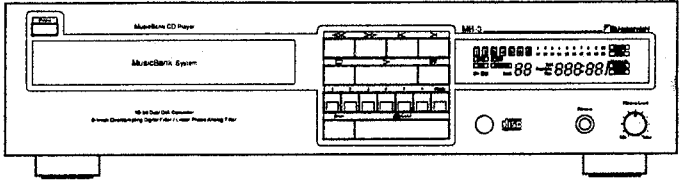


# Service Manual

## MB-3 MusicBank System



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## 1. GENERAL

### Reference Service Manual

The base Model of MB-3 is CD Player 3. In this Service Manual, identical sections/items are omitted. So, please refer to the Service Manual of CD Player 3 (0Q06132A).

### 1.1. Product Code

V326

### 1.2. Destinations


USA, CAN, EP, UK, AUS, SAU, OTR, JPN

#### Abbreviation

USA — U.S.A.	AUS — Australia
CAN — Canada	SAU — Saudi Arabia
EP — Europe	OTR — Other
UK — United Kingdom	JPN — Japan

### 1.3. Cautions/Warnings

#### (1) Product Safety Notice

Parts marked with the symbol  in the schematic diagram have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

#### (2) Leakage Current Check/Resistance Check

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.

**WARNING** — DO NOT return the unit to the customer until the problem is located and corrected.

#### (3) Lithium Battery Caution

Use ONLY replacement parts recommended by the manufacturer. Replacement must be done only by qualified service personnel because of risk for explosion.

### WARNING

Litiumbatteri. Explosionsfara vid felaktig hantering. Byte får endast ske av sakkunnig personal enligt servicedokumentationens anvisningar.

### ADVARSEL!

Lithiumbatterier. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen.  
batterierne kun må udskiftes med batterier af samme fabrikat og type.

### (4) Protection of Eyes from Laser Beam

To protect eyes from invisible laser beam during servicing, **DO NOT LOOK AT THE LASER BEAM.**

- Laser Diode Properties

GaAlAs double hetero laser diode

Maximum Radiant Power:

0.4mW Max.

Measured at a distance of 1.6mm from the object lens surface on the Laser Pickup.

Wavelength: 780 nm

Emission Duration: Continuous

### (5) Laser Caution

#### CAUTION

Adjusting the knobs, switches, and controls, etc. or taking actions not specified herein may result in a harmful emission of laser beams. This Compact Disc Player must be adjusted and repaired only by qualified service personnel.

### OBSERVERA!

Sådana inställningar av rattarna, omkopplarna eller övriga kontrollknappar som inte är beskriva i bruksanvisningen kan resultera i farlig laserutstrålning. Justering eller reparation av denna kompaktskivspelare skall endast utföras av

kvalificerad servicepersonal.

**OBS!**

Indstilling af knapper, omskiftere og øvrige kontrolknapper, som ikke følger den i brugsanvisningen beskrevne måde, kan resultere i farlig laserudstråling. Justering eller reparation af denne CD-afspiller må kun udføres af kvalificeret servicepersonale.

**OBS!**

Justering av ratt, brytere og kontroller andre enn de som er beskrevet her, kan resultere i farlig laserbestråling. Justering eller reparasjon av denne kompaktdiskspilleren må bare utføres av kvalifiserte fagfolk.

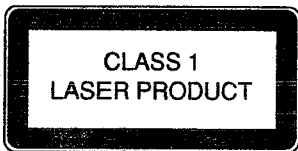
**HUOMAUTUS**

Jos nuppeja, kytkimiä ja säätimiä ym, säädetään tai laitetta käytetään toisella tavalla kuin on selostettu, tuloksena saattaa olla vaarallista lasersäteiden vuotoa. CD-soittimen säätö ja korjaus on jätettävä aina asiantuntevan huoltoteknikon tehtäväksi.

ADVERSEL: USYNLIG LASERSTRÅLING VED ÅBNING.  
UNDGÅ UDSAETTELSE FOR STRÅLING.

VARO! AVATTAESSA OLET ALTTIINA  
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.  
ÄLÄ KATSO SÄTEESEEN.

VARNING — OSYNLIG LASERSTRÅLNING NÄR  
DENNA DEL ÄR ÖPPNAD. BETRAKTA  
EJ STRÅLEN.



THIS COMPACT DISC PLAYER IS CLASSIFIED AS A CLASS 1 LASER PRODUCT. THE CLASS 1 LASER PRODUCT LABEL IS LOCATED ON THE REAR EXTERIOR.

**1.4. Voltage Selector**

The voltage selector is installed on the Rear Panel of the MB-3 (SAU & OTR). The voltage selector can select 110V, 127V, 220V, or 240V at customer's disposal.

**1.5. Handling the Laser Pickup**

In case of repair or replacement of the Laser Pickup, pay attention to the following handling instructions since the laser diode in the Laser Pickup is not resistant to static electricity.

**(1) Grounding**

When you repair a Laser Pickup, first ground the human body, as well as the measuring instruments and other tools (with particular caution to soldering iron). What's more, your workbench and floor should desirably be grounded using conductive sheet or copper plate. See Fig. 1.1.

**NOTE:** Be careful so as not to let your clothes touch the Laser Pickup, as static electricity on the clothes will not be released even if your body is grounded.

**(2) Discharge of Electricity**

Be sure to discharge electricity from objects brought into contact with the Laser Pickup (i.e., soldering iron, tweezers, probes, volt-ohm-meter probes, etc.) before starting work by contacting them with the body chassis. Besides, never touch the Laser Pickup while power is applied.

**(3) Soldering Iron to be Used**

The soldering iron for use in repair work should be: (1) a ceramic soldering iron, (2) a soldering iron with its metal part grounded, or (3) a soldering iron whose insulation resistance after five minutes of power application is 10 M-ohm or more at 500 VDC. Soldering should be completed promptly, at a soldering iron temperature of 320° max (39 W). A soldering iron heated above this temperature can break down the laser diode.

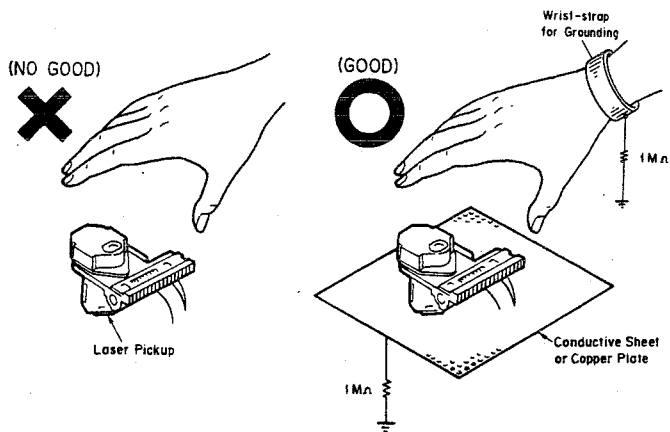


Fig. 1.1

### 1.6. Package Ass'y and Accessory Ass'y

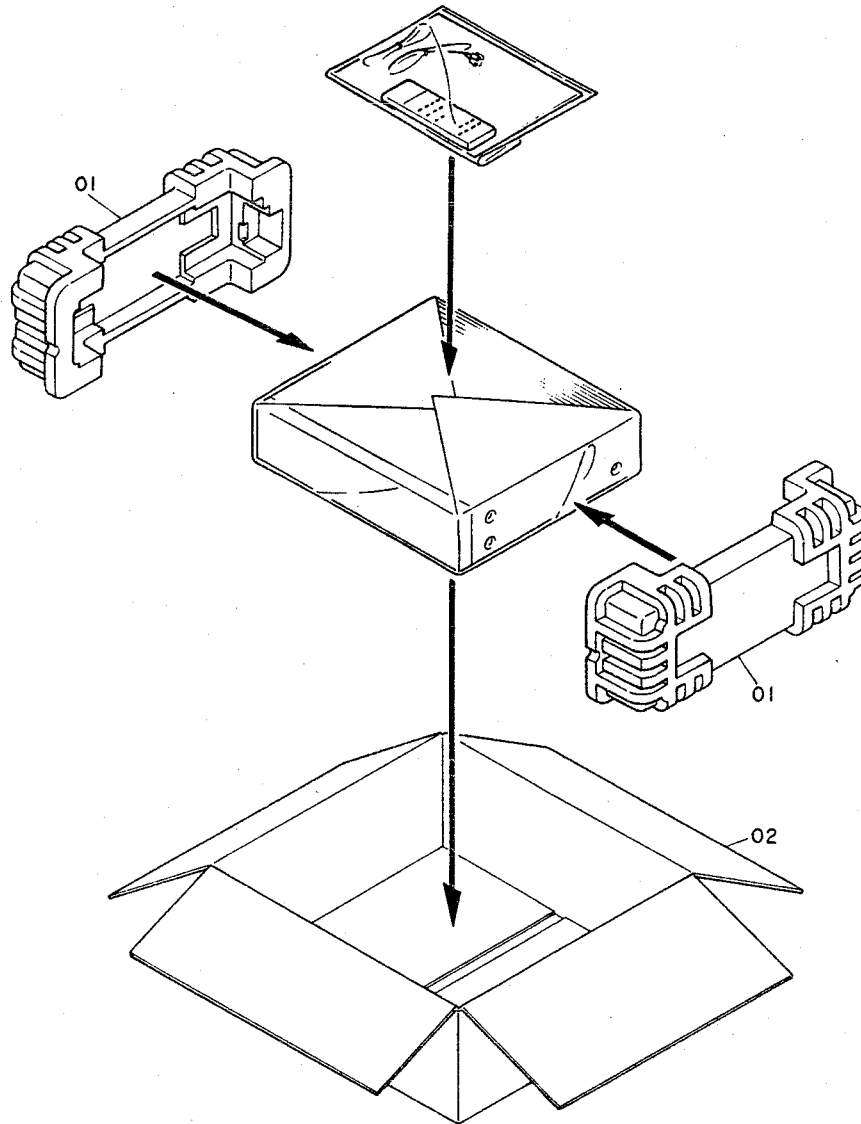


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
	—	<b>Package Ass'y</b>			<b>DA04683A</b>	<b>Accessory Ass'y (USA, CAN)</b>	<b>1</b>
01	0F04445B	Packing	2		<b>DA04684A</b>	<b>Accessory Ass'y (EP)</b>	<b>1</b>
02	0F04714A	Carton Box (USA, CAN, AUS, SAU, OTR, JPN)	1		<b>DA04685A</b>	<b>Accessory Ass'y (UK)</b>	<b>1</b>
	0F04715A	Carton Box (EP, UK)	1		<b>DA04687A</b>	<b>Accessory Ass'y (AUS, SAU, OTR)</b>	<b>1</b>
—	0F04458A	Soft Sheet	1		<b>DA04682A</b>	<b>Accessory Ass'y (JPN)</b>	<b>1</b>
					HA06494A	Remote Control Unit	1
					0B90462A	Battery UM4	2
					0D06408C	Owner's Manual (English)	1
					0D06412B	Owner's Manual (French)	1
					0D06413A	Owner's Manual (German)	1
					0D06407A	Owner's Manual (Japanese)	1
					0D06431A	Pin-Pin Cord	1



## 2. ELECTRICAL ADJUSTMENTS

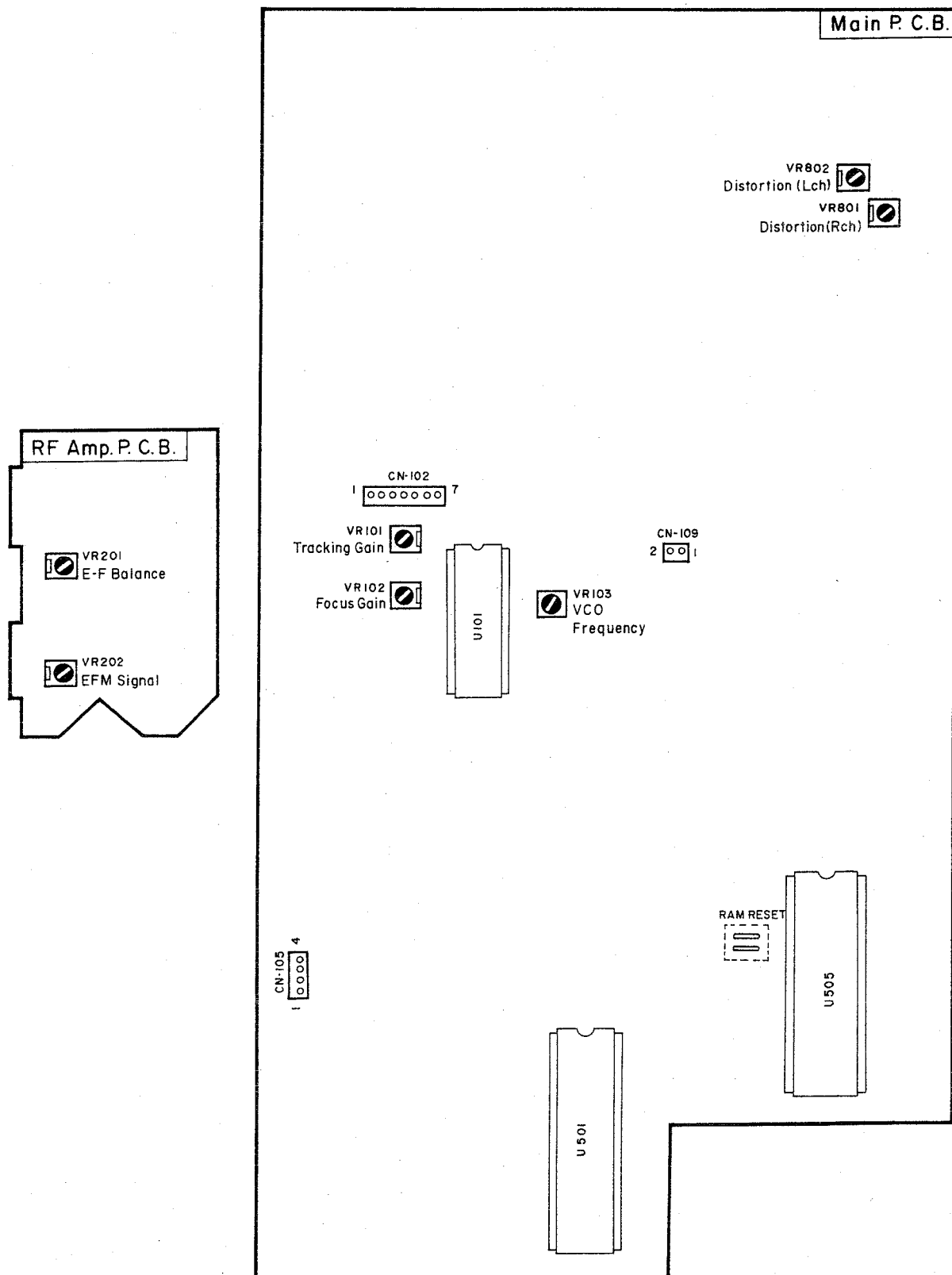
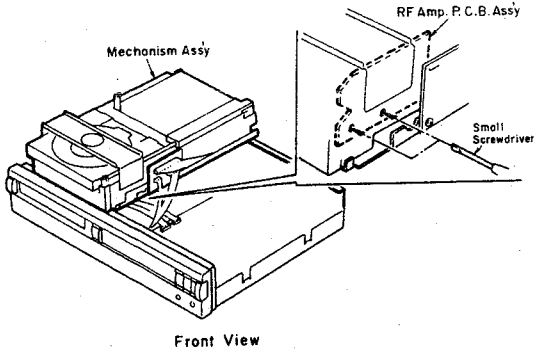
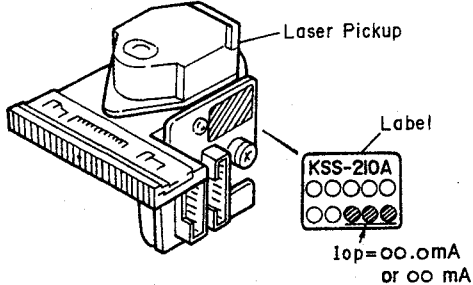
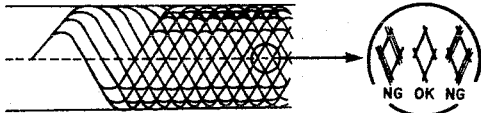
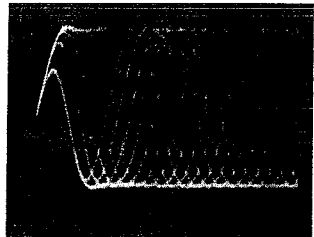
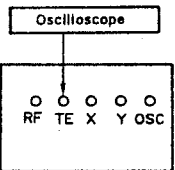
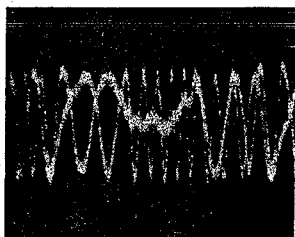
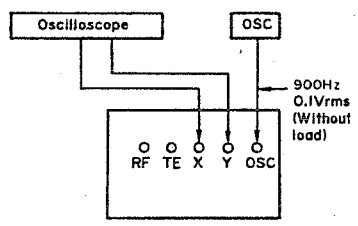
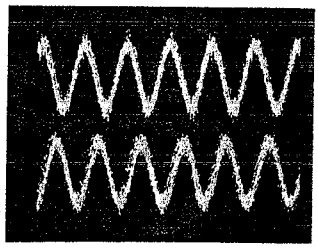
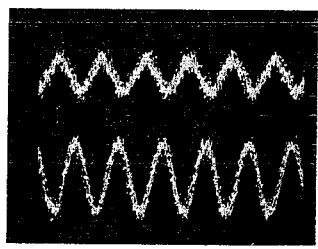
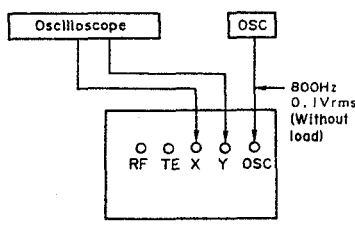
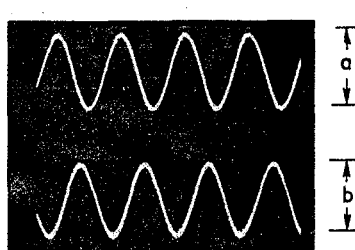
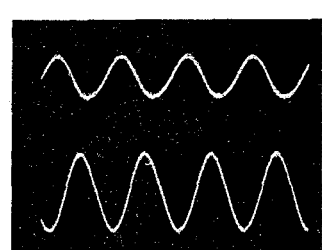


Fig. 2 Parts Location for Electrical Adjustment

NOTE: For adjusting, use the Test Unit made by Nakamichi.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
1	Preliminary Step				<p>1. Connect the Test Unit to CN-102 and CN-105 on the Main P.C.B. Ass'y via the Test Unit Cable.</p> <p>2. For adjusting VRs on the RF Amp. P.C.B. Ass'y, remove the Mechanism Ass'y and place it on the unit as shown left.</p> <p><b>Note:</b> In the following cases, preset the following semi-fixed volumes to their mechanical center positions before starting adjustment.</p> <p>VR101, VR102 --- Main P.C.B. Ass'y</p> <p>VR201, VR202 --- RF Amp. P.C.B. Ass'y</p> <ul style="list-style-type: none"> <li>o When Main P.C.B. Ass'y or RF Amp. P.C.B. Ass'y is replaced with new one.</li> <li>o When VR101, VR102, VR201, or VR202 is replaced with new one.</li> </ul>
					
2	Laser Current Check	Philips Test Sample 5	DC Voltmeter between Iop and +5V Terminals of Test Unit		<p>1. Turn the power ON and load the test disc.</p> <p>2. Play back the test disc and calculate the current flowing into R201 from the following formula.</p> $I = \frac{\text{Voltmeter Value}}{R201 (22 \text{ Ohms})} = \text{oo.o mA (Measured Value)}$ <p><b>Note:</b> The voltmeter value should be read to 3 digits after the decimal point.</p> <p>3. Press the Eject/Load button to open the Disc Tray and check that the difference between the measured value and the current value (Iop) indicated on the label on the Laser Pickup is within <math>\pm 10\%</math>.</p> $I_{op} - (\text{Measured Value}) = I_{op} \pm 10\%$
					
3	VCO Frequency Adjustment	None	Frequency Counter (10/1 probe) between Pins 2 (PLCK) and 1 (GND) of CN-109 on Main P.C.B.	Main P.C.B. VR103	<p>1. Set SW1 of the Test Unit to VCO.</p> <p>2. Adjust VR103 to obtain <math>4.322 \pm 0.005</math> MHz on the frequency counter.</p> <p>3. Set SW1 to OFF position.</p>
4	EFM Signal Adjustment	Philips Test Sample 5	Oscilloscope to RF Connector of Test Unit	RF Amp. P.C.B. VR202	<p>1. Play back the first track of the test disc.</p> <p>2. Adjust VR202 until waveform amplitude becomes maximum and the waveform becomes clear (not thick) as shown below:</p>
					  <p>Oscilloscope Setting: AC Mode, 0.2 V/div, 0.5 <math>\mu</math>s/div</p>

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
5	E-F Balance Adjustment (Supplementary Beam Balance Adjustment)	Philips Test Sample 5	Oscilloscope to TE Connector of Test Unit	RF Amp. P.C.B. VR201	<ol style="list-style-type: none"> <li>1. Play back the first track of the test disc.</li> <li>2. Set SW2 of the Test Unit to E-F position.</li> <li>3. Adjust VR201 so that the center level of the waveform is within the range of 0 V <math>\pm</math>0.1 V DC as shown below:</li> </ol>
<p>SW1: OFF    SW3: OFF SW2: E-F    Filter: OUT</p>  <p>Connecting Diagram</p>					 <p>Center Level</p> <p>Oscilloscope Setting: DC Mode, 1 V/div, 1 ms/div</p>
					4. Set SW2 to OFF position.
6	Tracking Gain Adjustment	Philips Test Sample 5	Oscillator to OSC Connector of Test Unit  Oscilloscope to Test Unit o CH1 to X o CH2 to Y	Main P.C.B. VR101	<ol style="list-style-type: none"> <li>1. Set the output of oscillator to 900 Hz, 0.1 Vrms without connecting it to the Test Unit.</li> <li>2. Note the position of the Output control of the oscillator.</li> <li>3. Connect the oscillator output to OSC connector of the Test Unit and set its output to 0 V.</li> <li>4. Set the Filter switch of the Test Unit to IN position.</li> <li>5. Play back the first track of the test disc.</li> <li>6. Set the Output control of the oscillator to the position noted in 2.</li> <li>7. Set SW3 of the Test Unit to TRACKING position.</li> <li>8. Adjust VR101 so that the amplitude of both waveforms on the oscilloscope are equal. (a=b)</li> <li>9. Set SW3 to OFF position.</li> </ol>
<p>SW1: OFF    SW3: TRACKING SW2: OFF    Filter: IN</p>  <p>Connecting Diagram</p>					<p>Good waveforms</p>  <p>CH1</p> <p>CH2</p> <p>a=b</p> <p>NG waveforms</p>  <p>Oscilloscope Setting: CH1, CH2: 0.2 V/div, DC Mode Time: 0.5 ms/div Mode: Auto, ALT Trigger: CH1</p>

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
7	Focus Gain Adjustment	Philips Test Sample 5	Oscillator to OSC connector of Test Unit  Oscilloscope to Test Unit o CH1 to X o CH2 to Y	Main P.C.B. VR102	<ol style="list-style-type: none"> <li>1. Set the output of oscillator to 800 Hz, 0.1 Vrms without connecting it to the Test Unit.</li> <li>2. Note the position of the Output control of the oscillator.</li> <li>3. Connect the oscillator output to OSC connector of the Test Unit and set its output to 0 V.</li> <li>4. Set the Filter switch of the Test Unit to IN position.</li> <li>5. Play back the first track of the test disc.</li> <li>6. Set the Output control of the oscillator to the position noted in 2.</li> <li>7. Set SW3 of the Test Unit to FOCUS position.</li> <li>8. Adjust VR102 so that the amplitude of both waveforms on the oscilloscope are equal. (a=b)</li> <li>9. Set SW3 to OFF position.</li> <li>10. Set the Filter switch to OUT position.</li> <li>11. After adjustment, perform "EFM Signal Adjustment" in Step 4.</li> </ol>
<p>SW1: OFF    SW3: FOCUS SW2: OFF    Filter: IN</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Connecting Diagram</p> </div> <div style="text-align: center;"> <p>Good waveforms</p>  <p>CH1</p> <p>CH2</p> <p>a=b</p> </div> <div style="text-align: center;"> <p>NG waveforms</p>  </div> </div> <p>Oscilloscope Setting: CH1, CH2: 0.2 V/div, DC Mode Time: 0.5 ms/div Mode: Auto, ALT Trigger: CH1</p>					
8	Distortion Adjustment	Sony YEDS-7 (Type 3)	Distortion Meter to Output Jack	Main P.C.B. VR802(L) VR801(R)	<ol style="list-style-type: none"> <li>1. Play back the 20th program (1kHz, -60dB) of the test disc.</li> <li>2. Adjust VR802 (Lch) and VR801 (Rch) to obtain minimum distortion.</li> </ol>
9	Operation Check	Philips Test Sample 5A			<p>Play back the following test programs on the test disc (Philips Test Sample 5A) and make sure that there is no noise and track-jumping.</p> <ul style="list-style-type: none"> <li>o Interruption 500 <math>\mu</math>m</li> <li>6th program</li> <li>o Black Dot 800 <math>\mu</math>m</li> <li>17th program</li> <li>o Simulated fingerprint</li> <li>19th program</li> </ul>

### 3. MECHANISM ASS'Y AND PARTS LIST

#### 3.1. Synthesis

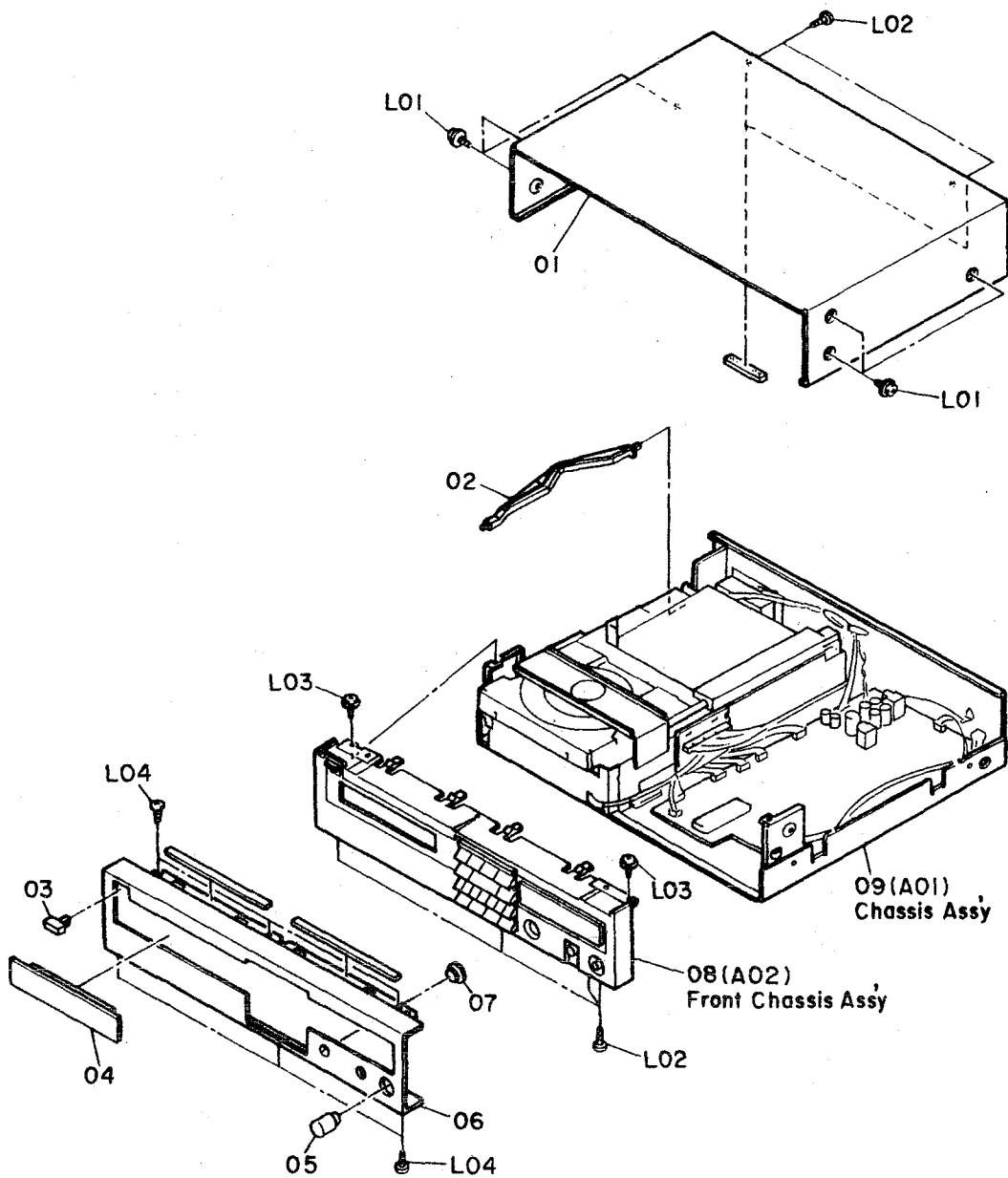


Fig. 3.1

#### 3.1. Synthesis

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty	
<b>Synthesis</b>					08	—	Front Chassis Ass'y	1
				09	—	Chassis Ass'y	1	
01	0H06422A	Top Cover	1	L01	0E03592A	BT4x6 + Binding Washer-Faced (Black Chromate)		
02	0J07036B	Power Switch Joint	1	L02	0E00921A	BT3x8 + Binding (Black Chromate)		
03	0H06418A	Power Knob	1	L03	0E03157A	BT3x8 + Binding with Washer		
04	HA06582B	Disc Tray Cover Ass'y	1	L04	0E03749A	PT3x8 + Binding (Black Chromate)		
05	HA06502A	Volume Knob Ass'y	1					
06	0H06453B	Front Panel	1					
07	0H05861B	Remote Window	1					

3.2. Chassis Ass'y (A01)

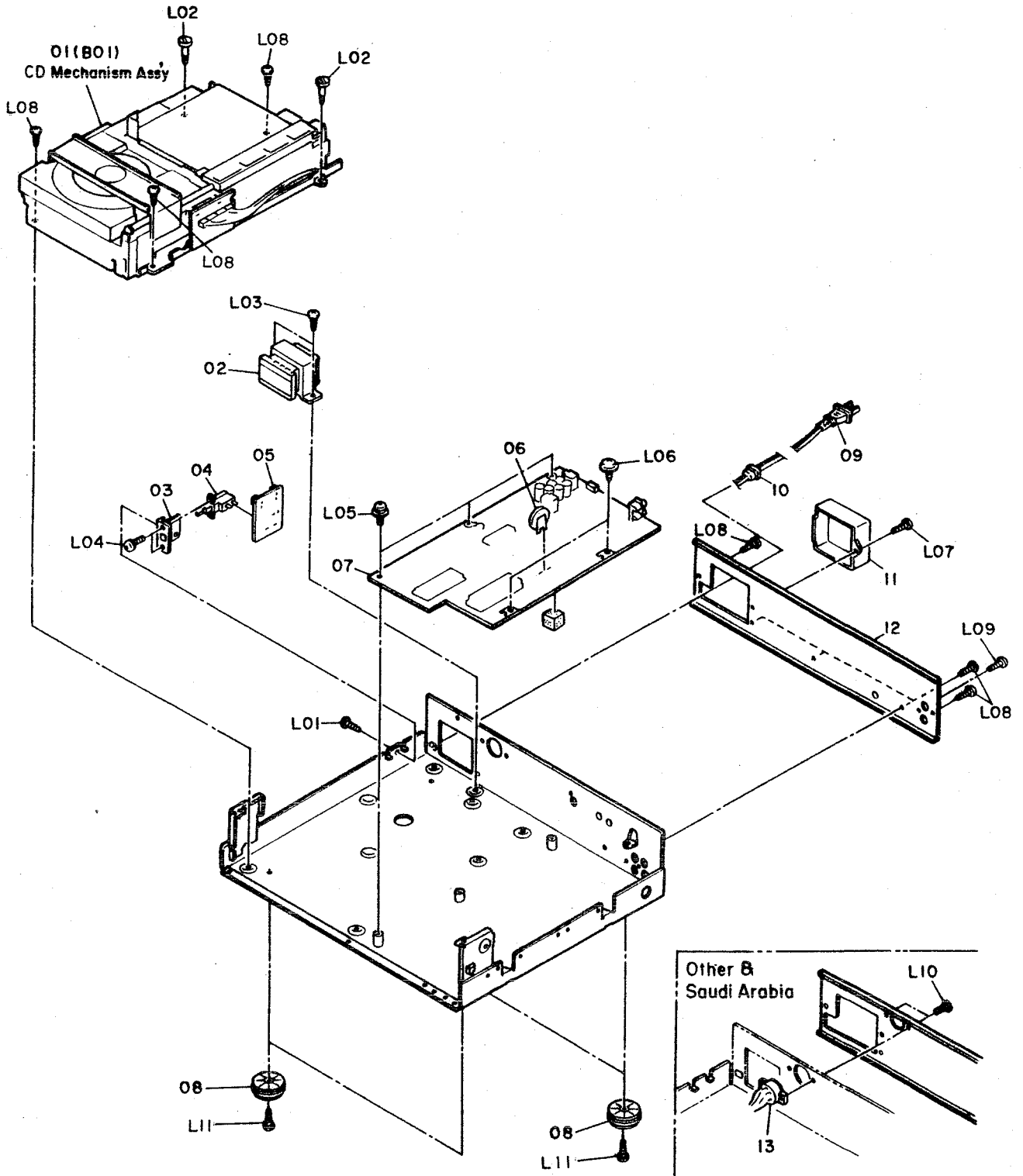


Fig. 3.2

### 3.3. Front Chassis Ass'y (A02)

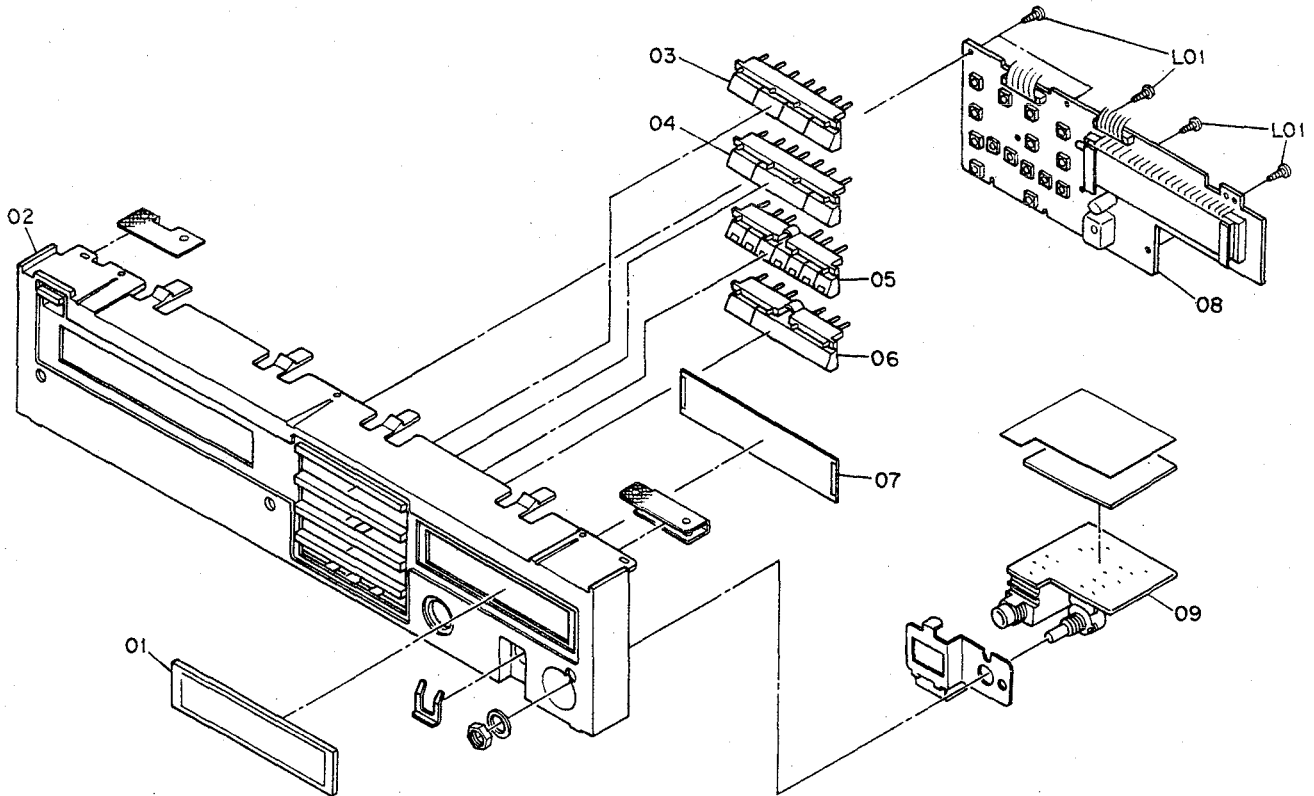


Fig. 3.3

### 3.2. Chassis Ass'y (A01)

Schematic Ref. No.	Part No.	Description	Qty
<b>A01</b>	—	<b>Chassis Ass'y</b>	<b>1</b>
01	CA09004A	Mechanism Ass'y	1
02	0B50170B	Power Transformer 120V (USA, CAN)	1
	0B50173B	Power Transformer 230V/240V (EP, UK, AUS)	1
	0B50172B	Power Transformer 110V-240V (SAU, OTR)	1
	0B50171B	Power Transformer 100V (JPN)	1
03	0J06231B	Power Switch Holder	1
04	0B71013A	Power Switch	1
05	BA08862A	Power Switch P.C.B. Ass'y (USA, CAN, SAU, OTR)	1
	BA08868A	Power Switch P.C.B. Ass'y (EP, UK, AUS)	1
	BA08866A	Power Switch P.C.B. Ass'y (JPN)	1
06	0B92048A	Lithium Battery [B501]	1
07	BA08860A	Main P.C.B. Ass'y	1
08	0H06472A	Leg	4
09	0B90205A	Power Cord (USA, CAN)	1
	0B08093U	Power Cord (EP)	1
	0B08348A	Power Cord (UK)	1
	0B05241A	Power Cord (AUS)	1
	0B08219B	Power Cord (SAU, OTR, JPN)	1
10	0B90280A	Cord Bushing (USA, CAN, EP, UK, AUS)	1
	0B90283A	Cord Bushing (SAU, OTR, JPN)	1
11	0H05810C	Transformer Cover	1
12	0H06520A	Rear Plate (USA, CAN, AUS, JPN)	1
	0H06522A	Rear Plate (EP, UK)	1
	0H06521A	Rear Plate (SAU, OTR)	1
13	0B81771A	Voltage Selector (SAU, OTR)	1

Schematic Ref. No.	Part No.	Description	Qty
L01	0E00857A	BT3x6 + Binding	
L02	0E03635A	BT3x6 + Binding	
L03	0E03434A	BT4x6 + Binding	
L04	0E00612A	M3x6 + Pan (2A)	
L05	0E00607A	M3x8 + Pan (3A)	
L06	0E03157A	BT3x8 + Binding with Washer	
L07	0E00921A	BT3x8 + Binding (Black Chromate)	
L08	0E00860A	BT3x6 + Binding (Black Chromate)	
L09	0E03749A	PT3x8 + Binding (Black Chromate)	
L10	0E00985A	M3x6 + Binding (Black Chromate) (SAU, OTR)	
L11	0E03632A	BT3x8 + Binding with Washer (Black Chromate)	

### 3.3. Front Chassis Ass'y (A02)

Schematic Ref. No.	Part No.	Description	Qty
<b>A02</b>	—	<b>Front Chassis Ass'y</b>	<b>1</b>
01	HA06596A	Display Lens MB Ass'y	1
02	0H06449B	Front Chassis MB	1
03	0H06442B	Control Knob 4C	1
04	0H06426B	Control Knob 3CD	1
05	0H06443B	Control Knob 7C	1
06	0H06444B	Control Knob 2C	1
07	HA06568A	Filter MB C Ass'y	1
08	BA08864A	Front P.C.B. Ass'y	1
09	BA08861A	Headphone Amp. P.C.B. Ass'y	1
L01	0E03749A	PT3x8 + Binding (Black Chromate)	

## 4. MOUNTING DIAGRAMS AND PARTS LIST

- NOTE:** 1. Component side is illustrated unless otherwise specified.  
2. Polarity of electrolytic capacitor.



### 4.1. Power Switch P.C.B. Ass'y

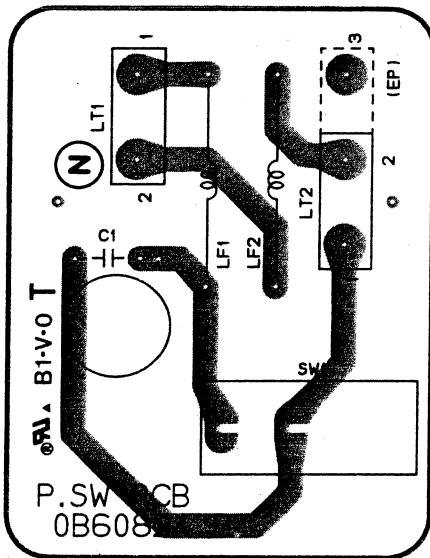


Fig. 4.1

### 4.2. Headphone Amp. P.C.B. Ass'y

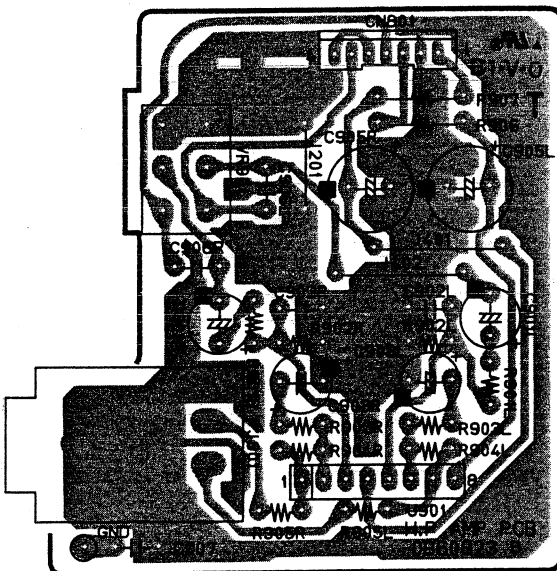


Fig. 4.2

### 4.3. Front P.C.B. Ass'y

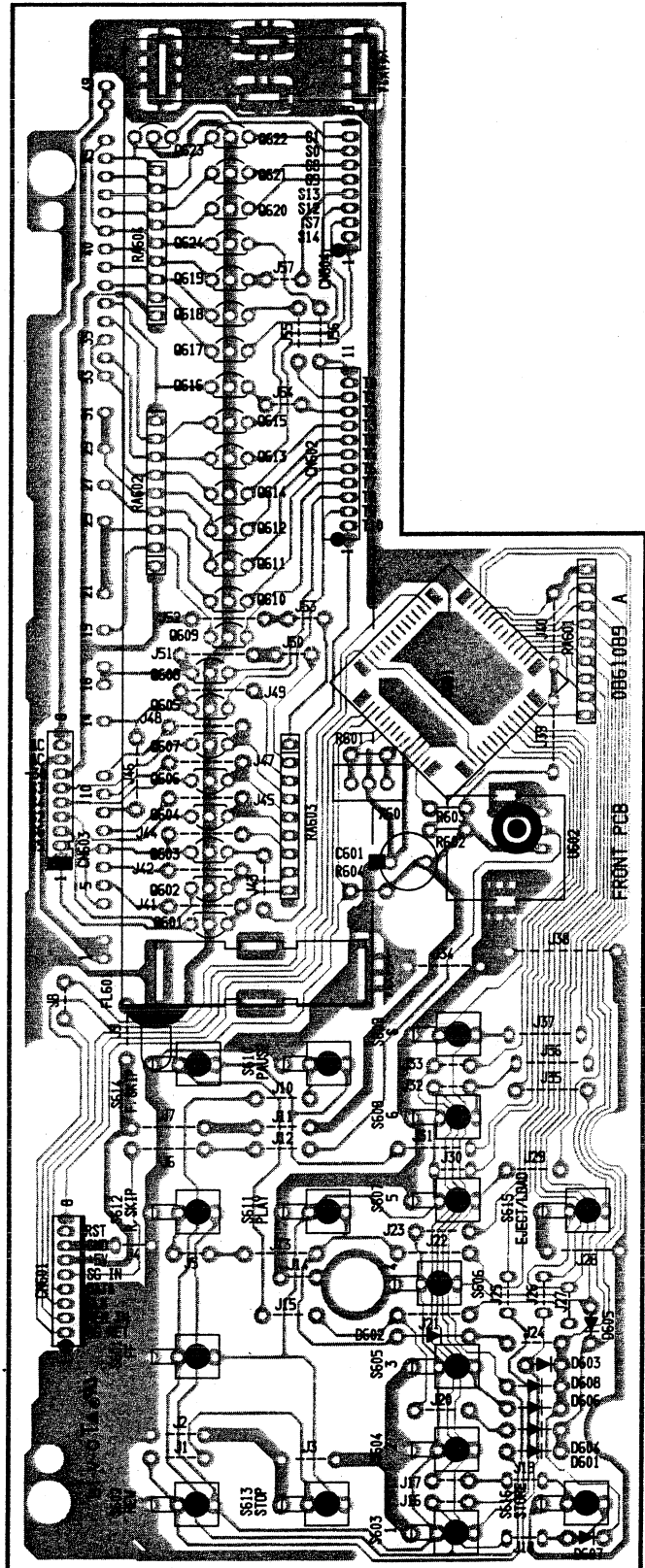


Fig. 4.3





- NOTES:** 1. Abbreviations  
 TR – Transistor, SID – Silicon Diode, ZD – Zener Diode, Varicap – Variable Capacitance Diode  
 RK – Carbon Resistor, RM – Metal Film Resistor, RF – Fail Safe Type Resistor, RC – Cement Resistor  
 CE – Electrolytic Capacitor, CML – Mylar Capacitor, CC – Ceramic Capacitor, CPP – PP Capacitor,  
 CMM – Metalized Mylar Capacitor, CSP – Polystyrene Capacitor, C – Mica Capacitor,  
 CT – Tantalum Capacitor  
 2. Description of capacitor: 10 16V = 10 $\mu$  16V

**4.1. Power Switch P.C.B. Ass'y**

Schematic Ref. No.	Part No.	Description
	<b>BA08862A</b>	<b>Power Switch P.C.B. Ass'y (USA, CAN, OTR, SAU)</b>
	<b>BA08868A</b>	<b>Power Switch P.C.B. Ass'y (EP, UK, AUS)</b>
	<b>BA08866A</b>	<b>Power Switch P.C.B. Ass'y (JPN)</b>
LF1,2	0B60824B 0B51397A	Power Switch P.C.B. Inductor 15uH (Except JPN)
C1	0B51352A 0B41825A 0B41826A	Inductor 15uH (JPN) CC 4700P 400V (Except JPN) CC 4700P 250V (JPN)
LT1	0B84275A	Wrapping Terminal 2P
LT2	0B84275A	Wrapping Terminal 2P (USA, CAN, OTR, SAU, JPN)
	0B84380A	Wrapping Terminal 3P (EP, UK, AUS)

**4.2. Headphone Amp. P.C.B. Ass'y**

Schematic Ref. No.	Part No.	Description
	<b>BA08861A</b>	<b>Headphone Amp. P.C.B. Ass'y</b>
	0B60823B	Headphone Amp. P.C.B.
U901	0B11857A	IC NJM4556S
VR901	0B30124A	Volume 50Kx2
R901L,R	0B09677A	RK 1K 1/6W J
R902L,R	0B09717A	RK 47K 1/6W J
R903L,R	0B09677A	RK 1K 1/6W J
R904L,R	0B09695A	RK 5.6K 1/6W J
R905L,R	0B20526A	RK 75 1/6W J
R906,907	0B24270A	Fuse Resistor 27
C901L,R	0B40087A	CE 10 25V
C902L,R	0B41209A	CPP 220P 100V J
C903L,R	0B40087A	CE 10 25V
C905L,R	0B40079A	CE 220 16V
C906L,R	0B41201A	CPP 100P 100V J
PJ901	0B84327A	Headphone Jack
CN801	0B84261A	7P Connector Ass'y (USA, CAN, AUS, SAU, OTR, JPN)
	0B84392A	7P Connector Ass'y (EP, UK)

**4.3. Front P.C.B. Ass'y**

Schematic Ref. No.	Part No.	Description
	<b>BA08864A</b>	<b>Front P.C.B. Ass'y</b>
	0B61089A	Front P.C.B.
U601	0B11810A	IC LC6522H-4377
U602	0B19017A	Remote Control Receiver Unit
Q601,602	0B10030A	TR 2SC1740S
Q603,604	0B10030A	TR 2SC1740S
Q605,606	0B10030A	TR 2SC1740S
Q607,608	0B10030A	TR 2SC1740S
Q609,610	0B10030A	TR 2SC1740S
Q611,612	0B10030A	TR 2SC1740S
Q613,614	0B10030A	TR 2SC1740S
Q615,616	0B10030A	TR 2SC1740S
Q617,618	0B10030A	TR 2SC1740S
Q619,620	0B10030A	TR 2SC1740S
Q621,622	0B10030A	TR 2SC1740S
Q623,624	0B10030A	TR 2SC1740S
D601,602	0B06398A	SiD 1SS176
D603,604	0B06398A	SiD 1SS176
D605,606	0B06398A	SiD 1SS176
D607,608	0B06398A	SiD 1SS176
X601	0B92033A	X'tal 4.0MHz
RA601	0B21090A	R Network 4.7Kx8
RA602,603	0B21091A	R Network 47Kx8
RA604	0B21091A	R Network 47Kx8
R601	0B09749A	RK 1M 1/6W J
R602,603	0B09717A	RK 47K 1/6W J
R604	0B09717A	RK 47K 1/6W J
C601	0B40052A	CE 470 6.3V
S601,602	0B70214A	Tact Switch
S603,604	0B70214A	Tact Switch
S605,606	0B70214A	Tact Switch
S607,608	0B70214A	Tact Switch
S609,610	0B70214A	Tact Switch
S611,612	0B70214A	Tact Switch
S613,614	0B70214A	Tact Switch
S615,616	0B70214A	Tact Switch
CN601	0B85213B	8P Connector
CN602	0B85212A	11P Connector
CN603	0B85215A	8P Connector
CN604	0B85214A	8P Connector
FL601	0B90444A	FL Display FIP11HM8

**4.4. Main P.C.B. Ass'y**

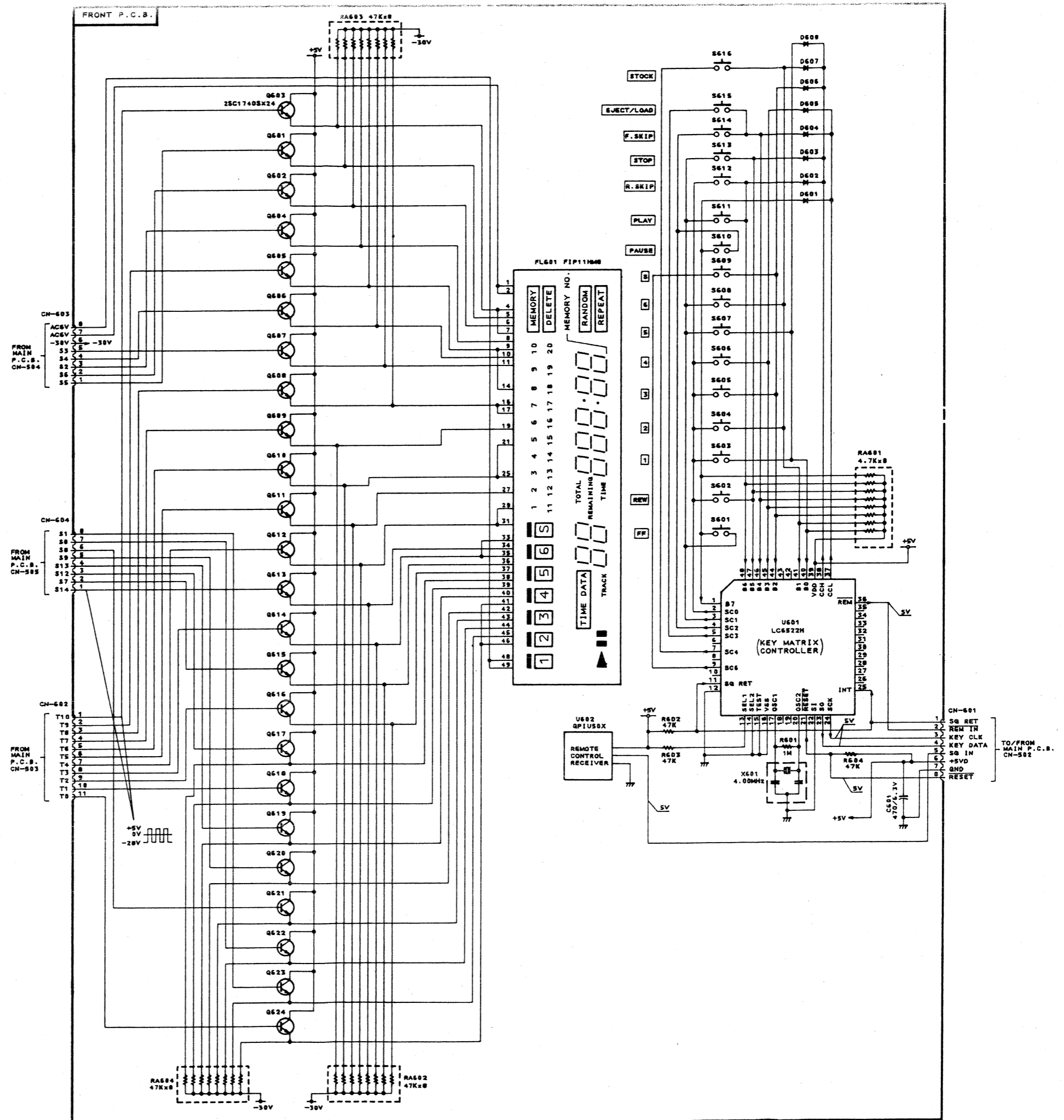
Schematic Ref. No.	Part No.	Description
	<b>BA08860A</b>	<b>Main P.C.B. Ass'y</b>
	— D/A Converter —	
U801	0B11835A	IC SM5840CP
U802	0B11850A	IC PCM1700P
U803	0B11873A	IC NE5532N
Q801L,R	0B06299A	TR 2SC2878
Q802L,R	0B06299A	TR 2SC2878
Q803	0B06180A	TR 2SA970
D801L,R	0B06398A	SID 1SS176
D802L,R	0B06398A	SID 1SS176
X801	0B92039A	X'tal 16.9344M
L801,802	0B51369A	Micro Coil 10uH
L803	0B51369A	Micro Coil 10uH
L804,805	0B51311A	Micro Coil 100uH
VR801,802	0B32196A	Semi VR 100k
R801	0B09653A	RK 100 1/6W J
R802	0B09749A	RK 1M 1/6W J
R803	0B09725A	RK 100K 1/6W J
R804	0B09731A	RK 180K 1/6W J
R805	0B09677A	RK 1K 1/6W J
R806	0B09731A	RK 180K 1/6W J
R807,808	0B09677A	RK 1K 1/6W J
R809	0B09677A	RK 1K 1/6W J
R810L,R	0B25149A	RM 332 1/4W F
R819L,R	0B25149A	RM 332 1/4W F
R820L,R	0B09725A	RK 100K 1/6W J
R821L,R	0B09709A	RK 22K 1/6W J
R830	0B09701A	RK 10K 1/6W J
R831L,R	0B25231A	RM 2.37K 1/4W F
R832L,R	0B25231A	RM 2.37K 1/4W F
R833L,R	0B09709A	RK 22K 1/6W J
R834	0B09701A	RK 10K 1/6W J
R835	0B09637A	RK 22 1/6W J
C801,802	0B41878A	CC 56P 50V J
C803	0B47117A	CC 0.1 50V Z
C804	0B40087A	CE 10 25V
C805,806	0B40115A	CE 4.7 50V
C810,811	0B40115A	CE 4.7 50V
C812,813	0B40115A	CE 4.7 50V
C814,815	0B40115A	CE 4.7 50V
C819L,R	0B40706A	CE 10 25V (LN)
C820L,R	0B41225A	CPP 1000P 100V J
C830,831	0B41215A	CPP 390P 100V J
C832L,R	0B41129A	CPP 1500P 100V J
C833L,R	0B41221A	CPP 680P 100V J
C834L,R	0B41298A	CML 0.1 50V J
C836	0B40087A	CE 10 25V
C837	0B47117A	CC 0.1 50V Z
C838	0B47113A	CC 330P 50V K
C839	0B47117A	CC 0.1 50V Z
C840	0B47113A	CC 330P 50V K
PJ801	0B84226A	Pin Jack 2P
PJ802	0B84028A	Stereo Mini Jack
CN801	0B81464A	7P T- Post
	0J05898B	Earth Plate (1)

— Servo —

U101	0B11819A	IC CXA1082BS
U102	0B11820A	IC CXD1167QZ

Schematic			Schematic			Schematic		
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
U104	0B11854A	IC LA6520	C131	0B40111A	CE 0.47 50V	Q405	0B10371A	TR 2SD1785
L101	0B51369A	Micro Coil 10uH	C132	0B41823A	CML 0.01 50V J	Q406	0B10370A	TR 2SB1258
Q102	0B10107A	TR 2SD1585	C133	0B40078A	CE 100 16V	Q409	0B10370A	TR 2SB1258
Q103	0B10106A	TR 2SB1094	C134,135	0B47117A	CC 0.1 50V Z	Q410,411	0B06100A	TR 2SC945
Q104	0B06066A	TR 2SD471MA	C137	0B47117A	CC 0.1 50V Z	Q420	0B06142A	TR 2SC2240 (GR)
Q105	0B06069A	TR 2SB564MA	C139	0B47117A	CC 0.1 50V Z	ZD401,402	0B12153A	ZD 6.2V B2
Q106	0B06066A	TR 2SD471MA	C141,142	0B47117A	CC 0.1 50V Z	ZD404	0B12171A	ZD 11V B2
Q107	0B06069A	TR 2SB564MA	C145,146	0B47117A	CC 0.1 50V Z	ZD405	0B12201A	ZD 30V B2
Q108	0B06066A	TR 2SD471MA	CN102	0B02244A	7P T-Post	ZD406	0B12165A	ZD 9.1V B2
Q109	0B06069A	TR 2SB564MA	CN104	0B84282A	4P T-Post	D407,408	0B06398A	SiD 1SS176
VR101,102	0B32194A	Semi VR 20K	CN105	0B02242A	4P T-Post	D410	0B12362A	SiD S5566B
VR103	0B32179A	Semi VR 1KB	CN109	0B02233A	2P T-Post	D411,412	0B06398A	SiD 1SS176
R101	0B09729A	RK 150K 1/6W J	CN201	0B81461A	4P T-Post	D413	0B06398A	SiD 1SS176
R102,103	0B09661A	RK 220 1/6W J	CN204	0B81463A	6P T-Post	D420,421	0B12362A	SiD S5566B
R104,105	0B09661A	RK 220 1/6W J	CN205	0B81465A	8P T-Post	D422,423	0B12362A	SiD S5566B
R106	0B09717A	RK 47K 1/6W J	CN6	0B84283A	4P T-Post	D424,425	0B12362A	SiD S5566B
R107,108	0B09661A	RK 220 1/6W J	— MPU Control —			D426,427	0B12362A	SiD S5566B
R109	0B09725A	RK 100K 1/6W J	U501	0B11937A	IC uPD75108CW-C46	D428,429	0B12362A	SiD S5566B
R110	0B09701A	RK 10K 1/6W J	U503	0B11852A	IC LC3517BSL-15	D430,431	0B12362A	SiD S5566B
R113	0B09689A	RK 3.3K 1/6W J	U505	0B11856A	IC uPD75216ACW	R407	0B09689A	RK 3.3K 1/6W J
R114	0B09725A	RK 100K 1/6W J	Q502,503	0B10068A	TR DTC114ES	R408	0B09701A	RK 10K 1/6W J
R115	0B09742A	RK 510K 1/6W J	Q504	0B10062A	TR DTC144ES	R409	0B09709A	RK 22K 1/6W J
R116	0B25387A	RM 100K 1/4W F	Q505	0B10058A	TR DTA114ES	R410,411	0B09653A	RK 100 1/6W J
R118	0B09725A	RK 100K 1/6W J	D432	0B06398A	SiD 1SS176	R413,414	0B24274A	Fuse Resistor 2.2
R119	0B09735A	RK 270K 1/6W J	D501,502	0B06398A	SiD 1SS176	R415	0B09749A	RK 1M 1/6W J
R120	0B09713A	RK 33K 1/6W J	D504	0B06398A	SiD 1SS176	R416	0B09701A	RK 10K 1/6W J
R128	0B09677A	RK 1K 1/6W J	D512	0B06398A	SiD 1SS176	R417	0B09749A	RK 1M 1/6W J
R129	0B25387A	RM 100K 1/4W F	X501,502	0B92033A	X'tal 4.0MHz	R418	0B09701A	RK 10K 1/6W J
R130	0B09701A	RK 10K 1/6W J	L501,502	0B51369A	Micro Coil 10uH	R419	0B09717A	RK 47K 1/6W J
R131	0B09708A	RK 20K 1/6W J	L503	0B51369A	Micro Coil 10uH	R420	0B09693A	RK 4.7K 1/6W J
R132	0B09749A	RK 1M 1/6W J	RA501	0B21083A	R Network 4.7Kx6	R421	0B09701A	RK 10K 1/6W J
R133	0B09725A	RK 100K 1/6W J	RA502	0B21086A	R Network 10Kx8	R422	0B09701A	RK 10K 1/6W J
R134	0B09727A	RK 120K 1/6W J	RA503	0B21084A	R Network 10Kx4	R423	0B09749A	RK 1M 1/6W J
R135	0B25666A	RM 3.6K 1/4W F	RA504	0B21086A	R Network 10Kx8	R424	0B09701A	RK 10K 1/6W J
R136	0B09701A	RK 10K 1/6W J	RA505	0B21086A	R Network 10Kx8	R425	0B09717A	RK 47K 1/6W J
R137,138	0B09653A	RK 100 1/6W J	RA506	0B21084A	R Network 10Kx4	R426	0B09693A	RK 4.7K 1/6W J
R139	0B09653A	RK 100 1/6W J	RA507	0B21085A	R Network 10Kx6	R427,428	0B20525A	RK 510 1/6W J
R140	0B09729A	RK 150K 1/6W J	RA508	0B21088A	R Network 47Kx10	R429,430	0B20525A	RK 510 1/6W J
R141	0B09621A	RK 4.7 1/6W J	RA509	0B21089A	R Network 47Kx13	R440	0B09703A	RK 12K 1/6W J
R142,143	0B09725A	RK 100K 1/6W J	RA510	0B21084A	R Network 10Kx4	R441	0B09702A	RK 11K 1/6W J
R144	0B09731A	RK 180K 1/6W J	R501	0B09717A	RK 47K 1/6W J	R442	0B09677A	RK 1K 1/6W J
R145	0B09621A	RK 4.7 1/6W J	R502	0B09717A	RK 47K 1/6W J	C401,402	0B40079A	CE 220 16V
R146,147	0B09725A	RK 100K 1/6W J	R504	0B09713A	RK 33K 1/6W J	C403,404	0B40064A	CE 220 10V
R149	0B09731A	RK 180K 1/6W J	R506	0B09717A	RK 47K 1/6W J	C405,406	0B40064A	CE 220 10V
R150	0B09729A	RK 150K 1/6W J	R507	0B09697A	RK 6.8K 1/6W J	C408	0B40079A	CE 220 16V
R151	0B09621A	RK 4.7 1/6W J	R509	0B09701A	RK 10K 1/6W J	C409,410	0B40096A	CE 2200 25V
R152,153	0B09725A	RK 100K 1/6W J	R516	0B09677A	RK 1K 1/6W J	C411,412	0B40096A	CE 2200 25V
R155,156	0B09729A	RK 150K 1/6W J	R517	0B09701A	RK 10K 1/6W J	C417	0B41553A	CC 0.01 25V Z
R157	0B09737A	RK 330K 1/6W J	R520,521	0B09701A	RK 10K 1/6W J	C418	0B40120A	CE 100 50V
R170	0B09653A	RK 100 1/6W J	R522	0B09701A	RK 10K 1/6W J	C419	0B40112A	CE 1 50V
R171,172	0B09677A	RK 1K 1/6W J	R523	0B09669A	RK 470 1/6W J	C420	0B40133A	CE 330 63V
C101	0B41885A	CC 220P 50V J	C501	0B40078A	CE 100 16V	C426,427	0B40082A	CE 1000 16V
C102	0B41823A	CML 0.01 50V J	C504,505	0B40074A	CE 10 16V	C428	0B47117A	CC 0.1 50V Z
C103,104	0B41278A	CML 2200P 50V J	C506	0B40078A	CE 100 16V	C429	0B40112A	CE 1 50V
C105	0B40074A	CE 10 16V	C507,508	0B47117A	CC 0.1 50V Z	C430	0B40085A	CE 4700 16V
C106	0B41283A	CML 5600P 50V J	JW501	0B82085B	Ribbon Cable 4P 250	C431	0B40082A	CE 1000 16V
C107	0B41298A	CML 0.1 50V J	JW502	0B82330A	Ribbon Cable 4P 320	C436	0B40082A	CE 1000 16V
C108	0B41294A	CML 0.047 50V J	CN502	0B81465A	8P T-Post	C437	0B41300A	CML 0.15 50V J
C109	0B41298A	CML 0.1 50V J	CN503	0B84086A	11P T-Post	C438	0B41823A	CML 0.01 50V J
C110	0B47117A	CC 0.1 50V Z	CN504	0B84294A	8P T-Post	C439,440	0B41944A	CC 1000P 50V K
C111	0B40115A	CE 4.7 50V	CN505	0B84296A	8P T-Post	C441,442	0B41944A	CC 1000P 50V K
C112	0B40076A	CE 33 16V	CN7	0B84085A	10P T-Post	C443,444	0B41944A	CC 1000P 50V K
C113	0B41823A	CML 0.01 50V J	— Power Supply —			CN402	0B84315A	4P T-Post
C115	0B40076A	CE 33 16V	U401	0B11753A	IC NJM7805FA	CN403	0B84317A	6P T-Post
C116	0B47117A	CC 0.1 50V Z	U402	0B11754A	IC NJM7905FA	— Miscellaneous —		
C118	0B09163A	CE 10 16V (BP)	U403	0B11611A	IC TC4584BP	0B60821B	Main P.C.B.	
C119	0B41298A	CML 0.1 50V J	IP401,402	0B11248A	ICP 0.25A ICP-N5-T104			
C122	0B47117A	CC 0.1 50V Z	IP403,404	0B11248A	ICP 0.25A ICP-N5-T104			
C123	0B41974A	CC 100P 50V J	IP405	0B11248A	ICP 0.25A ICP-N5-T104			
C124	0B41944A	CC 1000P 50V K	Q401	0B10371A	TR 2SD1785			
C125	0B40112A	CE 1 50V	Q402	0B10370A	TR 2SB1258			
C126	0B40078A	CE 100 16V						
C127	0B41274A	CML 1000P 50V J						
C128	0B40074A	CE 10 16V						
C130	0B41292A	CML 0.033 50V J						

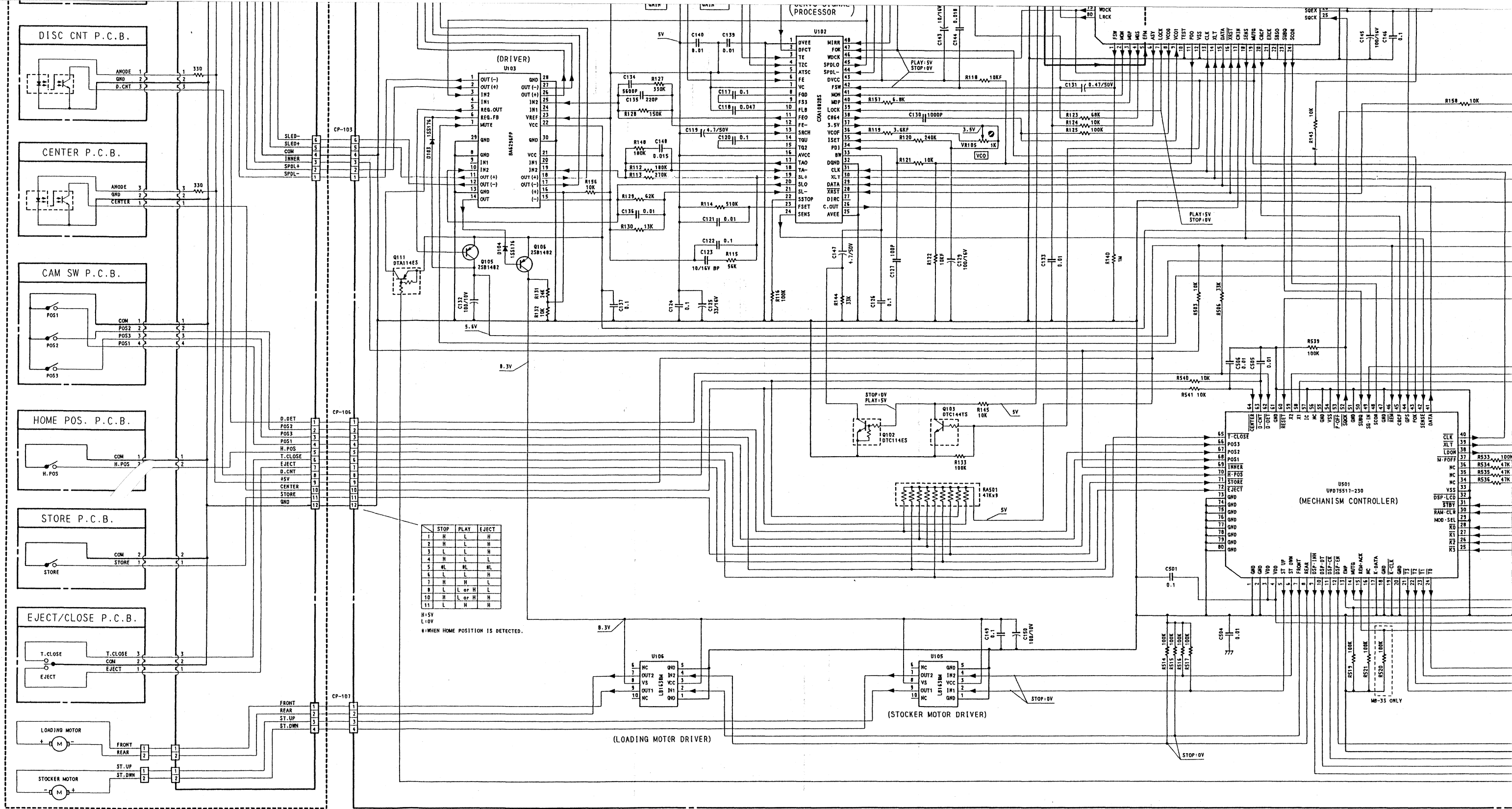
# 5. SCHEMATIC DIAGRAM



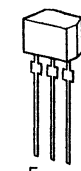
- NOTES:**
1. Diode is 1SS176, 1SS53, or 1S1555 unless otherwise specified.
  2. Description of electrolytic capacitor: 100/16V = 100µ 16V



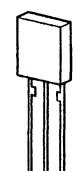




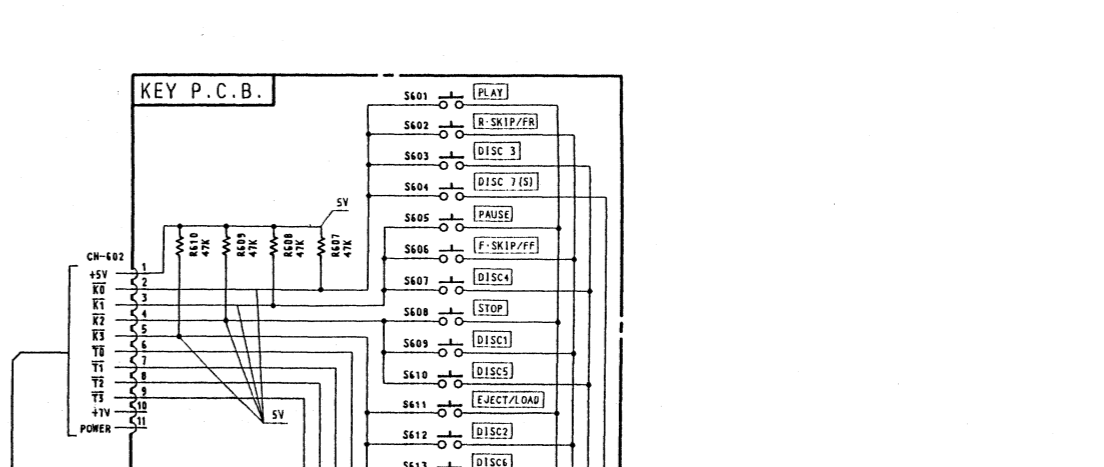
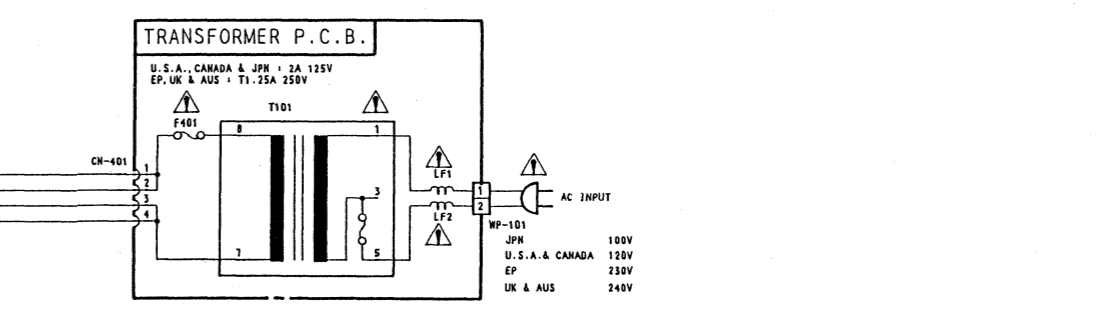
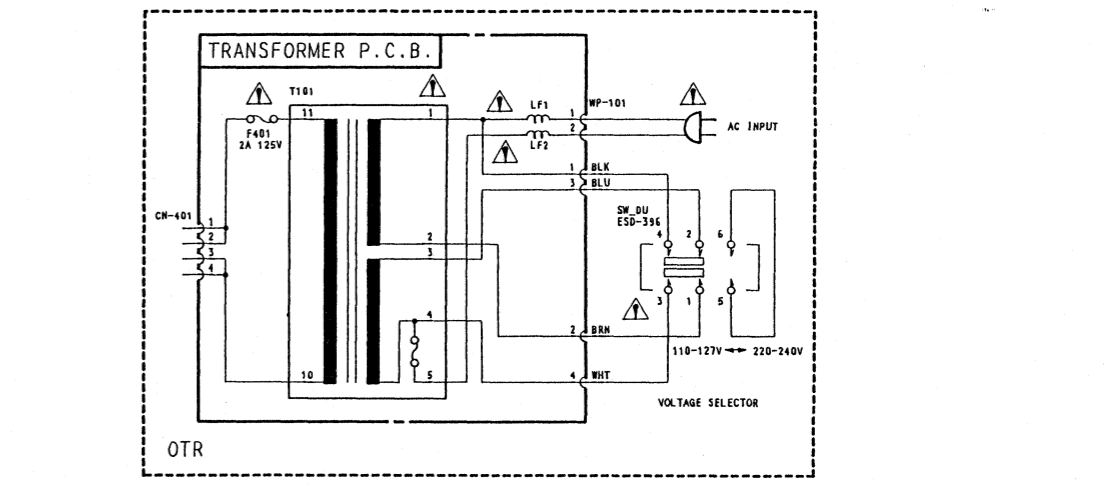
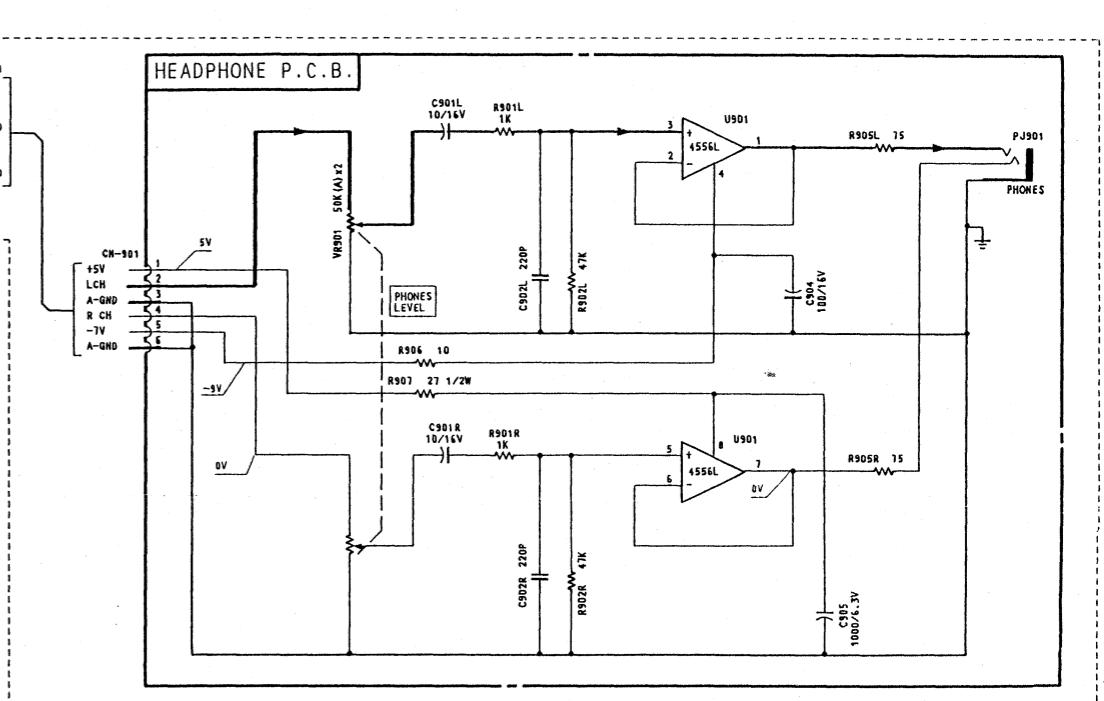
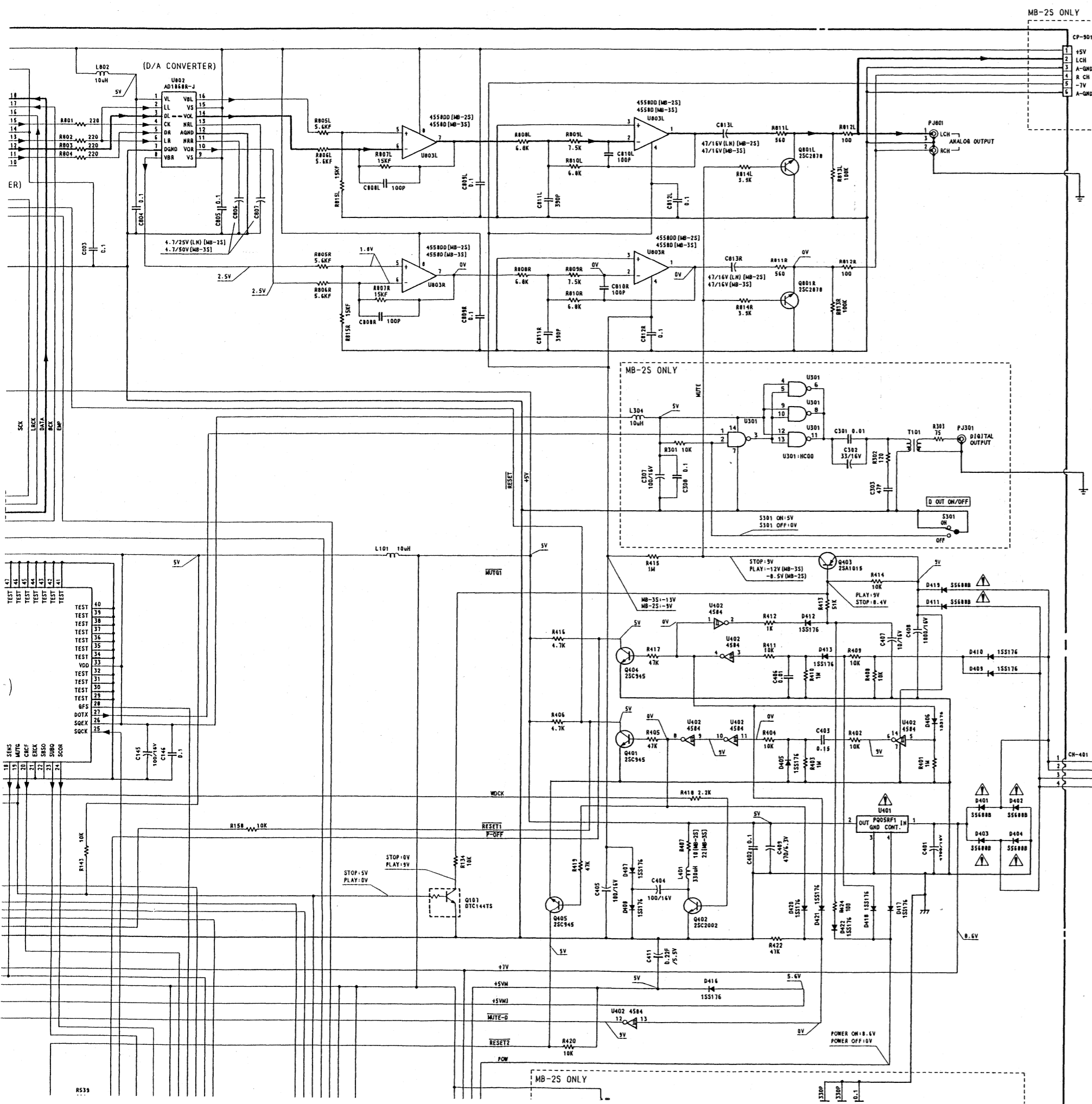
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2SC945  
2SC2002  
2SC2878

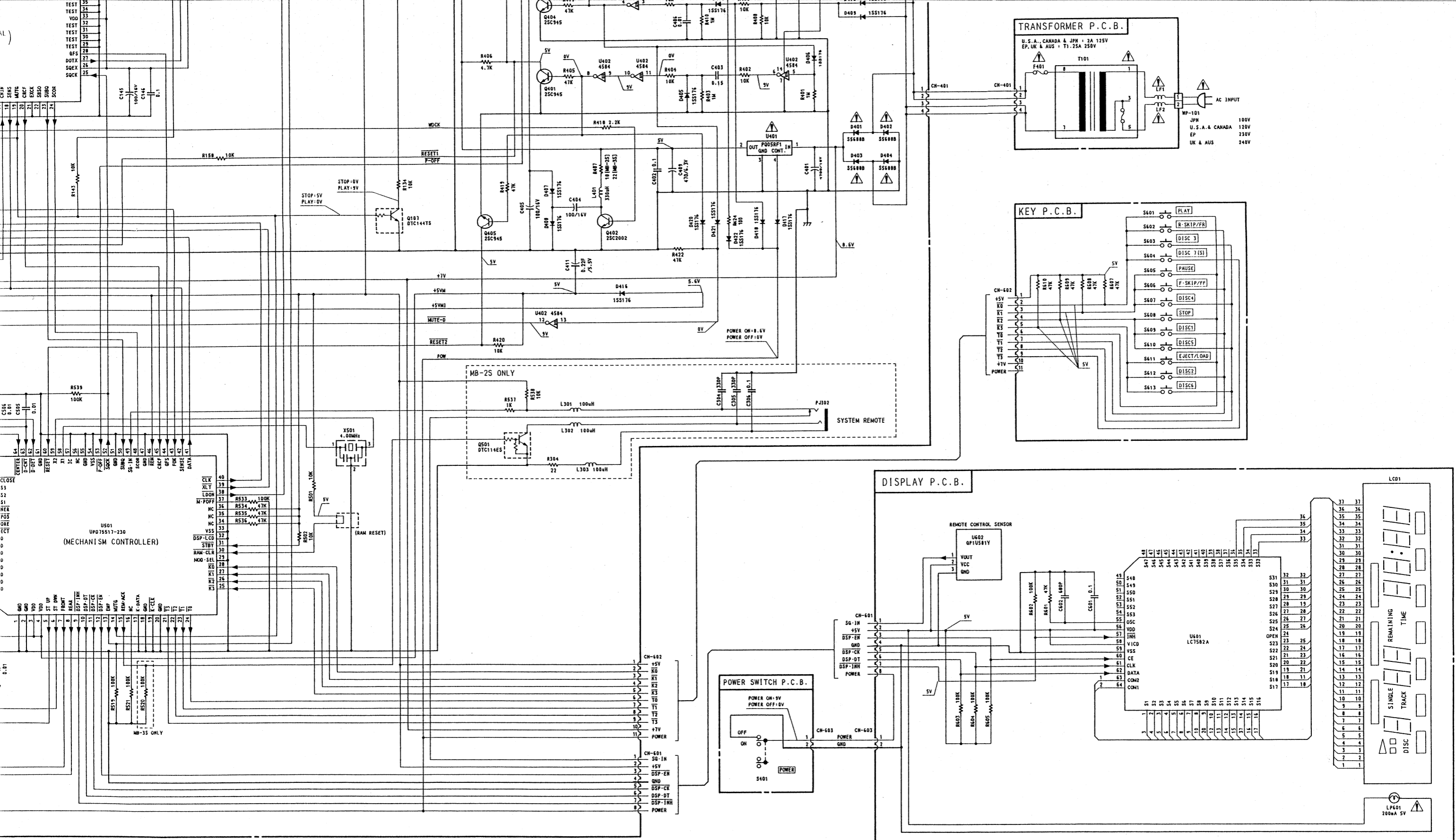


DTA114ES  
DTC114ES  
DTC144TS




2SB1482





**NOTES:** 1. Diode is 1SS176, 1SS53, or 1S1555 unless otherwise specified.  
 2. Description of electrolytic capacitor: 100/16V = 100µ 16V

**WARNING**  Parts marked with the symbol in the schematic diagram have critical characteristics. Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.