

service  
manual

7C

**marantz**

model 7C

*Stereo Console*

## INTRODUCTION

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

Servicing information and voltage and resistance data included in this manual are intended for use by the knowledgeable and experienced technician only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of the operation of the preamplifier. The functional description and associated block diagram furnishes signal flow and functional data about the preamplifier and is provided as an aid in this understanding.

The parts list furnishes information by which replacement parts may be ordered from the Marantz Company. A description is included for parts which can usually be obtained through local suppliers.

## FUNCTIONAL DESCRIPTION

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

SELECTOR switch SR7 contains three individual functional sections (arranged in five wafers). The three sections provide input, feedback and output routing of the signals. The input section selects low-level input sources and routes them to the preamp. The feedback section functions with the preamp. This section chooses an appropriate equalization network to be applied to the selected input signal. The output section couples the amplified signal to the TAPE switch and TAPE OUT jack. High-level inputs are coupled directly from the input jacks to the TAPE switch and TAPE OUT jack via the output section of the SELECTOR switch. When high-level inputs are selected, the input section shorts the preamp input to ground, thus eliminating interference from this source.

The preamp consists of V2A, V2B, and V3A. The preamp raises the level of all low-level inputs, while introducing the proper equalization necessary for the different input sources. The gain vs. frequency characteristics of the preamp is determined by the equalization network selected in the feedback loop. In the MICROPHONE position, equalization is accomplished with a single resistor. This sets the preamp gain to 40 db with the frequency response held within  $\pm 0.1$  db from 20 to 20,000 Hz. In the PHONO 1 and PHONO 2 positions, the desired equalization network is chosen by the setting of PHONO EQUALIZER switch SL7. The three settings available are OLD 78, R1AA, and COL LP. In all three positions, the gain of the preamp is set to approximately 42 db. Response at other frequencies depends on the network selected. Figure 2 shows the gain vs. frequency characteristics for the preamp in the three switch positions. In the figure, the 0 db reference level corresponds to a gain of 42 db. In the TAPE HEAD position of the SELECTOR, an adjustable equalization network is switched into the feedback loop. The variable element is TAPE EQU.

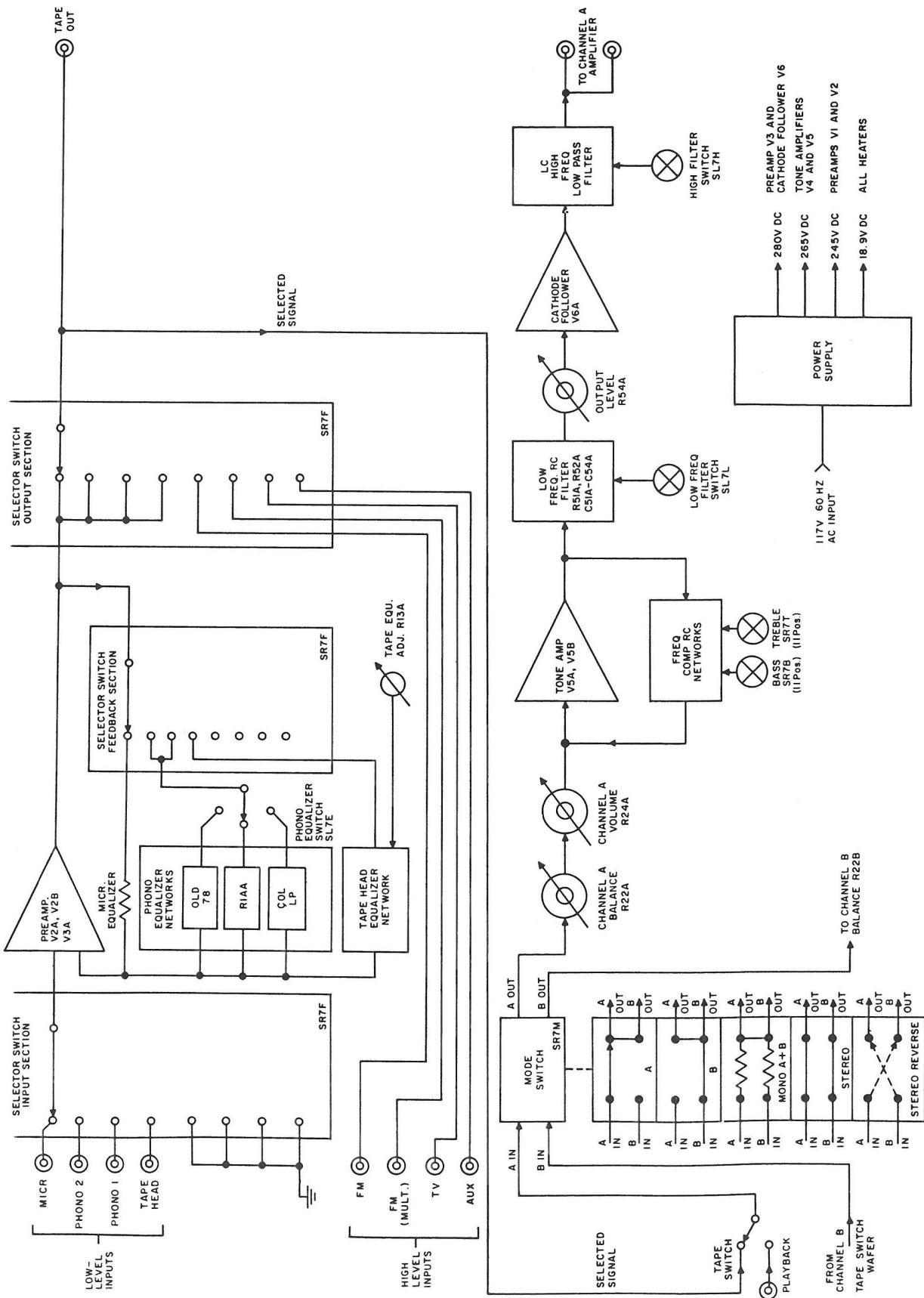


FIGURE 1. Model 7C Stereo Console, Functional Block Diagram

ADJUST potentiometer R13, located on 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. At frequencies above, the response is variable over a range of 13.5 db at 10 KHz. (See figure 2.) Each unit is factory set for NARTB equalization.

TAPE switch SL7 chooses between the selected or tape playback signals for application to the MODE switch. In the SELECTOR position, the selected input signal is applied to the mode switch, and thence to the tone amplifier, while the tape playback input is left open-circuited. In the playback position, the tape playback signal is coupled to the tone amplifier, and the selected input signal is left open-circuited. Note that the selected input signal always remains connected to the TAPE OUT jack.

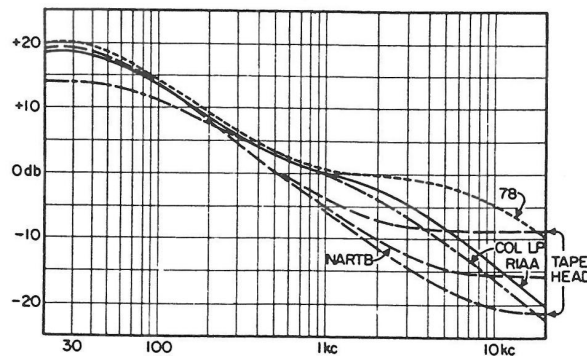


FIGURE 2. Phono And Tape Equalization Characteristics

Inter-channel switching is controlled by MODE switch SR7. In the CHANNEL A position, only the channel A input is applied to both A and B tone amplifiers. In the CHANNEL B position, only channel B inputs are processed by both channels. In MONO A+B, a resistive mixing network is selected by the switch contacts. Channel A and B inputs are mixed in equal proportions and applied to both A and B tone amplifiers. In the STEREO position, the channel A and B inputs are fed to their respective tone amplifiers. The STEREO REVERSE position reverses the destination, i.e., channel A input is fed to the B tone amplifier, and the channel B input is fed to the A tone amplifier.

The relative levels between the channel A and B signals are adjusted by BALANCE control. This is a full range dual potentiometer which permits attenuation of either channel to complete cutoff. One section controls each channel. At the center, both channels are attenuated equally (for balance). Attenuation is approximately 3 db. In the extreme clockwise position, the channel B input is fully attenuated while the channel A signal passes without attenuation. The opposite conditions exist in the counter-clockwise position. The VOLUME control 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.

The tone amplifier, V5, provides high gain and selected frequency compensation for all main channel outputs. Both the BASS and TREBLE controls 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 22.5 db with a flat frequency response from 20 to 20,000 Hz. For 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 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 22.5 db.



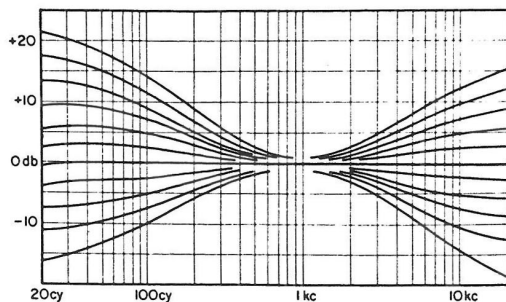


FIGURE 3. Tone Control Characteristics

The output from the tone amplifier is applied to the low frequency filter which consists of a two-section RC time constant network. Tone amplifier signals are attenuated at a rate approaching 12 db per octave below either 50 Hz or 100 Hz, depending upon the front panel switch setting. Figure 4 illustrates the resulting frequency response curves.

Isolation between the high- and low-frequency filters is provided by cathode follower V6. This tube also provides a low output impedance for driving the main output jacks. The input signal to the cathode follower is attenuated by approximately 12 db with OUTPUT LEVEL control R54 in its extreme counter-clockwise position. The high-frequency filter comprises a low-pass LC network that provides a rolloff above the selected cutoff frequency. The high frequency filter limits that may be selected are either 5000 Hz or 9000 Hz. The resulting frequency response is illustrated in figure 4.

The 7C power supply contains two separate rectifiers which supply all anode and heater voltages. DC anode voltages are derived from a conventional half wave rectifier with capacity input filter. Heater voltages are all dc to reduce the introduction of 60 Hz hum. These are supplied by a full wave bridge rectifier with a capacity input filter. The same source is used to light the pilot light.

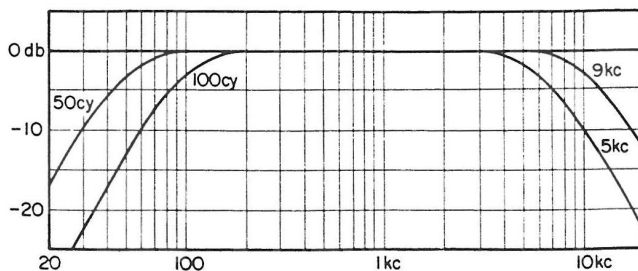


FIGURE 4. Low-Frequency And High-Frequency Filter Characteristics

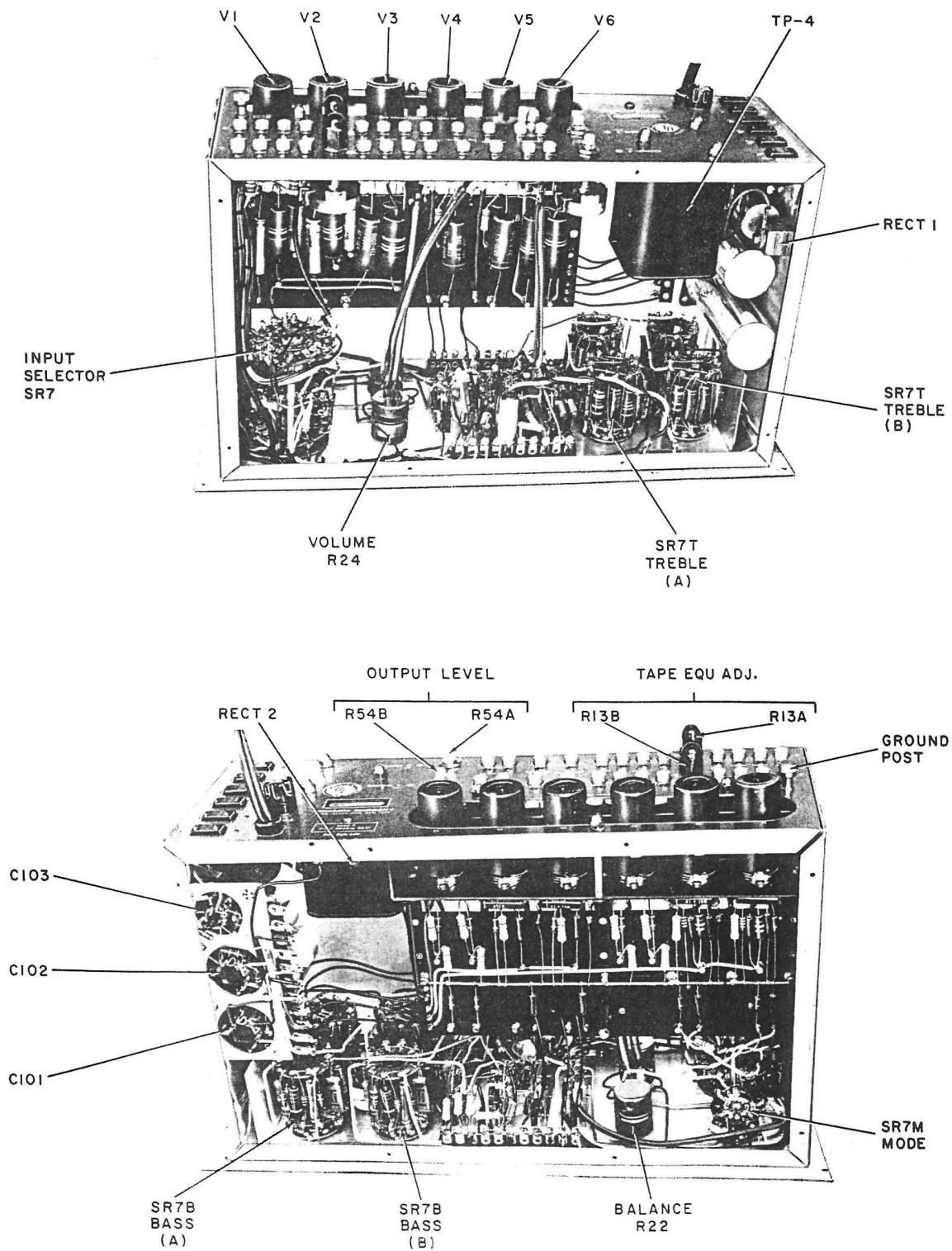


FIGURE 5. Adjustment And Component Locations

## VOLTAGE CHART

		PIN								
TUBE	TYPE	1	2	3	4	5	6	7	8	9
V1	12AX7	153	0	1.5	FIL	12.6 FIL	153	0	1.5	FIL
V2	12AX7	153	0	1.5	FIL	12.6 FIL	153	0	1.5	FIL
V3	12AX7	280	0	52	FIL	FIL	280	0	52	18.9 FIL
V4	12AX7	161	0	1.1	FIL	12.6 FIL	166	0	1.7	FIL
V5	12AX7	161	0	1.1	FIL	12.6 FIL	166	0	1.7	FIL
V6	12AX7	280	0	52	FIL	FIL	280	0	52	18.9 FIL

## NOTES AND CONDITIONS:

1. All voltages are dc  $\pm 10\%$ .
2. FIL are series-parallel connected. Refer to schematic diagram.
3. All voltages measured using a VTVM.
4. All voltages measured while maintaining 117-volt line input.
5. All voltages measured with no signal (SELECTOR switch at AUX and AUX jack shorted).
6. All voltages measured with respect to chassis ground.

## RESISTANCE CHART

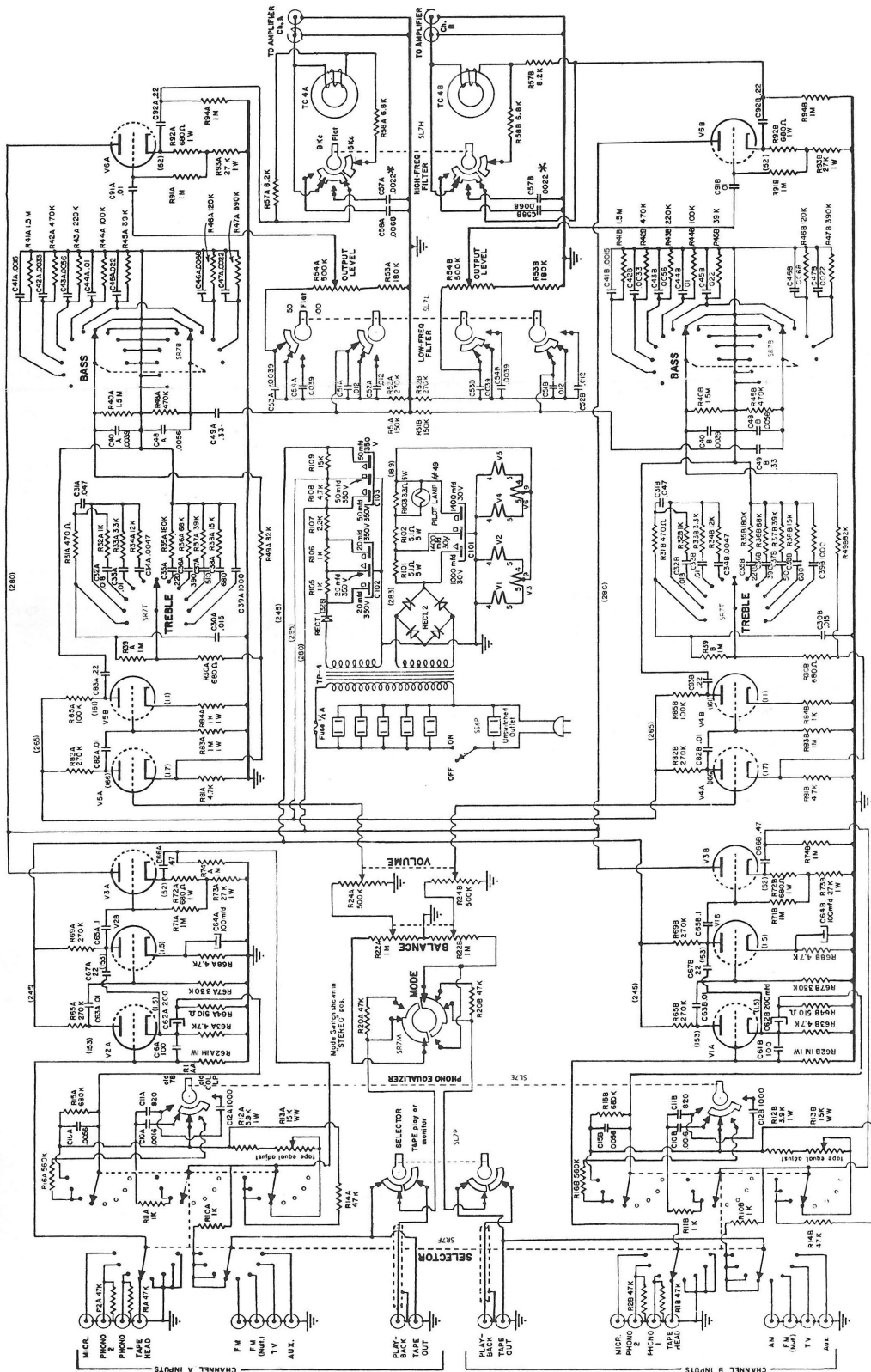
		PIN								
TUBE	TYPE	1	2	3	4	5	6	7	8	9
V1	12AX7	280K*	1M	4.7K	--	--	280K*	330K	5.7	--
V2	12AX7	280K*	1M	4.7K	--	--	280K*	330K	5.7	--
V3	12AX7	4K*	1M	28K	--	--	4K*	1M	28	--
V4	12AX7	280K*	100K**	4.7K	--	--	100K*	1M	1K	--
V5	12AX7	280K*	100K**	4.7K	--	--	100K*	1M	1K	--
V6	12AX7	4K*	1M	28K	--	--	47K*	1M	28K	--

## NOTES AND CONDITIONS:

1. All resistance measurements are in ohms,  $\pm 10\%$ , K = 1000, M = 1,000,000.
2. All resistance measurements taken from chassis ground unless otherwise stated:

\*measured from junction of R105 and cathode of Rect 1.

\*\*VOLUME control set at maximum for this measurement.



(D. C. volts) are approximate as measured with a V.T.V.M. after 30 min. warm up.

\* Where shielded lead to main amplifier exceeds 1.5-20 feet (about 500 mmf.), additional capacitance will lower the Filter cutoff frequencies. This can be compensated for by reducing the value of this capacitor by the amount of the lead capacitance.

Unless otherwise specified:

Condensers in decimals are in MFD  
 Condensers in whole Nos. are in MMFD

K = x 1,000  
 M = x 1,000,000 (or Megohms)

FIGURE 6. Model 7C Stereo Console, Schematic Diagram



## PARTS LIST

REF DESIG	MARANTZ PART NO.	DESCRIPTION	REF DESIG	MARANTZ PART NO.	DESCRIPTION
C10A,B	14-1048	1600 pf, 500V, 5%, Cer	C103	18-1005	50-50-50, 350V, Elect
C11A,B	14-1050	820 pf, 500V, 5%, Cer	R1A,B	26-1121	47K, 1 W, 10%, Carb Comp
C12A,B	14-1049	1000 pf, 500V, 5%, Cer	R2A,B	26-1121	47K, 1 W, 10%, Carb Comp
C15A,B	12-1012	.0056 uf, 400V, 5%, Paper	R10A,B	26-1060	1K, ½ W, 10%, Carb Comp
C30A,B	12-1008	.015 uf, 200V, 5%, Paper	R11A,B	26-1060	1K, ½ W, 10%, Carb Comp
C31A,B	12-1000	.047 uf, 200V, 10%, Paper	R12A,B	26-1127	3.9K, 1 W, 5%, Carb Comp
C32A,B	12-1007	.018 uf, 400V, 10%, Paper	R13A,B	33-1033	15K, WW, 2 W, Pot (Tape Equal)
C33A,B	12-1010	.01 uf, 400V, 10%, Paper	R14A,B	27-1086	47K, ½ W, 1%, Dep Carb
C34A,B	12-1014	.0047 uf, 400V, 10%, Paper	R15A,B	26-1114	680K, ½ W, 5%, Carb Comp
C35A,B	14-1054	220 pf, 500V, 5%, Cer	R16A,B	26-1115	560K, ½ W, 10%, Carb Comp
C36A,B	14-1053	390 pf, 500V, 5%, Cer	R20A,B	26-1069	47K, ½ W, 5%, Carb Comp
C37A,B	14-1052	510 pf, 500V, 5%, Cer	R22A,B	33-1031	1M, Pot, Dual (Balance)
C38A,B	14-1051	680 pf, 500V, 5%, Cer	R24A,B	33-1032	500K Pot, Dual (Volume)
C39A,B	14-1049	1000 pf, 500V, 5%, Cer	R30A,B	26-1129	680 ohms, ½ W, 10%, Carb Comp
C40A,B	12-1015	.0039 uf, 400V, 5%, Paper	R31A,B	26-1059	470 ohms, ½ W, 10%, Carb Comp
C41A,B	12-1020	.0015 uf, 400V, 10%, Paper	R32A,B	26-1060	1K, ½ W, 10%, Carb Comp
C42A,B	12-1017	.0033 uf, 400V, 10%, Paper	R33A,B	26-1049	3.3, ½ W, 10%, Carb Comp
C43A,B	12-1013	.0056 uf, 400V, 10%, Paper	R34A,B	26-1124	12K, ½ W, 10%, Carb Comp
C44A,B	12-1010	.01 uf 400V, 10%, Paper	R35A,B	26-1073	180K, ½ W, 10%, Carb Comp
C45A,B	12-1006	.022 uf, 400V, 10%, Paper	R36A,B	26-1071	68K, ½ W, 10%, Carb Comp
C46A,B	12-1011	.0068 uf, 400V, 10%, Paper	R37A,B	26-1068	39K, ½ W, 10%, Carb Comp
C47A,B	12-1019	.0022 uf, 400V, 10%, Paper	R38A,B	26-1123	15K, ½ W, 10%, Carb Comp
C48A,B	12-1012	.0056 uf, 400V, 5%, Paper	R39A,B	26-1079	1M, ½ W, 10%, Carb Comp
C49A,B	12-1002	.33 uf, 100V, 20%, Paper	R40A,B	26-1113	1.5M, ½ W, 5%, Carb Comp
C51A,B	12-1009	.012 uf, 200V, 10%, Paper	R41A,B	26-1113	1.5M, ½ W, 5%, Carb Comp
C52A,B	12-1009	.012 uf, 200V, 10%, Paper	R42A,B	26-1077	470K, ½ W, 10%, Carb Comp
C53A,B	12-1016	.0039 uf, 400V, 10%, Paper	R43A,B	26-1074	220K, ½ W, 10%, Carb Comp
C54A,B	12-1016	.0039 uf, 400V, 10%, Paper	R44A,B	26-1013	100K, ½ W, 10%, Carb Comp
C57A,B	12-1018	.0022 uf, 400V, 5%, Paper	R45A,B	26-1068	39K, ½ W, 10%, Carb Comp
C58A,B	12-1011	.0068 uf, 400V, 10%, Paper	R46A,B	26-1120	120K, ½ W, 10%, Carb Comp
C61A,B	14-1055	100 pf, 600V, 10%, Cer	R47A,B	26-1076	390K, ½ W, 10%, Carb Comp
C62A,B	19-1014	250 uf, 12V, Elect	R48A,B	26-1077	470K, ½ W, 10%, Carb Comp
C63A,B	12-1010	.01 uf, 400V, 10%, Paper	R49A,B	27-1085	82.5K, ½ W, 2%, Dep Carb
C64A,B	19-1015	100 uf, 3V, Elect	R51A,B	26-1119	150K, ½ W, 5%, Carb Comp
C65A,B	12-1005	.1 uf, 400V, 10%, Paper	R52A,B	26-1117	270K, ½ W, 5%, Carb Comp
C66A,B	12-1001	.47 uf, 200V, 10%, Paper	R53A,B	26-1073	180K, ½ W, 10%, Carb Comp
C67A,B	14-1056	22 pf, 600V, 10%, Cer	R54A,B	33-1034	500K, Pot (Output Level)
C82A,B	12-1010	.01 uf, 400V, 10%, Paper	R57A,B	26-1125	8.2K ½ W, 5%, Carb Comp
C83A,B	12-1003	.22 uf, 400V, 10%, Paper	R58A,B	26-1063	6.8K, ½ W, 10%, Carb Comp
C91A,B	14-1047	.01 uf, 500V, 20%, Cer			
C92A,B	12-1004	.22 uf, 200V, 10%, Paper			
C101	18-1004	1000-1400-1400,30V, Elect			
C102	18-1006	20-20-20, 350V Elect			

NOTE:

Cer = Ceramic

Elect = Electrolytic

Carb Comp = Carbon Composition

Dep Carb = Deposited Carbon

REF DESIG	MARANTZ PART NO.	DESCRIPTION	REF DESIG	MARANTZ PART NO.	DESCRIPTION
R62A,B	26-1079	1M, ½ W, 10%, Carb Comp	SL7H	47-1007	Switch, Lever (Hi Filt)
R63A,B	27-1087	4.7K, ½ W, 2%, Dep Carb	SL7L	47-1006	Switch, Lever (Lo Filt)
R64A,B	27-1088	510 ohms, ½ W, 1% Dep Carb	SL7P	47-1005	Switch, Lever (Play-Mon)
R65A,B	27-1084	270K, ½ W, 5%, Dep Carb	SR7B	46-1006	Switch, Rotary (Bass)
R67A,B	26-1116	330K, ½ W, 10%, Carb Comp	SR7F	46-1011	Switch, Rotary (Select)
R68A,B	26-1126	6.2K, ½ W, 5%, Carb Comp	SR7M	46-1012	Switch, Rotary (Mode)
R69A,B	26-1118	270K, 1 W, 10%, Carb Comp	SR7T	46-1005	Switch, Rotary (Treb)
R71A,B	26-1079	1M, ½ W, 10%, Carb Comp	SS6P	48-1007	Switch, Slide (Power)
R72A,B	26-1084	680 ohms, 1 W, 10%, Carb Comp	TC4A,B	55-1045	Transformer, Toroid
R73A,B	26-1122	27K, 1 W, 10%, Carb Comp	TP4	52-1004	Transformer, Power
R74A,B	26-1079	1M, ½ W, 10%, Carb Comp	V1A,B	37-1005	Tube, Type 12AX7/ECC83
R81A,B	27-1087	4.7K, ½ W, 2%, Dep Carb	V2A,B	37-1005	Tube, Type 12AX7/ECC83
R82A,B	27-1084	270K, ½ W, 5%, Dep Carb	V3A,B	37-1005	Tube, Type 12AX7/ECC83
R83A,B	26-1079	1M, ½ W, 10%, Carb Comp	V4A,B	37-1005	Tube, Type 12AX7/ECC83
R84A,B	26-1085	1K, 1 W, 10%, Carb Comp	V5A,B	37-1005	Tube, Type 12AX7/ECC83
R85A,B	26-1087	100K, 1 W, 10%, Carb Comp	V6A,B	37-1005	Tube, Type 12AX7/ECC83
R91A,B	26-1079	1M, ½ W, 10%, Carb Comp	90-1021	90-1021	Cap, Control
R92A,B	26-1084	680 ohms, 1 W, 10%, Carb Comp	41-1007	41-1007	Fuse, ½ Amp, Type 3AG
R93A,B	26-1122	27K, 1 W, 10%, Carb Comp	60-1054	60-1054	Jewel, Plastic
R94A,B	26-1079	1M, ½ W, 10%, Carb Comp	60-1055	60-1055	Jewel, Surround
R105	26-1060	1K, ½ W, 10%, Carb Comp	60-1047	60-1047	Knob, Black
R106	26-1060	1K, ½ W, 10%, Carb Comp	60-1045	60-1045	Knob, Large
R107	26-1061	2.2K, ½ W, 10%, Carb Comp	60-1046	60-1046	Knob, Small
R108	26-1062	4.7K, ½ W, 10%, Carb Comp	40-1002	40-1002	Lamp, No. 49
R109	26-1123	15K, ½ W, 10%, Carb Comp	92-1011	92-1011	Line Cord (with plug)
SL7E	47-1004	Switch, Lever (Equal)	60-1048	60-1048	Panel, Front
			35-1037	35-1037	Rect, Fil
			35-1038	35-1038	Rect, HV
			90-1066	90-1066	Strain Relief

NOTE:

Cer = Ceramic

Elect = Electrolytic

Carb Comp = Carbon Composition

Dep Carb = Deposited Carbon



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