

SERVICE MANUAL



STEREO CASSETTE RECORDER

M-G12

U.K.



142 385 07

SPECIFICATIONS

Power Source		Wow & Flutter	0.55%, RMS
DC	6V	Frequency Response (Playback)	
(UM-3, HP 7, AA Cell, Mignonzelle, R 6) x 4		Fe2O3	63Hz ~ 8,000Hz
Output Power	30mW x 2 (Max.)	Metal	63Hz ~ 10,000Hz
Current Consumption (at Vol. Min.)		Signal to Noise Ratio (with Fe2O3)	more than 40dB
Playback mode	140mA	Crosstalk (with Fe2O3)	
Fast Forward/Rewind mode	170mA	Track to Track	more than 53dB
Tape Speed	1-7/8ips. ± 3%	Channel Separation (with Fe2O3)	more than 30dB
Fast Forward/Rewind Time	160sec. (with C-60)	Hum & Noise (at Vol. Min.)	-38dBs
Torque		Terminal Impedance	
Playback	32 ~ 60g-cm	Headphone	32Ω
Fast Forward/Rewind	more than 50g-cm		

—Specifications subject to change without notice.—

WM-9390

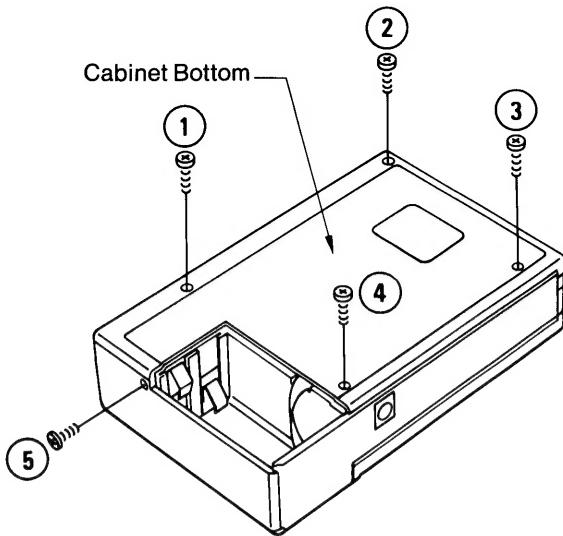
DISASSEMBLY INSTRUCTIONS

GENERAL REMARKS

- Before disassembling the unit, spread a soft rubber mat or a cloth on the workbench to avoid scratches and grease stains.
- Do not use a material which is likely to cause static electricity because transistors and ICs may be easily damaged by it.
- Reassemble the unit, noting the kinds of screws, the soldering and arrangement of the leads. Refer to "Circuit Diagram and Exploded Views" for correct assembly.
- Before disassembling the unit, take out the cassette tape and the batteries.

CABINET BOTTOM REMOVAL

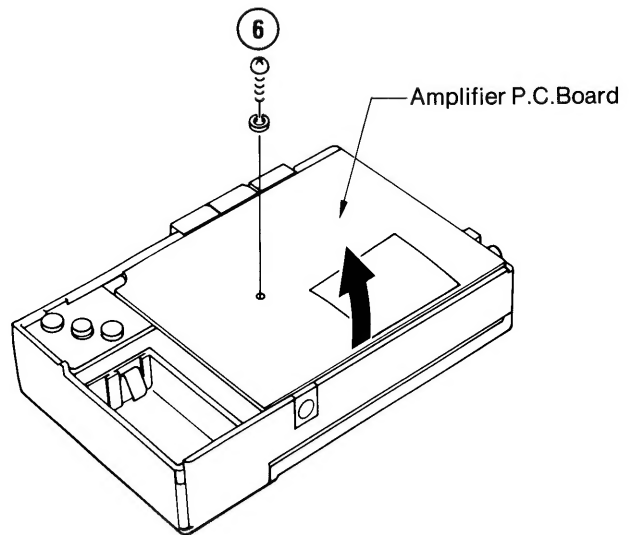
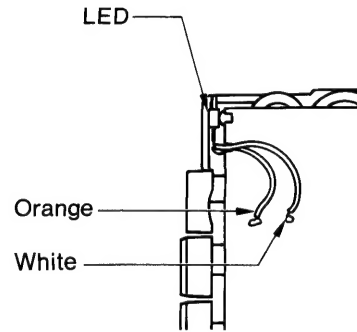
1. Open the Cassette Compartment Lid by pressing the Stop Button and take out the cassette tape from the Compartment.
2. Turn over the unit with front side down on a soft surface and remove the Battery Compartment Lid. Then, remove the batteries.
3. Remove the five screws (1 ~ 5) fastening the Cabinet Bottom and lift the Cabinet Bottom away from the unit.



4. Reassemble in reverse order.

AMPLIFIER P.C.BOARD REMOVAL

1. Follow the instructions for the "Cabinet Bottom Removal".
2. Remove the screw (6) fastening the P.C.Board and unsolder the LED leads (White and Orange) from the P.C.Board to protect the LED indicator.



3. Turn over the P.C.Board toward the front of the unit with caution not to damage the Playback Head, Motor and Battery Terminal leads.
4. Reassemble in reverse order.

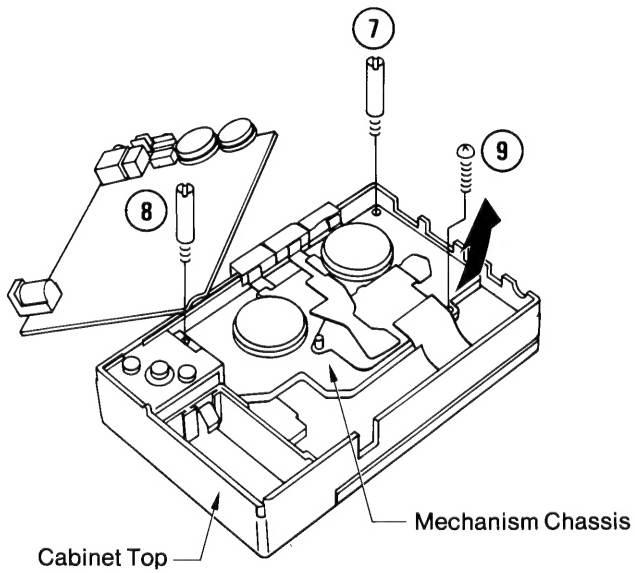
NOTE:

When unsoldering the removed lead wires, refer to the wiring diagram to avoid miswiring.

MECHANISM CHASSIS REMOVAL

1. Follow the instructions for "Cabinet Bottom Removal" and "Amplifier P.C.Board Removal".
2. Remove the two posts (7 and 8) and the screw (9) holding the Mechanism Chassis.

DISASSEMBLY INSTRUCTIONS (Continued)



3. After the Cassette Compartment Lid is opened, set the mechanism in the playback mode by pressing the Play Button.
4. To detach the Mechanism Chassis, lift the Mechanism Chassis in the direction of the arrow until the Play Button is removed from the button hole of the Cabinet Top. Then, left the motor side of the Mechanism Chassis away from the Cabinet Top.
5. Reassemble in reverse order.

ADJUSTMENTS

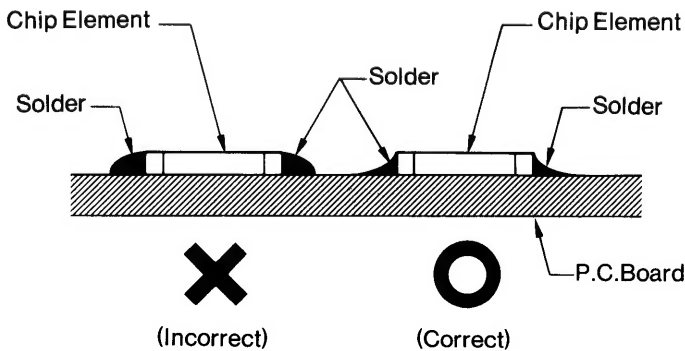
GENERAL REMARKS

- Before adjusting the mechanism of this unit, wipe the tape contacting surfaces of the Head, Pinch Roller and Capstan, and the surfaces of the driving parts such as the Drive Belt, Take-up Belt, Flywheel and Pulley with a soft cloth soaked in alcohol. Trouble may occur because of oil and grease stains.
- Carefully handle the belt because grease easily attaches to it. Then, check the used rubber parts. If the rubber has deteriorated or is scratched, replace the parts with new ones.

NOTES ON HANDLING THE CHIP ELEMENT

Pay due caution to the following items:

1. Do not use the removed chip element again.



2. Use a soldering iron of less than 30W.
 - * The soldering iron should not touch the body of the chip element.
 - * Complete soldering in a short time.
 - * Apply solder to the chip element as illustrated below.

EQUIPMENT REQUIRED

- VTVM
- Frequency Counter
- Dummy Load (33Ω)
- Test Tapes
 - * 3kHz test tape (Example: TEAC MTT-111) for the Tape Speed Adjustment
 - * 10kHz test tape (Example: TEAC MTT-114) for the Head Azimuth Adjustment
- Alignment Tool

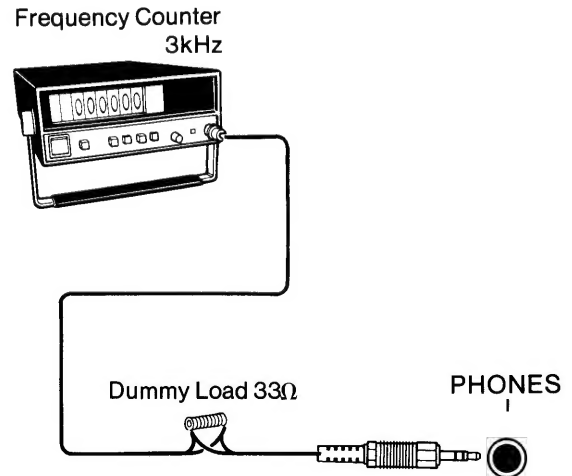
NOTE:

Before the Electrical Adjustments, set the unit as follows:

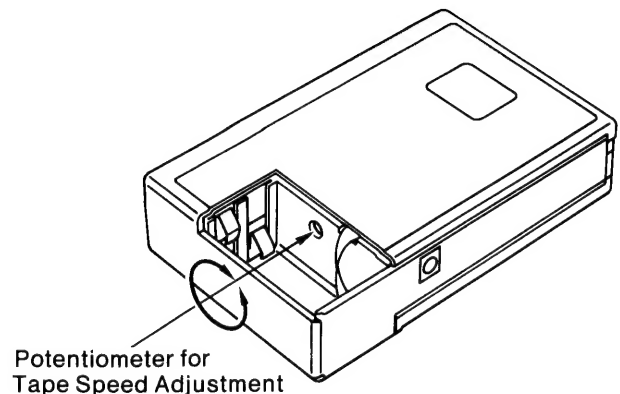
- * Tone Switch HIGH
- * Mute Switch OFF
- * Balance Control 0 (Center Position)
- * Supply a regulated DC 6V power to the Ext. Power Jack.

TAPE SPEED ADJUSTMENT

1. Remove the Battery Compartment Lid and take out the batteries from the compartment, and connect the regulated DC 6V power supply to the Ext. Power Jack.
2. Connect a frequency counter to the Headphones Jack as illustrated and insert a 3kHz test tape (Example: TEAC MTT-111) into the Cassette Compartment.



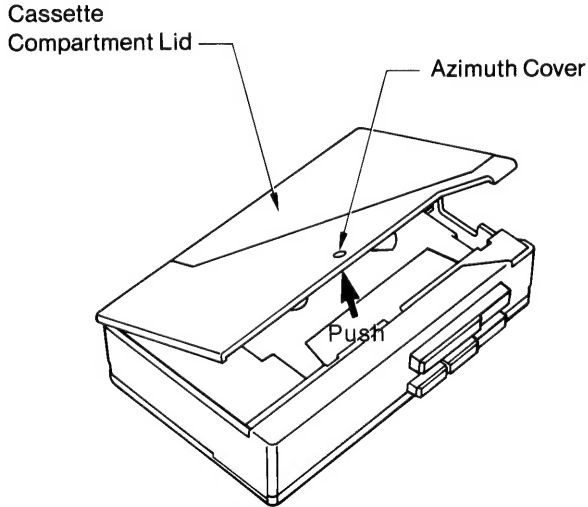
3. While playing back the test tape, adjust the tape speed by turning the potentiometer (P301) on the P.C.Board with an alignment tool until the frequency counter reads 3kHz.



ADJUSTMENTS (Continued)

HEAD AZIMUTH ADJUSTMENT

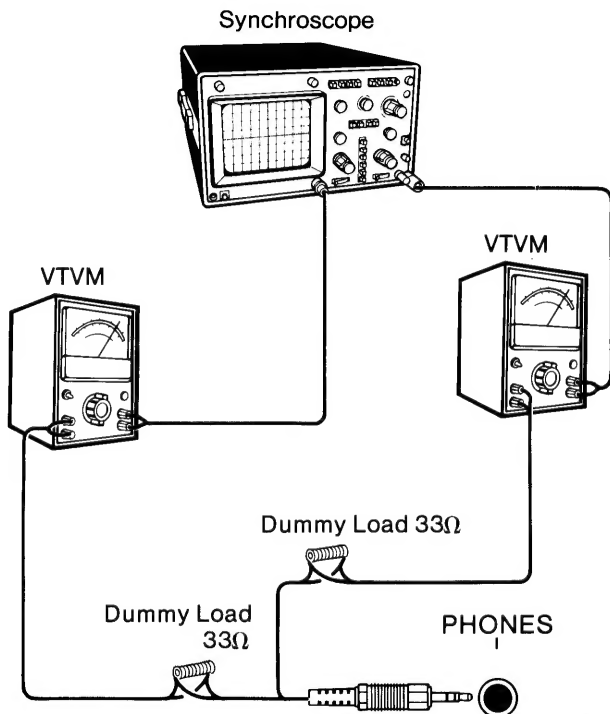
1. Open the Cassette Compartment Lid and remove the Azimuth Cover from the Lid by pushing it with a tweezers in the direction of the arrow.



2. Connect two VTVMs and a synchroscope to the Headphone Jack as illustrated.

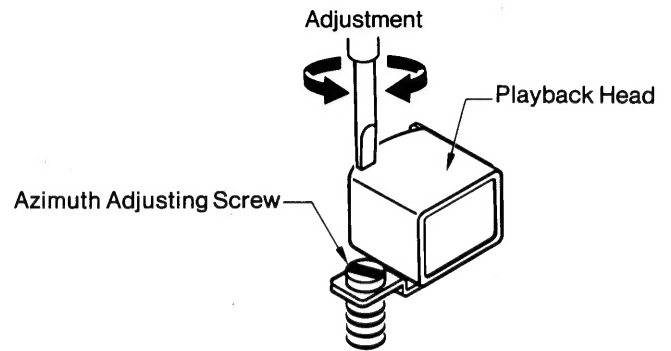
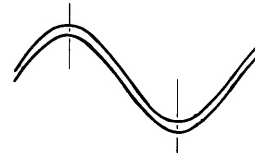
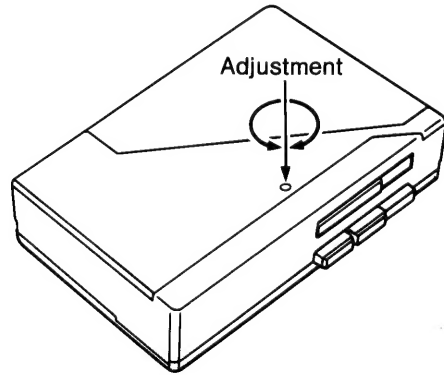
Set the synchroscope as follows:

- * MODE CHOP (chopped)
- * SOURCE INT (internal), CH1 or CH2
- * SWEEP MODE AUTO (automatic)



3. Insert a 10kHz test tape (Example: TEAC MTT-114) into the Cassette Compartment and play it back.

4. While playing back the test tape, slowly turn the azimuth adjusting screw until the amplitudes of both channel output wave forms become maximum and the wave forms overlap as well as possible in the maximum condition of the VTVM as illustrated.

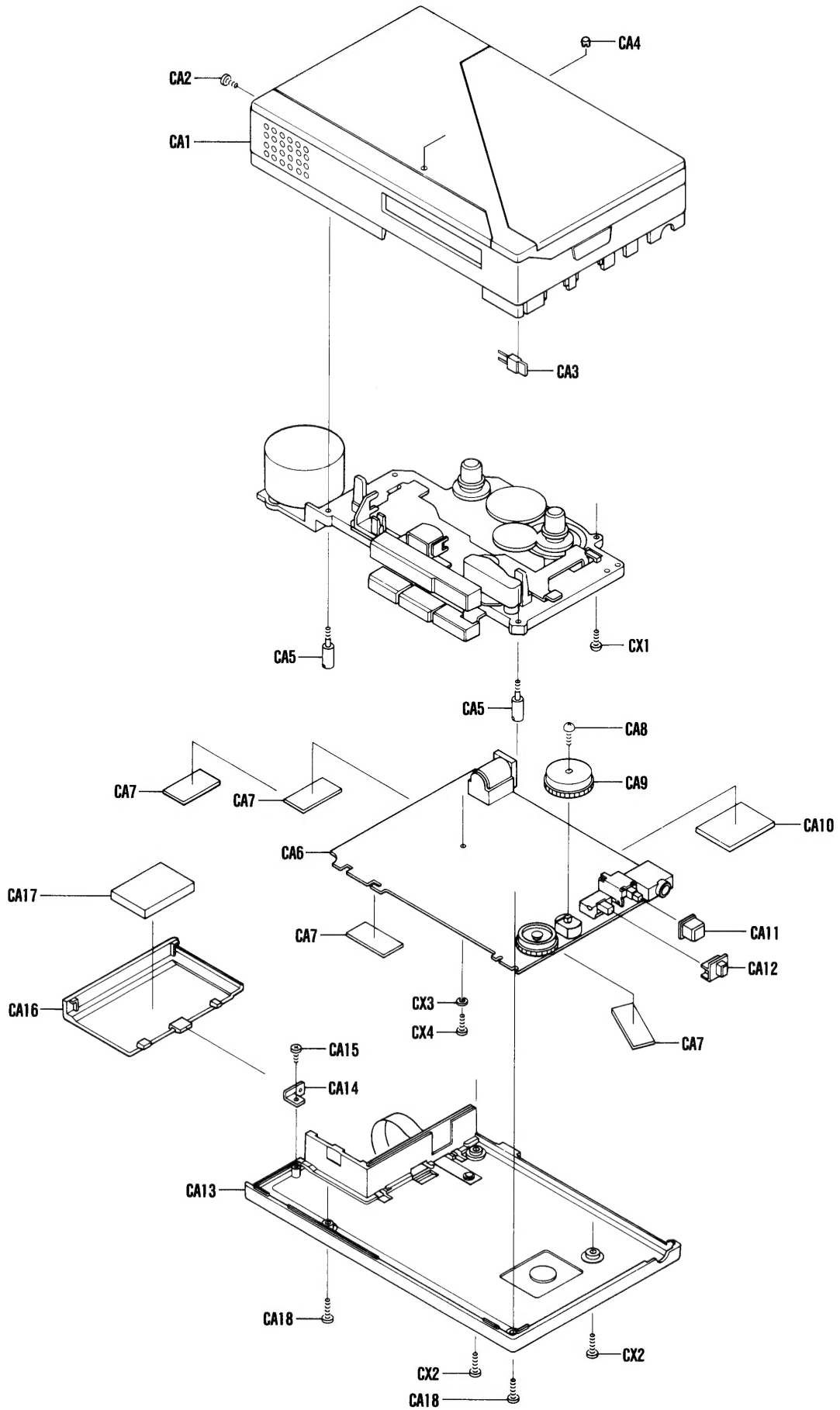


5. After the adjustment, secure the adjusting screw with paint or glue.

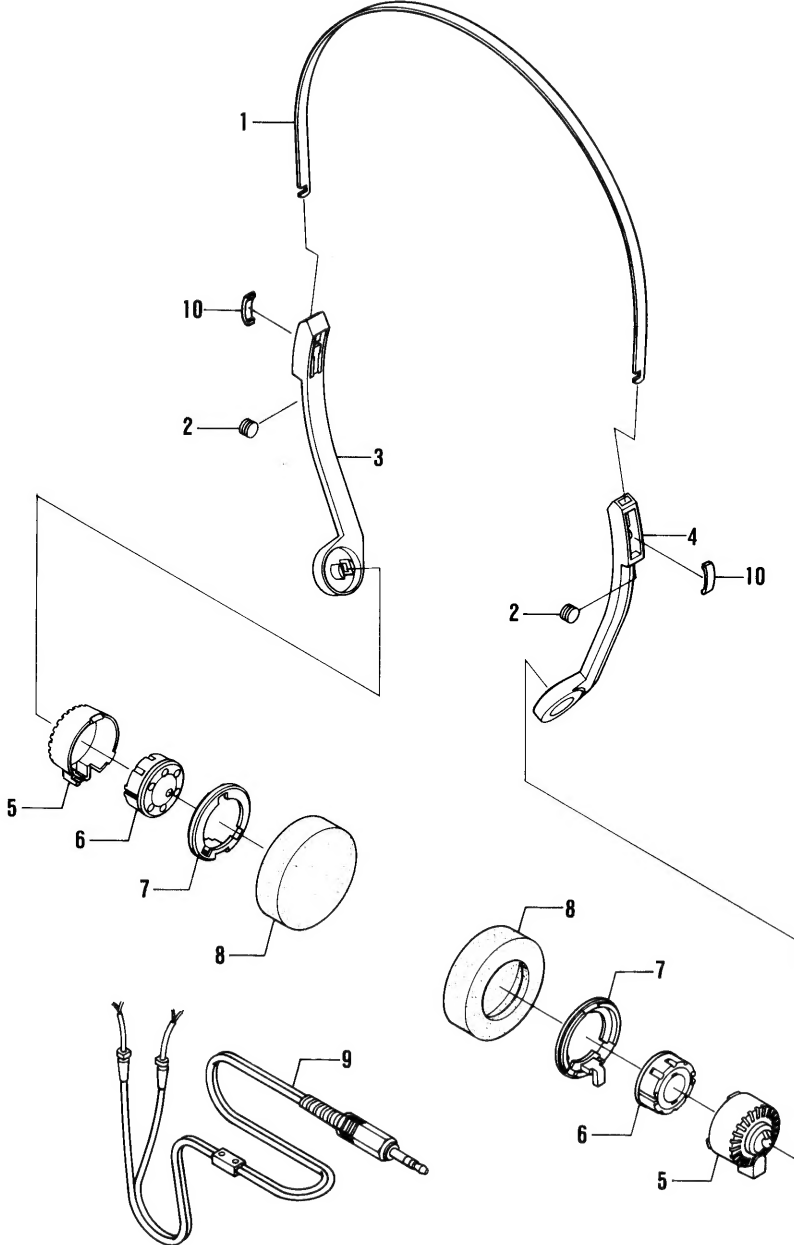
PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
PACKAGE							
141	6 1419 65300	Individual Carton	1	CX1	101 3 1302 00711	Screw, Pan Hd.	+M2.0x7 1
141	6 1449 82600	Styrofoam Case	1	CX2	101 3 1702 00614	Screw, Bind Hd. (Silver)	+M2.0x6 2
141	6 2519 08015	Poly Cover 80 x 150	1	CX2	101 3 1702 00618	Screw, Bind Hd. (Red)	+M2.0x6 2
141	6 3919 42000	Plain Pad	1	CX3	110 3 2101 70013	Spring Washer-2	M1.7 1
141	6 2519 12090	Poly Cover	2	CX4	127 3 1317 04014	PI Screw-1, Pan Hd.	+M1.7x4.0 1
141	6 4559 00100	Serial No. Sheet	3				
141	6 4729 37300	Red Label (Red)	3				
ACCESSORIES							
	4 1529 70240	Headphones	1				
141	0 1259 02700	Belt Clip Assy	1				
141	2 1769 05100	Shoulder Strap	1				
141	2 1819 13900	Carrying Case	1				
141	6 4519 07700	Warranty Card	1				
141	6 4729 37321	POP Label	1				
141	6 4119 31586	Instruction Manual	1				
HEADPHONES							
*	4 1529 70240	Headphones	1				
1	141 2 1769 06800	Slider	1				
2	141 2 8219 32600	Stopper	2				
3	141 2 1769 06700	Hanger, Left	1				
4	141 2 1769 06701	Hanger, Right	1				
5	141 2 1259 04900	Housing	2				
6	4 1529 70280	Ear Speaker	2				
7	141 2 2449 44200	Baffle	2				
8	141 2 4469 41900	Ear Pad	2				
9	4 2369 73640	Plug Cord	1				
10	141 2 3529 38200	Slide Adjustor	2				
CABINET							
	141 2 2449 45800	Sheet	1				
	141 2 2899 14000	Adhesive Sheet	1				
CA1	141 0 1119 88106	Completed Cabinet Top (Silver)	1				
CA1	141 0 1119 88105	Completed Cabinet Top (Red)	1				
CA2	141 2 4219 10602	Screw (Silver)	+M1.7x4.0 1				
CA2	141 2 4219 10601	Screw (Red)	+M1.7x4.0 1				
CA3	4 2029 71160	LED, SLP-151B (Battery) [D1]	1				
CA4	141 2 2419 27400	Azimuth Cover (Silver)	1				
CA4	141 2 2419 27402	Azimuth Cover (Red)	1				
CA5	141 2 7539 24300	Post	2				
CA6	4 1329 78100	Amplifier P.C.B. Assy [See PCB1] (Silver)	1				
CA6	4 1329 78105	Amplifier P.C.B. Assy [See PCB1] (Red)	1				
CA7	141 2 4419 14901	Sheet	4				
CA8	141 2 4219 08900	Screw	1				
CA9	141 2 1639 50500	Volume Knob (Silver)	1				
CA9	141 2 1639 50501	Volume Knob (Red)	1				
CA10	141 2 4469 39000	Cushion	1				
CA11	141 2 1659 08900	Mute Button	1				
CA12	141 2 1649 19800	Tone Knob (Silver)	1				
CA12	141 2 1649 19801	Tone Knob (Red)	1				
CA13	141 0 1119 88200	Cabinet Bottom Assy (Silver)	1				
CA13	141 0 1119 88202	Cabinet Bottom Assy (Red)	1				
CA14	141 2 2149 18300	Cabinet Bracket	1				
CA15	141 2 4219 27200	Screw	+M1.7x5.0 1				
CA16	141 2 1339 28600	Battery Lid (Silver)	1				
CA16	141 2 1339 28602	Battery Lid (Red)	1				
CA17	141 2 4469 43200	Cushion	1				
CA18	141 2 4219 30000	Screw (Silver)	+M2.0x10 2				
CA18	141 2 4219 30001	Screw (Red)	+M2.0x10 2				
				NOTES:			
				1. Parts order must contain Model Number, Part Number and Description.			
				2. Ordering quantity of screws and resistors must be multiple of 10 pcs.			

CABINET EXPLODED VIEW



HEADPHONE EXPLODED VIEW



MECHANISM PARTS LIST

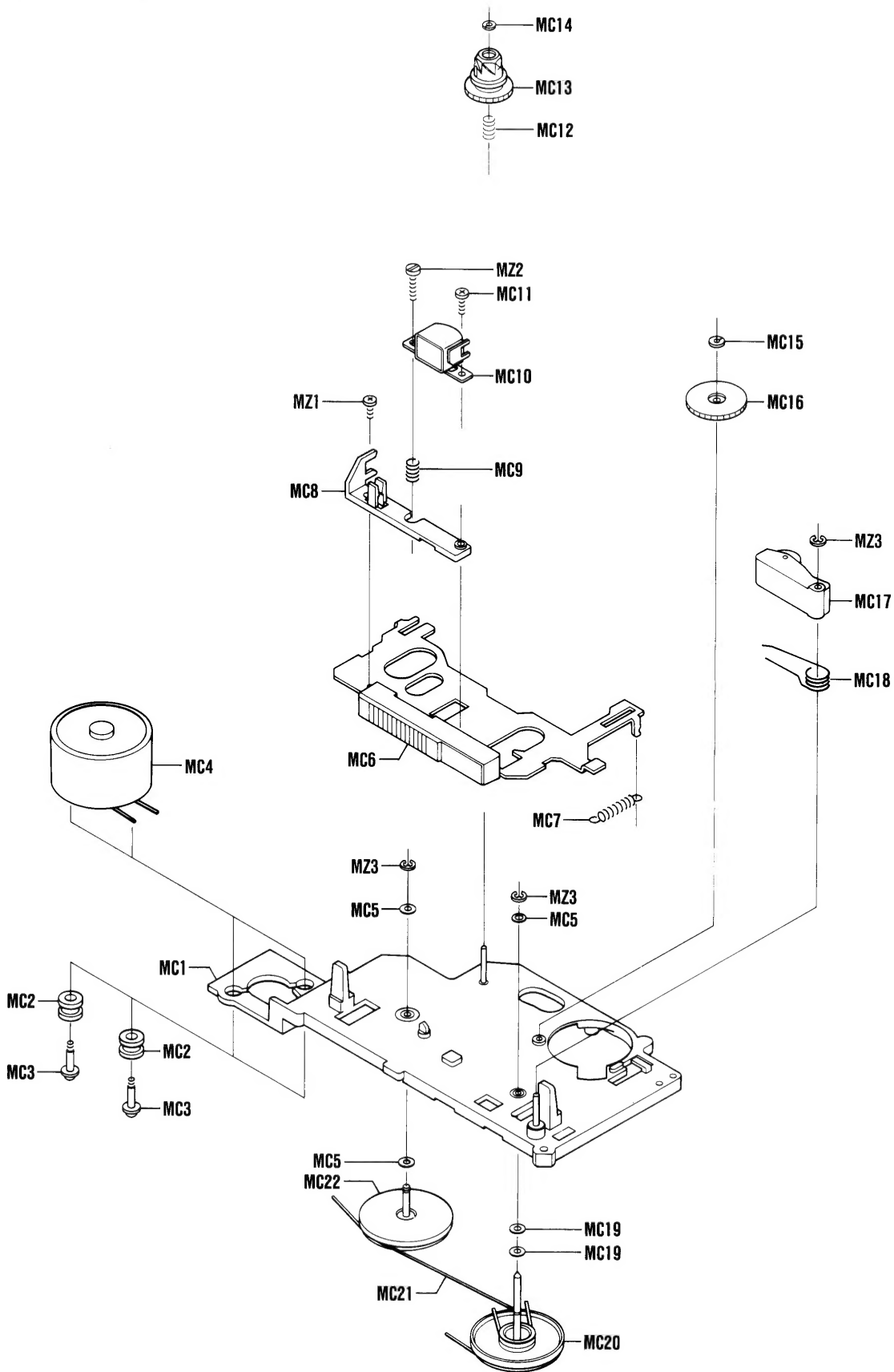
Ref. No.	Part No.	Description	Q'ty
MECHANISM			
MC1	141 0 3119 21600	Chassis Assy	1
MC2	141 2 4459 26800	Cushion, Motor	2
MC3	141 2 4219 23300	Screw	2
MC4	4 5279 71240	Motor [M1]	1
MC5	141 2 4539 27601	Washer	4
MC6	141 0 7419 36700	Play Lever Assy	1
MC7	141 2 8519 07500	Spring, Stop Lever	1
MC8	141 2 3529 36500	Base Head	1
MC9	141 2 8519 47400	Spring, Head	1
MC10	4 2429 72250	Play Back Head [HD1]	1
MC11	141 2 4219 24500	Screw	1
MC12	141 2 8559 02500	Spring, Supply	1
MC13	141 0 5369 01900	Supply Reel Assy	1
MC14	141 2 4539 17500	Washer	2
MC15	141 2 4539 30600	Washer	2
MC16	141 2 5519 47200	F.FWD Gear	1
MC17	141 0 5459 02000	Pinch Roller Assy	1
MC18	141 2 8529 11600	Spring, Pinch Roller	1
MC19	141 2 4539 19800	Washer	2
MC20	141 0 5219 09400	Flywheel Assy	1
MC21	141 2 5649 20600	Drive Belt	1
MC22	141 0 5219 03701	Sub Flywheel Assy	1
MC23	141 2 7319 54700	Lock Plate	1
MC24	141 0 7419 36600	Stop Lever Assy	1
MC25	141 0 7419 36500	Rewind Lever Assy	1
MC26	141 2 7439 31000	Review Arm	1
MC27	141 2 3519 60800	Plate	1
MC28	141 2 8549 06800	Spring, Lock Plate	1
MC29	141 2 8519 71200	Spring	2
MC30	141 2 8549 18200	Spring	2
MC31	141 2 4219 29900	Screw	4
MC32	141 2 7439 31100	Power Arm	1
MC33	141 0 3519 21500	Reel Plate Assy	1
MC34	141 2 3229 40300	Shield Plate	1
MC35	141 2 4579 01400	Washer, Take-up Pulley	1
MC36	141 2 4539 13000	Washer	1
MC37	141 2 5519 47000	Take-up Pulley	1
MC38	141 2 5649 09900	Take-up Belt	1
MC39	141 0 5319 07300	Take-up Reel Assy	1
MC40	141 2 8529 11700	Spring, AS0 Cancel	1
MC41	141 2 7439 30700	Take-up Arm	1
MC42	141 2 5519 47500	Take-up Gear	1
MC43	141 2 4539 15700	Washer	1
MC44	141 0 7419 36400	Fast Lever Assy	1
MC45	141 2 5519 47100	Fast Gear	1
MC46	141 2 4539 31500	Washer	M6.0x10x0.25 1
MZ1	101 3 1802 00311	Screw, Truss Hd.	+M2.0x3 1
MZ2	101 3 2502 00611	Screw, Cylinder Hd.	-M2.0x6 1
MZ3	112 3 1301 50082	E Ring	M1.5 3

NOTES:

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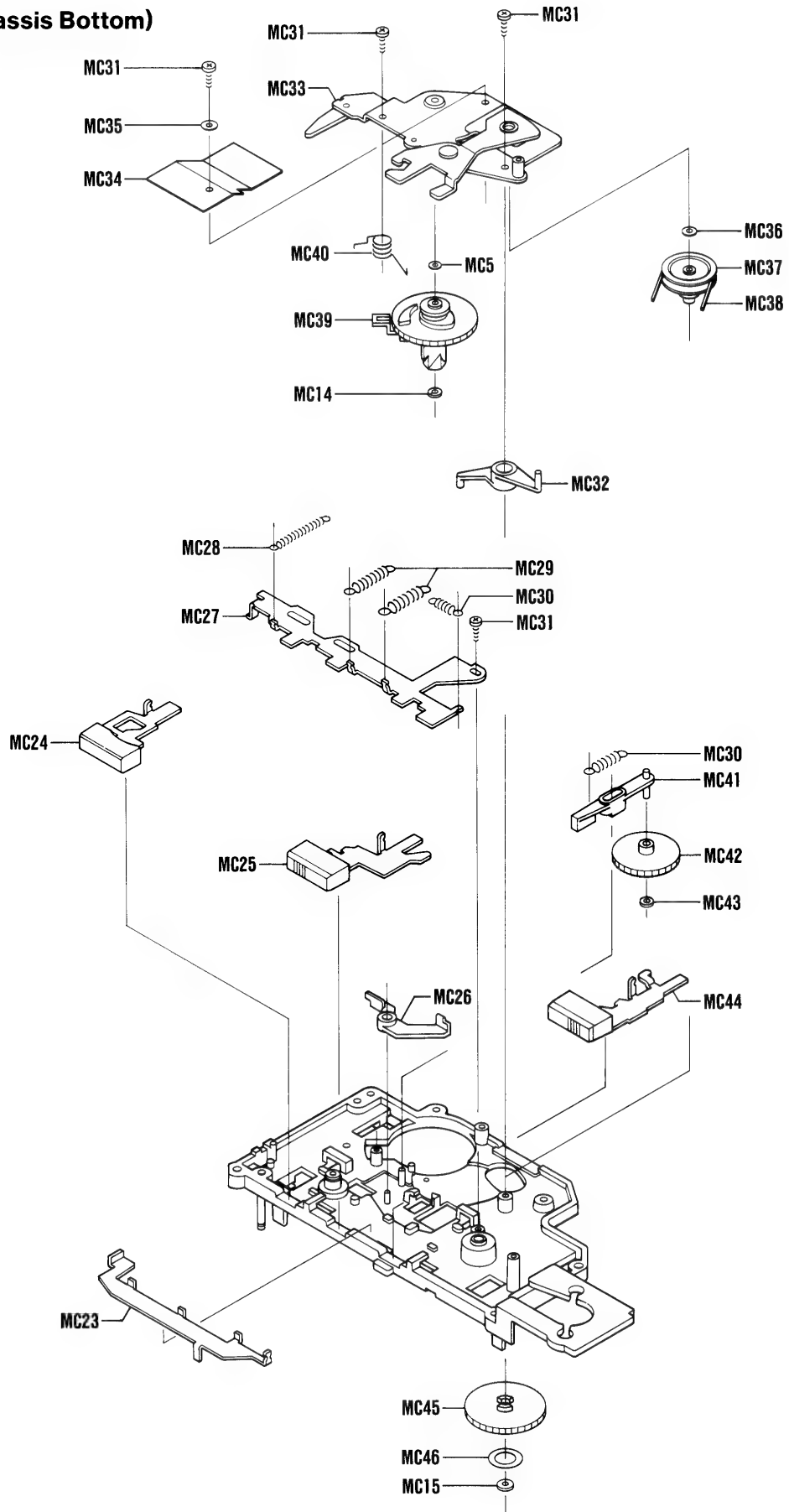
MECHANISM EXPLODED VIEW

(Chassis Top)



MECHANISM EXPLODED VIEW (Continued)

(Chassis Bottom)



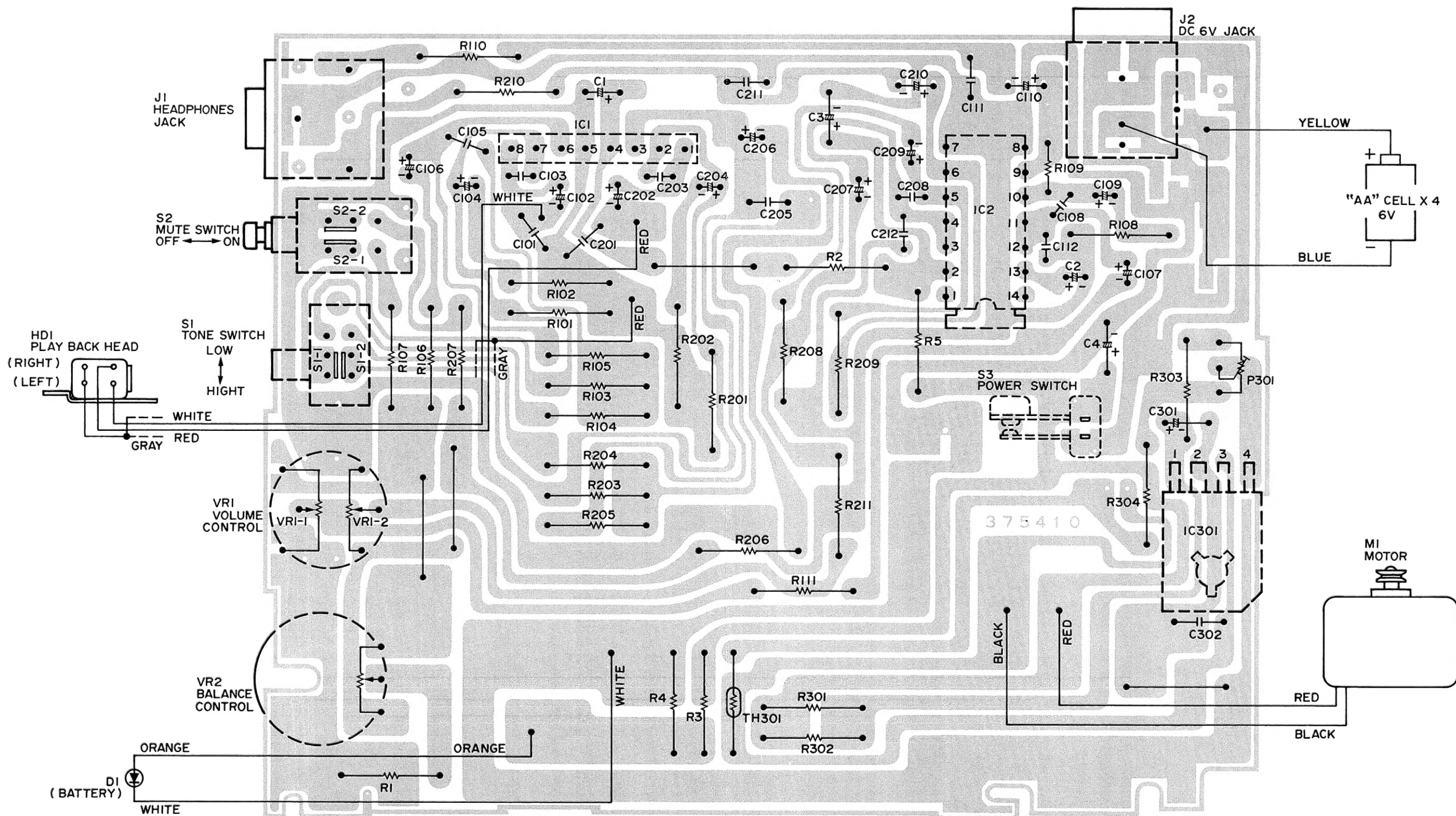
P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
AMPLIFIER P.C.B. ASSY							
PCB1	4 1329 78100	Amplifier P.C.B. Assy (Silver)	1	R204	RD1 5 2251 JM000 Carbon	1.5kΩ 1/4W ±5%	1
PCB1	4 1329 78105	Amplifier P.C.B. Assy (Red)	1	R205	RD1 0 4251 JM000 Carbon	100kΩ 1/4W ±5%	1
	141 2 3229 35900	Shield Plate	1	R206	RD1 2 2251 JM000 Carbon	1.2kΩ 1/4W ±5%	1
S1	4 2319 75610	Slide Switch (Tone)	1	R207	RD6 8 0251 JM000 Carbon	68Ω 1/4W ±5%	1
S2	4 2319 74630	Push Switch (Mute)	1	R208	RD1 5 1251 JM000 Carbon	150Ω 1/4W ±5%	1
S3	4 2319 74490	Leaf Switch (Power)	1	R209	RD1 0 3251 JM000 Carbon	10kΩ 1/4W ±5%	1
J1	4 2359 75782	Jack 3P (Headphones)	1	R210	RD2 2 A251 JM000 Carbon	2.2Ω 1/4W ±5%	1
J2	4 2359 72954	Ext. Power Socket	1	R211	RD1 0 2251 JM000 Carbon	1kΩ 1/4W ±5%	1
VR1	4 2229 73910	Volume Control (Volume, A-20kΩ)	1	R301	RD4 7 1251 JM000 Carbon	470Ω 1/4W ±5%	1
VR2	4 2229 73900	Volume Control (Balance, G-20kΩ) (Silver)	1	R302	RD2 7 1251 JM000 Carbon	270Ω 1/4W ±5%	1
VR2	4 2229 73901	Rotary Volume (Balance, G-20kΩ) (Red)	1	R303	RD5 6 2251 JM000 Carbon	5.6kΩ 1/4W ±5%	1
P301	4 2229 73511	Potentiometer (B-3kΩ)	1	R304	RD1 2 2251 JM000 Carbon	1.2kΩ 1/4W ±5%	1
IC1	4 2069 70670	IC, M51521L	1				
IC2	206 5 3374 17810	IC, LA4178	1				
IC301	206 5 1555 51220	IC, LA5512	1				
TH301	204 5 9000 00200	Thermister, SDT 20	1				
C1	CD2 2 763A 0001V	Electrolytic	220μF 6.3V	1			
C2	CD3 3 663A 0001V	Electrolytic	33μF 6.3V	1			
C3	CD4 7 7100 0003V	Electrolytic	470μF 10V	1			
C4	CD4 7 7100 0003V	Electrolytic	470μF 10V	1			
C101	CC1 0 2500 KE00C	Ceramic	0.001μF 50V ±10%	1			
C102	CD1 0 5500 0001V	Electrolytic	1μF 50V	1			
C103	CC5 6 1500 KE00C	Ceramic	560pF 50V ±10%	1			
C104	CD4 7 663A 0001V	Electrolytic	47μF 6.3V	1			
C105	CM3 3 3500 K00MV	Mylar	0.033μF 50V ±10%	1			
C106	CD1 0 6160 0001V	Electrolytic	10μF 16V	1			
C107	CD4 7 5250 0001V	Electrolytic	4.7μF 25V	1			
C108	CC1 0 2500 KE00C	Ceramic	0.001μF 50V ±10%	1			
C109	CD3 3 663A 0001V	Electrolytic	33μF 6.3V	1			
C110	CD2 2 763A 0001V	Electrolytic	220μF 6.3V	1			
C111	CM1 0 3500 K00SV	Mylar	0.01μF 50V ±10%	1			
C112	CC1 2 1500 KE00C	Ceramic	120pF 50V ±10%	1			
C201	CC1 0 2500 KE00C	Ceramic	0.001μF 50V ±10%	1			
C202	CD1 0 5500 0001V	Electrolytic	1μF 50V	1			
C203	CC5 6 1500 KE00C	Ceramic	560pF 50V ±10%	1			
C204	CD4 7 663A 0001V	Electrolytic	47μF 6.3V	1			
C205	CM3 3 3500 K00MV	Mylar	0.033μF 50V ±10%	1			
C206	CD1 0 6160 0001V	Electrolytic	10μF 16V	1			
C207	CD4 7 5250 0001V	Electrolytic	4.7μF 25V	1			
C208	CC1 0 2500 KE00C	Ceramic	0.001μF 50V ±10%	1			
C209	CD3 3 663A 0001V	Electrolytic	33μF 6.3V	1			
C210	CD2 2 763A 0001V	Electrolytic	220μF 6.3V	1			
C211	CM1 0 3500 K00SV	Mylar	0.01μF 50V ±10%	1			
C212	CC1 2 1500 KE00C	Ceramic	120pF 50V ±10%	1			
C301	CD4 7 4500 0001V	Electrolytic	0.47μF 50V	1			
C302	CI2 2 3250 KF00C	Boundary	0.022μF 25V ±10%	1			
R1	RD1 8 1251 JM000 Carbon	180Ω 1/4W ±5%	1				
R2	RD2 7 1251 JM000 Carbon	270Ω 1/4W ±5%	1				
R3	RD6 8 1251 JM000 Carbon	680Ω 1/4W ±5%	1				
R4	RD4 7 1251 JM000 Carbon	470Ω 1/4W ±5%	1				
R5	RD4 7 A251 JM000 Carbon	4.7Ω 1/4W ±5%	1				
R101	RD6 8 3251 JM000 Carbon	68kΩ 1/4W ±5%	1				
R102	RD1 6 1251 JM000 Carbon	160Ω 1/4W ±5%	1				
R103	RD4 3 2251 JM000 Carbon	4.3kΩ 1/4W ±5%	1				
R104	RD1 5 2251 JM000 Carbon	1.5kΩ 1/4W ±5%	1				
R105	RD1 0 4251 JM000 Carbon	100kΩ 1/4W ±5%	1				
R106	RD1 2 2251 JM000 Carbon	1.2kΩ 1/4W ±5%	1				
R107	RD6 8 0251 JM000 Carbon	68Ω 1/4W ±5%	1				
R108	RD1 5 1251 JM000 Carbon	150Ω 1/4W ±5%	1				
R109	RD1 0 3251 JN000 Carbon	10kΩ 1/4W ±5%	1				
R110	RD2 2 A251 JM000 Carbon	2.2Ω 1/4W ±5%	1				
R111	RD1 0 2251 JM000 Carbon	1kΩ 1/4W ±5%	1				
R201	RD6 8 3251 JM000 Carbon	68kΩ 1/4W ±5%	1				
R202	RD1 6 1251 JM000 Carbon	160Ω 1/4W ±5%	1				
R203	RD4 3 2251 JM000 Carbon	4.3kΩ 1/4W ±5%	1				

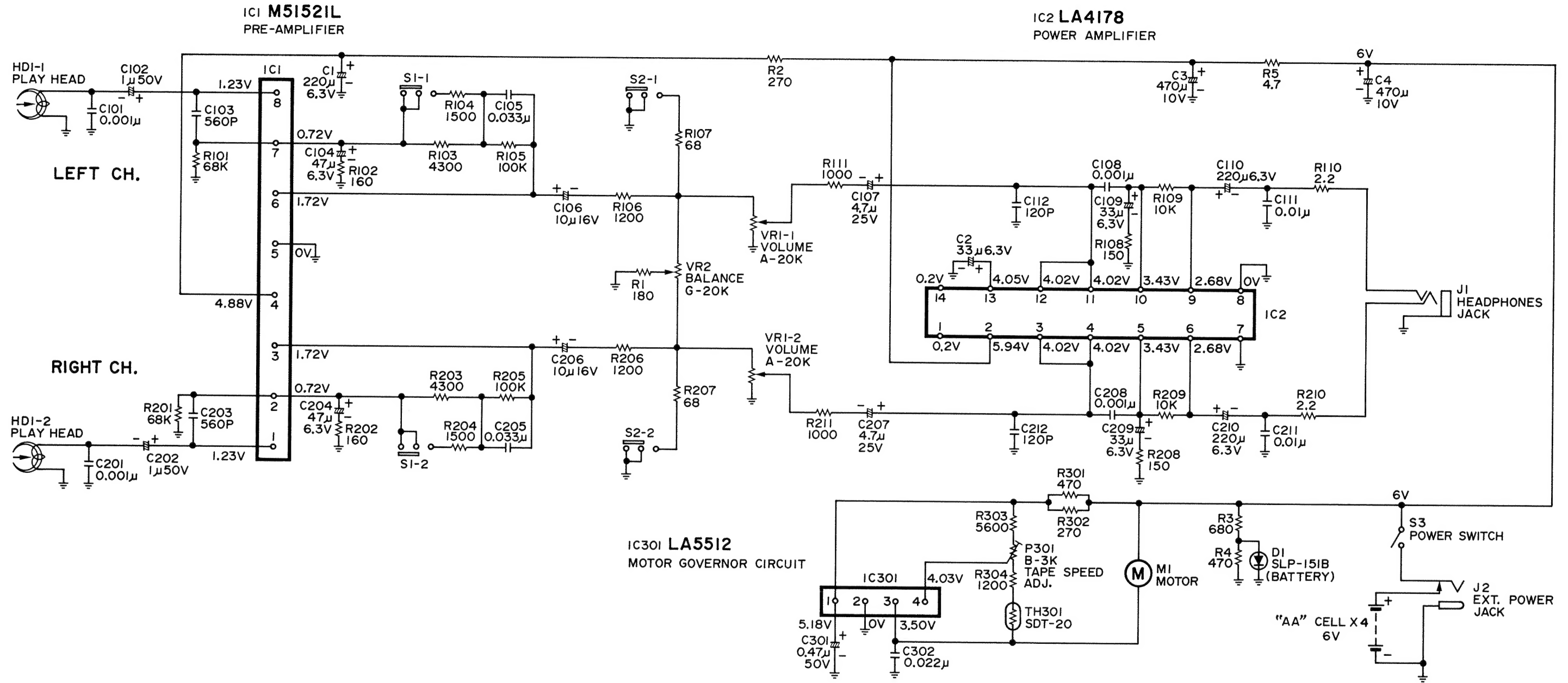
NOTES:

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- Ordering quantity of screws and resistors must be multiple of 10 pcs.

AMPLIFIER P.C.BOARD



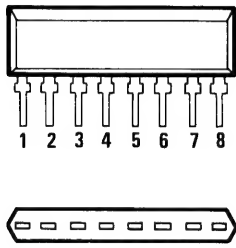
SCHEMATIC DIAGRAM



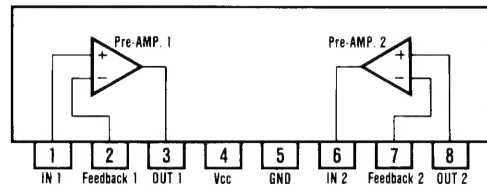
No.	Name	Position
S1	Tone Switch	HIGH
S2	Mute Switch	OFF
S3	Power Switch	OFF

IC LEAD IDENTIFICATION

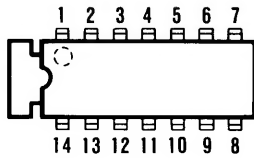
M51521L FRONT/BOTTOM VIEW



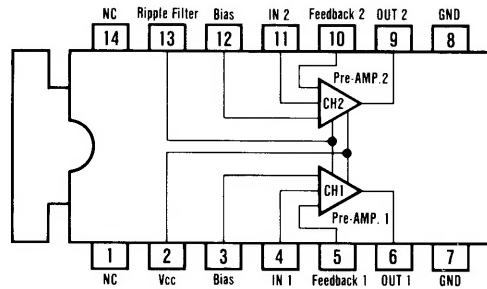
M51521L BLOCK DIAGRAM



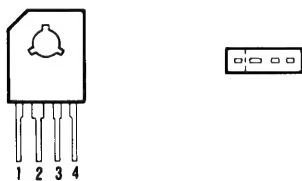
LA4178 BOTTOM VIEW



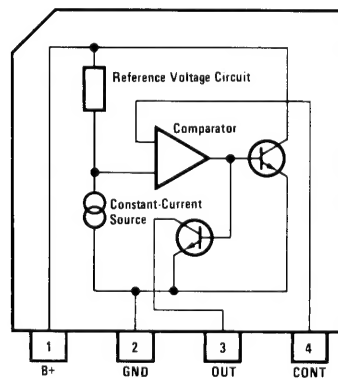
LA4178 BLOCK DIAGRAM



LA5512 FRONT/BOTTOM VIEW



LA5512 BLOCK DIAGRAM



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