally operating preamplifier. Separate schematic diagrams are provided to cover each configuration of the Model 7T (by serial no.).

NOTE

Performance verification is necessary following all repairs.

SYMPTOM	PROBABLE CAUSE
Weak output, distorted in all modes of operation.	Open B+ fuse in power supply board.
Severely attenuated, distorted in A + B mode.	Q505 on main output RAEF board shorted.
Right channel does not operate for high level inputs.	Open diode D402, or shorted Q406 on tone amplifier board. Shorted Q504 on main output RAEF board.
Left channel does not operate for high level inputs.	Open diode D401, or shorted Q405 on tone amplifier board. Shorted Q503 on main output RAEF board.
Loud pops are heard on right channel.	Open diode D402 on tone amplifier board.
Loud pops are heard on left channel.	Open diode D401 on tone amplifier board.
Weak output, distorted for low level inputs.	Open diode D203 on low level amplifier board.
Right channel does not operate for low level inputs.	Shorted Q206 on low level amplifier board.
Left channel does not operate for low level inputs.	Shorted Q205 on low level amplifier board.
Right channel noisy for high level inputs.	Defective (noisy) Q402 or Q404 on tone amplifier board.
Left channel noisy for high level inputs.	Defective (noisy) Q401 or Q403 on tone amplifier.
Right channel noisy for low level inputs.	Defective (noisy) Q202 or Q204 on low level amplifier board.
Left channel noisy for low level inputs.	Defective (noisy) Q201 or Q203 on low level amplifier board.
Right channel does not operate in recording mode.	Defective Q304 or Q302 on recording output RAEF board.
Left channel does not operate in recording mode.	Defective Q303 or Q301 on recording output RAEF board.
Center channel does not operate.	Shorted Q505 or Q506 on main output RAEF board.

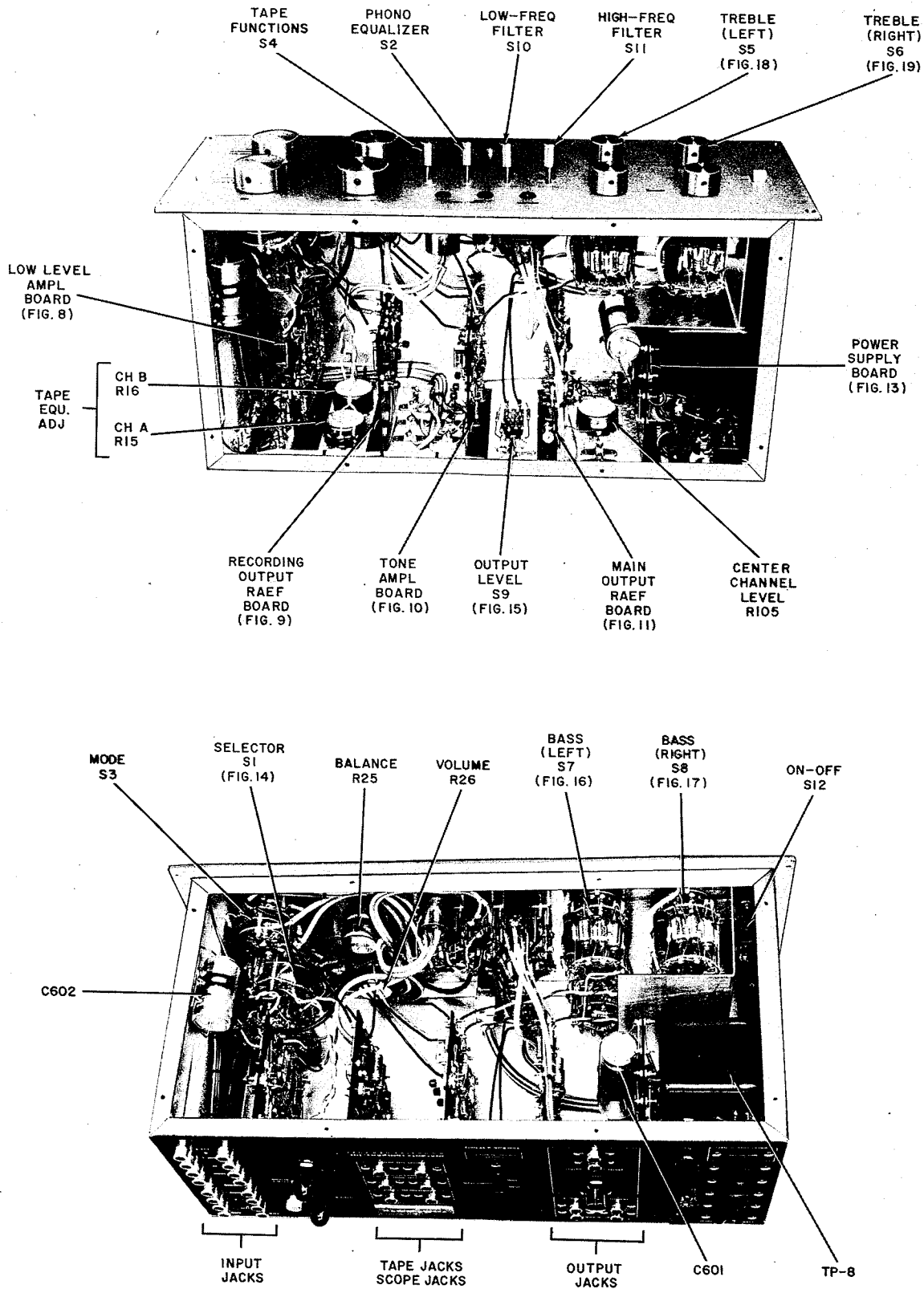


Figure 7. Main Chassis Component and Board Assembly Locations

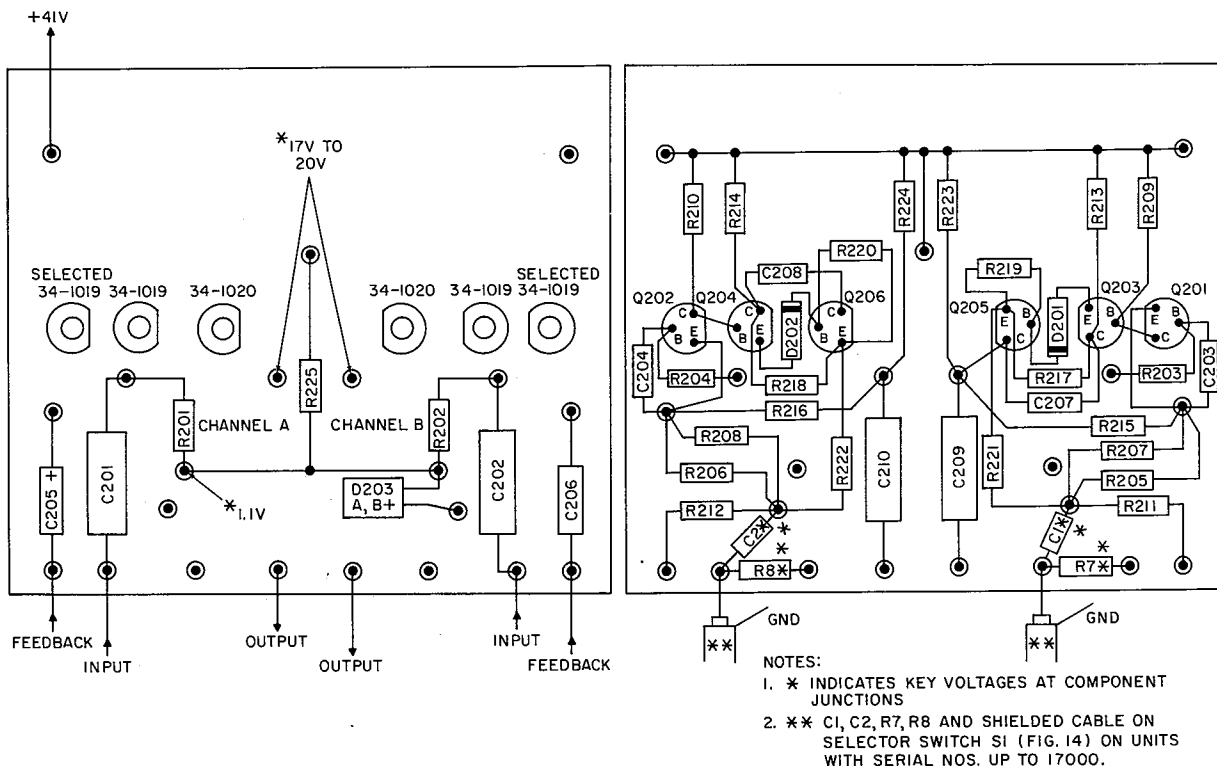


Figure 8. Low-Level Amplifier Board 11-1026, Component Locations

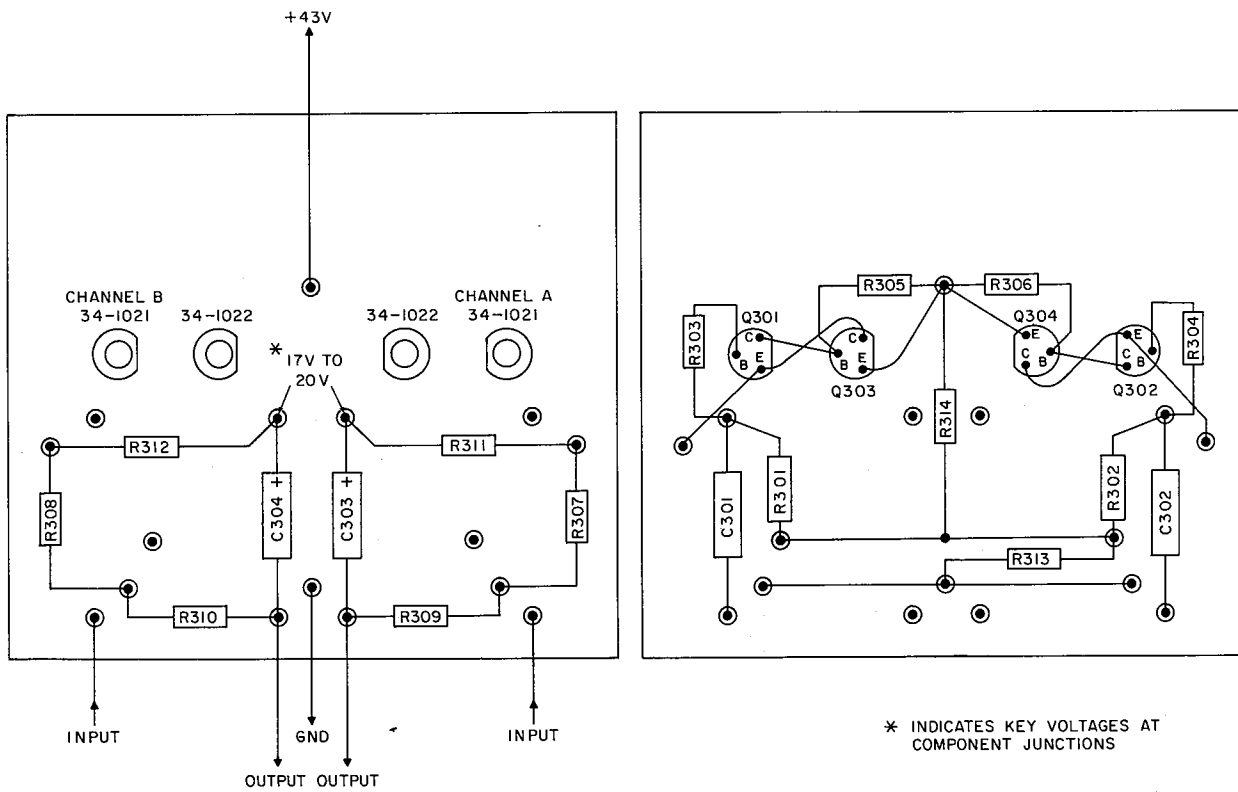


Figure 9. Recording Output RAEF Board 11-1028, Component Locations

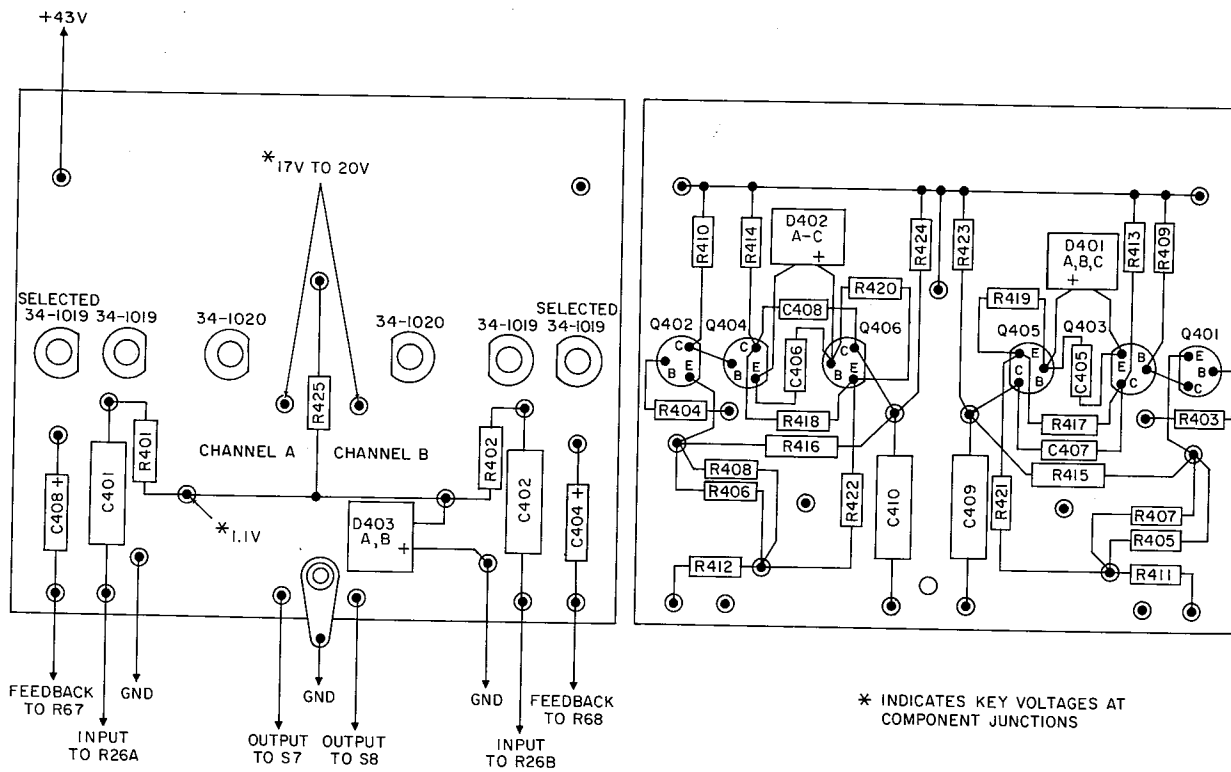


Figure 10. Tone Amplifier Board 11-1027, Component Locations

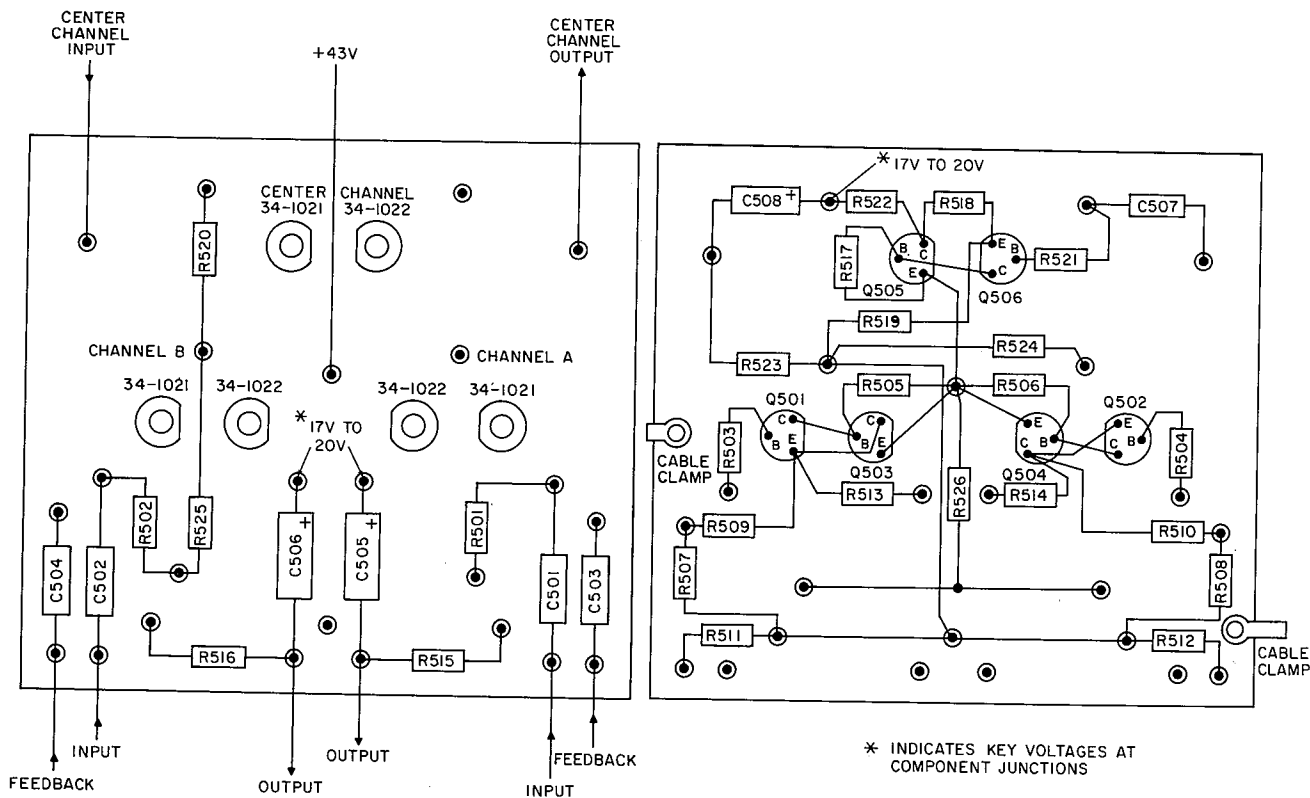


Figure 11. Main Output RAEF Board 11-1029, Component Locations

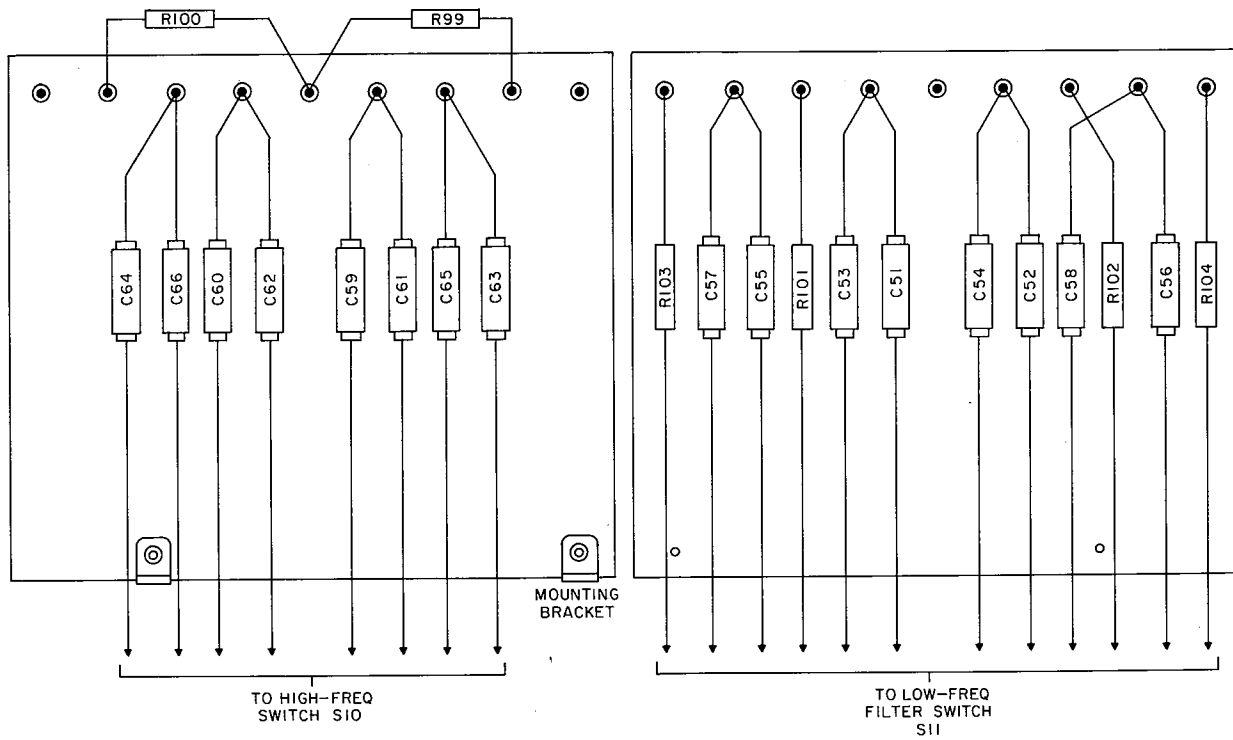


Figure 12. High-Low Filter Board 11-1025, Component Locations

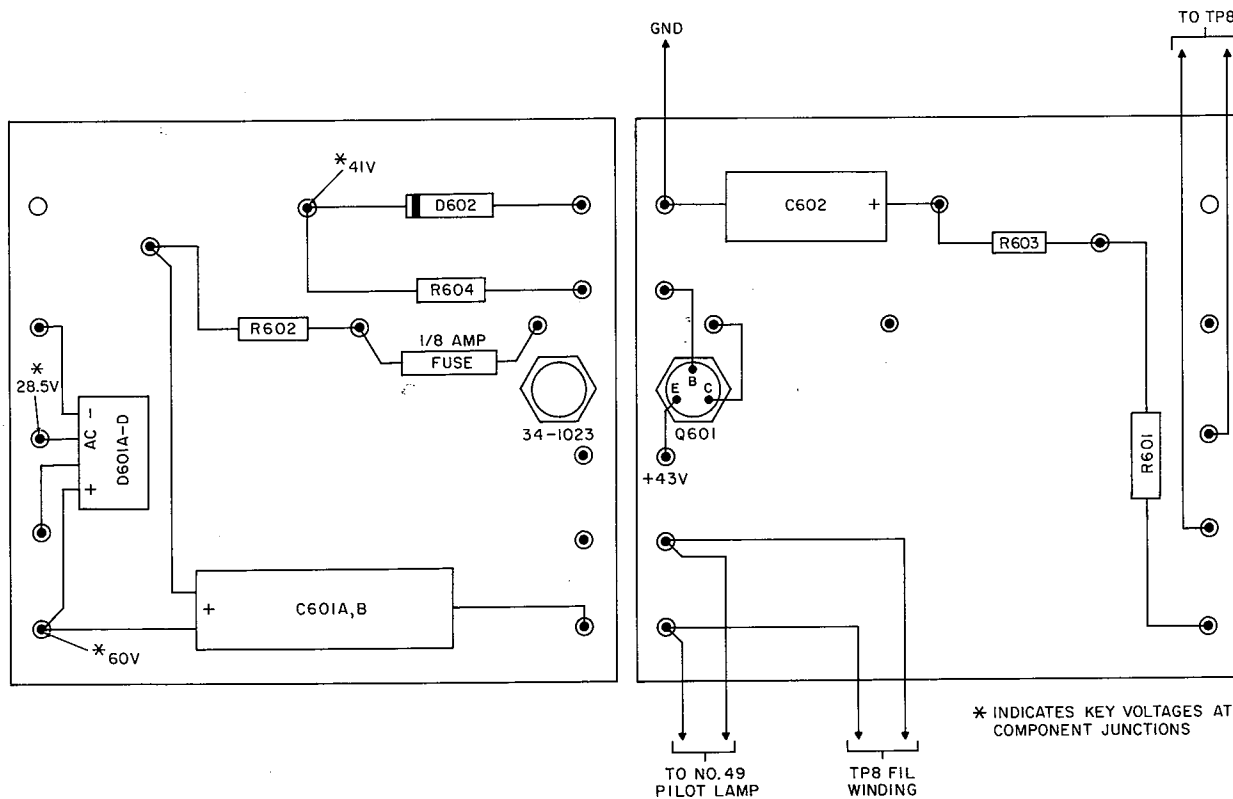


Figure 13. Power Supply Board 11-1030, Component Locations

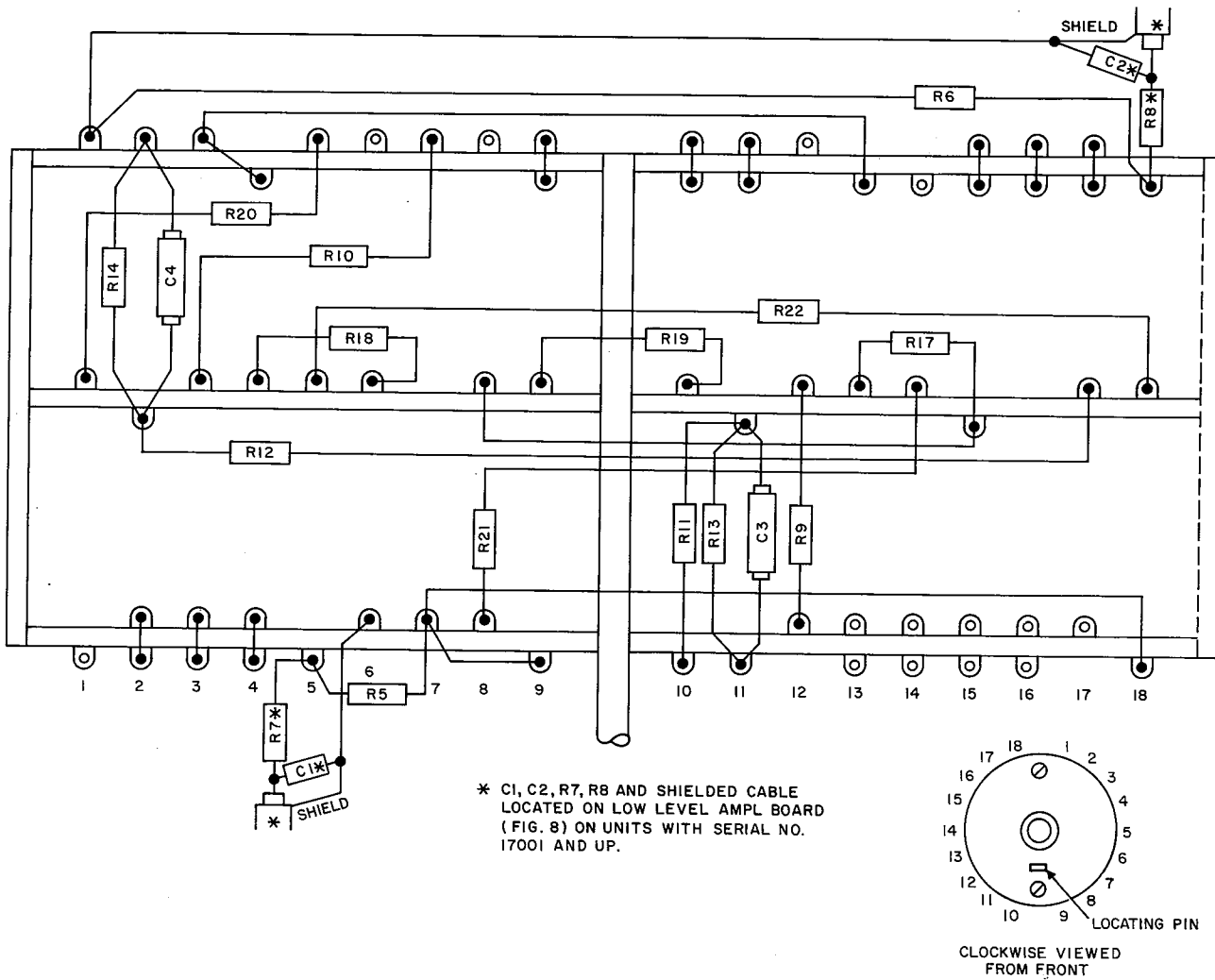


Figure 14. Selector Switch S1, Component Locations

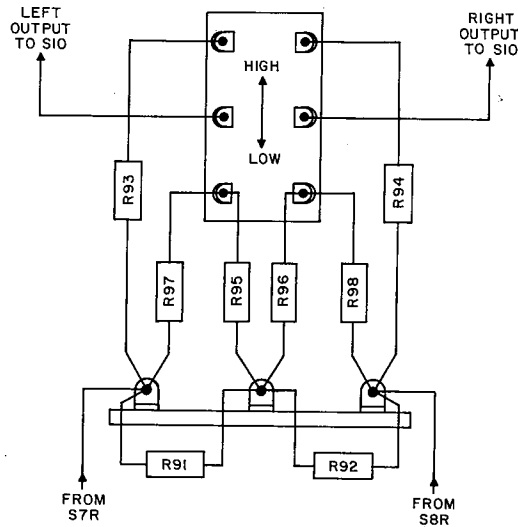


Figure 15. Output Level Switch S9, Component Locations

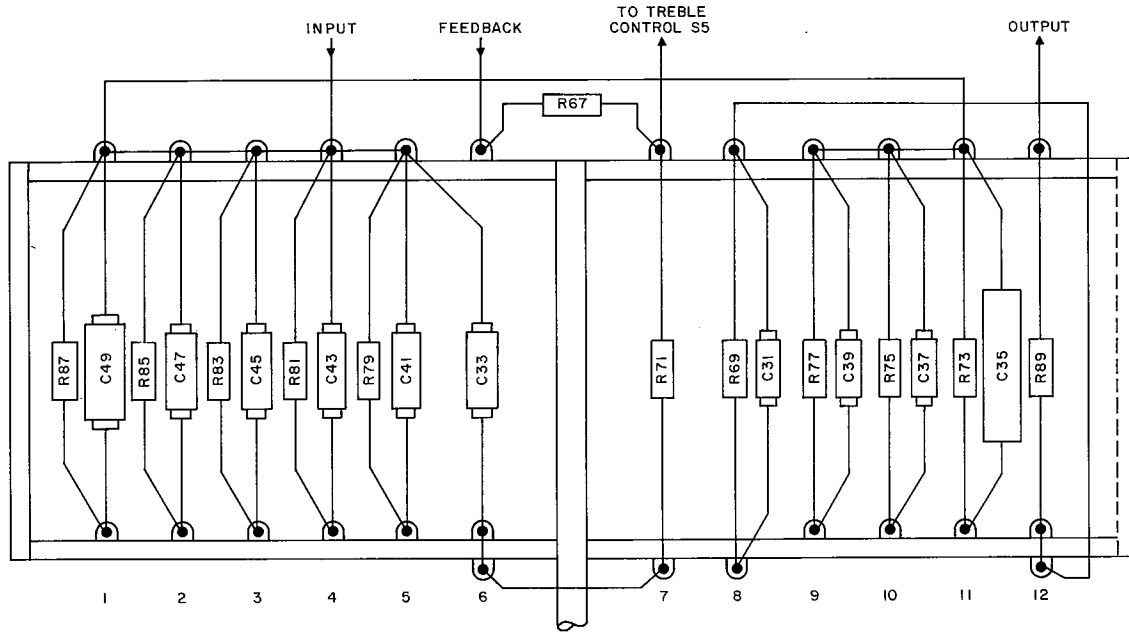


Figure 16. Bass Control Switch S7 (Left), Component Locations

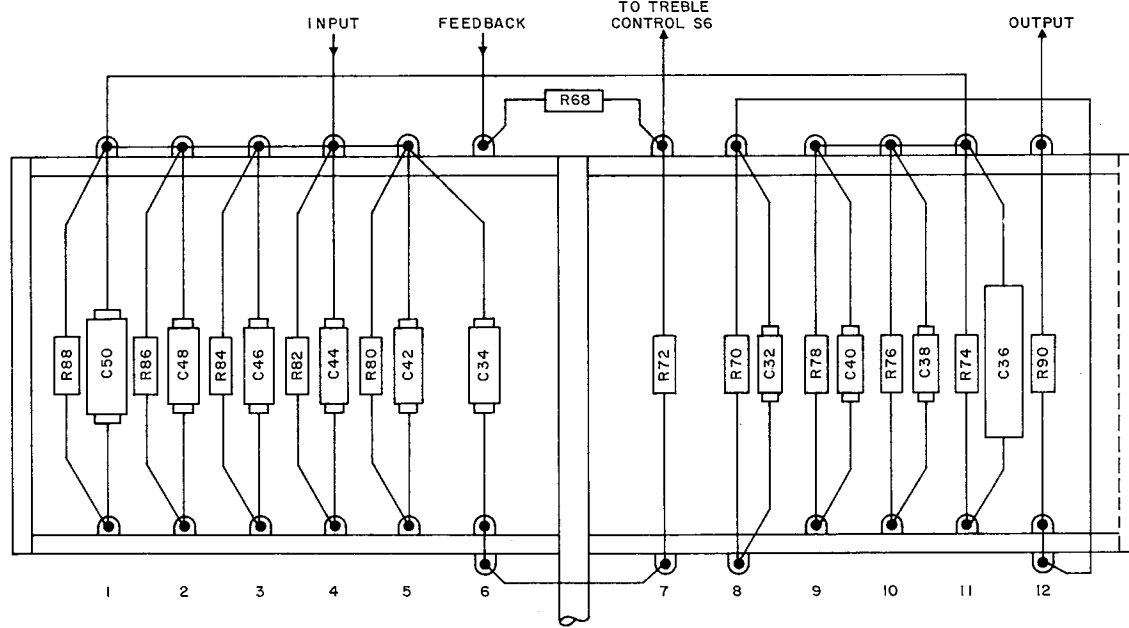
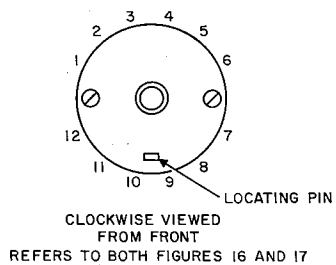


Figure 17. Bass Control Switch S8 (Right), Component Locations



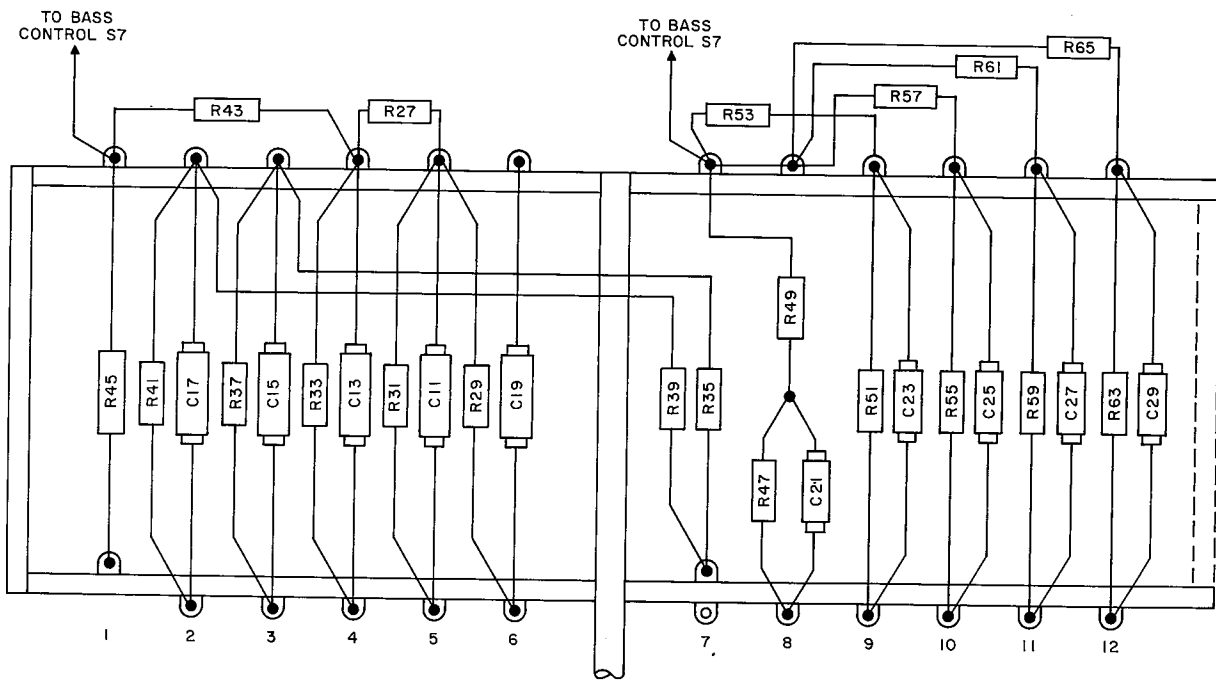


Figure 18. Treble Control Switch S5 (Left), Component Locations

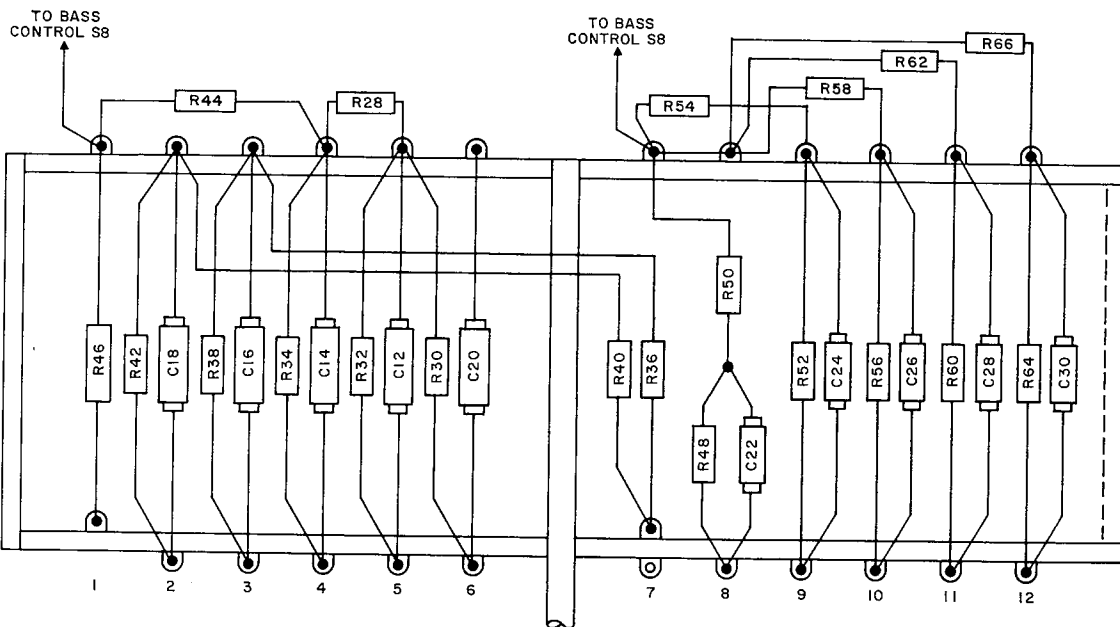
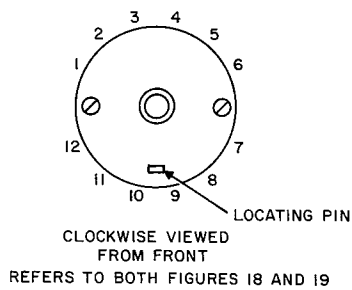


Figure 19. Treble Control Switch S6 (Right), Component Locations



VOLTAGE CHART

BOARD ASSY		VOLTAGE (DC)			JCT*
		B	E	C	
Low Level Ampl	JCT R201/R202				1.1
	JCT C209/R223 and C210/R224				17-20V
	Q201, Q202	0.98	0.62	1.56	
	Q203, Q204	1.56	1.1	7.9	
	Q205, Q206	0.74	0.18	17-20	
Recording Output RAEF	JCT R312/C304				17-20
	JCT R11/C303				17-20
	Q301, Q302	17.5	18.5	40	
	Q303, Q304	40	43	18.5	
Tone Ampl	JCT C409/R415 } JCT C410/R416 }				17-20
	JCT R401/R402				1.1
	Q401, Q402	1.0	0.62	2.5	
	Q403, Q404	2.5	2.0	8.0	
	Q405, Q406	0.76	0.2	19	
	Main Output RAEF	JCT R513/C505 } JCT R514/C506 } JCT R522/C508 }			
Q501, Q502		18	19	40	
Q503, Q504		40	40	19	
Q505		40	40	20	
Q506		6.3	6.5	40	
Power Supply		JCT TP8 RED/D601			
	JCT R601/D601				60
	JCT R604/D602				41
	Q601	42	43	50	

NOTES AND CONDITIONS:

1. All indicated voltages are dc $\pm 10\%$.
2. All voltages measured using a VTVM.
3. All voltages measured while maintaining 117-volt line input.
4. All voltages measured with no signal (INPUT jack shorted).
5. All voltages measured with respect to chassis ground.
6. * Key voltages available at component junctions useful in isolating trouble to board.

PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C1	17-1001	56 pf, 10%, 500V Mica	C51	15-1002	3600pf, 2½%, 125V, Poly
C2	17-1001	56 pf, 10%, 500V Mica	C52	15-1002	3600pf, 2½%, 125V, Poly
C3	15-1001	5600pf, 2½%, 125V, Poly	C53	15-1002	3600pf, 2½%, 125V, Poly
C4	15-1001	5600pf, 2½%, 125V, Poly	C54	15-1002	3600pf, 2½%, 125V, Poly
C5	15-1006	820pf, 2½%, 125V, Poly	C55	15-1002	3600pf, 2½%, 125V, Poly
C6	15-1006	820pf, 2½%, 125V, Poly	C56	15-1002	3600pf, 2½%, 125V, Poly
C7	15-1003	1650pf, 2½%, 125V, Poly	C57	15-1002	3600pf, 2½%, 125V, Poly
C8	15-1003	1650pf, 2½%, 125V, Poly	C58	15-1002	3600pf, 2½%, 125V, Poly
C9	15-1005	1000pf, 2½%, 125V, Poly	C59	15-1017	4700pf, 2½%, 125V, Poly
C10	15-1005	1000pf, 2½%, 125V, Poly	C60	15-1017	4700pf, 2½%, 125V, Poly
C11	12-1000	.047uf, 10%, 200V, Paper	C61	15-1019	3300pf, 2½%, 125V, Poly
C12	12-1000	.047uf, 10%, 200V, Paper	C62	15-1019	3300pf, 2½%, 125V, Poly
C13	15-1012	.018uf, 5%, 125V, Poly	C63	15-1023	150pf, 2½%, 125V, Poly
C14	15-1012	.018uf, 5%, 125V, Poly	C64	15-1023	150pf, 2½%, 125V, Poly
C15	15-1013	.01uf, 5%, 125V, Poly	C65	15-1024	56pf, 2½%, 125V, Poly
C16	15-1013	.01uf, 5%, 125V, Poly	C66	15-1024	56pf, 2½%, 125V, Poly
C17	15-1017	4700pf, 2½%, 125V, Poly	C67	19-1001	350uf, 50VDC, Elect
C18	15-1017	4700pf, 2½%, 125V, Poly	C201	13-1007	.22uf, 10%, 250V, Mylar
C19	15-1015	.015uf, 2½%, 125V, Poly	C202	13-1007	.22uf, 10%, 250V, Mylar
C20	15-1015	.015uf, 2½%, 125V, Poly	C203	17-1000	33pf, 5%, 500V, Mica
C21	15-1005	1000pf, 2½%, 125V, Poly	C204	17-1000	33pf, 5%, 500V, Mica
C22	15-1005	1000pf, 2½%, 125V, Poly	C205	16-1000	22uf, 20%, 4VDC, Tant
C23	15-1020	680pf, 2½%, 125V, Poly	C206	16-1000	22uf, 20%, 4VDC, Tant
C24	15-1020	680pf, 2½%, 125V, Poly	C207	14-1011	3.9pf, 10%, Cer
C25	15-1021	510pf, 2½%, 125V, Poly	C208	14-1011	3.9pf, 10%, Cer
C26	15-1021	510pf, 2½%, 125V, Poly	C209	13-1006	.47uf, 10%, 250V, Mylar
C27	15-1022	390pf, 2½%, 125V, Poly	C210	13-1006	.47uf, 10%, 250V, Mylar
C28	15-1022	390pf, 2½%, 125V, Poly	C301	13-1009	.047uf, 20%, 400V, Mylar
C29	15-1009	220pf, 2½%, 125V, Poly	C302	13-1009	.047uf, 20%, 400V, Mylar
C30	15-1009	220pf, 2½%, 125V, Poly	C303	19-1008	15uf, 35VDC, Elect
C31	15-1016	.012uf, 2½%, 125V, Poly	C304	19-1008	15uf, 35VDC, Elect
C32	15-1016	.012uf, 2½%, 125V, Poly	C401	13-1007	.22uf, 10%, 250V, Mylar
C33	15-1018	3900pf, 2½%, 125V, Poly	C402	13-1007	.22uf, 10%, 250V, Mylar
C34	15-1018	3900pf, 2½%, 125V, Poly	C403	16-1000	22uf, 20%, 4VDC, Tant
C35	12-1000	.047uf, 10%, 200V, Paper	C404	16-1000	22uf, 20%, 4VDC, Tant
C36	12-1000	.047uf, 10%, 200V, Paper	C405	13-1010	.033uf, 20%, 400V, Mylar
C37	15-1015	.015uf, 2½%, 125V, Poly	C406	13-1010	.033uf, 20%, 400V, Mylar
C38	15-1015	.015uf, 2½%, 125V, Poly	C407	14-1011	3.9pf, 10%, Cer
C39	15-1017	4700pf, 2½%, 125V, Poly	C408	14-1011	3.9pf, 10%, Cer
C40	15-1017	4700pf, 2½%, 125V, Poly	C409	13-1006	.47uf, 10%, 250V, Mylar
C41	15-1014	1500pf, 5%, 125V, Poly	C410	13-1006	.47uf, 10%, 250V, Mylar
C42	15-1014	1500pf, 5%, 125V, Poly	C501	13-1009	.047uf, 20%, 400V, Mylar
C43	15-1019	3300pf, 2½%, 125V, Poly	C502	13-1009	.047uf, 20%, 400V, Mylar
C44	15-1019	3300pf, 2½%, 125V, Poly	C503	13-1007	.22uf, 10%, 250V, Mylar
C45	15-1001	5600pf, 2½%, 125V, Poly	C504	13-1007	.22uf, 10%, 250V, Mylar
C46	15-1001	5600pf, 2½%, 125V, Poly	C505	19-1008	15uf, 35VDC, Elect
C47	15-1013	.01uf, 5%, 125V, Poly	C506	19-1008	15uf, 35VDC, Elect
C48	15-1013	.01uf, 5%, 125V, Poly	C507	13-1009	.047uf, 20%, 400V, Mylar
C49	15-1011	.022uf, 5%, 125V, Poly	C508	19-1008	15uf, 35VDC, Elect
C50	15-1011	.022uf, 5%, 125V, Poly	C601A, B	19-1009	250uf, 80VDC, Elect

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C602	19-1001	350uf, 50VDC, Elect	R15	33-1016	15K Pot (Tape Equalization)
D201	35-1014	Diode, Reference	R16	33-1016	15K Pot (Tape Equalization)
D202	35-1014	Diode, Reference	R17	30-1016	47K, 1%, 1/4W, Dep Carb
D203A, B	35-1023	Diode, Reference	R18	30-1016	47K, 1%, 1/4W, Dep Carb
D401A, B	35-1024	Diode, Reference	R19	30-1013	3.9K, 2%, 1/4W, Dep Carb
D401C			R20	30-1013	3.9K, 2%, 1/4W, Dep Carb
D402A, B	35-1024	Diode, Reference	R21	27-1015	2.2K, 10%, 1/4W, Dep Carb
D402C			R22	27-1015	2.2K, 10%, 1/4W, Dep Carb
D403A, B	35-1023	Diode, Reference	R23	27-1027	22K, 5%, 1/4W, Dep Carb
D601A, B	35-1020	Rectifier, Bridge	R24	27-1027	22K, 5%, 1/4W, Dep Carb
D601C, D			R25A, B	33-1014	500K Pot (Balance)
D602	35-1021	Diode, Zener	R26A, B	33-1013	250K Pot (Volume)
Q201	34-1019	Transistor	R27	27-1016	1.0K, 10%, 1/4W, Dep Carb
Q202	34-1019	Transistor	R28	27-1016	1.0K, 10%, 1/4W, Dep Carb
Q203	34-1019	Transistor	R29	27-1026	470 ohms, 5%, 1/4W, Dep Carb
Q204	34-1019	Transistor			
Q205	34-1020	Transistor	R30	27-1026	470 ohms, 5%, 1/4W, Dep Carb
Q206	34-1020	Transistor			
Q301	34-1021	Transistor	R31	26-1004	22M, 20%, 1/4W, Carb Comp
Q302	34-1021	Transistor	R32	26-1004	22M, 20%, 1/4W, Carb Comp
Q303	34-1022	Transistor	R33	26-1004	22M, 20%, 1/4W, Carb Comp
Q304	34-1022	Transistor	R34	26-1004	22M, 20%, 1/4W, Carb Comp
Q401	34-1019	Transistor	R35	27-1025	3.3K, 5%, 1/4W, Dep Carb
Q402	34-1019	Transistor	R36	27-1025	3.3K, 5%, 1/4W, Dep Carb
Q403	34-1019	Transistor	R37	26-1004	22M, 20%, 1/4W, Carb Comp
Q404	34-1019	Transistor	R38	26-1004	22M, 20%, 1/4W, Carb Comp
Q405	34-1020	Transistor	R39	27-1014	12K, 10%, 1/4W, Dep Carb
Q406	34-1020	Transistor	R40	27-1014	12K, 10%, 1/4W, Dep Carb
Q501	34-1021	Transistor	R41	26-1004	22M, 20%, 1/4W, Carb Comp
Q502	34-1021	Transistor	R42	26-1004	22M, 20%, 1/4W, Carb Comp
Q503	34-1022	Transistor	R43	27-1001	1.0M, 10%, 1/4W, Dep Carb
Q504	34-1022	Transistor	R44	27-1001	1.0M, 10%, 1/4W, Dep Carb
Q505	34-1022	Transistor	R45	27-1017	680 ohms, 10%, 1/4W, Dep Carb
Q506	34-1021	Transistor			
Q601	34-1023	Transistor	R46	27-1017	680 ohms, 10%, 1/4W, Dep Carb
R1	27-1022	47K, 5%, 1/4W, Dep Carb	R47	26-1004	22M, 20%, 1/4W, Carb Comp
R2	27-1022	47K, 5%, 1/4W, Dep Carb	R48	26-1004	22M, 20%, 1/4W, Carb Comp
R3	27-1022	47K, 5%, 1/4W, Dep Carb	R49	27-1015	2.2K, 10%, 1/4W, Dep Carb
R4	27-1022	47K, 5%, 1/4W, Dep Carb	R50	27-1015	2.2K, 10%, 1/4W, Dep Carb
R5	27-1000	4.7M, 10%, 1/4W, Dep Carb	R51	26-1004	22M, 20%, 1/4W, Carb Comp
R6	27-1000	4.7M, 10%, 1/4W, Dep Carb	R52	26-1004	22M, 20%, 1/4W, Carb Comp
R7	27-1026	470 ohms, 5%, 1/4W, Dep Carb	R53	27-1013	15K, 10%, 1/4W, Dep Carb
R8	27-1026	470 ohms, 5%, 1/4W, Dep Carb	R54	27-1013	15K, 10%, 1/4W, Dep Carb
R9	27-1016	1.0K, 10%, 1/4W, Dep Carb	R55	26-1004	22M, 20%, 1/4W, Dep Carb
R10	27-1016	1.0K, 10%, 1/4W, Dep Carb	R56	26-1004	22M, 20%, 1/4W, Dep Carb
R11	27-1031	560K, 5%, 1/4W, Dep Carb	R57	27-1023	39K, 5%, 1/4W, Dep Carb
R12	27-1031	560K, 5%, 1/4W, Dep Carb	R58	27-1023	39K, 5%, 1/4W, Dep Carb
R13	27-1029	2.2M, 5%, 1/4W, Dep Carb	R59	26-1004	22M, 20%, 1/4W, Carb Comp
R14	27-1029	2.2M, 5%, 1/4W, Dep Carb	R60	26-1004	22M, 20%, 1/4W, Carb Comp
			R61	27-1011	68K, 10%, 1/4W, Dep Carb

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R62	27-1011	68K, 10%, 1/4W, Dep Carb	R109	27-1024	10K, 5%, 1/4W, Dep Carb
R63	26-1004	22M, 20%, 1/4W, Carb Comp	R110	27-1024	10K, 5%, 1/4W, Dep Carb
R64	26-1004	22M, 20%, 1/4W, Carb Comp	R201	27-1030	1.0M, 5%, 1/4W, Dep Carb
R65	27-1010	180K, 10%, 1/4W, Dep Carb	R202	27-1030	1.0M, 5%, 1/4W, Dep Carb
R66	27-1010	180K, 10%, 1/4W, Dep Carb	R203	27-1026	470 ohms, 5%, 1/4W, Dep Carb
R67	27-1017	680 ohms, 10%, 1/4W, Dep Carb	R204	27-1026	470 ohms, 5%, 1/4W, Dep Carb
R68	27-1017	680 ohms, 10%, 1/4W, Dep Carb	R205	27-1033	22K, 5%, 1/4W, Dep Carb
R69	27-1008	270K, 10%, 1/4W, Dep Carb	R206	27-1033	22K, 5%, 1/4W, Dep Carb
R70	27-1008	270K, 10%, 1/4W, Dep Carb	*R207		150K, 10%, 1/4W, Carb Comp
R71	30-1005	82K, 2%, 1/4W, Dep Carb	*R208		150K, 10%, 1/4W, Carb Comp
R72	30-1005	82K, 2%, 1/4W, Dep Carb	R209	27-1028	3.9M, 5%, 1/4W, Dep Carb
R73	27-1012	27K, 10%, 1/4W, Dep Carb	R210	27-1028	3.9M, 5%, 1/4W, Dep Carb
R74	27-1012	27K, 10%, 1/4W, Dep Carb	R211	30-1017	470 ohms, 1%, 1/4W, Dep Carb
R75	27-1011	68K, 10%, 1/4W, Dep Carb	R212	30-1017	470 ohms, 1%, 1/4W, Dep Carb
R76	27-1011	68K, 10%, 1/4W, Dep Carb	R213	27-1008	270K, 10%, 1/4W, Dep Carb
R77	27-1020	200K, 5%, 1/4W, Dep Carb	R214	27-1008	270K, 10%, 1/4W, Dep Carb
R78	27-1020	200K, 5%, 1/4W, Dep Carb	R215	30-1002	680K, 2%, 1/4W, Dep Carb
R79	27-1002	1.5M, 5%, 1/4W, Dep Carb	R216	30-1002	680K, 2%, 1/4W, Dep Carb
R80	27-1002	1.5M, 5%, 1/4W, Dep Carb	R217	27-1019	100K, 10%, 1/4W, Dep Carb
R81	27-1007	470K, 10%, 1/4W, Dep Carb	R218	27-1019	100K, 10%, 1/4W, Dep Carb
R82	27-1007	470K, 10%, 1/4W, Dep Carb	R219	27-1022	47K, 5%, 1/4W, Dep Carb
R83	27-1009	220K, 10%, 1/4W, Dep Carb	R220	27-1022	47K, 5%, 1/4W, Dep Carb
R84	27-1009	220K, 10%, 1/4W, Dep Carb	R221	27-1004	47 ohms, 10%, 1/4W, Dep Carb
R85	27-1021	100K, 5%, 1/4W, Dep Carb	R222	27-1004	47 ohms, 10%, 1/4W, Dep Carb
R86	27-1021	100K, 5%, 1/4W, Dep Carb	R223	26-1002	4.7K, 5%, 1/4W, Carb Comp
R87	27-1023	39K, 5%, 1/4W, Dep Carb	R224	26-1002	4.7K, 5%, 1/4W, Carb Comp
R88	27-1023	39K, 5%, 1/4W, Dep Carb	R225	27-1023	39K, 5%, 1/4W, Dep Carb
R89	27-1016	1K, 10%, 1/4W, Dep Carb	R301	27-1030	1.0M, 5%, 1/4W, Dep Carb
R90	27-1016	1K, 10%, 1/4W, Dep Carb	R302	27-1030	1.0M, 5%, 1/4W, Dep Carb
R91	30-1004	100K, 2%, 1/4W, Dep Carb	R303	27-1006	3.3K, 10%, 1/4W, Dep Carb
R92	30-1004	100K, 2%, 1/4W, Dep Carb	R304	27-1006	3.3K, 10%, 1/4W, Dep Carb
R93	30-1009	22K, 2%, 1/4W, Dep Carb	R305	27-1005	10K, 10%, 1/4W, Dep Carb
R94	30-1009	22K, 2%, 1/4W, Dep Carb	R306	27-1005	10K, 10%, 1/4W, Dep Carb
R95	30-1008	33K, 2%, 1/4W, Dep Carb	R307	26-1000	2.2K, 10%, 1W, Carb Comp
R96	30-1008	33K, 2%, 1/4W, Dep Carb	R308	26-1000	2.2K, 10%, 1W, Carb Comp
R97	30-1006	68K, 2%, 1/4W, Dep Carb	R309	27-1019	100K, 10%, 1/4W, Dep Carb
R98	30-1006	68K, 2%, 1/4W, Dep Carb	R310	27-1019	100K, 10%, 1/4W, Dep Carb
R99	26-1004	22M, 20%, 1/4W, Carb Comp	R311	27-1026	470 ohms, 5%, 1/4W, Dep Carb
R100	26-1004	22M, 20%, 1/4W, Carb Comp	R312	27-1026	470 ohms, 5%, 1/4W, Dep Carb
R101	30-1007	47K, 2%, 1/4W, Dep Carb	R313	30-1009	22K, 2%, 1/4W, Dep Carb
R102	30-1007	47K, 2%, 1/4W, Dep Carb	R314	30-1009	22K, 2%, 1/4W, Dep Carb
R103	30-1003	220K, 2%, 1/4W, Dep Carb			
R104	30-1003	220K, 2%, 1/4W, Dep Carb			
R105	33-1015	100K Pot (Center Channel Level)			
R106	30-1007	47K, 2%, 1/4W, Dep Carb			
R107	30-1007	47K, 2%, 1/4W, Dep Carb			
R108	27-1018	220 ohms, 10%, 1/4W, Dep Carb			

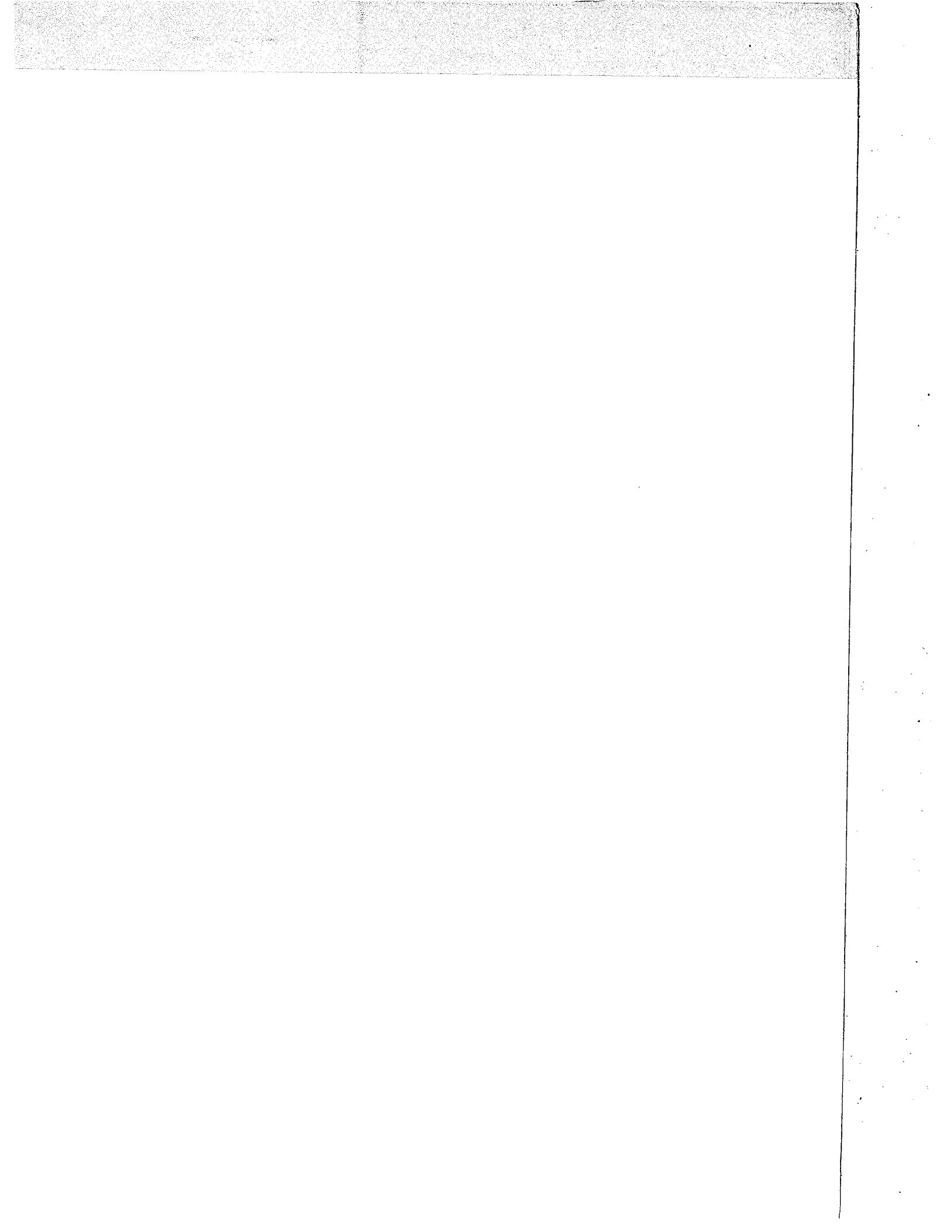
Select value for optimum performance.

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R401	27-1030	1.0M, 5%, 1/4W, Dep Carb	R518	26-1003	1.5K, 5%, 1/2W, Carb Comp
R402	27-1030	1.0M, 5%, 1/4W, Dep Carb	R519	30-1014	680 ohms, 2%, 1/4W, Dep Carb
R403	27-1006	3.3K, 10%, 1/4W, Dep Carb			
R404	27-1006	3.3K, 10%, 1/4W, Dep Carb	R520	27-1001	1.0M, 10%, 1/4W, Dep Carb
R405	27-1032	39K, 5%, 1/4W, Dep Carb	R521	27-1006	3.3K, 10%, 1/4W, Dep Carb
R406	27-1023	39K, 5%, 1/4W, Dep Carb	R522	27-1026	470 ohms, 5%, 1/4W, Dep Carb
*R407		100K, 10%, 1/4W, Dep Carb			
*R408		100K, 10%, 1/4W, Dep Carb	R523	27-1019	100K, 10%, 1/4W, Dep Carb
R409	27-1028	3.9M, 5%, 1/4W, Dep Carb	R524	30-1011	8.2K, 2%, 1/4W, Dep Carb
R410	27-1028	3.9M, 5%, 1/4W, Dep Carb	R525	30-1010	15K, 2%, 1/4W, Dep Carb
R411	30-1012	5.1K, 2%, 1/4W, Dep Carb	R526	30-1009	22K, 2%, 1/4W, Dep Carb
R412	30-1012	5.1K, 2%, 1/4W, Dep Carb	R601	26-1001	100 ohms, 10%, 1W, Carb Comp
R413	27-1008	270K, 10%, 1/4W, Dep Carb			
R414	27-1008	270K, 10%, 1/4W, Dep Carb	R602	26-1001	100 ohms, 10%, 1W, Carb Comp
R415	30-1000	1.5M, 2%, 1/4W, Dep Carb			
R416	30-1000	1.5M, 2%, 1/4W, Dep Carb	R603	27-1003	6.8K, 5%, 1/4W, Dep Carb
R417	27-1019	100K, 10%, 1/4W, Dep Carb	R604	27-1004	47 ohms, 10%, 1/4W, Dep Carb
R418	27-1019	100K, 10%, 1/4W, Dep Carb			
R419	27-1022	47K, 5%, 1/4W, Dep Carb	S1	46-1004	Switch, Selector
R420	27-1022	47K, 5%, 1/4W, Dep Carb	S2	47-1000	Switch, Equalizer
R421	27-1004	47 ohms, 10%, 1/4W, Dep Carb	S3	46-1002	Switch, Mode
			S4	47-1001	Switch, Tape
R422	27-1004	47 ohms, 10%, 1/4W, Dep Carb	S5	46-1005	Switch, Treble (wired)
			S6	46-1005	Switch, Treble (wired)
R423	26-1002	4.7K, 5%, 1/4W, Carb Comp	S7	46-1006	Switch, Bass (wired)
R424	26-1002	4.7K, 5%, 1/4W, Carb Comp	S8	46-1006	Switch, Bass (wired)
R425	27-1023	39K, 5%, 1/4W, Dep Carb	S9	48-1003	Switch, Output level
R501	30-1001	1M, 2%, 1/4W, Dep Carb	S10	47-1002	Switch, Low Freq Filter
R502	30-1001	1M, 2%, 1/4W, Dep Carb	S11	47-1003	Switch, High Freq Filter
R503	27-1006	3.3K, 10%, 1/4W, Dep Carb	S12	48-1002	Switch, Power
R504	27-1006	3.3K, 10%, 1/4W, Dep Carb	TP8	52-1001	Transformer, Power
R505	27-1005	10K, 10%, 1/4W, Dep Carb		90-1021	Cap, Control
R506	27-1005	10K, 10%, 1/4W, Dep Carb		41-1000	Fuse, 1/8 Amp, Type GJV
R507	30-1018	1.8K, 2%, 1/2W, Dep Carb		41-1001	Fuse, 1/8 Amp, Type MDL
R508	30-1018	1.8K, 2%, 1/2W, Dep Carb		69-1002	Jack, Phone (Playback Headphones)
R509	30-1015	430 ohms, 2%, 1/4W, Dep Carb		69-1003	Jack, Phone (Record)
R510	30-1015	430 ohms, 2%, 1/4W, Dep Carb		60-1015	Knob, Black
				60-1012	Knob, Large
R511	30-1001	1.0M, 2%, 1/4W, Dep Carb		60-1014	Knob, Lever
R512	30-1001	1.0M, 2%, 1/4W, Dep Carb		60-1013	Knob, Small
R513	27-1027	470 ohms, 5%, 1/4W, Dep Carb		40-1002	Lamp, Pilot, No. 49
				92-1003	Line Cord with Plug
R514	27-1027	470 ohms, 5%, 1/4W, Dep Carb		60-1016	Panel
				42-1000	Post, Fuse
R515	27-1019	100K, 10%, 1/4W, Dep Carb		11-1028	Recording Assy, RAEF
R516	27-1019	100K, 10%, 1/4W, Dep Carb		68-1007	Socket, Pilot Lamp
R517	27-1005	10K, 10%, 1/4W, Dep Carb		90-1056	Strain Relief

*Select value for optimum performance.

NOTES

1. Cer = Ceramic
 Elect = Electrolytic
 Carb Comp = Carbon Composition
 Dep Carb = Deposited Carbon





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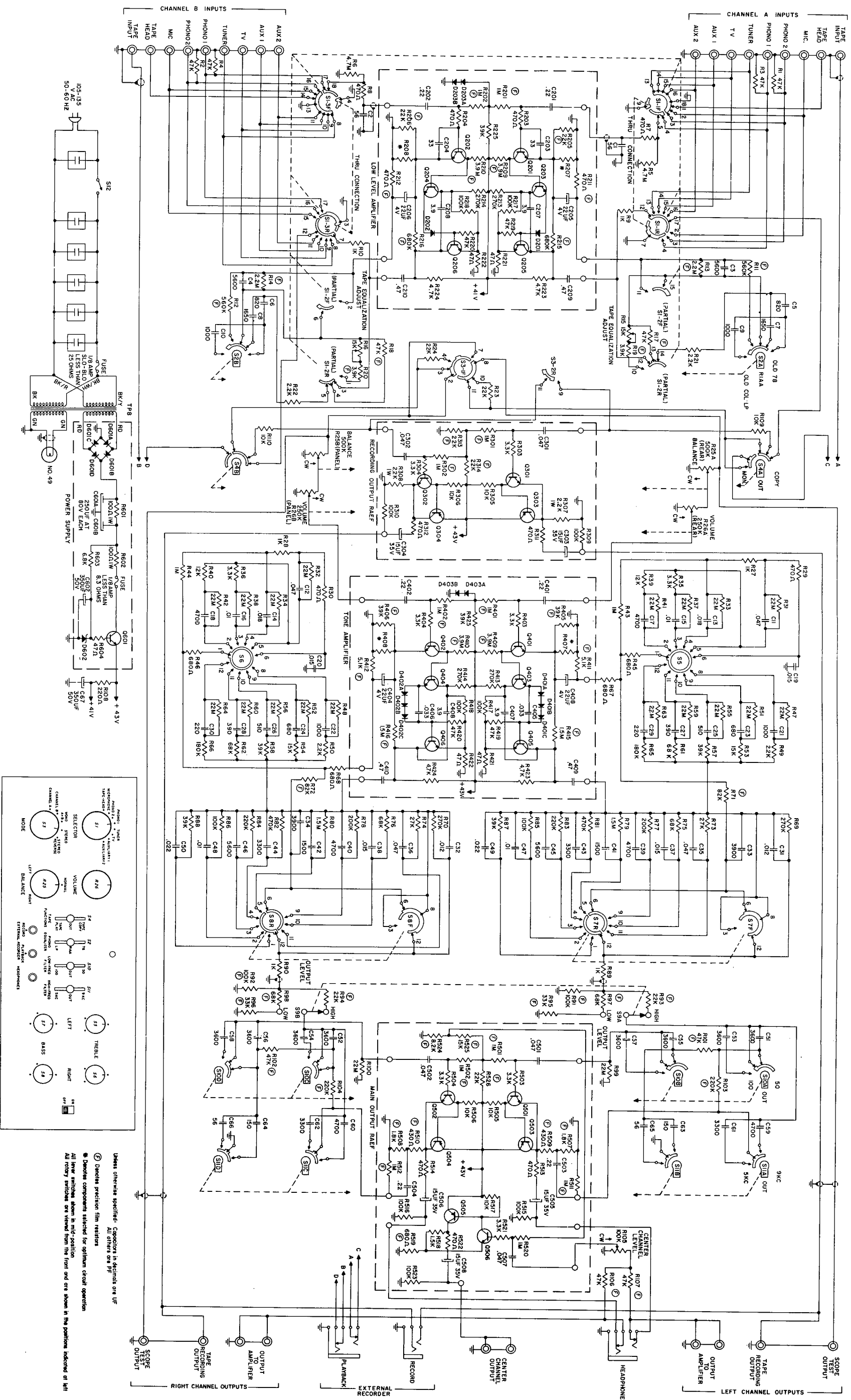
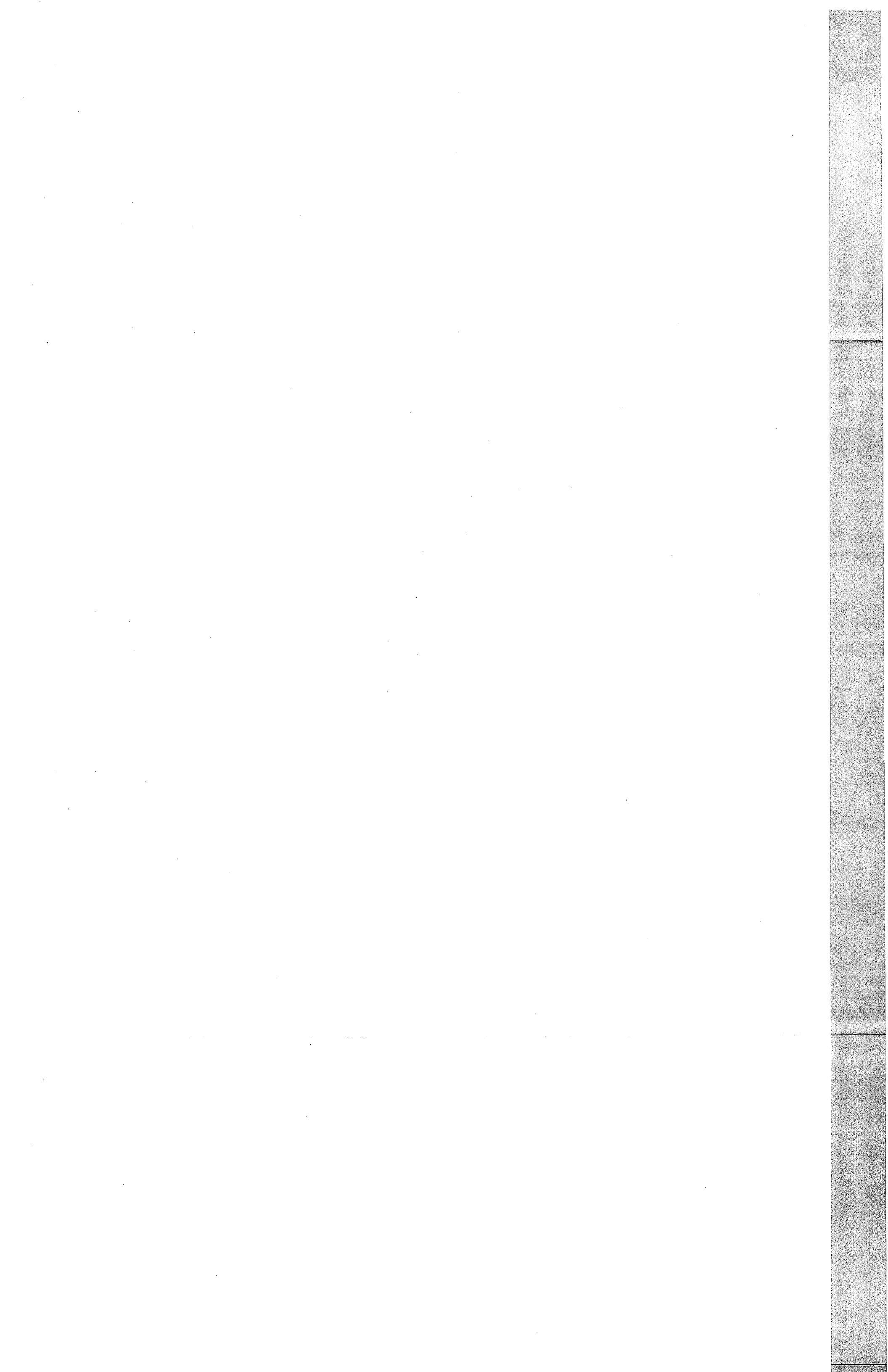


Figure 22. Model 7T Stereo Console, Schematic Diagram, Serial Nos. 15,001 and up



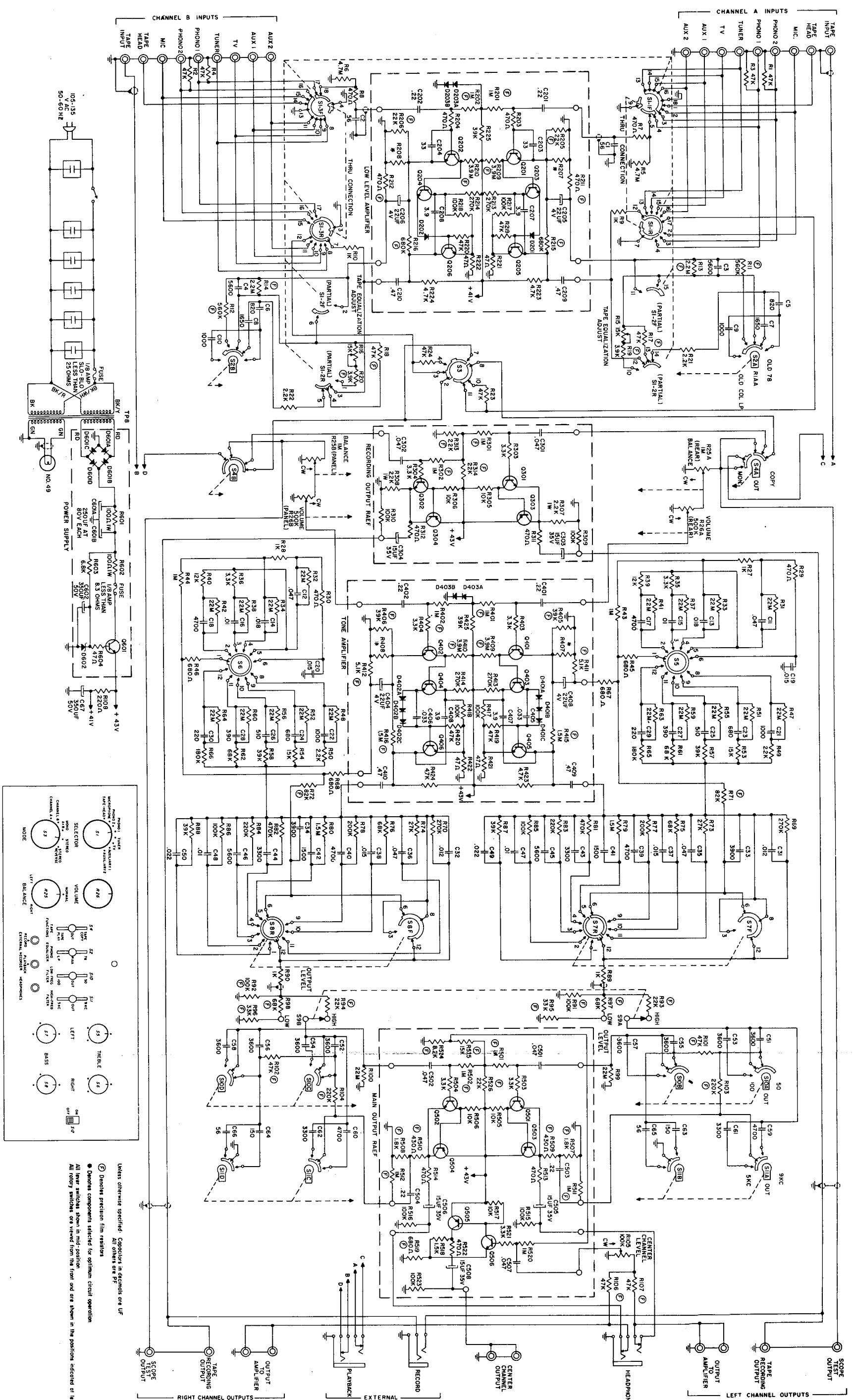


Figure 20. Model 7T Stereo Console, Schematic Diagram, Serial Nos. 10,000 through 12,500

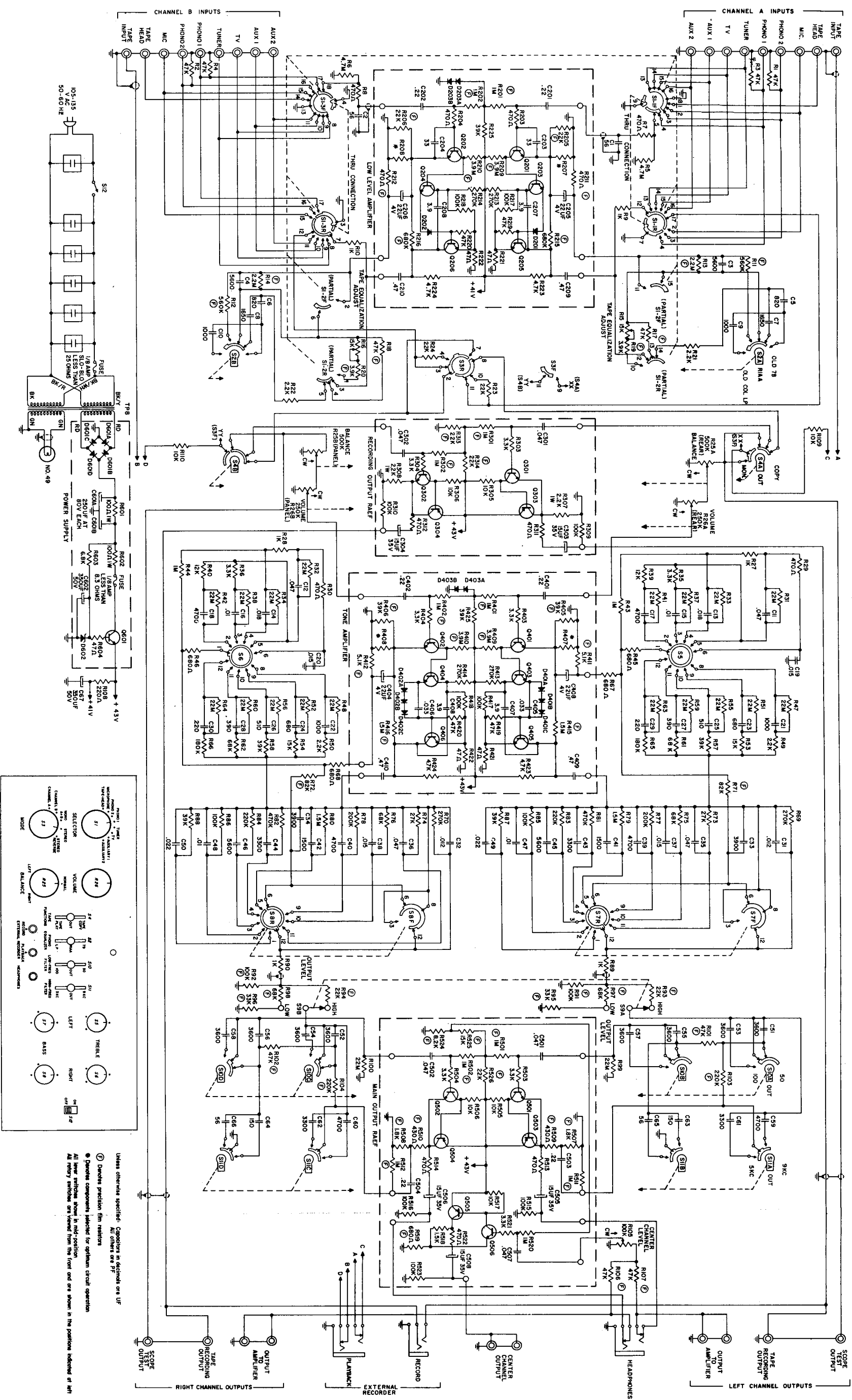


Figure 21. Model 7T Stereo Console, Schematic Diagram, Serial Nos. 12,501 through 15,000