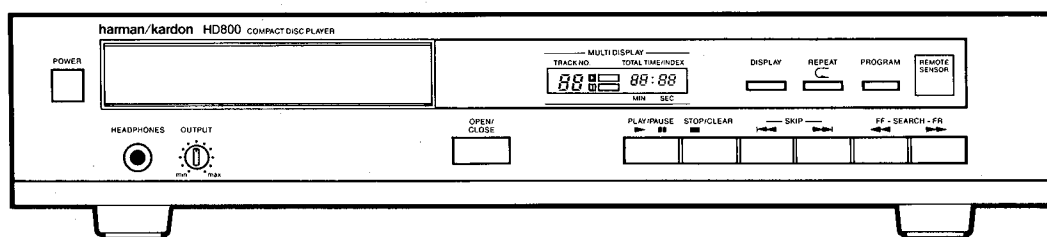


The Harman Kardon Model HD800 COMPACT DISC PLAYER

Manual 128A

HD800

Technical Manual



The following marks found in the parts list of this manual identify the models as follows.

- UA : North America area model
- BK : North America area model Black version
- G : General model
- GB : General model Black version

harman/kardon

240 Crossways Park West, Woodbury, N.Y. 11797
1112-3152128A2P-078801 1500 Printed in Japan

CLASS 1 LASER PRODUCT

Product complies with DHHS rules CFR subchapter J part 1040.10 at date of manufacture.

DANGER—invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to the beam.

CAUTION—use of all controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Be Careful of the Laser Pickup

Although you cannot see it from the outside, a laser pickup is located under the disc tray and a precision lens is built in it.

Since the laser pickup, including the lens element, is especially sensitive to dust, keep the disc tray closed when not in use. Also do not put your hand inside the unit.

**CLASS 1
LASER PRODUCT**

SPECIFICATIONS

System	: Compact Disc Digital Audio	Channel Separation	: 83dB (1kHz)
Signal Detection	: 3-Beam Semiconductor Laser	Wow & Flutter	: Immeasurable
Error Correction	: CIRC System	Line Output Level/Load Impedance	: 2.0V/10k Ohms
D/A Conversion Frequency	: 176.4kHz	Power Supply	
Quantization	: Dual 16-bit Linear	U.S.A. and Canada models	: AC 120V, 60Hz
Channels	: 2 Channel Stereo	General model	: AC 220/240V, 50/60Hz
Frequency Response	: 4Hz—20kHz ± 0.5 dB	Power Consumption	: 15 Watts
Total Harmonic Distortion	: 0.02% (1kHz)	Dimensions (W x H x D)	: 17-3/8" x 3-3/4" x 10-1/8" (443 x 95 x 257 mm)
Dynamic Range	: 90dB	Weight	: 8.5lbs. (3.9kg)
Signal-to-Noise Ratio	: 96dB		

Specifications and components subject to change without notice. Overall performance will be maintained or improved.

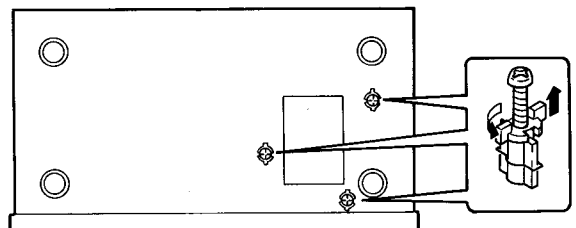
Adjustment of this unit requires following measuring instruments and jigs.

- Oscilloscope (3 or more modes, 100MHz, X-Y input possible) 1740A
- Test Disc:
EIAJ CD-1

IMPORTANT

Before plugging the unit in, be sure to remove the transportation screws on the bottom of the unit.

1. Place a cloth under the unit in order to prevent it from being scratched.
2. Turn the unit upside down.
3. Remove the three transportation screws with a screw driver, as shown in the illustration below.



NOTE: Be sure to tighten screws by the reverse procedure before transporting the unit.

SAFETY PRECAUTIONS

Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

- a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing.

(1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.

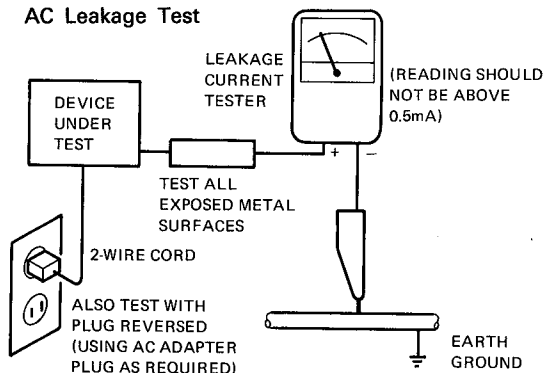
(2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks.

Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

- b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back over.

- c. **Leakage Current Hot Check** — With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 "Leakage Current for Appliances" and Underwriters Laboratories (UL) 1270, (34.6). With the instrument AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the instrument power cord plug in the outlet and repeat test. **ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER.**

AC Leakage Test

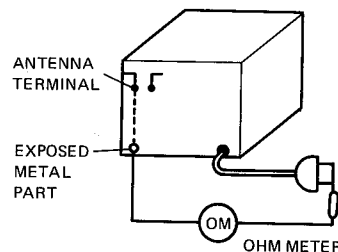


d. Insulation Resistance Test

- (1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug.
- (2) Turn on the power switch of the instrument.
- (3) Measure the resistance with an ohmmeter between the jumpered AC plug and each **exposed metallic** cabinet part on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. The reading should be as shown below. If it is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer.

e. Insulation Resistance Test Cold Check

- (1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug.
- (2) Turn on the power switch of the instrument.
- (3) Measure the resistance with an ohmmeter between the jumpered AC plug and each **exposed metallic** cabinet part on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 Megohm. When there is no return path to the chassis, the reading must be "infinite". If it is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer.



PRODUCT SAFETY NOTICE

Some electrical and mechanical parts have special safety related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, by (Δ) on schematics and parts listed. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. Products Safety is under review continuously and new instructions are issued whenever appropriate.

SERVICING PRECAUTIONS

CAUTION: Before servicing instruments covered by this manual and its supplements, read and follow the **SAFETY PRECAUTIONS** on this page.

NOTE: If unforeseen circumstances created conflict between the following servicing precautions and any of the safety precautions, **always follow the safety precautions.** Remember: Safety First.

General Servicing Precautions

- a. Always unplug the instrument AC power cord from the AC power source before:
 - (1) Removing or reinstalling any component, circuit board, module, or any other instrument assembly.
 - (2) Disconnecting or reconnecting any instrument electrical plug or other electrical connection.
 - (3) Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

Caution: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
- b. Do **not** defeat any plug/socket B+ voltage interlocks with which instruments covered by this manual might be equipped.
- c. Do **not** apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
- d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

NOTE: Refer to Safety Precautions on Page 3.

- (1) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.
- (2) The Components used in the unit has a specified flammability and dielectric strength. When replacing any components, use components which has the same ratings. Components marked (Δ) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace with the appointed components.
- (3) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install them as they were.
- (4) After servicing, always check that the removed screws, components and wiring have been installed correctly and that the portion around the service part have not been damaged and so on. Further check the insulation between the blades of attachment plug and accessible conductive parts.

Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between the each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1M-ohm.

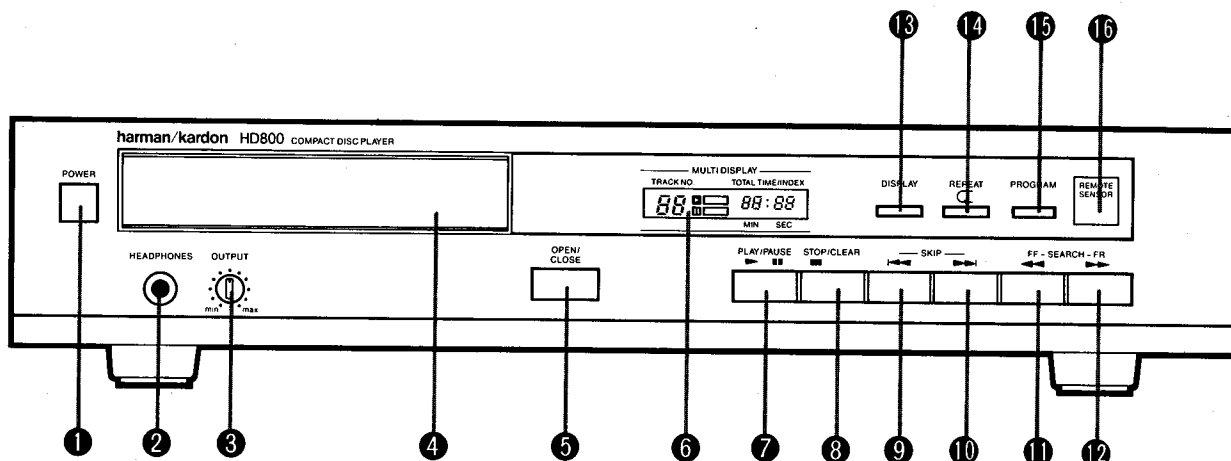
Note 1: Accessible Conductive Parts including Metal panels, Output jacks, etc.

ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some fieldeffect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
 2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
 3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
 4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
 5. Do not use freon-propelled chemicals. These can generate electrical charge sufficient to damage ES devices.
 6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
 7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

CONTROLS AND FUNCTIONS

**1 POWER SWITCH**

Pressing this switch will turn on the power. Press the switch again to turn the power off.

2 HEADPHONE OUTPUT

If you wish to listen to a compact disc without playing it through your stereo system, simply plug a pair of stereo headphones into the headphones jack.

3 OUTPUT LEVEL CONTROL

The output volume control not only controls the volume of the headphones output, but also controls the overall output from the HD800 to your stereo system. Thus it may be used in conjunction with "CD direct" inputs which bypass preamplifier tone, volume and balance controls.

4 DISC TRAY

By pressing the "OPEN/CLOSE" button, the tray onto which the discs are loaded will slide out.

5 OPEN/CLOSE BUTTON

Press this button to open or close the DISC TRAY. Press it once to make the DISC TRAY slide out, and again to make the DISC TRAY slide in.

6 MULTI DISPLAY

Displays the track number during playback, and displays elapsed playback time from the beginning of the program being played or the index number during stop mode.

7 PLAY/PAUSE BUTTON

Press this button to start playback. Pressing this button during playback activates the pause mode. Playback continues when this button is pressed again.

8 STOP/CLEAR BUTTON

Press this button to stop playing a disc or to cancel the pause mode. Press the button once again to erase the memory program.

9 << BUTTON (SKIP)

Pressing this button once skips playback backward to the beginning of the present program. Pressing it once more skips it to the beginning of the previous program, pressing it twice skips it to the beginning of the program before that, and so on.

10 >> BUTTON (SKIP)

Pressing this button once skips playback forward to the beginning of the next program. Pressing it twice skips it to the beginning of the program after that, and so on.

11 < BUTTON (REVERSE SEARCH)

Pressing this button starts low speed reverse. Holding the button down longer than two seconds changes the reverse mode to high speed. Sound can be heard at a reduced level in this mode. Also, when this button is pressed in the stop mode, the index number is decreased.

12 > BUTTON (FAST-FORWARD SEARCH)

Pressing this button starts low speed fast-forwarding. Holding the button down longer than two seconds changes the fast-forward mode to high speed. Sound can be heard at a reduced level in this mode. Also, when this button is pressed in the stop mode, the index number is increased.

13 DISPLAY BUTTON

Press to change the display. When pressed, display is switched between the elapsed playback time of a track and the time remaining before the end of the last selection. The display is also switched to the remaining number of programs during program playback.

14 REPEAT BUTTON

Pressing this button enables continuous repeat playback of the disc. Pressing this button again disables the repeat playback mode. Pressing this button while in memory playback repeats the programs stored in the memory.

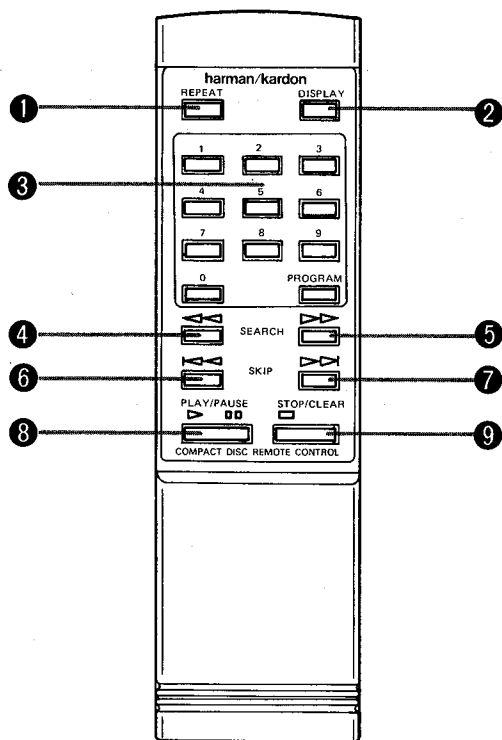
15 PROGRAM BUTTON

Used to program the memory for non-sequential playback of disc tracks. Up to 36 program selections can be stored in the memory.

16 REMOTE CONTROL SENSOR

Receives signals from the supplied remote control unit.

REMOTE CONTROL

**1 REPEAT BUTTON**

Refer to the main unit's Repeat Button section.

2 DISPLAY BUTTON

Refer to the main unit's Display Button section.

3 10-KEY INPUT BUTTONS

Press these buttons to facilitate programming and track access.

4 << BUTTON (REVERSE)

Refer to the main unit's << Button section.

5 >> BUTTON (FAST-FORWARD)

Refer to the main unit's >> Button section.

6 |<< BUTTON (PROGRAM SELECTION)

Refer to the main unit's |<< Button section.

7 >>| BUTTON (PROGRAM SELECTION)

Refer to the main unit's >>| Button section.

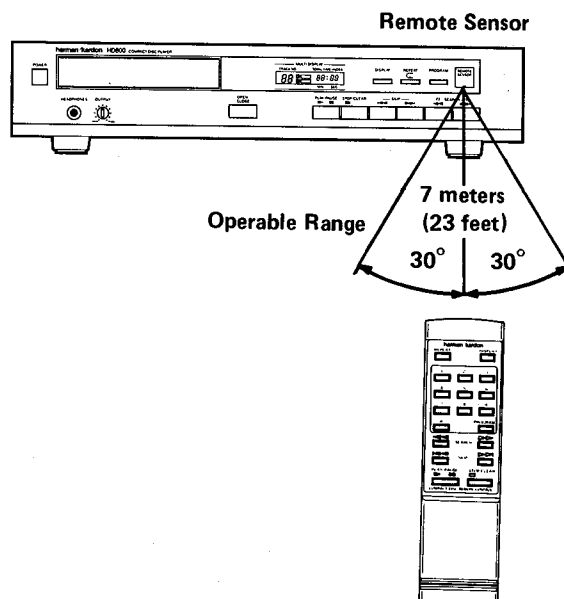
8 PLAY/PAUSE BUTTON

Refer to the main unit's Play/Pause Button section.

9 STOP/CLEAR BUTTON

Refer to the main unit's Stop/Clear Button section.

Use the remote control unit within the range shown in the diagram below.



NOTE: When changing the batteries of the remote control, insert the batteries with their polarity aligned according to the diagram on the back of the battery case. 2 AA size (UM-3) batteries are recommended.

DISASSEMBLY PROCEDURES (REFER TO PAGES 31 through 34 and 36)

1 CABINET TOP (122) REMOVAL

Remove 7 screws (A) and then remove the Cabinet Top (122).

2 FRONT PANEL ASS'Y (AC) REMOVAL

1. Remove the Cabinet Top (122), referring to the previous step 1.
2. Pull off Shaft (185).
3. Remove 7 screws (B) and then remove the Front Panel Ass'y (AC) with the Front P.C. Board (PCB-2).
4. Remove 4 screws (C) and then remove the Front P.C. Board (PCB-2) from the Front Panel Ass'y (AC).

3 MAIN P.C. BOARD (PCB-1) REMOVAL

1. Remove the Front Panel Ass'y (AC), referring to the previous step 2.
2. Unsolder the jumper leads (JL101, JL102, JL103, JL104 and JL105) from Front P.C. Board (PCB-2) and then remove the Front P.C. Board (PCB-2).
3. Open the lid of connectors (CN101, CN102 and CN103) on the Main P.C. Board (PCB-1), then unsolder the lead

wires from Headphone P.C. Board (PCB-4) and Headphone Jack P.C. Board (PCB-5).

4. Remove 6 screws (D) and then remove the Main P.C. Board (PCB-1).
5. Remove 2 screws (E), then Headphone P.C. Board (PCB-4) and Headphone Jack P.C. Board (PCB-5) are removed together with Metal Fitting (170).
6. Remove 2 screws (F) and then remove Power Switch P.C. Board (PCB-3). If necessary, unsolder the lead wire from Main P.C. Board (PCB-1).

4 CD PLAYER MECHANICAL ASSEMBLY REMOVAL

1. Remove the Front Panel Ass'y (AC), referring to the previous step 2.
2. Open the lid of connectors (CN101, CN102 and CN103) on the Main P.C. Board (PCB-1).
3. Remove 4 screws (G) and then remove the CD Player Mechanical Assembly (103).
4. Remove 3 screws (F) and then remove the CD Player Mechanical Assembly (103).

DISASSEMBLING THE CD PLAYER MECHANICAL ASSEMBLY

5 DISC TRAY REMOVAL

1. Remove the Cabinet Top (122), referring to the previous step 1.
2. Connect the Power cord and turn on the power by pressing the Power switch.
3. Open the Disc Tray (6) by pressing the Open/Close button.
4. With the Disc Tray (6) opened as it is, pull out the power plug.
5. Push the Disc Tray (6) by hand to slide it in once and then slide it out again.
6. Pull out the Disc Tray while disengaging the Tray Lock Pawl (Shown in Adjustment Points location on next page) in the direction of arrow with screwdriver or the like.

6 OPTICAL PICK-UP REMOVAL

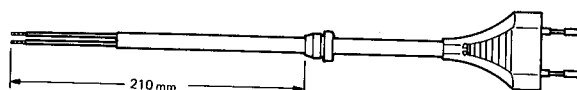
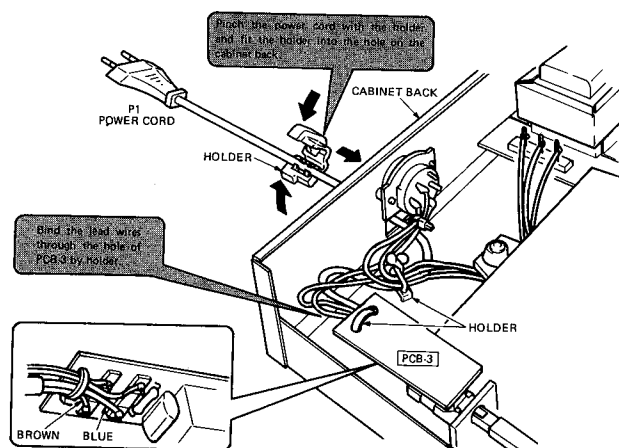
1. Remove the CD Player Mechanical Assembly (CA), referring to the previous step 4.
2. Remove 4 screws (G), then remove the Optical Pick-Up Base Assembly (2).
3. Remove 1 screw (H) and Pick-Up Base Shaft Holder (5), then remove the Pick-Up (32).

7 SPINDLE MOTOR ASSEMBLY REMOVAL

1. Remove the CD Player Mechanical Assembly (103), referring to the previous step 4.
2. Remove the Chuck Arm Spring (22).
3. Undo 2 catches fixing the Chuck Arm (10) to the right and left and remove the Chuck Arm (10).
4. Remove 2 screws (I) fixing the Spindle Motor Assembly (48) and then remove the Spindle Motor Assembly (48). Align the holes in the Spindle Table to the screw (I) positions for the screw removal.

POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the procedure below to replace the part with the standard supply parts.



ADJUSTMENT PROCEDURE

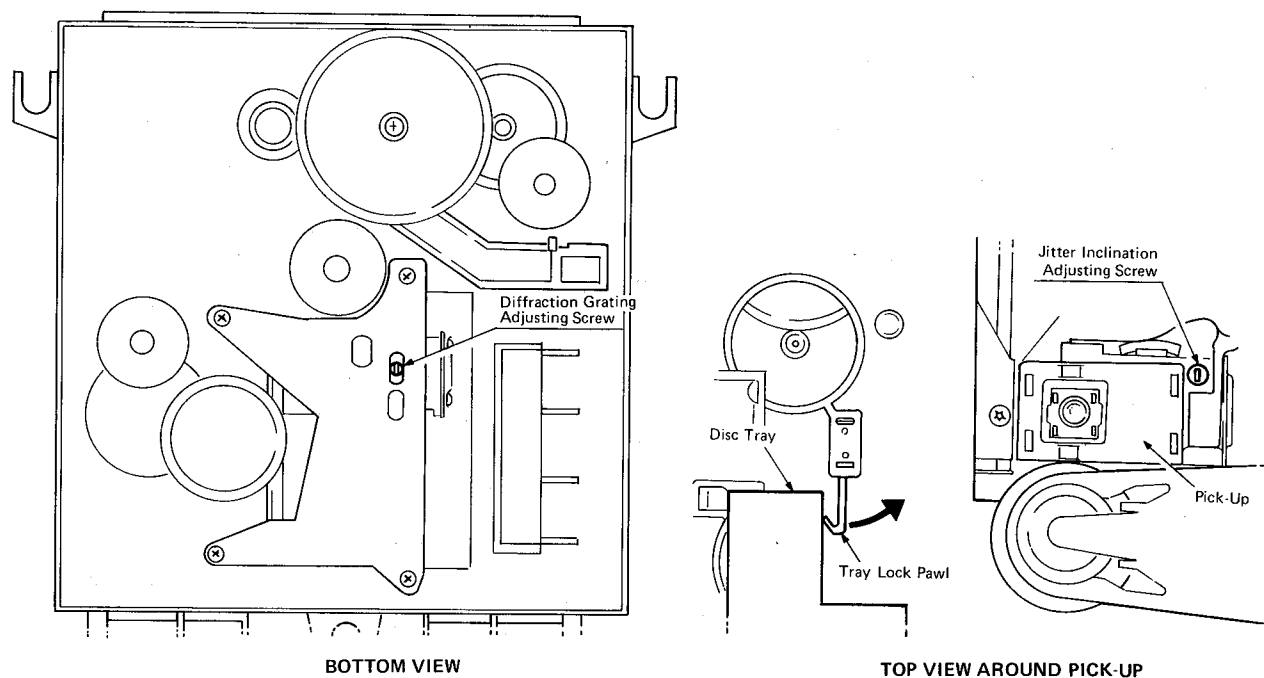
1. Meters and Jigs

- Oscilloscope (3 or more modes, 100 MHz, X-Y input possible)

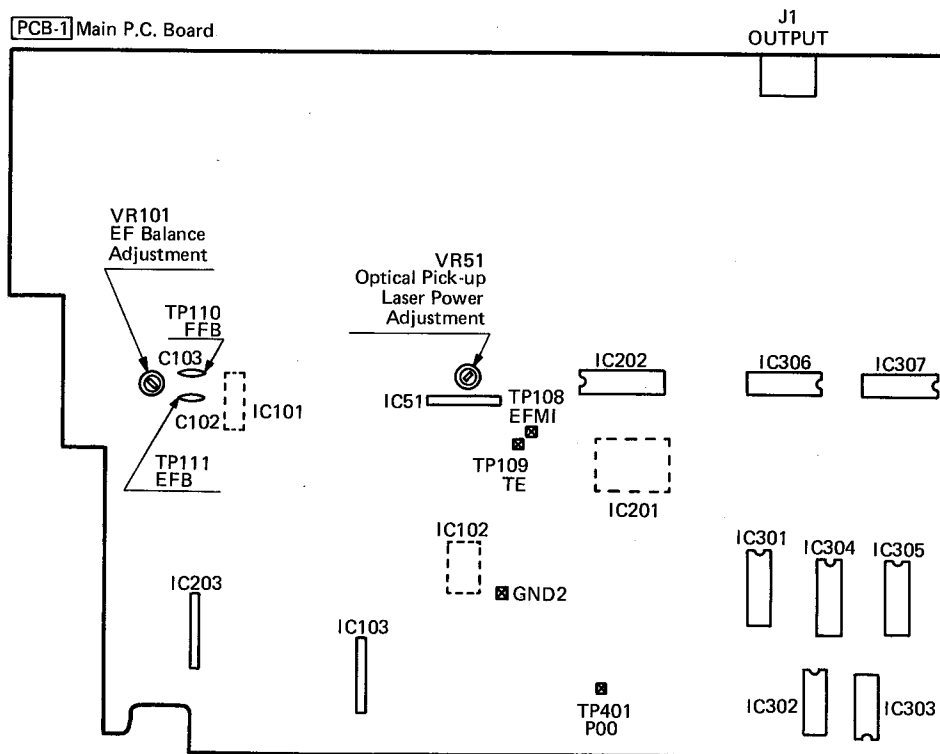
- Test Disc
EIAJ CD-1

2. Adjustment Points

2-1 Adjusting Screw Layout for CD Player Mechanical Assembly



2-2 VR and TP Layout for Main P.C. Board



3. Test Mode

- Short-circuit TP401 and GND located on the Main P.C. Board.

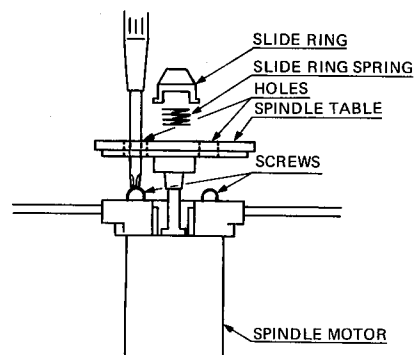
Push the power switch button. (Test Mode)

Press buttons in sequence below	Test mode number	Display	Operation
POWER	0	0 RE:57	LD OFF All servo OFF
PLAY	1	1 RE:57	LD ON
PLAY	2	2 RE:57	FS ON (Focus search)
PLAY (Disc must be in tray)	3	3 RE:57	FS ON (focus ON) Disc motor rotate Mute OFF
FORWARD SKIP	4	4 RE:57	TS (Tracking servo) ON SS (Slide servo) ON
FORWARD SKIP	5	12 3:21	Displays the track number and playback time.
REVERSE SKIP	6	3 RE:57	TS (Tracking servo) OFF SS (Slide servo) OFF
F.F. or REVERSE SEARCH	7	_____	Move the pick-up. (Manual)
STOP, then press OPEN/CLOSE	8	_____	Disc tray open or close This function can be activated from stop mode.

4. Replace the Spindle Motor Assembly

- (1) Remove the CD Player Mechanical Assembly.
- (2) Remove the Spindle Motor Assembly. (Refer to page 7, "Disassembling the CD Player Mechanical Assembly [7]".) To remove this, align the holes in the Spindle Table to the screw positions for the screw removal.
- (3) Attach the new Spindle Motor Assembly to CD Player Mechanical Assembly.

NOTE: Don't adjust the height of Spindle Table. Because its height has been already adjusted.



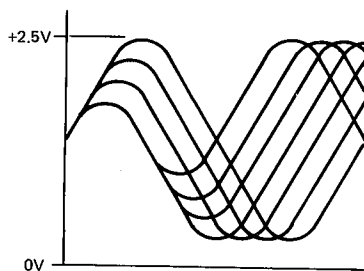
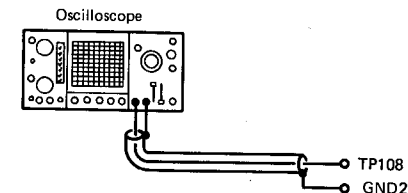
5. Adjustment of Main P.C. Board

5-1 Initial Setting of Adjustment Potentiometers

Before adjusting, preset adjustment potentiometers VR51 and 101 for mechanical center.

5-2 Optical Pick-up Laser Power Adjustment

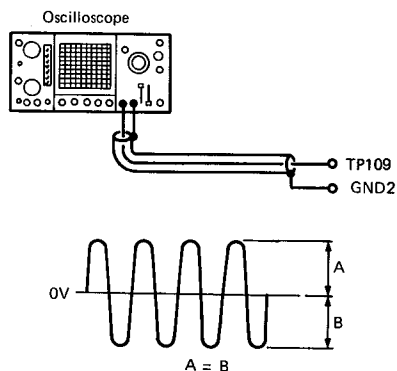
- (1) Connect the oscilloscope to TP108 and GND2.
- (2) Insert EIAJ CD-1 test disc and place the unit in the Test Mode 1.
- (3) Adjust VR51 so that the voltage becomes DC+2.5V.



5-3 EF Balance Adjustment

- (1) Connect the oscilloscope to TP109 and GND2.
- (2) Insert the EIAJ CD-1 test disc and place the unit in the Test Mode 3.
- (3) Adjust VR101 so that the amplitude above and below the zero DC line becomes equal. (Amplitude A = Amplitude B)

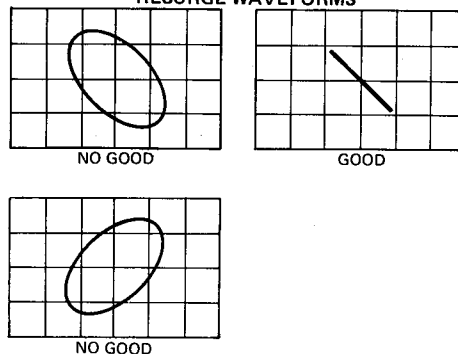
NOTE: Instead of using the DC input of a oscilloscope you may also use a DC null voltmeter for this alignment.



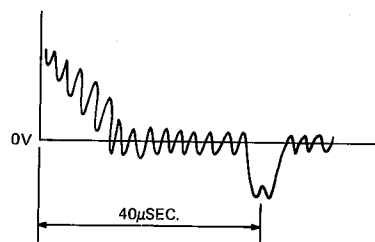
5-4 Diffraction Grating Adjustment

- (1) Connect the oscilloscope to TP110, GND (X input) and TP111, GND (Y input).
- (2) Insert the EIAJ CD-1 test disc and place the unit in the Test Mode 3.
- (3) Observe the resurge waveforms on the oscilloscope, and adjust the diffraction grating screw so that the phase difference of outputs X and Y is 180°.

RESURGE WAVEFORMS



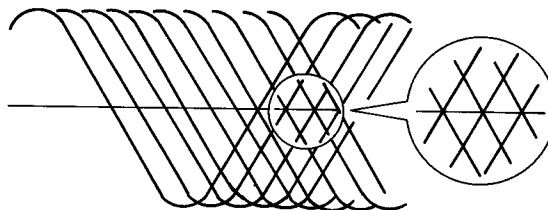
- (4) Connect the oscilloscope to TP109 and GND.
- (5) Place the unit in the Test Mode 4.
- (6) Confirm the waveform on the oscilloscope.



- (7) Repeat steps 1 through 6 for optimum sensitivity.

5-5 Jitter Inclination Adjustment

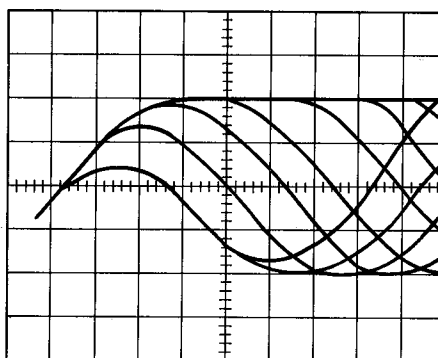
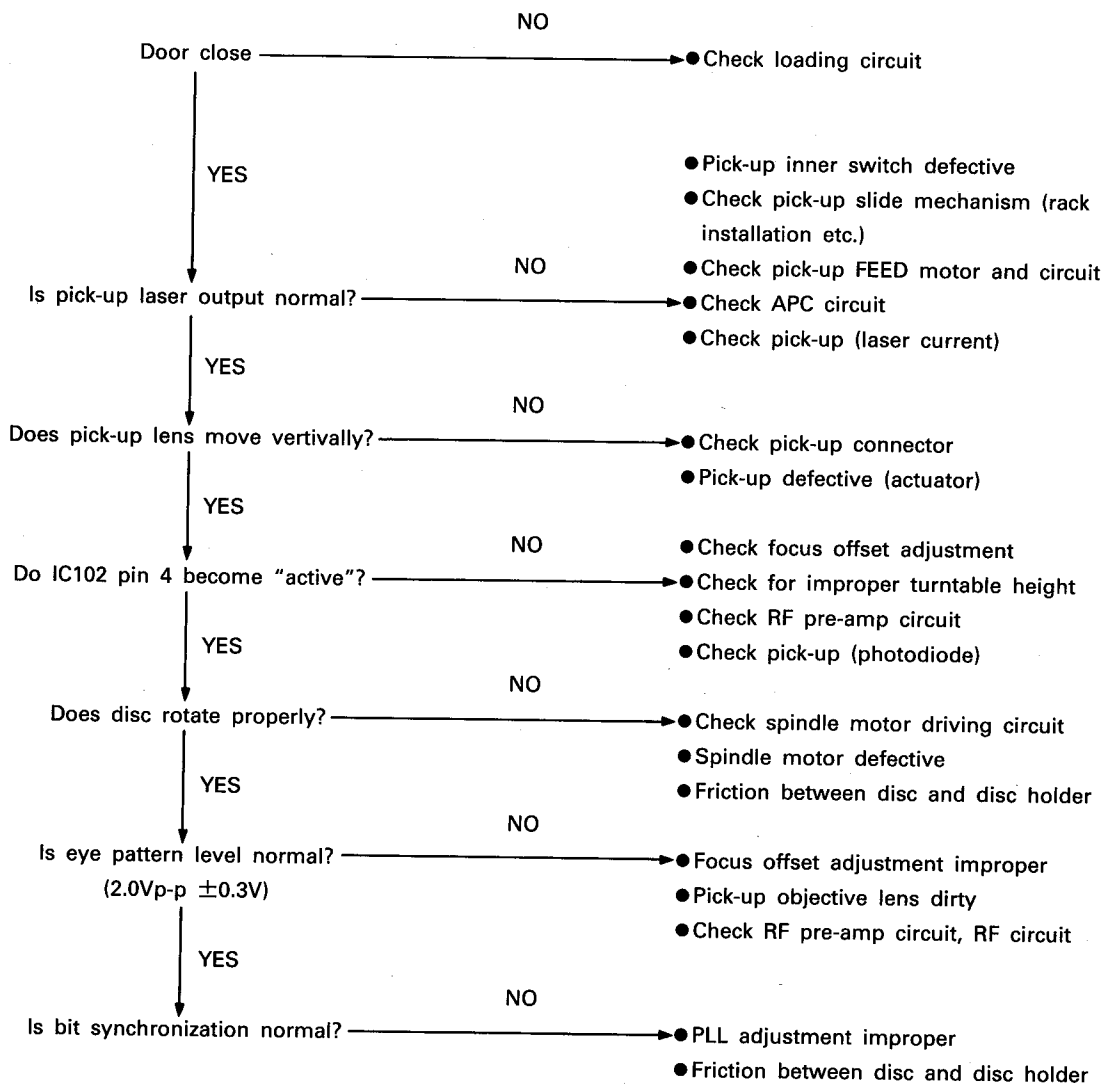
- (1) Remove the Disc Tray. (Refer to "Disassembling The CD Player Mechanical Assembly" on page 7)
- (2) Connect the oscilloscope to TP108 and GND2.
- (3) Insert the EIAJ CD-1 test disc and place the unit in the Test Mode 4.
- (4) Moving the pick-up assembly to adjustment the jitter inclination adjustment Screw.
- (5) Adjust the jitter inclination screw until the signal waveform (eye pattern) is distinct and clear.



NOTE: Repeat Diffraction Grating Adjustment and Jitter Inclination Adjustment for optimum sensitivity.

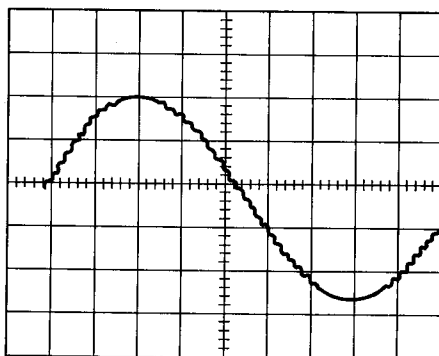
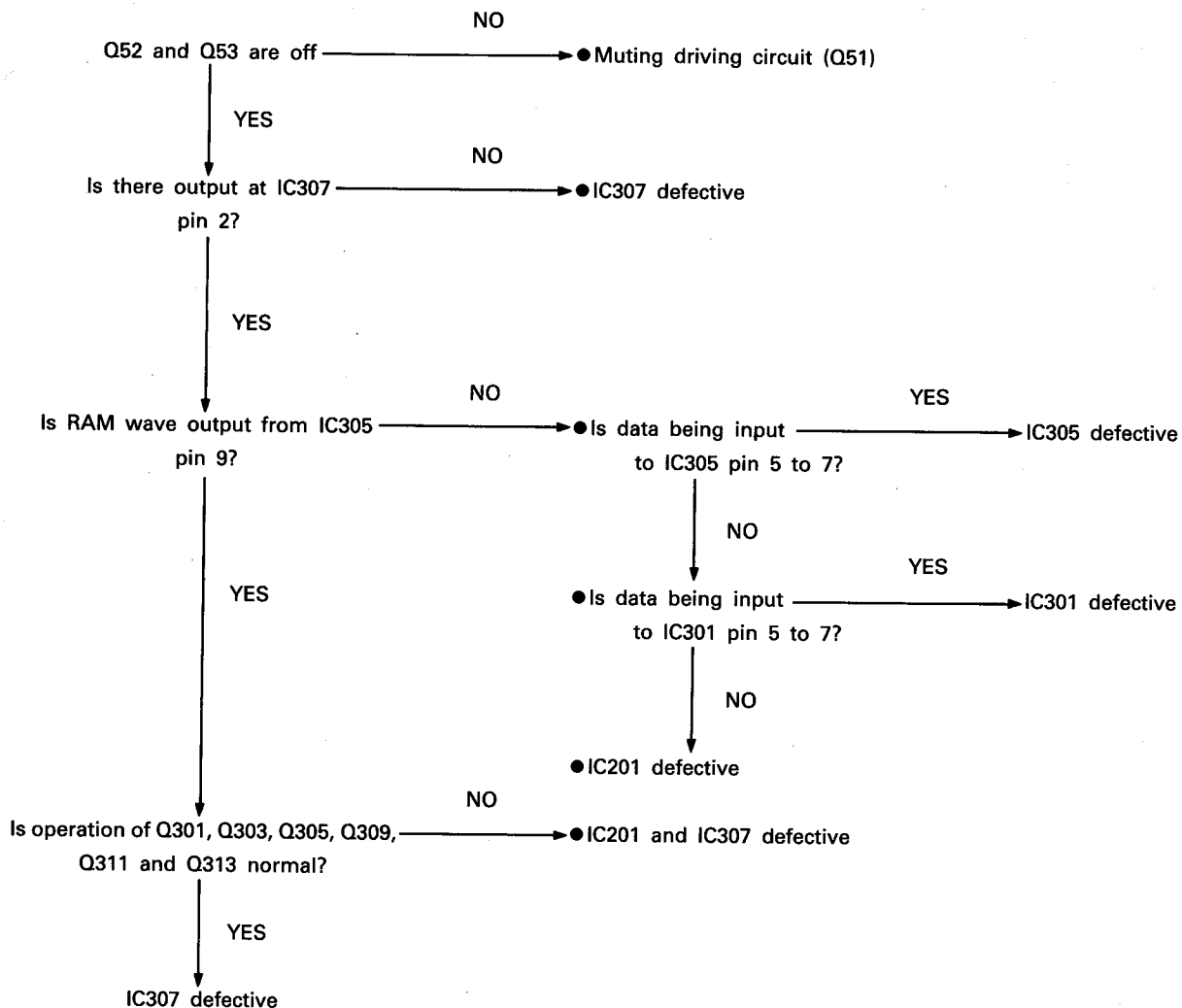
TROUBLE SHOOTING

1. Does not initialize

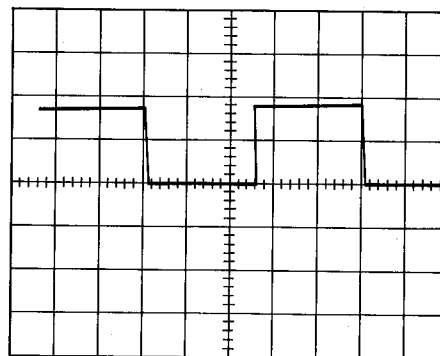


Eye Pattern (TP108)

2. No sound is produced



RAM Waveform (Pin 9 of IC305)
(Test Disk: EIAJ CD-1, 1st selection)



IC305 Pin 7 Waveform
(Test Disk: EIAJ CD-1, 1st selection)

3. IC Terminal Functions

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC102	1	TE IN	Pre. amp. input	I	Tracking error signal input terminal
	2	TC IN	Pre. amp. input	I	Track cross signal input terminal
	3	SHOCK IN	Pre. amp. input	I	Shock detection circuit input terminal
	4	HF OK	Pre. amp. input	I	HF OK signal input
	5	MR	Pre. amp. input	I	Disc mirror surface detection signal input signal terminal
	6	Jump Flag	Mi-com I/O	O	Outputs "1" in jump mode, e.g. TS OFF, JFJR, BRAKE.
	7	$\overline{\text{HFD}}$	Mi-com I/O	O	"1" indicates that MR input is "1" and track servo loop is off (TS OFF, JF, JR).
	8	T-HLD	Track servo	I	Direct control terminal for TS1 switch. "1" indicates that TS1 switch is "b". "0" indicates that priority is given to controller command.
	9	DATAOUT	Mi-com I/O	O	Outputs internal state corresponding to microcomputer command.
	10	$\overline{\text{JP1}}$	Mi-com I/O	I	1 track jump control signal. Normally "1".
	11	MSD	Mi-com I/O	I	Microcomputer serial data. Transfers serial data from microcomputer to servo IC. LSB forced. 8-bit data.
	12	$\overline{\text{MLA}}$	Mi-com I/O	I	Latches serial data from microcomputer to servo IC. Transfers data on trailing edge.
	13	MCK	Mi-com I/O	I	Clock for transferring serial data from microcomputer to servo IC. Receives data on leading edge.
	14	$\overline{\text{ACLR}}$	Mi-com I/O	I	All clear. Clears all internal register flip-flops. Resets when "0" signal is given.
	15	Bias	Power supply	O	Vcc/2 bias power supply output when single-pole power supply is used.
	16	COM	Power supply	I	Common terminal. Connect to GND when double-pole power supply is used and to BIAS when single-pole power supply is used.
	17	GND	Power supply	I	GND terminal.
	18	V _{EE}	Power supply	I	Negative power terminal. Connect to GND when single-pole power supply is used.
	19	SS OUT	Slide servo	O	Operation amplifier SS output
	20	SS $\ominus$	Slide servo	I	Operation amplifier SS reverse input

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC102	21	SS $\oplus$	Slide servo	I	Operation amplifier SS non-reverse input
	22	TS OUT	Track servo	O	Operation amplifier TA output
	23	TS $\ominus$	Track servo	I	Operation amplifier TA reverse input
	24	TG2	Track servo	—	Track gain select switch TG2 output. Set to open or common level.
	25	TS $\oplus$	Track servo	I	Operation amplifier TA non-reverse input
	26	TG1	Track servo	—	Track gain select switch TG1 output. Set to open or common level.
	27	TE OUT	Track servo	O	Operation amplifier TE output
	28	TE $\ominus$	Track servo	I	Operation amplifier TE reverse input
	29	FSR IN	Focus servo	I	Focus search voltage level detector input
	30	FS OUT	Focus servo	O	Operation amplifier FA output
	31	FS $\ominus$	Focus servo	I	Operation amplifier FA reverse input
	32	FS $\oplus$	Focus servo	I	Operation amplifier FA non-reverse input
	33	FG	Focus servo	—	Focus gain select switch FG output. Set to open or common level.
	34	C-FSR	Focus servo	—	Connect capacitor which determines time constant of focus search waveform.
	35	I-Ref	Power supply	I	Terminal for connecting resistor for setting current value of reference current source.
	36	Vcc	Power supply	I	Positive power terminal
IC201	1	DWDCK		O	D-A converter mode 3 word clock
	2	NC		—	
	3	EMP		O	Emphasis code output. "1" indicates emphasis.
	4	PWM ₁		O	Disc motor drive PWM output 1. —
	5	PWM ₂		O	Disc motor drive PWM output 2. +
	6	TEST		I	Test mode select input. Normally "0" indicates play.

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC201	7	DASEL ₁		I	D-A interface control input 1
	8	DFPAS		I	Digital filter control input. "1" indicates digital filter pass.
	9	DASEL ₂		I	D-A interface control input 2
	10	MSD		I	Microcomputer interface serial data input
	11	MCK		I	Microcomputer interface shift clock input
	12	$\overline{\text{MLA}}$		I	Microcomputer interface data latch clock input
	13	$\overline{\text{ACLR}}$		I	Microcomputer interface register clear input. "0" indicates that register has been cleared and MUTE, S/S, BCON set to "0".
	14	$\overline{\text{HFD}}$		I	Play signal absence signal input
	15	HF		I	Play signal input
	16	IREF		I	Detection/PLL circuit reference current input
	17	TLC		O	Slice level control output
	18	LPF		I/O	PLL loop filter connection terminal
	19	SYCLK		O	Frame synchronous state output. "1" indicates synchronization.
	20	V _{DD2}		I	5V power supply used for detection/PLL circuit analog area only
	21	NC		—	
	22	DRD		O	Low disc circuit state output
	23	EFFK		O	EFM frame clock output. Duty = approx. 50%.
	24	SCOR		O	Sub-code synchronous signal output. S0 + S1.
	25	CRCF		O	Sub-code Q CRC check result output. "1" indicates CRCOK.
	26	SCCK		I	Shift clock input for sub-code serial output
	27	SCOE ₂		I	Sub-code parallel output channel P to S enable input. "0" indicates high impedance.
	28	SCOE ₁		I	Sub-code parallel output channel T to W enable input. "0" indicates high impedance.
	29	V _{SS2}		I	GND. Same potential as VSS1.
	30	SBCW		O	Sub-code channel W output
	31	SBCV		O	Sub-code channel V output
	32	SBCU		O	Sub-code channel U output
	33	SBCT		O	Sub-code channel T output

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC201	34	SBCS		O	Sub-code channel S output
	35	SBCR		O	Sub-code channel R output
	36	SBCQ		O	Sub-code channel Q output
	37	SBCP		O	Sub-code channel P output
	38	$\overline{\text{RAS}}$		O	Row address strobe signal output
	39	NC		—	
	40	RDB ₂		I/O	External memory data I/O 2
	41	NC		—	
	42	RDB ₁		I/O	External memory data I/O 1
	43	RDB ₄		I/O	External memory data I/O 4
	44	$\overline{\text{CAS}}$		O	Column address strobe signal output
	45	RDB ₃		I/O	External memory data I/O 3
	46	$\overline{\text{WE}}$		O	Write enable signal output
	47	NC		—	
	48	RAD ₁		O	External memory address output 1
	49	RAD ₂		O	External memory address output 2
	50	RAD ₃		O	External memory address output 3
	51	RAD ₇		O	External memory address output 7
	52	RAD ₄		O	External memory address output 4
	53	RAD ₅		O	External memory address output 5
	54	RAD ₆		O	External memory address output 6
	55	RAD ₀		O	External memory address output 0
	56	V _{DD1}		I	5V power supply
	57	EST ₂		O	Error status 2. "1" indicates detection of data which cannot be corrected by C2 decoder.
	58	EST ₁		O	Error status 1. "1" indicates detection of C1 decoder error.
	59	C846		O	Clock output. 8.4672MHz.
	60	C423		O	Clock output. 4.2336MHz. Duty = 50%.
	61	C16MI		I	1/2 divider input. With built-in feedback resistor for generating 1/2 VDD bias voltage.

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC201	62	C8MO		O	1/2 divider output
	63	X ₁		I	Quartz oscillator input. External clock may be input. With built-in feedback resistor.
	64	X ₀		O	Quartz oscillator output
	65	V _{SS1}		I	GND. Same potential as V _{SS2} .
	66	DOFK		O	OSC frame clock output. 7.35kHz. Duty = 50%.
	67	DO		O	D-A converter serial data output
	68	NC		—	
	69	WDCK		O	D-A converter word clock or APTL
	70	LRCK		O	D-A converter left/right clock or APTR
	71	NC		—	
	72	DSCK		O	D-A converter data shift clock
IC202	1	$\overline{\text{OE}}$		I	Output enable input
	2	DQ1		I/O	Data I/O
	3	DQ2		I/O	Data I/O
	4	$\overline{\text{W}}$		I	Write designation input
	5	$\overline{\text{RAS}}$		I	Row address strobe input
	6	A6		I	Address input
	7	A5		I	Address input
	8	A4		I	Address input
	9	V _{CC}		—	Power supply (5V)
	10	A7		I	Address input (row address only)
	11	A3		I	Address input
	12	A2		I	Address input
	13	A1		I	Address input
	14	A0		I	Address input (row address only)
	15	DQ3		I/O	Data I/O
	16	$\overline{\text{CAS}}$		I	Column address strobe input
	17	DQ4		I/O	Data I/O
	18	V _{SS}		—	Power supply (0V)

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC301	1	XT		I	Oscillation area input terminal
	2	$\overline{\text{XT}}$		O	Oscillation area output terminal if $\overline{\text{CKSL}}$ is high. Open if CKSL is low.
	3	$\overline{\text{CKSL}}$		I	High indicates that XT has 16.9344MHz or 17.2872MHz quartz oscillation or external input. Low indicates that XT has 8.4672MHz or 8.6436MHz external input.
	4	CKO		O	Clock output (8.4672MHz or 8.6436MHz)
	5	LRCI		I	44.1kHz synchronous clock input
	6	DIN		I	Serial data input
	7	BCKI		I	Serial input bit clock input
	8	V _{SS}		—	GND terminal (0V)
	9	$\overline{\text{SCSL}}$		I	High indicates that system clock is 192fs. (fs = sampling frequency) Low indicates that system clock is 196fs.
	10	DGR		O	Channel R deglitch signal (176.4kHz)
	11	DGL		O	Channel L deglitch signal (176.4kHz)
	12	DOUT		O	Serial data output
	13	WDCO		O	Output control clock (352.8kHz)
	14	$\overline{\text{LRCO}}$		O	Output control clock (176.4kHz)
	15	BCKO		O	Serial output bit clock (8.4672MHz or 8.6436MHz)
	16	V _{DD}		—	Power supply (5V)
IC304 /305	1	— V _S		—	Negative analog power supply
	2	LOG COM		—	Logic common
	3	+ V _L		—	Positive logic power supply
	4	NC		—	
	5	CLK		I	Clock input
	6	LE		I	Latch enable input
	7	DATA		I	Serial data input
	8	— V _L		—	Negative logic power supply
	9	V _{OUT}		O	Voltage output
	10	RF		I	Feedback resistor
	11	SJ		I	Summing junction

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC304 /305	12	ANA COM		—	Analog common
	13	I _{OUT}		O	Current output
	14	MSB ADJ		—	MSB adjustment terminal
	15	TRIM		—	MSB trim potentiometer terminal
	16	+ V _S		—	Positive analog power supply
IC306 /307	1	Y1		I/O	Input/output (Y1) switches
	2	Y0		I/O	Input/output (Y0) switches
	3	Z1		I/O	Input/output (Z1) switches
	4	Z-COMMON		I/O	Output/input (Z) terminal
	5	Z0		I/O	Input/output (Z0) switches
	6	INHIBIT		I	Inhibit control input
	7	V _{EE}		—	Power terminal
	8	V _{SS}		—	Power terminal
	9	C		I	Select control input
	10	B		I	Select control input
	11	A		I	Select control input
	12	X0		I/O	Input/output (X0) switches
	13	X1		I/O	Input/output (X1) switches
	14	X-COMMON		I/O	Output/input (X) terminal
	15	Y-COMMON		I/O	Output/input (Y) terminal
	16	V _{DD}		—	Power terminal
IC401	1	P27	OPEN	I/O	Disc tray opening direction driving output
	2	P26	CLOSE	I/O	Disc tray closing direction driving output
	3	P25	JP1	I/O	
	4	P24	MSD	I/O	Serial data output
	5	P23	MCK	I/O	Shift clock output
	6	P22	MLA	I/O	Data latch clock output

ID number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC401	7	P21	MUTE	I/O	Mute output
	8	P20	ACK	I/O	
	9	NC	NC	—	
	10	P07	DATA IN	I/O	Serial data input
	11	P06	SYCLK	I/O	Frame synchronization signal output
	12	P05	DRD	I/O	
	13	P04	SCOR	I/O	Sub code synchronization signal output S0 + S1
	14	P03	CRCF	I/O	Sub code Q CRCOK = 1
	15	P02	SUBQ	I/O	Sub code Q Channel output
	16	P01	KD4	I/O	
	17	P00	TEST	I/O	
	18	$\overline{\text{INT2}}$	STB	I	
	19	$\overline{\text{INT1}}$	EFFK	I	EFM frame clock output
	20	NC	NC	—	
	21	CNVss	GND	—	CNVss input
	22	$\overline{\text{RESET}}$	RESET	I	Reset input
	23	XIN	XIN	I	Clock input
	24	XOUTF	XOUTF	O	Clock output F
	25	XOUTS	XOUTS	O	Clock output S
	26	Vss	GND	—	Power supply
	27	XCIN	DATA IN	I	Serial data input
	28	XCOUT	—	O	Clock output for timer
	29	R3	KD3	I	Key input 3
	30	R2	KD2	I	Key input 2
	31	R1	KD1	I	Key input 1
	32	R0	KD0	I	Key input 0
	33	ϕ	—	O	Timing output
	34	VP	VP	—	Pull down voltage input
	35	P17	LD ON	O	Laser diode control output

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC401	36	P16	G7	O	Figure output 7
	37	P15	G6	O	Figure output 6
	38	P14	G5	O	Figure output 5
	39	P13	G4	O	Figure output 4
	40	P12	G3	O	Figure output 3
	41	P11	G2	O	Figure output 2
	42	P10	G1	O	Figure output 1
	43	P37	i	O	Segment output i
	44	P36	g	O	Segment output g
	45	P35	f	O	Segment output f
	46	P34	e	O	Segment output e
	47	P33	d	O	Segment output d
	48	P32	c	O	Segment output c
	49	P31	b	O	Segment output b
	50	P30	a	O	Segment output a
	51	Vcc	Vcc	—	Power supply
	52	Vcc	Vcc	—	Power supply
IC402	1	I/O PORT D	D3	I/O	9-bit terminal having output function on an independent bit basis. Output is open drain circuit for N channel transistor. Port D0 to D3 terminals have 4-bit input function. Programming output latch to "1" sets the output to floating (high impedance) state so that the terminals may be used as input port.
	17		D0	I/O	
	18		D1	I/O	
	19		D2	I/O	
	2	OUT PORT D	D4	O	
	3		D5	O	
	6		D6	O	
	7		D7	O	
	8		D8	O	
	4	CNV _{SS} (0V)	CNV _{SS}	—	Connect to VSS. Low input (0V) must be applied.
	5	V _{SS} (0V)	V _{SS}	—	GND terminal

IC number	Terminal number	Port name	Terminal code	I/O	Outline of functions
IC402	9	I/O PORT F	F0	I/O	4-bit I/O terminal with output latch. Output is open drain circuit for N channel transistor. Programming port F output latch to "1" sets the output to floating (high impedance) state so that port F may be used as input port.
	10		F1	I/O	
	11		F2	I/O	
	12		F3	I/O	
	13	RESET	RESET	I	Sets to reset state by applying low level signal for two or more machine cycles.
	14	X _{OUT}	CLOCK OUT	O	Connect external resistor R for oscillating CR in the clock generation circuit. Ceramic resonator may be connected.
	15	X _{IN}	CLOCK IN	I	
	16	SENSE INPUT S	SENSE INPUT S	I	Sense input terminal active on leading edge. Sets flag to "1" when terminal S signal changes from low to high. Allows test and flag clear to be performed by command.
	20	V _{DD} (5V)	V _{DD}	—	Positive power supply terminal.

CIRCUIT DESCRIPTION

1. APC CIRCUIT

A semiconductor laser is used as the light source for the optical pickup. As the output from the semiconductor laser changes radically with changes in temperature, a circuit must be provided to stabilize this output. For this purpose, a monitor diode which detects the optical output of the laser diode is used in the semiconductor laser.

As the laser diode emits light from its bonded surface, light is emitted both in front and behind. The light emitted from the rear is monitored with the monitor diode installed on its rear surface, and the optical output is thus controlled. The light emitted from the front becomes the light source for the pickup.

Fig. 1 shows the APC circuit.

When the temperature rises and the optical output decreases, the monitor current (I_S) decreases, the electric potential of IC51 pin 1 rises, the base current of the driving transistor increases, and the laser current increases. This causes the reduced optical power to return to its former level.

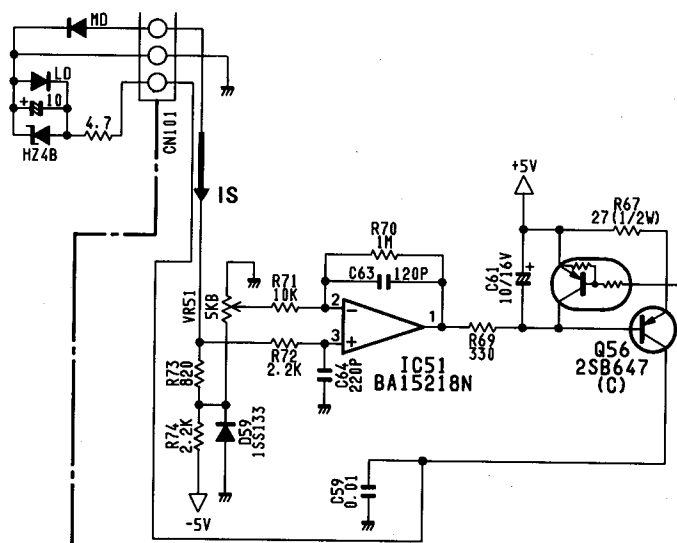
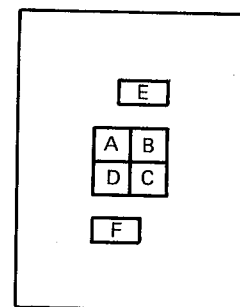


Fig. 1

2. FOCUS SERVO

2-1. Optical pickup

This set employs a three-spot optical pickup comprised of six division photodiodes, A through F. The four photodiodes at the center, i.e., (A + C) and (B + D), provide both focus error detection by means of a main beam spot and main signal pickup. The remaining two diodes, (E and F), provide tracking error detection by means of sub-beam spots.



Three spotted (six-division) photo diodes

Fig. 2-1

2-2. Focus error detecting operation

The reflected laser beam from a disc is polarized 90° with the beam-splitter and sent to the photodiodes via the cylindrical lens. The beam passed through this cylindrical lens gradually varies its shape along its path - as an oval in a longitudinal direction, then as a circle, and finally as an oval in a transverse direction. (See Fig. 2-2)

The beam shape varies with the distance from the disc, and when "just-focus" the photosensor (photo-diodes) is positioned at the center of the circular beam. The photodiode is divided into four sections, all of which provide outputs when in focus. However, when the disc is too close the longitudinal direction oval beam rays on the upper and lower photodiodes, causing only these two diodes to provide outputs, and if, on the other hand, the disc is too far only the left and right diodes provide outputs. Therefore, by amplifying the difference in output derived from these four-division diodes a focus error signal can be obtained. The focus error signal is amplified and fed to the objective lens for focus correction, thereby always maintaining an in-focus state. The focus correction is performed in the focus servo control circuit.

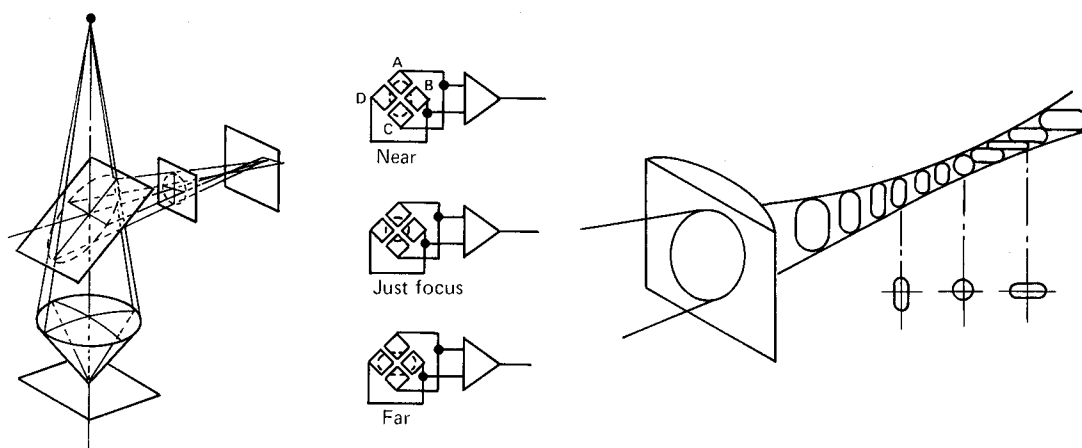


Fig. 2-2

2-3. Focus servo control operation

The optical pickup outputs, $(A + C)$ and $(B + D)$, are input to pin 5 and pin 6 of IC101, where the photodiode current is converted to voltage by RF-V Amplifier. The difference between $(A + C)$ and $(B + D)$ is derived and a focus error signal is output from pin 16 of IC101 (detection amplifier stage) in such a manner that if $(A + C) > (B + D)$ the focus error is positive (focus too close), and if $(A + C) < (B + D)$ the focus error is negative (focus too far).

If "near-focus" then output to pin 16 of IC101 is + voltage. And if "far focus" then output to pin 16 of IC101 is - voltage. This focus error signal input to pin 32 of IC102, after being amplified by the preamplifier (IC102). Output to pin 30. Output signal of + voltage or - voltage (pin 30 of IC102) input to pin 2 of IC103 and output to pin 8 of IC103, drives the objective lens for automatic focus correction (adjustment). (Fig. 2-3)

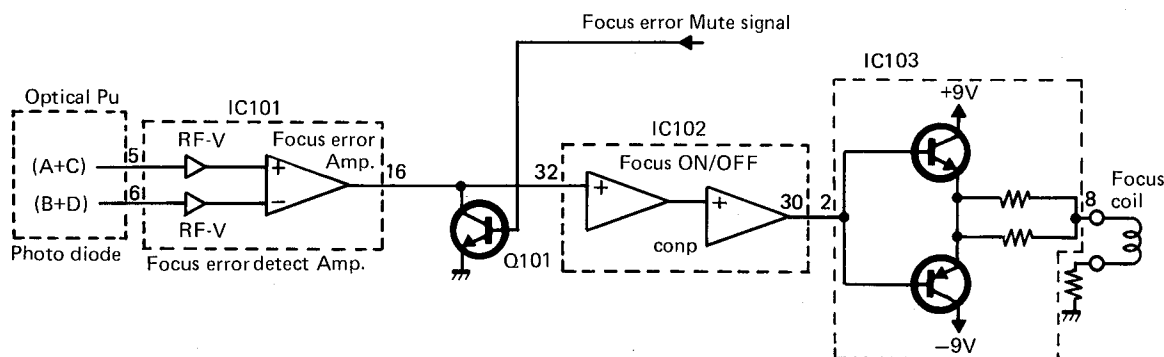


Fig. 2-3

2-4. The Tracking Error Detection System

The laser beam must follow the spiral path of the disc. The detection system employs the 3 beam system.

Fig. 2-4 illustrates the 3 beam system. Fig. 2-4-A depicts the condition under which the tracking is deemed to be correct. Two additional lights detectors (E and F), also a part of the Pick-Up Assembly, are used in the Auto Tracking circuit. When tracking is correct the amount of light reflected from the Disc for both outer beams is equal, therefore, the same amount of light is sensed by both the E and F light detectors and both detectors develop equal amplitude output voltages. The output of the E detector applied to the $(-)$ input of an OP-AMP, and the output of the F detector is directed to the $(+)$ input of the same OP-AMP. Since the $(+)$ and $(-)$ inputs are equal, the output of OP-AMP, when tracking is correct, is 0v.

Fig. 2-4-B illustrates a tracking error in one direction. In this case the E detector receiving reflected light from the mirrored surface of the Disc, receives more reflected light than the F detector, therefore, the $(-)$ OP-AMP input receives a higher voltage than the $(+)$ input. The OP-AMP outputs a negative Tracking Error voltage which is directed to the Tracking Servo circuit in order to make the adjustments necessary to achieve optimum tracking. Fig. 2-4-C illustrates tracking error in the opposite direction. Now the F detector receives more reflected light, the positive input of the OP-AMP is higher than the $(-)$ input, resulting in a positive Tracking Error voltage from the OP-AMP.

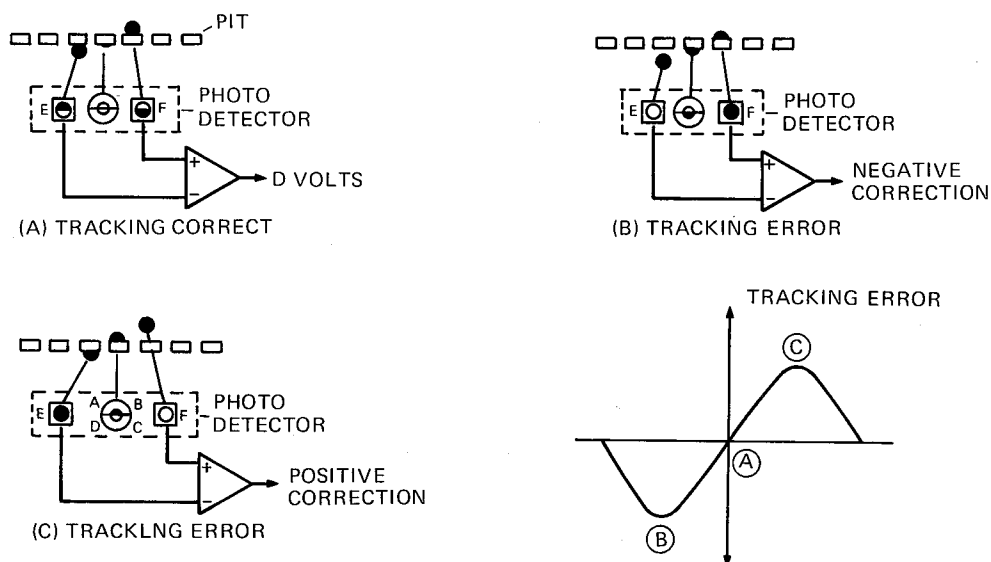
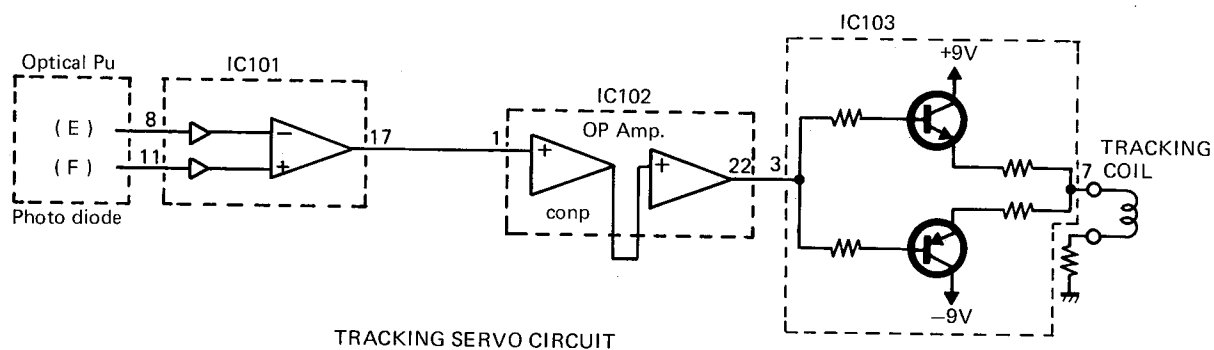


Fig. 2-4



3. REGENERATIVE CIRCUIT

3-1. RF circuit

Photo diode current input to Pin 5 (PD1) and Pin 6 (PD2) of IC101 is converted from current to voltage by RF I-V amplifiers. Next, (A + C) and (B + D) signals are mixed in and output from pin 4 of IC101.

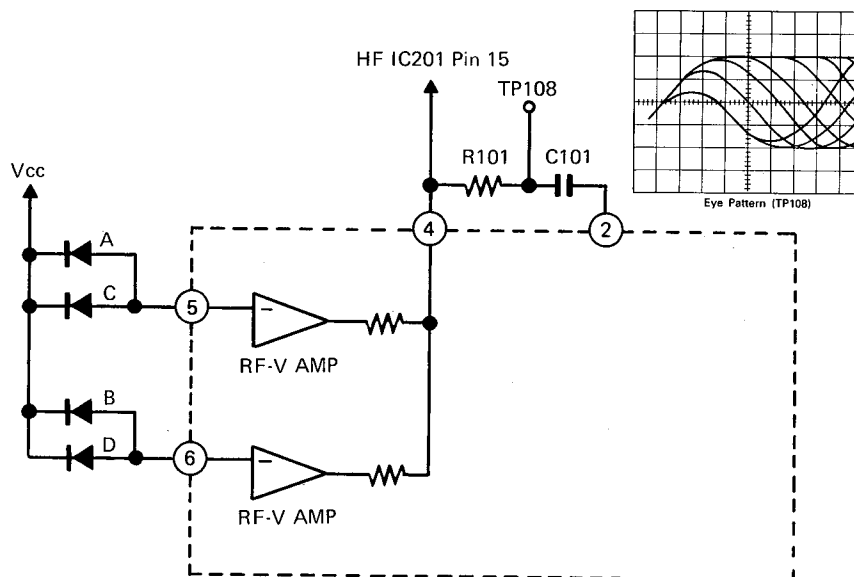


Fig. 3-1

3-2. EFM demodulation, error correction, serial/parallel conversion.

EFM demodulation, error correction and serial/parallel conversion are performed by internal circuitry of IC201. The eye-pattern signals from Pin 4 of IC101 are sent to Pin 15 of IC201, then demodulated from 14 bit into 8 bit by EFM readjustment.

If an error occurs at this point, it undergoes error correction (CIRC). The signals are then output as serial signals.

The digital signal of the CD is decoded by IC201 and then enters IC301, an FIR type digital filter which oversamples the signal to the frequency four times higher than the sampling frequency (44.1kHz) at the time of CD recording.

This IC allows noise components between 20kHz and 132.3kHz to be removed without damaging the phase. Hence, subsequent LPFs used may be at low order to improve the tone quality.

IC302 and IC303 comprise a timing circuit which transmits output from the digital filter to the D/A converter of IC304 and IC305 in the same phase. The output signal converted from digital to analog by IC304 and IC305 is input to the sample hold circuit consisting of IC306 and IC307, where a stable signal is generated and hold. Q317, Q318 and Q319 make up a timing circuit for the generation of that signal.

Q301, Q302, Q305 and Q306 configure a buffer circuit which prevents the sample hold circuit from interfering with the next LPF.

Q315 and Q316 comprise a switch driver that drives the deemphasis switch of Q307 and Q308 if an emphasis is given to the CD software by IC201.

Q52 and Q53 make up a muting switch used when the power circuit is switched on.

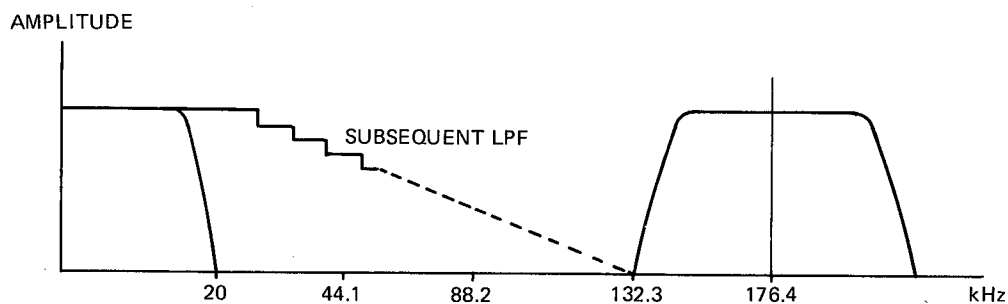
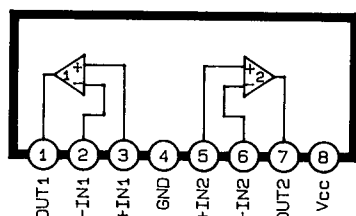


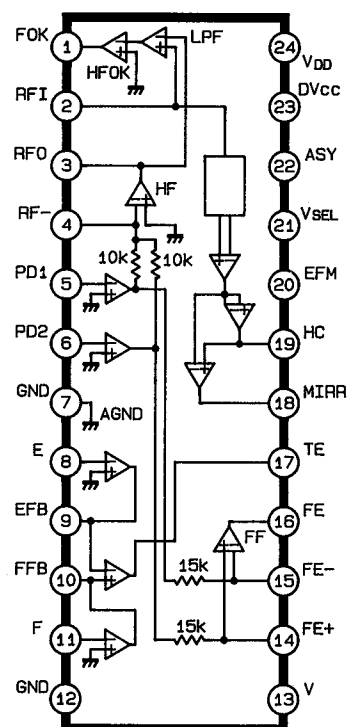
Fig. 3-2

IC BLOCK DIAGRAM

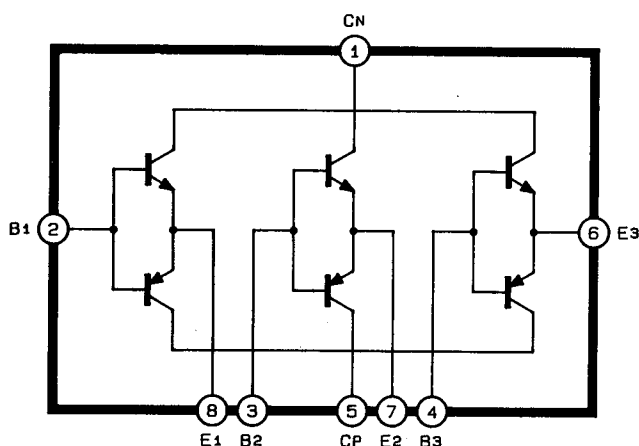
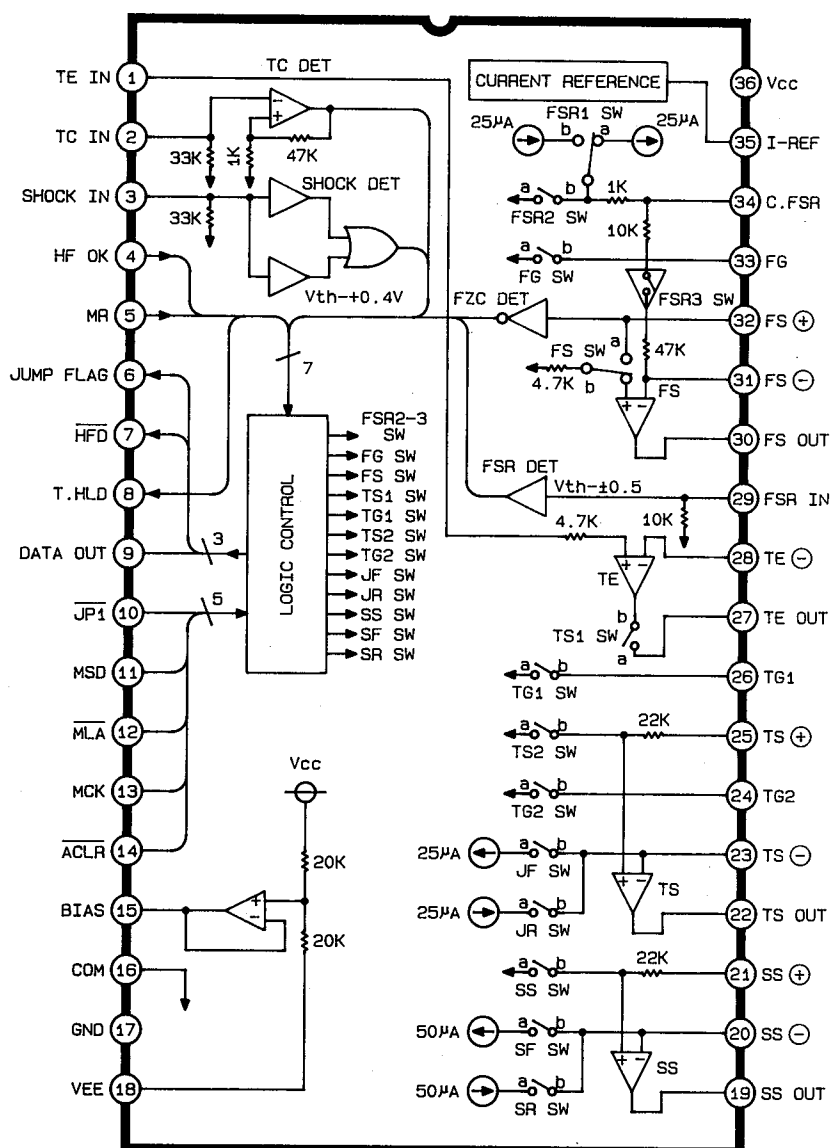
IC51, 203, 308
BA15218N
Dual Operational Amplifier



IC101
CX20109
RF Pre Amplifier

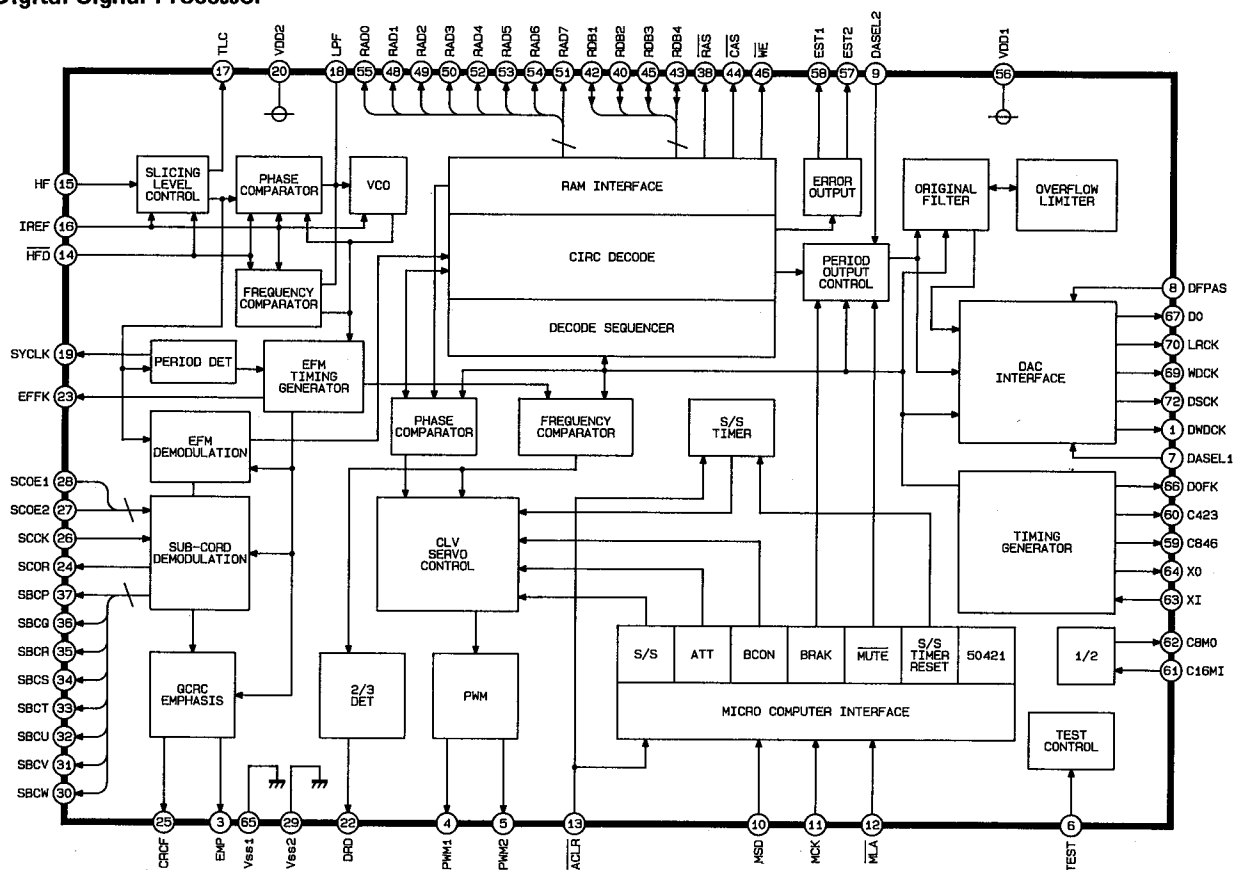


IC102
M51564P
Optical Pick-up Servo Control

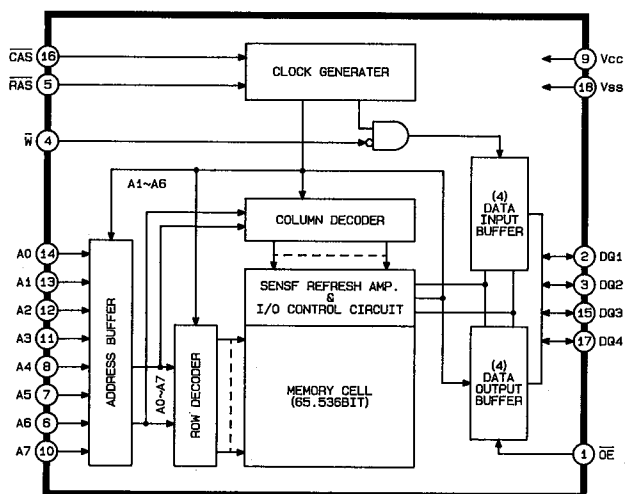


IC103
STA341M
Transistor Array

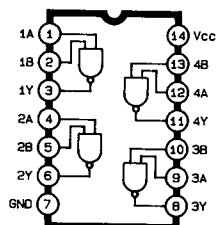
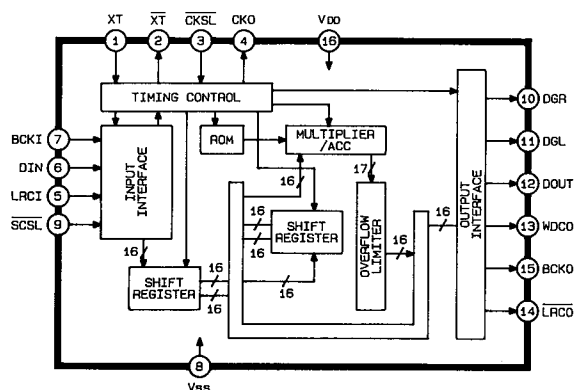
IC201
M50422P
 Digital Signal Processor



IC202
M5M4416P
 65636-Bit (16384-Word by 4-Bit)
 Dynamic RAM

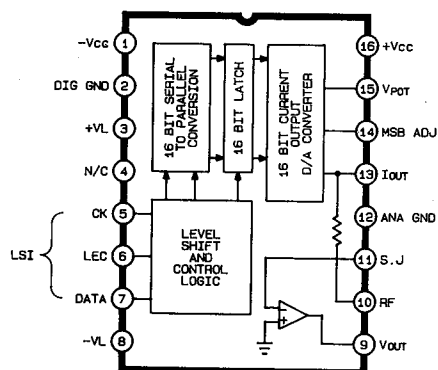


IC301
SM5807EP
 Digital Filter

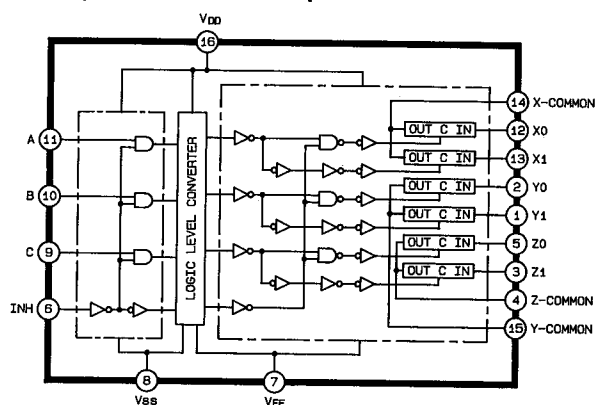


IC302, 303
T74HC00P
 Quad 2-Input NAND Gate

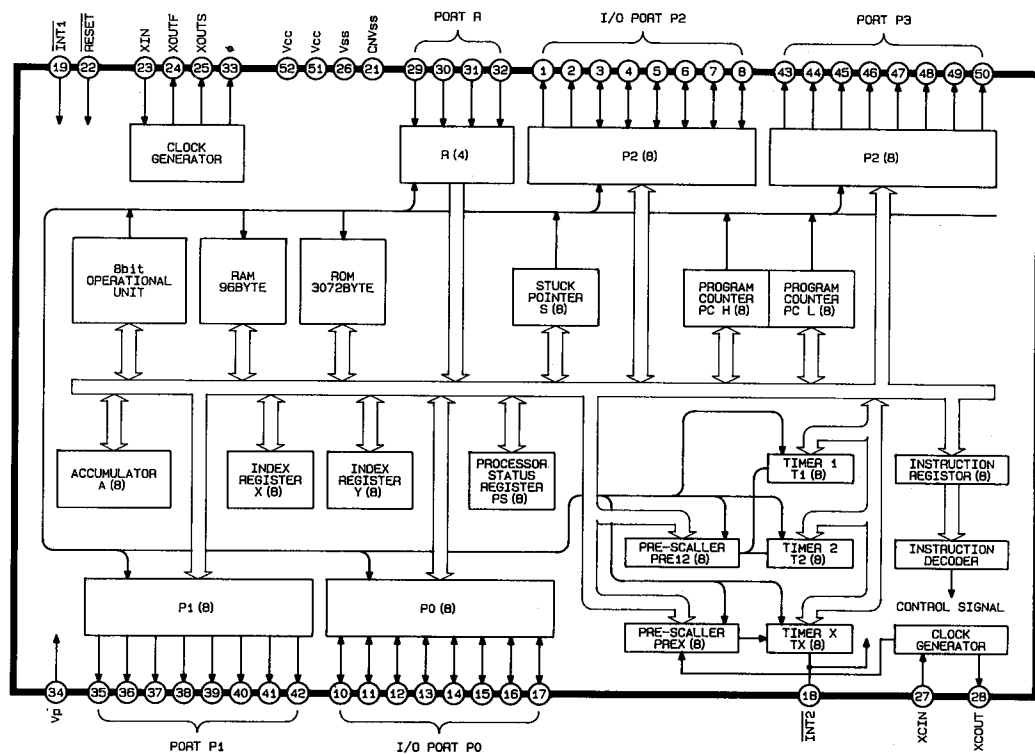
IC304, 305
PCM56P
D/A Converter



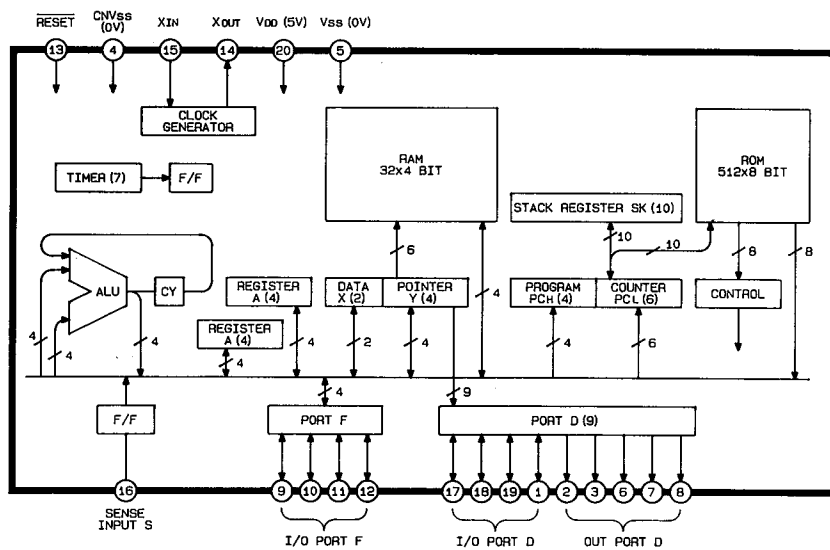
IC306, 307
HD14053BP
Triple-2 channel Multiplexer



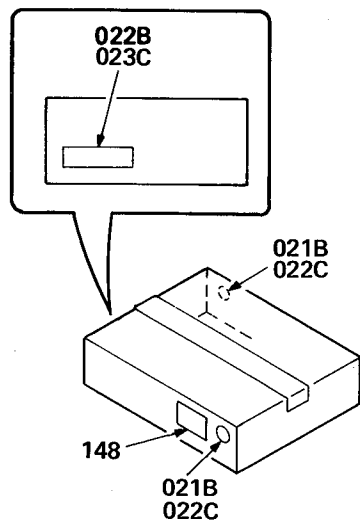
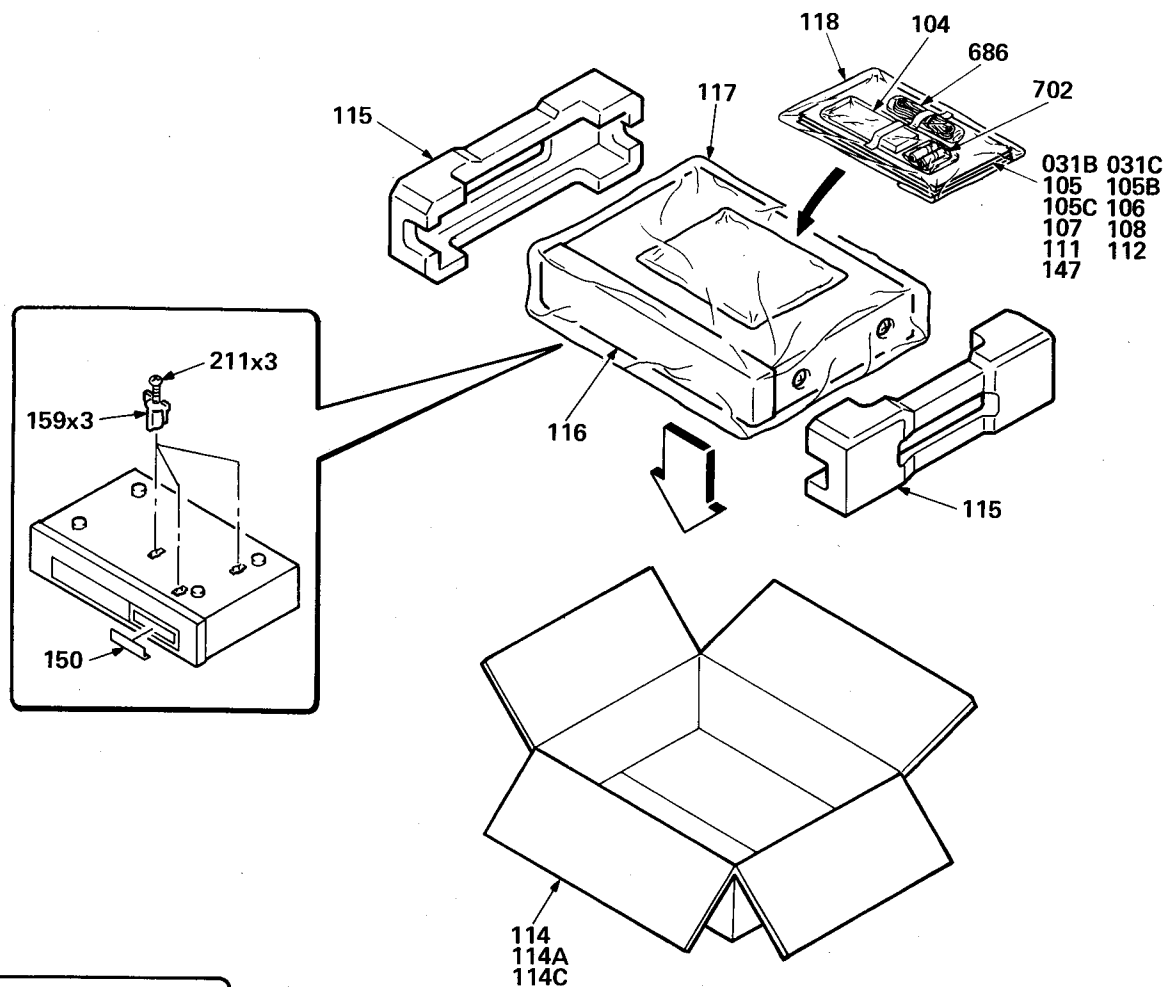
IC401
M50752-402SP
Microcomputer



IC402
M50761-430P
Microcomputer

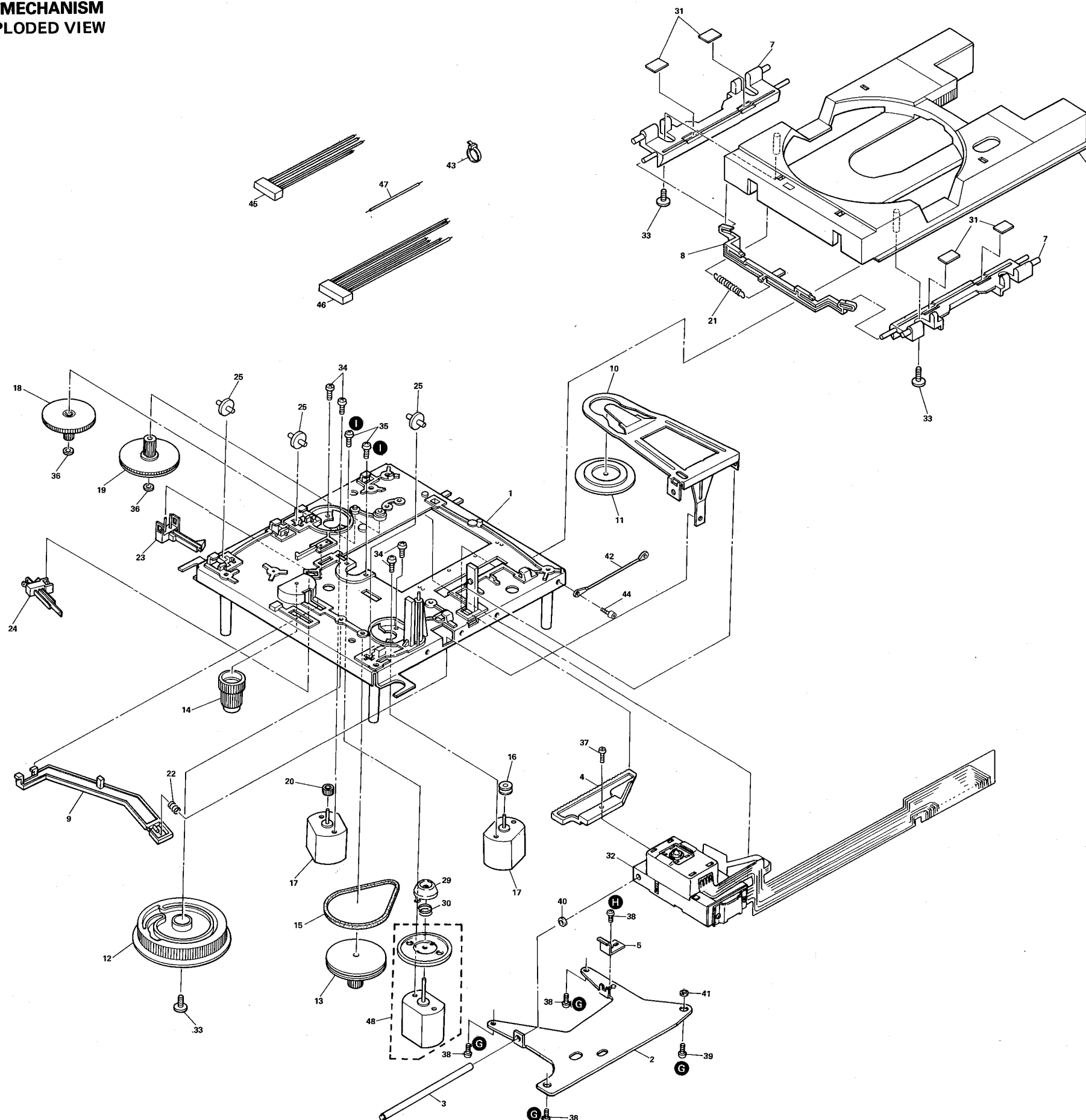


PACKAGE



Ref. No.	Part No.	Description
021B	1756-03124	LABEL G
022B	1756-06303	LABEL G
022C	1756-03124	LABEL GB
023C	1756-06303	LABEL GB
031B	1111-J30253	OWNER GUIDE G
031C	1111-J30253	OWNER GUIDE GB
104	6142-01102	REMOTE CONTROL UNIT
105	1111-J30285	OWNER GUIDE UA BK
105B	1111-J30286	OWNER GUIDE G
105C	1111-J30286	OWNER GUIDE GB
106	1111-J90195	OWNER GUIDE UA BK
107	1113-717004	OWNER CARD UA BK
108	1111-J30254	OWNER GUIDE UA BK
111	1119-047	ATTACH SHEET UA BK
112	1119-0137	ATTACH SHEET UA BK
114	1221-747194	CARTON BOX UA BK
114A	1221-757194	CARTON BOX BK
114C	1221-757194	CARTON BOX GB
115	1222-7306	CUSHION
116	1223-R0220055	SOFT SHEET
117	1241-R0155500	POLYETHY BAG
118	1241-R0123350	POLYETHY BAG
147	1756-11601	LABEL UA BK
148	1756-11701	LABEL UA BK
150	1756-12001	LABEL
159	2132-7148	SPACER
211	2347-R0130252	SCREW
686	4161-71184	CORD W/PLUG, CONNECTION
702	4191-0355	BATTERY

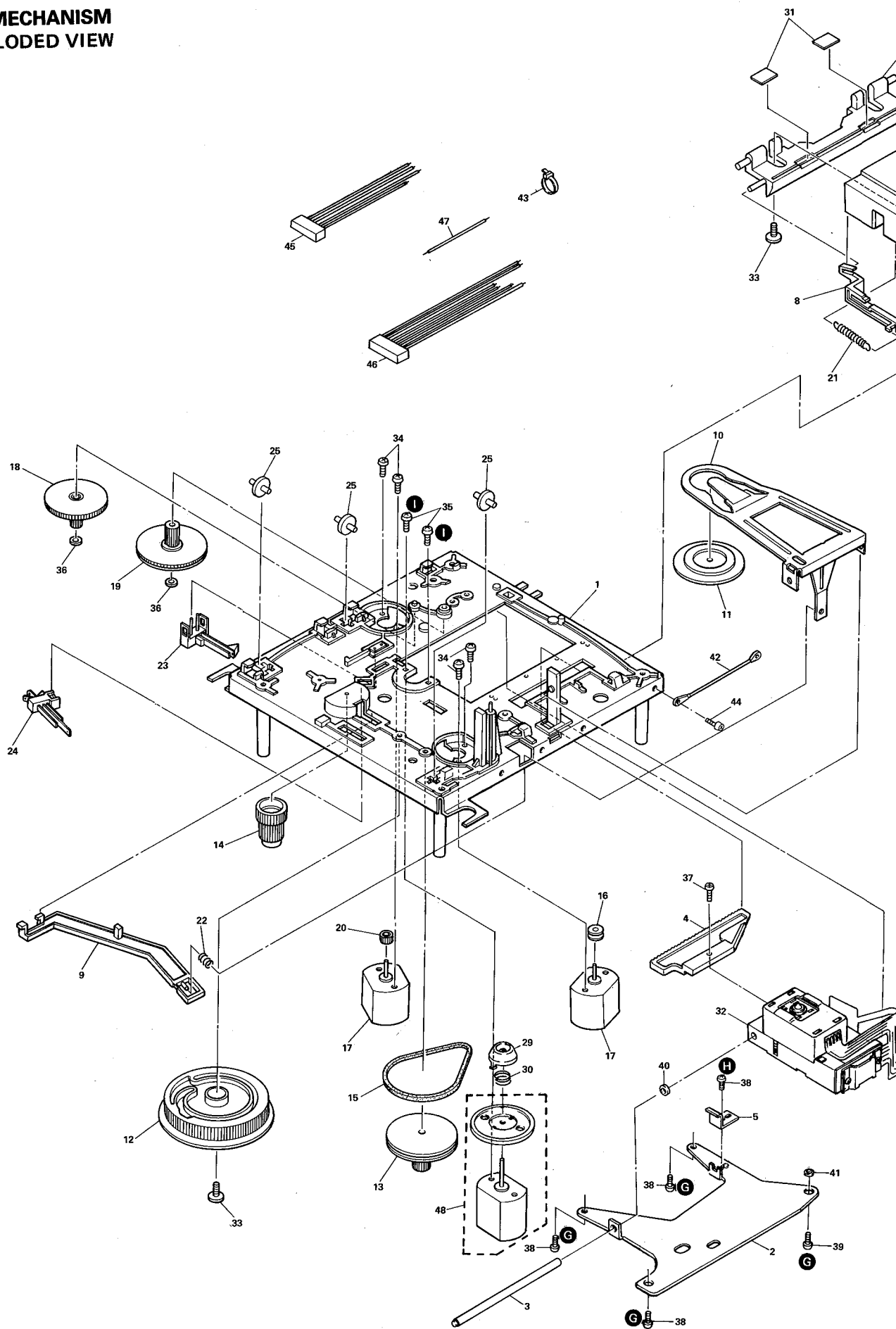
CD MECHANISM EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description
1	A81A189	CHASSIS ASS'Y
2	A81P203	PICK-UP BASE ASS'Y
3	A81H023	PICK-UP BASE SHAFT
4	A81G079	PICK-UP GEAR
5	A81P018	PICK-UP BASE SHAFT HOLDER
6	A81G236	DISC TRAY
7	A81G002	TABLE
8	A81G003	SLIDER
9	A81G507	LOCK LEVER
10	A81P004	CHUCK ARM
11	A81G004	DISK HOLDER
12	A81G005	LOADING CAM
13	A81G006	LOADING GEAR A
14	A81G007	LOADING GEAR B
15	A81G070	LOADING BELT
16	A81G235	MOTOR PULLEY
17	M01T061	MOTOR, LOADING SLIDER
18	A81G008	PICK-UP GEAR A
19	A81G009	PICK-UP GEAR B
20	A81G010	MOTOR GEAR
21	A81S001	TABLE UP SPRING
22	A81S002	CHUCK ARM SPRING
23	S01W050	LEAF SWITCH
24	S01W051	LEAF SWITCH
25	A81G023	GUIDE ROLLER
29	A81G012	SLIDE RING
30	A81S013	SLIDE RING SPRING
31	A81P051	DISK GUARD
32	A81G576	PICK-UP
33	A81H005	SCREW (M3 x 8 mm)
34	M20B003	SCREW (M2 x 3 mm)
35	M20S006	SCREW (M2 x 6 mm)
36	P16C325	WASHER (1.6 φ x 3.2 φ x 0.25 mm)
37	B20B004	SCREW (M2 x 4 mm)
38	B26T005	SCREW (M2.6 x 5 mm)
39	P26B005	SCREW (M2.6 x 6 mm)
40	P31W805	WASHER (3.1 φ x 8 φ x 0.5 mm)
41	P41W825	WASHER (4.1 φ x 8 φ x 0.25 mm)
42	A81B395	EARTH LEAD WIRE (W/LUG 3)
43	M01N035	BAND
44	M30T005	SCREW (M3 x 5 mm)
45	A81G327	CONNECTOR WITH LEAD WIRE
46	A81G328	CONNECTOR WITH LEAD WIRE
47	A81G317	LEAD WIRE
48	A81A214	SPINDLE MOTOR ASS'Y

CD MECHANISM EXPLODED VIEW



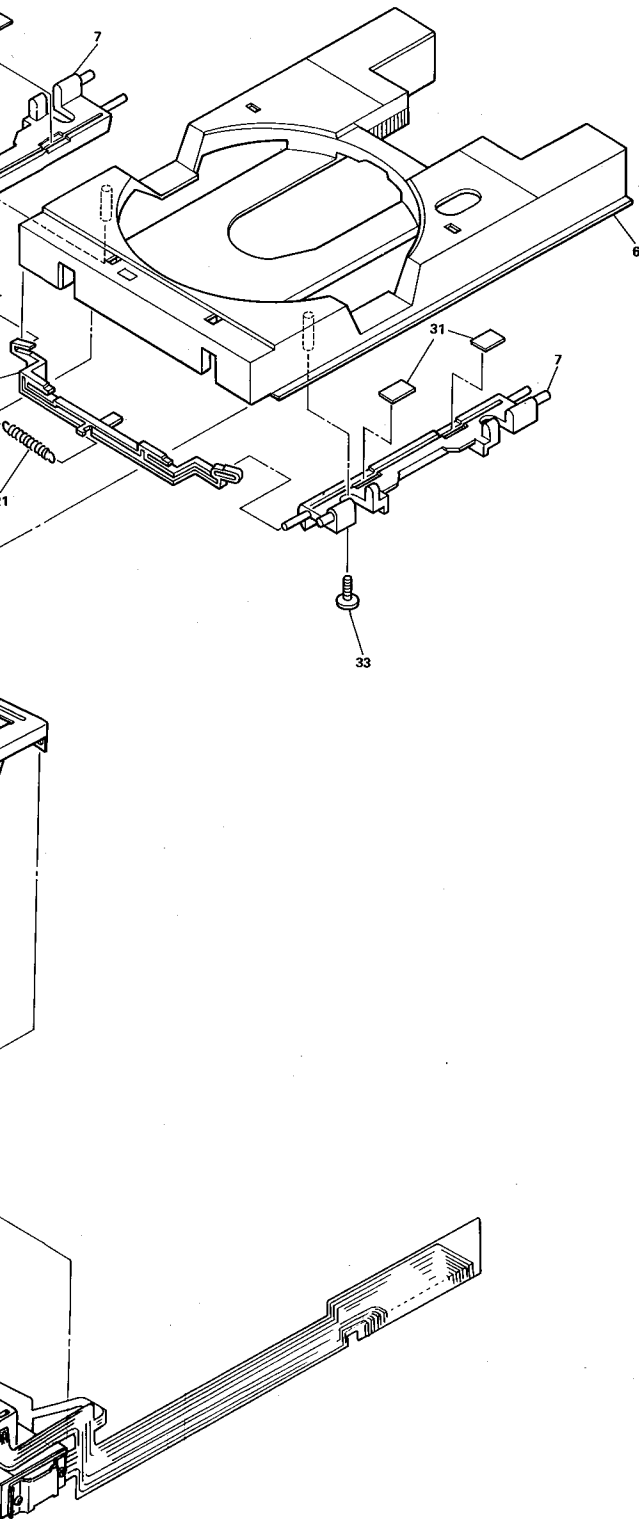
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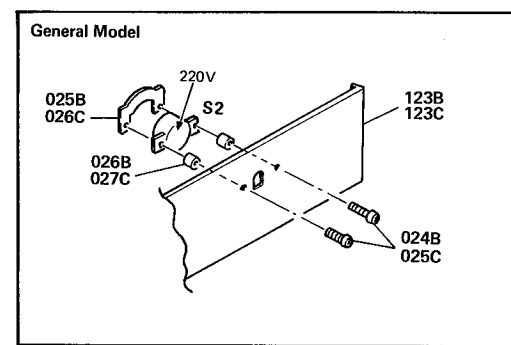
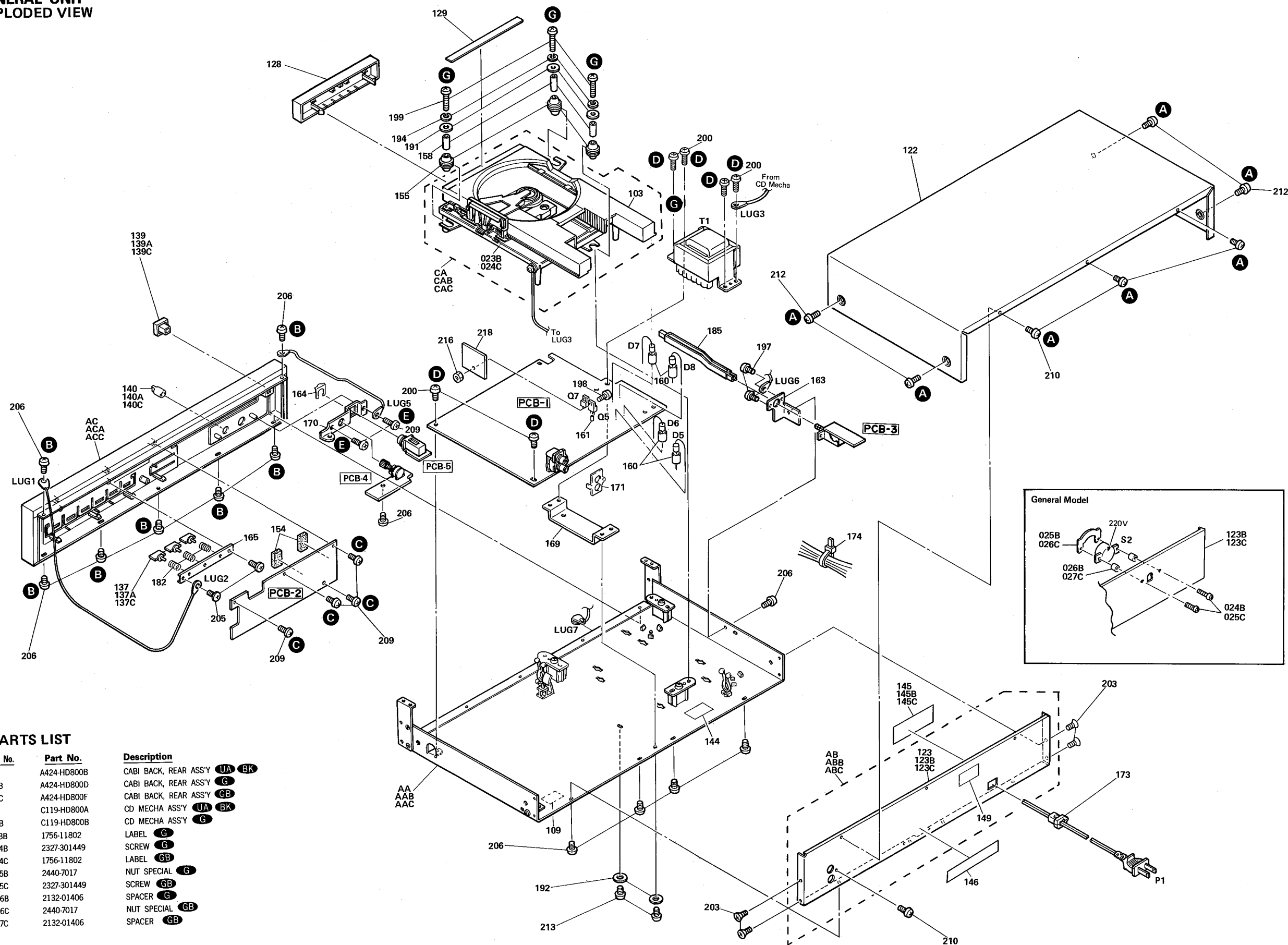
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PARTS LIST

Ref. No.	Part No.	Description
1	A81A189	CHASSIS ASS'Y
2	A81P203	PICK-UP BASE ASS'Y
3	A81H023	PICK-UP BASE SHAFT
4	A81G079	PICK-UP GEAR
5	A81P018	PICK-UP BASE SHAFT HOLDER
6	A81G236	DISC TRAY
7	A81G002	TABLE
8	A81G003	SLIDER
9	A81G507	LOCK LEVER
10	A81P004	CHUCK ARM
11	A81G004	DISK HOLDER
12	A81G005	LOADING CAM
13	A81G006	LOADING GEAR A
14	A81G007	LOADING GEAR B
15	A81G070	LOADING BELT
16	A81G235	MOTOR PULLEY
17	M01T061	MOTOR, LOADING SLIDER
18	A81G008	PICK-UP GEAR A
19	A81G009	PICK-UP GEAR B
20	A81G010	MOTOR GEAR
21	A81S001	TABLE UP SPRING
22	A81S002	CHUCK ARM SPRING
23	S01W050	LEAF SWITCH
24	S01W051	LEAF SWITCH
25	A81G023	GUIDE ROLLER
29	A81G012	SLIDE RING
30	A81S013	SLIDE RING SPRING
31	A81P051	DISK GUARD
32	A81G576	PICK-UP
33	A81H005	SCREW (M3 x 8 mm)
34	M20B003	SCREW (M2 x 3 mm)
35	M20S006	SCREW (M2 x 6 mm)
36	P16C325	WASHER (1.6 ϕ x 3.2 ϕ x 0.25 mm)
37	B20B004	SCREW (M2 x 4 mm)
38	B26T005	SCREW (M2.6 x 5 mm)
39	P26B005	SCREW (M2.6 x 6 mm)
40	P31W805	WASHER (3.1 ϕ x 8 ϕ x 0.5 mm)
41	P41W825	WASHER (4.1 ϕ x 8 ϕ x 0.25 mm)
42	A81B395	EARTH LEAD WIRE (W/LUG 3)
43	M01N035	BAND
44	M30T005	SCREW (M3 x 5 mm)
45	A81G327	CONNECTOR WITH LEAD WIRE
46	A81G328	CONNECTOR WITH LEAD WIRE
47	A81G317	LEAD WIRE
48	A81A214	SPINDLE MOTOR ASS'Y

GENERAL UNIT EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description
AB	A424-HD800B	CABI BACK, REAR ASS'Y (UA BK)
ABB	A424-HD800D	CABI BACK, REAR ASS'Y (G)
ABC	A424-HD800F	CABI BACK, REAR ASS'Y (GB)
CA	C119-HD800A	CD MECHA ASS'Y (UA BK)
CAB	C119-HD800B	CD MECHA ASS'Y (G)
023B	1756-11802	LABEL (G)
024B	2327-301449	SCREW (G)
024C	1756-11802	LABEL (GB)
025B	2440-7017	NUT SPECIAL (G)
025C	2327-301449	SCREW (GB)
026B	2132-01406	SPACER (G)
026C	2440-7017	NUT SPECIAL (GB)
027C	2132-01406	SPACER (GB)

GENERAL UNIT EXPLODED VIEW

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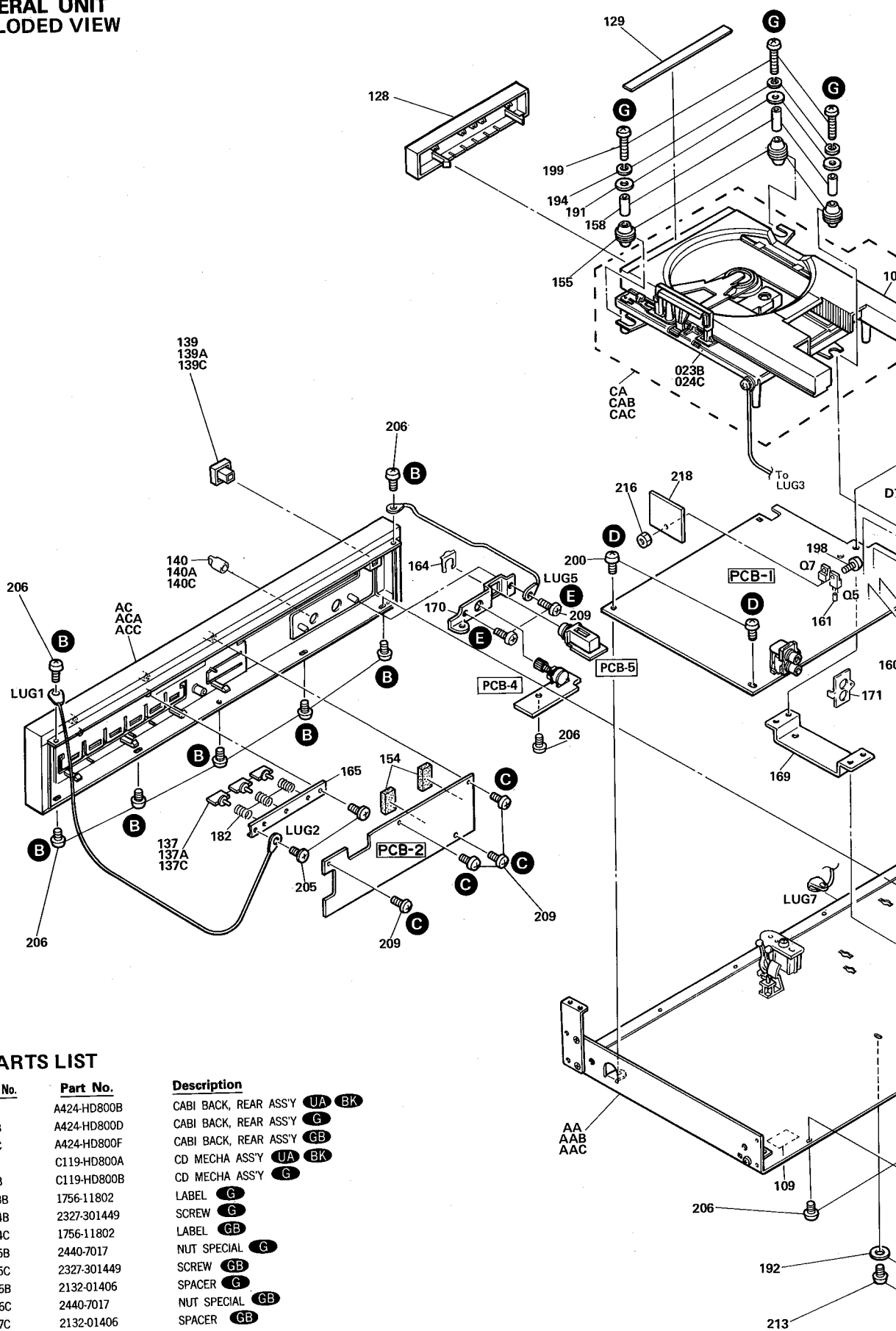
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PARTS LIST

Ref. No.	Part No.	Description
AB	A424-HD800B	CABI BACK, REAR ASS'Y (UA BK)
ABB	A424-HD800D	CABI BACK, REAR ASS'Y (G)
ABC	A424-HD800F	CABI BACK, REAR ASS'Y (GB)
CA	C119-HD800A	CD MECHA ASS'Y (UA BK)
CAB	C119-HD800B	CD MECHA ASS'Y (G)
023B	1756-11802	LABEL (G)
024B	2327-301449	SCREW (G)
024C	1756-11802	LABEL (GB)
025B	2440-7017	NUT SPECIAL (G)
025C	2327-301449	SCREW (GB)
026B	2132-01406	SPACER (G)
026C	2440-7017	NUT SPECIAL (GB)
027C	2132-01406	SPACER (GB)

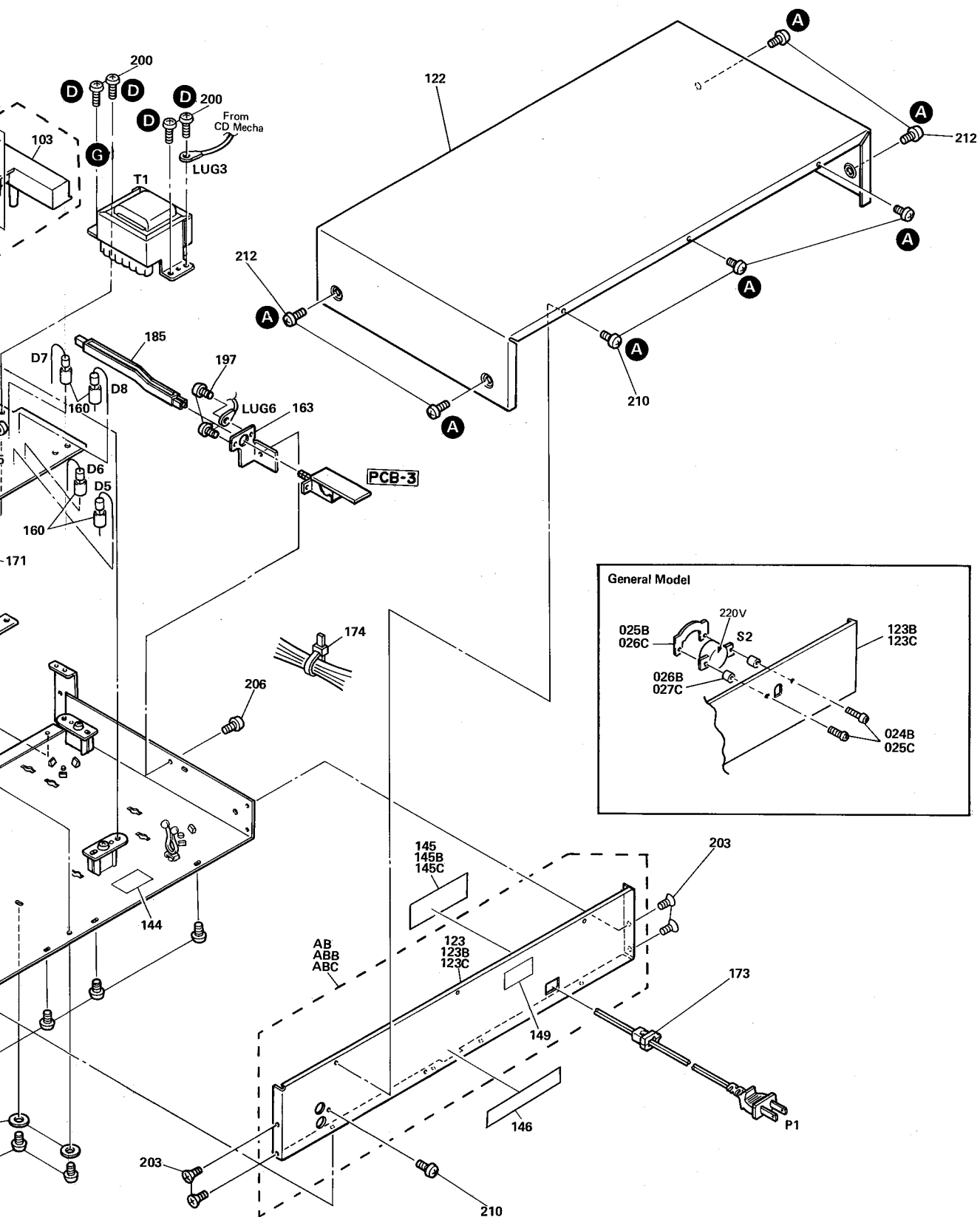
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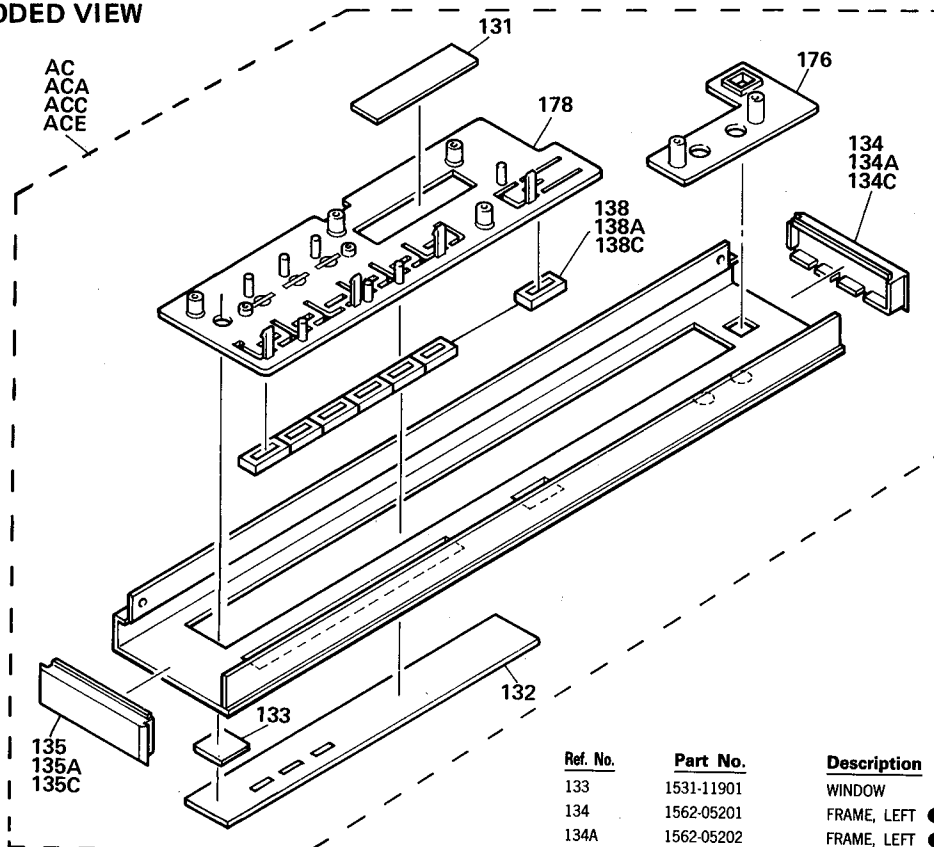
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PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
103	3119-00801	CD MECHA	165	2219-8140	METAL FITTG
109	1117-78	SERIAL LABEL	169	2219-8154	METAL FITTG
122	1414-09101	CABINET	170	2219-8193	METAL FITTG
123	1424-21004	CABI BACK, REAR UA BK	171	2219-8208	METAL FITTG
123B	1424-21005	CABI BACK, REAR G	173	2240-364	HOLDER
123C	1424-21005	CABI BACK, REAR GB	174	2240-7120	HOLDER
128	1452-04701	LID	182	2651-210192	SPRING
129	1511-09701	PLATE	185	2601-7161	SHAFT
137	1662-08502VN	PUSH BUTTON UA G	191	2401-0373	WASHER METAL
137A	1662-08503	PUSH BUTTON BK	192	2401-0476	WASHER METAL
137C	1662-08503	PUSH BUTTON GB	194	2412-3022	WASHER SPRING
139	1662-25401VN	PUSH BUTTON UA G	197	2327-R0130062	SCREW
139A	1662-25402	PUSH BUTTON BK	198	2327-R0130082	SCREW
139C	1662-25402	PUSH BUTTON GB	199	2327-R0130202	SCREW
140	1632-13902VN	ROTARY KNOB UA G	200	2347-R0130082	SCREW
140A	1632-13901	ROTARY KNOB BK	203	2343-300627	SCREW
140C	1632-13901	ROTARY KNOB GB	205	2347-200626	SCREW
144	1756-03305	LABEL	206	2347-R0130062	SCREW
145	1756-09602	LABEL UA BK	209	2347-R0130102	SCREW
145B	1756-12101	LABEL G	210	2347-R0130084	SCREW
145C	1756-12101	LABEL GB	212	2347-R0140064	SCREW
146	1756-CSA	LABEL UA BK	213	2347-R0140082	SCREW
149	1756-11801	LABEL	216	2446-30129	NUT, HEX
154	2114-106143	BUSHING	218	2222-7231	HEAT SINK, Q5
155	2114-01303	BUSHING	△P1	4161-01401232	CORD W/PLUG UA BK
158	2132-3014021	SPACER	△P1	4161-7256	CORD W/PLUG G GB
160	2132-7049	SPACER, D5, D6, D7, D8	△S2	4411-102729	SWITCH, ROTARY G GB
161	2132-5049	SPACER, Q5	△T1	5584-S1901	XFORMER, POWER UA BK
163	2215-7010	BRACKET	△T1	5584-S1902	XFORMER, POWER G GB
164	2218-89	BRACKET			

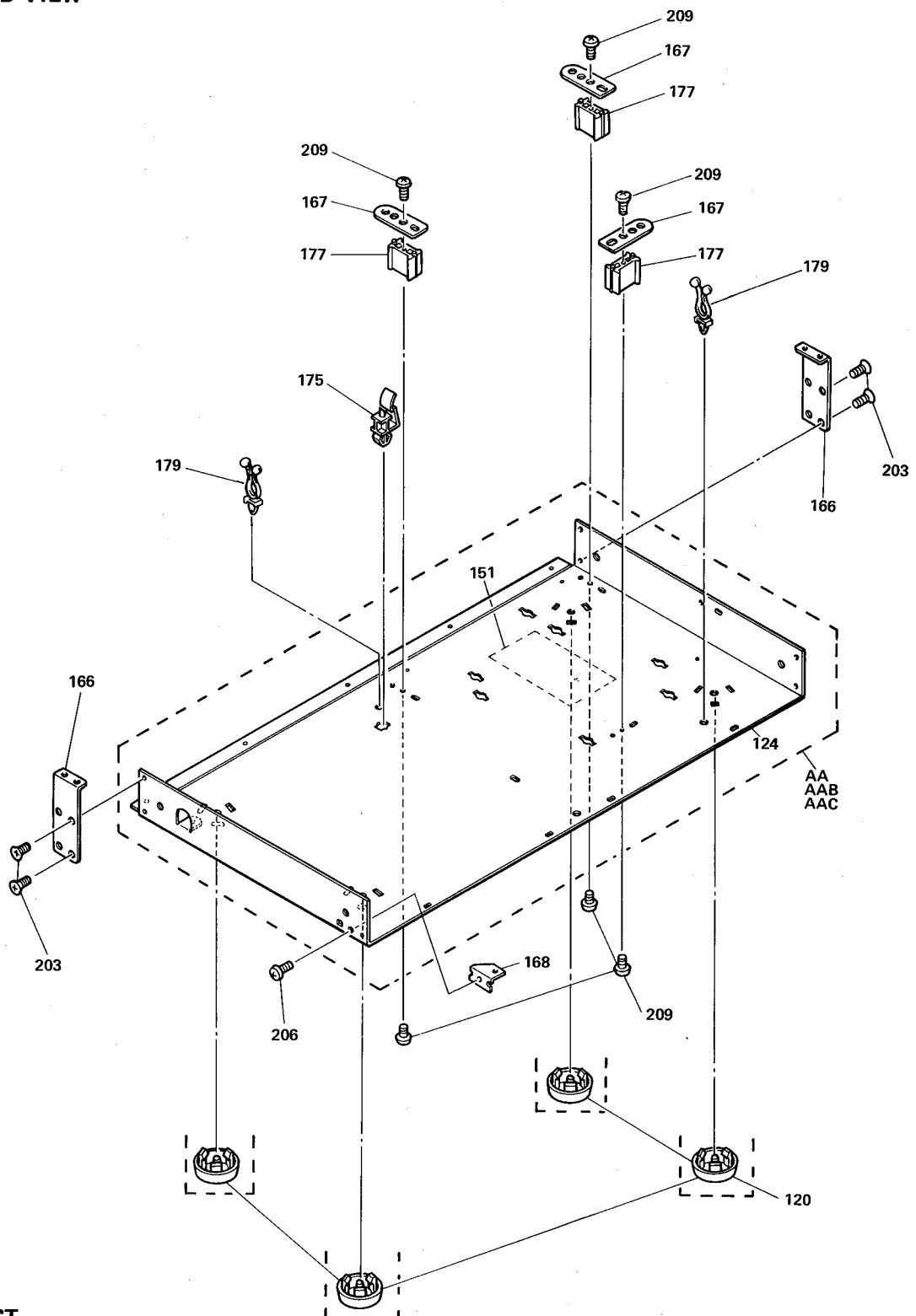
EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
AC	A443-HD800A	PANEL, FRONT ASS'Y UA G	133	1531-11901	WINDOW
ACA	A443-HD800B	PANEL, FRONT ASS'Y BK	134	1562-05201	FRAME, LEFT BK
ACC	A443-HD800C	PANEL, FRONT ASS'Y GB	134A	1562-05202	FRAME, LEFT BK
131	1531-10001	WINDOW	134C	1562-05202	FRAME, LEFT GB
132	1531-10102	WINDOW	135	1562-05301	FRAME, RIGHT UA G
			135A	1562-05302	FRAME, RIGHT BK
			135C	1562-05302	FRAME, RIGHT GB
			138	1662-21101	PUSH BUTTON UA G
			138A	1662-21102	PUSH BUTTON BK
			138C	1662-21102	PUSH BUTTON GB
			176	2240-7321	HOLDER
			178	2240-7286	HOLDER

EXPLODED VIEW

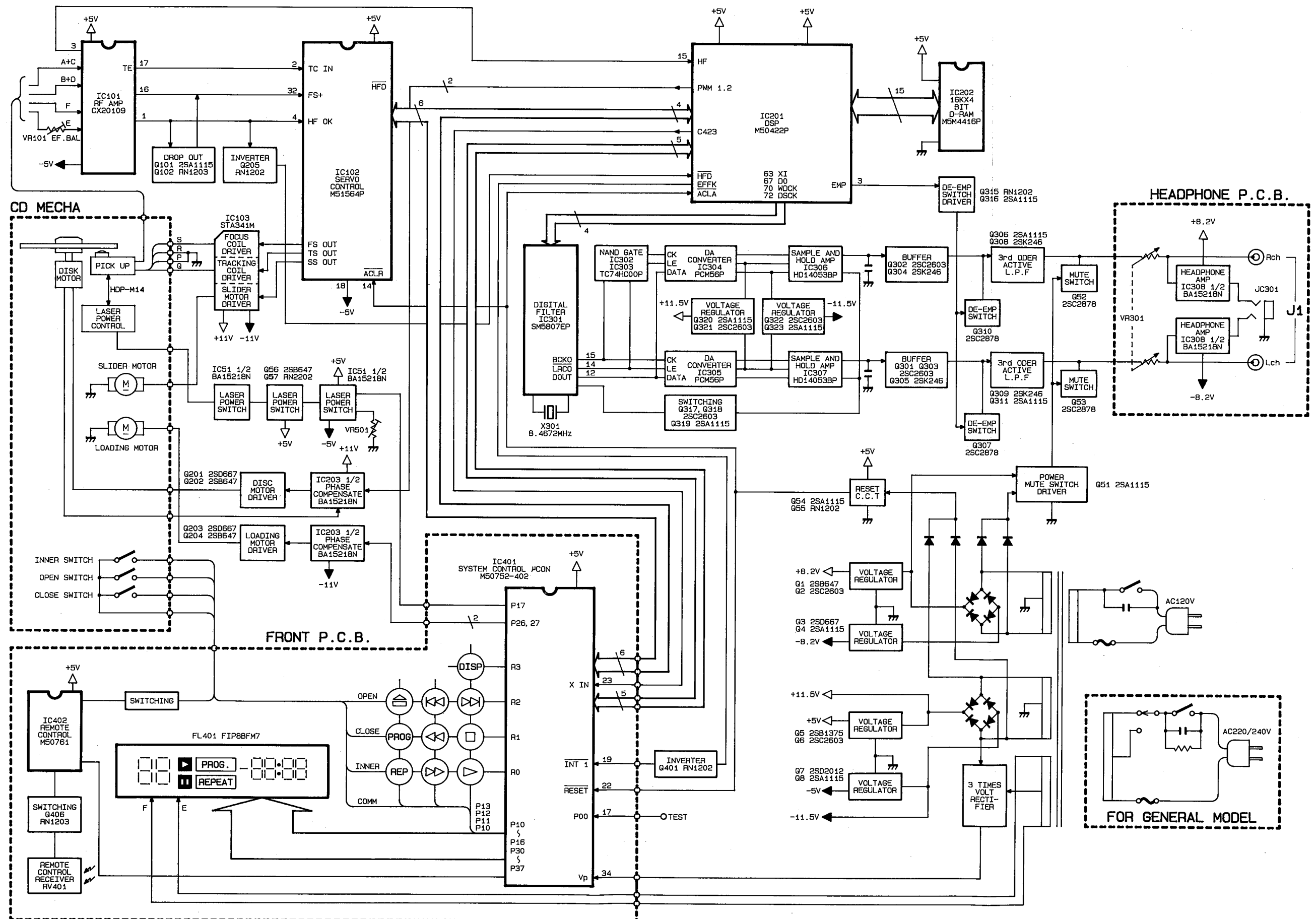


PARTS LIST

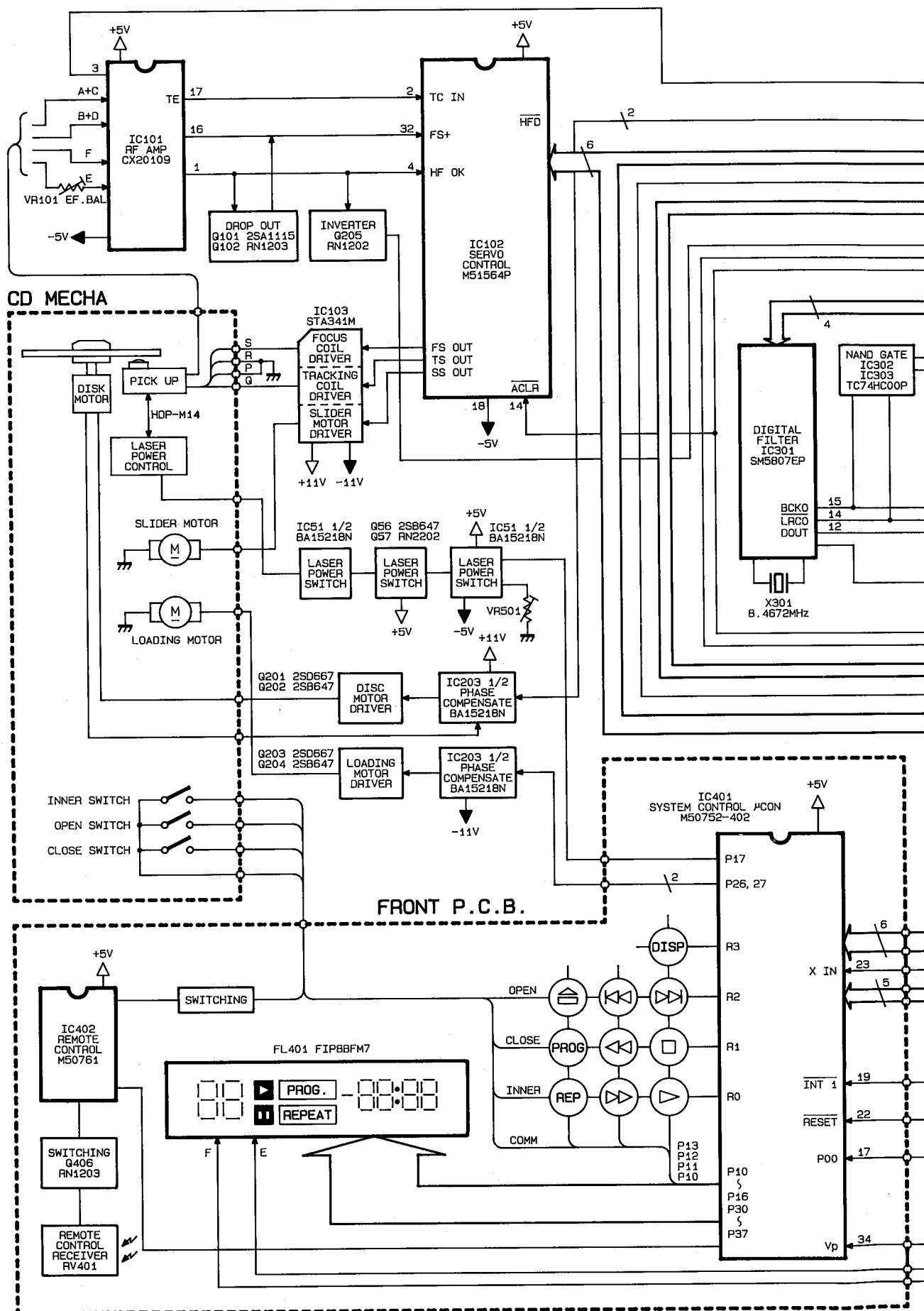
Ref. No.	Part No.	Description
AA	A424-HD800A	CABI BACK, BOTTOM ASS'Y UA BK
AAB	A424-HD800C	CABI BACK, BOTTOM ASS'Y G
AAC	A424-HD800E	CABI BACK, BOTTOM ASS'Y GB
120	1319-0139	LEG
124	1424-21101	CABI BACK, BOTTOM
151	1756-11111	LABEL
166	2219-8141	METAL FITTG
167	2219-8142	METAL FITTG

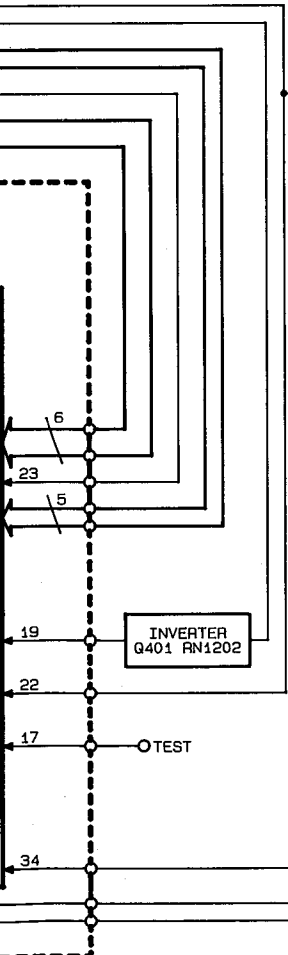
Ref. No.	Part No.	Description
168	2219-8096	METAL FITTG
175	2240-7264	HOLDER
177	2240-7285	HOLDER
179	2240-7049	HOLDER
203	2343-300627	SCREW
206	2347-R0130062	SCREW
209	2347-R0130102	SCREW

BLOCK DIAGRAM

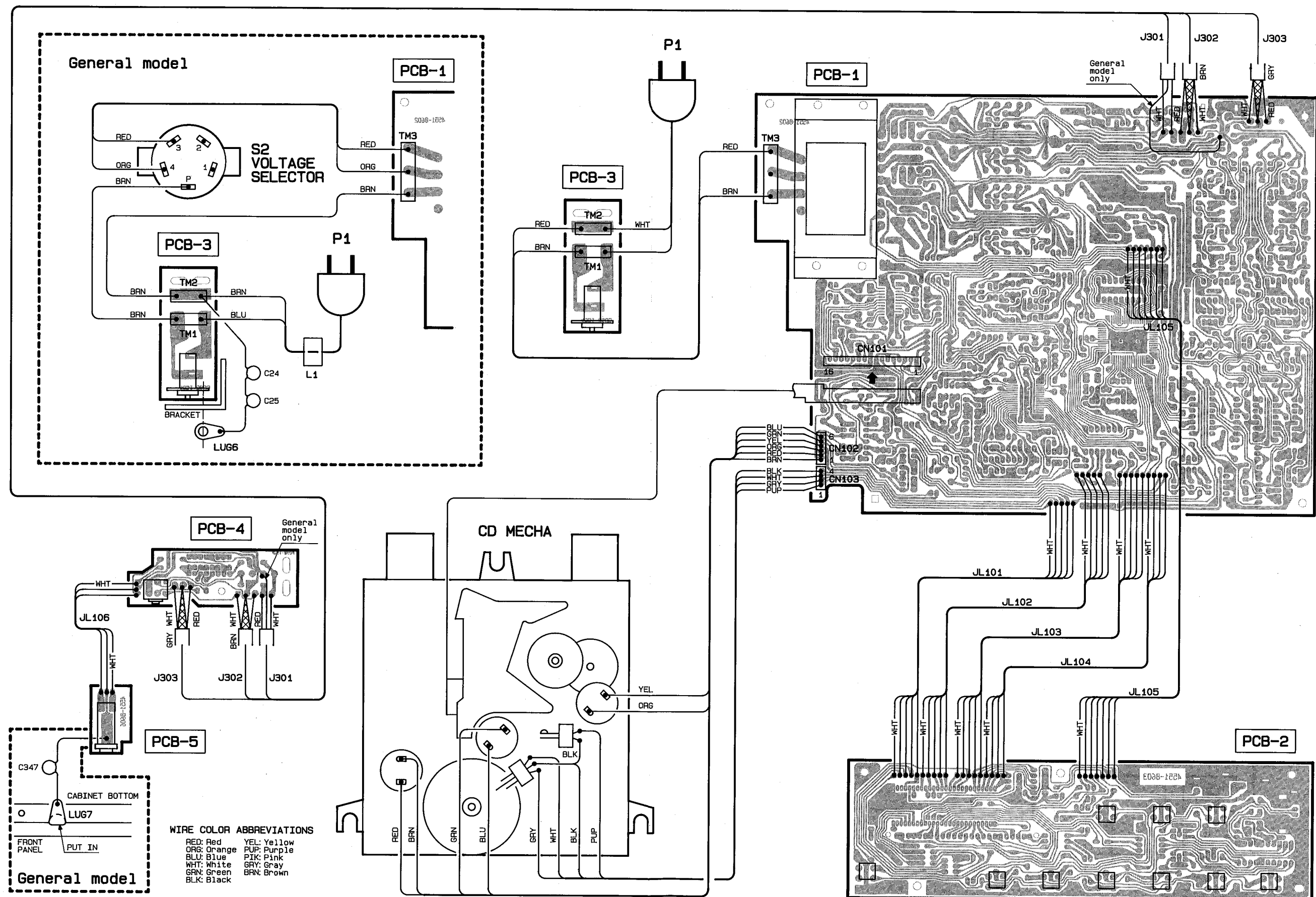


BLOCK DIAGRAM

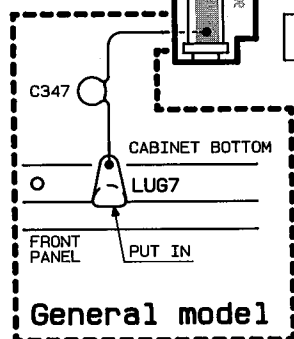
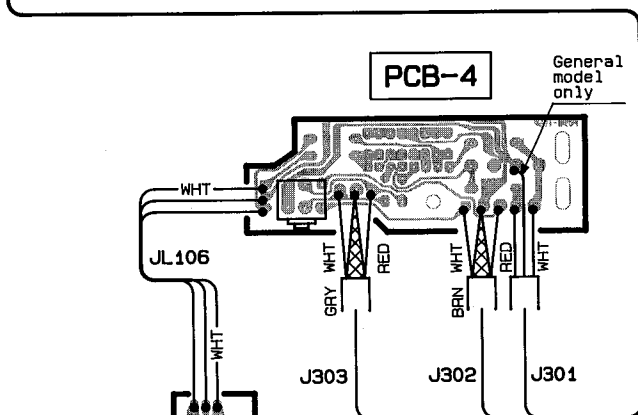
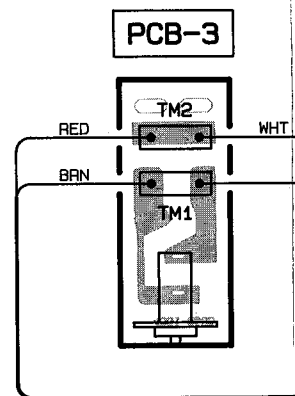
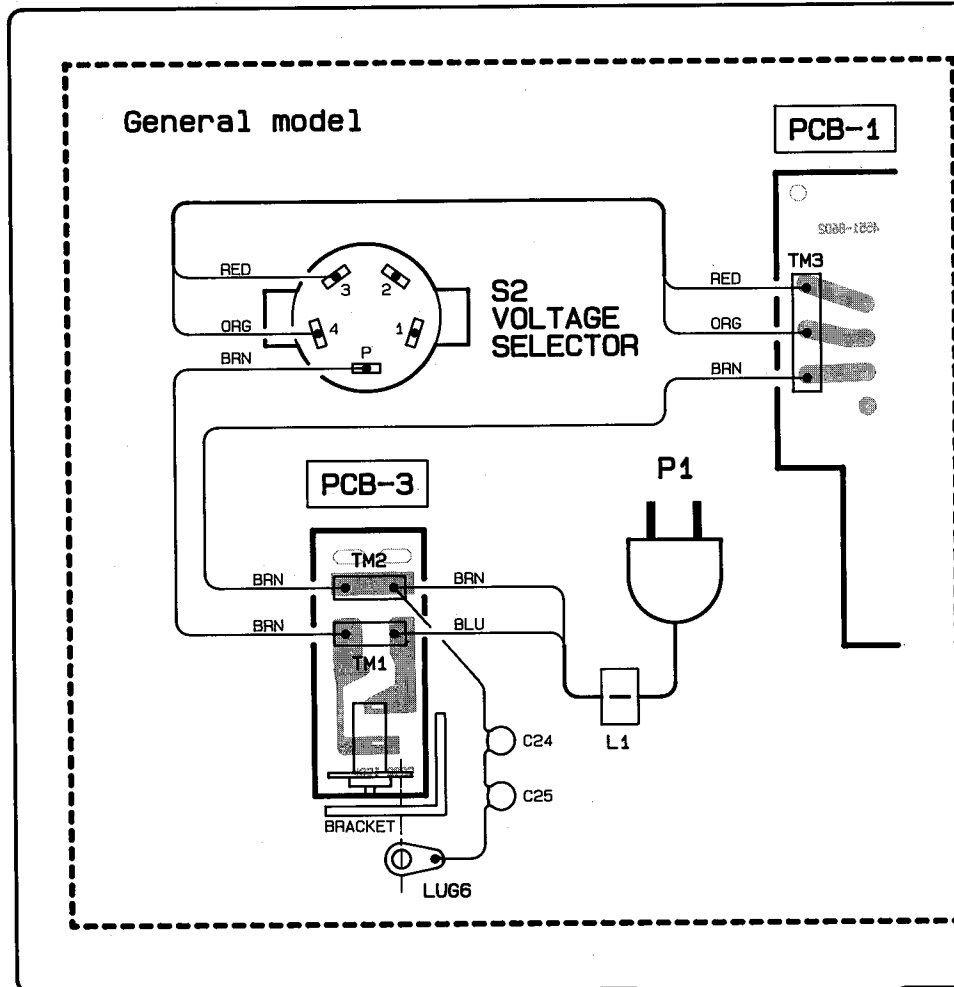




WIRING DIAGRAM

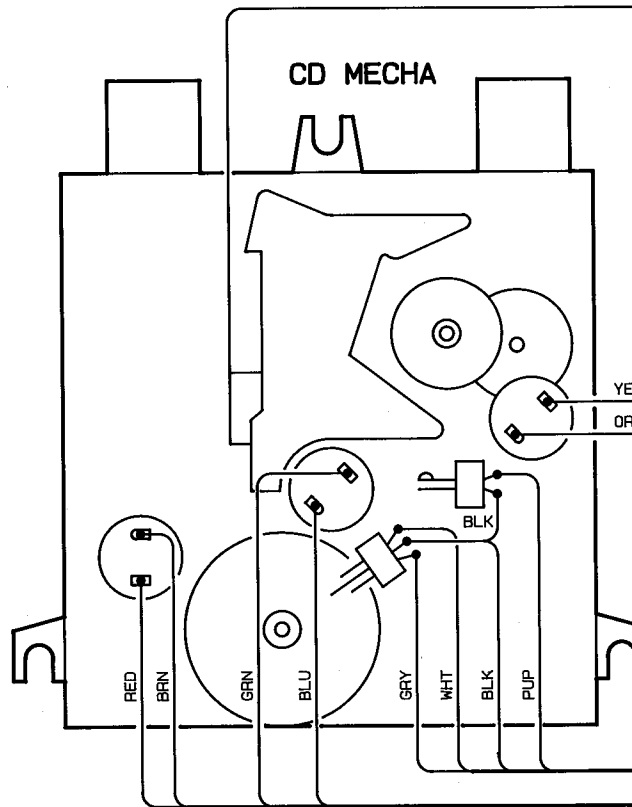


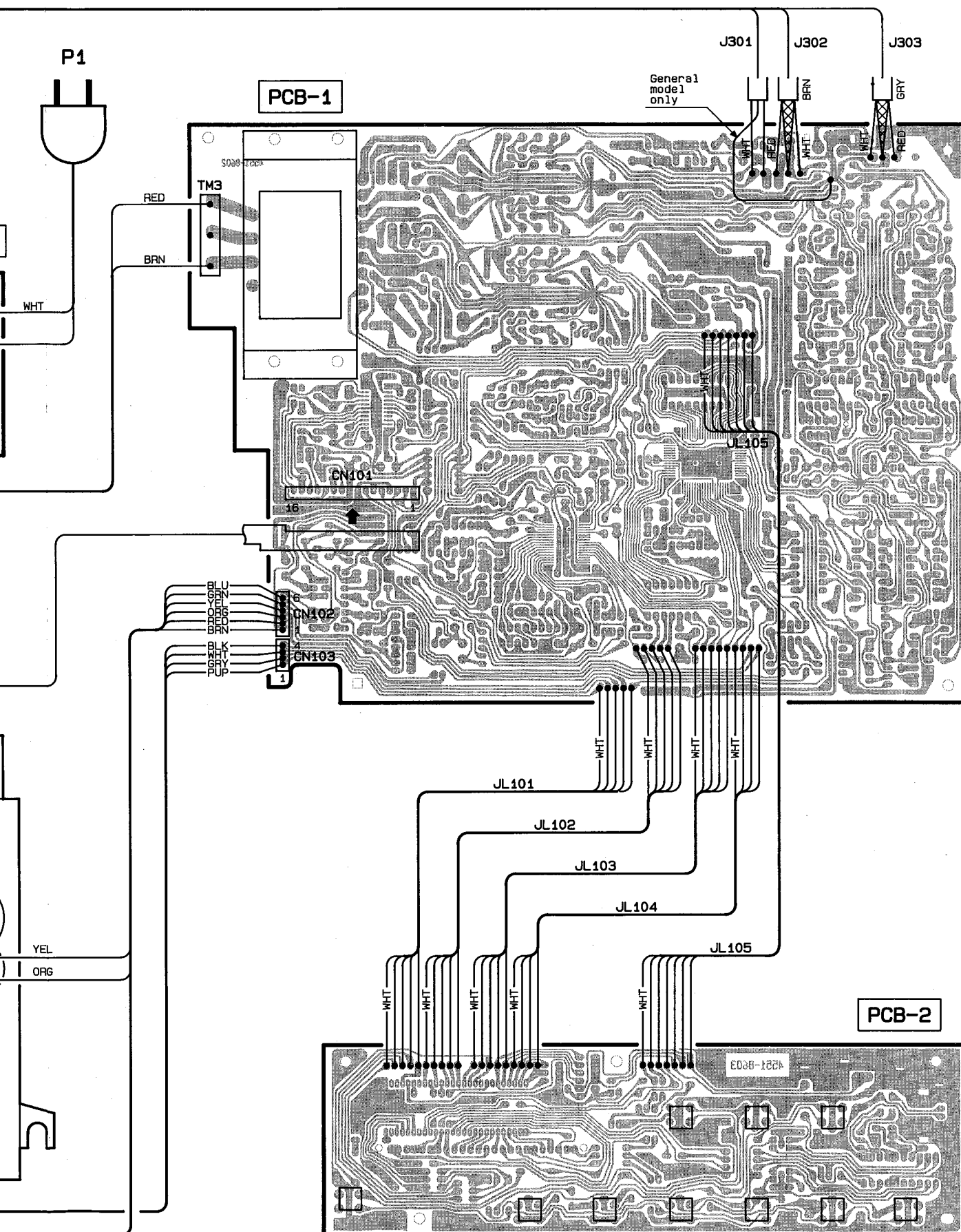
WIRING DIAGRAM

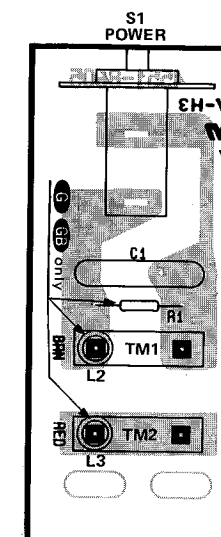


WIRE COLOR ABBREVIATIONS

RED: Red
 ORG: Orange
 BLU: Blue
 WHT: White
 GRN: Green
 BLK: Black
 YEL: Yellow
 PUP: Purple
 PIK: Pink
 GRY: Gray
 BRN: Brown

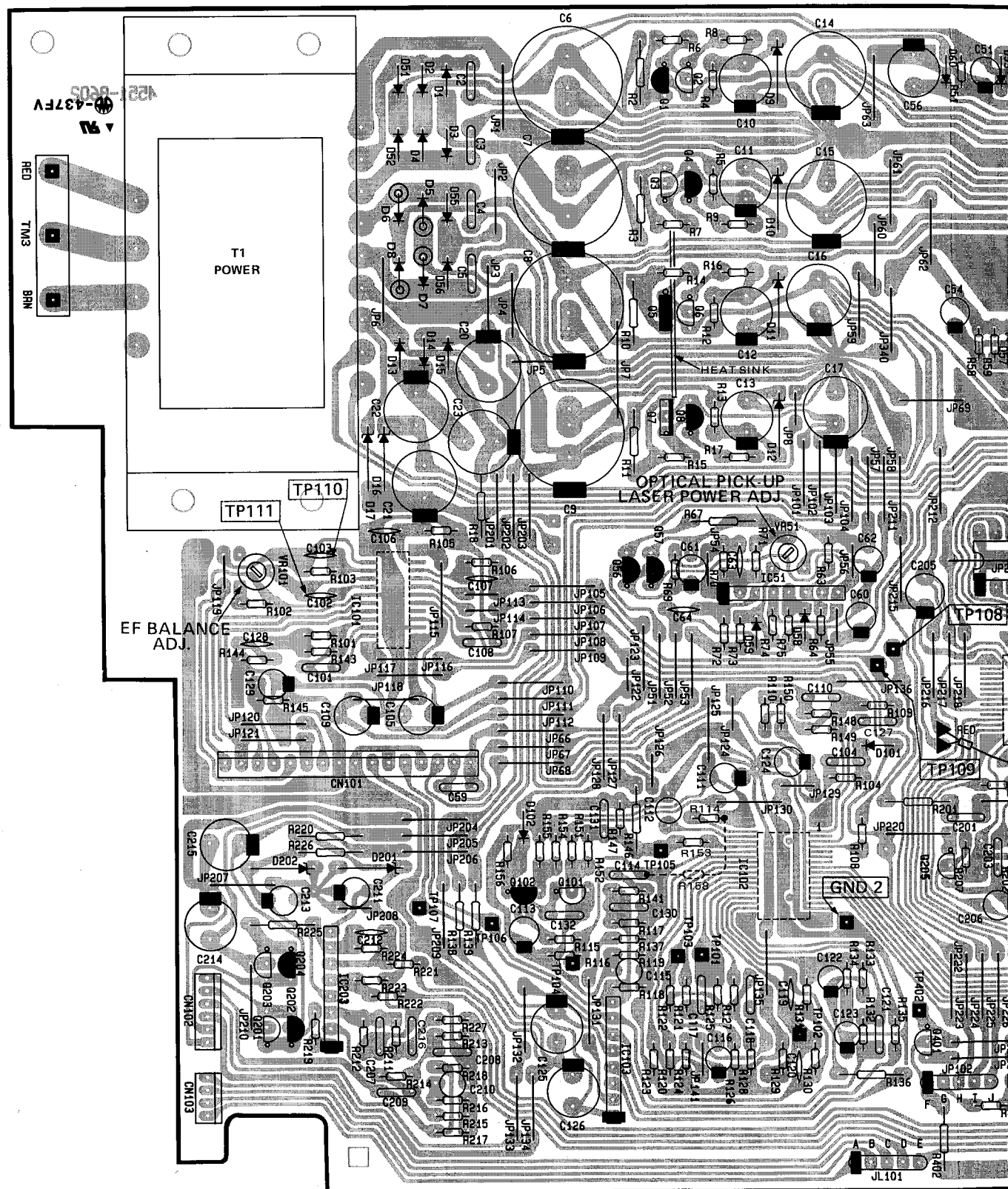






P.C. BOARDS (1)

PCB-1 Main P.C. Board



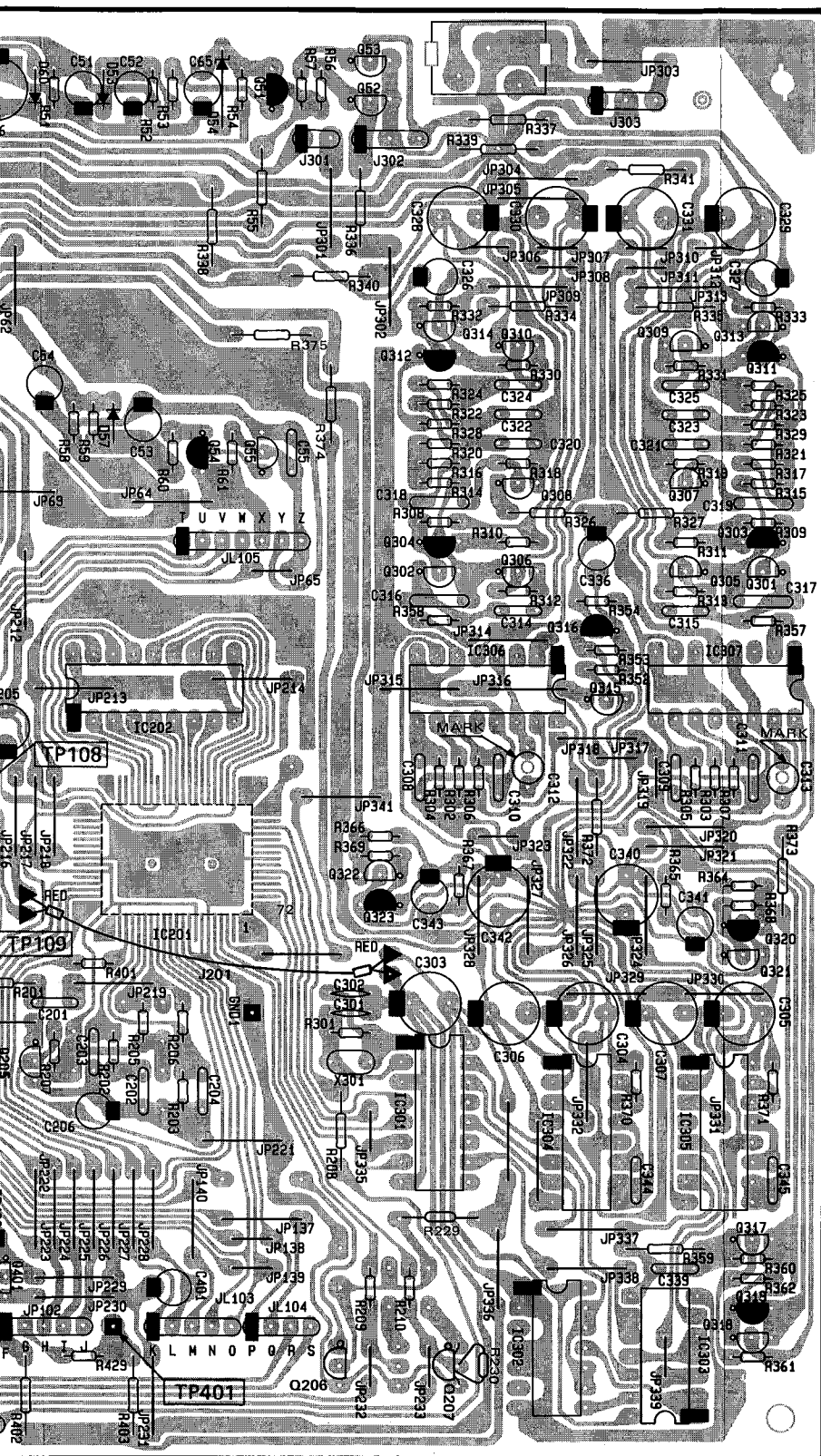
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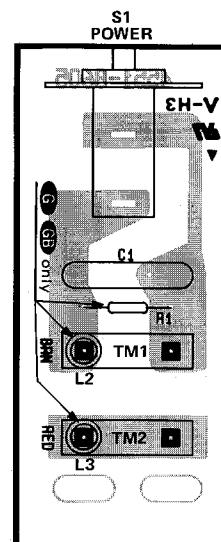
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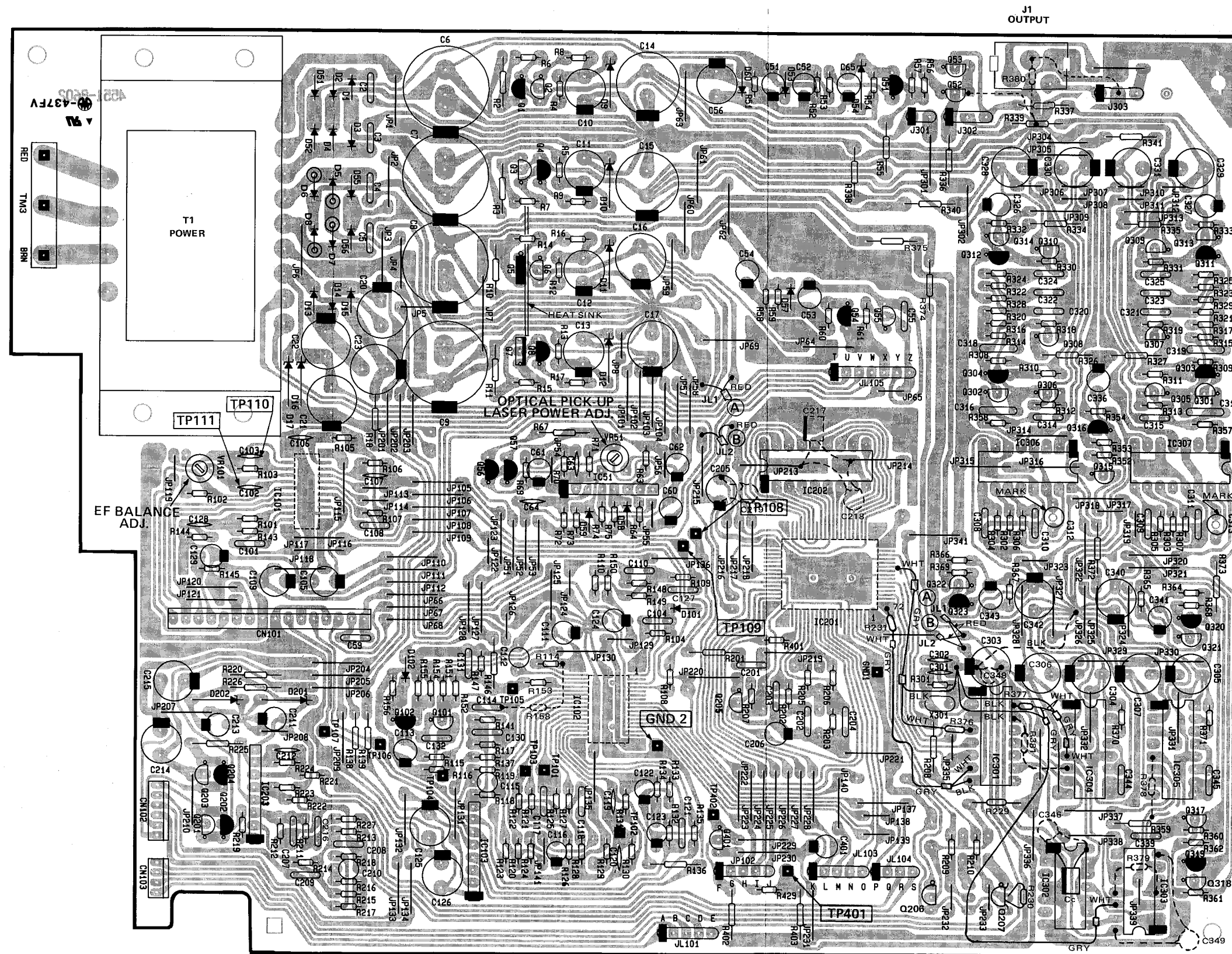
J1
OUTPUT

PCB-3 Power Switch P.C. Board

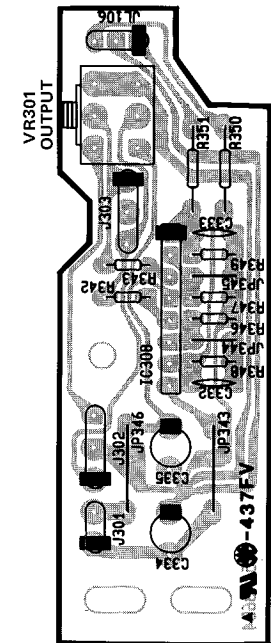


P.C. BOARDS (2)

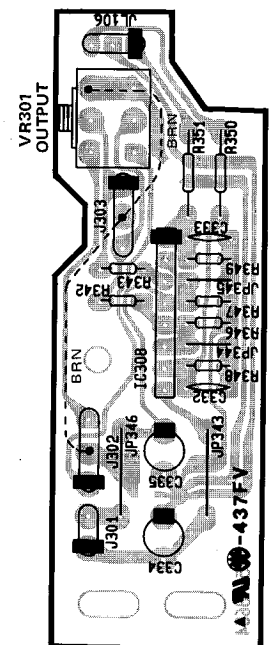
PCB-1 Main P.C. Board [General model]



PCB-4 Headphone P.C. Board

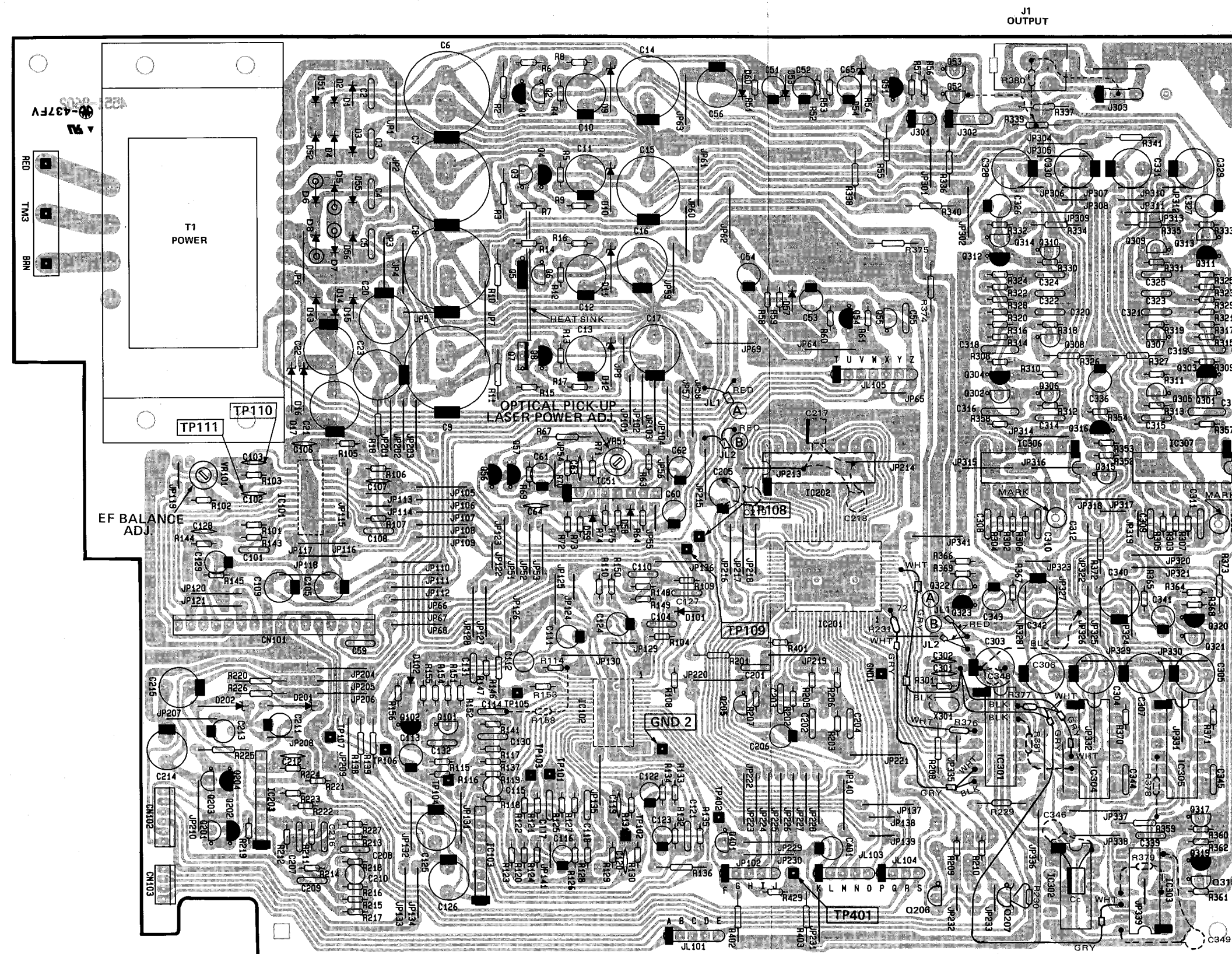


PCB-4 Headphone P.C. Board [General model]

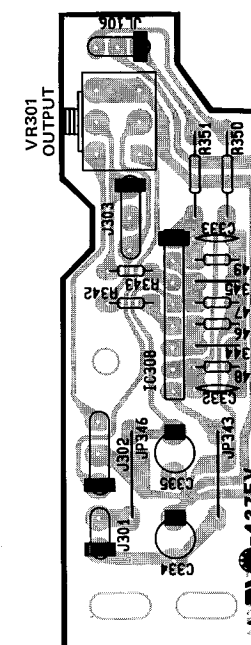


P.C. BOARDS (2)

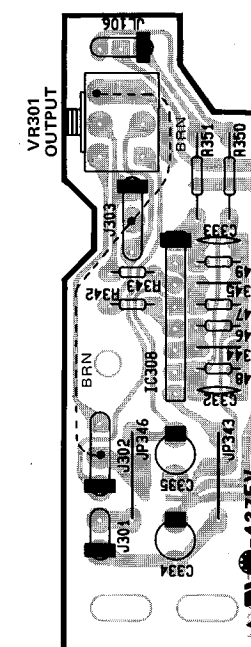
PCB-1 Main P.C. Board [General model]



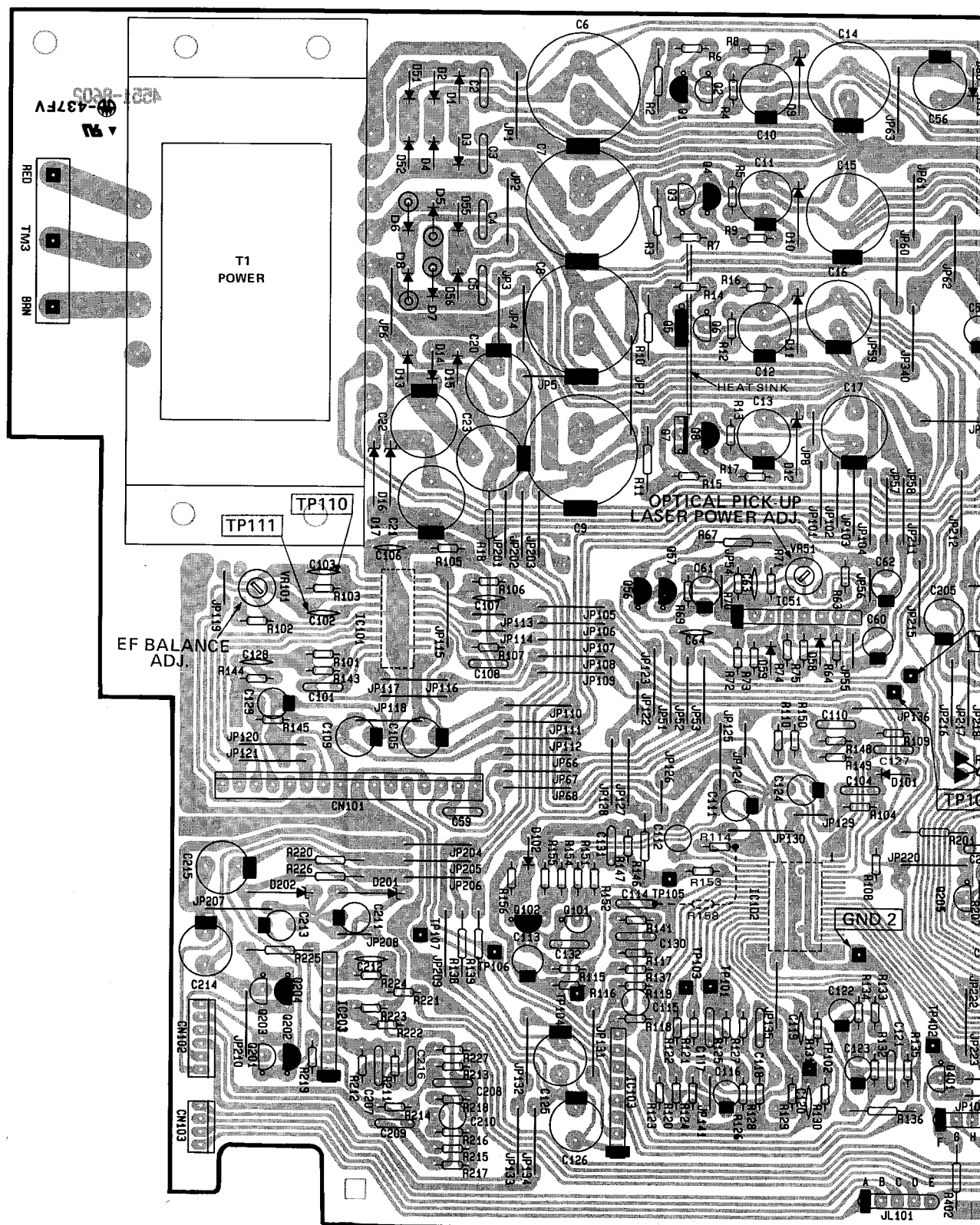
PCB-4 Headphone P.C. Board



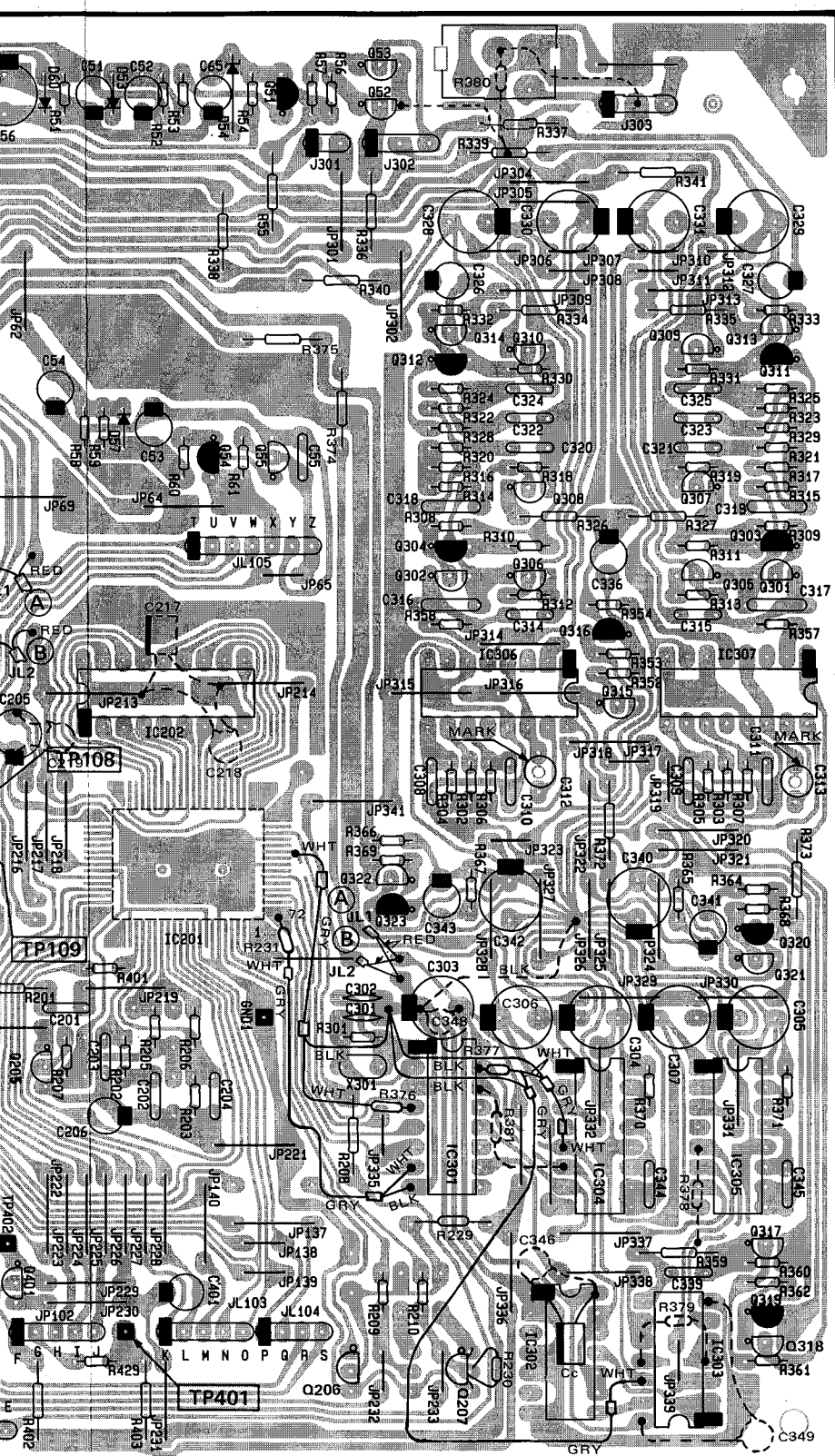
PCB-4 Headphone P.C. Board [General model]



PCB-1 Main P.C. Board

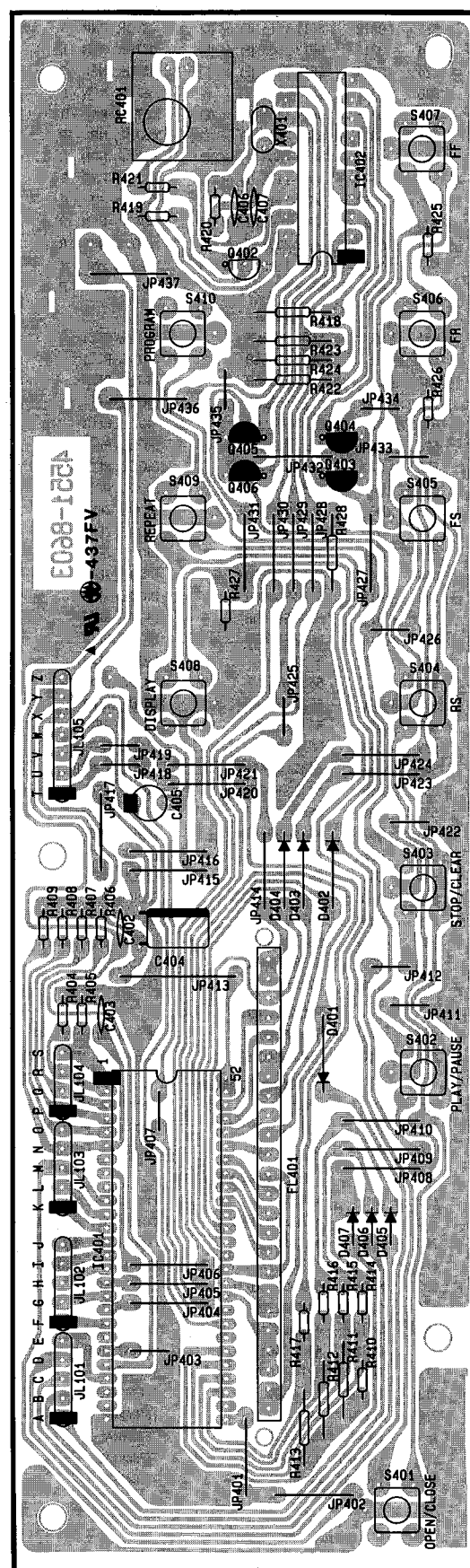


**J1
OUTPUT**

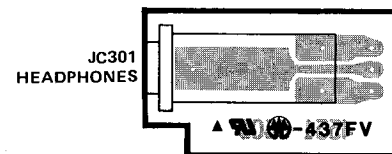


P.C. BOARDS (3)

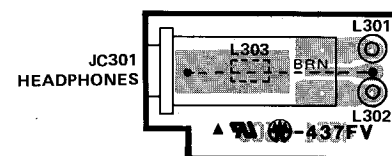
PCB-2 Front P.C. Board



PCB-5 Headphone Jack P.C. Board



PCB-5 Headphone Jack P.C. Board [General model]

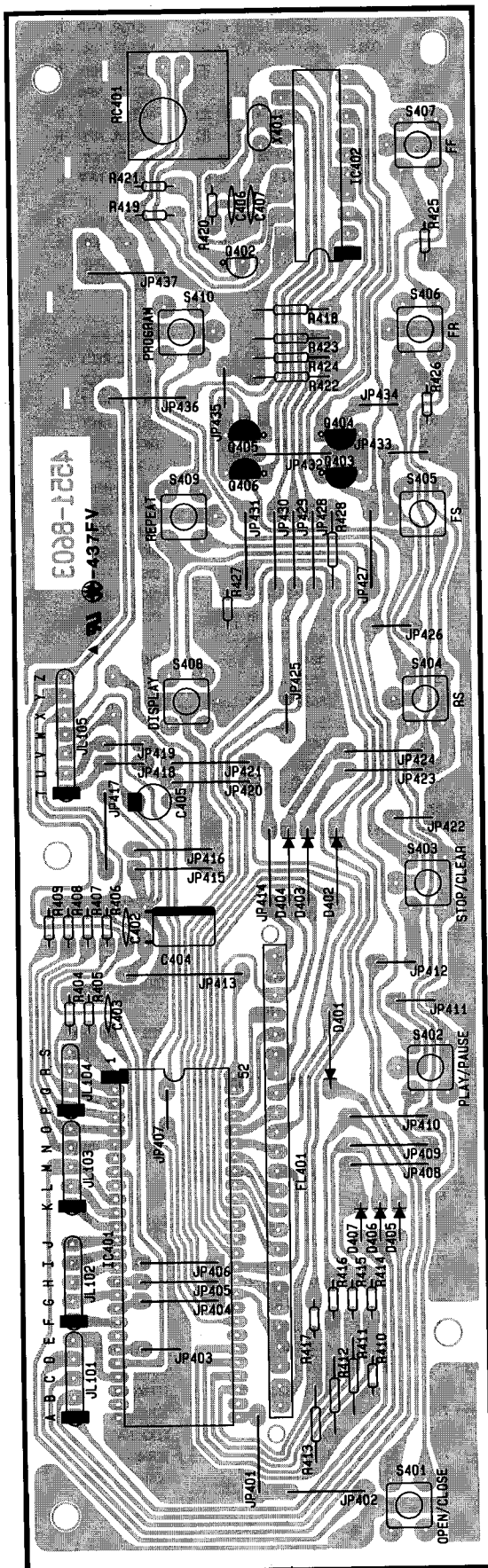


ELECTRICAL PARTS LIST

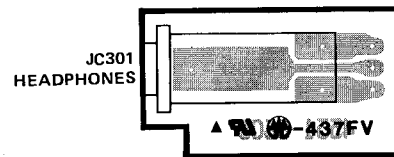
Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
PCB-1 MAIN P.C. BOARD				589	C207	5354-103J1HM	CAP, MYL .01 μ
CAPACITORS				589	C208	5354-103J1HM	CAP, MYL .01 μ
582	C2	5354-104593	CAP, MYL .1 μ	591	C209	5354-152J1HM	CAP, MYL 1500p
582	C3	5354-104593	CAP, MYL .1 μ	570	C210	5342-105F041	CAP, ELE BP 1 μ /50V
584	C4	5354-224593	CAP, MYL .22 μ	559	C211	5345-227B041	CAP, MINI ELE 220 μ /10V
584	C5	5354-224593	CAP, MYL .22 μ	579	C212	5361-220KSL	CAP, CER 22p
551	C6	5345-228C041	CAP, MINI ELE 2200 μ /16V	559	C213	5345-227B041	CAP, MINI ELE 220 μ /10V
551	C7	5345-228C041	CAP, MINI ELE 2200 μ /16V	554	C214	5345-107C041	CAP, MINI ELE 100 μ /16V
551	C8	5345-228C041	CAP, MINI ELE 2200 μ /16V	554	C215	5345-107C041	CAP, MINI ELE 100 μ /16V
551	C9	5345-228C041	CAP, MINI ELE 2200 μ /16V	589	C216	5354-103J1HM	CAP, MYL .01 μ
559	C10	5345-227B041	CAP, MINI ELE 220 μ /10V	560	C217	5345-476B0951	CAP, MINI ELE 47 μ /10V G GB
559	C11	5345-227B041	CAP, MINI ELE 220 μ /10V	595	C218	5361-103ZF	CAP, CER .01 μ G GB
556	C12	5345-227A041	CAP, MINI ELE 220 μ /6.3V	595	C219	5361-103ZF	CAP, CER .01 μ G GB
556	C13	5345-227A041	CAP, MINI ELE 220 μ /6.3V	575	C301	5361-220JCH	CAP, CER 22p
552	C14	5345-108B041	CAP, MINI ELE 1000 μ /10V	575	C302	5361-220JCH	CAP, CER 22p
552	C15	5345-108B041	CAP, MINI ELE 1000 μ /10V	559	C303	5345-227B041	CAP, MINI ELE 220 μ /10V UA BK
553	C16	5345-108A041	CAP, MINI ELE 1000 μ /6.3V	560	C303	5345-476B0951	CAP, MINI ELE 47 μ /10V G GB
553	C17	5345-108A041	CAP, MINI ELE 1000 μ /6.3V	559	C304	5345-227B041	CAP, MINI ELE 220 μ /10V
557	C20	5345-107E041	CAP, MINI ELE 100 μ /35V	559	C306	5345-227B041	CAP, MINI ELE 220 μ /10V
557	C21	5345-107E041	CAP, MINI ELE 100 μ /35V	559	C307	5345-227B041	CAP, MINI ELE 220 μ /10V
555	C22	5345-227C041	CAP, MINI ELE 220 μ /16V	602	C308	5359-6815851	CAP, PPP 680p
557	C23	5345-107E041	CAP, MINI ELE 100 μ /35V	602	C309	5359-6815851	CAP, PPP 680p
561	C51	5345-226C041	CAP, MINI ELE 22 μ /16V	601	C310	5359-3315851	CAP, PPP 330p
561	C52	5345-226C041	CAP, MINI ELE 22 μ /16V	601	C311	5359-3315851	CAP, PPP 330p
561	C53	5345-226C041	CAP, MINI ELE 22 μ /16V	611	C312	5355-S020J562	CAP, STY 5600p
561	C54	5345-226C041	CAP, MINI ELE 22 μ /16V	611	C313	5355-S020J562	CAP, STY 5600p
589	C55	5354-103J1HM	CAP, MYL .01 μ	605	C314	5359-4715851	CAP, PPP 470p
555	C56	5345-227C041	CAP, MINI ELE 220 μ /16V	605	C315	5359-4715851	CAP, PPP 470p
589	C59	5354-103J1HM	CAP, MYL .01 μ	603	C316	5359-3935851	CAP, PPP .039 μ
558	C60	5345-107B041	CAP, MINI ELE 100 μ /10V	603	C317	5359-3935851	CAP, PPP .039 μ
558	C61	5345-106C041	CAP, MINI ELE 10 μ /16V	606	C318	5359-2735851	CAP, PPP .027 μ
558	C62	5345-107B041	CAP, MINI ELE 100 μ /10V	606	C319	5359-2735851	CAP, PPP .027 μ
574	C63	5361-121KSL	CAP, CER 120p	597	C320	5359-5115851	CAP, PPP 510p
610	C64	5361-221KSL	CAP, CER 220p	597	C321	5359-5115851	CAP, PPP 510p
558	C65	5345-107B041	CAP, MINI ELE 100 μ /10V	597	C322	5359-5115851	CAP, PPP 510p
589	C101	5354-103J1HM	CAP, MYL .01 μ	597	C323	5359-5115851	CAP, PPP 510p
576	C102	5361-101KSL	CAP, CER 100p	600	C324	5359-2225851	CAP, PPP 2200p
576	C103	5361-101KSL	CAP, CER 100p	600	C325	5359-2225851	CAP, PPP 2200p
582	C104	5354-104593	CAP, MYL .1 μ	560	C326	5345-476B0951	CAP, MINI ELE 47 μ /10V
558	C105	5345-107B041	CAP, MINI ELE 100 μ /10V	560	C327	5345-476B0951	CAP, MINI ELE 47 μ /10V
578	C106	5361-680KSL	CAP, CER 68p	559	C328	5345-227B041	CAP, MINI ELE 220 μ /10V
578	C107	5361-680KSL	CAP, CER 68p	559	C329	5345-227B041	CAP, MINI ELE 220 μ /10V
587	C108	5354-333J1HM	CAP, MYL .033 μ	559	C330	5345-227B041	CAP, MINI ELE 220 μ /10V
558	C109	5345-107B041	CAP, MINI ELE 100 μ /10V	559	C331	5345-227B041	CAP, MINI ELE 220 μ /10V
591	C110	5354-152J1HM	CAP, MYL 1500p	565	C336	5345-335D041	CAP, MINI ELE 3.3 μ /25V
558	C111	5345-107B041	CAP, MINI ELE 100 μ /10V	607	C339	5359-1025851	CAP, PPP 1000p
571	C112	5342-226B041	CAP, ELE BP 22 μ /10V	559	C340	5345-227B041	CAP, MINI ELE 220 μ /10V
562	C113	5345-684F0951	CAP, MINI ELE .68 μ /50V	558	C341	5345-107B041	CAP, MINI ELE 100 μ /10V
596	C114	5354-274593	CAP, MYL .27 μ	559	C342	5345-227B041	CAP, MINI ELE 220 μ /10V
572	C115	5342-336B041	CAP, ELE BP 33 μ /10V	558	C343	5345-107B041	CAP, MINI ELE 100 μ /10V
562	C116	5345-684F0951	CAP, MINI ELE .68 μ /50V	608	C344	5353-030934	CAP, MCA 3p
592	C117	5354-124593	CAP, MYL .12 μ	608	C345	5353-030934	CAP, MCA 3p
586	C118	5354-273J1HM	CAP, MYL .027 μ	595	C346	5361-103ZF	CAP, CER .01 μ G GB
577	C119	5361-470KSL	CAP, CER 47p	595	C348	5361-103ZF	CAP, CER .01 μ G GB
581	C120	5361-151KSL	CAP, CER 150p	595	C349	5361-103ZF	CAP, CER .01 μ G GB
588	C121	5354-473J1HM	CAP, MYL .047 μ	564	C401	5345-105F041	CAP, MINI ELE 1 μ /50V
564	C122	5345-105F041	CAP, MINI ELE 1 μ /50V	733	Cc	5345-476B0951	CAP, MINI ELE 47 μ /10V G GB
563	C123	5345-106C041	CAP, MINI ELE 10 μ /16V	RESISTORS			
558	C124	5345-107B041	CAP, MINI ELE 100 μ /10V	617	Δ R2	5102-1004715	RES, FUSE 10
554	C125	5345-107C041	CAP, MINI ELE 100 μ /16V	617	Δ R3	5102-1004715	RES, FUSE 10
554	C126	5345-107C041	CAP, MINI ELE 100 μ /16V	635	R4	5232-222J16P	RES, CBN 1/6P 2.2K
590	C127	5354-472J1HM	CAP, MYL 4700p	635	R5	5232-222J16P	RES, CBN 1/6P 2.2K
575	C128	5361-220JCH	CAP, CER 22p	626	R6	5232-471J16P	RES, CBN 1/6P 470
558	C129	5345-107B041	CAP, MINI ELE 100 μ /10V	626	R7	5232-471J16P	RES, CBN 1/6P 470
594	C130	5354-822J1HM	CAP, MYL 8200p	623	R8	5232-101J16P	RES, CBN 1/6P 100
585	C131	5354-122J1HM	CAP, MYL 1200p	623	R9	5232-101J16P	RES, CBN 1/6P 100
588	C132	5354-473J1HM	CAP, MYL .047 μ	615	Δ R10	5102-4R75117F	RES, FUSE 4.7
599	C201	5359-1825851	CAP, PPP 1800p	613	Δ R11	5102-4R75116	RES, FUSE 4.7
593	C202	5354-334593	CAP, MYL .33 μ	633	R12	5232-152J16P	RES, CBN 1/6P 1.5K
598	C203	5359-5615851	CAP, PPP 560p	633	R13	5232-152J16P	RES, CBN 1/6P 1.5K
589	C204	5354-103J1HM	CAP, MYL .01 μ	626	R14	5232-471J16P	RES, CBN 1/6P 470
560	C205	5345-476B0951	CAP, MINI ELE 47 μ /10V	626	R15	5232-471J16P	RES, CBN 1/6P 470
569	C206	5345-336C041	CAP, MINI ELE 33 μ /16V	623	R16	5232-101J16P	RES, CBN 1/6P 100

P.C. BOARDS (3)

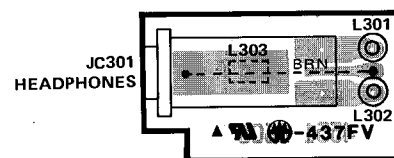
PCB-2 Front P.C. Board



PCB-5 Headphone Jack P.C. Board



PCB-5 Headphone Jack P.C. Board
[General model]



ELECTRICAL PARTS LIST

Ser. No. Ref. No. Part No. Description

PCB-1 MAIN P.C. BOARD

CAPACITORS

582	C2	5354-104593	CAP, MYL .1 μ
582	C3	5354-104593	CAP, MYL .1 μ
584	C4	5354-224593	CAP, MYL .22 μ
584	C5	5354-224593	CAP, MYL .22 μ
551	C6	5345-228C041	CAP, MINI ELE 2200 μ /16V
551	C7	5345-228C041	CAP, MINI ELE 2200 μ /16V
551	C8	5345-228C041	CAP, MINI ELE 2200 μ /16V
551	C9	5345-228C041	CAP, MINI ELE 2200 μ /16V
559	C10	5345-227B041	CAP, MINI ELE 220 μ /10V
559	C11	5345-227B041	CAP, MINI ELE 220 μ /10V
556	C12	5345-227A041	CAP, MINI ELE 220 μ /6.3V
556	C13	5345-227A041	CAP, MINI ELE 220 μ /6.3V
552	C14	5345-108B041	CAP, MINI ELE 1000 μ /10V
552	C15	5345-108B041	CAP, MINI ELE 1000 μ /10V
553	C16	5345-108A041	CAP, MINI ELE 1000 μ /6.3V
553	C17	5345-108A041	CAP, MINI ELE 1000 μ /6.3V
557	C20	5345-107E041	CAP, MINI ELE 100 μ /35V
557	C21	5345-107E041	CAP, MINI ELE 100 μ /35V
555	C22	5345-227C041	CAP, MINI ELE 220 μ /16V
557	C23	5345-107E041	CAP, MINI ELE 100 μ /35V
561	C51	5345-226C041	CAP, MINI ELE 22 μ /16V
561	C52	5345-226C041	CAP, MINI ELE 22 μ /16V
561	C53	5345-226C041	CAP, MINI ELE 22 μ /16V
561	C54	5345-226C041	CAP, MINI ELE 22 μ /16V
589	C55	5354-103J1HM	CAP, MYL .01 μ
555	C56	5345-227C041	CAP, MINI ELE 220 μ /16V
589	C59	5354-103J1HM	CAP, MYL .01 μ
558	C60	5345-107B041	CAP, MINI ELE 100 μ /10V
563	C61	5345-106C041	CAP, MINI ELE 10 μ /16V
558	C62	5345-107B041	CAP, MINI ELE 100 μ /10V
574	C63	5361-121KSL	CAP, CER 120p
610	C64	5361-221KSL	CAP, CER 220p
558	C65	5345-107B041	CAP, MINI ELE 100 μ /10V
589	C101	5354-103J1HM	CAP, MYL .01 μ
576	C102	5361-101KSL	CAP, CER 100p
576	C103	5361-101KSL	CAP, CER 100p
582	C104	5354-104593	CAP, MYL .1 μ
558	C105	5345-107B041	CAP, MINI ELE 100 μ /10V
578	C106	5361-680KSL	CAP, CER 68p
578	C107	5361-680KSL	CAP, CER 68p
587	C108	5354-333J1HM	CAP, MYL .033 μ
558	C109	5345-107B041	CAP, MINI ELE 100 μ /10V
591	C110	5354-152J1HM	CAP, MYL 1500p
558	C111	5345-107B041	CAP, MINI ELE 100 μ /10V
571	C112	5342-226B041	CAP, ELE BP 22 μ /10V
562	C113	5345-684F0951	CAP, MINI ELE .68 μ /50V
596	C114	5354-274593	CAP, MYL .27 μ
572	C115	5342-336B041	CAP, ELE BP 33 μ /10V
562	C116	5345-684F0951	CAP, MINI ELE .68 μ /50V
592	C117	5354-124593	CAP, MYL .12 μ
586	C118	5354-273J1HM	CAP, MYL .027 μ
577	C119	5361-470KSL	CAP, CER 47p
581	C120	5361-151KSL	CAP, CER 150p
588	C121	5354-473J1HM	CAP, MYL .047 μ
564	C122	5345-105F041	CAP, MINI ELE 1 μ /50V
563	C123	5345-106C041	CAP, MINI ELE 10 μ /16V
558	C124	5345-107B041	CAP, MINI ELE 100 μ /10V
554	C125	5345-107C041	CAP, MINI ELE 100 μ /16V
554	C126	5345-107C041	CAP, MINI ELE 100 μ /16V
590	C127	5354-472J1HM	CAP, MYL 4700p
575	C128	5361-220JCH	CAP, CER 22p
558	C129	5345-107B041	CAP, MINI ELE 100 μ /10V
594	C130	5354-822J1HM	CAP, MYL 8200p
585	C131	5354-122J1HM	CAP, MYL 1200p
588	C132	5354-473J1HM	CAP, MYL .047 μ
599	C201	5359-1825851	CAP, PPP 1800p
593	C202	5354-334593	CAP, MYL .33 μ
598	C203	5359-5615851	CAP, PPP 560p
589	C204	5354-103J1HM	CAP, MYL .01 μ
560	C205	5345-476B0951	CAP, MINI ELE 47 μ /10V
569	C206	5345-336C041	CAP, MINI ELE 33 μ /16V

Ser. No. Ref. No. Part No.

589	C207	5354-103J1HM
589	C208	5354-103J1HM
591	C209	5354-152J1HM
570	C210	5342-105F041
559	C211	5345-227B041
579	C212	5361-220KSL
559	C213	5345-227B041
554	C214	5345-107C041
554	C215	5345-107C041
589	C216	5354-103J1HM
560	C217	5345-476B0951
595	C218	5361-103ZF
595	C219	5361-103ZF
575	C301	5361-220JCH
575	C302	5361-220JCH
559	C303	5345-227B041
560	C303	5345-476B0951
559	C304	5345-227B041
559	C305	5345-227B041
559	C306	5345-227B041
559	C307	5345-227B041
602	C308	5359-6815851
602	C309	5359-6815851
601	C310	5359-3315851
601	C311	5359-3315851
611	C312	5355-S020J562
611	C313	5355-S020J562
605	C314	5359-4715851
605	C315	5359-4715851
603	C316	5359-3935851
603	C317	5359-3935851
606	C318	5359-2735851
606	C319	5359-2735851
597	C320	5359-5115851
597	C321	5359-5115851
597	C322	5359-5115851
597	C323	5359-5115851
600	C324	5359-2225851
600	C325	5359-2225851
560	C326	5345-476B0951
560	C327	5345-476B0951
559	C328	5345-227B041
559	C329	5345-227B041
559	C330	5345-227B041
559	C331	5345-227B041
565	C336	5345-335D041
607	C339	5359-1025851
559	C340	5345-227B041
558	C341	5345-107B041
559	C342	5345-227B041
558	C343	5345-107B041
608	C344	5353-030934
608	C345	5353-030934
595	C346	5361-103ZF
595	C348	5361-103ZF
595	C349	5361-103ZF
564	C401	5345-105F041
733	Cc	5345-476B0951

RESISTORS

617	Δ R2	5102-1004715
617	Δ R3	5102-1004715
635	R4	5232-222J16P
635	R5	5232-222J16P
626	R6	5232-471J16P
626	R7	5232-471J16P
623	R8	5232-101J16P
623	R9	5232-101J16P
615	Δ R10	5102-4R75117F
613	Δ R11	5102-4R75116
633	R12	5232-152J16P
633	R13	5232-152J16P
626	R14	5232-471J16P
626	R15	5232-471J16P
623	R16	5232-101J16P

Description

CAP, MYL .01 μ
CAP, MYL .01 μ
CAP, MYL 1500p
CAP, ELE BP 1 μ /50V
CAP, MINI ELE 220 μ /10V
CAP, CER 22p
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 100 μ /16V
CAP, MINI ELE 100 μ /16V
CAP, MYL .01 μ
CAP, MINI ELE 47 μ /10V G GB
CAP, CER .01 μ G GB
CAP, CER .01 μ G GB
CAP, CER 22p
CAP, CER 22p
CAP, MINI ELE 220 μ /10V UA BK
CAP, MINI ELE 47 μ /10V G GB
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, PPP 680p
CAP, PPP 680p
CAP, PPP 330p
CAP, PPP 330p
CAP, STY 5600p
CAP, STY 5600p
CAP, PPP 470p
CAP, PPP 470p
CAP, PPP .039 μ
CAP, PPP .039 μ
CAP, PPP .027 μ
CAP, PPP .027 μ
CAP, PPP 510p
CAP, PPP 510p
CAP, PPP 510p
CAP, PPP 2200p
CAP, PPP 2200p
CAP, MINI ELE 47 μ /10V
CAP, MINI ELE 47 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 3.3 μ /25V
CAP, PPP 1000p
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 100 μ /10V
CAP, MINI ELE 220 μ /10V
CAP, MINI ELE 100 μ /10V
CAP, MCA 3p
CAP, MCA 3p
CAP, CER .01 μ G GB
CAP, CER .01 μ G GB
CAP, CER .01 μ G GB
CAP, MINI ELE 1 μ /50V
CAP, MINI ELE 47 μ /10V G GB

RES, FUSE 10
RES, FUSE 10
RES, CBN 1/6P 2.2K
RES, CBN 1/6P 2.2K
RES, CBN 1/6P 470
RES, CBN 1/6P 470
RES, CBN 1/6P 100
RES, CBN 1/6P 100
RES, FUSE 4.7
RES, FUSE 4.7
RES, CBN 1/6P 1.5K
RES, CBN 1/6P 1.5K
RES, CBN 1/6P 470
RES, CBN 1/6P 470
RES, CBN 1/6P 100

Ser. No.	Ref. No.	Part No.	Description
623	R17	5232-101J16P	RES, CBN 1/6P 100
619	△R18	5102-1515116	RES, FUSE 150
633	R51	5232-152J16P	RES, CBN 1/6P 1.5K
659	R52	5232-564J16P	RES, CBN 1/6P 560K
656	R53	5232-104J16P	RES, CBN 1/6P 100K
633	R54	5232-152J16P	RES, CBN 1/6P 1.5K
672	R55	5135-154522	RES, CBN 1/2P 150K
634	R56	5232-182J16P	RES, CBN 1/6P 1.8K
634	R57	5232-182J16P	RES, CBN 1/6P 1.8K
633	R58	5232-152J16P	RES, CBN 1/6P 1.5K
658	R59	5232-274J16P	RES, CBN 1/6P 270K
656	R60	5232-104J16P	RES, CBN 1/6P 100K
641	R61	5232-103J16P	RES, CBN 1/6P 10K
641	R63	5232-103J16P	RES, CBN 1/6P 10K
637	R64	5232-332J16P	RES, CBN 1/6P 3.3K
674	R67	5135-270522	RES, CBN 1/2P 27
625	R69	5232-331J16P	RES, CBN 1/6P 330
661	R70	5232-105J16P	RES, CBN 1/6P 1M
641	R71	5232-103J16P	RES, CBN 1/6P 10K
635	R72	5232-222J16P	RES, CBN 1/6P 2.2K
630	R73	5232-821J16P	RES, CBN 1/6P 820
635	R74	5232-222J16P	RES, CBN 1/6P 2.2K
656	R75	5232-104J16P	RES, CBN 1/6P 100K
640	R101	5232-562J16P	RES, CBN 1/6P 5.6K
653	R102	5232-563J16P	RES, CBN 1/6P 56K
656	R103	5232-104J16P	RES, CBN 1/6P 100K
656	R104	5232-104J16P	RES, CBN 1/6P 100K
654	R105	5232-683J16P	RES, CBN 1/6P 68K
654	R106	5232-683J16P	RES, CBN 1/6P 68K
641	R107	5232-103J16P	RES, CBN 1/6P 10K
631	R108	5232-102J16P	RES, CBN 1/6P 1K
643	R109	5232-123J16P	RES, CBN 1/6P 12K
677	R110	5232-335J16P	RES, CBN 1/6P 3.3M
651	R114	5232-473J16P	RES, CBN 1/6P 47K
622	R115	5232-470J16P	RES, CBN 1/6P 47
640	R116	5232-562J16P	RES, CBN 1/6P 5.6K
655	R117	5232-823J16P	RES, CBN 1/6P 82K
635	R118	5232-222J16P	RES, CBN 1/6P 2.2K
631	R119	5232-102J16P	RES, CBN 1/6P 1K
651	R120	5232-473J16P	RES, CBN 1/6P 47K
646	R121	5232-183J16P	RES, CBN 1/6P 18K
645	R122	5232-153J16P	RES, CBN 1/6P 15K
646	R123	5232-183J16P	RES, CBN 1/6P 18K
645	R124	5232-153J16P	RES, CBN 1/6P 15K
651	R125	5232-473J16P	RES, CBN 1/6P 47K
656	R126	5232-104J16P	RES, CBN 1/6P 100K
630	R127	5232-821J16P	RES, CBN 1/6P 820
630	R128	5232-821J16P	RES, CBN 1/6P 820
735	R129	5232-273J16P	RES, CBN 1/6P 27K
649	R130	5232-333J16P	RES, CBN 1/6P 33K
650	R131	5232-393J16P	RES, CBN 1/6P 39K
651	R132	5232-473J16P	RES, CBN 1/6P 47K
643	R133	5232-123J16P	RES, CBN 1/6P 12K
641	R134	5232-223J16P	RES, CBN 1/6P 22K
622	R135	5232-470J16P	RES, CBN 1/6P 47
669	R136	5135-470522	RES, CBN 1/2P 47
622	R137	5232-470J16P	RES, CBN 1/6P 47
616	△R138	5102-4R75116	RES, FUSE 4.7
616	△R139	5102-4R75116	RES, FUSE 4.7
634	R141	5232-182J16P	RES, CBN 1/6P 1.8K
646	R143	5232-183J16P	RES, CBN 1/6P 18K
636	R144	5232-272J16P	RES, CBN 1/6P 2.7K
631	R145	5232-102J16P	RES, CBN 1/6P 1K
667	R146	5135-822522	RES, CBN 1/2P 8.2K
641	R147	5232-103J16P	RES, CBN 1/6P 10K
644	R148	5232-822J16P	RES, CBN 1/6P 8.2K
651	R149	5232-473J16P	RES, CBN 1/6P 47K
677	R150	5232-335J16P	RES, CBN 1/6P 3.3M
734	R151	5232-394J16P	RES, CBN 1/6P 390K
639	R152	5232-472J16P	RES, CBN 1/6P 4.7K
631	R153	5232-223J16P	RES, CBN 1/6P 22K
631	R154	5232-102J16P	RES, CBN 1/6P 1K
637	R155	5232-332J16P	RES, CBN 1/6P 3.3K
647	R156	5232-223J16P	RES, CBN 1/6P 22K
710	R158	5232-225J16P	RES, CBN 1/6P 2.2M

Ser. No.	Ref. No.	Part No.	Description
673	R201	5135-102522	RES, CBN 1/2P 1K
638	R202	5232-392J16P	RES, CBN 1/6P 3.9K
661	R203	5232-105J16P	RES, CBN 1/6P 1M
657	R205	5232-124J16P	RES, CBN 1/6P 120K
649	R206	5232-333J16P	RES, CBN 1/6P 33K
649	R207	5232-333J16P	RES, CBN 1/6P 33K
671	R208	5135-471522	RES, CBN 1/2P 470
646	R209	5232-183J16P	RES, CBN 1/6P 18K
646	R210	5232-183J16P	RES, CBN 1/6P 18K
659	R211	5232-564J16P	RES, CBN 1/6P 560K
654	R212	5232-683J16P	RES, CBN 1/6P 68K
655	R213	5232-823J16P	RES, CBN 1/6P 82K
659	R214	5232-564J16P	RES, CBN 1/6P 560K
653	R215	5232-563J16P	RES, CBN 1/6P 56K
648	R216	5232-273J16P	RES, CBN 1/6P 27K
643	R217	5232-123J16P	RES, CBN 1/6P 12K
621	R218	5232-2R2J16P	RES, CBN 1/6P 2.2
622	R219	5232-470J16P	RES, CBN 1/6P 47
618	△R220	5102-1014715	RES, FUSE 100
656	R221	5232-104J16P	RES, CBN 1/6P 100K
656	R222	5232-104J16P	RES, CBN 1/6P 100K
657	R223	5232-124J16P	RES, CBN 1/6P 120K
657	R224	5232-124J16P	RES, CBN 1/6P 120K
669	R225	5135-470522	RES, CBN 1/2P 47
618	△R226	5102-1014715	RES, FUSE 100
655	R227	5232-823J16P	RES, CBN 1/6P 82K
646	R229	5232-183J16P	RES, CBN 1/6P 18K
646	R230	5232-183J16P	RES, CBN 1/6P 18K
626	R231	5232-471J16P	RES, CBN 1/6P 470
661	R301	5232-105J16P	RES, CBN 1/6P 1M
623	R302	5232-101J16P	RES, CBN 1/6P 100
623	R303	5232-101J16P	RES, CBN 1/6P 100
623	R304	5232-101J16P	RES, CBN 1/6P 100
623	R305	5232-101J16P	RES, CBN 1/6P 100
623	R306	5232-101J16P	RES, CBN 1/6P 100
623	R307	5232-101J16P	RES, CBN 1/6P 100
631	R308	5232-102J16P	RES, CBN 1/6P 1K
631	R309	5232-102J16P	RES, CBN 1/6P 1K
622	R310	5232-470J16P	RES, CBN 1/6P 47
622	R311	5232-470J16P	RES, CBN 1/6P 47
623	R312	5232-101J16P	RES, CBN 1/6P 100
623	R313	5232-101J16P	RES, CBN 1/6P 100
632	R314	5232-122J16P	RES, CBN 1/6P 1.2K
632	R315	5232-122J16P	RES, CBN 1/6P 1.2K
627	R316	5232-561J16P	RES, CBN 1/6P 560
627	R317	5232-561J16P	RES, CBN 1/6P 560
661	R318	5232-105J16P	RES, CBN 1/6P 1M
661	R319	5232-105J16P	RES, CBN 1/6P 1M
633	R320	5232-152J16P	RES, CBN 1/6P 1.5K
633	R321	5232-152J16P	RES, CBN 1/6P 1.5K
637	R322	5232-332J16P	RES, CBN 1/6P 3.3K
637	R323	5232-332J16P	RES, CBN 1/6P 3.3K
637	R324	5232-332J16P	RES, CBN 1/6P 3.3K
637	R325	5232-332J16P	RES, CBN 1/6P 3.3K
668	R326	5135-472522	RES, CBN 1/2P 4.7K
668	R327	5135-472522	RES, CBN 1/2P 4.7K
623	R328	5232-101J16P	RES, CBN 1/6P 100
623	R329	5232-101J16P	RES, CBN 1/6P 100
623	R330	5232-101J16P	RES, CBN 1/6P 100
623	R331	5232-101J16P	RES, CBN 1/6P 100
631	R332	5232-102J16P	RES, CBN 1/6P 1K
631	R333	5232-102J16P	RES, CBN 1/6P 1K
664	R334	5135-101522	RES, CBN 1/2P 100
664	R335	5135-101522	RES, CBN 1/2P 100
664	R336	5135-101522	RES, CBN 1/2P 100
664	R337	5135-101522	RES, CBN 1/2P 100
616	△R338	5102-4R75116	RES, FUSE 4.7
616	△R339	5102-4R75116	RES, FUSE 4.7
616	△R340	5102-4R75116	RES, FUSE 4.7
616	△R341	5102-4R75116	RES, FUSE 4.7
655	R352	5232-823J16P	RES, CBN 1/6P 82K
649	R353	5232-333J16P	RES, CBN 1/6P 33K
660	R354	5232-154J16P	RES, CBN 1/6P 150K
628	R357	5232-220J16P	RES, CBN 1/6P 22
628	R358	5232-220J16P	RES, CBN 1/6P 22

Ser. No.	Ref. No.	Part No.	Description
728	R359	5135-223522	RES, CBN 1/2P 22K
647	R360	5232-223J16P	RES, CBN 1/6P 22K
636	R361	5232-272J16P	RES, CBN 1/6P 2.7K
633	R362	5232-152J16P	RES, CBN 1/6P 1.5K
645	R364	5232-153J16P	RES, CBN 1/6P 15K
653	R365	5232-563J16P	RES, CBN 1/6P 56K
645	R366	5232-153J16P	RES, CBN 1/6P 15K
653	R367	5232-563J16P	RES, CBN 1/6P 56K
631	R368	5232-102J16P	RES, CBN 1/6P 1K
631	R369	5232-102J16P	RES, CBN 1/6P 1K
659	R370	5232-564J16P	RES, CBN 1/6P 560K
659	R371	5232-564J16P	RES, CBN 1/6P 560K
727	R372	5135-330522	RES, CBN 1/2P 33
727	R373	5135-330522	RES, CBN 1/2P 33
620	△R374	5102-6R84715	RES, FUSE 6.8
620	△R375	5102-6R84715	RES, FUSE 6.8
626	R376	5232-471J16P	RES, CBN 1/6P 470
626	R377	5232-471J16P	RES, CBN 1/6P 470
626	R378	5232-471J16P	RES, CBN 1/6P 470
626	R379	5232-471J16P	RES, CBN 1/6P 470
730	R380	5132-2R2J50P	RES, CBN 1/2P 2.2
631	R381	5232-102J16P	RES, CBN 1/6P 1K
651	R401	5232-473J16P	RES, CBN 1/6P 47K
670	R402	5135-103522	RES, CBN 1/2P 10K
729	R403	5135-473522	RES, CBN 1/2P 47K
623	R429	5232-101J16P	RES, CBN 1/6P 100
INTEGRATED CIRCUITS			
514	IC51	5653-BA15218N	IC, LINEAR
511	IC101	5653-CX20109	IC, LINEAR
502	IC102	5654-M51564P	IC, DIGITAL
512	IC103	5653-STA341M	IC, LINEAR
503	IC201	5654-M50422P	IC, DIGITAL
504	IC202	5654-M5M4416P	IC, DIGITAL
514	IC203	5653-BA15218N	IC, LINEAR
506	IC301	5654-SM5807EP	IC, DIGITAL
507	IC302	5654-T74HC00P	IC, DIGITAL
507	IC303	5654-T74HC00P	IC, DIGITAL
509	IC304	5654-PCM56P	IC, DIGITAL
509	IC305	5654-PCM56P	IC, DIGITAL
508	IC306	5654-HD14053B	IC, DIGITAL
508	IC307	5654-HD14053B	IC, DIGITAL
TRANSISTORS			
522	Q1	5612-647 (C)	XISTOR, PNP A
524	Q2	5613-2603 (F) or (E)	XISTOR, NPN R
531	Q3	5614-667 (C)	XISTOR, NPN A
516	Q4	5611-1115 (F) or (E)	XISTOR, PNP R
521	Q5	5612-1375	XISTOR, PNP A
524	Q6	5613-2603 (F) or (E)	XISTOR, NPN R
530	Q7	5614-2012	XISTOR, NPN A
516	Q8	5611-1115 (F) or (E)	XISTOR, PNP R
516	Q51	5611-1115 (F) or (E)	XISTOR, PNP R
527	Q52	5613-2878 (B)	XISTOR, NPN R
527	Q53	5613-2878 (B)	XISTOR, NPN R
516	Q54	5611-1115 (F) or (E)	XISTOR, PNP R
526	Q55	5613-RN1202	XISTOR, NPN R
522	Q56	5612-647 (C)	XISTOR, PNP A
520	Q57	5611-RN2202	XISTOR, PNP R
528	Q101	5613-RN1203	XISTOR, NPN R
516	Q102	5611-1115 (F) or (E)	XISTOR, PNP R
531	Q201	5614-667 (C)	XISTOR, NPN A
522	Q202	5612-647 (C)	XISTOR, PNP A
531	Q203	5614-667 (C)	XISTOR, NPN A
522	Q204	5612-647 (C)	XISTOR, PNP A
526	Q205	5613-RN1202	XISTOR, NPN R
528	Q206	5613-RN1203	XISTOR, NPN R
528	Q207	5613-RN1203	XISTOR, NPN R
524	Q301	5613-2603 (F) or (E)	XISTOR, NPN R
524	Q302	5613-2603 (F) or (E)	XISTOR, NPN R
516	Q303	5611-1115 (F) or (E)	XISTOR, PNP R
516	Q304	5611-1115 (F) or (E)	XISTOR, PNP R
533	Q305	5616-SK246GR1	FET, N-CH
533	Q306	5616-SK246GR1	FET, N-CH
527	Q307	5613-2878 (B)	XISTOR, NPN R
527	Q308	5613-2878 (B)	XISTOR, NPN R

Ser. No.	Ref. No.	Part No.	Description
623	R17	5232-101J16P	RES, CBN 1/6P 100
619	△R18	5102-1515116	RES, FUSE 150
633	R51	5232-152J16P	RES, CBN 1/6P 1.5K
659	R52	5232-564J16P	RES, CBN 1/6P 560K
656	R53	5232-104J16P	RES, CBN 1/6P 100K
633	R54	5232-152J16P	RES, CBN 1/6P 1.5K
672	R55	5135-154522	RES, CBN 1/2P 150K
634	R56	5232-182J16P	RES, CBN 1/6P 1.8K
634	R57	5232-182J16P	RES, CBN 1/6P 1.8K
633	R58	5232-152J16P	RES, CBN 1/6P 1.5K
658	R59	5232-274J16P	RES, CBN 1/6P 270K
656	R60	5232-104J16P	RES, CBN 1/6P 100K
641	R61	5232-103J16P	RES, CBN 1/6P 10K
641	R63	5232-103J16P	RES, CBN 1/6P 10K
637	R64	5232-332J16P	RES, CBN 1/6P 3.3K
674	R67	5135-270522	RES, CBN 1/2P 27
625	R69	5232-331J16P	RES, CBN 1/6P 330
661	R70	5232-105J16P	RES, CBN 1/6P 1M
641	R71	5232-103J16P	RES, CBN 1/6P 10K
635	R72	5232-222J16P	RES, CBN 1/6P 2.2K
630	R73	5232-821J16P	RES, CBN 1/6P 820
635	R74	5232-222J16P	RES, CBN 1/6P 2.2K
656	R75	5232-104J16P	RES, CBN 1/6P 100K
640	R101	5232-562J16P	RES, CBN 1/6P 5.6K
653	R102	5232-563J16P	RES, CBN 1/6P 56K
656	R103	5232-104J16P	RES, CBN 1/6P 100K
656	R104	5232-104J16P	RES, CBN 1/6P 100K
654	R105	5232-683J16P	RES, CBN 1/6P 68K
654	R106	5232-683J16P	RES, CBN 1/6P 68K
641	R107	5232-103J16P	RES, CBN 1/6P 10K
631	R108	5232-102J16P	RES, CBN 1/6P 1K
643	R109	5232-123J16P	RES, CBN 1/6P 12K
677	R110	5232-335J16P	RES, CBN 1/6P 3.3M
651	R114	5232-473J16P	RES, CBN 1/6P 47K
622	R115	5232-470J16P	RES, CBN 1/6P 47
640	R116	5232-562J16P	RES, CBN 1/6P 5.6K
655	R117	5232-823J16P	RES, CBN 1/6P 82K
635	R118	5232-222J16P	RES, CBN 1/6P 2.2K
631	R119	5232-102J16P	RES, CBN 1/6P 1K
651	R120	5232-473J16P	RES, CBN 1/6P 47K
646	R121	5232-183J16P	RES, CBN 1/6P 18K
645	R122	5232-153J16P	RES, CBN 1/6P 15K
646	R123	5232-183J16P	RES, CBN 1/6P 18K
645	R124	5232-153J16P	RES, CBN 1/6P 15K
651	R125	5232-473J16P	RES, CBN 1/6P 47K
656	R126	5232-104J16P	RES, CBN 1/6P 100K
630	R127	5232-821J16P	RES, CBN 1/6P 820
630	R128	5232-821J16P	RES, CBN 1/6P 820
735	R129	5232-273J16P	RES, CBN 1/6P 27K
649	R130	5232-333J16P	RES, CBN 1/6P 33K
650	R131	5232-393J16P	RES, CBN 1/6P 39K
651	R132	5232-473J16P	RES, CBN 1/6P 47K
643	R133	5232-123J16P	RES, CBN 1/6P 12K
641	R134	5232-223J16P	RES, CBN 1/6P 22K
622	R135	5232-470J16P	RES, CBN 1/6P 47
669	R136	5135-470522	RES, CBN 1/2P 47
622	R137	5232-470J16P	RES, CBN 1/6P 47
616	△R138	5102-4R75116	RES, FUSE 4.7
616	△R139	5102-4R75116	RES, FUSE 4.7
634	R141	5232-182J16P	RES, CBN 1/6P 1.8K
646	R143	5232-183J16P	RES, CBN 1/6P 18K
636	R144	5232-272J16P	RES, CBN 1/6P 2.7K
631	R145	5232-102J16P	RES, CBN 1/6P 1K
667	R146	5135-822522	RES, CBN 1/2P 8.2K
641	R147	5232-103J16P	RES, CBN 1/6P 10K
644	R148	5232-822J16P	RES, CBN 1/6P 8.2K
651	R149	5232-473J16P	RES, CBN 1/6P 47K
677	R150	5232-335J16P	RES, CBN 1/6P 3.3M
734	R151	5232-394J16P	RES, CBN 1/6P 390K
639	R152	5232-472J16P	RES, CBN 1/6P 4.7K
631	R153	5232-223J16P	RES, CBN 1/6P 22K
631	R154	5232-102J16P	RES, CBN 1/6P 1K
637	R155	5232-332J16P	RES, CBN 1/6P 3.3K
647	R156	5232-223J16P	RES, CBN 1/6P 22K
710	R158	5232-225J16P	RES, CBN 1/6P 2.2M

Ser. No.	Ref. No.	Part No.	Description
673	R201	5135-102522	RES, CBN 1/2P 1K
638	R202	5232-392J16P	RES, CBN 1/6P 3.9K
661	R203	5232-105J16P	RES, CBN 1/6P 1M
657	R205	5232-124J16P	RES, CBN 1/6P 120K
649	R206	5232-333J16P	RES, CBN 1/6P 33K
649	R207	5232-333J16P	RES, CBN 1/6P 33K
671	R208	5135-471522	RES, CBN 1/2P 470
646	R209	5232-183J16P	RES, CBN 1/6P 18K
646	R210	5232-183J16P	RES, CBN 1/6P 18K
659	R211	5232-564J16P	RES, CBN 1/6P 560K
654	R212	5232-683J16P	RES, CBN 1/6P 68K
655	R213	5232-823J16P	RES, CBN 1/6P 82K
659	R214	5232-564J16P	RES, CBN 1/6P 560K
653	R215	5232-563J16P	RES, CBN 1/6P 56K
648	R216	5232-273J16P	RES, CBN 1/6P 27K
643	R217	5232-123J16P	RES, CBN 1/6P 12K
621	R218	5232-2R2J16P	RES, CBN 1/6P 2.2
622	R219	5232-470J16P	RES, CBN 1/6P 47
618	△R220	5102-1014715	RES, FUSE 100
656	R221	5232-104J16P	RES, CBN 1/6P 100K
656	R222	5232-104J16P	RES, CBN 1/6P 100K
657	R223	5232-124J16P	RES, CBN 1/6P 120K
657	R224	5232-124J16P	RES, CBN 1/6P 120K
669	R225	5135-470522	RES, CBN 1/2P 47
618	△R226	5102-1014715	RES, FUSE 100
655	R227	5232-823J16P	RES, CBN 1/6P 82K
646	R229	5232-183J16P	RES, CBN 1/6P 18K
646	R230	5232-183J16P	RES, CBN 1/6P 18K
626	R231	5232-471J16P	RES, CBN 1/6P 470
661	R301	5232-105J16P	RES, CBN 1/6P 1M
623	R302	5232-101J16P	RES, CBN 1/6P 100
623	R303	5232-101J16P	RES, CBN 1/6P 100
623	R304	5232-101J16P	RES, CBN 1/6P 100
623	R305	5232-101J16P	RES, CBN 1/6P 100
623	R306	5232-101J16P	RES, CBN 1/6P 100
623	R307	5232-101J16P	RES, CBN 1/6P 100
631	R308	5232-102J16P	RES, CBN 1/6P 1K
631	R309	5232-102J16P	RES, CBN 1/6P 1K
622	R310	5232-470J16P	RES, CBN 1/6P 47
622	R311	5232-470J16P	RES, CBN 1/6P 47
623	R312	5232-101J16P	RES, CBN 1/6P 100
623	R313	5232-101J16P	RES, CBN 1/6P 100
632	R314	5232-122J16P	RES, CBN 1/6P 1.2K
632	R315	5232-122J16P	RES, CBN 1/6P 1.2K
627	R316	5232-561J16P	RES, CBN 1/6P 560
627	R317	5232-561J16P	RES, CBN 1/6P 560
661	R318	5232-105J16P	RES, CBN 1/6P 1M
661	R319	5232-105J16P	RES, CBN 1/6P 1M
633	R320	5232-152J16P	RES, CBN 1/6P 1.5K
633	R321	5232-152J16P	RES, CBN 1/6P 1.5K
637	R322	5232-332J16P	RES, CBN 1/6P 3.3K
637	R323	5232-332J16P	RES, CBN 1/6P 3.3K
637	R324	5232-332J16P	RES, CBN 1/6P 3.3K
637	R325	5232-332J16P	RES, CBN 1/6P 3.3K
668	R326	5135-472522	RES, CBN 1/2P 4.7K
668	R327	5135-472522	RES, CBN 1/2P 4.7K
623	R328	5232-101J16P	RES, CBN 1/6P 100
623	R329	5232-101J16P	RES, CBN 1/6P 100
623	R330	5232-101J16P	RES, CBN 1/6P 100
623	R331	5232-101J16P	RES, CBN 1/6P 100
631	R332	5232-102J16P	RES, CBN 1/6P 1K
631	R333	5232-102J16P	RES, CBN 1/6P 1K
664	R334	5135-101522	RES, CBN 1/2P 100
664	R335	5135-101522	RES, CBN 1/2P 100
664	R336	5135-101522	RES, CBN 1/2P 100
664	R337	5135-101522	RES, CBN 1/2P 100
616	△R338	5102-4R75116	RES, FUSE 4.7
616	△R339	5102-4R75116	RES, FUSE 4.7
616	△R340	5102-4R75116	RES, FUSE 4.7
616	△R341	5102-4R75116	RES, FUSE 4.7
655	R352	5232-823J16P	RES, CBN 1/6P 82K
649	R353	5232-333J16P	RES, CBN 1/6P 33K
660	R354	5232-154J16P	RES, CBN 1/6P 150K
628	R357	5232-220J16P	RES, CBN 1/6P 22
628	R358	5232-220J16P	RES, CBN 1/6P 22

G GB

Ser. No.	Ref. No.	Part No.	Description
728	R359	5135-223522	RES, CBN 1/2P 22K
647	R360	5232-223J16P	RES, CBN 1/6P 22K
636	R361	5232-272J16P	RES, CBN 1/6P 2.7K
633	R362	5232-152J16P	RES, CBN 1/6P 1.5K
645	R364	5232-153J16P	RES, CBN 1/6P 15K
653	R365	5232-563J16P	RES, CBN 1/6P 56K
645	R366	5232-153J16P	RES, CBN 1/6P 15K
653	R367	5232-563J16P	RES, CBN 1/6P 56K
631	R368	5232-102J16P	RES, CBN 1/6P 1K
631	R369	5232-102J16P	RES, CBN 1/6P 1K
659	R370	5232-564J16P	RES, CBN 1/6P 560K
659	R371	5232-564J16P	RES, CBN 1/6P 560K
727	R372	5135-330522	RES, CBN 1/2P 33
727	R373	5135-330522	RES, CBN 1/2P 33
620	△R374	5102-6R84715	RES, FUSE 6.8
620	△R375	5102-6R84715	RES, FUSE 6.8
626	R376	5232-471J16P	RES, CBN 1/6P 470 G GB
626	R377	5232-471J16P	RES, CBN 1/6P 470 G GB
626	R378	5232-471J16P	RES, CBN 1/6P 470 G GB
626	R379	5232-471J16P	RES, CBN 1/6P 470 G GB
730	R380	5132-2R2J50P	RES, CBN 1/2P 2.2 G GB
631	R381	5232-102J16P	RES, CBN 1/6P 1K G GB
651	R401	5232-473J16P	RES, CBN 1/6P 47K
670	R402	5135-103522	RES, CBN 1/2P 10K
729	R403	5135-473522	RES, CBN 1/2P 47K
623	R429	5232-101J16P	RES, CBN 1/6P 100

INTEGRATED CIRCUITS

514	IC51	5653-BA15218N	IC, LINEAR
511	IC101	5653-CX20109	IC, LINEAR
502	IC102	5654-M51564P	IC, DIGITAL
512	IC103	5653-STA341M	IC, LINEAR
503	IC201	5654-M50422P	IC, DIGITAL
504	IC202	5654-M5M4416P	IC, DIGITAL
514	IC203	5653-BA15218N	IC, LINEAR
506	IC301	5654-SM5807EP	IC, DIGITAL
507	IC302	5654-T74HC00P	IC, DIGITAL
507	IC303	5654-T74HC00P	IC, DIGITAL
509	IC304	5654-PCM56P	IC, DIGITAL
509	IC305	5654-PCM56P	IC, DIGITAL
508	IC306	5654-HD14053B	IC, DIGITAL
508	IC307	5654-HD14053B	IC, DIGITAL

TRANSISTORS

522	Q1	5612-647 (C)	XISTOR, PNP A
524	Q2	5613-2603 (F) or (E)	XISTOR, NPN R
531	Q3	5614-667 (C)	XISTOR, NPN A
516	Q4	5611-1115 (F) or (E)	XISTOR, PNP R
521	Q5	5612-1375	XISTOR, PNP A
524	Q6	5613-2603 (F) or (E)	XISTOR, NPN R
530	Q7	5614-2012	XISTOR, NPN A
516	Q8	5611-1115 (F) or (E)	XISTOR, PNP R
516	Q51	5611-1115 (F) or (E)	XISTOR, PNP R
527	Q52	5613-2878 (B)	XISTOR, NPN R
527	Q53	5613-2878 (B)	XISTOR, NPN R
516	Q54	5611-1115 (F) or (E)	XISTOR, PNP R
526	Q55	5613-RN1202	XISTOR, NPN R
522	Q56	5612-647 (C)	XISTOR, PNP A
520	Q57	5611-RN2202	XISTOR, PNP R
528	Q101	5613-RN1203	XISTOR, NPN R
516	Q102	5611-1115 (F) or (E)	XISTOR, PNP R
531	Q201	5614-667 (C)	XISTOR, NPN A
522	Q202	5612-647 (C)	XISTOR, PNP A
531	Q203	5614-667 (C)	XISTOR, NPN A
522	Q204	5612-647 (C)	XISTOR, PNP A
526	Q205	5613-RN1202	XISTOR, NPN R
528	Q206	5613-RN1203	XISTOR, NPN R
528	Q207	5613-RN1203	XISTOR, NPN R
524	Q301	5613-2603 (F) or (E)	XISTOR, NPN R
524	Q302	5613-2603 (F) or (E)	XISTOR, NPN R
516	Q303	5611-1115 (F) or (E)	XISTOR, PNP R
516	Q304	5611-1115 (F) or (E)	XISTOR, PNP R
533	Q305	5616-SK246GR1	FET, N-CH
533	Q306	5616-SK246GR1	FET, N-CH
527	Q307	5613-2878 (B)	XISTOR, NPN R
527	Q308	5613-2878 (B)	XISTOR, NPN R

Ser. No.	Ref. No.	Part No.	Description
533	Q309	5616-SK246GR1	FET, N-CH
533	Q310	5616-SK246GR1	FET, N-CH
516	Q311	5611-1115 (F) or (E)	XISTOR, PNP R
516	Q312	5611-1115 (F) or (E)	XISTOR, PNP R
524	Q313	5613-2603 (F) or (E)	XISTOR, NPN R
524	Q314	5613-2603 (F) or (E)	XISTOR, NPN R
526	Q315	5613-RN1202	XISTOR, NPN R
516	Q316	5611-1115 (F) or (E)	XISTOR, PNP R
524	Q317	5613-2603 (F) or (E)	XISTOR, NPN R
524	Q318	5613-2603 (F) or (E)	XISTOR, NPN R
516	Q319	5611-1115 (F) or (E)	XISTOR, PNP R
516	Q320	5611-1115 (F) or (E)	XISTOR, PNP R
524	Q321	5613-2603 (F) or (E)	XISTOR, NPN R
524	Q322	5613-2603 (F) or (E)	XISTOR, NPN R
516	Q323	5611-1115 (F) or (E)	XISTOR, PNP R
526	Q401	5613-RN1202	XISTOR, NPN R

DIODES

537	△D1	5632-S5566B	DIODE, RECT
537	△D2	5632-S5566B	DIODE, RECT
537	△D3	5632-S5566B	DIODE, RECT
537	△D4	5632-S5566B	DIODE, RECT
538	△D5	5632-S5566B	DIODE, RECT
538	△D6	5632-S5566B	DIODE, RECT
538	△D7	5632-S5566B	DIODE, RECT
538	△D8	5632-S5566B	DIODE, RECT
545	D9	D5635-HZ9B2L	DIODE, ZENER
545	D10	D5635-HZ9B2L	DIODE, ZENER
546	D11	D5635-HZ6B1L	DIODE, ZENER
546	D12	D5635-HZ6B1L	DIODE, ZENER
537	△D13	5632-S5566B	DIODE, RECT
537	△D14	5632-S5566B	DIODE, RECT
537	△D15	5632-S5566B	DIODE, RECT
543	D16	5635-HZ27-2	DIODE, ZENER
544	D17	5635-HZ5B-2	DIODE, ZENER
537	△D51	5632-S5566B	DIODE, RECT
537	△D52	5632-S5566B	DIODE, RECT
539	D53	5631-1SS133	DIODE, DET
547	D54	5635-HZ6A1L	DIODE, ZENER
537	△D55	5632-S5566B	DIODE, RECT
537	△D56	5632-S5566B	DIODE, RECT
539	D57	5631-1SS133	DIODE, DET
539	D58	5631-1SS133	DIODE, DET
539	D59	5631-1SS133	DIODE, DET
539	D60	5631-1SS133	DIODE, DET
539	D101	5631-1SS133	DIODE, DET
539	D102	5631-1SS133	DIODE, DET
548	D201	5635-HZ9A1L	DIODE, ZENER
548	D202	5635-HZ9A1L	DIODE, ZENER

CONTROLS

614	VR51	5101-50201933	RES, SEMI FIX 5K
612	VR101	5101-10401933	RES, SEMI FIX 100K

TRANSFORMERS

700	△T1	5584-S1901	XFORMER, POWER
700B	△T1	5584-S1902	XFORMER, POWER G
700C	△T1	5584-S1902	XFORMER, POWER GB

MISCELLANEOUS

683	J1	4482-0131	PIN JACK, 2P
709	J201	4132-R0202600	CORD, 2C UA BK
710	JL1	4132-R0202131	CORD, 2C G GB
710	JL2	4132-R0202131	CORD, 2C G GB
535	X301	5691-00846731	XTAL, OSC
692	CN101	4443-01301016	CONNECTOR
691	CN102	4443-06011140	CONNECTOR
690	CN103	4443-04011140	CONNECTOR
712	TM3	4214-11031	TERMINAL
713	TP108	4214-132	TERMINAL
713	TP109	4214-132	TERMINAL
713	TP401	4214-132	TERMINAL
713	TPGND1	4214-132	TERMINAL
713	TPGND2	4214-132	TERMINAL

Ser. No. Ref. No. Part No. Description

PCB-2 FRONT P.C. BOARD

CAPACITORS

580	C402	5361-102KB	CAP, CER	1000p
580	C403	5361-102KB	CAP, CER	1000p
566	C404	5345-226A0356	CAP, MINI ELE	22 μ /6.3V
567	C405	5345-226E0356	CAP, MINI ELE	22 μ /35V
573	C406	5361-101JCH	CAP, CER	100p
573	C407	5361-101JCH	CAP, CER	100p

RESISTORS

642	R404	5232-103J16P	RES, CBN	1/6P 10K
642	R405	5232-103J16P	RES, CBN	1/6P 10K
642	R406	5232-103J16P	RES, CBN	1/6P 10K
642	R407	5232-103J16P	RES, CBN	1/6P 10K
642	R408	5232-103J16P	RES, CBN	1/6P 10K
642	R409	5232-103J16P	RES, CBN	1/6P 10K
642	R410	5232-103J16P	RES, CBN	1/6P 10K
662	R411	5135-103522	RES, CBN	1/2P 10K
662	R412	5135-103522	RES, CBN	1/2P 10K
662	R413	5135-103522	RES, CBN	1/2P 10K
624	R414	5232-101J16P	RES, CBN	1/6P 100
624	R415	5232-101J16P	RES, CBN	1/6P 100
624	R416	5232-101J16P	RES, CBN	1/6P 100
624	R417	5232-101J16P	RES, CBN	1/6P 100
663	R418	5135-473522	RES, CBN	1/2P 47K
642	R419	5232-103J16P	RES, CBN	1/6P 10K
675	R420	5232-105J16P	RES, CBN	1/6P 1M
642	R421	5232-103J16P	RES, CBN	1/6P 10K
663	R422	5135-473522	RES, CBN	1/2P 47K
663	R423	5135-473522	RES, CBN	1/2P 47K
663	R424	5135-473522	RES, CBN	1/2P 47K
642	R425	5232-103J16P	RES, CBN	1/6P 10K
642	R426	5232-103J16P	RES, CBN	1/6P 10K
642	R427	5232-103J16P	RES, CBN	1/6P 10K
662	R428	5135-103522	RES, CBN	1/2P 10K

INTEGRATED CIRCUITS

501	IC401	5654-M752-402	IC, DIGITAL
505	IC402	5654-M761-430	IC, DIGITAL

TRANSISTORS

529	Q402	5613-RN1203	XISTOR, NPN R
519	Q403	5611-RN2202	XISTOR, PNP R
519	Q404	5611-RN2202	XISTOR, PNP R
519	Q405	5611-RN2202	XISTOR, PNP R
519	Q406	5611-RN2202	XISTOR, PNP R

DIODES

541	D401	5631-1S2473	DIODE, DET
541	D402	5631-1S2473	DIODE, DET
541	D403	5631-1S2473	DIODE, DET
541	D404	5631-1S2473	DIODE, DET
540	D405	5631-1SS133	DIODE, DET
540	D406	5631-1SS133	DIODE, DET
540	D407	5631-1SS133	DIODE, DET

MISCELLANEOUS

678	S401	4431-A017240	SWITCH, PUSH
678	S402	4431-A017240	SWITCH, PUSH
678	S403	4431-A017240	SWITCH, PUSH
678	S404	4431-A017240	SWITCH, PUSH
678	S405	4431-A017240	SWITCH, PUSH
678	S406	4431-A017240	SWITCH, PUSH
678	S407	4431-A017240	SWITCH, PUSH
679	S408	4437-00501	SWITCH, PUSH
679	S409	4437-00501	SWITCH, PUSH
679	S410	4437-00501	SWITCH, PUSH
536	X401	5693-CSB400P	OSC, CER
676	FL401	5722-26	TUBE DISPLAY
705	JL101	4242-R0105181	JUMPER LEAD
705	JL102	4242-R0105181	JUMPER LEAD
705	JL103	4242-R0105181	JUMPER LEAD
706	JL104	4242-R0104181	JUMPER LEAD
704	JL105	4242-R0107251	JUMPER LEAD
681	RC401	6143-00301	RECEIVE UNIT

Ser. No. Ref. No. Part No. Description

PCB-3 POWER SWITCH P.C. BOARD

CAPACITORS

609	Δ C1	5352-S010M103	CAP, MTL	.01 μ
604	Δ C24	5361-4720421	CAP, CER	4700p G GB
604	Δ C25	5361-4720421	CAP, CER	4700p G GB

RESISTORS

042B	Δ R1	5135-335J50P	RES, CBN	1/2P 3.3M G
042C	Δ R1	5135-335J50P	RES, CBN	1/2P 3.3M GB

COILS

696	L2	5597-45502	CORE, BEADS	G GB
696	L3	5597-45502	CORE, BEADS	G GB

MISCELLANEOUS

680	Δ S1	4433-00702	SWITCH, POWER
711	TM1	4214-11024	TERMINAL UA BK
714	TM1	4214-11023	TERMINAL G GB
711	TM2	4214-11024	TERMINAL UA BK
715	TM2	4214-11023	TERMINAL G GB
716	LUG6	4211-4	LUG G GB

PCB-4 HEADPHONE P.C. BOARD

CAPACITORS

583	C332	5361-220KSL	CAP, CER	22p
583	C333	5361-220KSL	CAP, CER	22p
568	C334	5345-476B0356	CAP, MINI ELE	47 μ /10V
568	C335	5345-476B0356	CAP, MINI ELE	47 μ /10V

RESISTORS

652	R342	5232-103J16P	RES, CBN	1/6P 10K
652	R343	5232-103J16P	RES, CBN	1/6P 10K
629	R346	5232-333J16P	RES, CBN	1/6P 33K
629	R347	5232-333J16P	RES, CBN	1/6P 33K
665	R348	5232-153J16P	RES, CBN	1/6P 15K
665	R349	5232-153J16P	RES, CBN	1/6P 15K
666	R350	5135-101522	RES, CBN	1/2P 100
666	R351	5135-101522	RES, CBN	1/2P 100

INTEGRATED CIRCUIT

513	IC308	5653-BA15218N	IC, LINEAR
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CONTROL

697	VR301	5112-S0101502	RES, V CBN	12 5K
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MISCELLANEOUS

708	J301	4132-R0202451	CORD, 2C
707	JL106	4242-R0103600	JUMPER LEAD

PCB-5 HEADPHONE JACK P.C. BOARD

CAPACITOR

595	C347	5361-103ZF	CAP, CER	.01 μ G GB
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COILS

723	L301	5597-45502	CORE, BEADS	G GB
723	L302	5597-45502	CORE, BEADS	G GB
723	L303	5597-45502	CORE, BEADS	G GB

MISCELLANEOUS

694	JC301	4451-00173	JACK, 1P
716	LUG7	4211-4	LUG G GB

Ser. No.	Ref. No.	Part No.	Description
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ABBREVIATIONS IN PARTS LIST**CAPACITORS**

CAP, MINI ELE : Electrolytic
 CAP, CER : Ceramic
 CAP, PPP : Polypropylene
 CAP, MYL : Mylar
 CAP, MCA : Mica
 CAP, MINI BP : Bipolar
 CAP, ELE BP : Electrolytic Bipolar
 470 μ : 470 μ F
 6800p : 6800pF
 .047 μ : 0.047 μ F

RESISTORS

RES, CBN 1/6P : Carbon 1/6W
 RES, FUSE : Fuse
 RES, CEM 5P : Cement 5W
 RES, MTL 1P : Metal 1W
 2.2K : 2.2k Ω
 220 : 220 Ω

TRANSISTORS

XISTOR : Transistor
 FET : Field Effect Transistor

CONTROLS

RES, SEMI FIX : Semi-fixed Resistor

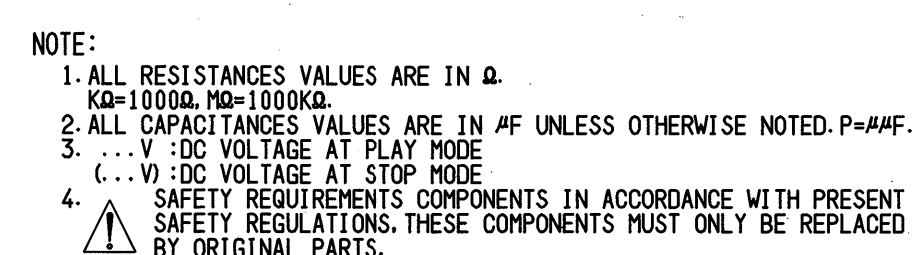
CHASSIS MISCELLANEOUS PARTS LIST

685 Δ P1	4161-01401232	CORD W/PLUG	UA BK
685B Δ P1	4161-7256	CORD W/PLUG	G
685C Δ P1	4161-7256	CORD W/PLUG	GB
041B Δ S2	4411-102729	SWITCH, ROTARY	G
041C Δ S2	4411-102729	SWITCH, ROTARY	GB
695 L1	5597-00101	CORE, BEADS	G GB
688 W-1	4162-00201800	LUG W/WIRE (W/LUG 1, LUG 2)	
688 W-2	4162-00201800	LUG W/WIRE (W/LUG 4, LUG 5)	

NOTE

SAFETY RELATED COMPONENT. USE ONLY EXACT REPLACEMENT PART AS SPECIFIED.

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General model

SCHEMATIC DIAGRAM

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3

4

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7

PIC UP
HDP-M14

FOCUS
COIL

TRACK
COIL

LD
HZ4B

VR101
100K

VR51
5K

VR74
2.2K

VR74
2.2K

VR74
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