

# CDP-C67ES/C615

## SERVICE MANUAL



Photo: CDP-C67ES

US Model

CDP-C67ES/C615

Canadian Model

AEP Model

E Model

Australian Model

CDP-C615

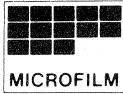
Model Name Using Similar Mechanism	CDP-C312M
CD Mechanism Type	CDM16E2-5BD3
Optical Pick-Up Block Type	BU-5BD3

### SPECIFICATIONS

System	Compact disc digital audio system	DIGITAL OUT (OPTICAL) (optical output connector)	Wave length 660 nm Output level -18 dBm
Laser	Semiconductor laser ( $\lambda = 780$ nm)	HEADPHONES (stereo phone jack)	Output level max. 15 mW Load impedance 32 ohms
Laser output	Emission duration: continuous Max. 44.6 $\mu$ W*		
	* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.		
Frequency response	2 Hz - 20 kHz ( $\pm 0.5$ dB)	<b>General</b>	US and Canadian model: 120 V AC, 60 Hz
Signal to noise ratio	More than 110 dB (C67ES) More than 100 dB (C615)	Power requirements	Australian model: 240 V AC, 50/60 Hz
Dynamic range	More than 100 dB (C67ES) More than 98 dB (C615)		AEP model: 220-230 V AC, 50/60 Hz
Harmonic distortion	Less than 0.0025% (1 kHz) (C67ES) Less than 0.004% (1 kHz) (C615)		E model: 110-120 V, 220-240 V, 50/60 Hz
Channel separation	More than 105 dB (1 kHz) (C67ES) More than 100 dB (1 kHz) (C615)	Power consumption	13 W
Wow and flutter	Below measurable limit	Dimensions	Approx. 430 × 125 × 385 mm (w/h/d) (17 × 5 × 15 $\frac{1}{4}$ inches) not including projecting parts and controls
<b>Outputs</b>		Weight	Approx. 7 kg (15 lbs 7 oz), net (C67ES) Approx. 6 kg (13 lbs 4 oz), net (C615)
LINE OUT (FIXED) (phone jacks)	Output level 2 V (at 50 kilohms) Load impedance over 10 kilohms		
LINE OUT (VARIABLE) (phono jacks)	Output level max. 2 V (at 50 kilohms) Load impedance over 10 kilohms		

- Continued on next page -

**COMPACT DISK PLAYER**  
**SONY**®



MICROFILM

Remote commander RM-D615  
 Remote control system Infrared control  
 Power requirements 3 V DC with two batteries size AA  
 (IEC designation R6)

**Supplied accessories**

Connecting cord (1)  
 (2 phono plugs ↔ 2 phono plugs)  
 Remote commander (1)  
 Size AA batteries (2)  
 Operating Manual (1)

**Optional accessory**

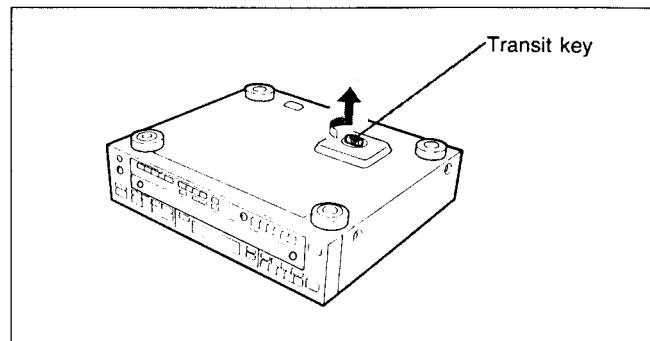
Audio Optical connecting cord POC-15

Design and specifications subject to change without notice.

**Note on the Transit Key**

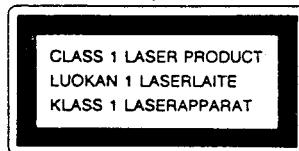
The transit key on the bottom exterior of the unit protects the optical system against shock during transportation. Before operating the CD player, be sure to remove the key by following the instructions on the label, and store it in a safe place.

When transporting the unit, replace the key in its original hole and lock it in place.

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For the European countries



This Compact Disc player is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT label is located on the rear exterior.

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

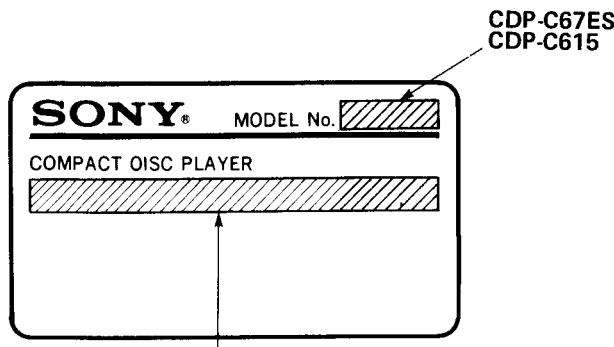
LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

**SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

**MODEL IDENTIFICATION**

—Model Number Label—



US, Canadian model: AC: 120V 60Hz

AEP model: AC: 220-230V~50/60Hz

Australian model: AC: 240V~50/60Hz

E model: AC: 110-120V, 220-240V~50/60Hz

**NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT**

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

**NOTES ON LASER DIODE EMISSION CHECK**

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30cm away from the objective lens.

**SAFETY CHECK-OUT**

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

**LEAKAGE TEST**

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

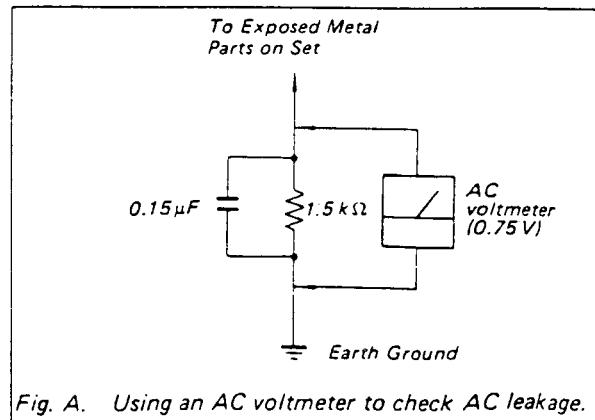


Fig. A. Using an AC voltmeter to check AC leakage.

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### 1. Laser Diode Properties

- Material: GaAlAs
- Wavelength: 780 nm
- Emission Duration: continuous
- Laser Output Power: less than 44.6  $\mu$ W\*

\* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.

2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optical Pick-up Block (including APC board).

## BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

I dette apparat anvendes laserlys. Derfor skal nedenstående instruktioner nøje følges under service.

Følg iøvrigt instruktionerne i servicemanualen.

### ADVARSEL!!

**Under service må øjnene ikke komme nær objektiv-linsen på den optiske pick-up enhed. I tilfælde af at det er nødvendigt at kontrollere udsendelsen af laserlys, skal det ske i en afstand af mere end 25 cm fra den optiske pick-up.**

### 1. Laser-didoe data

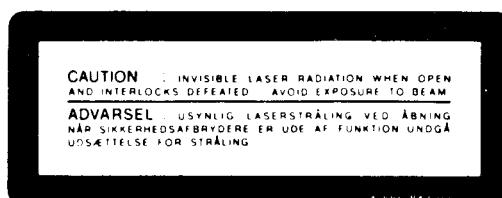
- Materiale: GaAlAs
  - Bølgelængde: 780 nm
  - Udstraling: Kontinuerlig
  - Laseroutput: Max. 0,4 mW\*
- \* Målt i 1,6 mm afstand fra overfladen af objektiv-linsen på den optiske pick-up enhed.
- Klassifikation: Klasse IIIb.

2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laserdioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

## LASER ADVARSEL MÆRKNING

Følgende mærkning findes indvendig i apparatet:

### 1. Advarsel Mærkning

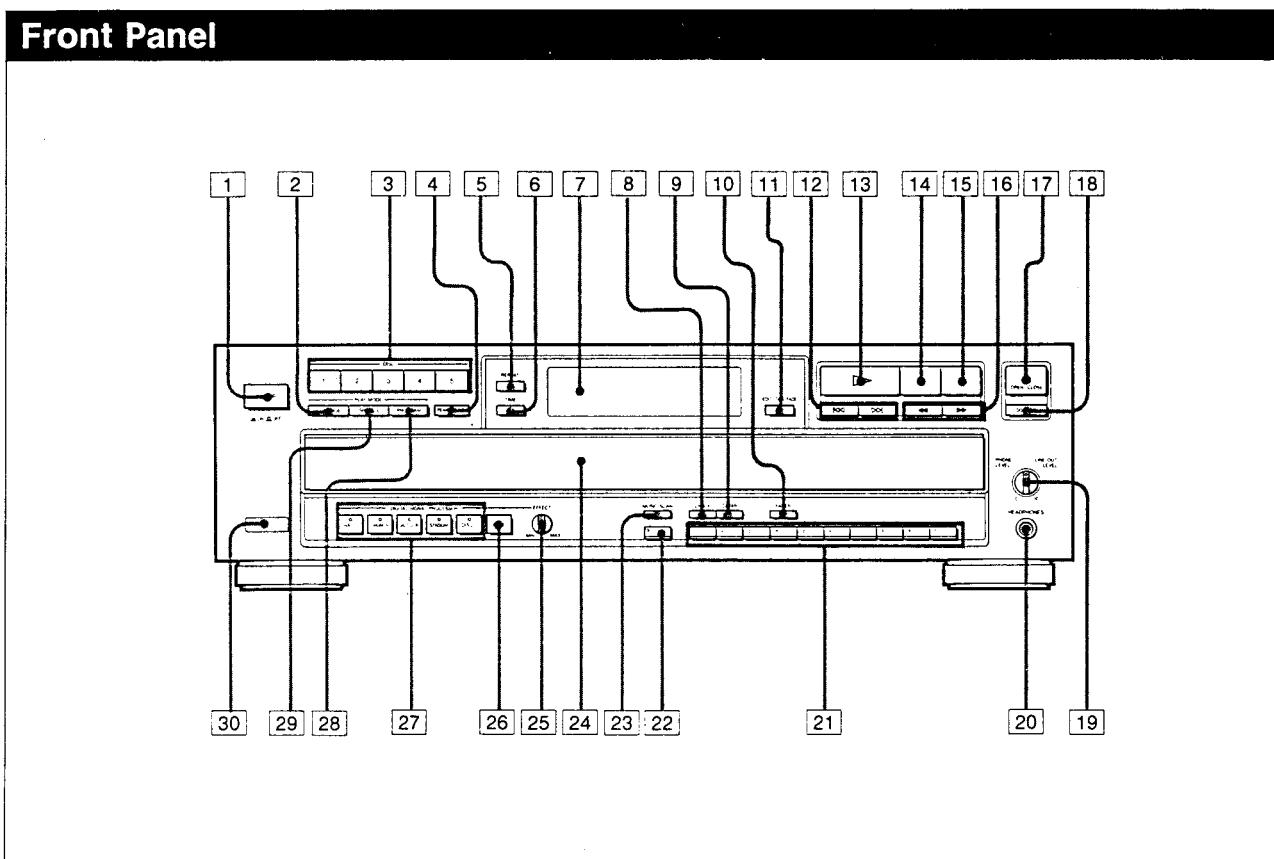


**VAROITUS:** Laite sisältää, laserdiodin, joka lähtää (näkymätöntä) silmille vaarallista lasersateilyä.

## SECTION 1

### GENERAL

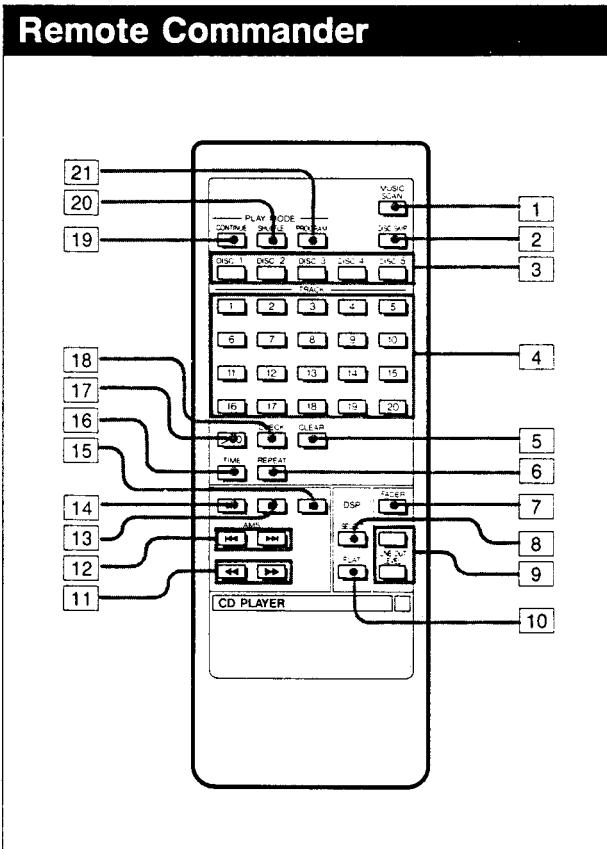
#### 1-1. LOCATION OF CONTROLS



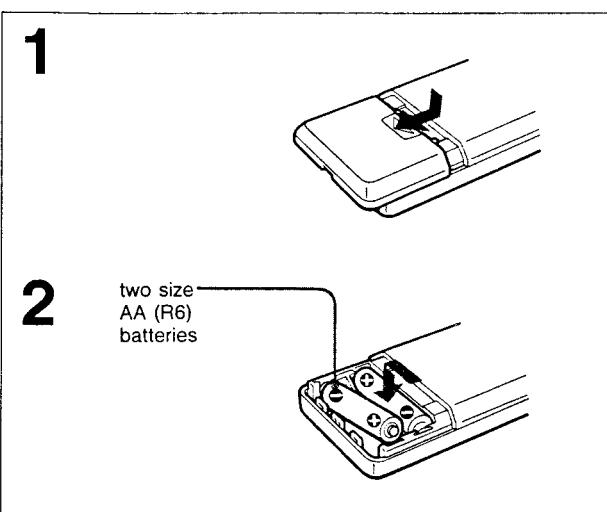
- 1 POWER switch
- 2 CONTINUE button
- 3 DISC 1-5 buttons
- 4 PEAK SEARCH button
- 5 REPEAT button
- 6 TIME button
- 7 Display window
- 8 CHECK (program check) button
- 9 CLEAR (program clear) button
- 10 FADER button
- 11 EDIT/TIME FADE button
- 12  $\blacktriangleleft/\triangleright$  (AMS\*) buttons
- 13  $\triangleright$  (play) button
- 14  $\blacksquare$  (pause) button
- 15  $\blacksquare$  (stop) button
- 16  $\blacktriangleleft/\triangleright$  (manual search) buttons

- 17  $\blacktriangle$  OPEN/CLOSE button
- 18 DISC SKIP button
- 19 LINE OUT/PHONE LEVEL control
- 20 HEADPHONES jack
- 21 Numeric buttons (1-10)
- 22  $> 10$  (over 10) button
- 23 MUSIC SCAN button
- 24 Disc tray
- 25 DIGITAL SIGNAL PROCESSOR EFFECT level control
- 26 DIGITAL SIGNAL PROCESSOR FLAT button
- 27 DIGITAL SIGNAL PROCESSOR mode select buttons
- 28 PROGRAM button
- 29 SHUFFLE button
- 30 Remote sensor

\* AMS is the abbreviation of Automatic Music Sensor.

**Remote Commander**

- 1 MUSIC SCAN button
- 2 DISC SKIP button
- 3 DISC 1-5 buttons
- 4 Numeric buttons
- 5 CLEAR (program clear) button
- 6 REPEAT button
- 7 FADER button
- 8 DSP SELECT button
- 9 LINE OUT LEVEL buttons
- 10 DSP FLAT button
- 11 <▶▶ (manual search) buttons
- 12 ▲◀▶ (AMS) buttons
- 13 II (pause) button
- 14 ▶ (play) button
- 15 ■ (stop) button
- 16 TIME button
- 17 >20 (over 20) button
- 18 CHECK (program check) button
- 19 CONTINUE button
- 20 SHUFFLE button
- 21 PROGRAM button

**Installing Batteries in the Remote Commander****On battery life**

- About half a year of normal operation can be expected when using the Sony SUM-3(NS) batteries.
- When the batteries are run down, the remote commander will not operate the unit. In this case, replace both batteries with new ones.

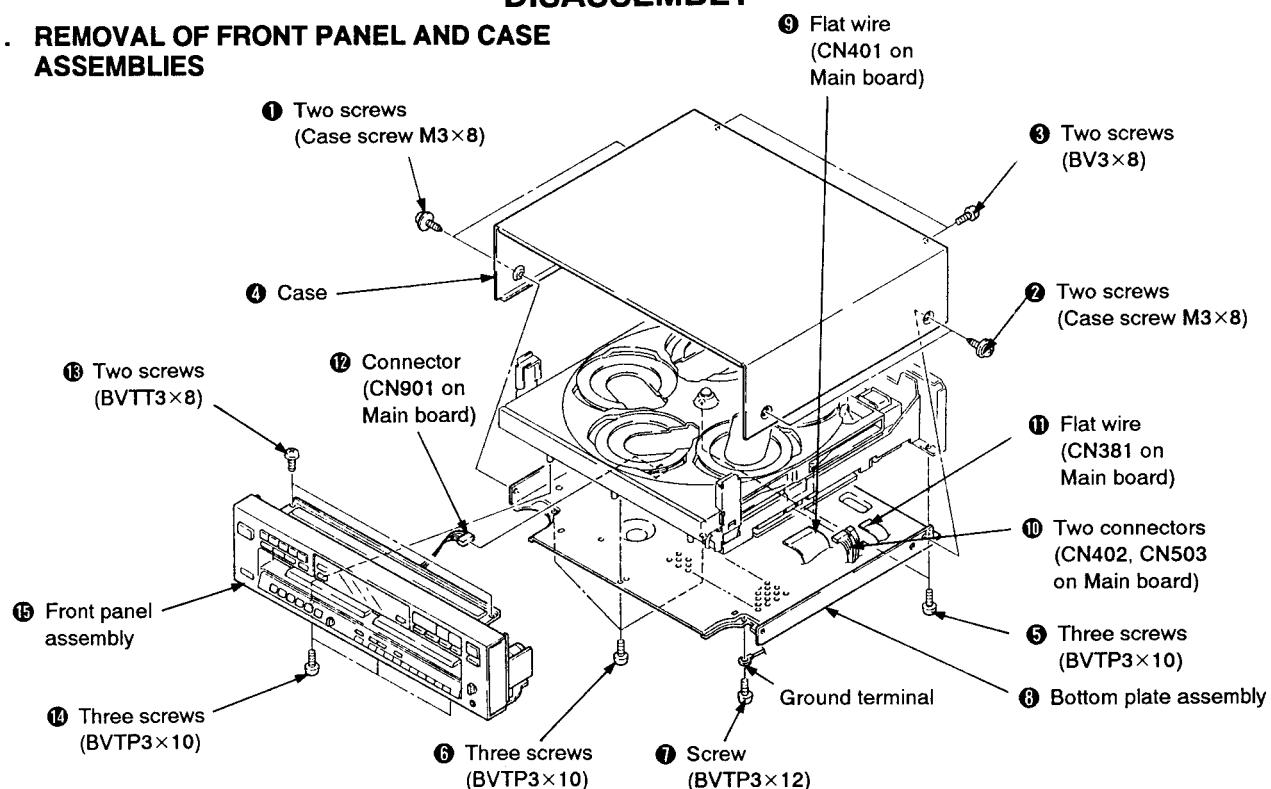
**Notes on the remote commander and remote control operation**

- Keep the commander away from extremely hot or humid places.
- Avoid dropping any foreign objects into the commander casing, particularly when replacing the batteries.
- Avoid exposing the remote sensor to direct sunlight or lighting apparatus. Such exposure can cause a malfunction.
- To avoid damage caused by battery leakage and corrosion, remove the batteries when the commander will not be used for a long time.

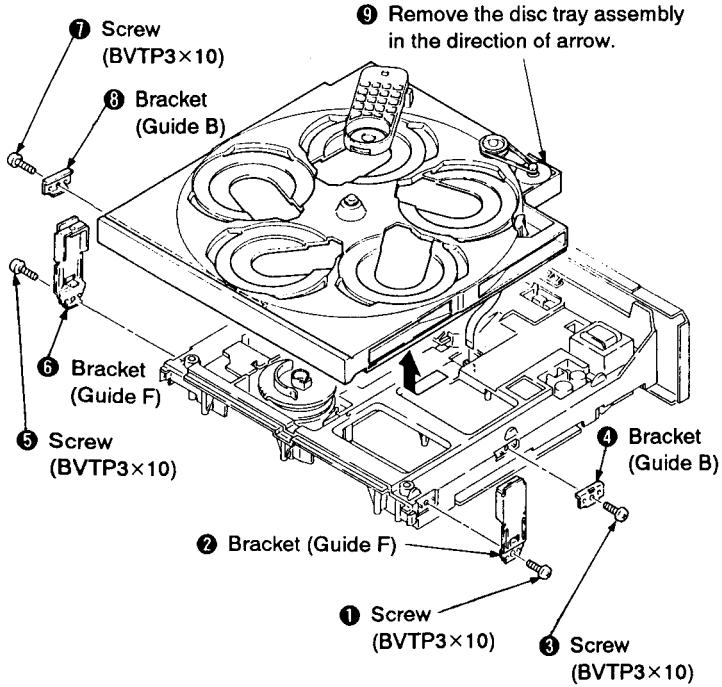
## SECTION 2

### DISASSEMBLY

#### 2-1. REMOVAL OF FRONT PANEL AND CASE ASSEMBLIES

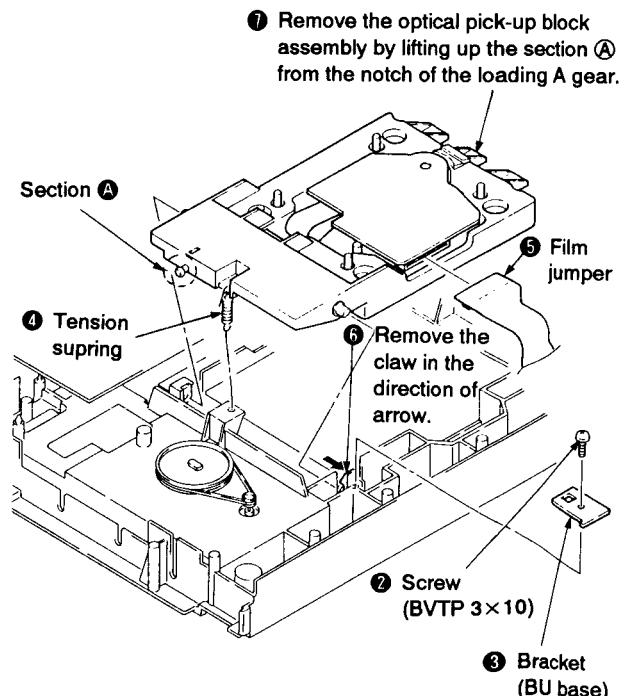


#### 2-2. REMOVAL OF DISC TRAY ASSEMBLY



#### 2-3. REMOVAL OF OPTICAL PICK-UP BLOCK ASSEMBLY

##### 1) Replace the set up side down.



### SECTION 3

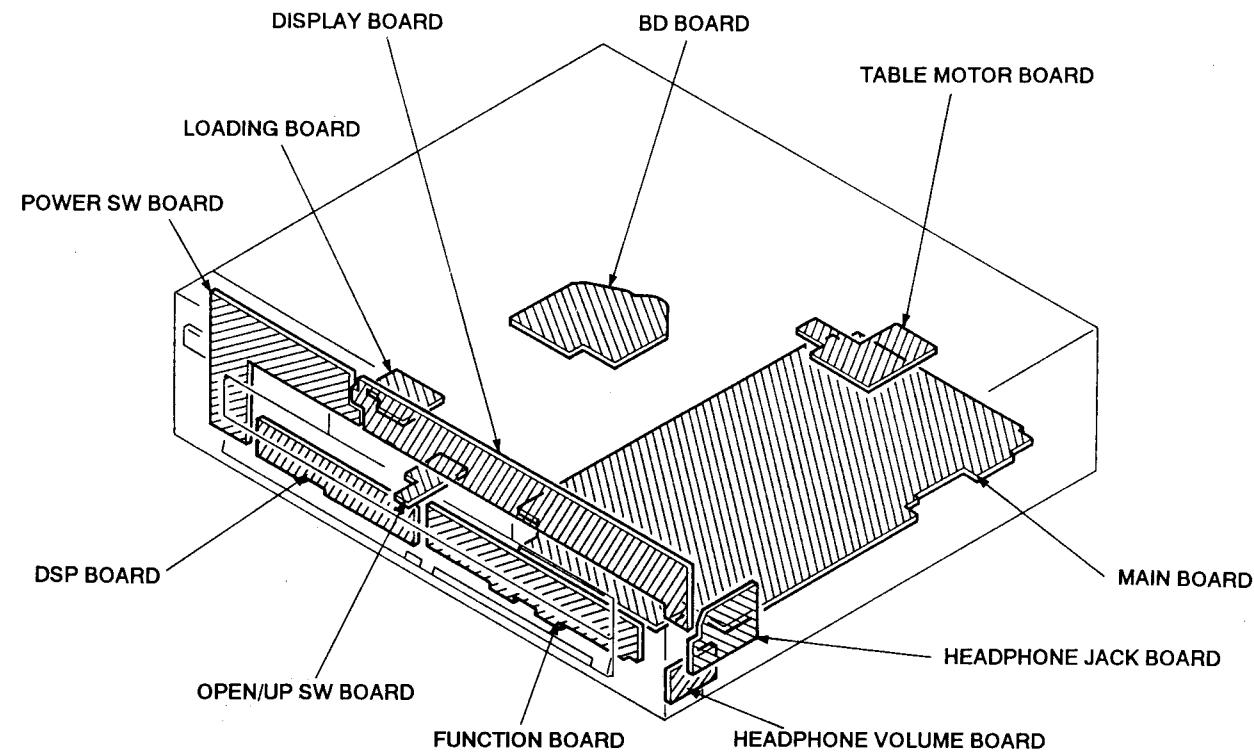
#### IC101 (CXA1372Q) PIN FUNCTION

Pin No.	Pin Name	I/O	Function
1	VC		When $\pm$ power : GND. When signal power : middle point (2.5V)
2	FGD	I	FGD terminal of gain select (time constant) in focus gain normal, down
3	FS3	I	Connecting terminal between FS3 terminals
4	FLB	I	Capacitor connecting terminal for equalizing low-frequency response of focus servo
5	FEO	O	Focus drive output
6	FE-	I	Focus amplifier inverting input
7	SRCH	I	Time constant connecting terminal to create focus search waveform
8	TGU	I	TGU terminal of gain select time constant in tracking gain normal, up
9	TG2	I	Connecting terminal between TG2 terminals
10	AVCC		Analog power (when $\pm$ power : +5V, when single power : +5V)
11	TAO	O	Tracking drive output
12	TA-	I	Tracking amplifier inverting input
13	SL+	I	Sled amplifier non-inverting input
14	SLO	O	Sled drive output
15	SL-	I	Sled amplifier non-inverting input
16	FSET	I	Resistor of 510 k $\Omega$ connecting terminal for phase compensation setting
17	ISET	I	Resistor connecting terminal for current source setting
18	SSTOP	I	Limit switch connecting terminal
19	AVEE		Analog power (when $\pm$ power : -5V, when single power : GND)
20	DIRC	I	Direct control terminal
21	LOCK	I	"L" : sled free-run protector operates
22	CLK	I	Serial data transmission clock input from CPU (or DSP)
23	XLT	I	Latch input from CPU (or DSP)
24	DATA	I	Serial data input from CPU (or DSP)
25	SENS	O	SENS signal output
26	XRST	I	System reset. "L" : reset
27	C. OUT	O	Output for tracking counter
28	DGND		Digital ground (when $\pm$ power : GND, when single power : GND)
29	MIRR	O	Mirror output
30	DFCT	O	Defect output. "H" : when defected
31	ASY	I	Auto asymmetry control input
32	EFM	O	EFM comparator output
33	FOK	O	Focus OK
34	CC2	I	Defect bottom hold input (fed by capacitor coupling)
35	CC1	O	Defect bottom hold output
36	DVCC		Digital power (when $\pm$ power : +5V, when single power : +5V)
37	CB	I	Defect bottom hold capacitor connecting terminal
38	CP	I	Mirror hold capacitor connecting terminal
39	RFI	I	RF signal input (fed by capacitor coupling)
40	RFO	I	RF signal input (fed by DC coupling)
41	DVEE		Digital power (when $\pm$ power : -5V, when single power : GND)
42	TZC	I	Tracking zero-cross comparator input
43	TE	I	Tracking error input
44	TDFCT	I	Hold capacitor connecting terminal against defects
45	ATSC	I	Anti-shock input
46	FZC	I	Focus zero-cross comparator input
47	FE	I	Focus error input
48	FDFCT	I	Hold capacitor connecting terminal against defects

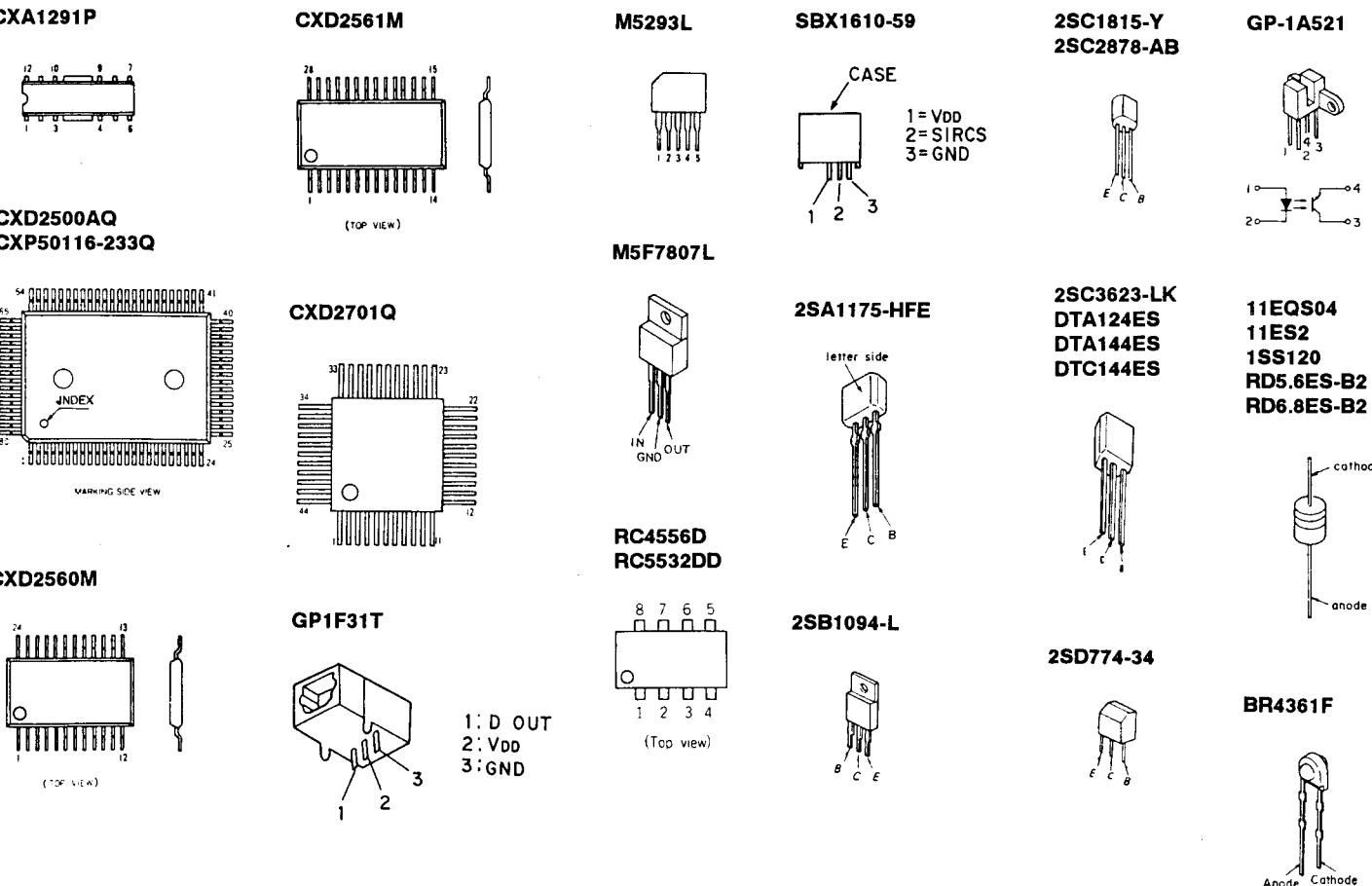


## SECTION 5 DIAGRAMS

### 1. CIRCUIT BOARDS LOCATION

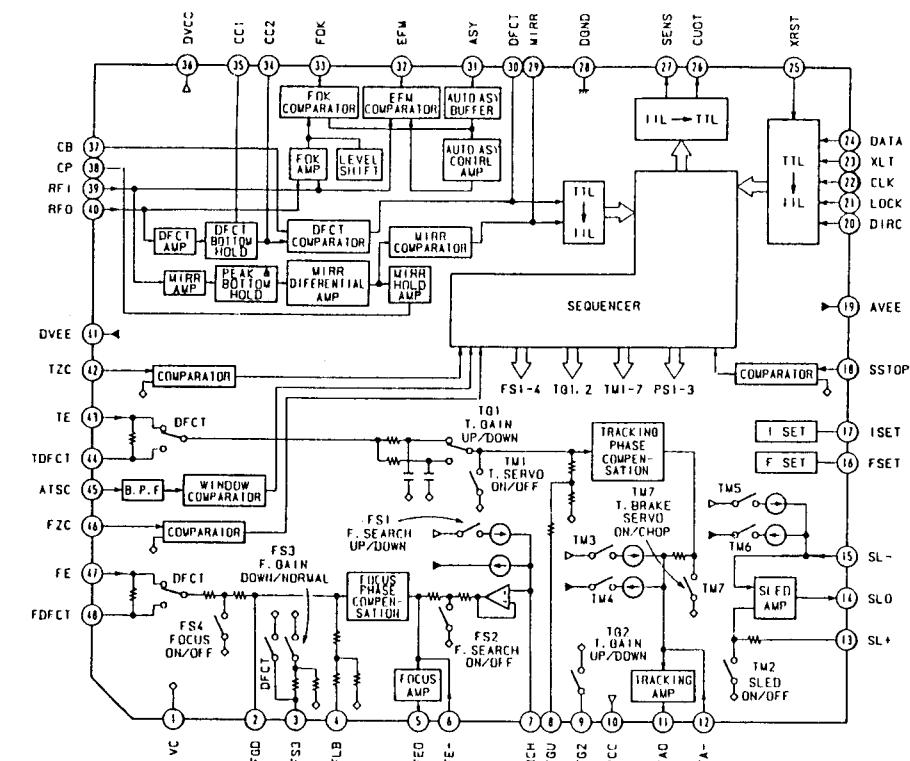


### 2. SEMICONDUCTOR LEAD LAYOUTS

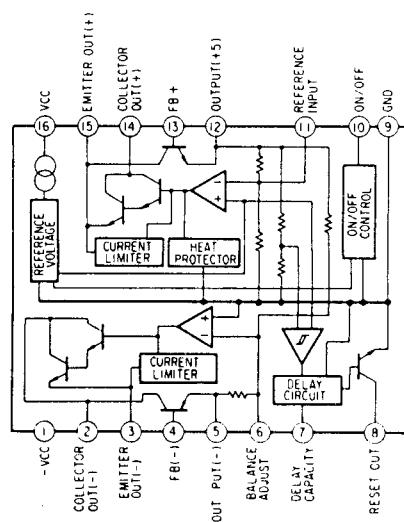


### 5-3. IC BLOCK DIAGRAMS

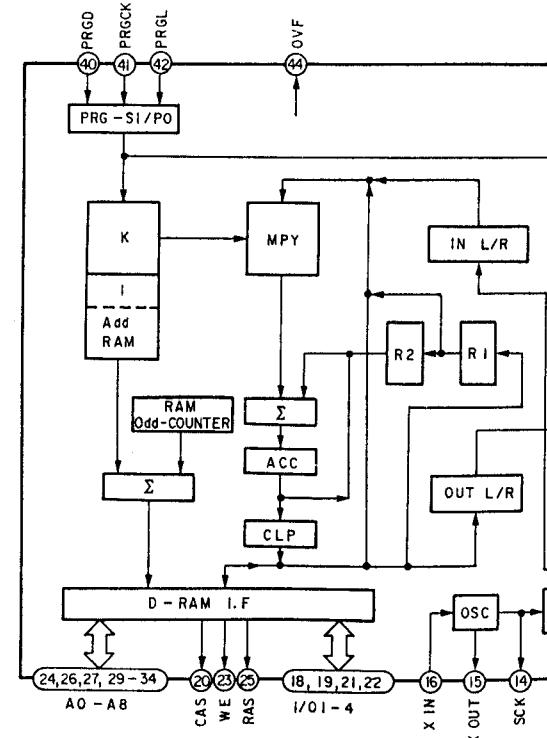
IC101 CXA1372Q



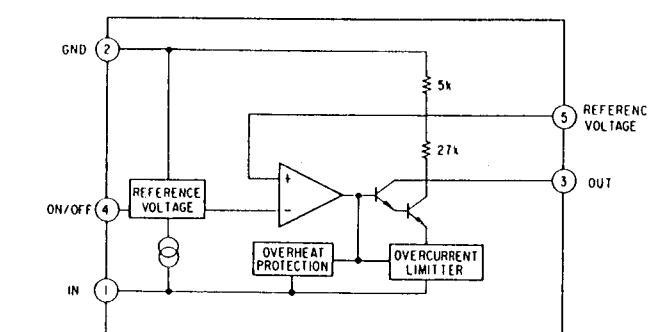
IC202 M5290P-16



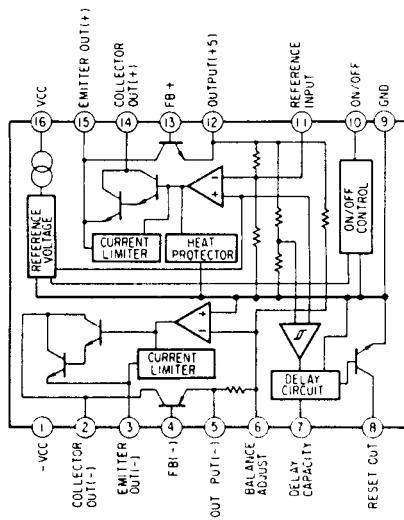
IC901 CXD2701Q



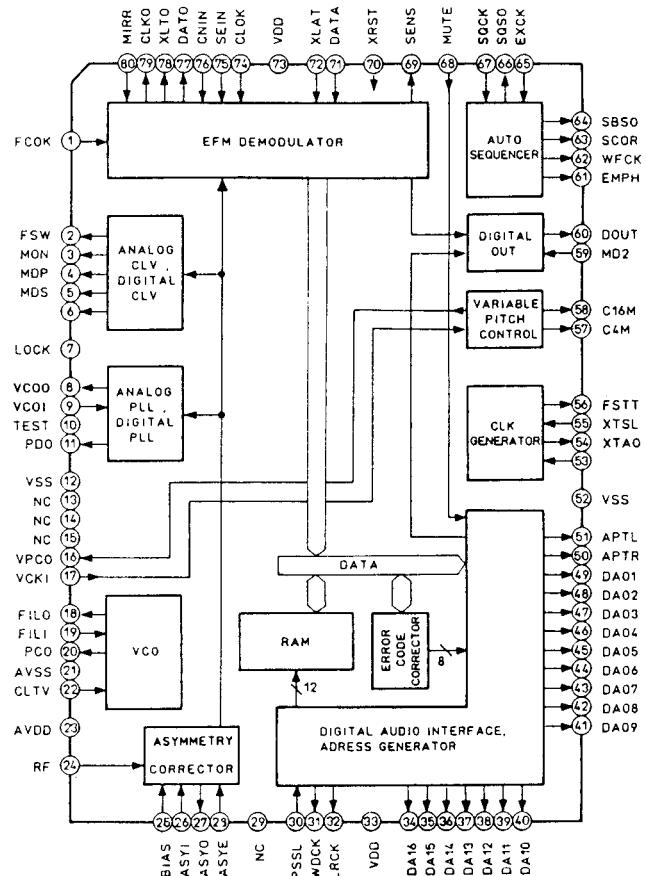
IC201 M5293L



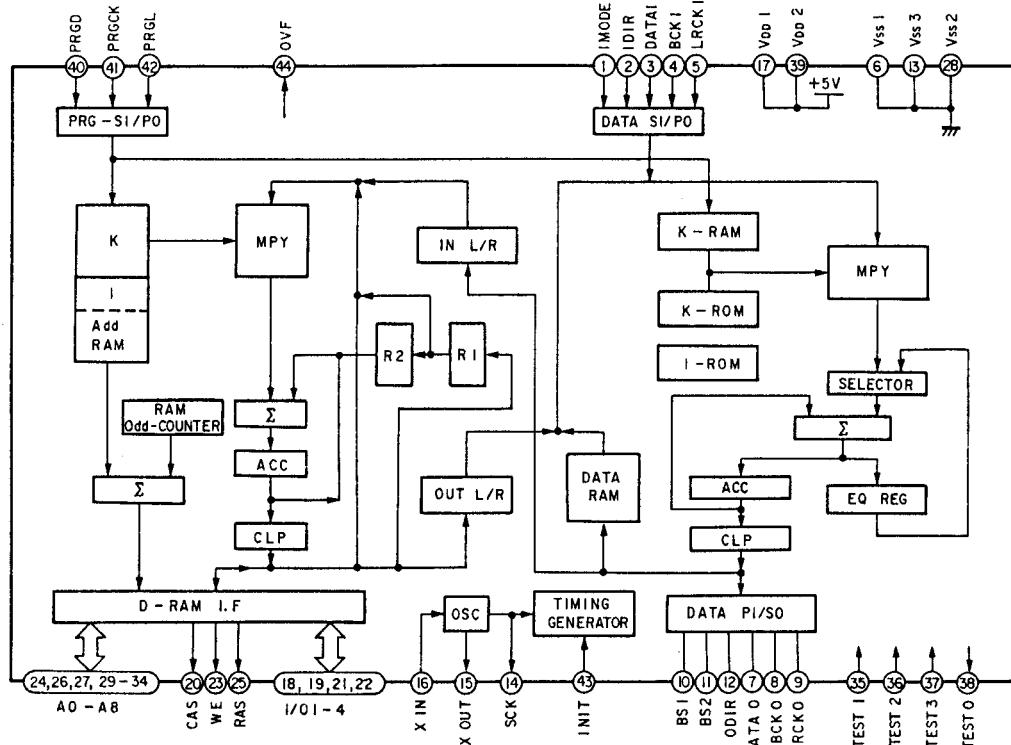
IC202 M5290P-16



IC301 CXD2500Q



IC901 CXD2701Q

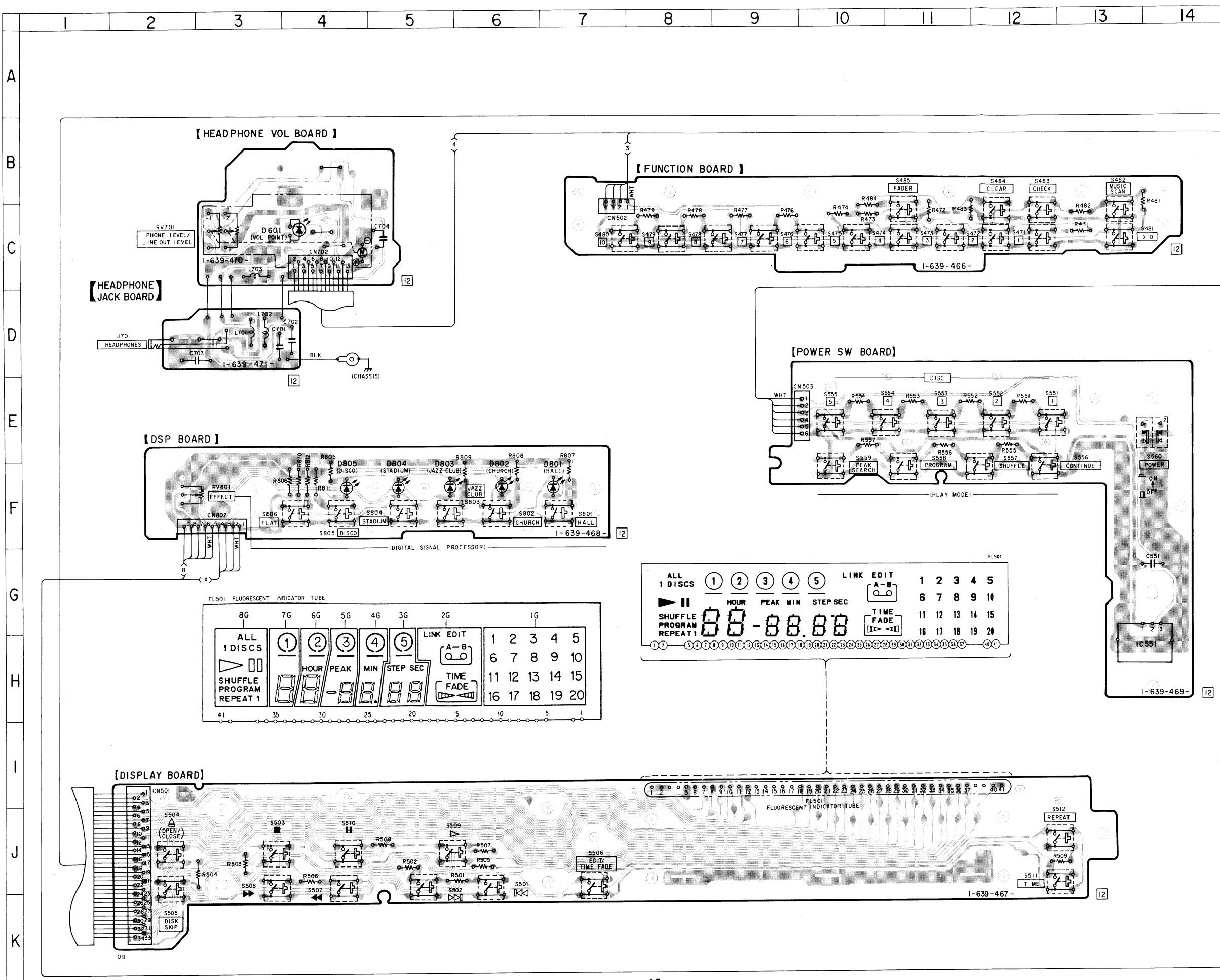


## 5-4. PRINTED WIRING BOARDS

- Refer to page 11 for Semiconductor Lead Layouts.

## • Semiconductor Location

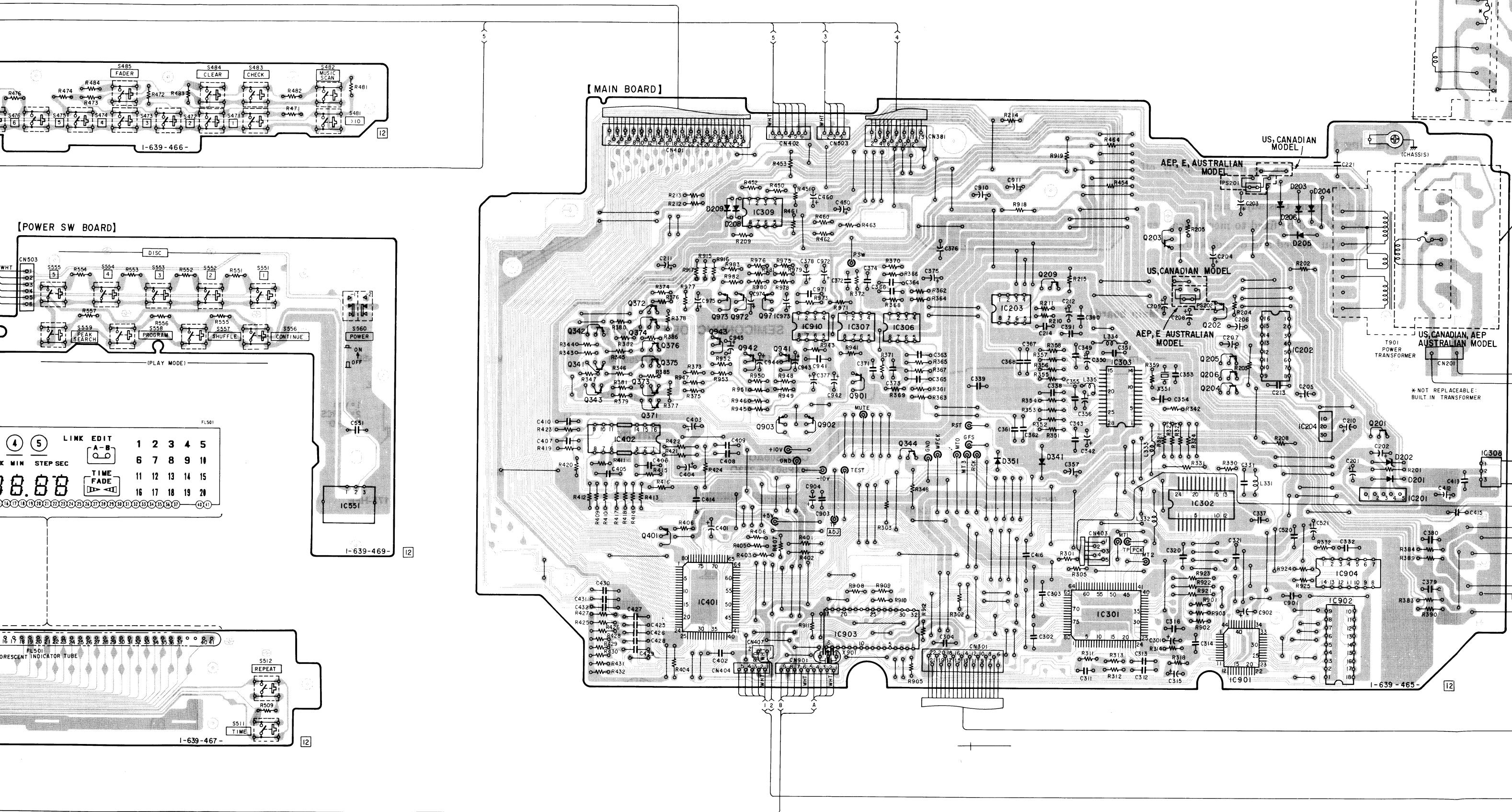
Ref. No.	Location
D201	H-26
D202	G-26
D203	D-25
D204	D-25
D205	E-25
D206	D-25
D208	D-18
D209	D-18
D341	G-22
D351	G-21
D601	C-4
D701	I-32
D801	F-7
D802	F-6
D803	F-5
D804	F-5
D805	F-4
IC101	E-30
IC102	D-30
IC201	H-26
IC202	F-25
IC203	F-22
IC204	G-25
IC301	I-23
IC302	H-24
IC303	G-23
IC306	F-20
IC307	F-20
IC308	H-27
IC309	D-19
IC401	I-18
IC402	G-17
IC551	H-13
IC901	J-24
IC902	I-26
IC903	J-20
IC904	I-26
IC910	F-19
Q101	F-31
Q201	G-26
Q202	F-24
Q203	E-23
Q204	G-24
Q205	F-24
Q206	F-24
Q209	E-22
Q341	F-16
Q342	F-16
Q343	G-16
Q344	G-20
Q371	G-17
Q372	F-17
Q373	G-17
Q374	F-17
Q375	F-17
Q376	F-17
Q401	H-17
Q901	G-20
Q902	G-19
Q903	G-19
Q941	F-19
Q942	F-18
Q943	F-18
Q971	F-19
Q972	F-18
Q973	F-18

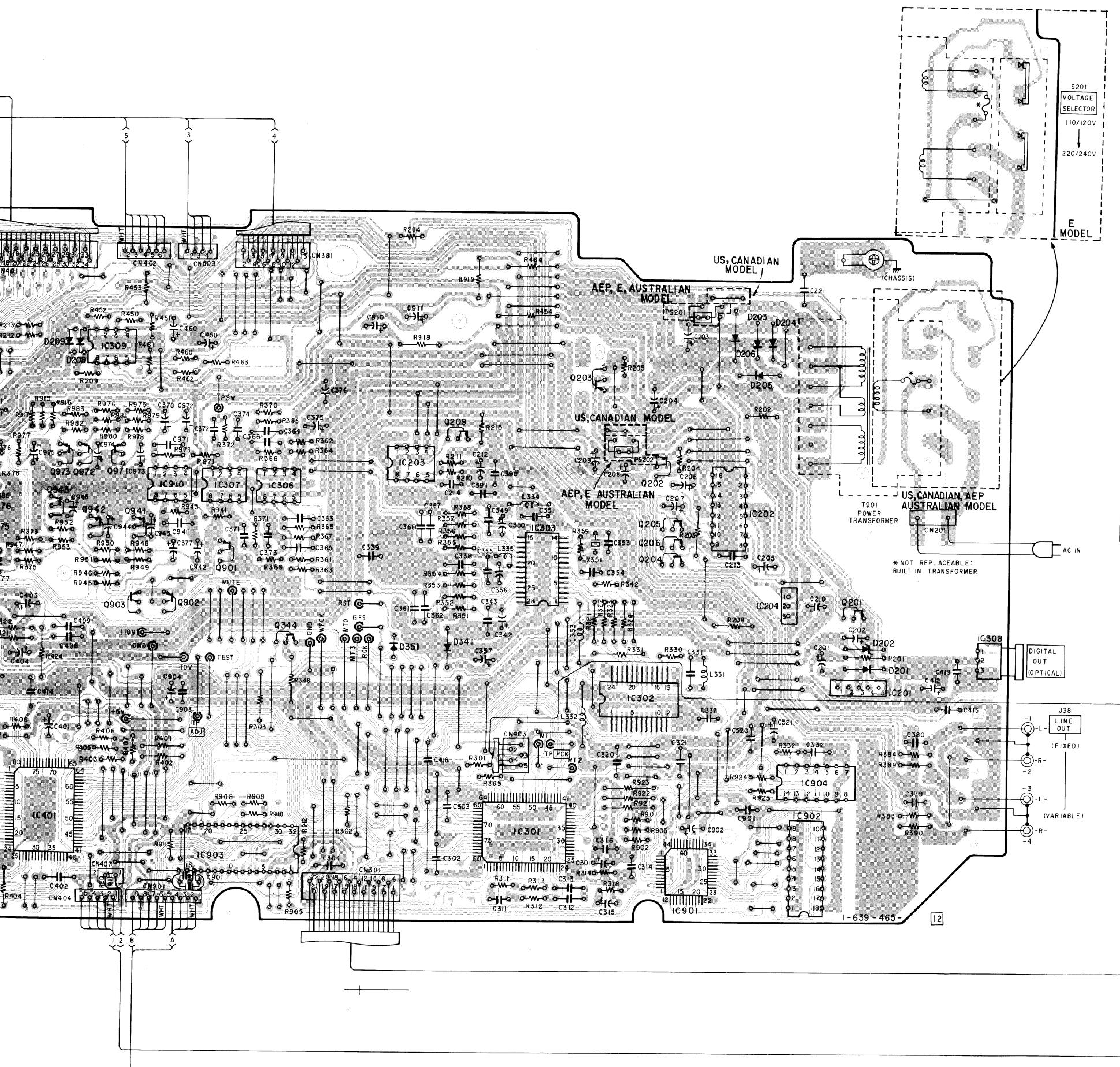


## Note:

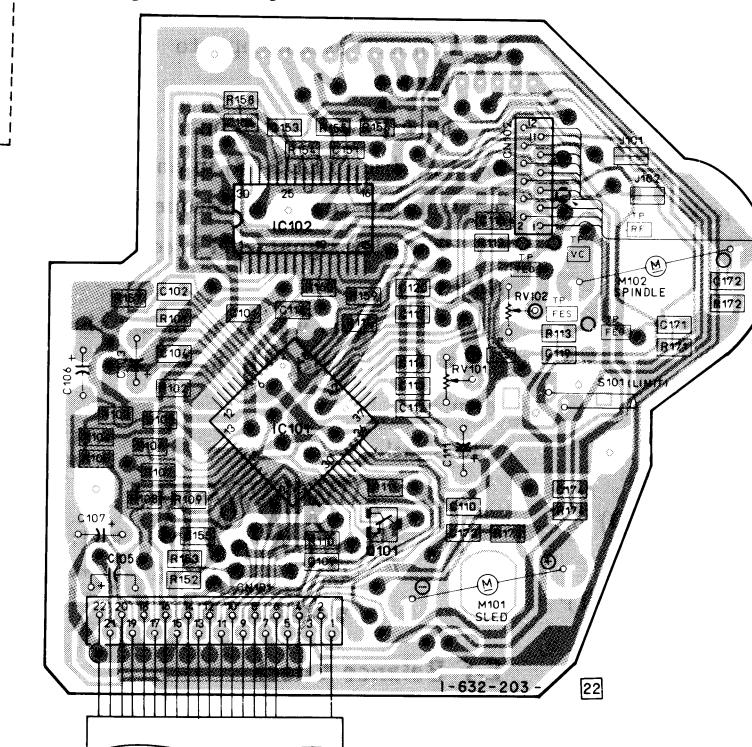
- : parts extracted from the component side.
- : Through hole.
- : Pattern on the side which is seen.
- : Pattern of the rear side.

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

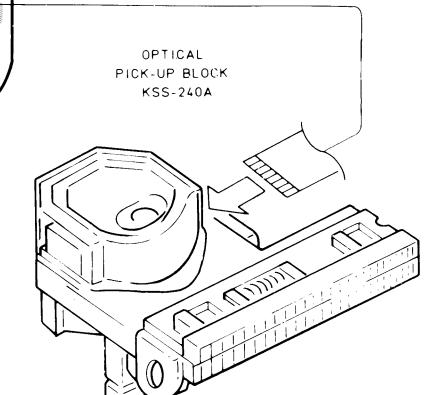




[BD BOARD]



OPTICAL  
PICK-UP BLOCK



LOADING  
MOTOR BOARD

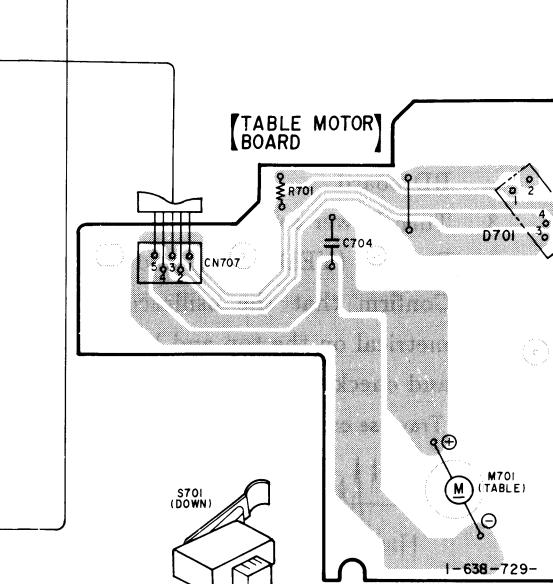
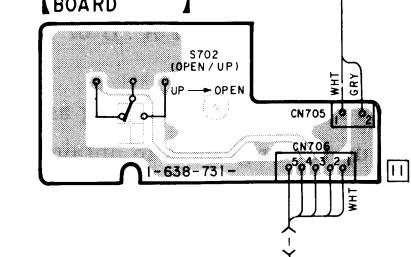


TABLE I

OPEN/UP SW



## 5-5. SCHEMATIC DIAGRAM

• Refer to page 12 for IC BLOCK Diagrams.

1 2 3 4 5

A

B

C

D

E

F

G

H

I

J

K

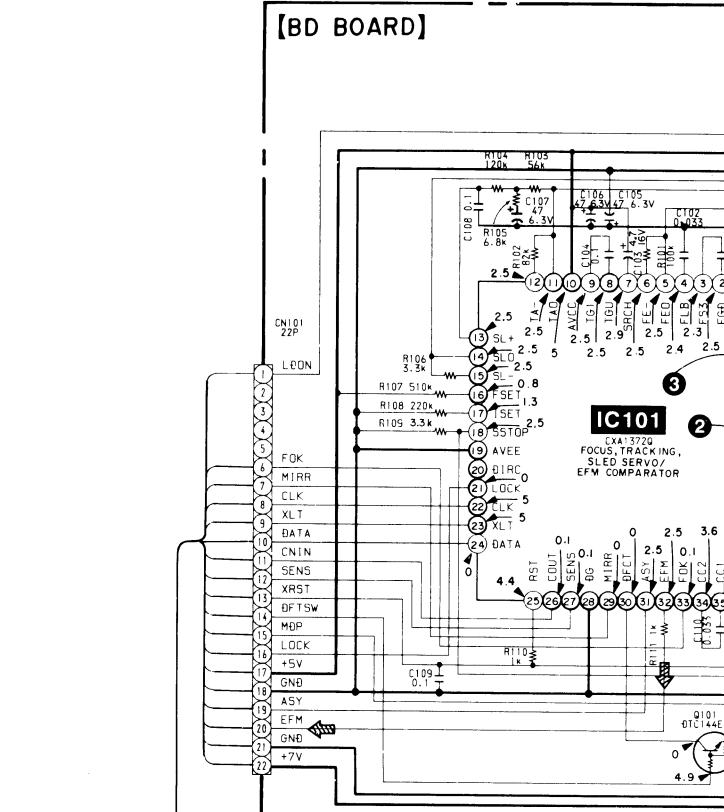
L

M

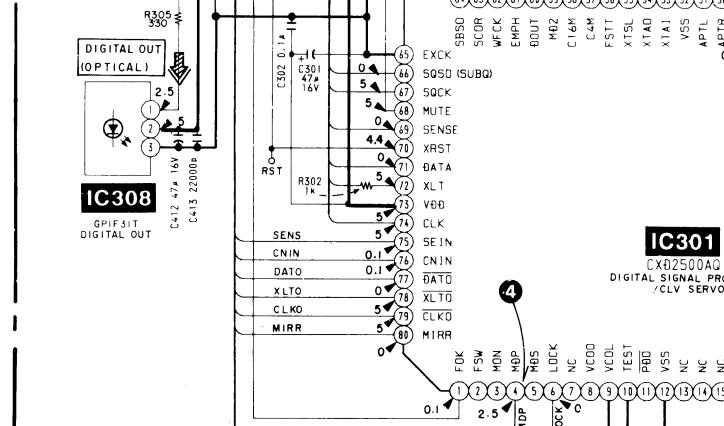
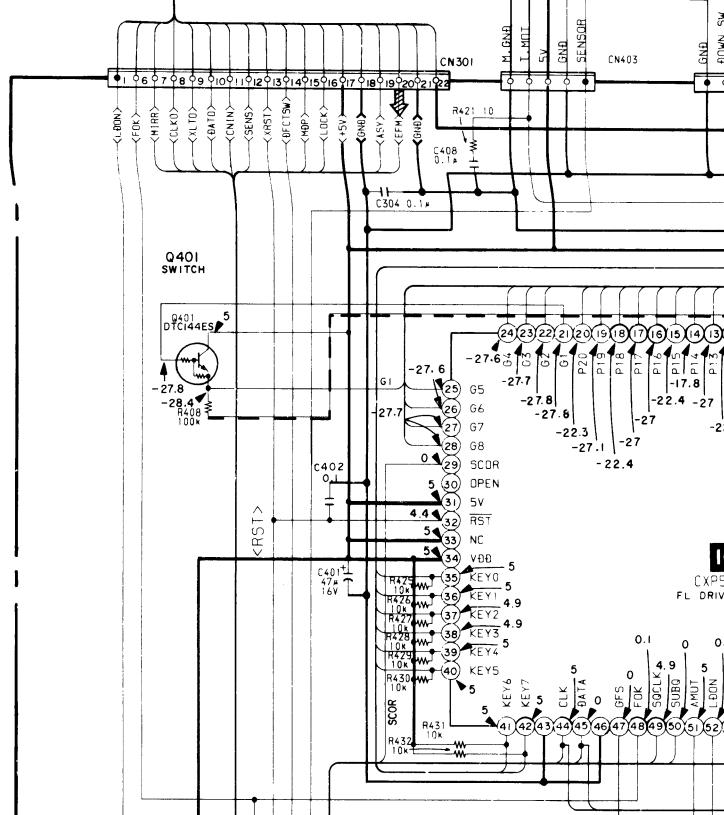
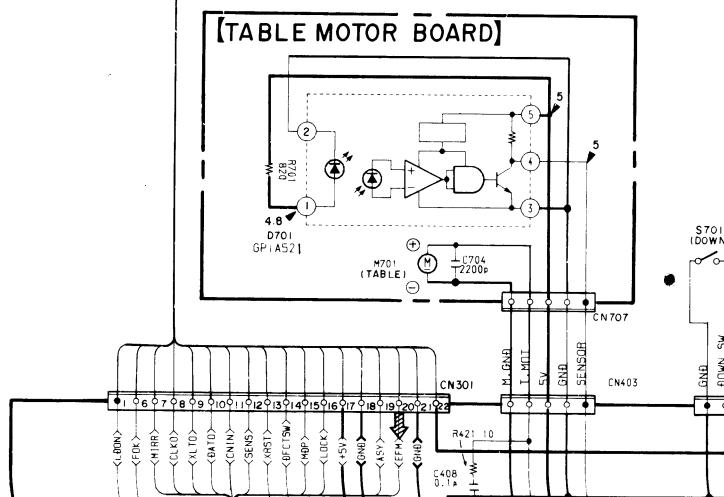
N

O

**[BD BOARD]**



**[TABLE MOTOR BOARD]**



**[MAIN BOARD]**

<http://www.ManualsCenter.com>

### Note:

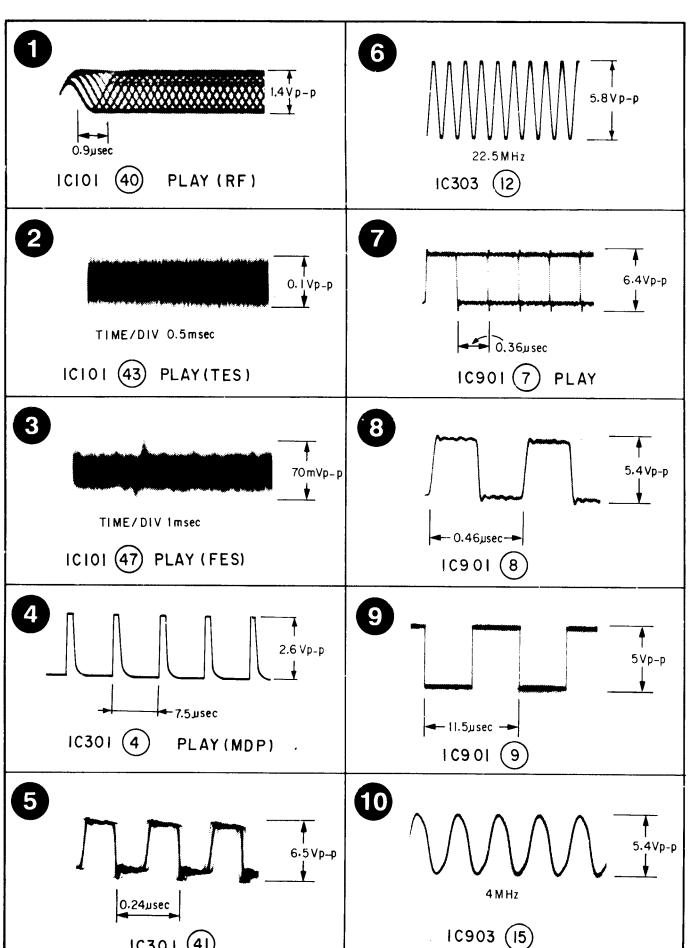
- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$ . 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and 1/4W or less unless otherwise specified.

**Note:**  
The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

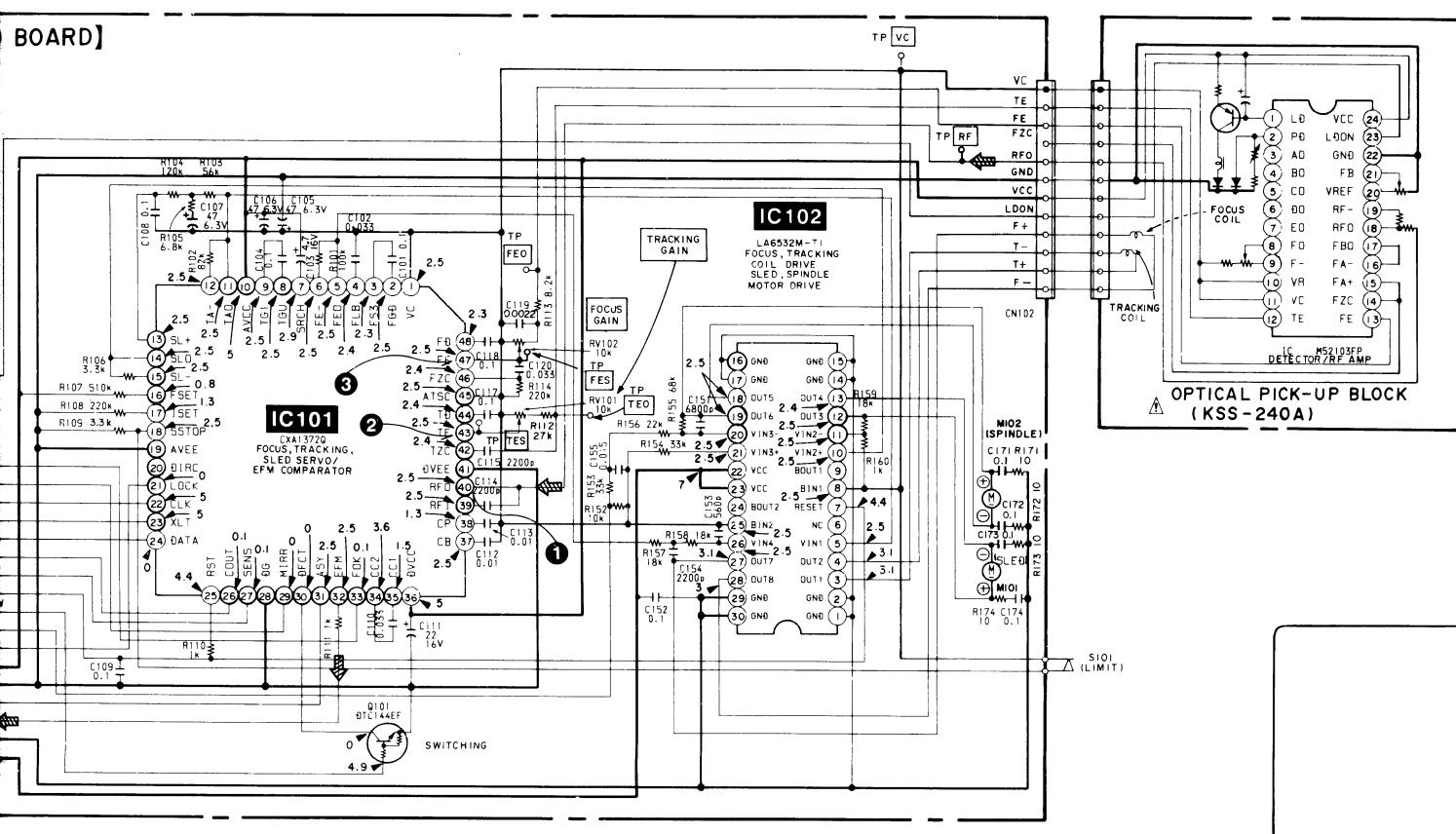
- : B+ Line.
- - - : B- Line.
- : adjustment for repair.
- $\triangle$  : internal component.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltage are taken with a VOM (Input Impedance 10M  $\Omega$ )  
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.  
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

$\Rightarrow$  : CD       $\Rightarrow$  : digital out

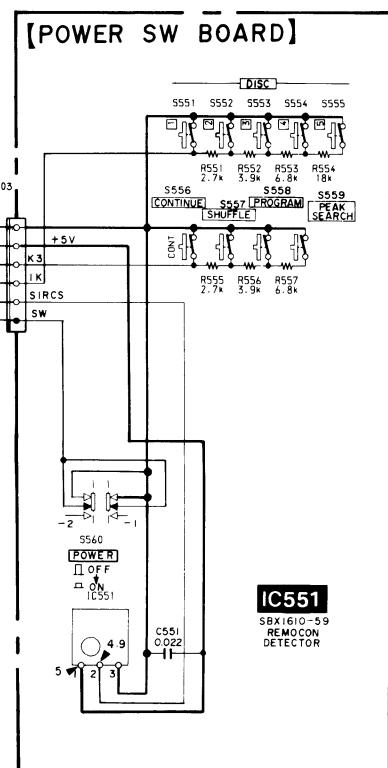


4 5 6 7 8 9 10 11 12 13 14

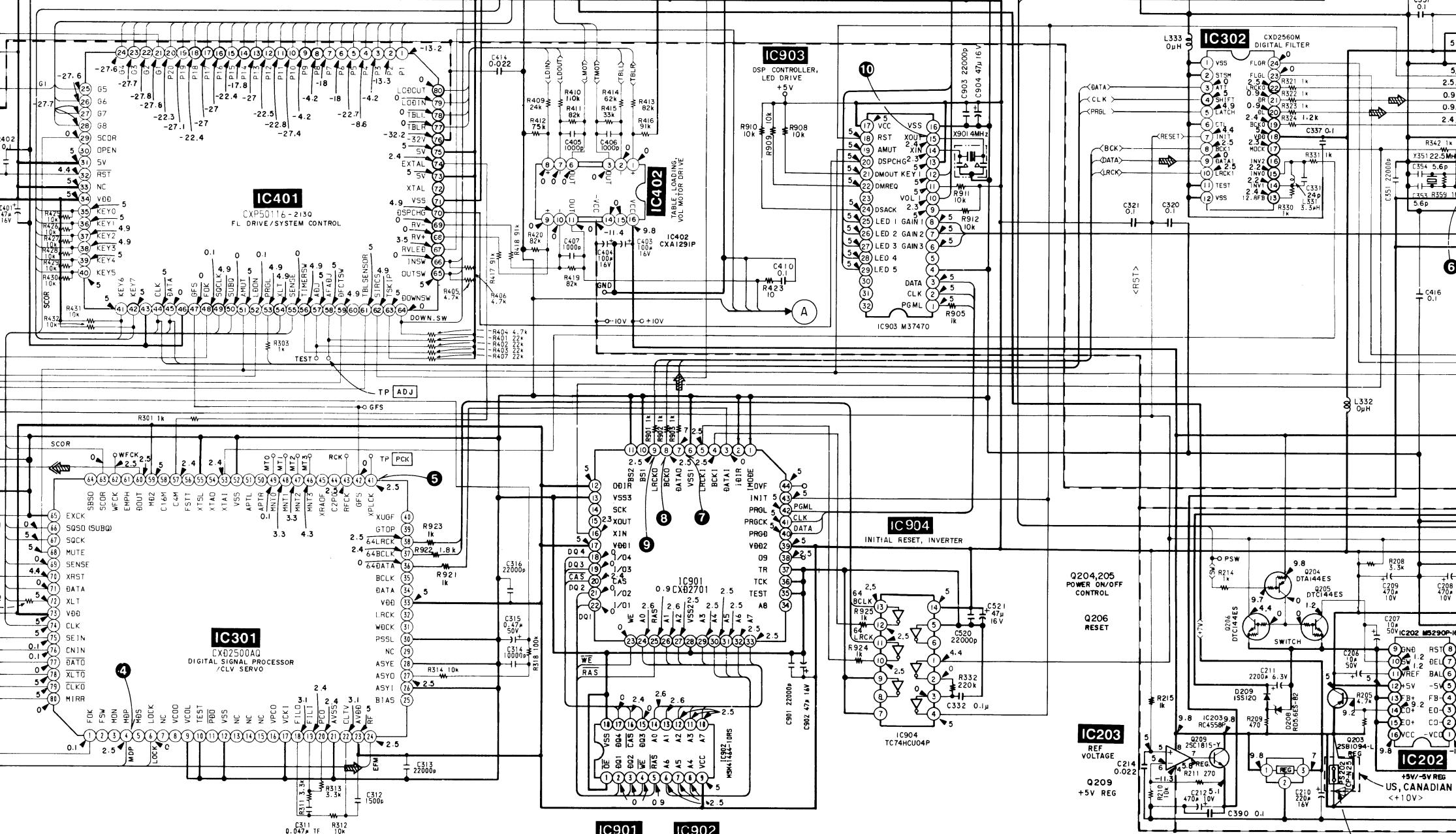
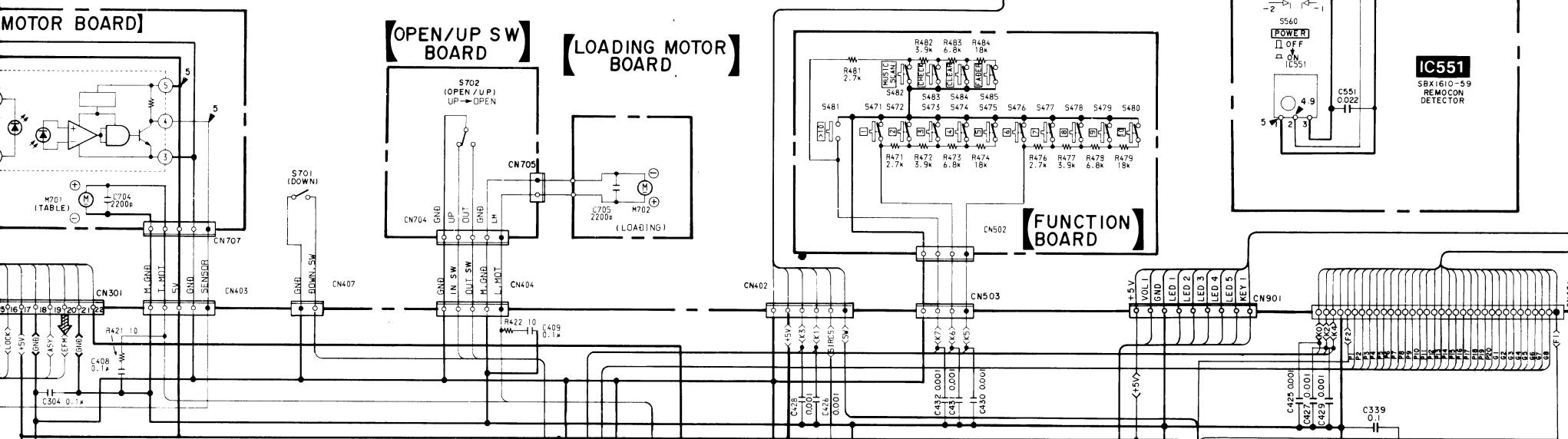
BOARD]



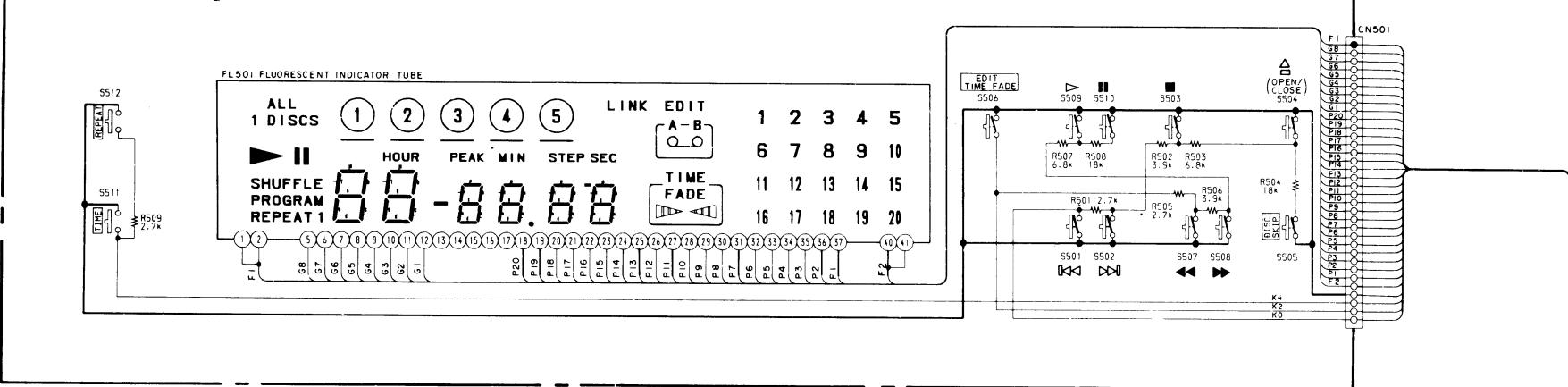
[DISPLA



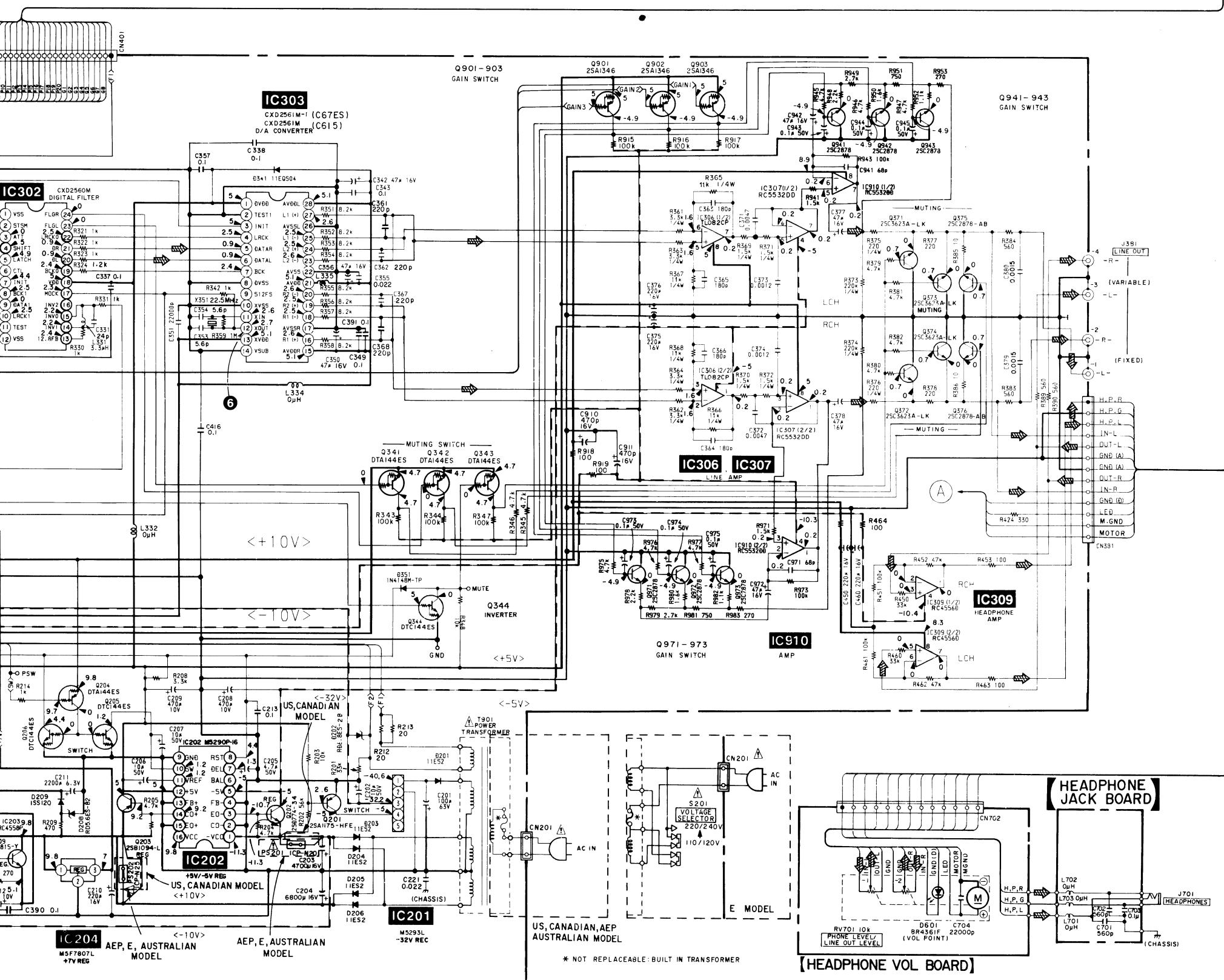
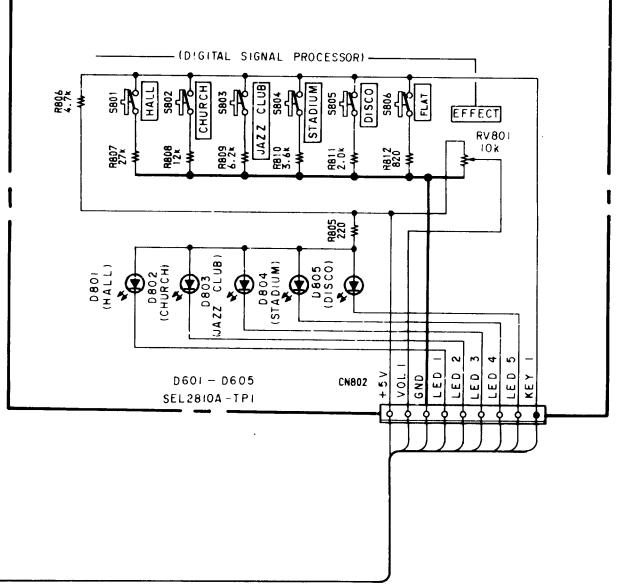
MOTOR BOARD]



【DISPLAY BOARD】



[DSP BOARD]



## EXPLODED VIEWS

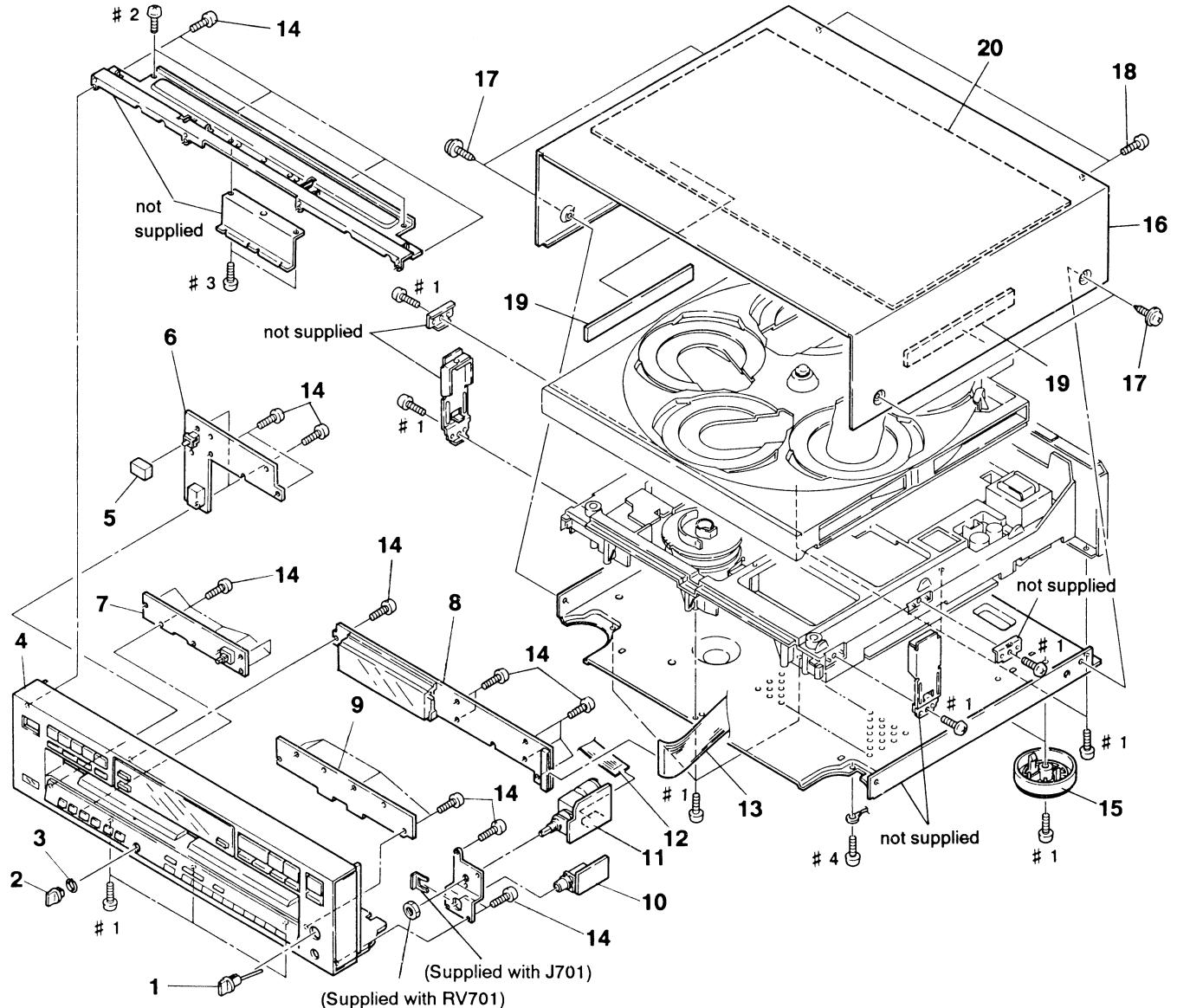
**NOTE:**

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts Example:  
KNOB, BALANCE (WHITE)...(RED)  
 ↑  
Parts color Cabinet's color

- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.  
 Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

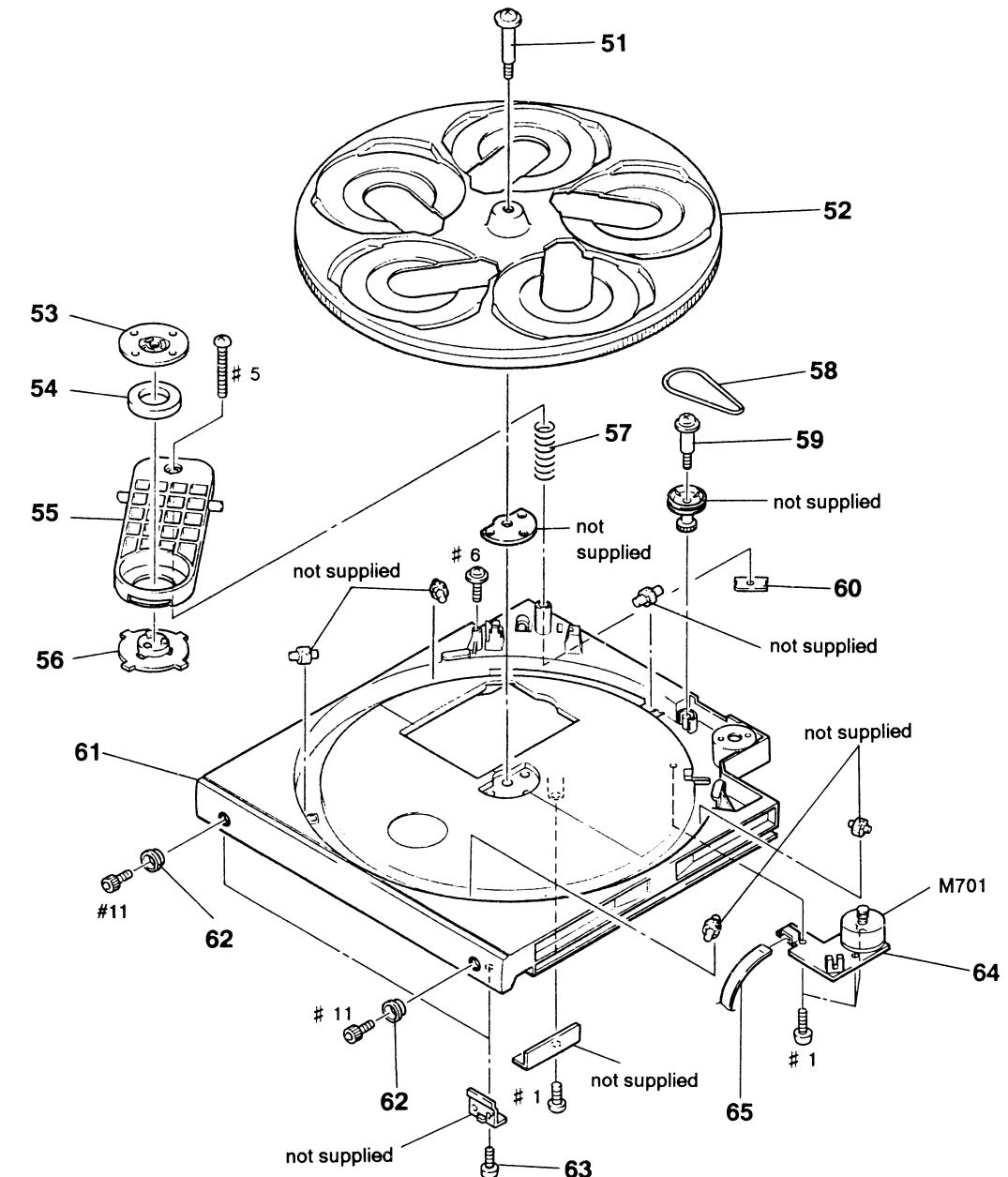
### 6-1. FRONT PANEL AND CASE ASSEMBLIES



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	A-4675-298-A	KNOB (HP) ASSY		10	* 1-639-471-11	HEADPHONE JACK BOARD	
2	4-944-154-02	KNOB (DSP)		11	* 1-639-470-11	HEADPHONE VOLUME BOARD	
3	3-354-981-01	SPRING (SUS). RING		12	1-590-834-11	WIRE, FLAT TYPE (13 CORE)	
4	X-4941-484-2	PANEL ASSY, FRONT (C615:US, Canadian)		13	1-590-835-11	WIRE, FLAT TYPE (34 CORE)	
4	X-4941-486-2	PANEL ASSY, FRONT (C67ES)		14	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
4	X-4941-485-2	PANEL ASSY, FRONT (AEP, E, Australian)		15	X-4924-463-1	FOOT ASSY (C67ES)(C615:AEP, E, Australian)	
5	4-922-921-01	BUTTON (POWER)		15	X-4924-464-1	FOOT ASSY (C615:US, Canadian)	
6	* 1-639-469-11	POWER SW BOARD		16	* 4-944-153-01	CASE	
7	* 1-639-468-11	DSP BOARD		17	3-704-366-01	SCREW (CASE) (M3X8)	
8	* 1-639-467-11	DISPLAY BOARD		18	3-703-685-21	SCREW (+BV 3X8)	
9	* 1-639-466-11	FUNCTION BOARD		19	* 4-929-561-01	CUSHION (CASE)	
				20	A-4675-309-A	REINFORCEMENT (TOP PLATE) ASSY (C67ES)	

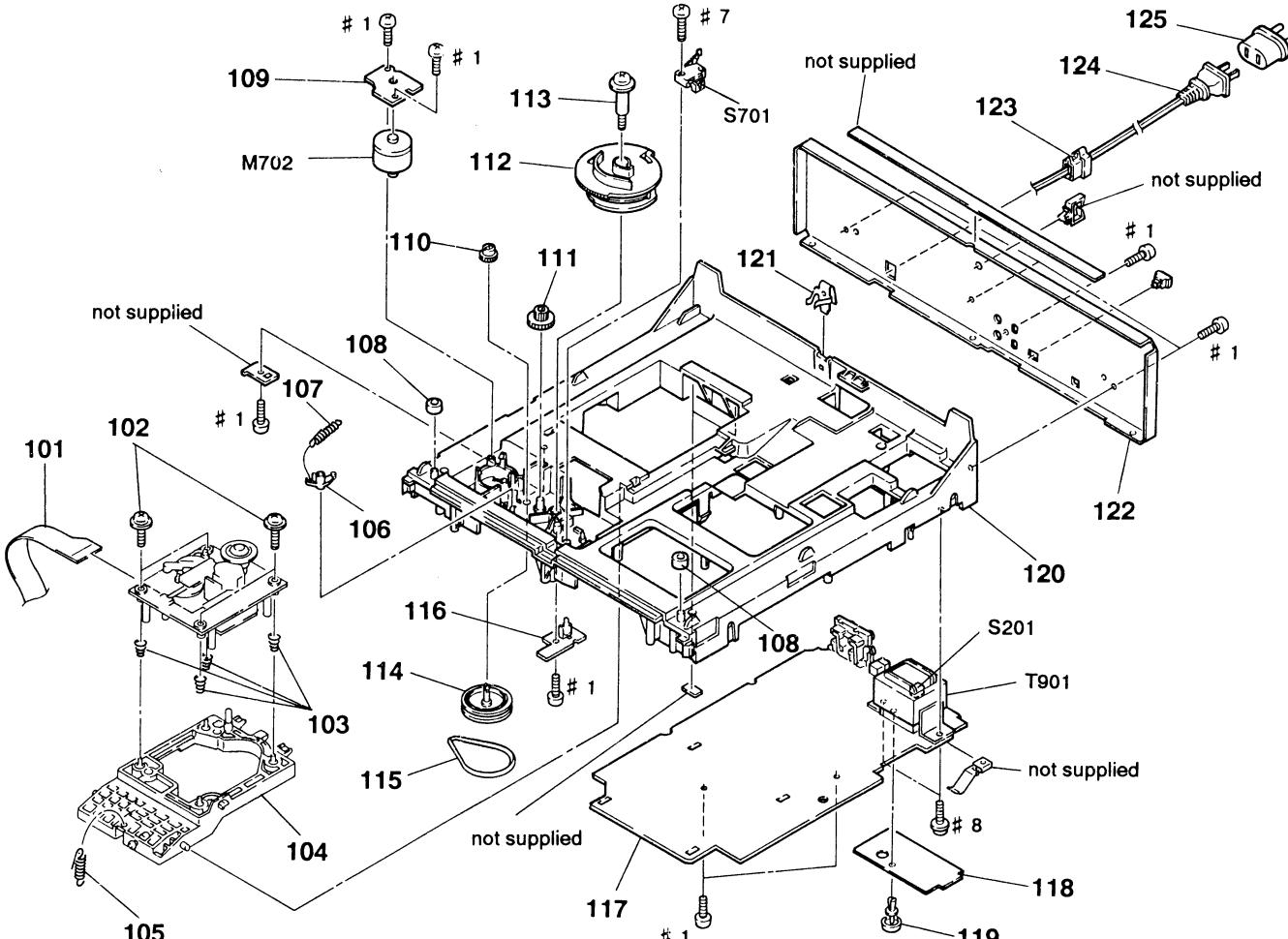
<http://www.ManualsCenter.com>

### 6-2. DISC TRAY ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-926-384-01	SCREW, STEP		58	4-926-399-01	BELT	
52	* 4-926-383-01	TABLE (B), DISK (C615)		59	4-923-597-01	SCREW, STEP	
52	4-926-383-11	TABLE (B), DISK (C67ES)		60	* 4-926-388-01	BRACKET (ADJUSTMENT)	
53	4-921-029-01	YOKE, CHUCKING		61	4-944-160-01	TABLE (A), DISK (C615)	
54	1-452-340-21	MAGNET		61	4-944-161-01	TABLE (A), DISK (C67ES)	
55	* 4-930-506-02	BRACKET (PRESS PULLEY)		62	4-934-307-01	ESCUTCHEON (C67ES)	
56	4-921-022-01	PULLEY, CHUCKING		63	4-928-635-01	SCREW, +BV (2.6X8) TAPPING (C67ES)	
57	4-926-395-01	SPRING, COMPRESSION		64	* 1-638-729-11	TABLE MOTOR BOARD	
				65	1-590-849-11	WIRE, FLAT TYPE (5 CORE)	
				M701	A-4604-585-A	MOTOR ASSY, ROTARY (TABLE)	
				109	* 1		
110	4			111	4		
102	4			112	4		
103	4			113	4		
104	* 4			114	X		
105	4			115	4		
106	4			116	* 1		
107	4			117	* A		
108	* 4			118	* 4		
				119	3		
				120	* 4		
				121	* 4		

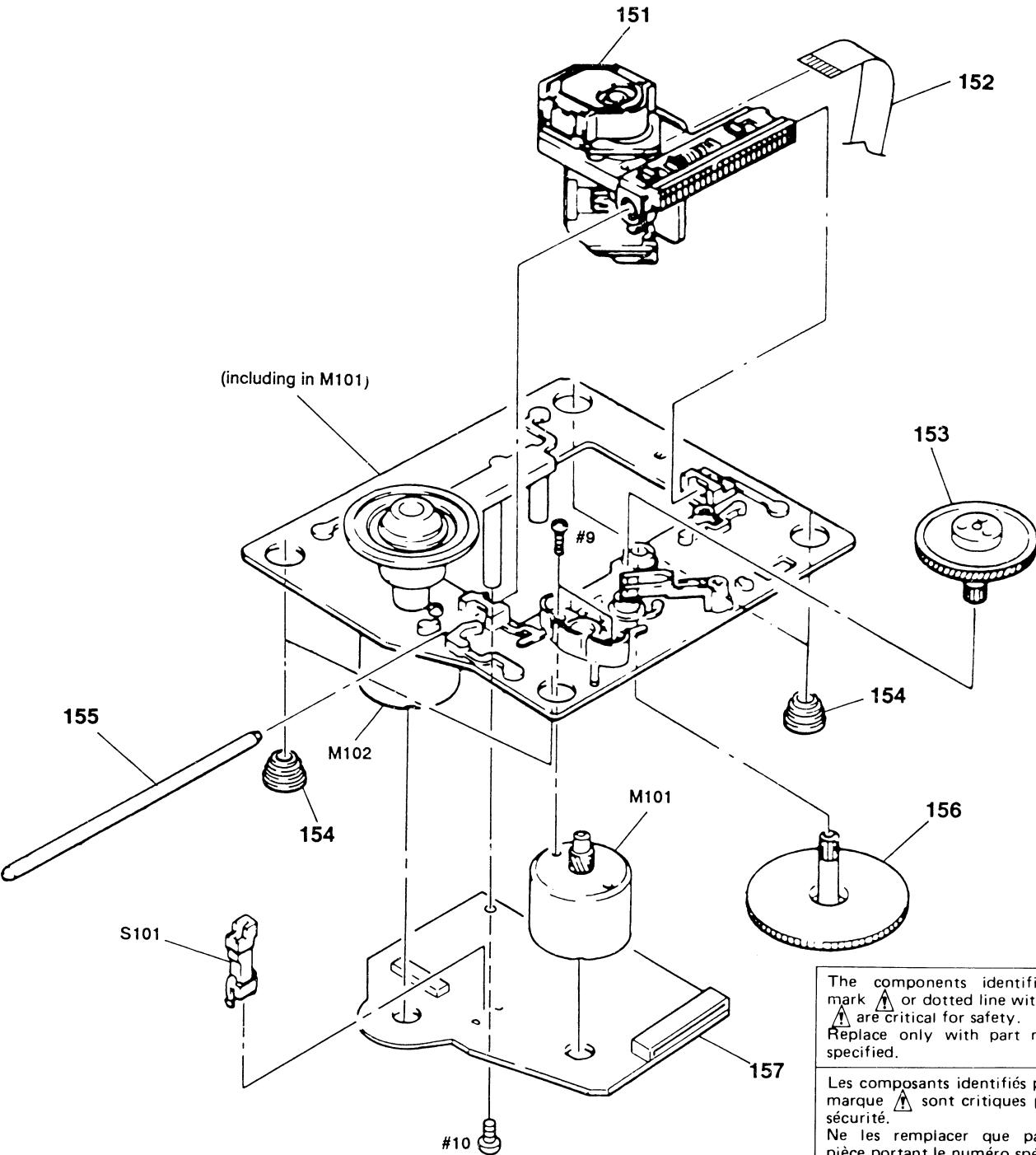
### 6-3. CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	1-535-892-11	JUMPER, FILM (WITH TERMINAL)	
102	4-933-134-01	SCREW (+PTPWH M2.6X6)	
103	4-917-541-01	SPRING (B)	
104	* 4-934-373-01	BRACKET (BU)	
105	4-937-911-01	SPRING, TENSION	
106	4-917-519-01	LEVER, SET	
107	4-924-412-01	SPRING (B), TENSION	
108	* 4-934-382-01	CUSHION	
109	* 1-638-730-11	LOADING MOTOR BOARD	
110	4-934-375-01	GEAR (LOADING B)	
111	4-934-381-01	GEAR (LOADING C)	
112	4-934-391-01	GEAR (LOADING A)	
113	4-926-317-01	SCREW, STEP	
114	X-4941-529-1	PULLEY ASSY	
115	4-944-490-01	BELT (TIMING)	
116	* 1-638-731-11	OPEN/UP SW BOARD	
117	* A-4617-851-A	MAIN BOARD, COMPLETE (AEP,Australian)	(C67ES)
117	* A-4617-842-A	MAIN BOARD, COMPLETE (C67ES)	)
117	* A-4617-843-A	MAIN BOARD, COMPLETE (C615:US,Canadian)	
117	* A-4617-853-A	MAIN BOARD, COMPLETE (E)	
118	* 4-944-178-01	SHEET (INSULATING)	
119	3-531-576-11	RIVET	
120	* 4-943-997-01	CHASSIS	
121	* 4-943-996-01	SPRING, LEAF	

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.  
Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

### 6-4. OPTICAL PICK-UP BLOCK ASSEMBLY (BU-5BD3)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	8-848-144-11	DEVICE, OPTICAL KSS-240A		156	4-917-564-01	GEAR (P), FLATNESS	
152	1-575-001-11	WIRE, FLAT TYPE (12 CORE)		157	* A-4617-371-A	BD BOARD, COMPLETE	
153	4-917-567-01	GEAR (M)		M101	X-4917-504-1	MOTOR ASSY (SLED)	
154	4-933-126-01	INSULATOR (A)		M102	X-4917-523-3	MOTOR ASSY (SPINDLE)	
155	4-917-565-01	SHAFT, SLED		S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)	

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.  
Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## SECTION 7

### ELECTRICAL PARTS LIST

BD

**NOTE:**

The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- **RESISTORS**  
All resistors are in ohms  
**METAL:** Metal-film resistor  
**METAL OXIDE:** Metal Oxide-film resistor  
**F:** nonflammable
- **SEMICONDUCTORS**  
In each case, u:  $\mu$ , for example:  
uA...:  $\mu$ A..., uPA...:  $\mu$ PA...,  
uPB...:  $\mu$ PB..., uPC...:  $\mu$ PC...,  
uPD...:  $\mu$ PD...
- **CAPACITORS**  
uF:  $\mu$ F
- **COILS**  
uH:  $\mu$ H

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark								
-----																	
* A-4617-371-A BD BOARD, COMPLETE																	
*****																	
< CAPACITOR >																	
C101	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C102	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V												
C103	1-126-163-11	ELECT	4.7uF	20%	50V												
C104	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C105	1-126-154-11	ELECT	47uF	20%	6.3V												
C106	1-126-154-11	ELECT	47uF	20%	6.3V												
C107	1-126-154-11	ELECT	47uF	20%	6.3V												
C108	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C109	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V												
C111	1-131-367-00	TANTALUM	22uF	10%	20V												
C112	1-164-232-11	CERAMIC CHIP	0.01uF	50V													
C113	1-164-232-11	CERAMIC CHIP	0.01uF	50V													
C114	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V												
C115	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V												
C117	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C118	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C119	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V												
C120	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V												
C151	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V												
C152	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C153	1-163-006-11	CERAMIC CHIP	560PF	10%	50V												
C154	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V												
C155	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V												
C171	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C172	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C173	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
C174	1-163-038-00	CERAMIC CHIP	0.1uF	25V													
< CONNECTOR >																	
CN101	1-568-796-11	SOCKET, CONNECTOR 22P															
CN102	1-568-795-11	SOCKET, CONNECTOR 12P															
< IC >																	
IC101	8-752-050-82	IC CXA1372Q															
IC102	8-759-822-36	IC LA6532M															
< JUNPER >																	
J101	1-216-295-00	METAL CHIP	0	5%	1/10W												
J102	1-216-295-00	METAL CHIP	0	5%	1/10W												
< TRANSISTOR >																	
Q101	8-729-901-01	TRANSISTOR DTC144EK															
< RESISTOR >																	
R101	1-216-097-00	METAL CHIP	100K	5%	1/10W												
R102	1-216-095-00	METAL CHIP	82K	5%	1/10W												
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W												
R104	1-216-099-00	METAL CHIP	120K	5%	1/10W												
R105	1-216-069-00	METAL CHIP	6.8K	5%	1/10W												
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W												
R107	1-216-114-00	METAL GLAZE	510K	5%	1/10W												
R108	1-216-105-00	METAL CHIP	220K	5%	1/10W												
R109	1-216-061-00	METAL CHIP	3.3K	5%	1/10W												
R110	1-216-049-00	METAL CHIP	1K	5%	1/10W												
R111	1-216-049-00	METAL CHIP	1K	5%	1/10W												
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W												
R113	1-216-071-00	METAL CHIP	8.2K	5%	1/10W												
R114	1-216-105-00	METAL CHIP	220K	5%	1/10W												
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W												

**BD** **MAIN** **FUNCTION** **DISPLAY** **DSP**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R153	1-216-085-00	METAL CHIP	33K 5% 1/10W	C211	1-124-893-11	ELECT	2200uF 20% 10V
R154	1-216-085-00	METAL CHIP	33K 5% 1/10W	C212	1-124-997-11	ELECT	470uF 20% 10V
R155	1-216-093-00	METAL CHIP	68K 5% 1/10W	C213	1-164-159-11	CERAMIC	0.1uF 50V
R156	1-216-081-00	METAL CHIP	22K 5% 1/10W	C214	1-130-487-00	MYLAR	0.022uF 5% 50V
R157	1-216-079-00	METAL CHIP	18K 5% 1/10W	C221	1-161-494-00	CERAMIC	0.022uF 25V
R158	1-216-079-00	METAL CHIP	18K 5% 1/10W	C301	1-126-022-11	ELECT	47uF 20% 16V
R159	1-216-079-00	METAL CHIP	18K 5% 1/10W	C302	1-164-159-11	CERAMIC	0.1uF 50V
R160	1-216-049-00	METAL CHIP	1K 5% 1/10W	C303	1-164-159-11	CERAMIC	0.1uF 50V
R171	1-216-001-00	METAL CHIP	10 5% 1/10W	C304	1-164-159-11	CERAMIC	0.1uF 50V
R172	1-216-001-00	METAL CHIP	10 5% 1/10W	C311	1-130-491-00	MYLAR	0.047uF 5% 50V
R173	1-216-001-00	METAL CHIP	10 5% 1/10W	C312	1-161-374-11	CERAMIC	0.0015uF 20% 50V
R174	1-216-001-00	METAL CHIP	10 5% 1/10W	C313	1-161-494-00	CERAMIC	0.022uF 25V
< VARIABLE RESISTOR >							
RV101	1-238-016-11	RES. ADJ. CARBON	10K	C314	1-162-306-11	CERAMIC	0.01uF 20% 16V
RV102	1-238-016-11	RES. ADJ. CARBON	10K	C315	1-126-300-11	ELECT	0.47uF 20% 50V
< SWITCH >							
S101	1-572-085-11	SWITCH. LEAF (LIMIT)		C316	1-161-494-00	CERAMIC	0.022uF 25V
*****							
* A-4617-842-A MAIN BOARD, COMPLETE (C67ES)							
* A-4617-843-A MAIN BOARD, COMPLETE (C615:US, Canadian)							
* A-4617-851-A MAIN BOARD, COMPLETE (AEP, Australian)							
* A-4617-853-A MAIN BOARD, COMPLETE (E)							
*****							
* 1-639-466-11 FUNCTION BOARD							
*****							
* 1-639-467-11 DISPLAY BOARD							
*****							
* 1-639-468-11 DSP BOARD							
*****							
* 4-363-146-21 HEAT SINK, V. OUT							
* 4-944-156-01 HOLDER, LED							
7-682-548-09 SCREW +BVTT 3X8 (S)							
< CAPACITOR >							
C201	1-124-572-11	ELECT	100uF 20% 63V	C356	1-126-022-11	ELECT	47uF 20% 16V
C202	1-126-059-11	ELECT	10uF 20% 50V	C357	1-124-997-11	ELECT	470uF 20% 10V
C203	1-126-937-11	ELECT	4700uF 20% 16V	C361	1-162-286-31	CERAMIC	220PF 10% 50V
C204	1-126-017-11	ELECT	6800uF 20% 16V	C362	1-162-286-31	CERAMIC	220PF 10% 50V
C205	1-126-163-11	ELECT	4.7uF 20% 50V	C363	1-162-285-31	CERAMIC	180PF 10% 50V
C206	1-126-059-11	ELECT	10uF 20% 50V	C364	1-162-285-31	CERAMIC	180PF 10% 50V
C207	1-126-059-11	ELECT	10uF 20% 50V	C365	1-162-285-31	CERAMIC	180PF 10% 50V
C208	1-124-997-11	ELECT	470uF 20% 10V	C366	1-162-285-31	CERAMIC	180PF 10% 50V
C209	1-124-997-11	ELECT	470uF 20% 10V	C367	1-162-286-31	CERAMIC	220PF 10% 50V
C210	1-126-024-11	ELECT	220uF 20% 16V	C368	1-162-286-31	CERAMIC	220PF 10% 50V
C371							
C372							
C373							
C374							
C375							
C376							
C377							
C378							
C379							

MAIN

FUNCTION

DISPLAY

DSP

Ref. No.	Part No.	Description		Remark	Ref. No.	Part No.	Description	Remark
C380	1-130-473-00	MYLAR	0.0015uF	5%	50V		< CONNECTOR >	
C390	1-164-159-11	CERAMIC	0.1uF		50V	CN201	* 1-573-047-11 PIN, CONNECTOR	
C391	1-164-159-11	CERAMIC	0.1uF		50V	CN301	* 1-573-046-11 SOCKET, CONNECTOR 18P	
C401	1-126-022-11	ELECT	47uF	20%	16V	CN381	* 1-568-856-11 SOCKET, CONNECTOR 13P	
C402	1-164-159-11	CERAMIC	0.1uF		50V	CN401	* 1-573-080-11 SOCKET, CONNECTOR (34P, L TYPE)	
C403	1-126-023-11	ELECT	100uF	20%	16V	CN402	* 1-568-944-11 PIN, CONNECTOR 6P	
C404	1-126-023-11	ELECT	100uF	20%	16V			
C405	1-162-294-31	CERAMIC	0.001uF	10%	50V	CN403	* 1-568-824-11 SOCKET, CONNECTOR 5P	
C406	1-162-294-31	CERAMIC	0.001uF	10%	50V	CN404	* 1-568-943-11 PIN, CONNECTOR 5P	
C407	1-162-294-31	CERAMIC	0.001uF	10%	50V	CN501	* 1-573-080-11 SOCKET, CONNECTOR (34P, L TYPE)	
C408	1-164-159-11	CERAMIC	0.1uF		50V	CN503	* 1-568-942-11 PIN, CONNECTOR 4P	
C409	1-164-159-11	CERAMIC	0.1uF		50V	CN901	* 1-568-947-11 PIN, CONNECTOR 9P	
C410	1-164-159-11	CERAMIC	0.1uF		50V		< DIODE >	
C412	1-126-022-11	ELECT	47uF	20%	16V	D201	8-719-200-82 DIODE 11ES2	
C413	1-161-494-00	CERAMIC	0.022uF		25V	D202	8-719-109-97 DIODE RD6.8ES-2B	
C414	1-161-494-00	CERAMIC	0.022uF		25V	D203	8-719-200-82 DIODE 11ES2	
C415	1-161-494-00	CERAMIC	0.022uF		25V	D204	8-719-200-82 DIODE 11ES2	
C416	1-164-159-11	CERAMIC	0.1uF		50V	D205	8-719-200-82 DIODE 11ES2	
C425	1-162-294-31	CERAMIC	0.001uF	10%	50V	D206	8-719-200-82 DIODE 11ES2	
C426	1-162-294-31	CERAMIC	0.001uF	10%	50V	D208	8-719-109-89 DIODE RD5.6ES-B2	
C427	1-162-294-31	CERAMIC	0.001uF	10%	50V	D209	8-719-912-20 DIODE 1SS120	
C428	1-162-294-31	CERAMIC	0.001uF	10%	50V	D341	8-719-210-21 DIODE 11EQS04	
C429	1-162-294-31	CERAMIC	0.001uF	10%	50V	D351	8-719-912-20 DIODE 1SS120	
C430	1-162-294-31	CERAMIC	0.001uF	10%	50V			
C431	1-162-294-31	CERAMIC	0.001uF	10%	50V	D801	8-719-301-52 DIODE SEL2810A-C (HALL)	
C432	1-162-294-31	CERAMIC	0.001uF	10%	50V	D802	8-719-301-52 DIODE SEL2810A-C (CHURCH)	
C450	1-126-024-11	ELECT	220uF	20%	16V	D803	8-719-301-52 DIODE SEL2810A-C (JAZZ CLUB)	
C460	1-126-024-11	ELECT	220uF	20%	16V	D804	8-719-301-52 DIODE SEL2810A-C (STADIUM)	
C520	1-161-494-00	CERAMIC	0.022uF		25V	D805	8-719-301-52 DIODE SEL2810A-C (DISCO)	
C521	1-126-022-11	ELECT	47uF	20%	16V		< FLUORESCENT INDICATOR >	
C901	1-161-494-00	CERAMIC	0.022uF		25V	FL501	1-519-655-11 FLUORESCENT INDICATOR	
C902	1-126-022-11	ELECT	47uF	20%	16V		< IC >	
C903	1-161-494-00	CERAMIC	0.022uF		25V	IC201	8-759-633-42 IC M5293L	
C904	1-126-022-11	ELECT	47uF	20%	16V	IC202	8-759-630-21 IC M5290P-16	
C910	1-126-012-11	ELECT	470uF	20%	16V	IC203	8-759-945-58 IC RC4558P	
C911	1-126-012-11	ELECT	470uF	20%	16V	IC204	8-759-604-86 IC M5F7807L	
C941	1-162-219-31	CERAMIC	68PF	5%	50V	IC301	8-752-337-26 IC CXD2500AQ	
C942	1-126-022-11	ELECT	47uF	20%	16V			
C943	1-124-463-00	ELECT	0.1uF	20%	50V	IC302	8-752-342-65 IC CXD2560M	
C944	1-124-463-00	ELECT	0.1uF	20%	50V	IC303	8-752-343-01 IC CXD2561M (C615)	
C945	1-124-463-00	ELECT	0.1uF	20%	50V	IC303	8-752-344-10 IC CXD2561M-1 (C67ES)	
C971	1-162-219-31	CERAMIC	68PF	5%	50V	IC306	8-759-990-82 IC TL082CP	
C972	1-126-022-11	ELECT	47uF	20%	16V	IC307	8-759-982-03 IC RC5532DD	
C973	1-124-463-00	ELECT	0.1uF	20%	50V			
C974	1-124-463-00	ELECT	0.1uF	20%	50V	IC308	8-759-977-71 IC GP1F31T (DIGITAL OUT OPTICAL)	
C975	1-124-463-00	ELECT	0.1uF	20%	50V	IC309	8-759-981-85 IC RC4556D	
					IC401	8-752-831-21 IC CXP50116-2233Q		
					IC402	8-759-821-32 IC CXA-1291P		
					IC901	8-752-341-99 IC CXD2701Q		

<b>MAIN</b>	<b>FUNCTION</b>	<b>DISPLAY</b>	<b>DSP</b>
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
IC902	8-759-973-04	IC MSM41464-10RS-K		Q972	8-729-231-55	TRANSISTOR 2SC2878-AB	
IC903	8-759-636-84	IC M37470M4-054SP		Q973	8-729-231-55	TRANSISTOR 2SC2878-AB	
IC904	8-759-917-18	IC SN74HCU04AN					
IC910	8-759-982-03	IC RC5532DD					
		. < JACK >					
J381	* 1-569-443-11	JACK, PIN 4P (LINE OUT FIXED/VARIABLE) (C615)		R201	1-249-435-11	CARBON	33K 5% 1/4W
J381	* 1-569-443-21	JACK, PIN 4P (LINE OUT FIXED/VARIABLE) (C67ES)		R202	1-249-438-11	CARBON	56K 5% 1/4W
				R203	1-249-429-11	CARBON	10K 5% 1/4W
		< COIL >		R204	1-249-425-11	CARBON	4.7K 5% 1/4W
L331	1-408-403-00	INDUCTOR	3.3uH	R205	1-249-425-11	CARBON	4.7K 5% 1/4W
L332	1-412-473-21	INDUCTOR	0uH				
L333	1-412-473-21	INDUCTOR	0uH	R208	1-249-423-11	CARBON	3.3K 5% 1/4W
L334	1-412-473-21	INDUCTOR	0uH	R209	1-249-413-11	CARBON	470 5% 1/4W
L335	1-412-473-21	INDUCTOR, SMALL TYPE		R210	1-249-429-11	CARBON	10K 5% 1/4W
		< LINK >		R211	1-249-410-11	CARBON	270 5% 1/4W
PS201	△ 1-532-685-00	LINK, IC 0.8A ICP-N20 (AEP, E, Australian)		R212	1-247-790-11	CARBON	20 5% 1/4W
PS202	△ 1-532-637-00	LINK, IC 1.0A ICP-N25 (AEP, E, Australian)		R213	1-247-790-11	CARBON	20 5% 1/4W
		< TRANSISTOR >		R214	1-249-417-11	CARBON	1K 5% 1/4W
Q201	8-729-119-76	TRANSISTOR 2SA1175-HFE		R215	1-249-417-11	CARBON	1K 5% 1/4W
Q202	8-729-140-96	TRANSISTOR 2SD774-34		R301	1-249-417-11	CARBON	1K 5% 1/4W
Q203	8-729-111-67	TRANSISTOR 2SB1094-L		R302	1-249-417-11	CARBON	1K 5% 1/4W
Q204	8-729-900-65	TRANSISTOR DTA144ES					
Q205	8-729-900-89	TRANSISTOR DTC144ES		R303	1-249-417-11	CARBON	1K 5% 1/4W
Q206	8-729-900-89	TRANSISTOR DTC144ES		R305	1-249-411-11	CARBON	330 5% 1/4W
Q209	8-729-281-52	TRANSISTOR 2SC1815-Y		R311	1-249-423-11	CARBON	3.3K 5% 1/4W
Q341	8-729-900-65	TRANSISTOR DTA144ES		R312	1-249-429-11	CARBON	10K 5% 1/4W
Q342	8-729-900-65	TRANSISTOR DTA144ES		R313	1-249-423-11	CARBON	3.3K 5% 1/4W
Q343	8-729-900-65	TRANSISTOR DTA144ES		R314	1-249-429-11	CARBON	10K 5% 1/4W
Q344	8-729-900-89	TRANSISTOR DTC144ES		R318	1-249-441-11	CARBON	100K 5% 1/4W
Q371	8-729-141-30	TRANSISTOR 2SC3623A-LK		R321	1-249-417-11	CARBON	1K 5% 1/4W
Q372	8-729-141-30	TRANSISTOR 2SC3623A-LK		R322	1-249-417-11	CARBON	1K 5% 1/4W
Q373	8-729-141-30	TRANSISTOR 2SC3623A-LK		R323	1-249-417-11	CARBON	1K 5% 1/4W
Q374	8-729-141-30	TRANSISTOR 2SC3623A-LK		R324	1-249-418-11	CARBON	1.2K 5% 1/4W
Q375	8-729-231-55	TRANSISTOR 2SC2878-AB		R330	1-249-417-11	CARBON	1K 5% 1/4W
Q376	8-729-231-55	TRANSISTOR 2SC2878-AB		R331	1-249-417-11	CARBON	1K 5% 1/4W
Q401	8-729-900-89	TRANSISTOR DTC144ES		R332	1-247-887-00	CARBON	220K 5% 1/4W
Q901	8-729-900-63	TRANSISTOR DTA124ES		R342	1-249-417-11	CARBON	1K 5% 1/4W
Q902	8-729-900-63	TRANSISTOR DTA124ES					
Q903	8-729-900-63	TRANSISTOR DTA124ES		R343	1-249-441-11	CARBON	100K 5% 1/4W
Q941	8-729-231-55	TRANSISTOR 2SC2878-AB		R344	1-249-441-11	CARBON	100K 5% 1/4W
Q942	8-729-231-55	TRANSISTOR 2SC2878-AB		R345	1-249-425-11	CARBON	4.7K 5% 1/4W
Q943	8-729-231-55	TRANSISTOR 2SC2878-AB		R346	1-249-425-11	CARBON	4.7K 5% 1/4W
Q971	8-729-231-55	TRANSISTOR 2SC2878-AB		R347	1-249-441-11	CARBON	100K 5% 1/4W
				R348	1-249-429-11	CARBON	10K 5% 1/4W
				R351	1-249-428-11	CARBON	8.2K 5% 1/4W
				R352	1-249-428-11	CARBON	8.2K 5% 1/4W
				R353	1-249-428-11	CARBON	8.2K 5% 1/4W
				R354	1-249-428-11	CARBON	8.2K 5% 1/4W
				R355	1-249-428-11	CARBON	8.2K 5% 1/4W
				R356	1-249-428-11	CARBON	8.2K 5% 1/4W
				R357	1-249-428-11	CARBON	8.2K 5% 1/4W
				R358	1-249-428-11	CARBON	8.2K 5% 1/4W
				R359	1-247-903-00	CARBON	1M 5% 1/4W

**Note:**  
The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque △ sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

MAIN

FUNCTION

DISPLAY

DSP

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R361	1-249-423-11	CARBON	3.3K 5% 1/4W	R422	1-249-393-11	CARBON	10 5% 1/4W
R362	1-249-423-11	CARBON	3.3K 5% 1/4W	R423	1-249-393-11	CARBON	10 5% 1/4W
R363	1-249-423-11	CARBON	3.3K 5% 1/4W	R424	1-249-411-11	CARBON	330 5% 1/4W
R364	1-249-423-11	CARBON	3.3K 5% 1/4W	R425	1-249-429-11	CARBON	10K 5% 1/4W
R365	1-247-856-00	CARBON	11K 5% 1/4W	R426	1-249-429-11	CARBON	10K 5% 1/4W
				R427	1-249-429-11	CARBON	10K 5% 1/4W
R366	1-247-856-00	CARBON	11K 5% 1/4W	R428	1-249-429-11	CARBON	10K 5% 1/4W
R367	1-247-856-00	CARBON	11K 5% 1/4W	R429	1-249-429-11	CARBON	10K 5% 1/4W
R368	1-247-856-00	CARBON	11K 5% 1/4W	R430	1-249-429-11	CARBON	10K 5% 1/4W
R369	1-249-419-11	CARBON	1.5K 5% 1/4W	R431	1-249-429-11	CARBON	10K 5% 1/4W
R370	1-249-419-11	CARBON	1.5K 5% 1/4W	R432	1-249-429-11	CARBON	10K 5% 1/4W
R371	1-249-419-11	CARBON	1.5K 5% 1/4W	R450	1-249-435-11	CARBON	33K 5% 1/4W
R372	1-249-419-11	CARBON	1.5K 5% 1/4W	R451	1-249-441-11	CARBON	100K 5% 1/4W
R373	1-247-887-00	CARBON	220K 5% 1/4W	R452	1-249-437-11	CARBON	47K 5% 1/4W
R374	1-247-887-00	CARBON	220K 5% 1/4W	R453	1-249-405-11	CARBON	100 5% 1/4W
R375	1-249-409-11	CARBON	220 5% 1/4W	R454	1-249-405-11	CARBON	100 5% 1/4W
R376	1-249-409-11	CARBON	220 5% 1/4W	R460	1-249-435-11	CARBON	33K 5% 1/4W
R377	1-249-409-11	CARBON	220 5% 1/4W	R461	1-249-441-11	CARBON	100K 5% 1/4W
R378	1-249-409-11	CARBON	220 5% 1/4W	R462	1-249-437-11	CARBON	47K 5% 1/4W
R379	1-249-425-11	CARBON	4.7K 5% 1/4W	R463	1-249-405-11	CARBON	100 5% 1/4W
R380	1-249-425-11	CARBON	4.7K 5% 1/4W	R464	1-249-405-11	CARBON	100 5% 1/4W
R381	1-249-425-11	CARBON	4.7K 5% 1/4W	R471	1-249-422-11	CARBON	2.7K 5% 1/4W
R382	1-249-425-11	CARBON	4.7K 5% 1/4W	R472	1-249-424-11	CARBON	3.9K 5% 1/4W
R383	1-249-414-11	CARBON	560 5% 1/4W	R473	1-249-427-11	CARBON	6.8K 5% 1/4W
R384	1-249-414-11	CARBON	560 5% 1/4W	R474	1-249-432-11	CARBON	18K 5% 1/4W
R385	1-249-393-11	CARBON	10 5% 1/4W	R476	1-249-422-11	CARBON	2.7K 5% 1/4W
R386	1-249-393-11	CARBON	10 5% 1/4W	R477	1-249-424-11	CARBON	3.9K 5% 1/4W
R389	1-249-414-11	CARBON	560 5% 1/4W	R478	1-249-427-11	CARBON	6.8K 5% 1/4W
R390	1-249-414-11	CARBON	560 5% 1/4W	R479	1-249-432-11	CARBON	18K 5% 1/4W
R401	1-249-433-11	CARBON	22K 5% 1/4W	R481	1-249-422-11	CARBON	2.7K 5% 1/4W
R402	1-249-433-11	CARBON	22K 5% 1/4W	R482	1-249-424-11	CARBON	3.9K 5% 1/4W
R403	1-249-433-11	CARBON	22K 5% 1/4W	R483	1-249-427-11	CARBON	6.8K 5% 1/4W
R404	1-249-425-11	CARBON	4.7K 5% 1/4W	R484	1-249-432-11	CARBON	18K 5% 1/4W
R405	1-249-425-11	CARBON	4.7K 5% 1/4W	R501	1-249-422-11	CARBON	2.7K 5% 1/4W
R406	1-249-425-11	CARBON	4.7K 5% 1/4W	R502	1-249-424-11	CARBON	3.9K 5% 1/4W
R407	1-249-433-11	CARBON	22K 5% 1/4W	R503	1-249-427-11	CARBON	6.8K 5% 1/4W
R408	1-249-441-11	CARBON	100K 5% 1/4W	R504	1-249-432-11	CARBON	18K 5% 1/4W
R409	1-247-864-11	CARBON	24K 5% 1/4W	R505	1-249-422-11	CARBON	2.7K 5% 1/4W
R410	1-247-880-11	CARBON	110K 5% 1/4W	R506	1-249-424-11	CARBON	3.9K 5% 1/4W
R411	1-249-440-11	CARBON	82K 5% 1/4W	R507	1-249-427-11	CARBON	6.8K 5% 1/4W
R412	1-247-876-11	CARBON	75K 5% 1/4W	R508	1-249-432-11	CARBON	18K 5% 1/4W
R413	1-249-440-11	CARBON	82K 5% 1/4W	R509	1-249-422-11	CARBON	2.7K 5% 1/4W
R414	1-247-874-11	CARBON	62K 5% 1/4W	R805	1-249-409-11	CARBON	220 5% 1/4W
R415	1-249-435-11	CARBON	33K 5% 1/4W	R806	1-249-425-11	CARBON	4.7K 5% 1/4W
R416	1-247-878-00	CARBON	91K 5% 1/4W	R807	1-249-434-11	CARBON	27K 5% 1/4W
R417	1-247-878-00	CARBON	91K 5% 1/4W	R808	1-249-430-11	CARBON	12K 5% 1/4W
R418	1-247-878-00	CARBON	91K 5% 1/4W	R809	1-247-850-11	CARBON	6.2K 5% 1/4W
R419	1-249-440-11	CARBON	82K 5% 1/4W	R810	1-247-844-11	CARBON	3.6K 5% 1/4W
R420	1-249-440-11	CARBON	82K 5% 1/4W	R811	1-247-838-00	CARBON	2K 5% 1/4W
R421	1-249-393-11	CARBON	10 5% 1/4W				

<b>MAIN</b>	<b>FUNCTION</b>	<b>DISPLAY</b>	<b>DSP</b>	<b>POWER</b>
<b>HEADPHONE VOL</b>	<b>HEADPHONE JACK</b>			

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R812	1-249-416-11	CARBON	820 5% 1/4W			< SWITCH >	
R901	1-249-417-11	CARBON	1K 5% 1/4W	S201	▲ 1-571-722-11	SWITCH, VOLTAGE SELECTION (E)	
R902	1-249-417-11	CARBON	1K 5% 1/4W	S471	1-554-303-21	SWITCH, TACTILE (1)	
R903	1-249-417-11	CARBON	1K 5% 1/4W	S472	1-554-303-21	SWITCH, TACTILE (2)	
R905	1-249-417-11	CARBON	1K 5% 1/4W	S473	1-554-303-21	SWITCH, TACTILE (3)	
R908	1-249-429-11	CARBON	10K 5% 1/4W	S474	1-554-303-21	SWITCH, TACTILE (4)	
R909	1-249-429-11	CARBON	10K 5% 1/4W	S475	1-554-303-21	SWITCH, TACTILE (5)	
R910	1-249-429-11	CARBON	10K 5% 1/4W	S476	1-554-303-21	SWITCH, TACTILE (6)	
R911	1-249-429-11	CARBON	10K 5% 1/4W	S477	1-554-303-21	SWITCH, TACTILE (7)	
R912	1-249-429-11	CARBON	10K 5% 1/4W	S478	1-554-303-21	SWITCH, TACTILE (8)	
R915	1-249-441-11	CARBON	100K 5% 1/4W	S479	1-554-303-21	SWITCH, TACTILE (9)	
R916	1-249-441-11	CARBON	100K 5% 1/4W	S480	1-554-303-21	SWITCH, TACTILE (10)	
R917	1-249-441-11	CARBON	100K 5% 1/4W	S481	1-554-303-21	SWITCH, TACTILE (>10)	
R918	1-249-405-11	CARBON	100 5% 1/4W	S482	1-554-303-21	SWITCH, TACTILE (MUSIC SCAN)	
R919	1-249-405-11	CARBON	100 5% 1/4W	S483	1-554-303-21	SWITCH, TACTILE (CHECK)	
R921	1-249-417-11	CARBON	1K 5% 1/4W	S484	1-554-303-21	SWITCH, TACTILE (CLEAR)	
R922	1-249-420-11	CARBON	1.8K 5% 1/4W	S485	1-554-303-21	SWITCH, TACTILE (FADER)	
R923	1-249-417-11	CARBON	1K 5% 1/4W	S501	1-554-303-21	SWITCH, TACTILE (◀)	
R924	1-249-417-11	CARBON	1K 5% 1/4W	S502	1-554-303-21	SWITCH, TACTILE (▶)	
R925	1-249-417-11	CARBON	1K 5% 1/4W	S503	1-554-303-21	SWITCH, TACTILE (■)	
R941	1-249-419-11	CARBON	1.5K 5% 1/4W	S504	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE ▲)	
R943	1-249-441-11	CARBON	100K 5% 1/4W	S505	1-554-303-21	SWITCH, TACTILE (DISC SKIP)	
R945	1-249-425-11	CARBON	4.7K 5% 1/4W	S506	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)	
R946	1-249-425-11	CARBON	4.7K 5% 1/4W	S507	1-554-303-21	SWITCH, TACTILE (◀)	
R947	1-249-425-11	CARBON	4.7K 5% 1/4W	S508	1-554-303-21	SWITCH, TACTILE (▶)	
R948	1-249-421-11	CARBON	2.2K 5% 1/4W	S509	1-554-303-21	SWITCH, TACTILE (►)	
R949	1-249-422-11	CARBON	2.7K 5% 1/4W	S510	1-554-303-21	SWITCH, TACTILE (■)	
R950	1-247-836-11	CARBON	1.6K 5% 1/4W	S511	1-554-303-21	SWITCH, TACTILE (TIME)	
R951	1-247-828-11	CARBON	750 5% 1/4W	S512	1-554-303-21	SWITCH, TACTILE (REPEAT)	
R952	1-247-832-11	CARBON	1.1K 5% 1/4W	S801	1-554-303-21	SWITCH, TACTILE (HALL)	
R953	1-249-410-11	CARBON	270 5% 1/4W	S802	1-554-303-21	SWITCH, TACTILE (CHURCH)	
R971	1-249-419-11	CARBON	1.5K 5% 1/4W	S803	1-554-303-21	SWITCH, TACTILE (JAZZ CLUB)	
R973	1-249-441-11	CARBON	100K 5% 1/4W	S804	1-554-303-21	SWITCH, TACTILE (STADIUM)	
R975	1-249-425-11	CARBON	4.7K 5% 1/4W	S805	1-554-303-21	SWITCH, TACTILE (DISCO)	
R976	1-249-425-11	CARBON	4.7K 5% 1/4W	S806	1-554-303-21	SWITCH, TACTILE (FLAT)	
R977	1-249-425-11	CARBON	4.7K 5% 1/4W			< CRYSTAL >	
R978	1-249-421-11	CARBON	2.2K 5% 1/4W	X351	1-567-965-11	VIBRATOR, CRYSTAL (22.5MHz)	
R979	1-249-422-11	CARBON	2.7K 5% 1/4W	X901	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	
R980	1-247-836-11	CARBON	1.6K 5% 1/4W			*****	
R981	1-247-828-11	CARBON	750 5% 1/4W			* 1-639-469-11 POWER SW BOARD	
R982	1-247-832-11	CARBON	1.1K 5% 1/4W			*****	
R983	1-249-410-11	CARBON	270 5% 1/4W			* 1-639-470-11 HEADPHONE VOL BOARD	

&lt; VARIABLE RESISTOR &gt;

RV801 1-241-509-11 RES. VAR. CARBON 10K (EFFECT MIN/MAX)

**Note:**  
The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

**Note:**  
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Ne les remplacer que par une pièce portant le numéro spécifié.

\* 4-922-980-01 HOLDER (LED)

\* 1-639-471-11 HEADPHONE JACK BOARD  
\*\*\*\*\*

\* 1-639-470-11 HEADPHONE VOL BOARD  
\*\*\*\*\*

\* 1-639-469-11 POWER SW BOARD  
\*\*\*\*\*

<b>POWER</b>	<b>HEADPHONE VOL</b>	<b>HEADPHONE JACK</b>
<b>TABLE MOTOR</b>	<b>LOADING MOTOR</b>	<b>OPEN/UP SW</b>

Ref. No.	Part No.	Description			Remark		Ref. No.	Part No.	Description			Remark	
-----													
		< CAPACITOR >							* 1-638-729-11 TABLE MOTOR BOARD *****				
C551	1-161-494-00	CERAMIC	0.022uF		25V				* 1-638-730-11 LOADING MOTOR BOARD *****				
C701	1-162-291-31	CERAMIC	560PF	10%	50V				* 1-638-731-11 OPEN/UP SW BOARD *****				
C702	1-162-291-31	CERAMIC	560PF	10%	50V								
C703	1-164-159-11	CERAMIC	0.1uF		50V								
C704	1-161-494-00	CERAMIC	0.022uF		25V				< CAPACITOR >				
		< CONNECTOR >											
CN702	* 1-568-832-11	SOCKET, CONNECTOR 13P						C704	1-161-375-00	CERAMIC	0.0022uF	20%	50V
		< DIODE >						C705	1-161-375-00	CERAMIC	0.0022uF	20%	50V
		< IC >							< CONNECTOR >				
D601	8-719-970-49	DIODE BR4361F (VOL POINT)						CN705	* 1-566-214-11	PIN, CONNECTOR (PC BOARD)	2P		
		< JACK >						CN707	* 1-573-044-11	SOCKET, CONNECTOR			
IC551	8-741-100-48	IC SBX1610-59							< DIODE >				
		< RESISTOR >						D701	8-719-970-19	DIODE GP1A521			
		< JACK >							< RESISTOR >				
J701	1-568-519-21	JACK, LARGE TYPE (HEADPHONES) (C615)						R701	1-249-416-11	CARBON	820	5%	1/4W
J701	1-568-519-41	JACK, LARGE TYPE (HEADPHONES) (C67ES)							< SWITCH >				
		< RESISTOR >						S702	1-571-300-21	SWITCH, ROTARY (OPEN/UP)			
		< VARIABLE RESISTOR >							*****				
RV701	1-238-750-11	RES, VAR, CARBON 10K/10K (PHONE/LINE OUT LEVEL)							MISCELLANEOUS *****				
		< SWITCH >							12 1-590-834-11 WIRE, FLAT TYPE (13 CORE)				
		< SWITCH >							13 1-590-835-11 WIRE, FLAT TYPE (34 CORE)				
\$551	1-554-303-21	SWITCH, TACTILE (DISC 1)							54 1-452-340-21 MAGNET				
\$552	1-554-303-21	SWITCH, TACTILE (DISC 2)							65 1-590-849-11 WIRE, FLAT TYPE (5 CORE)				
\$553	1-554-303-21	SWITCH, TACTILE (DISC 3)							101 1-535-892-11 JUMPER, FILM (WITH TERMINAL)				
\$554	1-554-303-21	SWITCH, TACTILE (DISC 4)							124 ▲ 1-574-358-31 CORD, POWER (WITH CONNECTOR) (Australian)				
\$555	1-554-303-21	SWITCH, TACTILE (DISC 5)							124 ▲ 1-575-651-21 CORD, POWER (AEP)				
\$556	1-554-303-21	SWITCH, TACTILE (CONTINUE)							124 ▲ 1-575-653-21 CORD, POWER (E)				
\$557	1-554-303-21	SWITCH, TACTILE (SHUFFLE)							124 ▲ 1-590-836-11 CORD, POWER (U.S. Canadian)				
\$558	1-554-303-21	SWITCH, TACTILE (PROGRAM)							125 ▲ 1-569-007-11 ADAPTOR, CONVERSION 2P (E)				
\$559	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)							151 ▲ 8-848-144-11 DEVICE, OPTICAL KSS-240A				
\$560	1-572-714-11	SWITCH, PUSH (POWER ON/OFF)							152 1-575-001-11 WIRE, FLAT TYPE (12 CORE)				
		< SWITCH >							M101 X-4917-504-1 MOTOR ASSY (SLED)				
		< SWITCH >							M102 X-4917-523-3 MOTOR ASSY (SPINDLE)				
		< SWITCH >							M701 A-4604-585-A MOTOR ASSY, ROTARY (TABLE)				
		< SWITCH >							M702 A-4604-834-A MOTOR ASSY, LOADING				
		< SWITCH >							S701 1-572-713-11 SWITCH, PUSH (WITH CONNECTOR) (DOWN)				
		< SWITCH >							T901 ▲ 1-450-133-11 TRANSFORMER, POWER (U.S. Canadian)				
		< SWITCH >							T901 ▲ 1-450-134-11 TRANSFORMER, POWER (AEP, Australian)				
		< SWITCH >							T901 ▲ 1-450-135-11 TRANSFORMER, POWER (E)				

**Note:**

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**Note:**

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Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
-----			
ACCESSION & PACKING MATERIAL			
*****			
	1-465-729-11	REMOTE COMMANDER	
	1-558-271-11	CORD, CONNECTION (C67ES)	
	1-559-533-11	CORD, CONNECTION (C615)	
	3-701-630-00	BAG, POLYETHYLENE	
	3-707-584-01	COVER, BATTERY	
	3-753-146-11	MANUAL, INSTRUCTION (English, French, Spanish, Portuguese) (AEP, E, Canadian)	
	3-753-146-21	MANUAL, INSTRUCTION (Engliah) (C615:US, Australian)	
	3-753-146-41	MANUAL, INSTRUCTION (German, Dutch, Swedish, Italian) (AEP)	
	3-753-147-21	MANUAL, INSTRUCTION (English) (C67ES)	
	3-795-629-11	INSTRUCTION	
	4-937-945-01	PLATE (TRANSPORT), LOCK	
*	4-941-548-01	LABEL, CLASS 1 (AEP, E, Australian)	
*	4-944-109-41	INDIVIDUAL CARTON (C615)	
*	4-944-109-51	INDIVIDUAL CARTON (C67ES)	
*	4-944-110-01	CUSHION (FRONT)	
*	4-944-111-01	CUSHION (REAR)	
*****			

**HARDWARE LIST**  
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# 1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
# 2	7-682-548-04	SCREW +BVTT 3X8 (S)
# 3	7-685-870-01	SCREW +BVTT 3X5 (S)
# 4	7-685-648-79	SCREW +BVTP 3X12 TYPE2 N-S
# 5	7-682-554-04	SCREW +B 3X25
# 6	7-685-648-79	SCREW (M3X12), TAPPING
# 7	7-685-136-19	SCREW +P 2.6X12 TYPE2 NON-SLIT
# 8	7-685-647-79	SCREW, TAPPING
# 9	7-621-255-15	SCREW +P 2X3
#10	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S
#11	7-683-401-04	BOLT, HEXAGON SOCKET 3X4 (C67ES)