

# CDP-591/M51

## SERVICE MANUAL

*US Model*  
*Canadian Model*  
*CDP-591*  
*AEP Model*  
*Australian Model*  
*UK Model*  
*E Model*  
*CDP-591/M51*

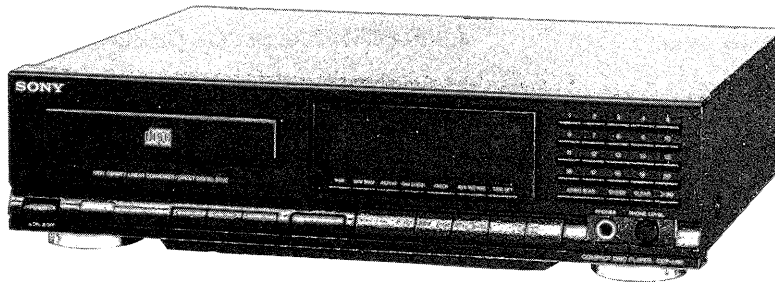


PHOTO : CDP-M51

Model Name Using Similar Mechanism	CDP-291/391
CD Mechanism Name	CDM14-5BD1
Base Unit Name	BU-5BD1

### SPECIFICATIONS

#### Compact disc player

Frequency response	2 Hz — 20 kHz $\pm 0.5$ dB
Signal to noise ratio	More than 100 dB
Dynamic range	More than 98 dB
Harmonic distortion	Less than 0.003%
Channel separation	More than 97 dB

#### Outputs

LINE OUT (FIXED) (phono 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 50 kilohms
HEADPHONES (Stereo phone jack)	Output level max. 10 mW Load impedance 32 ohms

#### General

Power requirements	Model for Continental Europe 220 – 230 V AC, 50/60 Hz Model for Australia 240 V AC, 50/60 Hz Model for other countries 110 – 120, 220–240 V AC adjustable, 50/60 Hz
Power consumption	12 W
Dimensions (approx., including projections)	CDP-591: 430×110×280 mm (w/h/d) CDP-M51: 355 × 95 × 310 mm (w/h/d)
Weight (approx.)	CDP-591: 3.7 kg CDP-M51: 3.3 kg

#### Remote commander RM-D591

Remote control system	Infrared control
Power requirements	3 V DC with two batteries size AA (IEC designation R6)
Dimensions	40×20×175 mm (w/h/d)
Weight	95 g Including batteries

COMPACT DISC PLAYER  
**SONY®**

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## Supplied accessories

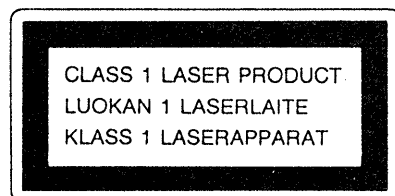
Connecting cord	1 (2 phono plugs ↔ 2 phono plugs)
Remote commander	1
R6 (size AA) batteries	2

Design and specifications subject to change without notice.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

## Note

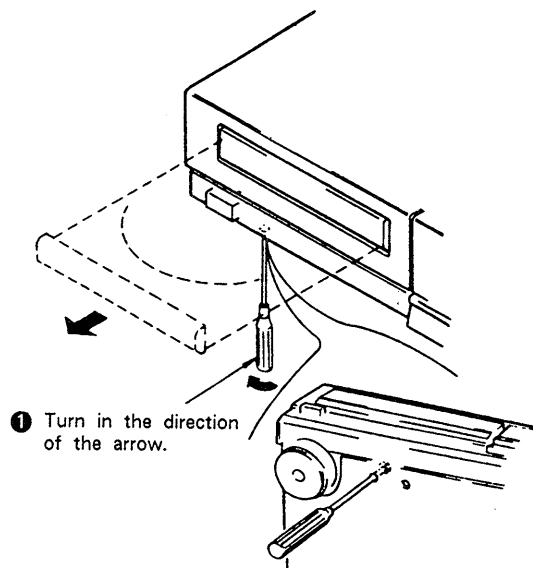
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.



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

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## HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF



Caution : When you work, keep the set horizontal.

## SAFETY-RELATED COMPONENT WARNING!!

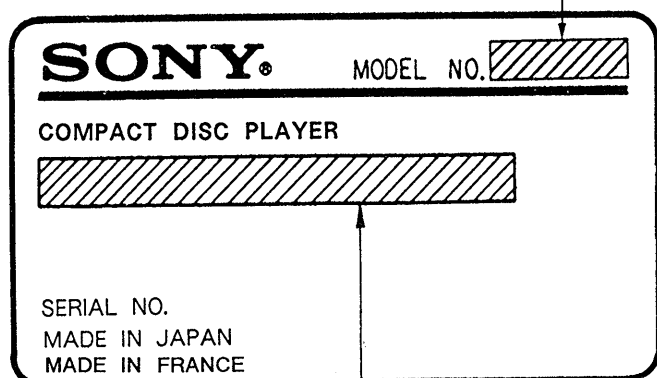
COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## 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.

## MODEL IDENTIFICATION

—Specification Labels—



US, Canadian model : AC : 120V 60Hz

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

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

Australian model : AC : 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 more than 25 cm away from the objective lens.

**SAFETY CHECK-OUT**

(US Model only)

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 microamperes). 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 0.75 V, 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)

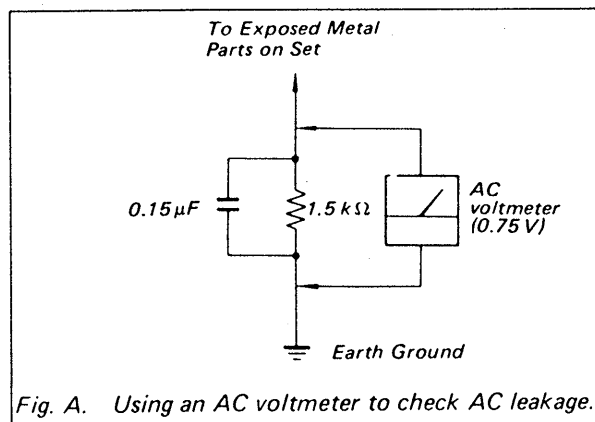


Fig. A. Using an AC voltmeter to check AC leakage.

## 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: 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.

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 iverigt 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-dioe data

- Materiale: GaAlAs
- Bølgelængde: 780 nm
- Udstråling: 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. laser-dioden) 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

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN  
AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.  
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING  
NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGA  
UDSÆTTELSE FOR STRÅLING.

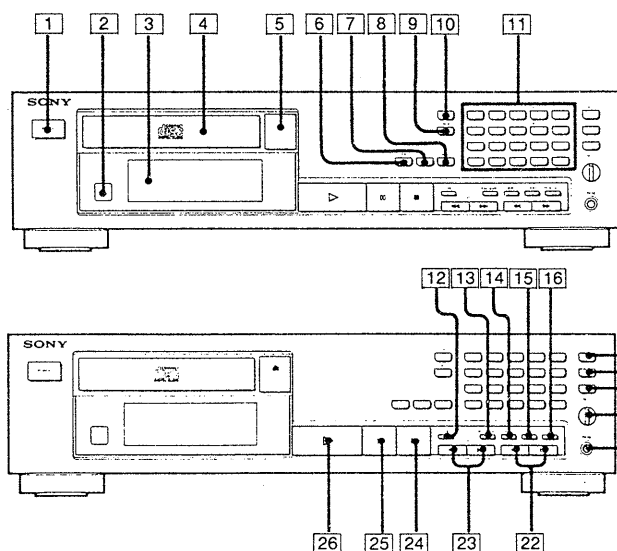
**VAROITUS:** Laite sisältää, laserdiodin, joka lähettää (näkyvätöntä) silmille vaarallista lasersäteilyä.

## SECTION 1

### GENERAL

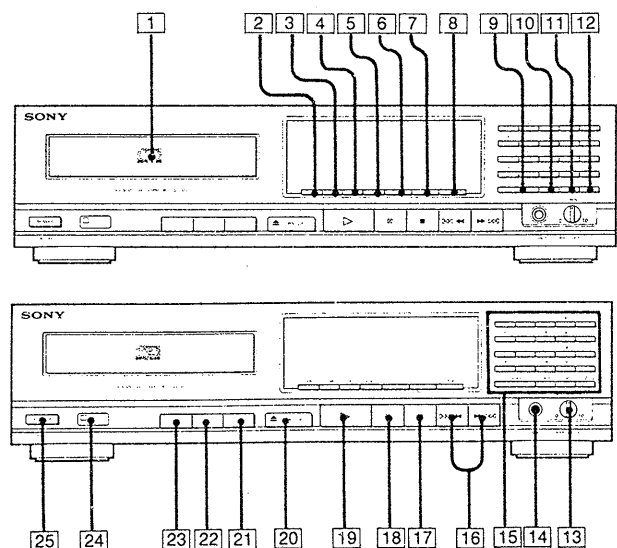
#### • LOCATION AND FUNCTION OF CONTROLS

##### — CDP-591 —

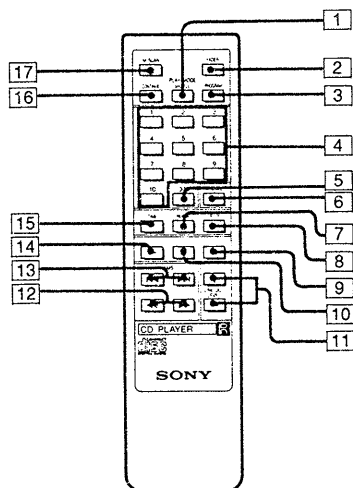


- 1 POWER switch
  - 2 Remote sensor
  - 3 Display window
  - 4 Disk tray
  - 5 ▲ (open/close) button
  - 6 CONTINUE button
  - 7 SHUFFLE button
  - 8 PROGRAM button
  - 9 TIME SET button
  - 10 EDIT/TIME FADE button
  - 11 Numeric buttons
  - 12 TIME button
  - 13 PEAK SEARCH button
  - 14 REPEAT button
  - 15 FADER (fade in/fade out) button
  - 16 MUSIC SCAN button
  - 17 > 20 (over 20) button
  - 18 CHECK (program check) button
  - 19 CLEAR (program clear) button
  - 20 LINE OUT/PHONE LEVEL control
  - 21 PHONES jack
  - 22 ◀▶ (manual search) buttons
  - 23 ◀▶▶▶ (AMS\*) buttons
  - 24 ■ (stop) button
  - 25 || (pause) button
  - 26 ▶ (play) button
- \* AMS is the abbreviation of Automatic Music Sensor.

##### — CDP-M51 —



- 1 Disc tray
- 2 TIME button
- 3 AUTO SPACE (auto space) button
- 4 REPEAT button
- 5 PEAK SEARCH button
- 6 FADER (fade in/fade out) button
- 7 EDIT/TIME FADE button
- 8 TIME SET button
- 9 MUSIC SCAN button
- 10 CHECK (program check) button
- 11 CLEAR (program clear) button
- 12 > 20 (over 20) button
- 13 LINE OUT/PHONE LEVEL control
- 14 PHONES jack
- 15 Numeric buttons
- 16 ◀▶▶▶▶▶▶▶▶▶ (AMS\*/manual search) button
- 17 ■ (stop) button
- 18 || (pause) button
- 19 ▶ (play) button
- 20 ▲ (open/close) button
- 21 PROGRAM button
- 22 SHUFFLE button
- 23 CONTINUE button
- 24 Remote sensor
- 25 Power switch



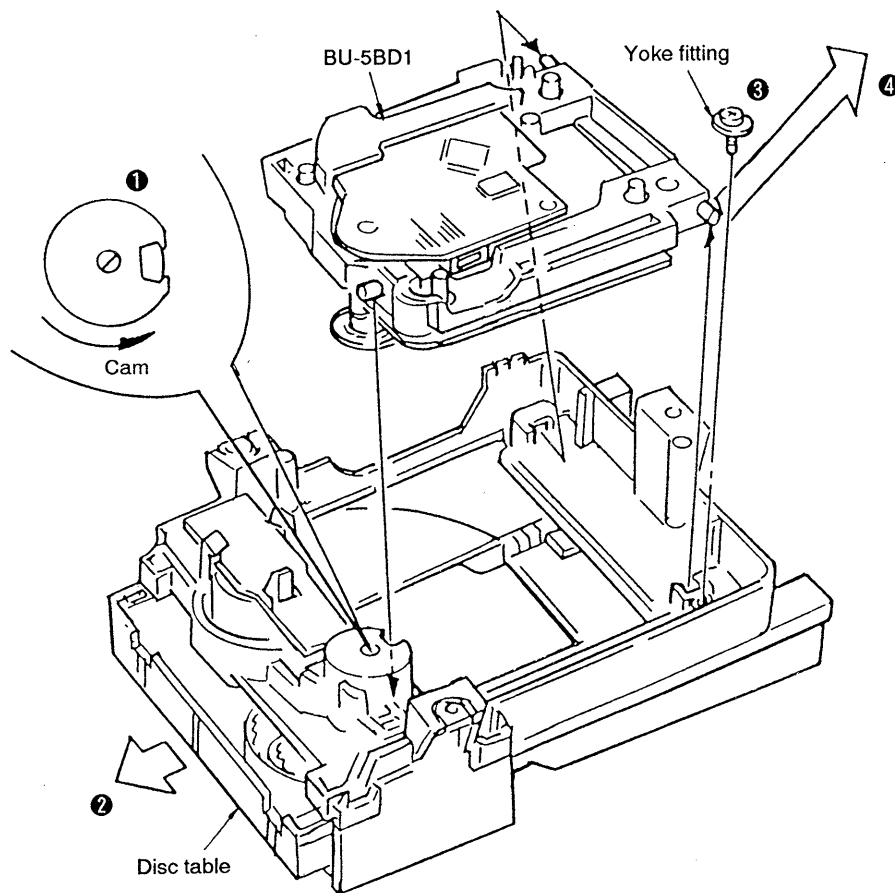
- 1 SHUFFLE button
- 2 FADER (fade in/fade out) button
- 3 PROGRAM button
- 4 Numeric button
- 5 > 10 (over 10) button
- 6 A.SPACE (auto space) button
- 7 REPEAT (A - B repeat clear/repeat) button
- 8 A - B repeat button
- 9 ■ (stop) button
- 10 || (pause) button
- 11 LINE OUT LEVEL (line out/headphone level) buttons
- 12 ◀▶▶▶ (manual search) button
- 13 ◀▶▶▶▶ AMS buttons
- 14 ▶ (play) button
- 15 TIME button
- 16 CONTINUE button
- 17 M.SCAN (music scan) button

## SECTION 2

### DISASSEMBLY

#### [Removal of MD block (BU-5BD1)]

- Disassemble in the order instructed by numbers, such as ❶.
- ❶ Turn the cam in the arrow direction with slotted screwdriver.
- ❷ Draw out the disc table.
- ❸ Remove the yoke fitting.
- ❹ Remove BU-5BD1 in the arrow direction.



## SECTION 3

### IC101 (CXA1372Q) PIN FUNCTION

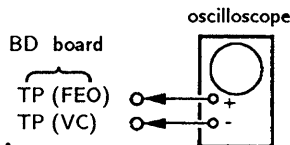
Pin No.	Pin Name	I/O	Function
1	VC		When $\pm$ power : GND. When signal power : middle point (2.5V)
2	FGD	I	FGD terminal of gain select (time constant) in focus gain normal, down
3	FS3	I	Connecting terminal between FS3 terminals
4	FLB	I	Capacitor connecting terminal for equalizing low-frequency response 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 4

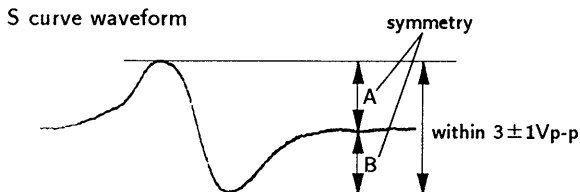
### ELECTRICAL BLOCK CHECKING

**Note :**

1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than  $10M\Omega$  impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

**S Curve Check****Procedure :**

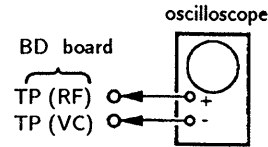
1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within  $3 \pm 1V_{p-p}$ .



5. After check, remove the lead wire connected in step 2.

**Note :** • Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.

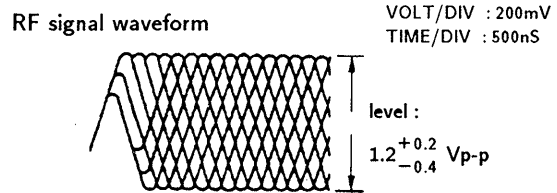
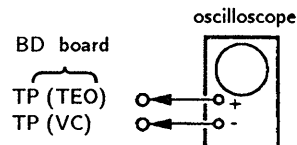
- Take sweep time as long as possible and light up the brightness to obtain best waveform.

**RF Level Check****Procedure :**

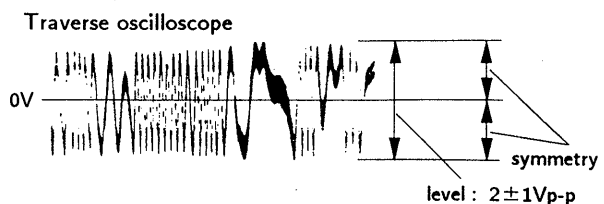
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

**Note :**

Clear RF signal waveform means that the shape “◇” can be clearly distinguished at the center of the waveform.

**E-F Balance Check****Procedure :**

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

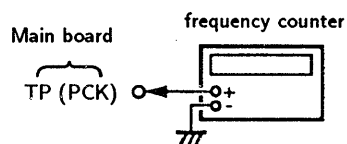


6. Remove the lead wire connected in step 1.

## RF PLL Free-run Frequency Check

### Procedure :

1. Connect frequency counter to test point (PCK) with lead wire.



2. Turn Power switch on.
3. Confirm that reading on frequency counter is
4. 3218MHz.

### Focus/Tracking Gain

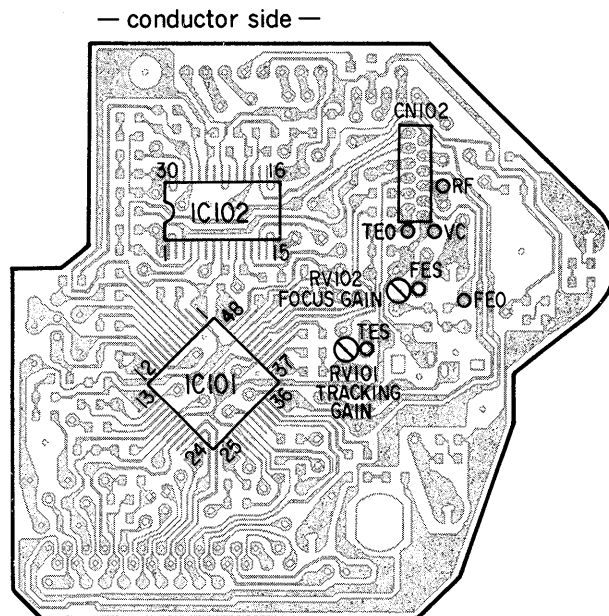
This gain has a margin, so even if it is slightly off. There is no problem.

Therefore, do not perform, this adjustment.

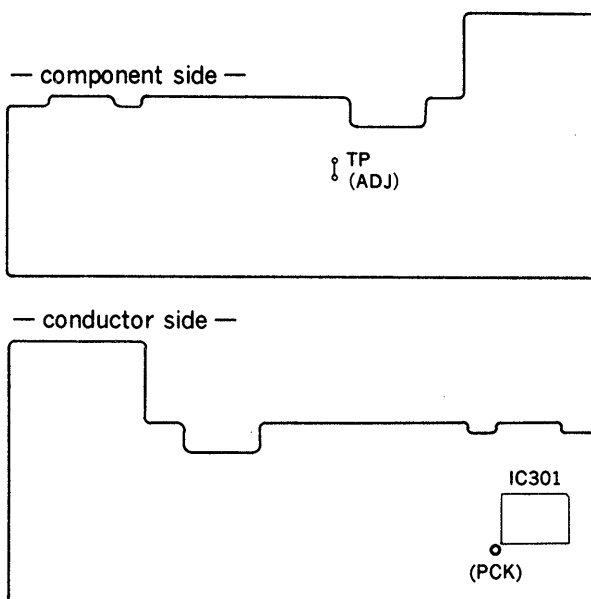
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

### Adjustment Locations :

#### [BD board]



#### [Main board]





- **IC BLOCK DIAGRAMS**

The diagram illustrates the control system for a color television receiver, showing the interconnection of various functional blocks and their control signals. The system is organized into several main sections:

- Top Section (Control Inputs and Buffers):** Includes inputs for DVCC, CC1, CC2, FDK, EFM, AUTO ASY BUFFER, DFCFT MIRR, DND, SENS, COOT, and XSET. These are connected to various comparators and buffers.
- Left Section (Control Signals):** Lists control signals such as CB, CP, RF1, RFO, DVEE, TZC, TE, TDFCT, ATSC, FZC, FE, FDFCT, VC, FGD, FS3, FLB, FE0, FE-, RCH, TBU, VCC, TA0, and TA-.
- Right Section (Control Signals):** Lists control signals such as DATA, XLT, CLK, LOCK, DIRC, AVEE, SSTR, ISET, FSET, SL-, SLO, and SL+.
- Central Section (Functional Blocks):**
  - COMPARATORS:** FOK, LEVEL SHIFT, DFCFT, MIRR, PEAK & BOTTOM HOLD, MIRR DIFFERENTIAL AMP, MIRR HOLD AMP, and a large central COMPARATOR.
  - SEQUENCER:** A central block that coordinates the timing of various operations.
  - TRACKING PHASE COMPENSATION:** A block for stabilizing the tracking phase.
  - SLED AMP:** A block for controlling the sled amplifier.
  - FOCUS PHASE COMPENSATION:** A block for stabilizing the focus phase.
  - FOCUS AMP:** A block for controlling the focus amplifier.
- Bottom Section (Control Signals):** Lists control signals such as FS1-4, TG1-2, TM1-7, PS1-3, T. GAIN UP/DOWN, T. SERVO ON/OFF, T. BRAKE SERVO ON/CHOP, T. GAIN UP/DOWN, T. SEARCH ON/OFF, and T. SEARCH ON/OFF.

The diagram shows a complex network of connections between these blocks, with many lines indicating the flow of control signals. The central SEQUENCER block is a key component, receiving inputs from various control signals and outputting to many other blocks. The TRACKING PHASE COMPENSATION and FOCUS PHASE COMPENSATION blocks are also central to the system, receiving inputs from the SEQUENCER and other control signals.

The block diagram illustrates the internal architecture of the Philips TDA1147 integrated circuit, which is designed for FM stereo reception and processing. The circuit is organized around a central DATA BUS that connects various functional blocks.

**Input and Control Pins (Left Side):**

- 1: FOK (Feedback Output Key)
- 2: FSW (Frequency Switching)
- 3: MON (Monitor)
- 4: MOP (Monitor Output)
- 5: MBS (Monitor Bias)
- 6: LOCK (Lock Indicator)
- 7: NC (Not Connected)
- 8: VCOO (VCO Output)
- 9: VCOI (VCO Input)
- 10: TEST
- 11: PDD (Power Detector)
- 12: VSS (Ground)
- 13: NC
- 14: NC
- 15: NC
- 16: VPCO (VCO Control)
- 17: VCKI (VCO Clock Input)
- 18: FILO (Filter Output)
- 19: FILI (Filter Input)
- 20: PCO (Phase Control)
- 21: AYSS (Automatic Volume Control)
- 22: CLTV (Control Line)
- 23: AVDD (Automatic Volume Control)
- 24: RF (Radio Frequency Input)

**Output Pins (Right Side):**

- 41: DA0S (Data Output)
- 42: DA0T (Data Output)
- 43: DA07 (Data Output)
- 44: DA06 (Data Output)
- 45: DA05 (Data Output)
- 46: DA04 (Data Output)
- 47: DA03 (Data Output)
- 48: DA02 (Data Output)
- 49: DA01 (Data Output)
- 50: APTF (Automatic Pitch Control)
- 51: APTL (Automatic Pitch Control)
- 52: VSS (Ground)
- 53: XTAL1 (Crystal Input)
- 54: XTAL2 (Crystal Input)
- 55: FSTL (Frequency Switching)
- 56: C4M (Capacitor)
- 57: C16M (Capacitor)
- 58: VARIABLE PITCH CONTROL
- 59: MO2 (Monitor Output)
- 60: ROUT (Radio Output)
- 61: EMPH (Emphasis)
- 62: WFCM (Wide Frequency Control)
- 63: SCOR (Stereo Control)
- 64: SBSO (Stereo Bias)

**Internal Functional Blocks:**

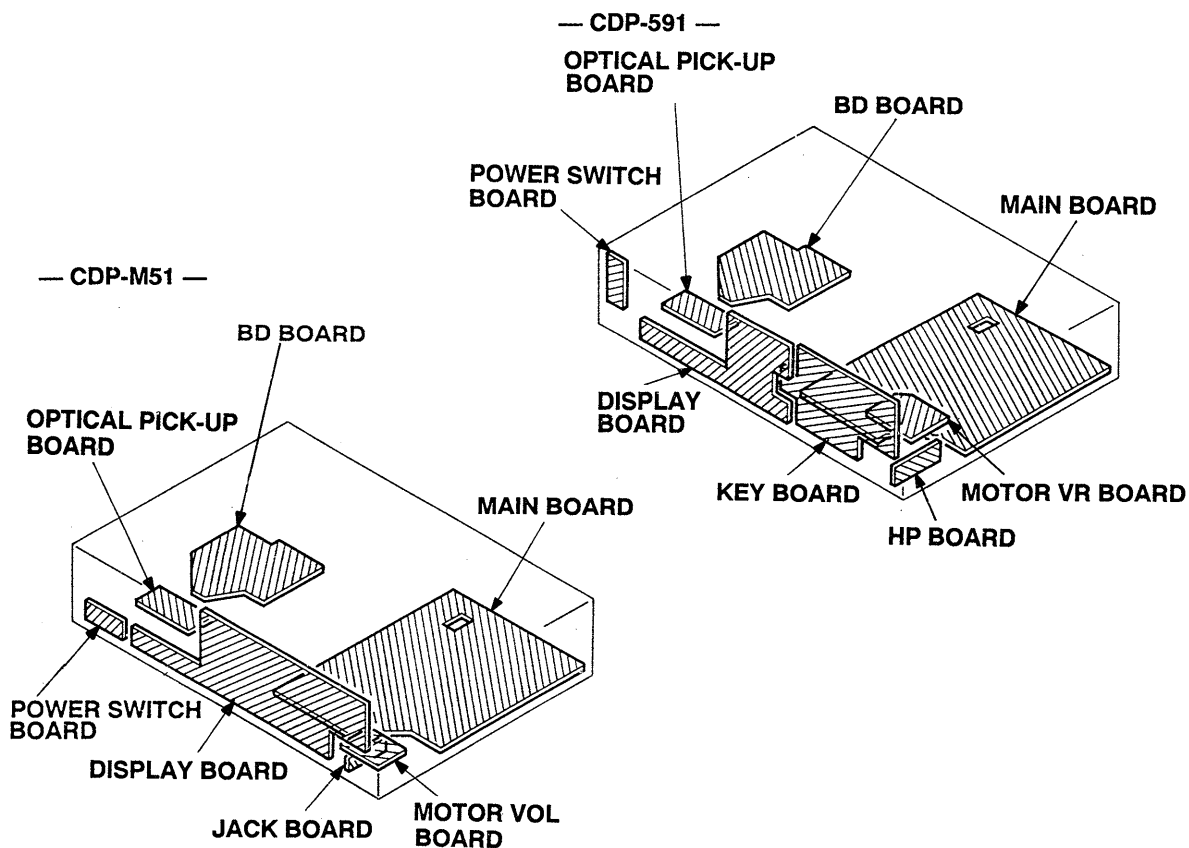
- AUTO SEQUENCER:** Manages the overall operation and sequencing of the circuit.
- CLV (Control Line Variable):** Processes control line signals.
- PLL (Phase-Locked Loop):** Locks the VCO to the received frequency.
- VCO (Voltage-Controlled Oscillator):** Generates the carrier frequency.
- ASYMMETRY CORRECTOR:** Corrects asymmetry in the stereo signal.
- DATA BUS:** The central communication channel connecting all major blocks.
- RAM (Random Access Memory):** Stores temporary data.
- ADDRESS GENERATOR:** Provides addresses for the RAM and the D/A processor.
- ERROR CORRECTOR:** Detects and corrects errors in the received signal.
- D/A DATA PROCESSOR:** Converts digital data back into an analog signal.
- FM DEMODULATOR:** Demodulates the FM signal to extract the baseband.
- DIGITAL OUT:** Provides digital output data.
- CLOCK GENERATOR:** Provides a stable clock signal for the digital blocks.

**Power and Reference Pins (Top and Bottom):**

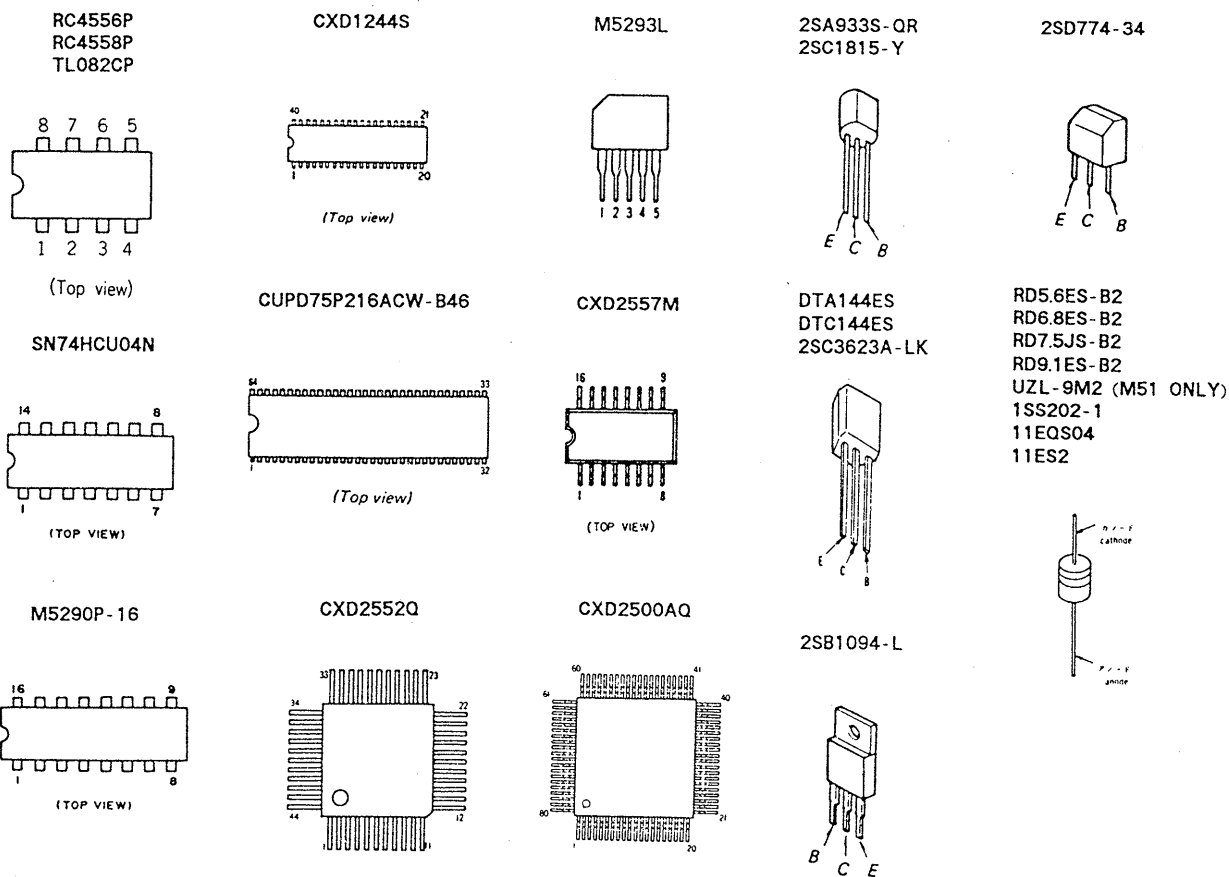
- Top: MIRR, CLKO, XLTO, DATA, CNIN, SEIN, CLOK, VDD, XLAT, DATA, XRST, SENS, MUTE, SOCK, SOSO, EXCK.
- Bottom: TEST2, TEST3, ASVO, TEST4, NC, PSSL, WCKL, LRCK, VDD, DA16, DA15, DA14, DA13, DA12, DA11, DA10.

[illegible]

# • CIRCUIT BOARD LOCATIONS

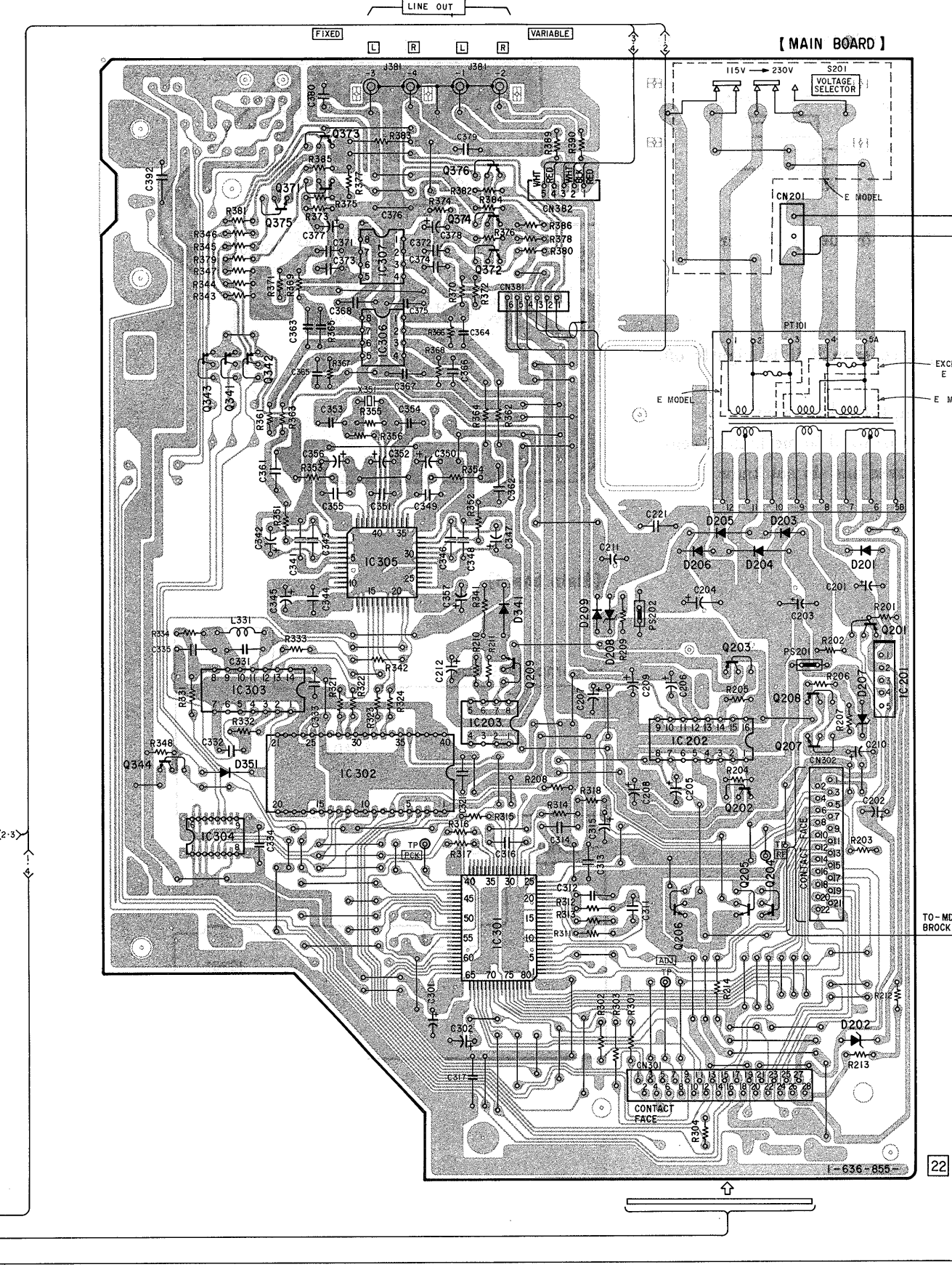
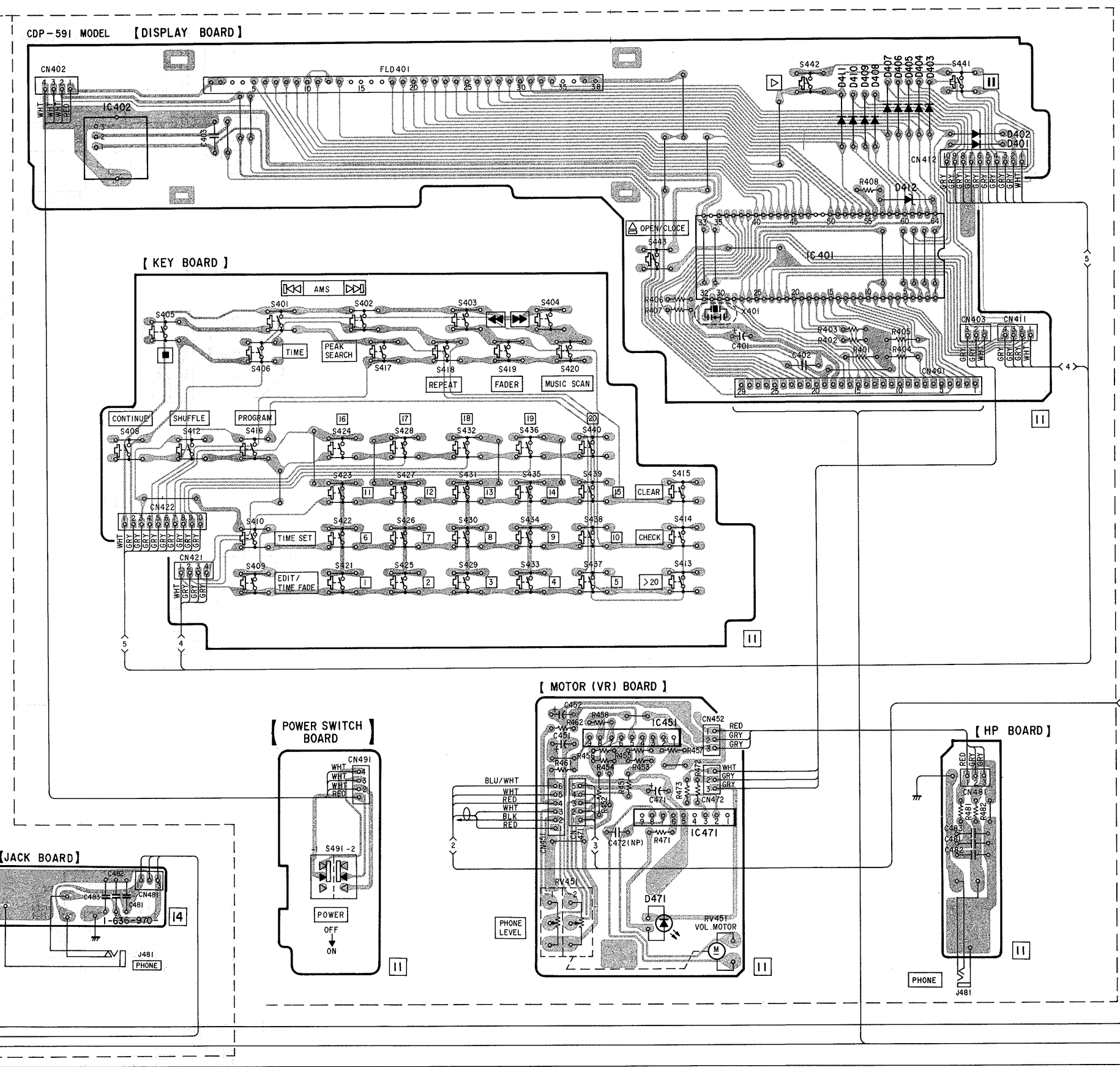
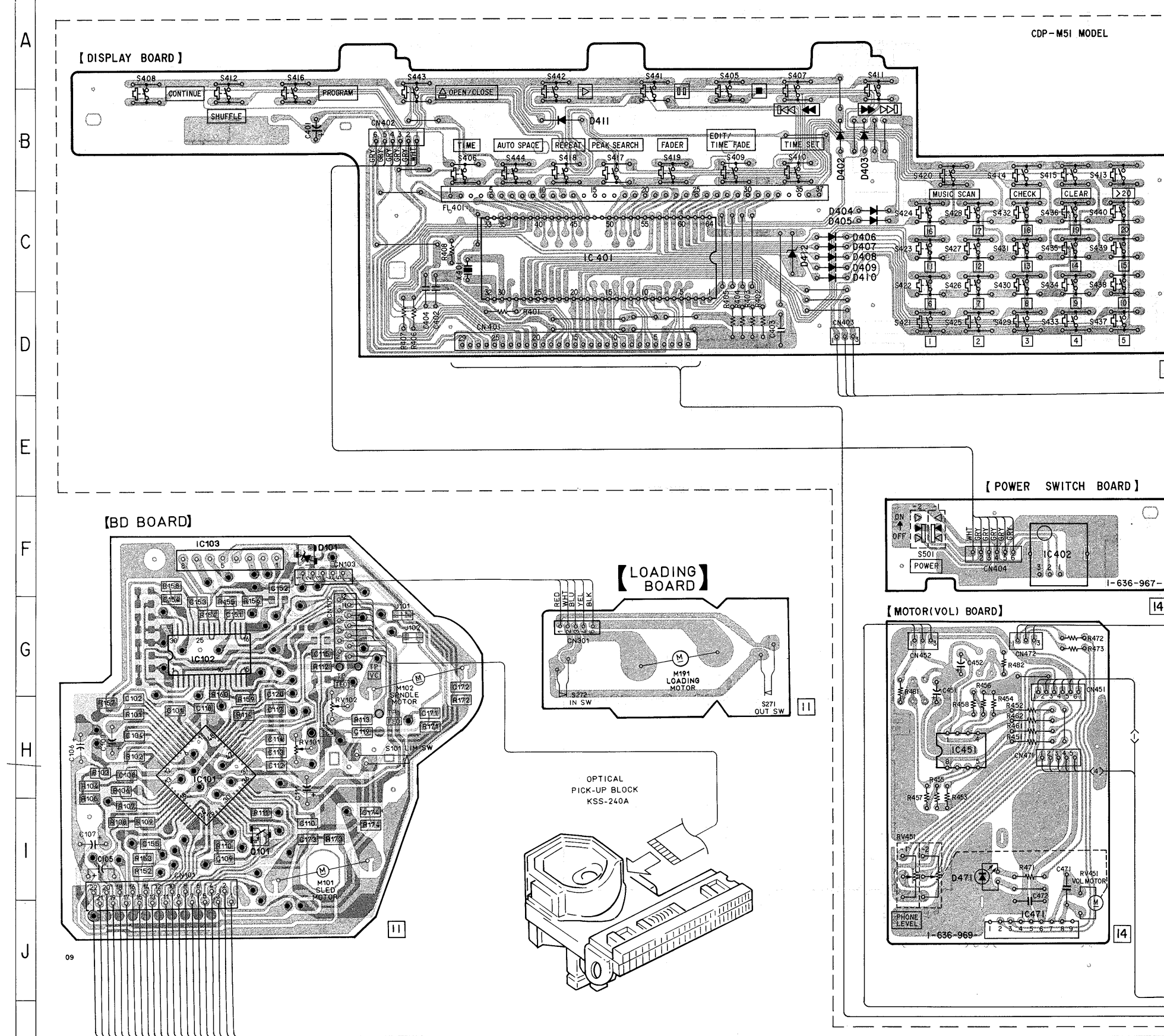


# • SEMICONDUCTOR LEAD LAYOUTS



- See page 11, 12 for IC Block Diagrams.
- See page 13 for Semiconductor Lead Layouts

Ref. No.	Location	Ref. No.	Location
D101	F-3	IC201	F-30
D201	E-30	IC202	G-28
D202	I-30	IC203	F-27
D203	E-29	IC301	H-27
D204	E-29	IC302	G-26
D205	E-28	IC303	F-25
D206	E-28	IC304	G-24
D207	F-30	IC305	E-26
D208	F-28	IC306	C-26
D209	F-28	IC307	C-26
D341	F-27	IC401	C-20 (S91)
D351	G-25		C-6 (M51)
D401	B-21	IC402	B-13 (S91)
D402	B-21 (S91)		F-11 (M51)
D403	B-8 (M51)	IC451	H-18 (S91)
D404	B-21 (S91)	IC471	H-10 (M51)
D405	B-9 (M51)		H-18 (S91)
D406	C-9 (M51)		J-10 (M51)
D407	B-21 (S91)	Q101	I-30
D408	C-9 (M51)	Q201	F-3
D409	B-21 (S91)	Q202	G-29
D410	C-8 (M51)	Q203	F-29
D411	B-20 (S91)	Q204	H-29
D412	C-8 (M51)	Q205	H-28
D413	B-20 (S91)	Q207	G-29
D414	C-8 (M51)	Q208	F-29
D415	B-20 (S91)	Q209	F-27
D416	B-6 (M51)	Q341	D-25
D417	C-21 (S91)	Q342	D-24
D418	C-8 (M51)	Q343	D-25
D419	H-18 (S91)	Q344	G-24
D420	H-10 (M51)	Q371	B-25
D421	H-2	Q372	C-27
D422	H-2	Q373	B-25
D423	G-2	Q374	B-27
D424	F-2	Q375	B-25
D425		Q376	B-27



- ○ — : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ▨ : Pattern on the side which is seen.
- ▩ : Pattern of the rear side.

# • SCHEMATIC DIAGRAMS

- See page 11, 12 for IC Block Diagrams.
- See page 13 for Semiconductor Lead Layouts.

## Note:

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

• B+ : B+ Line

• B- : B- Line

• : adjustment for repair.

• Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.

• Circled numbers refer to waveforms.

• Signal path.

• : CD

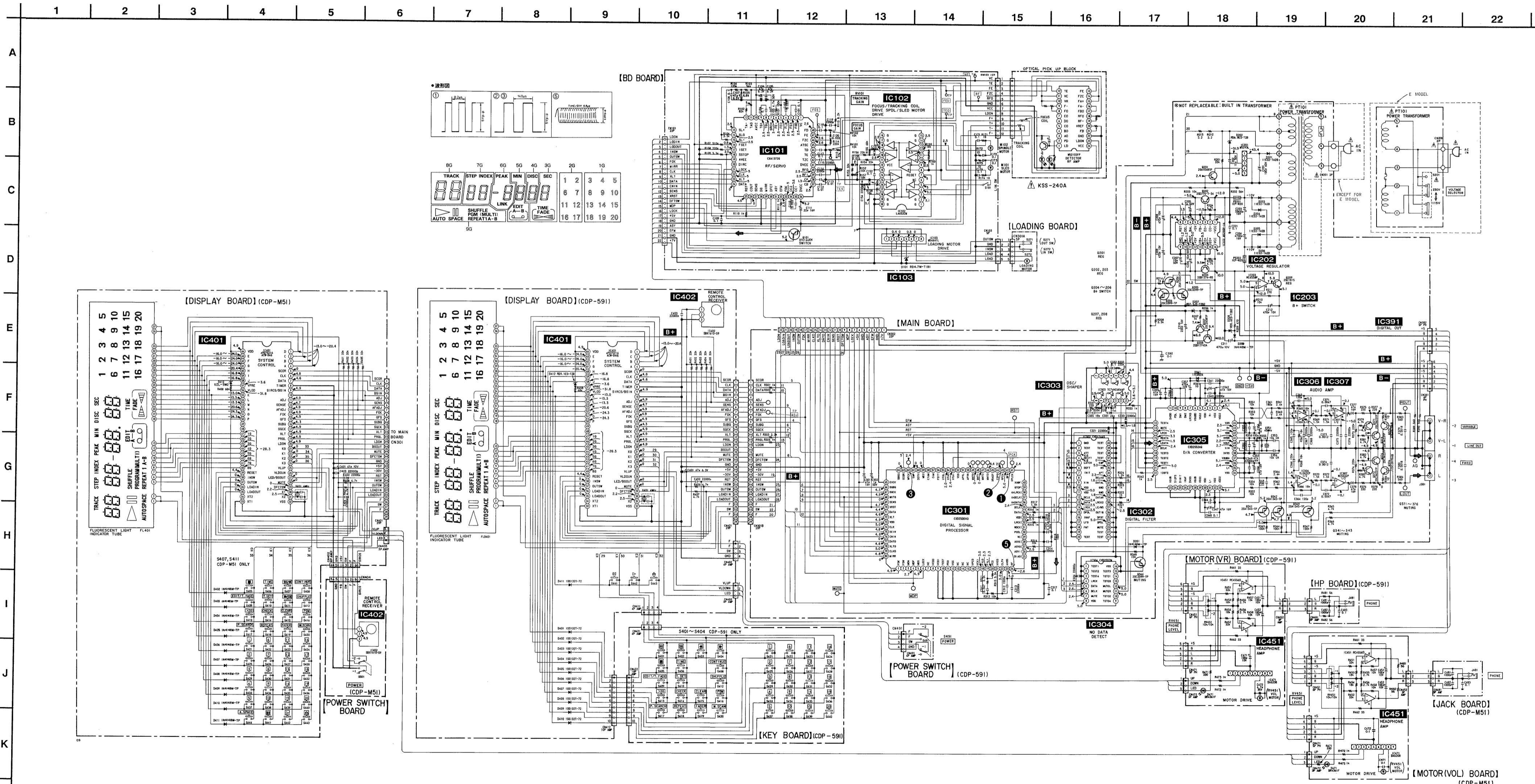
• : digital out

## Note:

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

## Note:

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






SECTION 6  
EXPLODED VIEWS

NOTE:

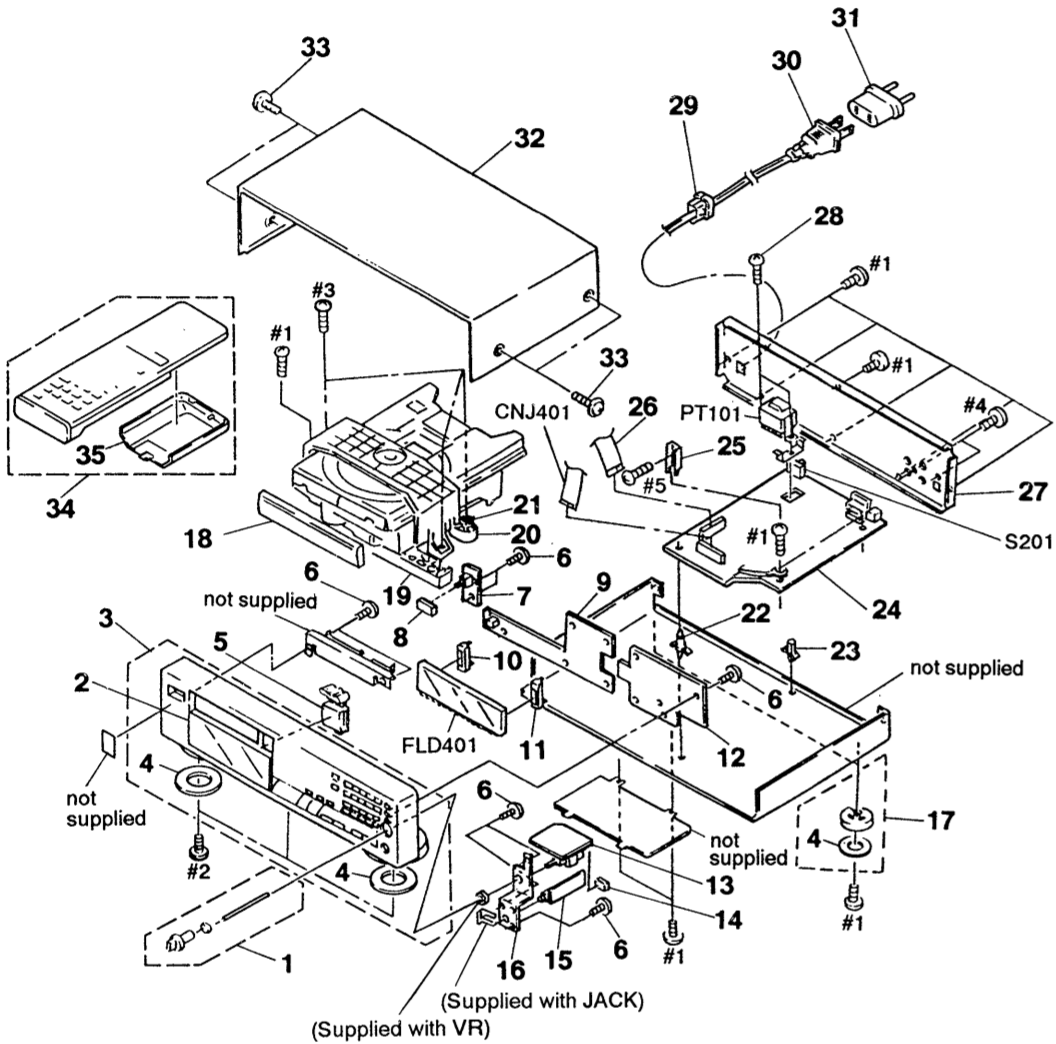
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color Indication of Appearance Parts  
Example:  
KONB, BALANCE (WHITE) . . . (RED)  
↑                    ↑  
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.

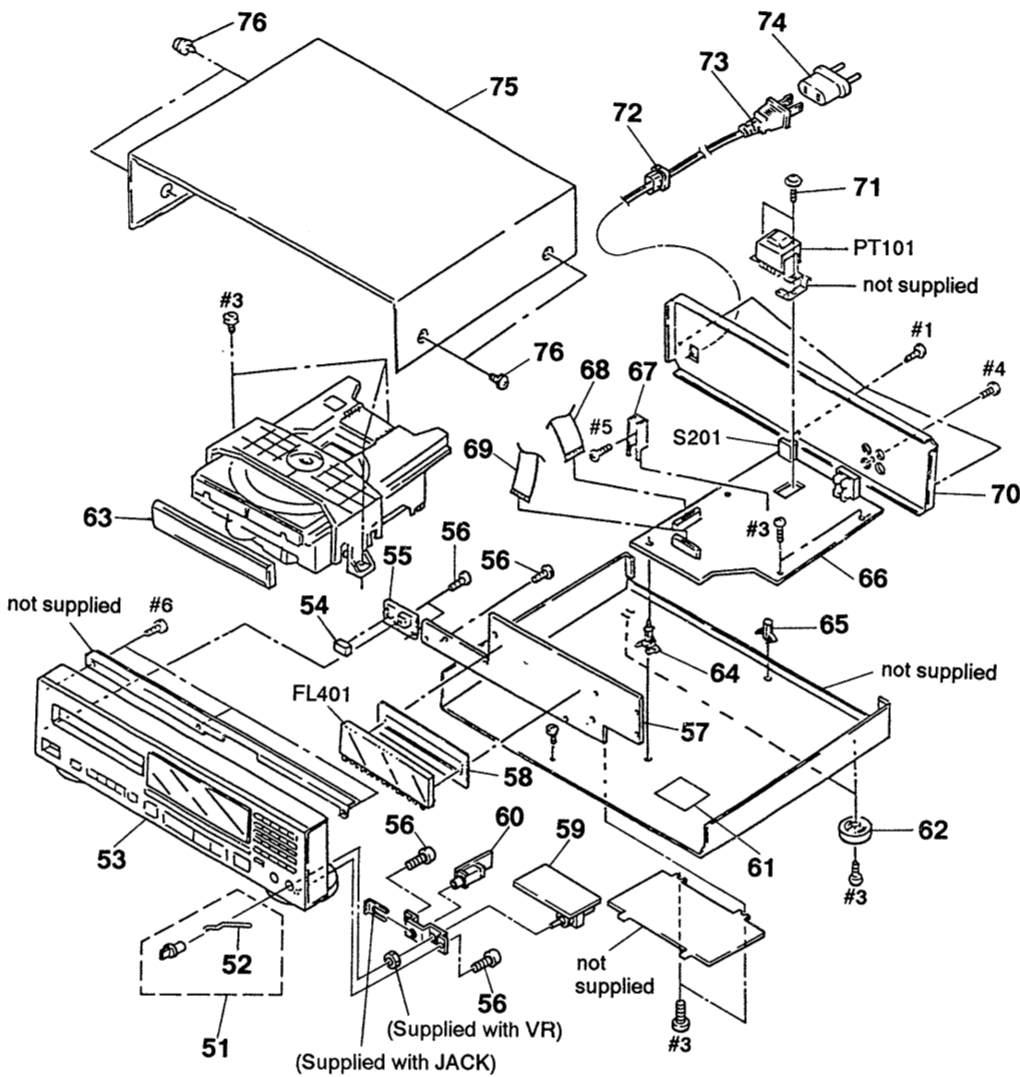
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

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

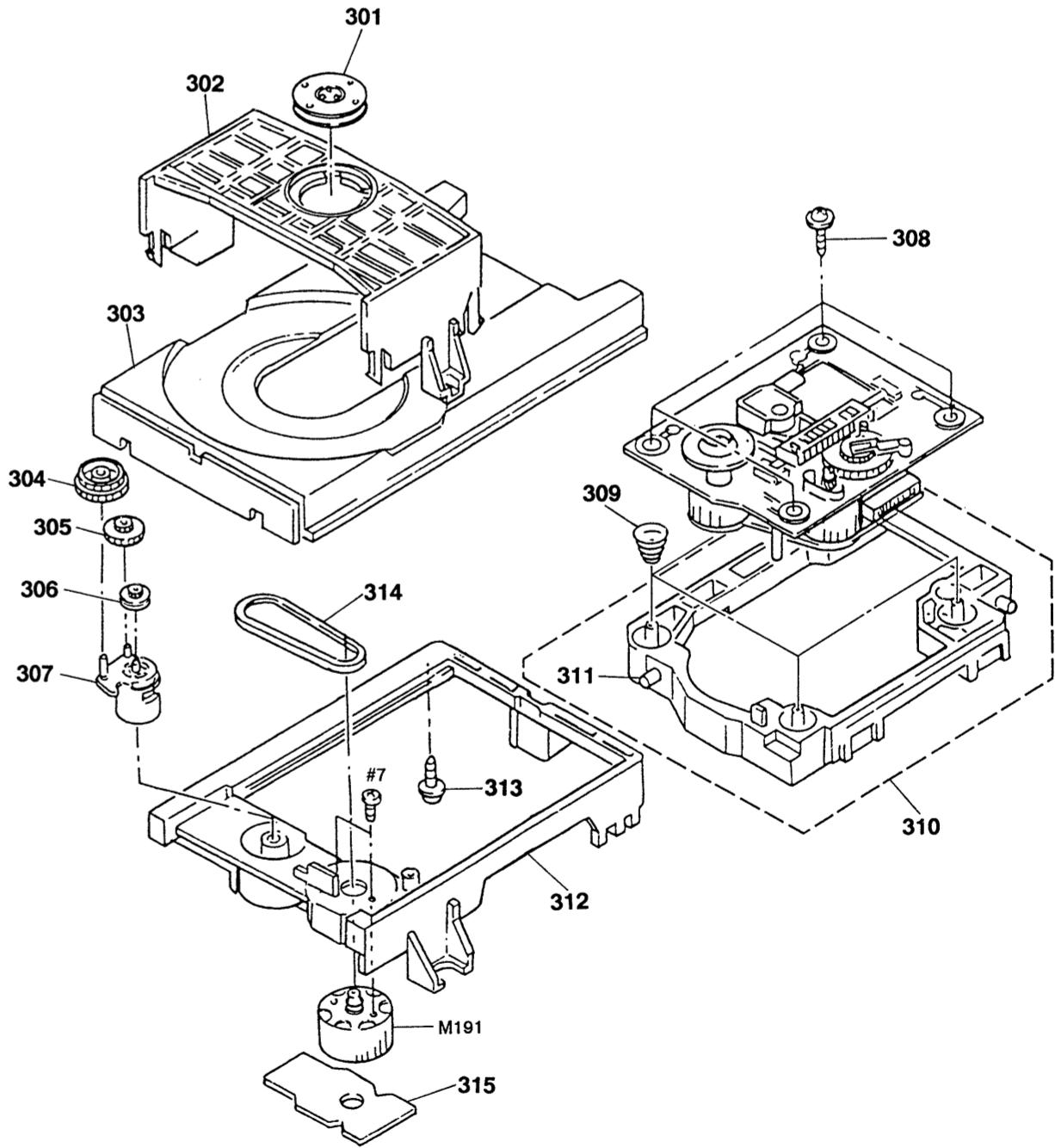
(1) OVERALL ASSEMBLY (CDP-591)
















(2) OVERALL ASSEMBLY (CDP-M51)





(3) MD BLOCK ASSEMBLY (CDM14-5BD1)














Ref.No.	Part No.	Description	Remark
1	A-4604-702-A	KNOB (HP) ASSY	
2	4-941-165-01	PLATE, INDICATION	
3	X-4941-232-1	PANEL ASSY, FRONT (US,Canadian)	4
3	X-4941-122-4	PANEL ASSY, FRONT (AEP,AUS,E,UK)	4
4	4-923-836-11	CUSHION	
5	4-941-166-01	BUTTON (OPEN,CLOSE)	
6	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
7	* 1-636-852-11	POWER SWITCH BOARD	
8	4-922-921-01	BUTTON (POWER)	
9	* 1-636-853-11	DISPLAY BOARD	
10	* 4-941-171-01	HOLDER (L)	
11	* 4-941-172-01	HOLDER (R)	
12	* 1-636-850-11	KEY BOARD	
13	* 1-636-854-11	MOTOR VR BOARD	
14	* 4-922-980-00	HOLDER (LED)	
15	* 1-636-851-11	HP BOARD	
16	* 4-941-167-01	BRACKET (HP)	
17	X-4885-950-1	FOOT ASSY (US,Canadian)	4
17	X-3304-938-2	FOOT ASSY (AEP,UK,E,Australian)	4
18	4-941-168-22	PANEL, LOADING	
19	4-941-169-01	BASE (MD/F)	
20	4-941-170-01	BASE (MD/R)	
21	* 4-933-220-01	SPACER (MD)	
22	* 4-924-098-01	HOLDER, PC BOARD	
23	* 3-349-025-41	HOLDER, PC BOARD	
24	* A-4617-666-A	MAIN BOARD, COMPLETE (MADE IN FRANCE)	
24	* A-4617-745-A	MAIN BOARD, COMPLETE (MADE IN JAPAN: AEP,US,AUS,Canadian)	
24	* A-4617-746-A	MAIN BOARD, COMPLETE (E)	

Ref.No.	Part No.	Description	Remark
25	* 4-941-237-01	HEAT SINK	
26	1-575-002-11	WIRE, FLAT TYPE (22 CORE)	
27	* 4-941-173-11	PANEL, BACK (US)	
27	* 4-941-173-21	PANEL, BACK (Canadian)	
27	* 4-941-173-41	PANEL, BACK (E)	
27	* 4-941-173-51	PANEL, BACK (Australian)	
27	* 4-941-173-31	PANEL, BACK (AEP,UK)	
28	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
29	* 3-703-571-11	BUSHING (S) (4516), COAR (US,Canadian,E)	
29	* 3-703-244-00	BUSHING (2104), COAR (AEP,Australian,UK)	
30	 1-575-651-21	CORD, POWER (MADE IN JAPAN:AEP)	
30	 1-558-945-21	CORD, POWER (POLAR,SPT-1) (US,Canadian)	
30	 1-574-358-31	CORD, POWER (WITH CONNECTOR) (Australian)	
30	 1-575-653-21	CORD, POWER (E)	
30	 1-574-127-31	CORD, POWER (MADE IN FRANCE:AEP)	
30	 1-574-390-31	CORD, POWER (MADE IN FRANCE:UK)	
30	 1-575-651-21	CORD, POWER (MADE IN JAPAN:AEP)	
31	 1-569-007-11	ADAPTOR, CONVERSION 2P (E)	
32	* 4-937-817-01	CASE	
33	3-704-366-01	SCREW (CASE) (M3X8)	
34	1-465-595-11	COMMANDER, REMOTE (RM-D591)	
35	2-181-754-01	COVER, BATTERY	
CN401	1-535-872-11	JUMPER, FILM (WITH TERMINAL)	
FLD401	1-519-618-21	INDICATOR TUBE, FLUORECENT	
PT101	 1-449-923-11	TRANSFORMER, POWER (E)	
PT101	 1-449-921-11	TRANSFORMER, POWER (US,Canadian)	
PT101	 1-449-922-11	TRANSFORMER, POWER (AEP,Australian)	
PT101	 1-449-925-11	TRANSFORMER, POWER (MADE IN FRANCE)	
S201	 1-571-722-11	SWITCH, VOLTAGE SELECTOR (E)	

Ref.No.	Part No.	Description	Remark
51	A-4604-798-A	KNOB (HP) ASSY	52
52	4-922-979-01	INDICATOR	
53	X-4941-558-1	PANEL ASSY, FRONT (MADE IN JAPAN)	
53	X-4941-171-2	PANEL ASSY, FRONT (MADE IN FRANCE)	
54	4-941-982-01	BUTTON (POWER)	
55	* 1-636-967-11	POWER SW BOARD	
56	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
57	* A-4617-652-A	DISPLAY BOARD, COMPLETE (MADE IN FRANCE)	
57	* 1-636-966-11	DISPLAY BOARD (MADE IN JAPAN)	
58	4-941-981-01	HOLDER, FL TUBE	
59	* 1-637-598-11	MOTOR VOL BOARD (MADE IN FRANCE)	
59	* 1-636-969-11	MOTOR VOL BOARD (MADE IN JAPAN)	
60	* 1-636-970-11	JACK BOARD	
61	9-911-863-XX	CUSHION (INSULATOR)	
62	* 4-934-883-01	FOOT	
63	4-941-980-01	PANEL, LOADING	
64	* 4-924-098-31	HOLDER, PC BOARD	
65	* 3-349-025-41	HOLDER, PC BOARD	
66	* A-4617-666-A	MAIN BOARD, COMPLETE (MADE IN FRANCE)	
66	* A-4617-745-A	MAIN BOARD, COMPLETE (MADE IN JAPAN: AEP,Australian)	
66	* A-4617-746-A	MAIN BOARD, COMPLETE (MADE IN JAPAN:E)	

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

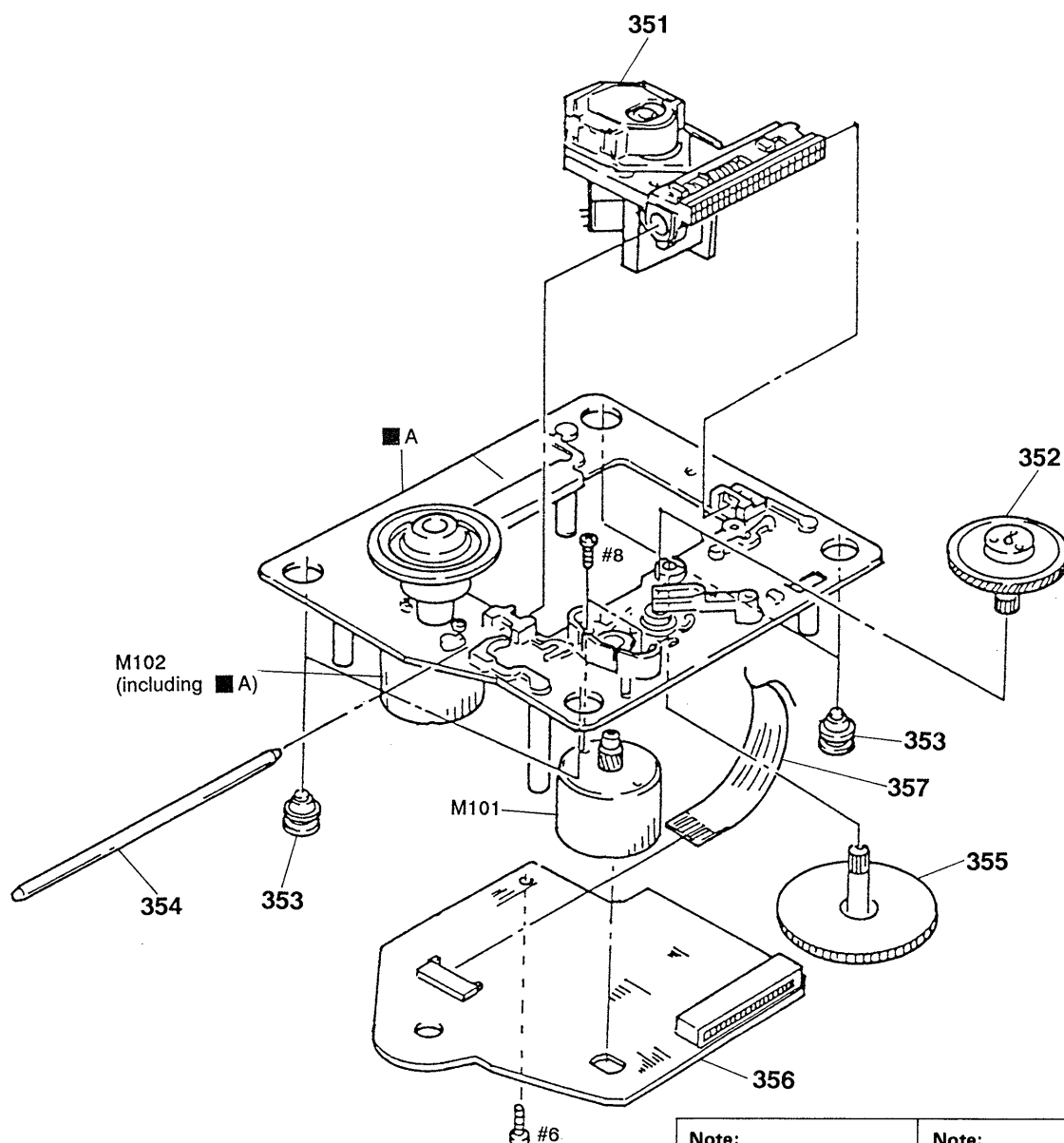
Note:  
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



Ref.No.	Part No.	Description	Remark
67	* 4-941-237-01	HEAT SINK	
68	1-575-160-11	WIRE, FLAT TYPE (22 CORE)	
69	1-535-871-11	JUMPER, FILM (WITH TERMINAL)	
70	* 4-941-552-42	PANEL, BACK (E)	
70	* 4-941-552-31	PANEL, BACK (Australian)	
70	* 4-941-552-21	PANEL, BACK (AEP,UK)	
71	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
72	* 3-703-571-11	BUSHING (S) (4516), CORD (E)	
72	* 3-703-244-00	BUSHING (2104), CORD (AEP,UK,Australian)	
73	 1-574-358-31	CORD, POWER (WITH CONNECTOR) (Australian)	
73	 1-575-635-21	CORD, POWER (E)	
73	 1-574-127-31	CORD, POWER (MADE IN FRANCE:AEP)	
73	 1-574-390-31	CORD, POWER (MADE IN FRANCE:UK)	
73	 1-575-651-21	CORD, POWER (MADE IN JAPAN:AEP)	
74	 1-569-007-11	ADAPTOR, CONNECTION 2P (E)	
75	* 4-939-802-71	CASE	
76	3-704-366-01	SCREW (CASE) (M3X8)	
FL401	1-519-618-11	INDICATOR TUBE, FLUORECENT	
PT101	 1-449-922-11	TRANSFORMER, POWER (AEP,Australian)	
PT101	 1-449-923-11	TRANSFORMER, POWER (E)	
PT101	 1-449-925-11	TRANSFORMER, POWER (MADE IN FRANCE)	
S201	 1-571-722-11	SWITCH, VOLTAGE SELECTION (E)	


Ref.No.	Part No.	Description	Remark
301	* 1-452-538-11	MAGNET	
302	* 4-933-110-01	HOLDER (MG)	
303	4-933-112-01	TABLE, DISK	
304	4-933-107-01	GEAR (PL)	
305	4-927-628-01	GEAR (C)	
306	4-927-651-01	PULLEY (S)	
307	4-933-109-01	CAM	
308	4-933-134-01	SCREW (+PTTWH M2.6X6)	


Ref.No.	Part No.	Description	Remark
309	4-917-541-01	SPRING (B)	
310	4-933-129-01	HOLDER (BU)	311
311	4-933-108-01	SHAFT (CAM)	
312	4-933-111-01	CHASSIS (MD)	
313	* 4-917-583-21	BRACKET, YOKE	
314	4-927-649-01	BELT	
315	* 1-632-202-11	LOADING BOARD	
M191	A-4604-363-A	MOTOR (L) ASSY	

## (4) OPTICAL BLOCK ASSEMBLY (BU-5BD1)



**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.

Ref. No.	Part No.	Description	Remark
351	 8-848-144-11	DEVICE, OPTICAL KSS-240A	
352	4-917-567-01	GEAR (M)	
353	4-933-126-01	INSULATOR (A)	
354	4-917-565-01	SHAFT, SLED	
355	4-917-564-01	GEAR (P), FLATNESS	



Ref. No.	Part No.	Description	Remark
356	* A-4617-161-A	BD BOARD, COMPLETE	
357	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
M101	X-4917-523-3	MOTOR ASSY (SLED)	
M102	X-4917-504-1	MOTOR ASSY (SPINDLE)	


BD

## SECTION 7

### ELECTRICAL PARTS LIST

**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

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- 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		
* A-4617-161-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

Ref. No.	Part No.	Description	Remark		
< CONNECTOR >					
CN101	1-568-796-11	SOCKET, CONNECTOR 22P			
CN102	1-568-795-11	SOCKET, CONNECTOR 12P			
CN103	* 1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P			
< DIODE >					
D101	8-719-105-72	DIODE RD4.7M-B1			
< IC >					
IC101	8-752-050-82	IC CXA1372Q			
IC102	8-759-822-36	IC LA6532M			
IC103	8-759-633-65	IC M54641L			
< JAMPER >					
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

BD

DISPLAY

HP

Ref. No.	Part No.	Description	Remark		
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
R153	1-216-085-00	METAL CHIP	33K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-093-00	METAL CHIP	68K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-079-00	METAL CHIP	18K	5%	1/10W
R158	1-216-079-00	METAL CHIP	18K	5%	1/10W
R159	1-216-079-00	METAL CHIP	18K	5%	1/10W
R160	1-216-049-00	METAL CHIP	1K	5%	1/10W
R171	1-216-001-00	METAL CHIP	10	5%	1/10W
R172	1-216-001-00	METAL CHIP	10	5%	1/10W
R173	1-216-001-00	METAL CHIP	10	5%	1/10W
R174	1-216-001-00	METAL CHIP	10	5%	1/10W
< VARIABLE RESISTOR >					
RV101	1-238-016-11	RES. ADJ. CARBON 10K			
RV102	1-238-016-11	RES. ADJ. CARBON 10K			
< SWITCH >					
S101	1-572-085-11	SWITCH, LEAF			
*****					
* 1-636-853-11 DISPLAY BOARD (591)					
*****					
* 4-941-171-01 HOLDER (L)					
* 4-941-172-01 HOLDER (R)					
< CAPACITOR >					
C401	1-126-154-11	ELECT	47uF	20%	6.3V
C402	1-161-494-00	CERAMIC	0.022uF		25V
C403	1-161-494-00	CERAMIC	0.022uF		25V
< CONNECTOR >					
CN401	1-535-872-11	JUMPER, FILM (WITH TERMINAL)			
< DIODE >					
D401	8-719-107-94	DIODE 1SS202-1			
D402	8-719-107-94	DIODE 1SS202-1			
D403	8-719-107-94	DIODE 1SS202-1			
D404	8-719-107-94	DIODE 1SS202-1			
D405	8-719-107-94	DIODE 1SS202-1			
D406	8-719-107-94	DIODE 1SS202-1			

Ref. No.	Part No.	Description	Remark		
D407	8-719-107-94	DIODE 1SS202-1			
D408	8-719-107-94	DIODE 1SS202-1			
D409	8-719-107-94	DIODE 1SS202-1			
D410	8-719-107-94	DIODE 1SS202-1			
D411	8-719-107-94	DIODE 1SS202-1			
D412	8-719-110-13	DIODE RD9.1ES-B2			
< FLUORESCENT INDICATOR >					
FLD401	1-519-618-21	INDICATOR TUBE, FLUORESCENT			
< IC >					
IC401	8-759-152-26	IC uPD75216ACW-B46			
IC402	8-741-100-48	IC SBX1610-59			
< RESISTOR >					
R401	1-249-435-11	CARBON	33K	5%	1/4W
R402	1-249-435-11	CARBON	33K	5%	1/4W
R403	1-249-435-11	CARBON	33K	5%	1/4W
R404	1-249-435-11	CARBON	33K	5%	1/4W
R405	1-249-435-11	CARBON	33K	5%	1/4W
R406	1-249-425-11	CARBON	4.7K	5%	1/4W
R407	1-249-425-11	CARBON	4.7K	5%	1/4W
R408	1-249-439-11	CARBON	68K	5%	1/4W
< SWITCH >					
S441	1-554-303-21	SWITCH, TACTILE (■) (MADE IN JAPAN)			
S441	1-554-303-81	SWITCH, TACTILE (■) (MADE IN FRANCE)			
S442	1-554-303-21	SWITCH, TACTILE (▶) (MADE IN JAPAN)			
S442	1-554-303-81	SWITCH, TACTILE (▶) (MADE IN FRANCE)			
S443	1-554-303-21	SWITCH, TACTILE (▲) (MADE IN JAPAN)			
S443	1-554-303-81	SWITCH, TACTILE (▲) (MADE IN FRANCE)			
< CERAMIC >					
X401	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			
*****					
* 1-636-851-11 HP BOARD (591)					
*****					
< CAPACITOR >					
C481	1-162-294-31	CERAMIC	0.001uF	10%	50V
C482	1-162-294-31	CERAMIC	0.001uF	10%	50V
C483	1-164-159-11	CERAMIC	0.1uF		50V
< CONNECTOR >					
CN481	* 1-568-941-11	PIN, CONNECTOR 3P			

HP	KEY
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Ref. No.	Part No.	Description	Remark
< JACK >			
J481	1-568-519-21	JACK, LARGE TYPE (PHONE) (MADE IN JAPAN)	
J481	1-568-519-41	JACK, LARGE TYPE (PHONE) (MADE IN FRANCE)	
< RESISTOR >			
R481	1-249-402-11	CARBON 56 5% 1/4W	
R482	1-249-402-11	CARBON 56 5% 1/4W	
*****			
* 1-636-850-11 KEY BOARD BOARD (591)			
*****			
< CONNECTOR >			
CN421	* 1-568-953-11	PIN, CONNECTOR 4P	
CN422	* 1-568-937-11	PIN, CONNECTOR 10P	
< SWITCH > (MADE IN JAPAN)			
S401	1-554-303-21	SWITCH, TACTILE ( I<<< )	
S402	1-554-303-21	SWITCH, TACTILE ( >>> I )	
S403	1-554-303-21	SWITCH, TACTILE ( <<< I )	
S404	1-554-303-21	SWITCH, TACTILE ( I>>> )	
S405	1-554-303-21	SWITCH, TACTILE ( ■ )	
S406	1-554-303-21	SWITCH, TACTILE (TIME)	
S408	1-554-303-21	SWITCH, TACTILE (CONTINUE)	
S409	1-554-303-21	SWITCH, TACTILE (EDIT/T. FADE)	
S410	1-554-303-21	SWITCH, TACTILE (T. SET)	
S412	1-554-303-21	SWITCH, TACTILE (SHUFFLE)	
S413	1-554-303-21	SWITCH, TACTILE (>20)	
S414	1-554-303-21	SWITCH, TACTILE (CHECK)	
S415	1-554-303-21	SWITCH, TACTILE (CLEAR)	
S416	1-554-303-21	SWITCH, TACTILE (PGM)	
S417	1-554-303-21	SWITCH, TACTILE (P. SEARCH)	
S418	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S419	1-554-303-21	SWITCH, TACTILE (FADEER)	
S420	1-554-303-21	SWITCH, TACTILE (M. SCAN)	
S421	1-554-303-21	SWITCH, TACTILE (1)	
S422	1-554-303-21	SWITCH, TACTILE (6)	
S423	1-554-303-21	SWITCH, TACTILE (11)	
S424	1-554-303-21	SWITCH, TACTILE (16)	
S425	1-554-303-21	SWITCH, TACTILE (2)	
S426	1-554-303-21	SWITCH, TACTILE (7)	
S427	1-554-303-21	SWITCH, TACTILE (12)	
S428	1-554-303-21	SWITCH, TACTILE (17)	
S429	1-554-303-21	SWITCH, TACTILE (3)	
S430	1-554-303-21	SWITCH, TACTILE (8)	
S431	1-554-303-21	SWITCH, TACTILE (13)	
S432	1-554-303-21	SWITCH, TACTILE (18)	

Ref. No.	Part No.	Description	Remark
S433	1-554-303-21	SWITCH, TACTILE (4)	
S434	1-554-303-21	SWITCH, TACTILE (9)	
S435	1-554-303-21	SWITCH, TACTILE (14)	
S436	1-554-303-21	SWITCH, TACTILE (19)	
S437	1-554-303-21	SWITCH, TACTILE (5)	
S438	1-554-303-21	SWITCH, TACTILE (10)	
S439	1-554-303-21	SWITCH, TACTILE (15)	
S440	1-554-303-21	SWITCH, TACTILE (20)	
< SWITCH > (MADE IN FRANCE)			
S401	1-554-303-81	SWITCH, TACTILE ( I<<< )	
S402	1-554-303-81	SWITCH, TACTILE ( >>> I )	
S403	1-554-303-81	SWITCH, TACTILE ( <<< I )	
S404	1-554-303-81	SWITCH, TACTILE ( I>>> )	
S405	1-554-303-81	SWITCH, TACTILE ( ■ )	
S406	1-554-303-81	SWITCH, TACTILE (TIME)	
S408	1-554-303-81	SWITCH, TACTILE (CONTINUE)	
S409	1-554-303-81	SWITCH, TACTILE (EDIT/T. FADE)	
S410	1-554-303-81	SWITCH, TACTILE (T. SET)	
S412	1-554-303-81	SWITCH, TACTILE (SHUFFLE)	
S413	1-554-303-81	SWITCH, TACTILE (>20)	
S414	1-554-303-81	SWITCH, TACTILE (CHECK)	
S415	1-554-303-81	SWITCH, TACTILE (CLEAR)	
S416	1-554-303-81	SWITCH, TACTILE (PGM)	
S417	1-554-303-81	SWITCH, TACTILE (P. SEARCH)	
S418	1-554-303-81	SWITCH, TACTILE (REPEAT)	
S419	1-554-303-81	SWITCH, TACTILE (FADEER)	
S420	1-554-303-81	SWITCH, TACTILE (M. SCAN)	
S421	1-554-303-81	SWITCH, TACTILE (1)	
S422	1-554-303-81	SWITCH, TACTILE (6)	
S423	1-554-303-81	SWITCH, TACTILE (11)	
S424	1-554-303-81	SWITCH, TACTILE (16)	
S425	1-554-303-81	SWITCH, TACTILE (2)	
S426	1-554-303-81	SWITCH, TACTILE (7)	
S427	1-554-303-81	SWITCH, TACTILE (12)	
S428	1-554-303-81	SWITCH, TACTILE (17)	
S429	1-554-303-81	SWITCH, TACTILE (3)	
S430	1-554-303-81	SWITCH, TACTILE (8)	
S431	1-554-303-81	SWITCH, TACTILE (13)	
S432	1-554-303-81	SWITCH, TACTILE (18)	
S433	1-554-303-81	SWITCH, TACTILE (4)	
S434	1-554-303-81	SWITCH, TACTILE (9)	
S435	1-554-303-81	SWITCH, TACTILE (14)	
S436	1-554-303-81	SWITCH, TACTILE (19)	
S437	1-554-303-81	SWITCH, TACTILE (5)	
S438	1-554-303-81	SWITCH, TACTILE (10)	
S439	1-554-303-81	SWITCH, TACTILE (15)	
S440	1-554-303-81	SWITCH, TACTILE (20)	

LOADING

MAIN

Ref. No.	Part No.	Description	Remark
	* 1-632-202-11	LOADING BOARD *****	
		< CONNECTOR >	
CN301	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P  < SWITCH >	
S271	1-572-086-11	SWITCH, LEAF (OUT SW)	
S272	1-572-086-11	SWITCH, LEAF (IN SW)	
*****			
	* A-4617-666-A	MAIN BOARD, COMPLETE (MADE IN FRANCE)	
	* A-4617-745-A	MAIN BOARD, COMPLETE (MADE IN JAPAN: AEP, US, AUS, Canadian)	
	* A-4617-746-A	MAIN BOARD, COMPLETE (E) *****	
	* 4-902-345-01	HEAT SINK	
	7-682-547-09	SCREW +B 3X6	
		< CAPACITOR >	
C201	1-124-572-11	ELECT 100uF 20% 63V	
C202	1-126-059-11	ELECT 10uF 20% 50V	
C203	1-124-887-00	ELECT 3300uF 20% 16V	
C204	1-126-937-11	ELECT 4700uF 20% 16V	
C205	1-126-163-11	ELECT 4.7uF 20% 50V	
C206	1-126-059-11	ELECT 10uF 20% 50V	
C207	1-126-059-11	ELECT 10uF 20% 50V	
C208	1-124-997-11	ELECT 470uF 20% 10V	
C209	1-124-997-11	ELECT 470uF 20% 10V	
C210	1-126-024-11	ELECT 220uF 20% 16V	
C211	1-124-997-11	ELECT 470uF 20% 10V	
C212	1-124-997-11	ELECT 470uF 20% 10V	
C221	1-164-159-11	CERAMIC 0.1uF 50V	
C301	1-126-022-11	ELECT 47uF 20% 16V	
C302	1-126-301-11	ELECT 1uF 20% 50V	
C311	1-130-491-00	MYLAR 0.047uF 5% 50V	
C312	1-161-374-11	CERAMIC 0.0015uF 20% 50V	
C313	1-161-494-00	CERAMIC 0.022uF 25V	
C314	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C315	1-126-300-11	ELECT 0.47uF 20% 50V	
C316	1-161-494-00	CERAMIC 0.022uF 25V	
C317	1-164-159-11	CERAMIC 0.1uF 50V	
C321	1-161-494-00	CERAMIC 0.022uF 25V	
C331	1-162-208-31	CERAMIC 24PF 5% 50V	
C332	1-130-495-00	MYLAR 0.1uF 5% 50V	
C333	1-161-494-00	CERAMIC 0.022uF 25V	
C334	1-161-494-00	CERAMIC 0.022uF 25V	
C335	1-162-205-31	CERAMIC 18PF 5% 50V	

Ref. No.	Part No.	Description	Remark
C341	1-161-494-00	CERAMIC 0.022uF 25V	
C342	1-126-022-11	ELECT 47uF 20% 16V	
C343	1-161-494-00	CERAMIC 0.022uF 25V	
C344	1-161-494-00	CERAMIC 0.022uF 25V	
C345	1-126-022-11	ELECT 47uF 20% 16V	
C346	1-164-159-11	CERAMIC 0.1uF 50V	
C347	1-126-022-11	ELECT 47uF 20% 16V	
C348	1-164-159-11	CERAMIC 0.1uF 50V	
C349	1-161-494-00	CERAMIC 0.022uF 25V	
C350	1-126-022-11	ELECT 47uF 20% 16V	
C351	1-161-494-00	CERAMIC 0.022uF 25V	
C352	1-126-022-11	ELECT 47uF 20% 16V	
C353	1-162-199-31	CERAMIC 10PF 5% 50V	
C354	1-162-199-31	CERAMIC 10PF 5% 50V	
C355	1-161-494-00	CERAMIC 0.022uF 25V	
C356	1-126-022-11	ELECT 47uF 20% 16V	
C357	1-124-997-11	ELECT 470uF 20% 10V	
C361	1-162-285-31	CERAMIC 180PF 10% 50V	
C362	1-162-285-31	CERAMIC 180PF 10% 50V	
C363	1-162-283-31	CERAMIC 120PF 10% 50V	
C364	1-162-283-31	CERAMIC 120PF 10% 50V	
C365	1-162-283-31	CERAMIC 120PF 10% 50V	
C366	1-162-283-31	CERAMIC 120PF 10% 50V	
C367	1-161-494-00	CERAMIC 0.022uF 25V	
C368	1-161-494-00	CERAMIC 0.022uF 25V	
C371	1-130-479-00	MYLAR 0.0047uF 5% 50V	
C372	1-130-479-00	MYLAR 0.0047uF 5% 50V	
C373	1-130-472-00	MYLAR 0.0012uF 5% 50V	
C374	1-130-472-00	MYLAR 0.0012uF 5% 50V	
C375	1-161-494-00	CERAMIC 0.022uF 25V	
C376	1-161-494-00	CERAMIC 0.022uF 25V	
C377	1-126-022-11	ELECT 47uF 20% 16V	
C378	1-126-022-11	ELECT 47uF 20% 16V	
C379	1-130-474-00	MYLAR 0.0018uF 5% 50V	
C380	1-130-474-00	MYLAR 0.0018uF 5% 50V	
C392	1-164-159-11	CERAMIC 0.1uF 50V	
		< CONNECTOR >	
CN201	* 1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P	
CN301	* 1-568-844-11	SOCKET, CONNECTOR 29P	
CN302	* 1-568-822-11	SOCKET, CONNECTOR 22P	
CN381	* 1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P	
CN382	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P	
		< DIODE >	
D201	8-719-200-82	DIODE 11ES2	
D202	8-719-109-97	DIODE RD6.8ES-82	
D203	8-719-200-82	DIODE 11ES2	
D204	8-719-200-82	DIODE 11ES2	
D205	8-719-200-82	DIODE 11ES2	

## MAIN

Ref. No.	Part No.	Description	Remark
D206	8-719-200-82	DIODE 11ES2	
D207	8-719-114-49	DIODE RD7. 5JS-B2	
D208	8-719-109-89	DIODE RD5. 6ES-B2	
D209	8-719-912-20	DIODE 1SS120	
D341	8-719-210-21	DIODE 11EQS04	
D351	8-719-912-20	DIODE 1SS120	
< IC >			
IC201	8-759-633-42	IC M5293L	
IC202	8-759-630-21	IC M5290P-16	
IC203	8-759-945-58	IC RC4558P	
IC301	8-752-337-26	IC CXD2500AQ	
IC302	8-752-328-61	IC CXD1244S	
IC303	8-759-917-18	IC SN74HCU04AN	
IC304	8-752-339-86	IC CXD2557M	
IC305	8-752-334-87	IC CXD2552Q	
IC306	8-759-990-82	IC TL082CP	
IC307	8-759-900-72	IC NE5532P	
< JACK >			
J381	* 1-569-443-11	JACK. PIN 4P (LINE OUT VARIABLE/FIXED)	
< COIL >			
L331	1-408-403-00	INDUCTOR 3.3uH	
< LINK >			
PS201	1-532-685-00	LINK, IC	
PS202	1-532-637-00	LINK, IC 1.0A	
< TRANSISTOR >			
Q201	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q202	8-729-140-96	TRANSISTOR 2SD774-34	
Q203	8-729-111-67	TRANSISTOR 2SB1094-L	
Q204	8-729-900-65	TRANSISTOR DTA144ES	
Q205	8-729-900-89	TRANSISTOR DTC144ES	
Q206	8-729-900-89	TRANSISTOR DTC144ES	
Q207	8-729-230-45	TRANSISTOR 2SC2458-YGR	
Q208	8-729-821-73	TRANSISTOR 2SB1274SA-RS	
Q209	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q341	8-729-900-65	TRANSISTOR DTA144ES	
Q342	8-729-900-65	TRANSISTOR DTA144ES	
Q343	8-729-900-65	TRANSISTOR DTA144ES	
Q344	8-729-900-89	TRANSISTOR DTC144ES	
Q371	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q372	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q373	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q374	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q375	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q376	8-729-231-55	TRANSISTOR 2SC2878-AB	

Ref. No.	Part No.	Description	Remark
< RESISTOR >			
R201	1-249-435-11	CARBON 33K 5% 1/4W	
R202	1-249-438-11	CARBON 56K 5% 1/4W	
R203	1-249-429-11	CARBON 10K 5% 1/4W	
R204	1-249-425-11	CARBON 4.7K 5% 1/4W	
R205	1-249-425-11	CARBON 4.7K 5% 1/4W	
R206	1-249-417-11	CARBON 1K 5% 1/4W	
R207	1-249-417-11	CARBON 1K 5% 1/4W	
R208	1-249-423-11	CARBON 3.3K 5% 1/4W	
R209	1-249-413-11	CARBON 470 5% 1/4W	
R210	1-249-429-11	CARBON 10K 5% 1/4W	
R211	1-249-410-11	CARBON 270 5% 1/4W	
R212	1-249-385-11	CARBON 2.2 5% 1/6W	
R213	1-249-385-11	CARBON 2.2 5% 1/6W	
R214	1-249-417-11	CARBON 1K 5% 1/4W	
R301	1-249-417-11	CARBON 1K 5% 1/4W	
R302	1-249-417-11	CARBON 1K 5% 1/4W	
R303	1-249-421-11	CARBON 2.2K 5% 1/4W	
R304	1-249-417-11	CARBON 1K 5% 1/4W	
R311	1-249-423-11	CARBON 3.3K 5% 1/4W	
R312	1-249-429-11	CARBON 10K 5% 1/4W	
R313	1-249-423-11	CARBON 3.3K 5% 1/4W	
R314	1-249-429-11	CARBON 10K 5% 1/4W	
R315	1-249-417-11	CARBON 1K 5% 1/4W	
R316	1-249-417-11	CARBON 1K 5% 1/4W	
R317	1-249-420-11	CARBON 1.8K 5% 1/4W	
R318	1-249-441-11	CARBON 100K 5% 1/4W	
R321	1-249-417-11	CARBON 1K 5% 1/4W	
R322	1-249-417-11	CARBON 1K 5% 1/4W	
R323	1-249-417-11	CARBON 1K 5% 1/4W	
R324	1-249-418-11	CARBON 1.2K 5% 1/4W	
R331	1-249-409-11	CARBON 220 5% 1/4W	
R332	1-247-887-00	CARBON 220K 5% 1/4W	
R333	1-249-417-11	CARBON 1K 5% 1/4W	
R334	1-249-409-11	CARBON 220 5% 1/4W	
R341	1-249-393-11	CARBON 10 5% 1/4W	
R342	1-249-417-11	CARBON 1K 5% 1/4W	
R343	1-249-441-11	CARBON 100K 5% 1/4W	
R344	1-249-441-11	CARBON 100K 5% 1/4W	
R345	1-249-425-11	CARBON 4.7K 5% 1/4W	
R346	1-249-425-11	CARBON 4.7K 5% 1/4W	
R347	1-249-441-11	CARBON 100K 5% 1/4W	
R348	1-249-429-11	CARBON 10K 5% 1/4W	
R351	1-249-429-11	CARBON 10K 5% 1/4W	
R352	1-249-429-11	CARBON 10K 5% 1/4W	
R353	1-249-429-11	CARBON 10K 5% 1/4W	

## MAIN

## MOTOR VR

## POWER SWITCH

Ref. No.	Part No.	Description	Remark		
R354	1-249-429-11	CARBON	10K	5%	1/4W
R355	1-247-848-11	CARBON	5. 1K	5%	1/4W
R356	1-249-405-11	CARBON	100	5%	1/4W
R361	1-247-840-00	CARBON	2. 4K	5%	1/4W
R362	1-247-840-00	CARBON	2. 4K	5%	1/4W
R363	1-247-840-00	CARBON	2. 4K	5%	1/4W
R364	1-247-840-00	CARBON	2. 4K	5%	1/4W
R365	1-249-432-11	CARBON	18K	5%	1/4W
R366	1-249-432-11	CARBON	18K	5%	1/4W
R367	1-249-432-11	CARBON	18K	5%	1/4W
R368	1-249-432-11	CARBON	18K	5%	1/4W
R369	1-249-419-11	CARBON	1. 5K	5%	1/4W
R370	1-249-419-11	CARBON	1. 5K	5%	1/4W
R371	1-249-419-11	CARBON	1. 5K	5%	1/4W
R372	1-249-419-11	CARBON	1. 5K	5%	1/4W
R373	1-247-887-00	CARBON	220K	5%	1/4W
R374	1-247-887-00	CARBON	220K	5%	1/4W
R375	1-249-409-11	CARBON	220	5%	1/4W
R376	1-249-409-11	CARBON	220	5%	1/4W
R377	1-249-409-11	CARBON	220	5%	1/4W
R378	1-249-409-11	CARBON	220	5%	1/4W
R379	1-249-425-11	CARBON	4. 7K	5%	1/4W
R380	1-249-425-11	CARBON	4. 7K	5%	1/4W
R381	1-249-425-11	CARBON	4. 7K	5%	1/4W
R382	1-249-425-11	CARBON	4. 7K	5%	1/4W
R383	1-249-414-11	CARBON	560	5%	1/4W
R384	1-249-414-11	CARBON	560	5%	1/4W
R385	1-249-393-11	CARBON	10	5%	1/4W
R386	1-249-393-11	CARBON	10	5%	1/4W
R389	1-249-414-11	CARBON	560	5%	1/4W
R390	1-249-414-11	CARBON	560	5%	1/4W
< CRYSTAL >					
X351	1-579-161-11	VIBRATOR, CRYSTAL (455MHz)			
< SWITCH >					
S201	△ 1-571-722-11	SWITCH, VOLTAGE SELECTOR (E)			
*****					
* 1-636-854-11 MOTOR VR BOARD (591)					
*****					
* 4-922-980-01 HOLDER (LED)					
< CAPACITOR >					
C451	1-124-994-11	ELECT	100uF	20%	10V
C452	1-124-994-11	ELECT	100uF	20%	10V
C471	1-124-994-11	ELECT	100uF	20%	10V
C472	1-124-277-11	ELECT	4. 7uF	20%	35V

Ref. No.	Part No.	Description	Remark		
< CONNECTOR >					
CN451	* 1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN471	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P			
CN472	* 1-568-941-11	PIN, CONNECTOR 3P			
< DIODE >					
D471	8-719-970-49	DIODE BR4361F			
< IC >					
IC451	8-759-981-89	IC RC4556S			
IC471	8-759-962-08	IC BA6208			
< RESISTOR >					
R451	1-249-435-11	CARBON	33K	5%	1/4W
R452	1-249-435-11	CARBON	33K	5%	1/4W
R453	1-249-432-11	CARBON	18K	5%	1/4W
R454	1-249-432-11	CARBON	18K	5%	1/4W
R455	1-249-422-11	CARBON	2.7K	5%	1/4W
R456	1-249-422-11	CARBON	2.7K	5%	1/4W
R457	1-249-429-11	CARBON	10K	5%	1/4W
R458	1-249-429-11	CARBON	10K	5%	1/4W
R461	1-249-399-11	CARBON	33	5%	1/4W
R462	1-249-399-11	CARBON	33	5%	1/4W
R471	1-249-411-11	CARBON	330	5%	1/4W
R472	1-249-417-11	CARBON	1K	5%	1/4W
R473	1-249-417-11	CARBON	1K	5%	1/4W
< VARIABLE RESISTOR >					
RV451	1-241-302-11	RES, VAR, CARBON 10K/10K (PHONE LEVEL			
*****					
* 1-636-852-11 POWER SWITCH BOARD (591)					
*****					
< SWITCH >					
S491	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER ON/OFF)			

## 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.

## DISPLAY

## POWER SW

## MOTOR VOL

## JACK

Ref.No.	Part No.	Description	Remark
		-----	-----
	* A-4617-652-A DISPLAY BOARD COMPLETE (M51)		
		(MADE IN FRANCE)	
	* 1-636-966-11 DISPLAY BOARD (M51) (MADE IN JAPAN)		
		*****	
	* 1-636-967-11 POWER SW BOARD (M51) (MADE IN JAPAN)		
	* 1-637-596-11 POWER SW BOARD (M51) (MADE IN FRANCE)		
		*****	
	* 1-636-969-11 MOTOR VOL BOARD (M51)		
		*****	
	* 1-636-970-11 JACK BOARD (M51) (MADE IN JAPAN)		
	* 1-637-599-11 JACK BOARD (M51) (MADE IN FRANCE)		
		*****	
	1-535-871-11 JUMPER, FILM (WITH TERMINAL)		
	* 4-922-980-01 HOLDER (LED)		
	4-941-981-01 HOLDER, FL TUBE		

## &lt; CAPACITOR &gt;

C401	1-126-022-11	ELECT	47uF	20%	10V
C402	1-161-494-00	CERAMIC	0.022uF		25V
C403	1-161-494-00	CERAMIC	0.022uF		25V
C404	1-161-494-00	CERAMIC	0.022uF		25V
C451	1-124-443-00	ELECT	100uF	20%	10V
C452	1-124-443-00	ELECT	100uF	20%	10V
C471	1-164-159-11	CERAMIC	0.1uF		50V
C472	1-164-159-11	CERAMIC	0.1uF		50V
C481	1-162-294-31	CERAMIC	0.001uF	10%	50V
C482	1-162-294-31	CERAMIC	0.001uF	10%	50V
C483	1-164-159-11	CERAMIC	0.1uF		50V

## &lt; CONNECTOR &gt;

CN401	* 1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P
CN452	* 1-568-941-11	PIN, CONNECTOR 3P
CN471	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
CN472	* 1-568-941-11	PIN, CONNECTOR 3P

Ref.No.	Part No.	Description	Remark
		-----	-----
		< DIODE >	
D402	8-719-912-20	DIODE 1SS120	
D403	8-719-912-20	DIODE 1SS120	
D404	8-719-912-20	DIODE 1SS120	
D405	8-719-912-20	DIODE 1SS120	
D406	8-719-912-20	DIODE 1SS120	
D407	8-719-912-20	DIODE 1SS120	
D408	8-719-912-20	DIODE 1SS120	
D409	8-719-912-20	DIODE 1SS120	
D410	8-719-912-20	DIODE 1SS120	
D411	8-719-912-20	DIODE 1SS120	
D412	8-719-001-15	DIODE UZL-9M2	
D471	8-719-970-49	DIODE BR4361F	

## &lt; FLUORESCENT INDICATOR &gt;

FL401	1-519-618-11	INDICATOR TUBE, FLUORESCENT
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## &lt; IC &gt;

IC401	8-759-152-26	IC uPD75216ACW-B46
IC402	8-741-100-48	IC SBX1610-59
IC451	8-759-981-85	IC RC4556D
IC471	8-759-962-08	IC BA6208

## &lt; JACK &gt;

J481	1-568-519-21	JACK, LARGE TYPE (PHONE) (MADE IN JAPAN)
J481	1-568-519-41	JACK, LARGE TYPE (PHONE) (MADE IN FRANCE)

## &lt; RESISTOR &gt;

R401	1-249-435-11	CARBON	33K	5%	1/4W
R402	1-249-435-11	CARBON	33K	5%	1/4W
R403	1-249-435-11	CARBON	33K	5%	1/4W
R404	1-249-435-11	CARBON	33K	5%	1/4W

## DISPLAY

## POWER SW

## MOTOR VOL

## JACK

Ref. No.	Part No.	Description	Remark		
R405	1-249-435-11	CARBON	33K	5%	1/4W
R406	1-249-425-11	CARBON	4.7K	5%	1/4W
R407	1-249-425-11	CARBON	4.7K	5%	1/4W
R408	1-249-439-11	CARBON	68K	5%	1/4W
R451	1-249-435-11	CARBON	33K	5%	1/4W
R452	1-249-435-11	CARBON	33K	5%	1/4W
R453	1-249-432-11	CARBON	18K	5%	1/4W
R454	1-249-432-11	CARBON	18K	5%	1/4W
R455	1-249-422-11	CARBON	2.7K	5%	1/4W
R456	1-249-422-11	CARBON	2.7K	5%	1/4W
R457	1-249-429-11	CARBON	10K	5%	1/4W
R458	1-249-429-11	CARBON	10K	5%	1/4W
R461	1-249-399-11	CARBON	33	5%	1/4W
R462	1-249-399-11	CARBON	33	5%	1/4W
R471	1-249-411-11	CARBON	330	5%	1/4W
R472	1-249-417-11	CARBON	1K	5%	1/4W
R473	1-249-417-11	CARBON	1K	5%	1/4W
R481	1-249-402-11	CARBON	56	5%	1/4W
R482	1-249-402-11	CARBON	56	5%	1/4W

&lt; VARIABLE RESISTOR &gt;

RV451 1-241-343-11 RES. VAR. CARBON 10K/10K (PHONE LEVEL)

&lt; SWITCH &gt; (MADE IN JAPAN)

S405	1-554-303-21	SWITCH, TACTILE (■)
S406	1-554-303-21	SWITCH, TACTILE (TIME)
S407	1-554-303-21	SWITCH, TACTILE (◀▶ / ◀▶)
S408	1-554-303-21	SWITCH, TACTILE (CONTINUE)
S409	1-554-303-21	SWITCH, TACTILE (EDIT/T. FADE)
S410	1-554-303-21	SWITCH, TACTILE (T. SET)
S411	1-554-303-21	SWITCH, TACTILE (▶▶ / ▶▶)
S412	1-554-303-21	SWITCH, TACTILE (SHUFFLE)
S413	1-554-303-21	SWITCH, TACTILE (>20)
S414	1-554-303-21	SWITCH, TACTILE (CHECK)
S415	1-554-303-21	SWITCH, TACTILE (CLEAR)
S416	1-554-303-21	SWITCH, TACTILE (PGM)
S417	1-554-303-21	SWITCH, TACTILE (P. SEARCH)
S418	1-554-303-21	SWITCH, TACTILE (REPEAT)
S419	1-554-303-21	SWITCH, TACTILE (FADER)
S420	1-554-303-21	SWITCH, TACTILE (M. SCAN)
S421	1-554-303-21	SWITCH, TACTILE (1)
S422	1-554-303-21	SWITCH, TACTILE (6)
S423	1-554-303-21	SWITCH, TACTILE (11)
S424	1-554-303-21	SWITCH, TACTILE (16)
S425	1-554-303-21	SWITCH, TACTILE (2)
S426	1-554-303-21	SWITCH, TACTILE (7)
S427	1-554-303-21	SWITCH, TACTILE (12)
S428	1-554-303-21	SWITCH, TACTILE (17)
S429	1-554-303-21	SWITCH, TACTILE (3)

Ref. No.	Part No.	Description	Remark
S430	1-554-303-21	SWITCH, TACTILE (8)	
S431	1-554-303-21	SWITCH, TACTILE (13)	
S432	1-554-303-21	SWITCH, TACTILE (18)	
S433	1-554-303-21	SWITCH, TACTILE (4)	
S434	1-554-303-21	SWITCH, TACTILE (9)	
S435	1-554-303-21	SWITCH, TACTILE (14)	
S436	1-554-303-21	SWITCH, TACTILE (19)	
S437	1-554-303-21	SWITCH, TACTILE (5)	
S438	1-554-303-21	SWITCH, TACTILE (10)	
S439	1-554-303-21	SWITCH, TACTILE (15)	
S440	1-554-303-21	SWITCH, TACTILE (20)	
S441	1-554-303-21	SWITCH, TACTILE (■)	
S442	1-554-303-21	SWITCH, TACTILE (▶)	
S443	1-554-303-21	SWITCH, TACTILE (▲)	
S444	1-554-303-21	SWITCH, TACTILE (A. SPACE)	
S501	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER ON/OFF)	

&lt; SWITCH &gt; (MADE IN FRANCE)

S405	1-554-303-81	SWITCH, TACTILE (■)
S406	1-554-303-81	SWITCH, TACTILE (TIME)
S407	1-554-303-81	SWITCH, TACTILE (◀▶ / ◀▶)
S408	1-554-303-81	SWITCH, TACTILE (CONTINUE)
S409	1-554-303-81	SWITCH, TACTILE (EDIT/T. FADE)
S410	1-554-303-81	SWITCH, TACTILE (T. SET)
S411	1-554-303-81	SWITCH, TACTILE (▶▶ / ▶▶)
S412	1-554-303-81	SWITCH, TACTILE (SHUFFLE)
S413	1-554-303-81	SWITCH, TACTILE (>20)
S414	1-554-303-81	SWITCH, TACTILE (CHECK)
S415	1-554-303-81	SWITCH, TACTILE (CLEAR)
S416	1-554-303-81	SWITCH, TACTILE (PGM)
S417	1-554-303-81	SWITCH, TACTILE (P. SEARCH)
S418	1-554-303-81	SWITCH, TACTILE (REPEAT)
S419	1-554-303-81	SWITCH, TACTILE (FADER)
S420	1-554-303-81	SWITCH, TACTILE (M. SCAN)
S421	1-554-303-81	SWITCH, TACTILE (1)
S422	1-554-303-81	SWITCH, TACTILE (6)
S423	1-554-303-81	SWITCH, TACTILE (11)
S424	1-554-303-81	SWITCH, TACTILE (16)
S425	1-554-303-81	SWITCH, TACTILE (2)
S426	1-554-303-81	SWITCH, TACTILE (7)
S427	1-554-303-81	SWITCH, TACTILE (12)
S428	1-554-303-81	SWITCH, TACTILE (17)
S429	1-554-303-81	SWITCH, TACTILE (3)
S430	1-554-303-81	SWITCH, TACTILE (8)
S431	1-554-303-81	SWITCH, TACTILE (13)
S432	1-554-303-81	SWITCH, TACTILE (18)
S433	1-554-303-81	SWITCH, TACTILE (4)
S434	1-554-303-81	SWITCH, TACTILE (9)

## DISPLAY

## POWER SW

## MOTOR VOL

## JACK

Ref. No.	Part No.	Description	Remark
S435	1-554-303-81	SWITCH, TACTILE (14)	
S436	1-554-303-81	SWITCH, TACTILE (19)	
S437	1-554-303-81	SWITCH, TACTILE (5)	
S438	1-554-303-81	SWITCH, TACTILE (10)	
S439	1-554-303-81	SWITCH, TACTILE (15)	
S440	1-554-303-81	SWITCH, TACTILE (20)	
S441	1-554-303-81	SWITCH, TACTILE (II)	
S442	1-554-303-81	SWITCH, TACTILE (▶)	
S443	1-554-303-81	SWITCH, TACTILE (▲)	
S444	1-554-303-81	SWITCH, TACTILE (A. SPACE)	
S501	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER ON/OFF)	

&lt; CERAMIC &gt;

X401 1-577-082-11 VIBRATOR, CERAMIC (4MHz)

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## MISCELLANEOUS

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26 1-575-002-11 WIRE, FLAT TYPE (22 CORE) (591)  
 30, 73 △ 1-574-127-31 CORD, POWER (MADE IN FRANCE:AEP)  
 30, 73 △ 1-574-358-31 CORD, POWER (WITH CONNECTOR) (Australian)  
 30, 73 △ 1-574-390-31 CORD, POWER (MADE IN FRANCE:UK)  
 30, 73 △ 1-575-651-21 CORD, POWER (MADE IN JAPAN:AEP)  
 30, 73 △ 1-575-653-21 CORD, POWER (E)  
 31, 74 △ 1-569-007-11 ADAPTOR, CONVERSION 2P (E MODEL)  
 68 △ 1-575-160-11 WIRE, FLAT TYPE (22 CORE) (M51)  
 69 △ 1-535-871-11 JUMPER, FILM (WITH TERMINAL) (M51)  
 301 \* 1-452-538-11 MAGNET  
 351 △ 8-848-144-11 DEVICE, OPTICAL KSS-240A  
 357 1-575-001-11 WIRE, FLAT TYPE (12 CORE)  
 M101 X-4917-523-3 MOTOR ASSY (SLED)  
 M102 X-4917-504-1 MOTOR ASSY (SPINDLE)  
 M191 A-4604-363-A MOTOR (L) ASSY  
 PT101 △ 1-449-921-11 TRANSFORMER, POWER (US, Canadian)  
 PT101 △ 1-449-922-11 TRANSFORMER, POWER (AEP, Australian)  
 PT101 △ 1-449-923-11 TRANSFORMER, POWER (E)  
 PT101 △ 1-449-925-11 TRANSFORMER, POWER (MADE IN FRANCE)

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## ACCESSORY &amp; PACKING MATERIAL

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1-465-595-11 COMMANDER, REMOTE (RM-D591)  
 (Including ※1)  
 1-558-271-11 CORD, CONNECTION (MADE IN FRANCE)  
 1-559-533-11 CORD, CONNECTION (MADE IN JAPAN)  
 2-181-754-01 COVER, BATTERY (※1)  
 3-752-279-11 MANUAL, INSTRUCTION (ENGLISH, F, E, P)  
 (AEP, E, Australian, UK)  
 3-752-279-21 MANUAL, INSTRUCTION (ENGLISH, F)  
 (US, Canadian)  
 3-752-279-41 MANUAL, INSTRUCTION (D, NL, S, I) (AEP)  
 \* 3-750-090-01 INSTRUCTION (ENGLISH, F) (Canadian)  
 \* 3-795-629-11 INSTRUCTION (DENMARK) (AEP)  
 \* 4-941-548-01 LABEL, CLASS 1 (AEP, E, Australian)  
 \* 4-922-998-01 CUSHION (M51)  
 \* 4-941-925-01 CUSHION (591)  
 \* 4-942-085-11 INDIVIDUAL CARTON (M51) (MADE IN JAPAN)  
 \* 4-942-788-01 INDIVIDUAL CARTON (M51) (MADE IN FRANCE)  
 \* 4-942-789-01 INDIVIDUAL CARTON (591) (MADE IN FRANCE)  
 \* 4-944-108-01 INDIVIDUAL CARTON (591) (MADE IN JAPAN)

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Ref. No.	Part No.	Description	Remark
HARDWARE LIST			
*****			
# 1	7-682-548-09	SCREW +BVTT 3X8 (S)	
# 2	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
# 3	7-682-547-04	SCREW +BVTT 3X6 (S)	
# 4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
# 5	7-682-547-09	SCREW +B 3X6	
# 6	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
# 7	7-621-775-10	SCREW +B 2.6X4	
# 8	7-621-255-15	SCREW +P 2X3	

## 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.