CDP-XA20ES

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model

Photo: Black
EXCEPT UK

Model Name Using Similar Mechanism	NEW
CD Mechanism Type	CDM36B-14C
Base Unit Type	BU-14C
Optical Pick-up Type	KSS-213B

SPECIFICATIONS

Compact disc player

System	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max. 44.6 μW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Frequency response	2 Hz to 20 kHz ±0.3 dB
Dynamic range	More than 90 dB
Harmonic distortion	Less than 0.0023 %

Outputs

	Jack type	Maximum output levels	Load impedance
LINE OUT (FIXED)	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohms
LINE OUT (VARIABLE) (except for UK model)	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	−18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL) (European and UK models only)	Coaxial output connector	0.5 Vp-p (75 ohms)	75 ohms
PHONES (except for UK model)	Stereo phone jack	20 mW	32 ohms

– Continued on next page –

COMPACT DISC PLAYER

MICROFILM

SONY®

General

Power requirements

Where purchased	Power requirements
USA/Canada	120 V AC, 60 Hz
Europe/UK	220 V – 230 V AC, 50/60 Hz
Other countries	110 V – 120 V or 220 V – 240 V AC, adjustable, 50/60 Hz

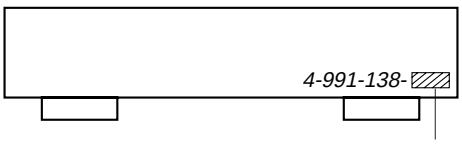
Power consumption	18 W
Dimensions (approx.) (w/h/d)	430 × 125 × 350 mm (17 × 5 × 13 7/8 in.) incl. projecting parts
Mass (approx.)	7.5 kg (16 lbs 9 oz)

Supplied accessories

Audio cord (2 phono plugs – 2 phono plugs) (1)
Remote commander (remote) (1)
Sony SUM-3 (NS) batteries (2)
Stabilizer (1)

Design and specifications are subject to change without notice.

MODEL IDENTIFICATION
– BACK PANEL –



AEP Model : 0 ☐
UK Model : 1 ☐
Singapore Model : 2 ☐
US Model : 3 ☐
Canadian Model : 4 ☐

TABLE OF CONTENTS

1. SERVICING NOTES
1-1. How to Open the Disc Tray When Power Switch Turns Off 4
1-2. Preparation for Adjustment and Measurement 4

2. GENERAL 5

3. DISASSEMBLY 6

4. TEST MODE
4-1. AF Mode 11
4-2. ADJ Mode 12

5. ELECTRICAL ADJUSTMENTS 13

6. DIAGRAMS
6-1. IC Pin Function Description 15
6-2. Block Diagram 21
6-3. Printed Wiring Boards –BD Section – 24
6-4. Schematic Diagram — BD Section — 27
6-5. Schematic Diagram — MAIN Section — 30
6-6. Printed Wiring Boards — MAIN Section — 33
6-7. Schematic Diagram — POWER Section — 35
6-8. Printed Wiring Boards — POWER Section — 37
6-9. Printed Wiring Boards — PANEL Section — 39
6-10. Schematic Diagram — PANEL Section — 41

7. EXPLODED VIEWS 47

8. ELECTRICAL PARTS LIST 52

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.

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

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down 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 30 cm away from the objective lens.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

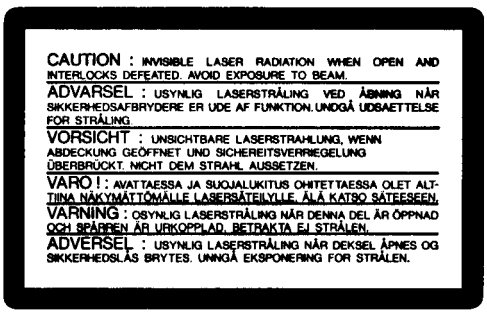
CAUTION

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

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

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

The following caution label is located inside the unit.



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 0.75 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 2 V AC range are suitable. (See Fig. A)

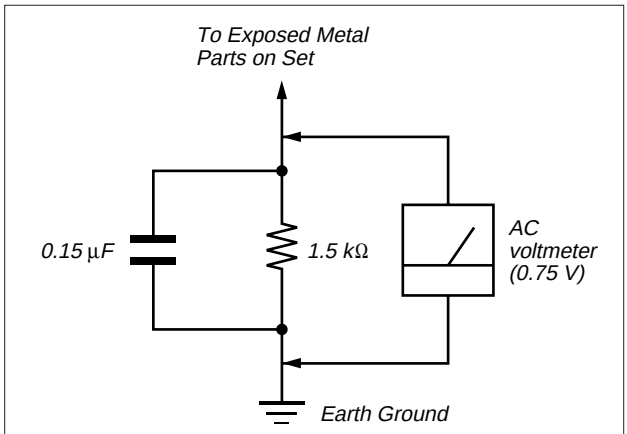
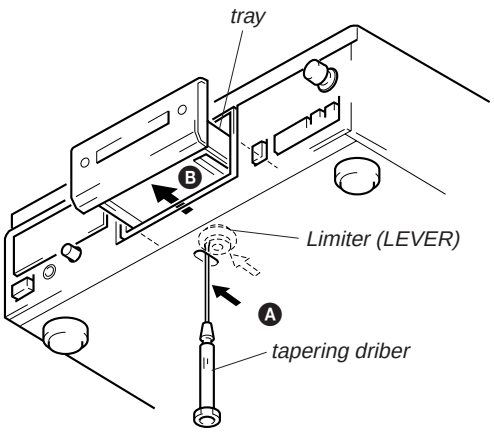


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1
SERVICING NOTES

1-1. HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF

① Insert a tapering driver into the aperture of the unit bottom, and move the limiter (LEVER) to direction of the arrow Ⓐ.
② Pull the tray to direction fo the arrow Ⓑ.

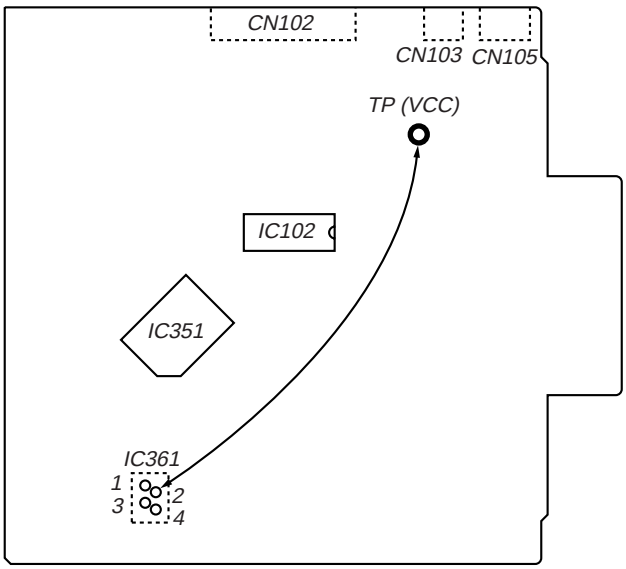


** To close the disc tray, move the driver in the reverse direction (to IN direction).*

1-2. PREPARATION FOR ADJUSTMENT AND MEASUREMENT

Perform connecting the IC361 pin ② of BD board to the line of +5V because this unit does not work without the stabilizer structurally.

Connecting Location:
[BD BOARD] – Side B –

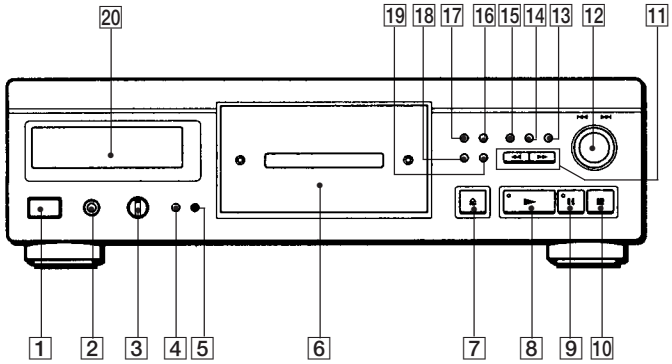


SECTION 2
GENERAL

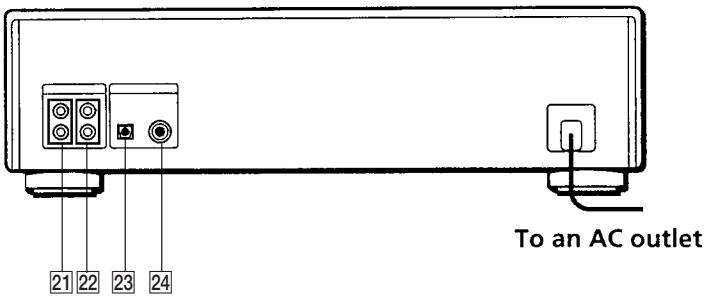
This section is extracted from instruction manual.

Location of Controls

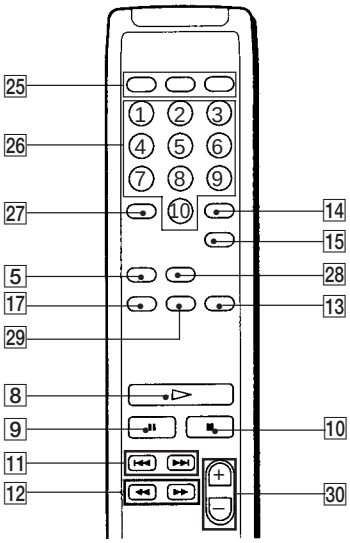
• FRONT PANEL



• REAR PANEL



• REMOTE COMMANDER

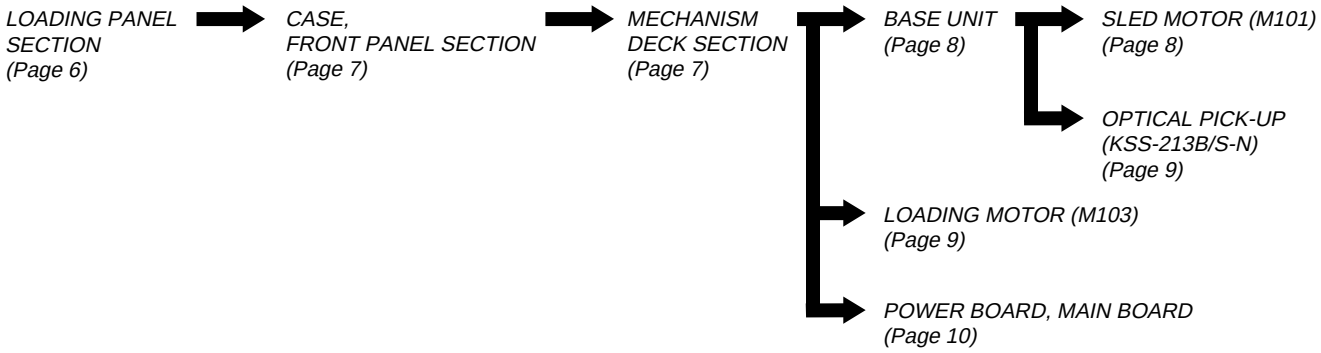


1 POWER Switch
2 PHONES jack (EXCEPT UK)
3 LINE OUT/PHONE LEVEL control (EXCEPT UK)
4 PLAY MODE button
5 TIME button
6 Disc tray
7 ⏏ OPEN/CLOSE button
8 ► (play) button
9 ❚❚ (pause) button
10 ■ (stop) button
11 ◄◄/►► (manual search) buttons
12 ⏮/⏭ (AMS*) control
13 FADER button
14 CLEAR (program clear) button
15 CHECK (program check) button
16 EDIT/TIME FADE button
17 REPEAT button
(CLEAR REPEAT button on the remote commander)
18 PEAK SEARCH button
19 AUTO SPACE button
20 Display
21 LINE OUT FIXED jack
22 LINE OUT VARIABLE jack (EXCEPT UK)
23 DIGITAL OUT OPTICAL jack
24 DIGITAL OUT COAXIAL jack (AEP, UK)
25 Play mode buttons
CONTINUE button
SHUFFLE button
PROGRAM button
26 Numeric buttons
27 >10 (over 10) button
28 DISPLAY ON/OFF button
29 A↔B button
30 LINE OUT LEVEL +/– buttons

* AMS is the abbreviation of Automatic Music Sensor.

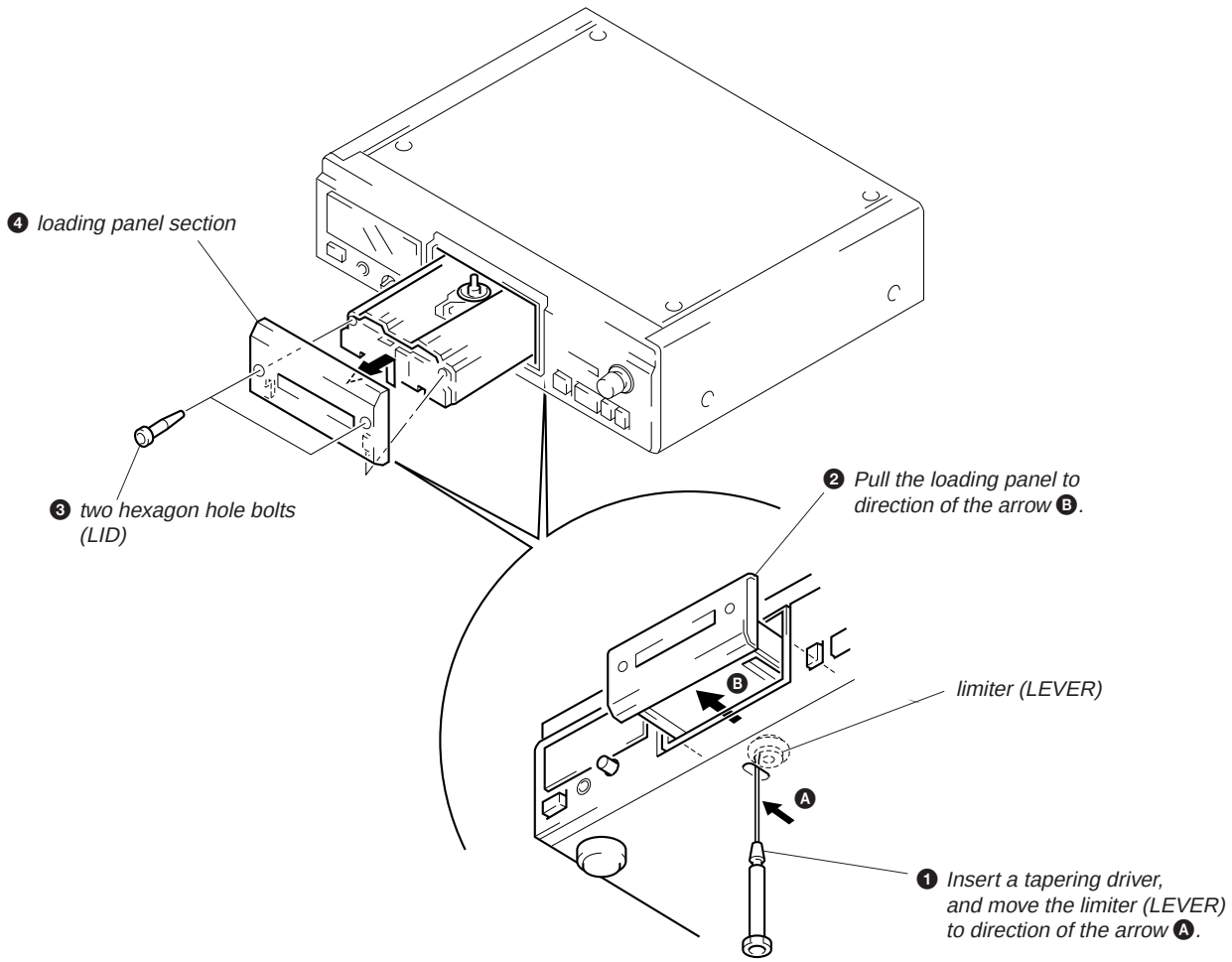
SECTION 3
DISASSEMBLY

• This set can be disassembled in the order shown below.

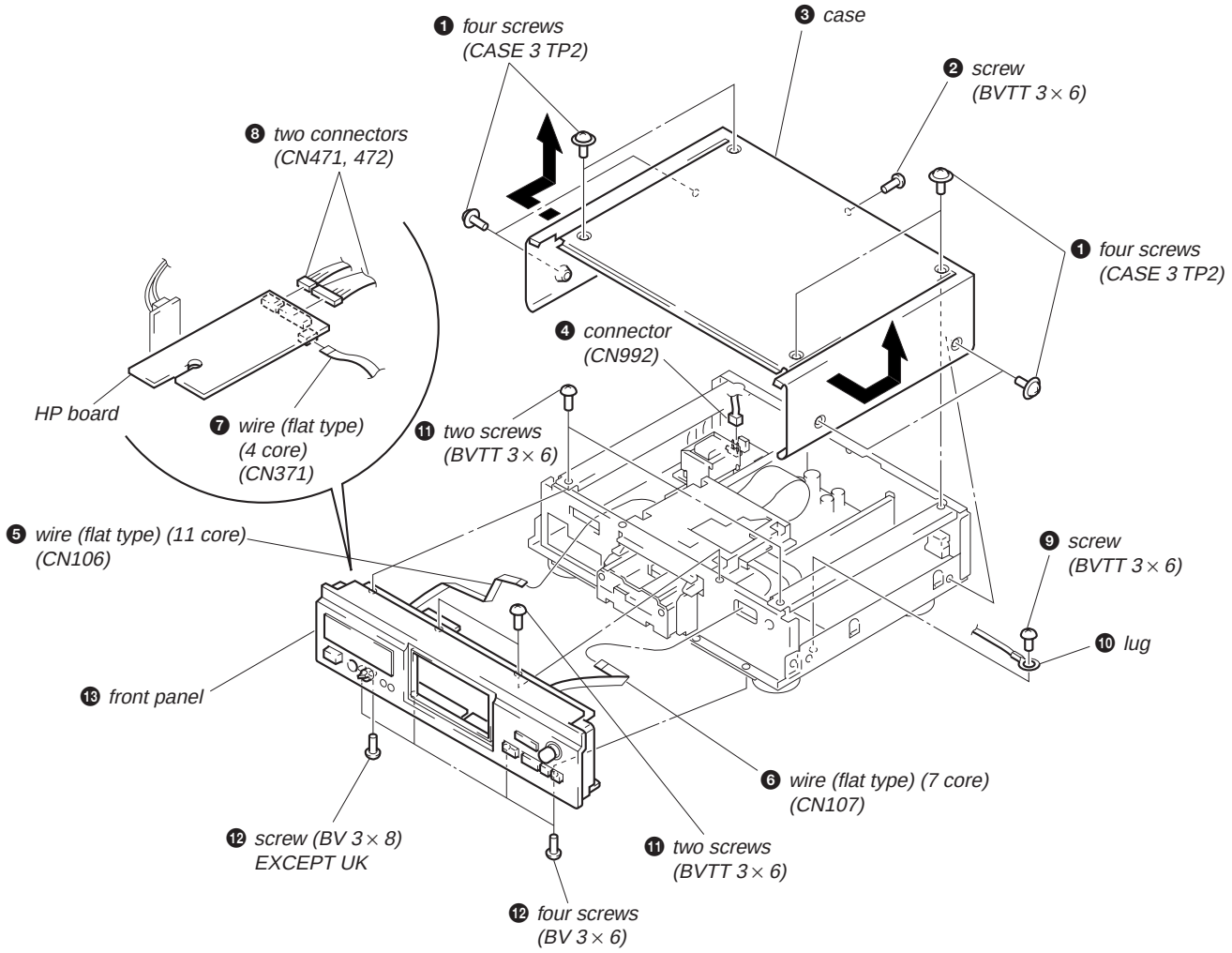


Note: Follow the disassembly procedure in the numerical order given.

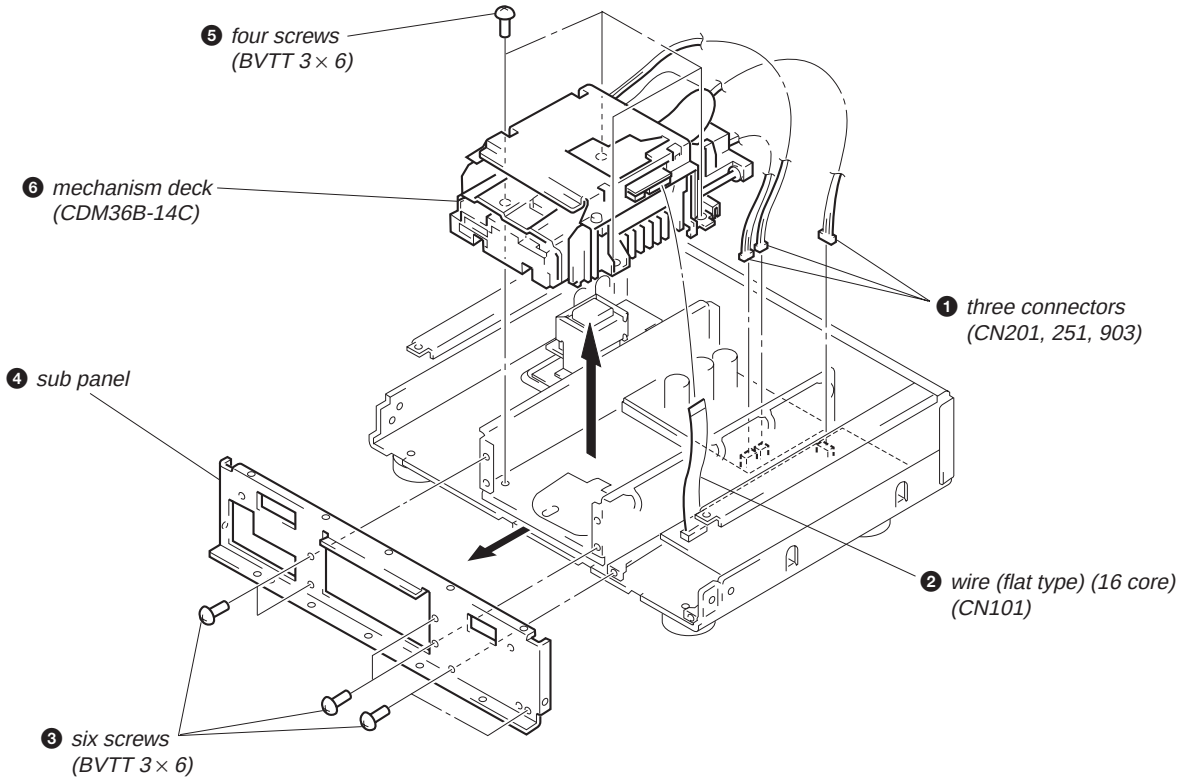
LOADING PANEL SECTION



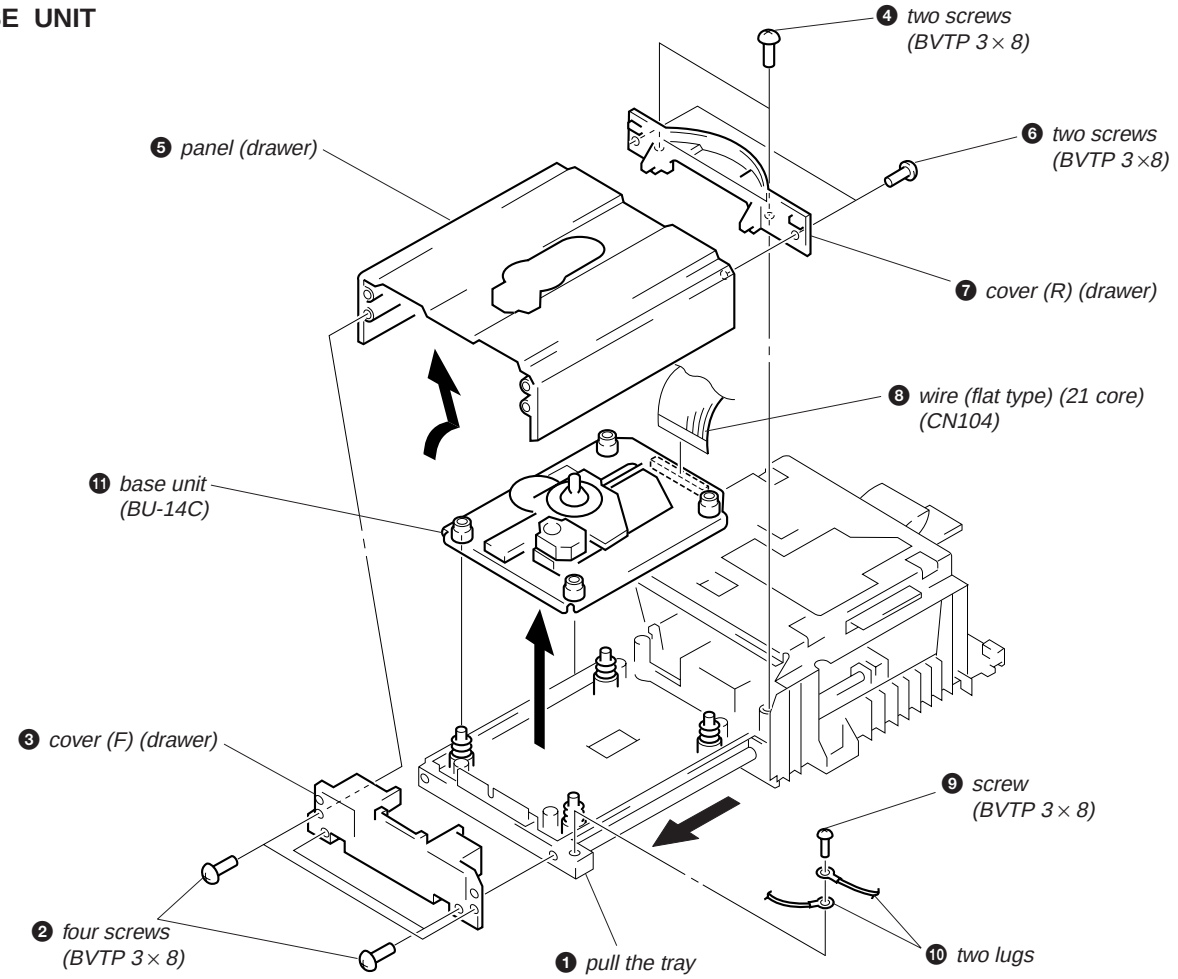
CASE, FRONT PANEL SECTION



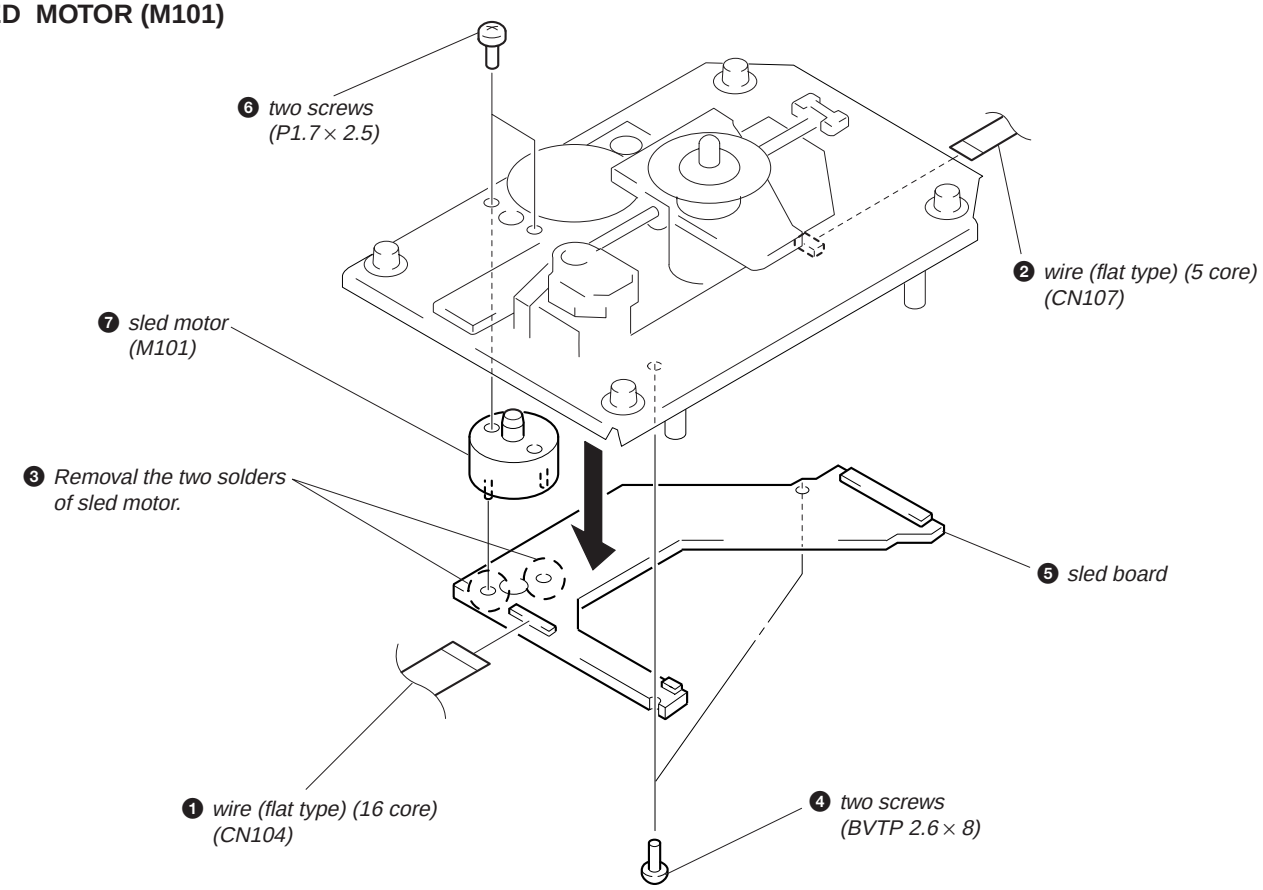
MECHANISM DECK SECTION



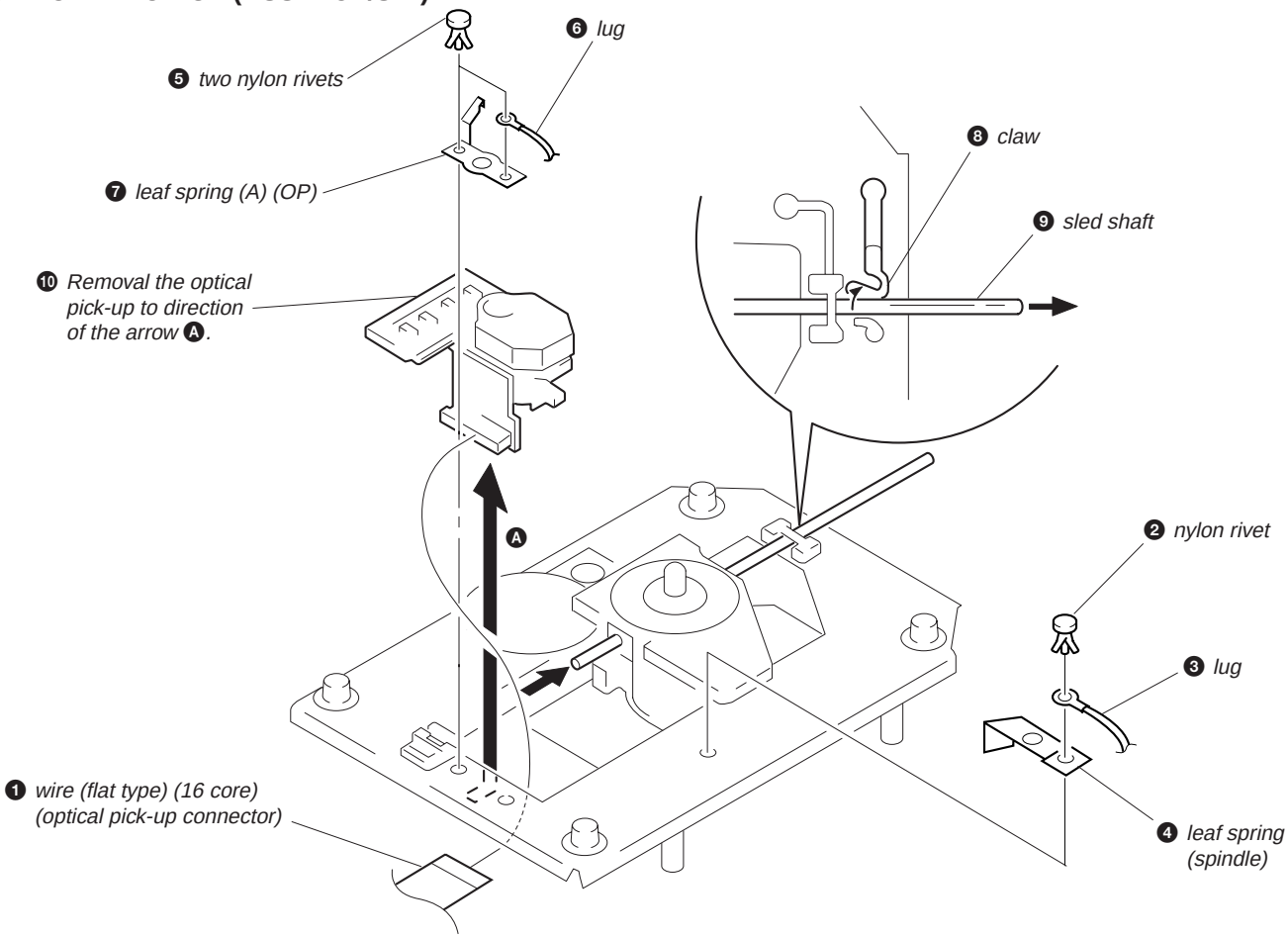
BASE UNIT



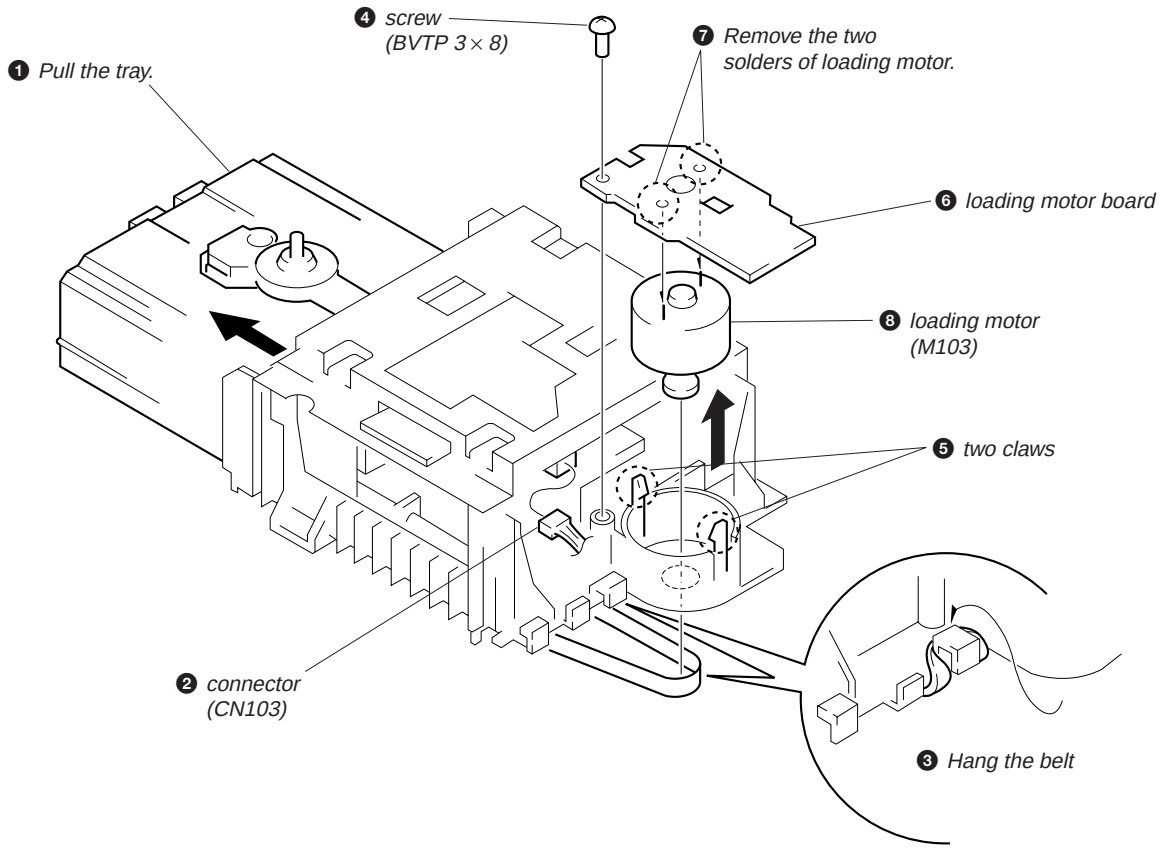
SLED MOTOR (M101)



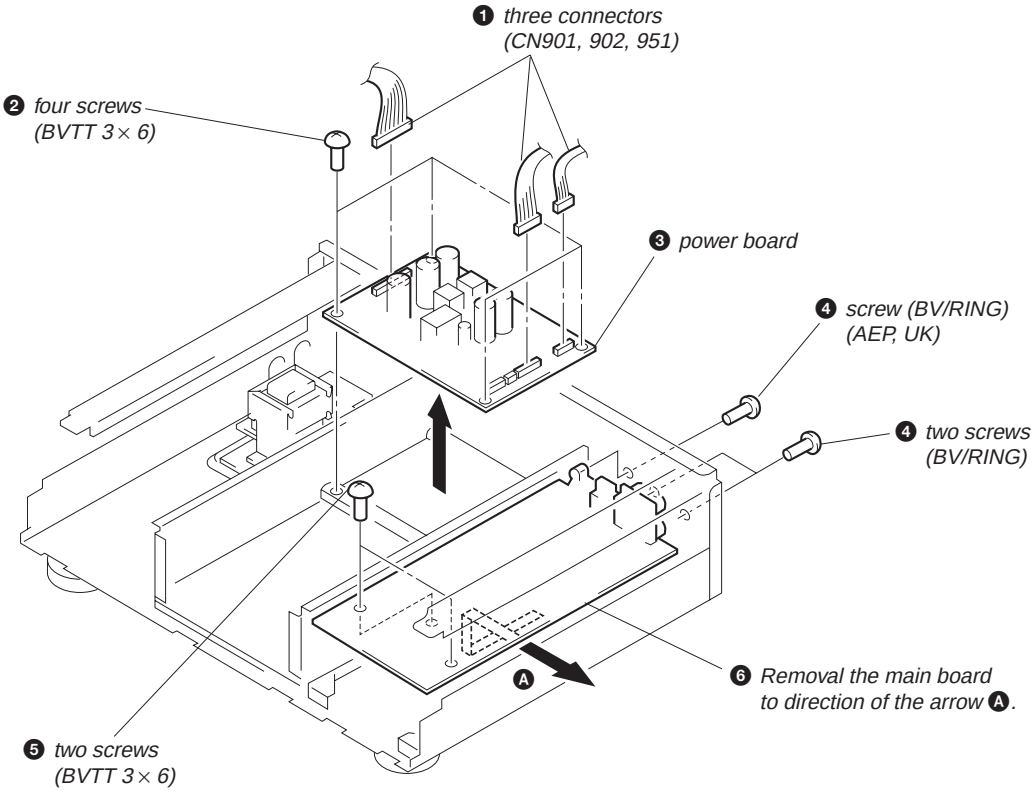
OPTICAL PICK-UP (KSS-213B/S-N)



LOADING MOTOR (M103)



POWER BOARD, MAIN BOARD



SECTION 4
TEST MODE

4-1. AF MODE

Connect the TP19 (AFADJ) on the BD board to the ground and turn on the power supply.
The AF mode is then activated and the following check can be made.

4-1-1. Fluorescent Indicator Tube Check

After confirming display of all on, keep pressing the following button, and the following display is attained.

► (PLAY) button

(Display: 01)

❚❚ (PAUSE) button

	2		4	
6		8		10
	12		14	
16		18		20

(Display: 02)

A track number on FL display tube increases if I◄◄ AMS ►►I knob is rotated in ►►I direction, or decreases in I◄◄ direction.

Keep pressing the ⏏OPEN/CLOSE button, and all on display is attained again.

4-1-2. Key Check

All buttons are assigned with numbers respectively, and when each button is pressed, it is counted and its number is displayed. Up to "16" can be counted.
A button pressed once is not further counted but the number is displayed. (Table 4-1)

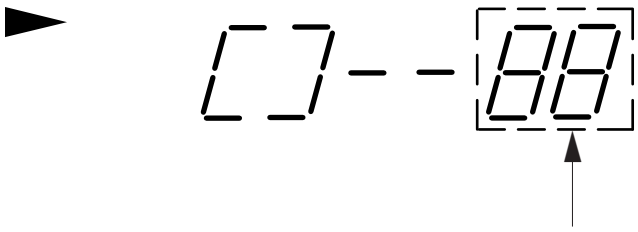
count display *button number display*

Table 4-1.

Button	Display	Button	Display
TIME	09	PUSH ENTER	24
PLAY MODE	10	EDIT/ TIME FADE	27
AUTO SPACE	18	REPEAT	28
CHECK	19	PEAK SEARCH	29
CLEAR	20	■	33
FADER	21	►	01
◄◄	22	❚❚	02
►►	23	⏏ OPEN/CLOSE	all light up

4-1-3. Remote Commander Check

All buttons are assigned with numbers respectively.
If a button is kept pressed, its button number is displayed on the FL display tube of main unit. (Table 4-2)



button number display

Table 4-2.

Button	Display	Button	Display
1	00	10	32
2	01	>10	39
3	02	TIME	40
4	03	A – B	42
5	04	REPEAT	44
6	05	⏮	48
7	06	⏭	49
8	07	▷	50
9	08	◀◀	51
CHECK	13	▶▶	52
CLEAR	15	SHUFFLE	53
+	18	■	56
–	19	⏸	57
CONTINUE	29	DISPLAY ON/OFF	86
PROGRAM	31	FADER	95

4-2. ADJ MODE

Connect the TP18 (ADJ) on the BD board to the ground and turn on the power supply. The ADJ mode is then activated and the following operation is executed.

- There is no problem even if Guarded Frame Sync is low value continuously during playing.
- Do not perform high speed search during an access.
- The gain of focus servo and spindle servo does not lower during playing.
- Manual operation and measurement of the servo system are possible. (For detailed operating method, see Table 4-3. in ADJ Mode.)

4-2-1. Button Operation Table in ADJ Mode

After all music numbers are displayed, press the TIME button, and the jitter display mode is then set. The button functions are as listed below.

Button Functions (Operate with remote commander.)

Table 4-3.

Button No.	Test Mode
3	Tracking servo off
8	Tracking servo on
11	S-curve measuring mode
12	All servo off
13	Top turnblack display
14	Botton turnblack display
15	Center display
16	Optimum point display
17	Optimum jitter display
18	TE traverse display
19	VC, FE and RF display
20	Autogain display (Focus, tracking and sled)

* For button numbers 3, 8, 11, and 12, use them only when an oscilloscope is connected.

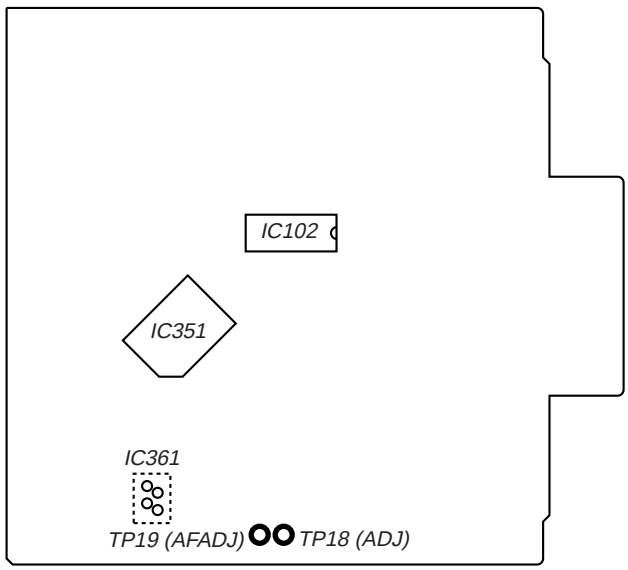
4-3. CLV-S MODE

The spindle servo can be operated for play in the CLV-S mode by connecting TP18 (ADJ) and after turning on the power supply.

4-4. RELEASE THE TEST MODE

Disconnect the lead wire of test point connected in first step.

Connecting Location:
[BD BOARD] – Side B –

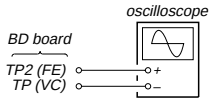


SECTION 5
ELECTRICAL ADJUSTMENTS

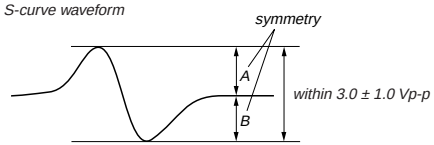
Notes:
1. CD block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (Part No.: 3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10 MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S-Curve Check

Connection:



Procedure:
1. Connect the oscilloscope to TP2 (FE) and TP (VC) on BD board.
2. Connect the TP3 (FEI: IC101 pin ㉙) and TP (VC) with lead wire.
3. Turned power switch on.
4. Put disc (YEDS-18) in and turned power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Confirm that the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.0 ± 1.0 Vp-p.

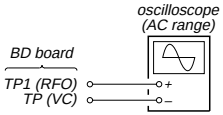


6. After check, remove the lead wire connected in step 2.

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.

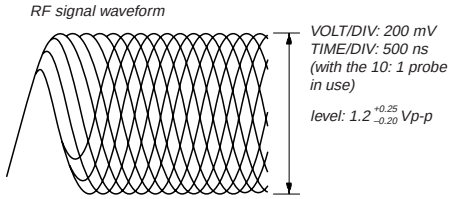
RF Level Check

Connection:



Procedure:
1. Connect the oscilloscope to TP1 (RFO) and TP (VC) on BD board.
2. Turned power switch on. (stop mode)
3. Put disc (YEDS-18) in and press the ► button.
4. Confirm that the oscilloscope waveform is clear and check RF signal level is correct or not.

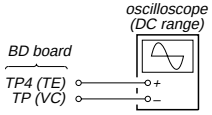
Note: Clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.



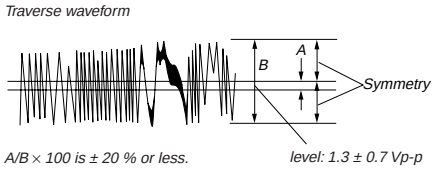
When observing the eye pattern, set the oscilloscope for AC range and raise vertical sensitivity.

E-F Balance (Traverse) Check

Connection:



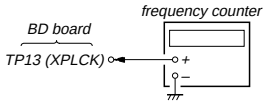
Procedure:
1. Connect the TP18 (ADJ) to ground and TP5 (TEI: IC101 pin ㉗) to TP (VC)with lead wire.
2. Connect the oscilloscope to TP4 (TE) and TP (VC) on BD board.
3. Turned power switch on.
4. Put disc (YEDS-18) in and press the ► button.
5. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to A Vdc, and check this level.



6. After check, remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Connection:

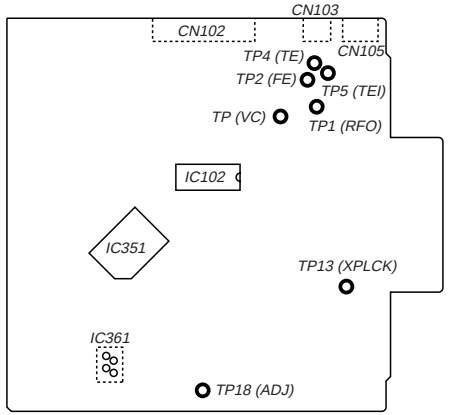


Procedure:
1. Connect the frequency counter to TP13 (XPLCK).
2. Turned power switch on.
3. Put disc (YEDS-18) in and press the ► button.
4. Confirm that the reading on frequency counter is 4.3218 MHz.

FOCUS/TRACKING GAIN ADJUSTMENT

VR in optical block is not adjusted.
As this gain has a margin, normally a little shift of gain will not cause a problem.
If you happened to move VR and you are not sure the original position, set it to the mechanical center.

Adjustment Location:
[BD BOARD] – Side B –



SECTION 6
DIAGRAMS

6-1. IC PIN FUNCTION DESCRIPTION

• BD BOARD IC101 CXD2545Q
(DIGITAL SIGNAL PROCESSOR, FOCUS/TRACKING/SLED SERVO, EFM COMPARATOR)

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled servo drive PWM signal output terminal Not used (open)
2	SRDR	O	Sled servo drive PWM signal (–) output to the BA6297AFP (IC102)
3	SFON	O	Sled servo drive PWM signal output terminal Not used (open)
4	TFDR	O	Tracking servo drive PWM signal (–) output to the BA6297AFP (IC102)
5	TRON	O	Tracking servo drive PWM signal output terminal Not used (open)
6	TRDR	O	Tracking servo drive PWM signal (+) output to the BA6297AFP (IC102)
7	TFON	O	Tracking servo drive PWM signal output terminal Not used (open)
8	FFDR	O	Focus servo drive PWM signal (+) output to the BA6297AFP (IC102)
9	FRON	O	Focus servo drive PWM signal output terminal Not used (open)
10	FRDR	O	Focus servo drive PWM signal (–) output to the BA6297AFP (IC102)
11	FFON	O	Focus servo drive PWM signal output terminal Not used (open)
12	VCOO	O	Oscillator circuit output terminal for analog PLL of the playback EFM Not used (open)
13	VCOI	I	Oscillator circuit input terminal for analog PLL of the playback EFM Not used (fixed at "L")
14	TEST	I	Input terminal for the test (fixed at "L")
15	DVSS	—	Ground terminal (digital system)
16	TES2	I	Input terminal for the test (fixed at "L")
17	TES3	I	Input terminal for the test (fixed at "L")
18	PDO	O	Charge-pump output terminal for analog PLL of the playback EFM Not used (open)
19	VPCO	O	PLL charge-pump output terminal for the variable pitch Not used (open)
20	VCKI	I	Clock signal input from external VCO for the variable pitch Not used (fixed at "L")
21	AVD2	—	Power supply terminal (+5V) (analog system)
22	IGEN	I	Power supply terminal (+5V) (for operational amplifier)
23	AVS2	—	Ground terminal (analog system)
24	ADIO	O	Output terminal of the operational amplifier Not used (open)
25	RFC	I	Input terminal for the A/D converter Not used (open)
26	RFDC	I	RF signal (DC level) input terminal for the digital servo process
27	TE	I	Tracking error signal input from the RF amplifier in optical pick-up
28	SE	I	Sled error signal input from the RF amplifier in optical pick-up
29	FE	I	Focus error signal input from the RF amplifier in optical pick-up
30	VC	I	Middle point voltage (+2.5V) input from the RF amplifier in optical pick-up
31	FILO	O	Filter output terminal for master clock of the playback master PLL
32	FILI	I	Filter input terminal for master clock of the playback master PLL
33	PCO	O	Phase comparison output terminal for master clock of the playback EFM master PLL
34	CLTV	I	Internal VCO control voltage input of the playback master PLL
35	AVS1	—	Ground terminal (analog system)
36	RFAC	I	RF signal (AC level) input terminal for the EFM demodulator
37	BIAS	I	Constant current input terminal of the playback EFM asymmetry circuit
38	ASYI	I	Playback EFM asymmetry comparator voltage input terminal
39	ASYO	O	Playback EFM full-swing output terminal
40	AVD1	—	Power supply terminal (+5V) (analog system)
41	DVDD	—	Power supply terminal (+5V) (digital system)
42	ASYE	I	Playback EFM asymmetry circuit on/off selection input terminal (fixed at "H")
43	PSSL	I	Audio data output mode selection input terminal (fixed at "L")

Pin No.	Pin Name	I/O	Function
44	WDCK	O	Word clock signal (88.2 kHz) output terminal Not used (open)
45	LRCK	O	L/R sampling clock signal (44.1 kHz) output to the CXD8505BQ (IC302)
46	DATA	O	DA16 output when PSSL="H", 48-bit slot serial data output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Serial data output to the CXD8505BQ (IC302)
47	BCLK	O	DA15 output when PSSL="H", 48-bit slot bit clock signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Bit clock signal (2.8224 MHz) output to the CXD8505BQ (IC302)
48	64 DATA	O	DA14 output when PSSL="H", 64-bit slot serial data output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
49	64 BCLK	O	DA13 output when PSSL="H", 64-bit slot bit clock signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
50	64 LRCK	O	DA12 output when PSSL="H", 64-bit slot L/R sampling clock signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
51	GTOP	O	DA11 output when PSSL="H", GTOP signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
52	XUGF	O	DA10 output when PSSL="H", XUGF signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
53	XPLCK	O	DA09 output when PSSL="H", XPLCK signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
54	GFS	O	DA08 output when PSSL="H", GFS (guard frame sync) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
55	RFCK	O	DA07 output when PSSL="H", RFCK (read frame clock) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
56	C2PO	O	DA06 output when PSSL="H", C2PO signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
57	XRAOF	O	DA05 output when PSSL="H", XRAOF (RAM over flow) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
58	MNT3	O	DA04 output when PSSL="H", MNT3 (monitor 3) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
59	MNT2	O	DA03 output when PSSL="H", MNT2 (monitor 2) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
60	MNT1	O	DA02 output when PSSL="H", MNT1 (monitor 1) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
61	MNT0	O	DA01 output when PSSL="H", MNT0 (monitor 0) signal output when PSSL="L" (PSSL (pin ㊸)=fixed at "L") Not used (open)
62	XTAI	I	System clock input terminal (16 MHz)
63	XTAO	O	System clock output terminal (16 MHz) Not used (open)
64	XTSL	I	System clock selection input terminal (fixed at "L")
65	DVSS	—	Ground terminal (digital system)
66	FSTI	I	2/3 divider input terminal of pins ㊷ (XATI) and ㊸ (XTAO)
67	FSTO	O	2/3 divider output terminal of pins ㊷ (XATI) and ㊸ (XTAO)
68	FSOF	O	4.2336 MHz clock signal output terminal Not used (open)
69	C16M	O	16.9344 MHz clock signal output terminal Not used (open)
70	MD2	I	Digital out on/off control signal input terminal (fixed at "H")
71	DOUT	O	Digital signal (for coaxial out and optical out) output terminal
72	EMPH	O	Emphasis control signal output terminal Not used (open)
73	WFCK	O	Write frame clock signal output terminal Not used (open)
74	SCOR	O	Sub-code sync (S0+S1) detection signal output to the system controller (IC351)

Pin No.	Pin Name	I/O	Function
75	SBSO	O	Sub-code P-W serial data output terminal Not used (open)
76	EXCK	I	Sub-code P-W serial data reading clock signal input terminal Not used (fixed at "L")
77	SUBQ	O	Sub-code Q data signal output to the system controller (IC351)
78	SQCK	I	Sub-code Q data reading clock signal input from the system controller (IC351)
79	MUTE	I	Mute signal input from the system controller (IC351)
80	SENS	O	Internal status (SENSE) signal output to the system controller (IC351)
81	$\overline{\text{XRST}}$	I	System reset signal input from the reset signal generator (IC912) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
82	DIRC	I	1-track jump mode input terminal Not used (fixed at "H")
83	SCLK	I	Sense serial data reading clock signal input from the system controller (IC351)
84	DFSW	I	Defect on/off select signal input terminal Not used (fixed at "L")
85	ATSK	I	Input terminal for the anti-shock Not used (fixed at "L")
86	DATA	I	Serial data input from the system controller (IC351)
87	XLAT	I	Serial data latch pulse signal input from the system controller (IC351)
88	CLOK	I	Serial data transfer clock signal input from the system controller (IC351)
89	COUT	O	Track number count signal output terminal Not used (open)
90	DVDD	—	Power supply terminal (+5V) (digital system)
91	MIRR	O	Mirror detection signal output terminal Not used (open)
92	DFCT	O	Defect signal output terminal Not used (open)
93	FOK	O	Focus OK signal output terminal Not used (open)
94	FSW	O	Selection signal output terminal of the output filter for spindle motor Not used (open)
95	MON	O	Spindle motor on/off control signal output terminal Not used (open)
96	MDP	O	Spindle servo control signal output terminal
97	MDS	O	Spindle servo control signal output terminal Not used (open)
98	LOCK	O	GFS is sampled by 460 Hz "H" output when GFS is "H" Not used (open)
99	SSTP	I	Detection input from the sled limit-in detect switch (S151) The optical pick-up is inner position when "H"
100	SFDR	O	Sled servo drive PWM signal (+) output to the BA6297AFP (IC102)

• **BD BOARD IC351 CXP84120-070Q (SYSTEM CONTROLLER)**

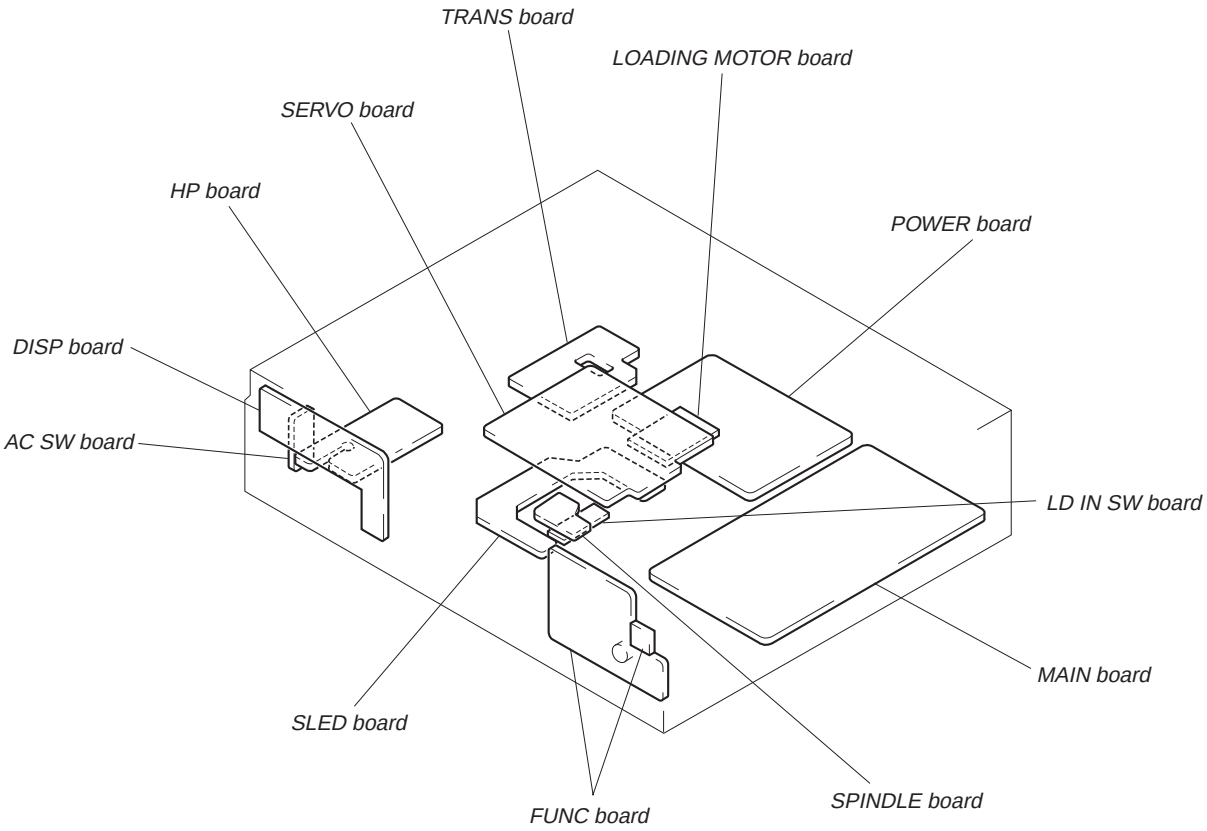
Pin No.	Pin Name	I/O	Function
1	A3	O	No Connection
2	A4	O	
3	A5	O	
4	A6	O	
5	A7	O	
6	A8	O	
7	A9	O	
8	A10	O	
9	A11	O	
10	A12	O	
11	$\overline{WE}$	O	
12	NC	O	
13	NC	O	
14	LED PLAY	O	► LED (D801) drive signal output terminal "H": LED on
15	LED PAUSE	O	❚❚ LED (D802) drive signal output terminal "H": LED on
16	LED FILTER	O	No Connection
17	SPD-MUTE	O	No Connection
18	RE-INIT	O	No Connection
19	VR+	O	Volume up control signal output to the volume control motor driver (IC371)
20	VR–	O	Volume down control signal output to the volume control motor driver (IC371)
21	$\overline{BLK}$	O	Blank signal output to the fluorescent indicator tube driver (IC801)
22	D0	O	Serial data output to the fluorescent indicator tube driver (IC801)
23	D1	O	No Connection
24	D2	O	No Connection
25	FLD CLK	O	Serial data transfer clock signal output to the fluorescent indicator tube driver (IC801)
26	WR	O	Read/write select signal output to the fluorescent indicator tube driver (IC801)
27	SENSOR SW	O	On/off control signal output to the stabilizer detect sensor (IC361) "H": on
28	SENSOR IN	I	Detect signal input from the stabilizer detect sensor (IC361) "H": on
29	LIMIT SW	I	Detection input from the sled limit-out detect switch The optical pick-up is outer position when "L" Not used (fixed at "L")
30	$\overline{RESET}$	I	System reset signal input from the reset signal generator (IC912) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
31	XIN	I	Main system clock input terminal (4 MHz)
32	XOUT	O	Main system clock output terminal (4 MHz)
33	GND	—	Ground terminal
34	NC	—	No Connection
35	NC	—	Not used (fixed at "L")
36	GND	—	Ground terminal (for A/D converter)
37	+5V	I	Reference voltage input terminal (+5V)
38	ADJ/AFADJ	I	Setting terminal for the test mode "L" active
39	K0	I	Key input terminal (A/D input) (fixed at "H")
40	K1	I	Key input terminal (A/D input) TIME, PLAY MODE keys (S819, S820) input
41	K2	I	Key input terminal (A/D input) AUTO SPACE, CHECK, CLEAR, FADER, ►►, ◄◄ , PUSH ENTER, AMS ⊳⊳Ⅱ keys (S801 to S806, RV801) input

Pin No.	Pin Name	I/O	Function
42	K3	I	Key input terminal (A/D input) EDIT/TIME FADE, REPEAT, PEAK SEARCH, ⏏ OPEN/ CLOSE, ►, ❚❚, ■ , AMS ⏮⏭ keys (S811 to S817, RV801) input
43	K4	I	Key input terminal (A/D input) (fixed at "H")
44	K5	I	Key input terminal (A/D input) (fixed at "H")
45	IN/OUT SW	I	Detection input from the loading in/out detect switch (S152, S153) (A/D input)
46	SCLK OUT	O	Sense serial data reading clock signal output to the CXD2545Q (IC101)
47	PRGL	O	Serial data latch pulse signal output to the CXD8505BQ (IC302)
48	CLK	O	Serial data transfer clock signal output to the CXD2545Q (IC101) and CXD8505BQ (IC302)
49	SENSE	I	Internal status (SENSE) signal input from the CXD2545Q (IC101)
50	DATA	O	Serial data output to the CXD2545Q (IC101) and CXD8505BQ (IC302)
51	SQCK	O	Sub-code Q data reading clock signal output to the CXD2545Q (IC101)
52	SUBQ	I	Sub-code Q data signal input from the CXD2545Q (IC101)
53	TEST3	O	No Connection
54	SEL1	I	Not used (fixed at "H")
55	SEL0	I	Not used (fixed at "H")
56	RMIN	I	Remote control signal input from the remote control receiver (IC804)
57	TIMER	I	Not used (fixed at "H")
58	TEST2	O	No Connection
59	TEST1	O	No Connection
60	SCOR	I	Sub-code sync (S0+S1) detection signal input from the CXD2545Q (IC101)
61	A.MUTE	O	Muting control signal output to the analog mute driver and mute relay driver
62	LDON	O	Laser diode on/off selection signal output to the RF amplifier in optical pick-up
63	XLT	O	Serial data latch pulse signal output to the CXD2545Q (IC101)
64	LOAD OUT	O	Loading motor (M103) drive signal output to the NJM4558M (IC182) *1
65	LOAD IN	O	Loading motor (M103) drive signal output to the NJM4558M (IC182) *1
66	DOUT (NC)	O	No Connection
67	D.MUTE	O	Muting control signal output to the CXD2545Q (IC101) and CXD8505BQ (IC302)
68	D0	O	No Connection
69	D1	O	
70	D2	O	
71	D3	O	
72	VDD	—	Power supply terminal (+5V)
73	NC	I	Not used (fixed at "H")
74	D4	O	No Connection
75	D5	O	
76	D6	O	
77	D7	O	
78	A0	O	No Connection
79	A1	O	
80	A2	O	

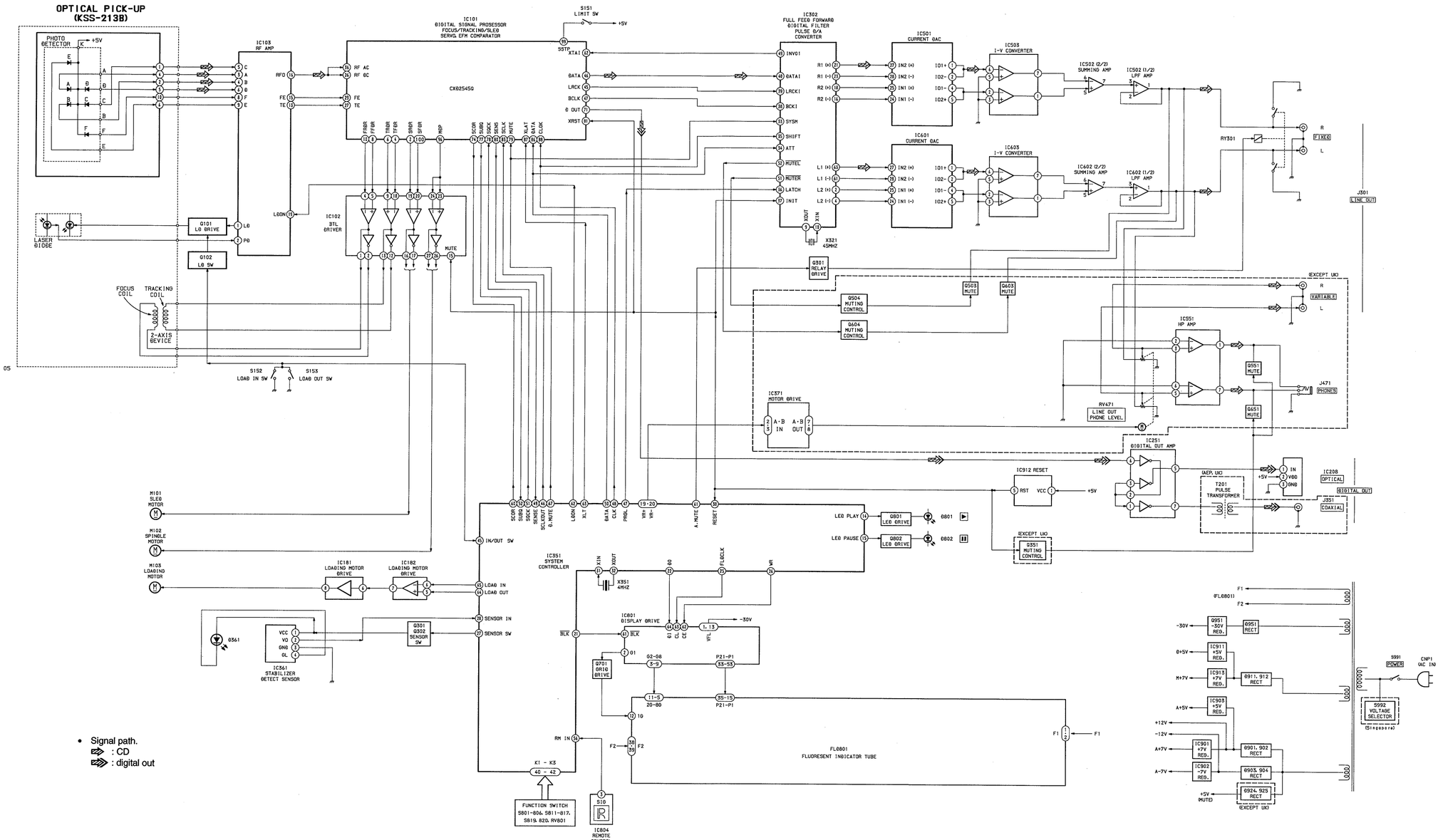
*1 Loading motor (M103) control

Terminal \ Operation	OFF	OUT	I N	BRAKE
LOAD OUT (pin ⑭)	"L"	"H"	"L"	"H"
LOAD IN (pin ⑮)	"L"	"L"	"H"	"H"

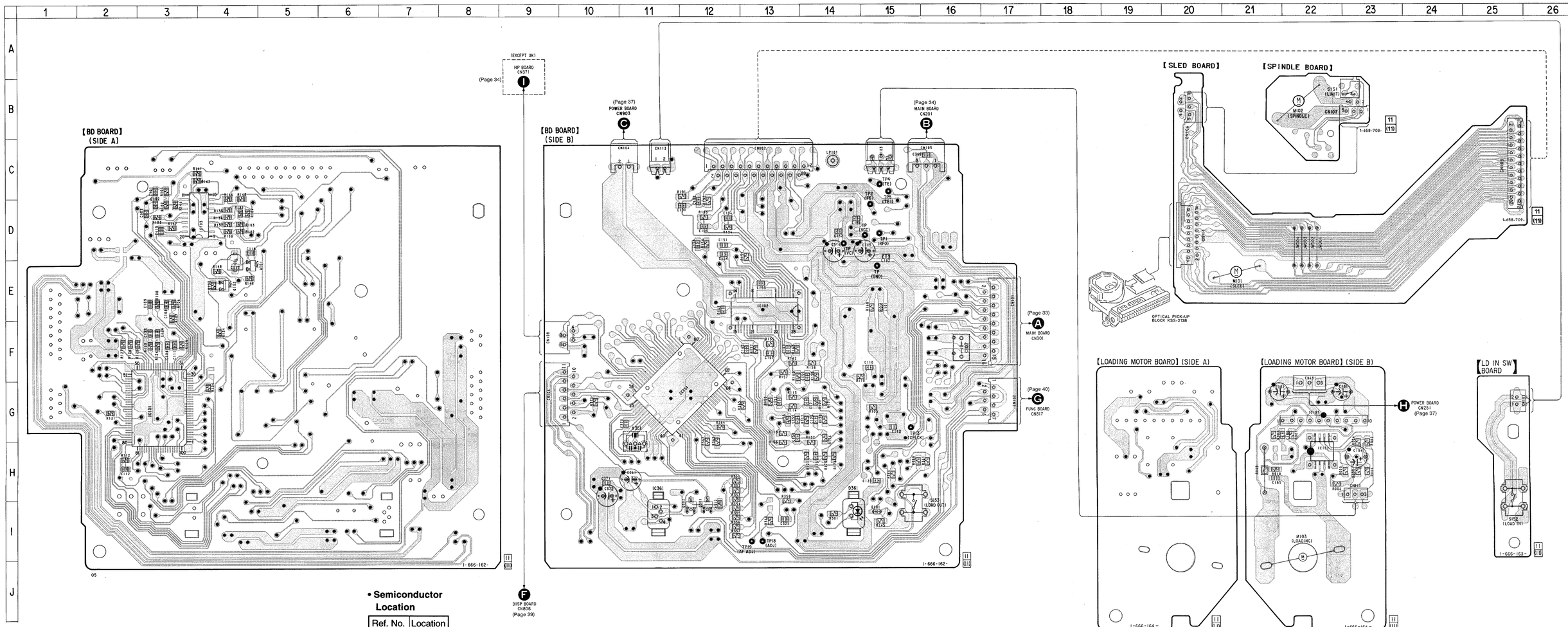
• Circuit Boards Location



6-2. BLOCK DIAGRAM



6-3. PRINTED WIRING BOARDS – BD Section – • See page 20 for Circuit Boards Location.



Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ● : Through hole.
- △ : internal component.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

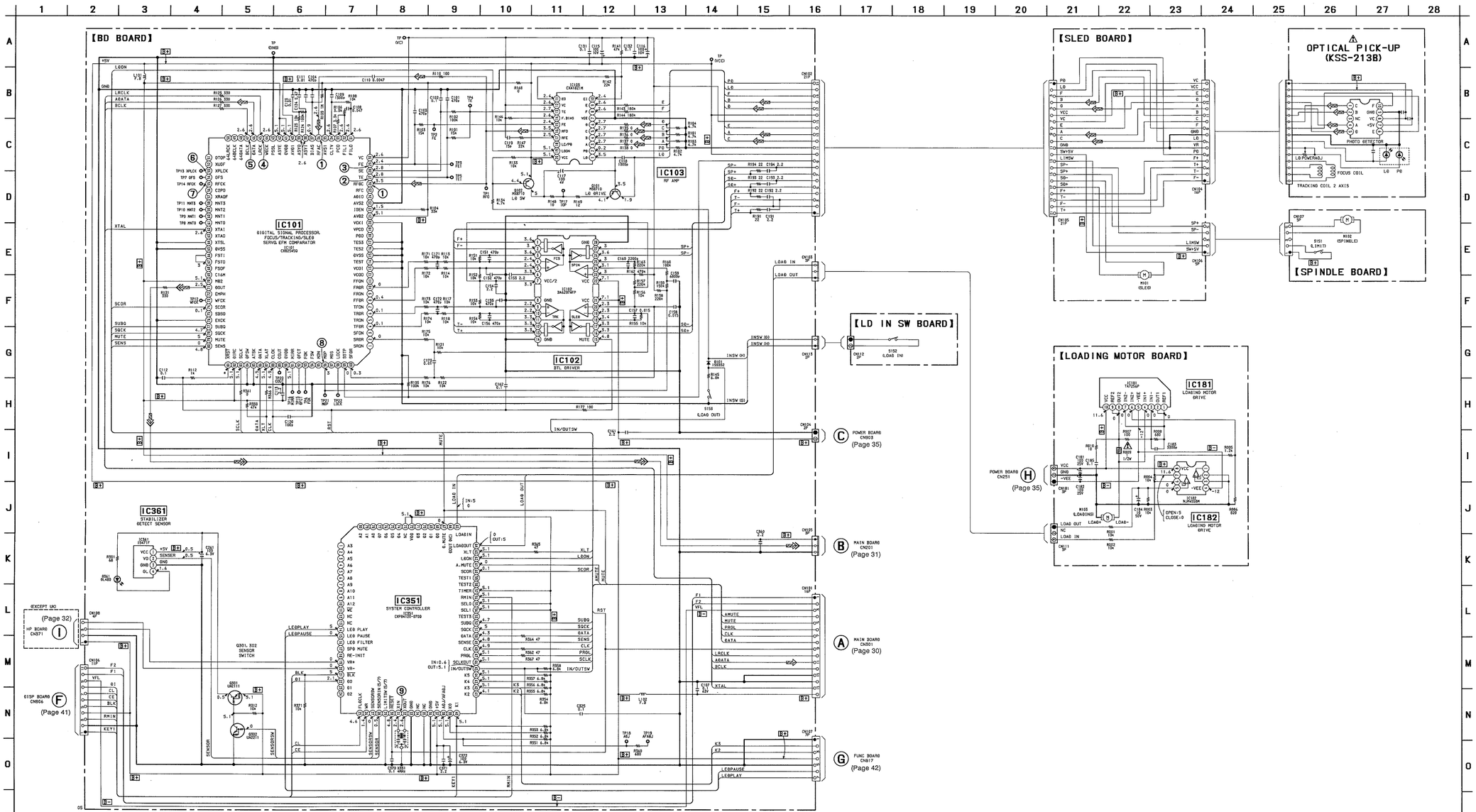
Caution:
Pattern face side: (Side B) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A) Parts on the parts face side seen from the parts face are indicated.

• Semiconductor Location

Ref. No.	Location
D101	I-15
D361	H-14
IC101	G-3
IC102	E-13
IC103	D-4
IC181	G-22
IC182	H-22
IC351	G-12
IC361	H-11
Q101	E-4
Q102	E-4
Q301	I-12
Q302	I-12

6-4. SCHEMATIC DIAGRAM – BD Section –

• See page 44 for IC Block Diagrams. • See page 43 for Waveforms. • See page 15 to 19 for IC pin Function Description.



Note on Schematic Diagram:

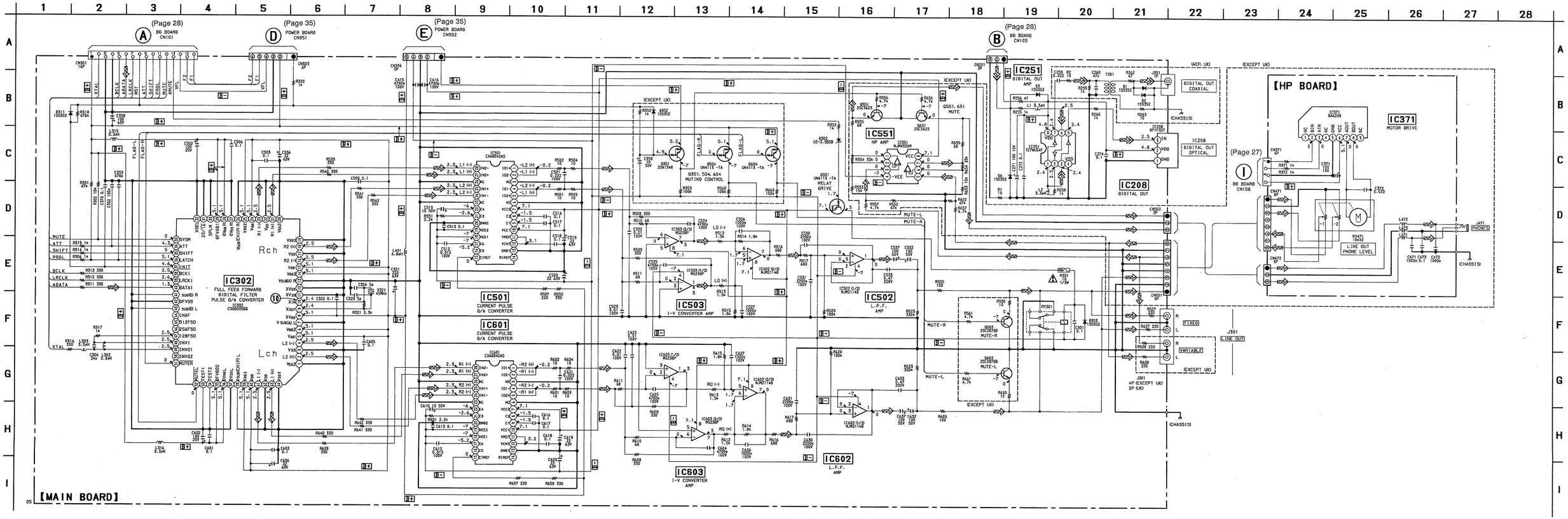
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ⚠ : nonflammable resistor

Note:	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.

- B+ : B+ Line.
- B− : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : CD PLAY
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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.
  ⇒ : CD
  ⇛ : digital out

6-5. SCHEMATIC DIAGRAM – MAIN Section –

• See page 46 for IC Block Diagrams. • See page 43 for Waveforms.



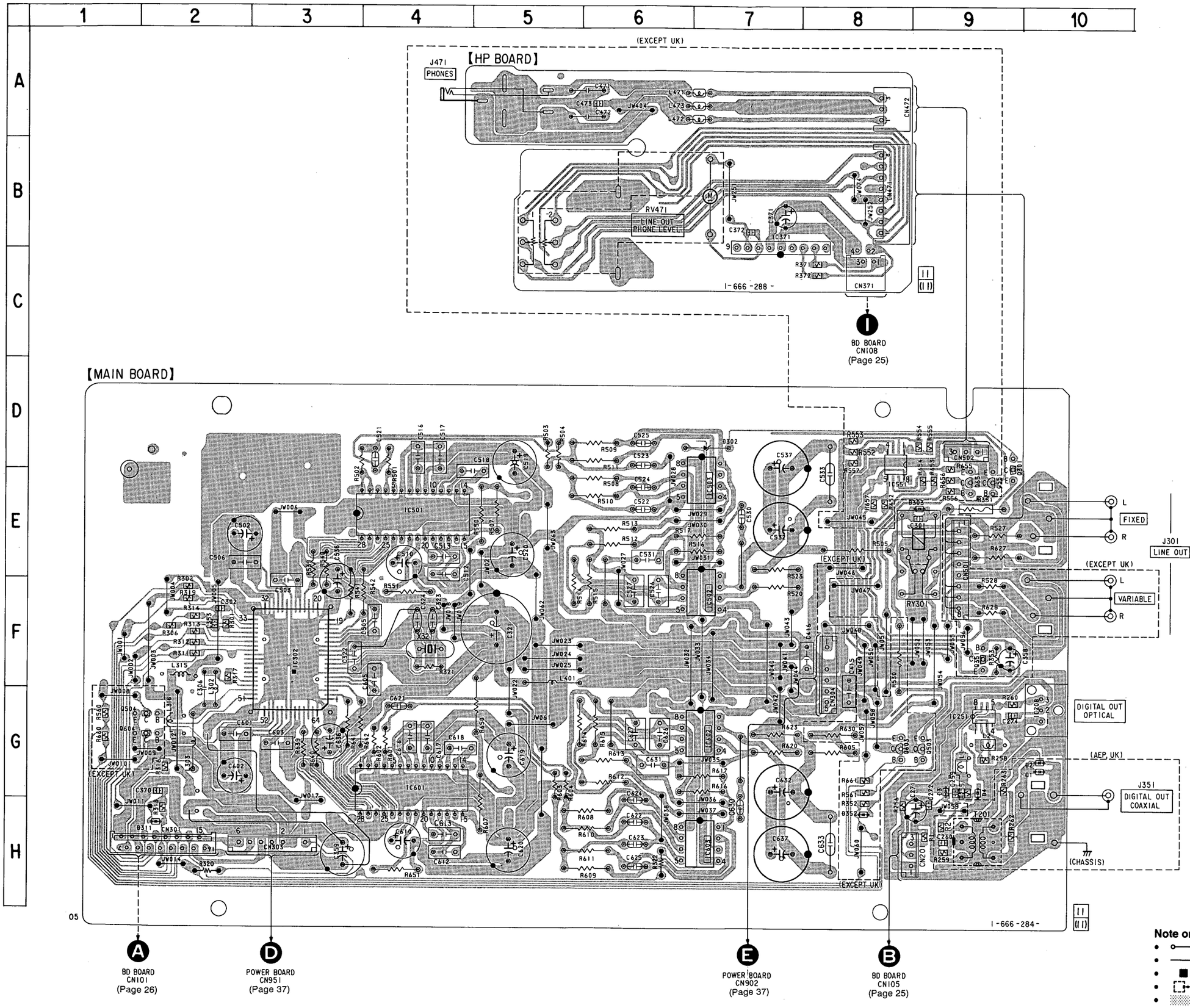
Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.

Note:	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 piéce portant le numéro spécifié.

- B+ : B+ Line.
- B− : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions. no mark : CD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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. ⇨ : CD ⇛ : digital out

6-6. PRINTED WIRING BOARDS – MAIN Section – • See page 20 for Circuit Boards Location.



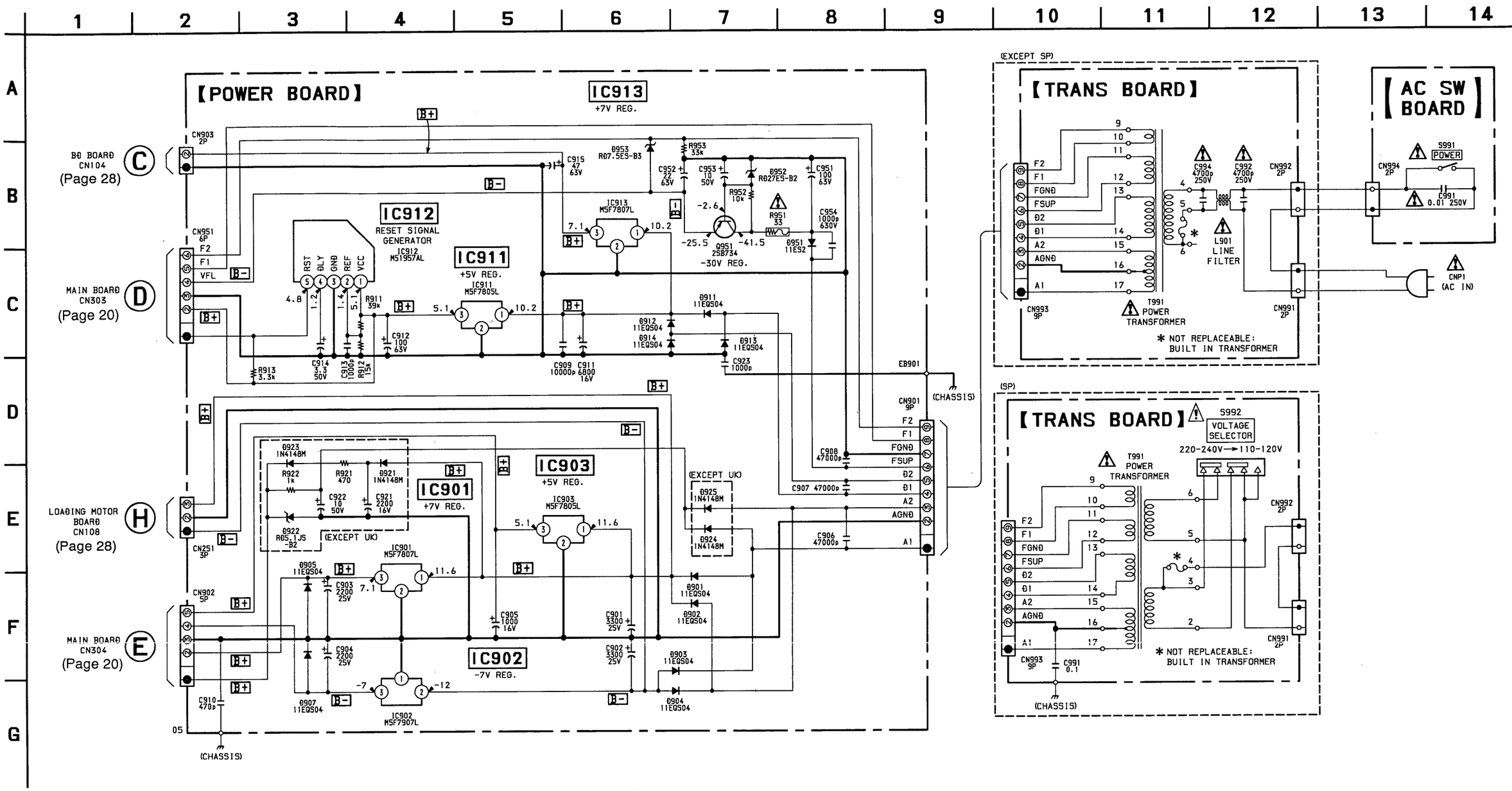
• **Semiconductor Location**

Ref. No.	Location
○ D1	G-10
○ D2	G-10
D3	G-9
D4	G-9
D302	D-7
D303	E-9
D311	H-2
● D352	H-8
IC208	G-10
IC251	G-9
IC302	F-3
● IC371	B-7
IC501	E-4
IC502	F-7
IC503	E-7
● IC551	E-8
IC601	G-4
IC602	G-7
IC603	H-7
Q301	D-9
● Q351	F-9
● Q503	G-9
● Q504	G-2
● Q551	E-9
● Q603	G-8
● Q604	G-2

NOTE:
○:AEP, UK model only
●: EXCEPT UK model only

Note on Printed Wiring Board:
- ——○—— : parts extracted from the component side.
- —————— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- : indicates side identified with part number.
- : Pattern from the side which enables seeing.

6-7. SCHEMATIC DIAGRAM – POWER Section – • See page 45 for IC Block Diagrams.



Note on Schematic Diagram:

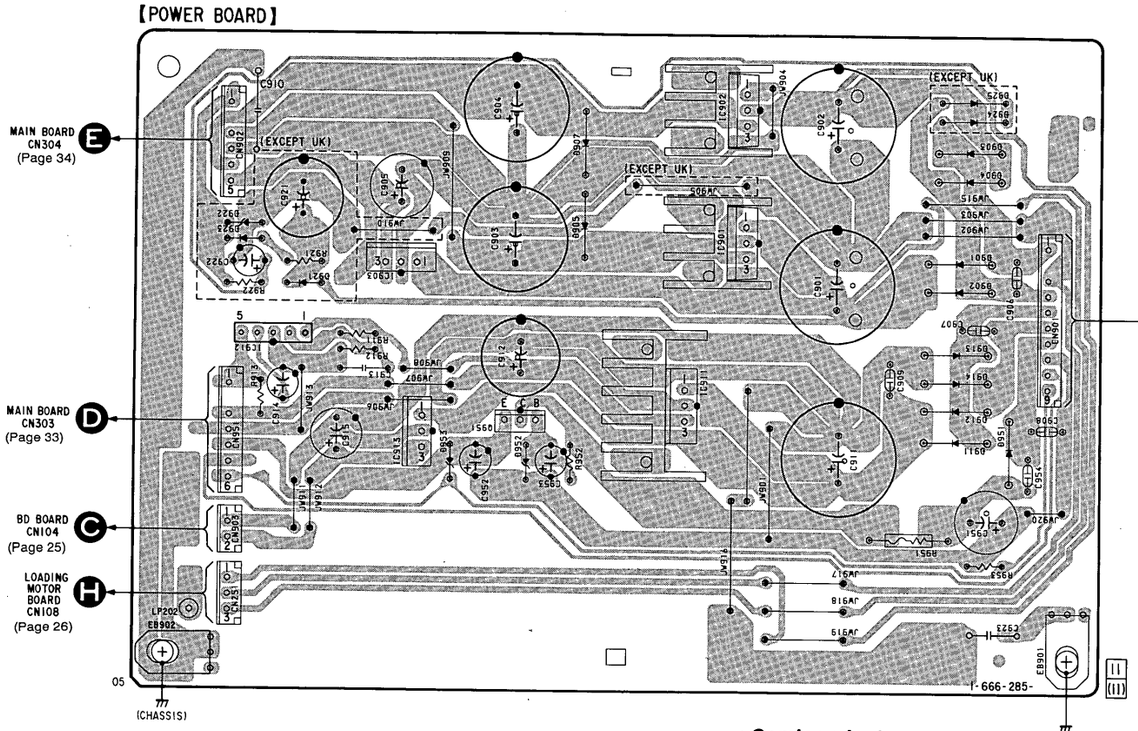
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- : fusible resistor.

Note:	**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 piéce portant le numéro spécifié.

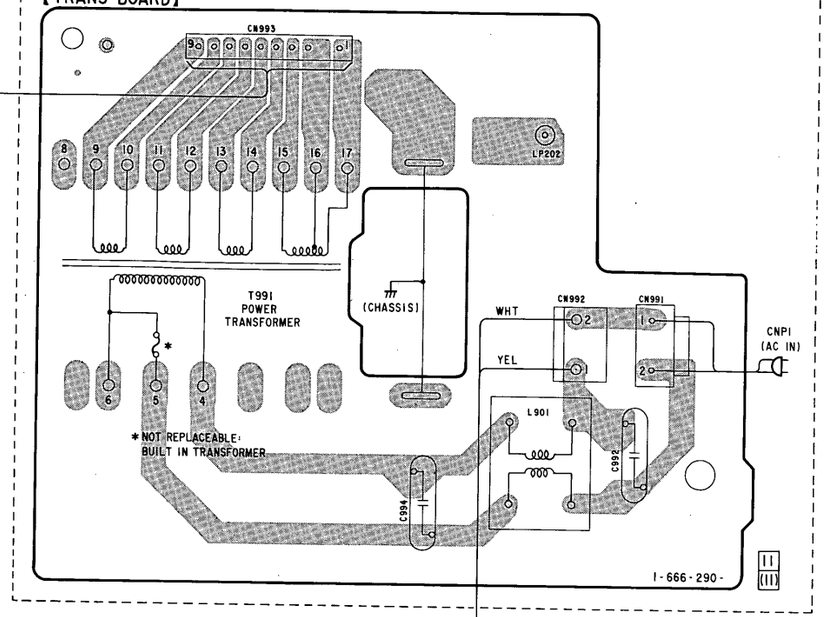
- B+ : B+ Line.
- B− : B- Line.
- Voltages are dc with respect to ground under no-signal conditions.
  no mark : CD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Abbreviation
  SP: Singapore

6-8. PRINTED WIRING BOARDS – POWER Section – • See page 20 for Circuit Boards Location.

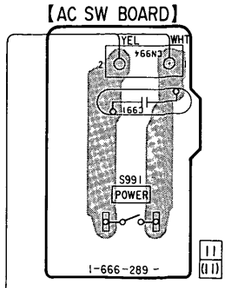
【POWER BOARD】



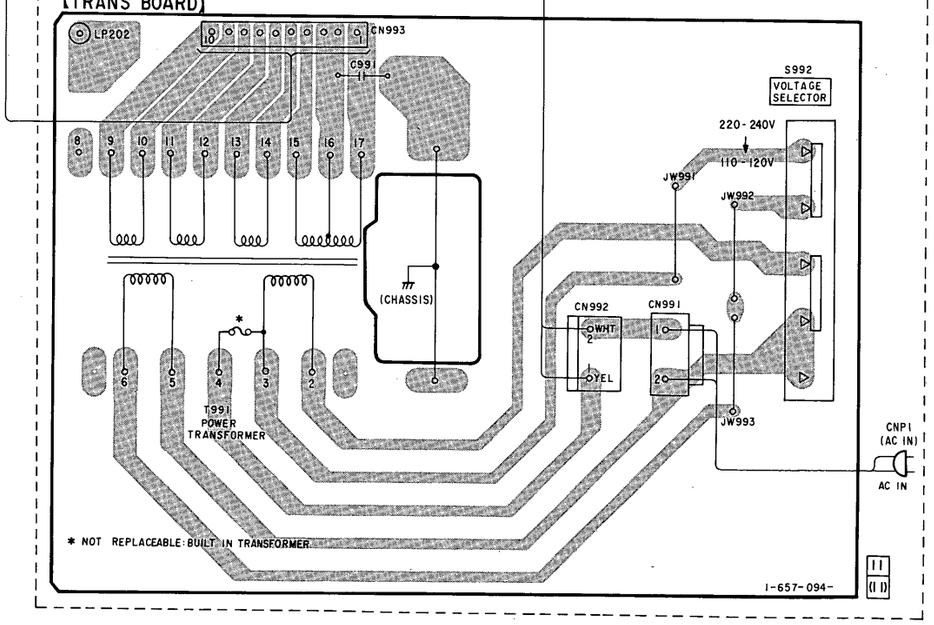
【TRANS BOARD】 (EXCEPT SP)



【AC SW BOARD】



【TRANS BOARD】 (SP)



Note on Printed Wiring Board:

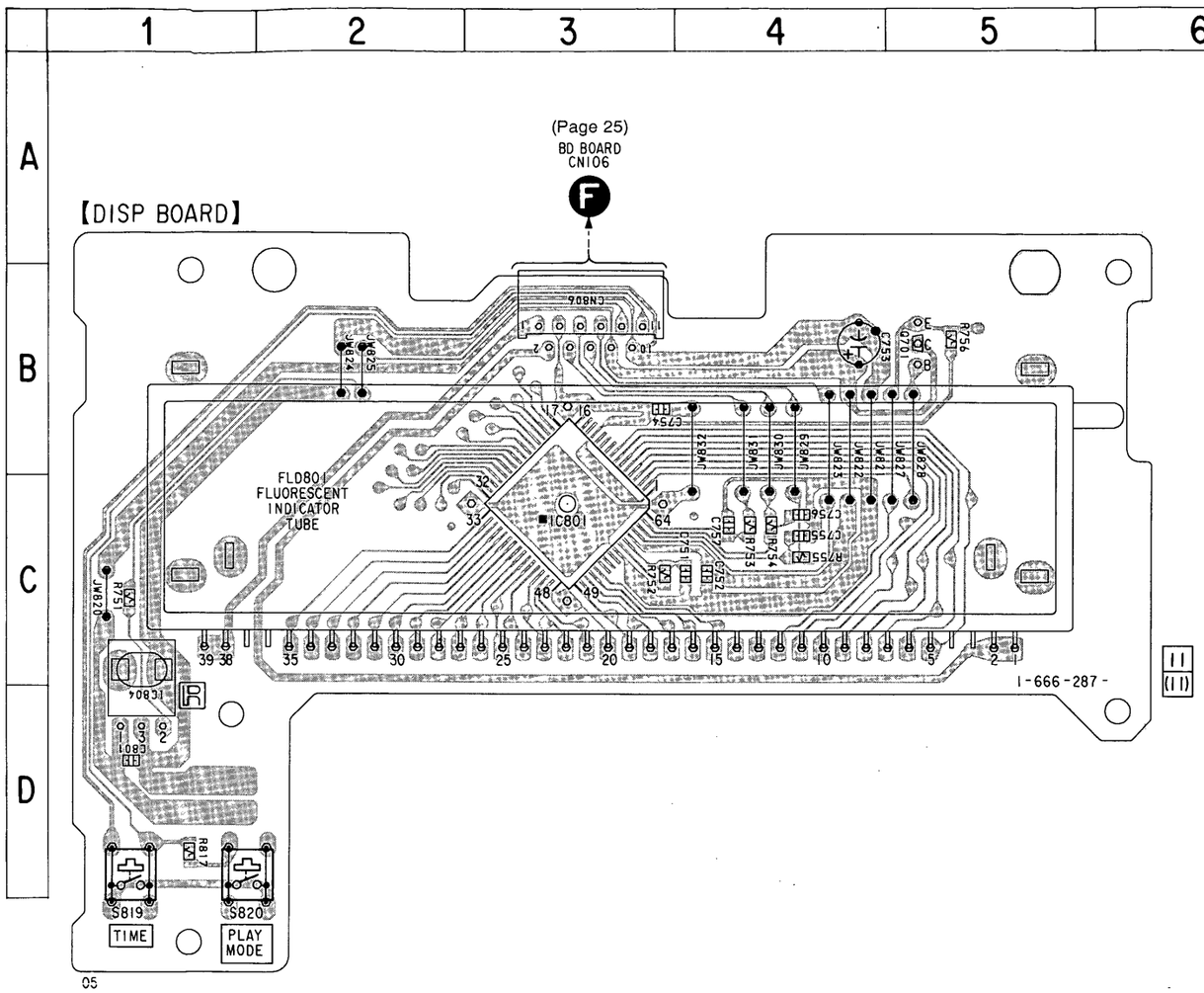
- o—— : parts extracted from the component side.
- ▒▒▒ : Pattern from the side which enables seeing.
- Abbreviation
  SP: Singapore

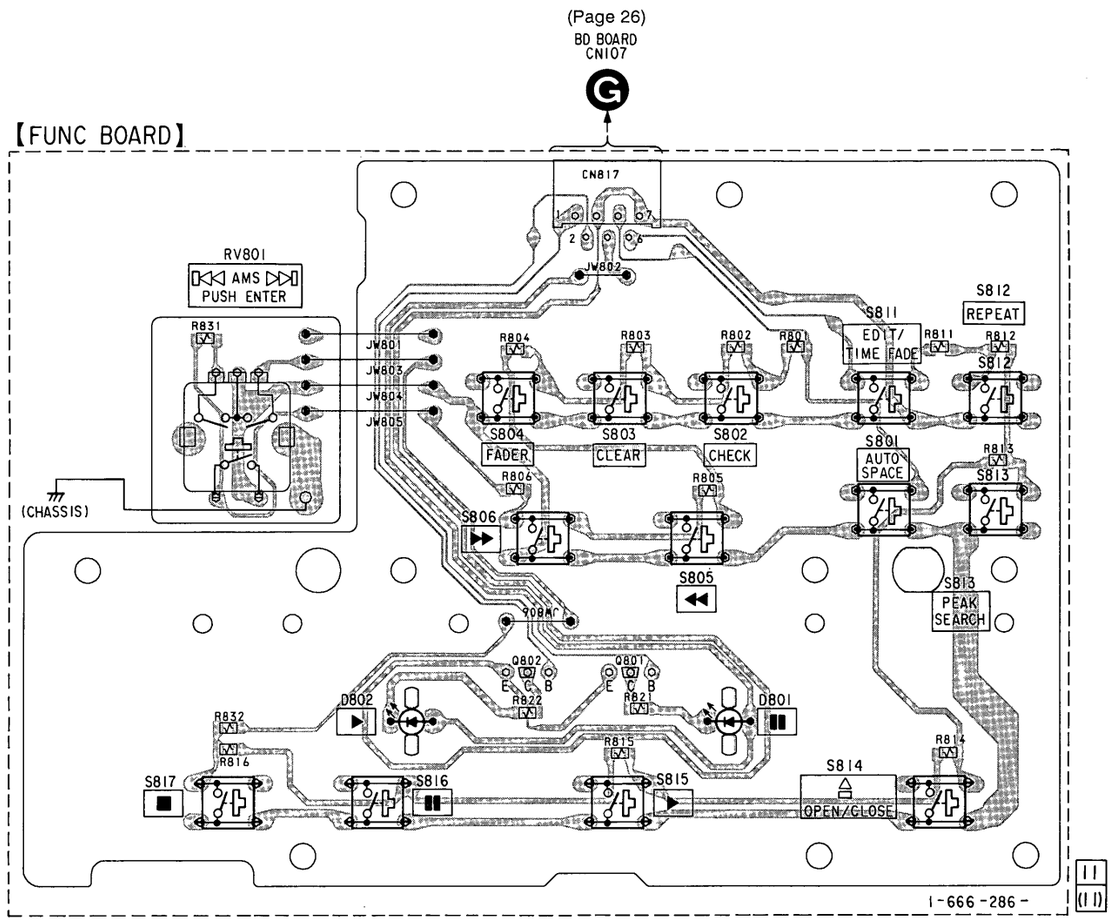
• Semiconductor Location

Ref. No.	Location
D901	D-7
D902	D-7
D903	C-7
D904	C-7
D905	D-4
D907	C-4
D911	E-7
D912	E-7
D913	D-7
D914	E-7
● D921	D-3
● D922	D-2
● D923	D-2
● D924	C-7
● D925	C-7
D951	E-7
D952	E-4
D953	E-4
IC901	D-5
IC902	C-5
IC903	D-3
IC911	E-5
IC912	D-2
IC913	E-3
Q951	E-4

NOTE:
●: EXCEPT UK model only

6-9. PRINTED WIRING BOARDS – PANEL Section – • See page 20 for Circuit Boards Location.



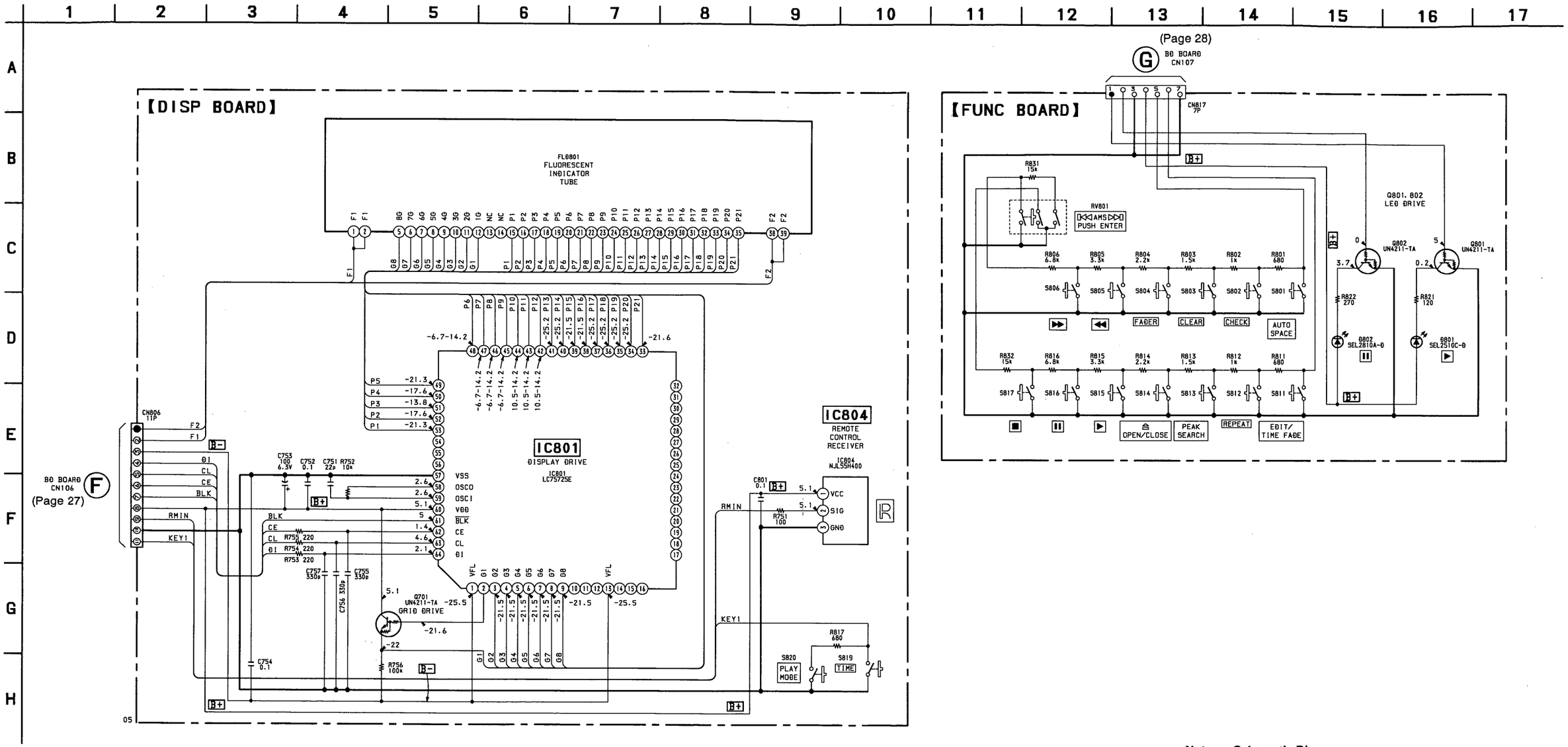


• **Semiconductor Location**

Ref. No.	Location
D801	D-10
D802	D-8
IC801	C-3
IC804	D-1
Q701	B-5
Q801	D-9
Q802	D-9

Note on Printed Wiring Board:
- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ▒▒ : Pattern from the side which enables seeing.

6-10. SCHEMATIC DIAGRAM – PANEL Section –

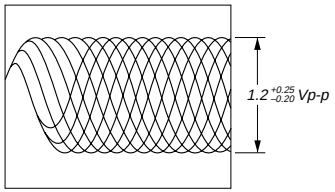


Note on Schematic Diagram:

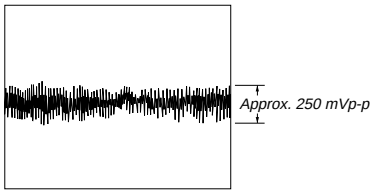
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- [ ] : panel designation.
- [B+] : B+ Line.
- [B−] : B- Line.
- Voltages are dc with respect to ground under no-signal conditions.
  no mark : CD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.

• Waveforms
– BD Section –

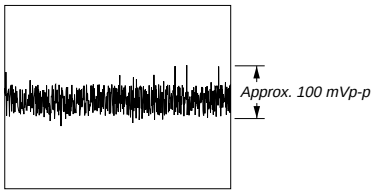
❶ IC101 ㉘ (RFDC), ㊱ (RFAC) 200 mV/DIV, 500 ns/DIV



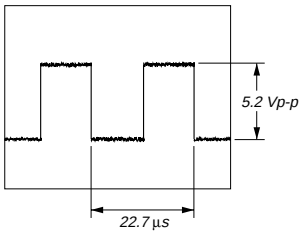
❷ IC101 ㉗ (TE) 100 mV/DIV, 500 ns/DIV



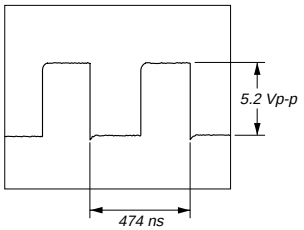
❸ IC101 ㉙ (FE) 50 mV/DIV, 500 ns/DIV



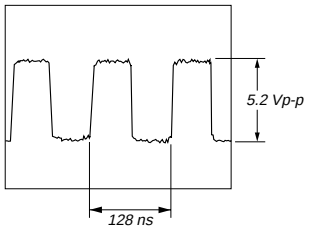
❹ IC101 ㊺ (LRCK)



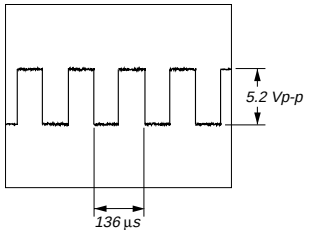
❺ IC101 ㊼ (BCLK)



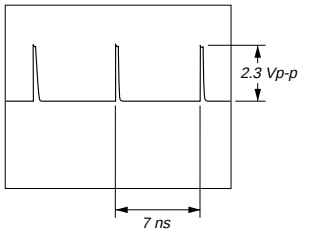
❻ IC101 ㊸ (XPLCK)



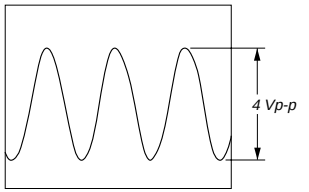
❼ IC101 ㊺ (RFCK)



❽ IC101 ㊻ (MDP)



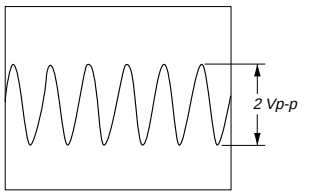
❾ IC351 ㉛ (XIN)



4 MHz

– MAIN Section –

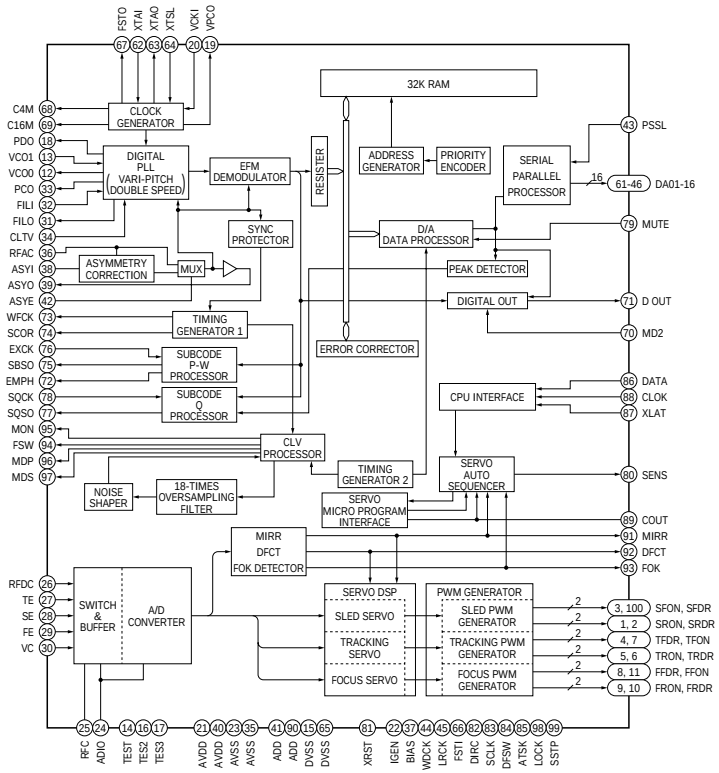
❿ IC302 ⑩ (XIN)



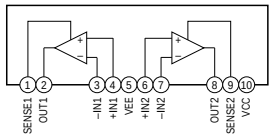
45 MHz

• IC Block Diagrams
– BD Section –

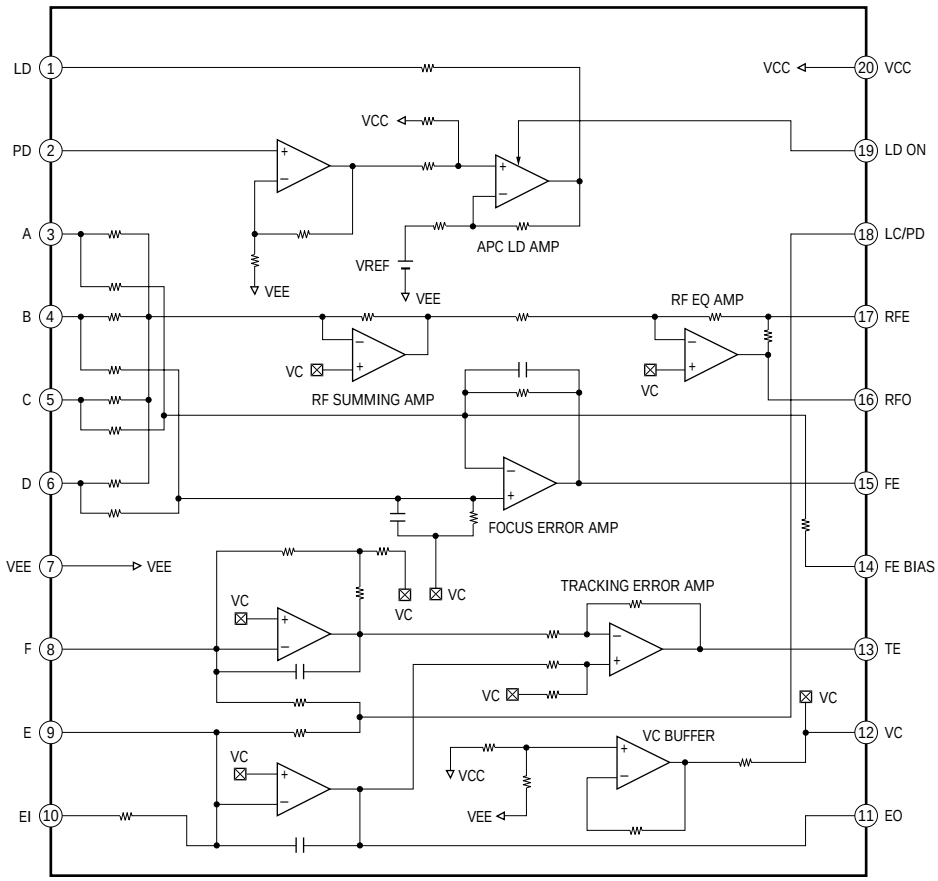
IC101 CXD2545Q



IC181 TA7256P

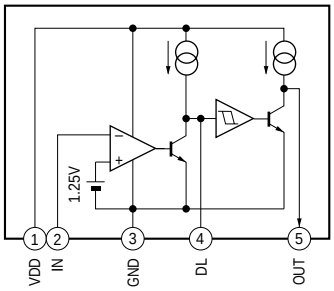


IC103 CXA1821M-T6



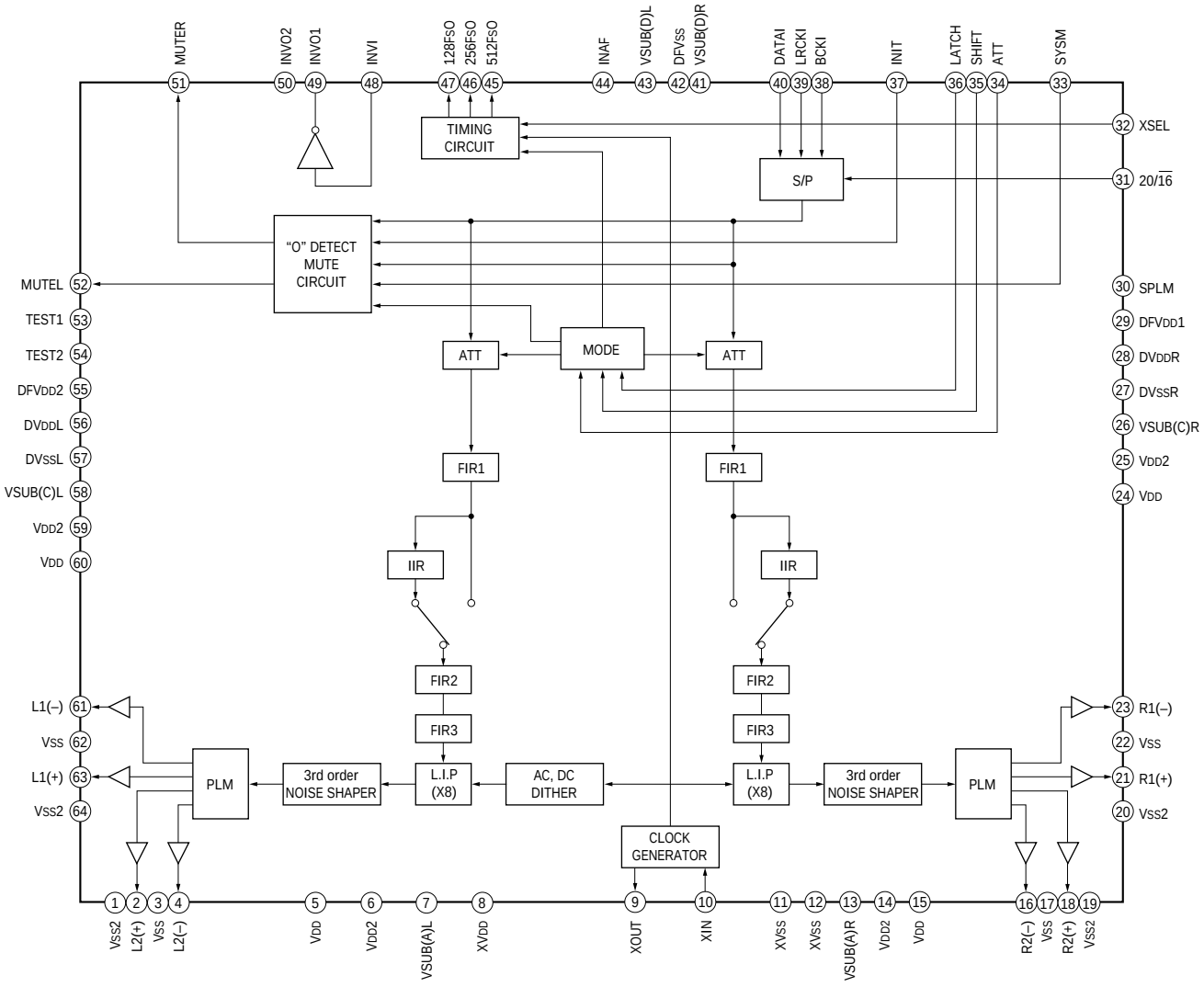
– POWER Section –

IC912 M51957AL

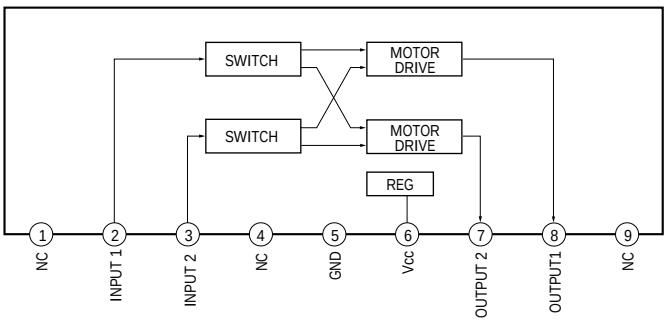


– MAIN Section –

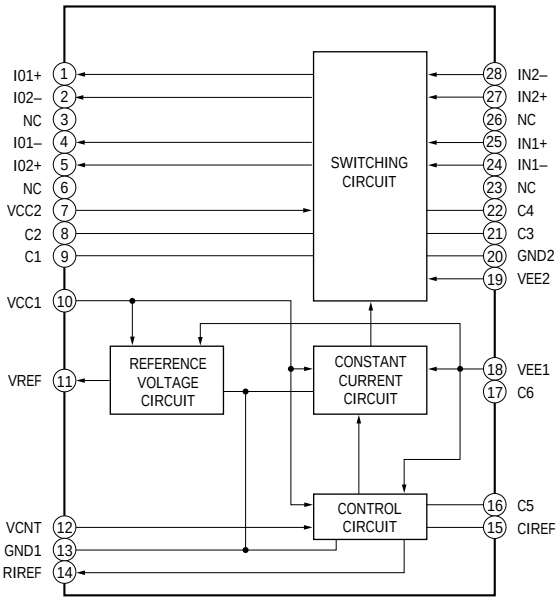
IC302 CXD8505BQ



IC371 BA6208



IC501, 601 CXA8042AS



SECTION 7
EXPLODED VIEWS

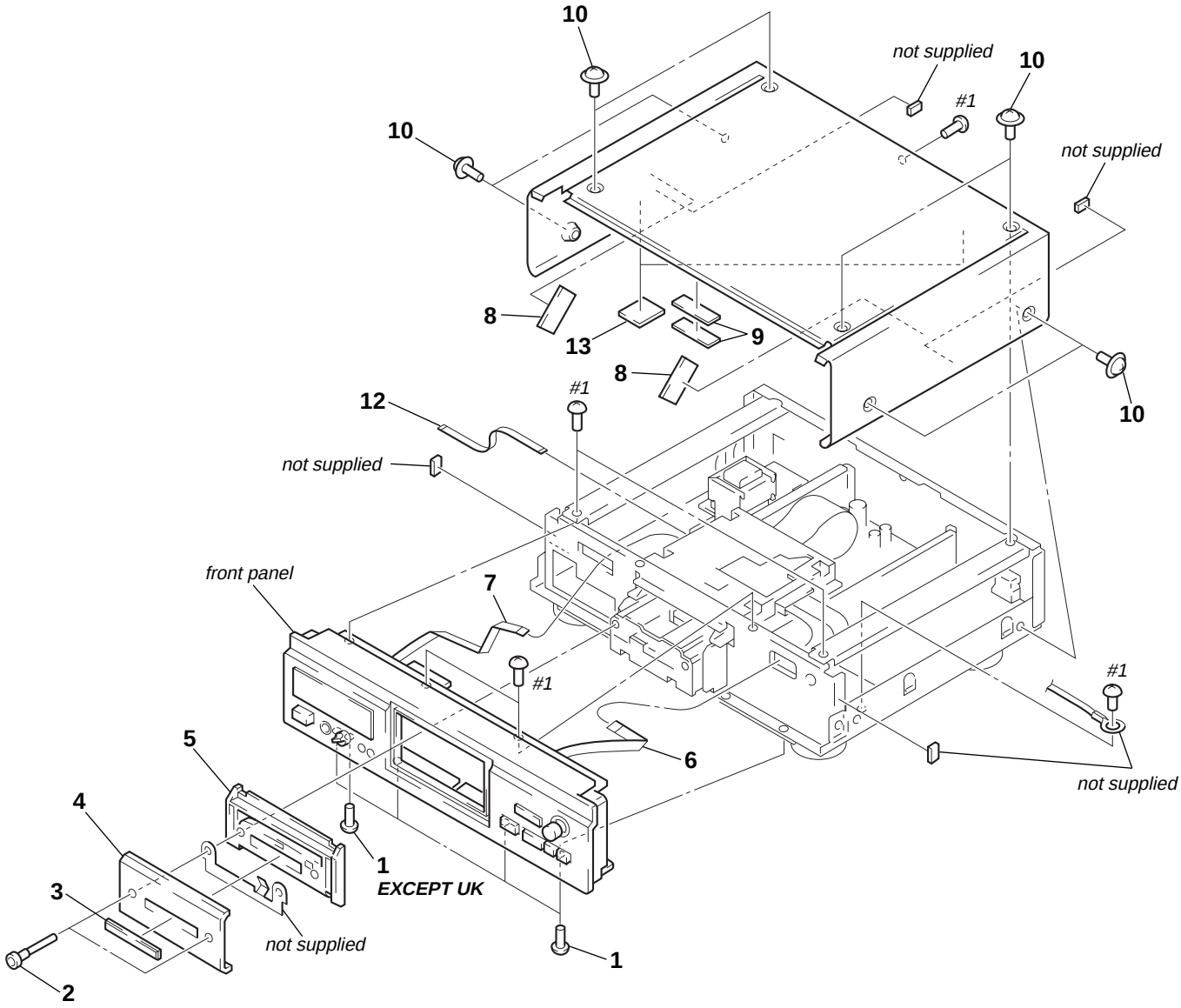
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE)
  ↑
  Cabinet's Color
- Abbreviation
  CND: Canadian SP: Singapore
- 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 and accessories and packing materials are given in the last of the electrical parts list.

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

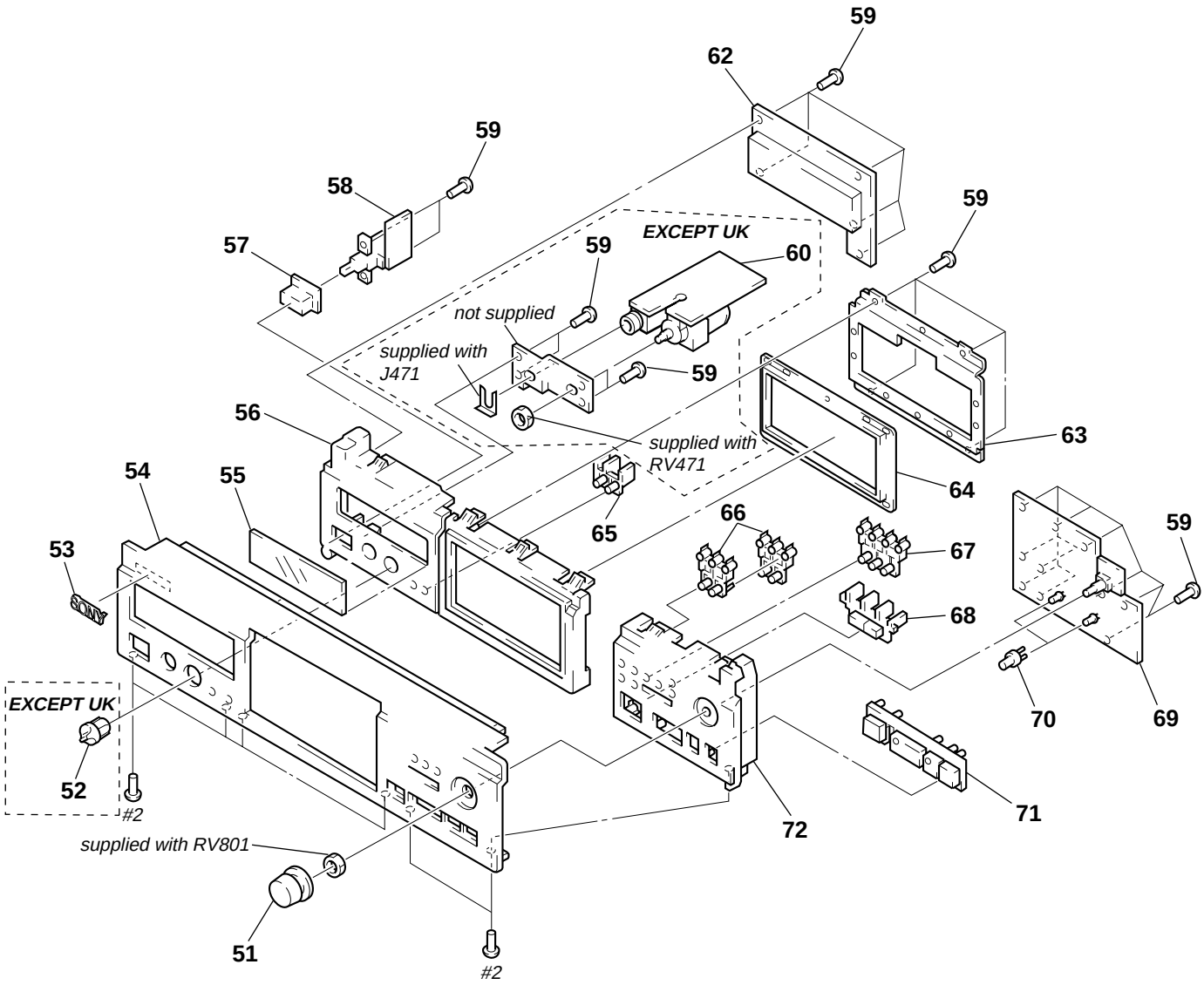
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

(1) CASE, LOADING PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	3-703-685-21	SCREW (+BV 3X8)	
2	4-970-998-21	BOLT (LID), HEXAGON HOLE (GOLD)(AEP, SP)	
2	4-970-998-31	BOLT (LID), HEXAGON HOLE (BLACK)	
3	4-987-965-01	EMBLEM (FIXED PICKUP) (GOLD) (AEP, SP)	
3	4-987-965-11	EMBLEM (FIXED PICKUP) (BLACK)	
4	4-986-744-01	PANEL, LOADING (GOLD) (AEP, SP)	
4	4-986-744-11	PANEL, LOADING (BLACK)	
5	4-986-745-01	BASE, LOADING PANEL (GOLD) (AEP, SP)	
5	4-986-745-11	BASE, LOADING PANEL (BLACK)	
6	1-782-503-11	WIRE (FLAT TYPE) (7 CORE)	
7	1-782-504-11	WIRE (FLAT TYPE) (11 CORE)	
8	4-959-077-01	DAMPER	
* 9	4-615-354-01	SPACER	
10	3-363-099-01	SCREW (CASE 3 TP2) (BLACK)	
10	3-363-099-11	SCREW (CASE 3 TP2) (GOLD) (AEP, SP)	
11	4-969-469-01	CASE (BLACK)	
11	4-969-469-31	CASE (GOLD) (AEP, SP)	
12	1-782-502-11	WIRE (FLAT TYPE) (4 CORE)	
13	4-962-329-01	DAMPER	

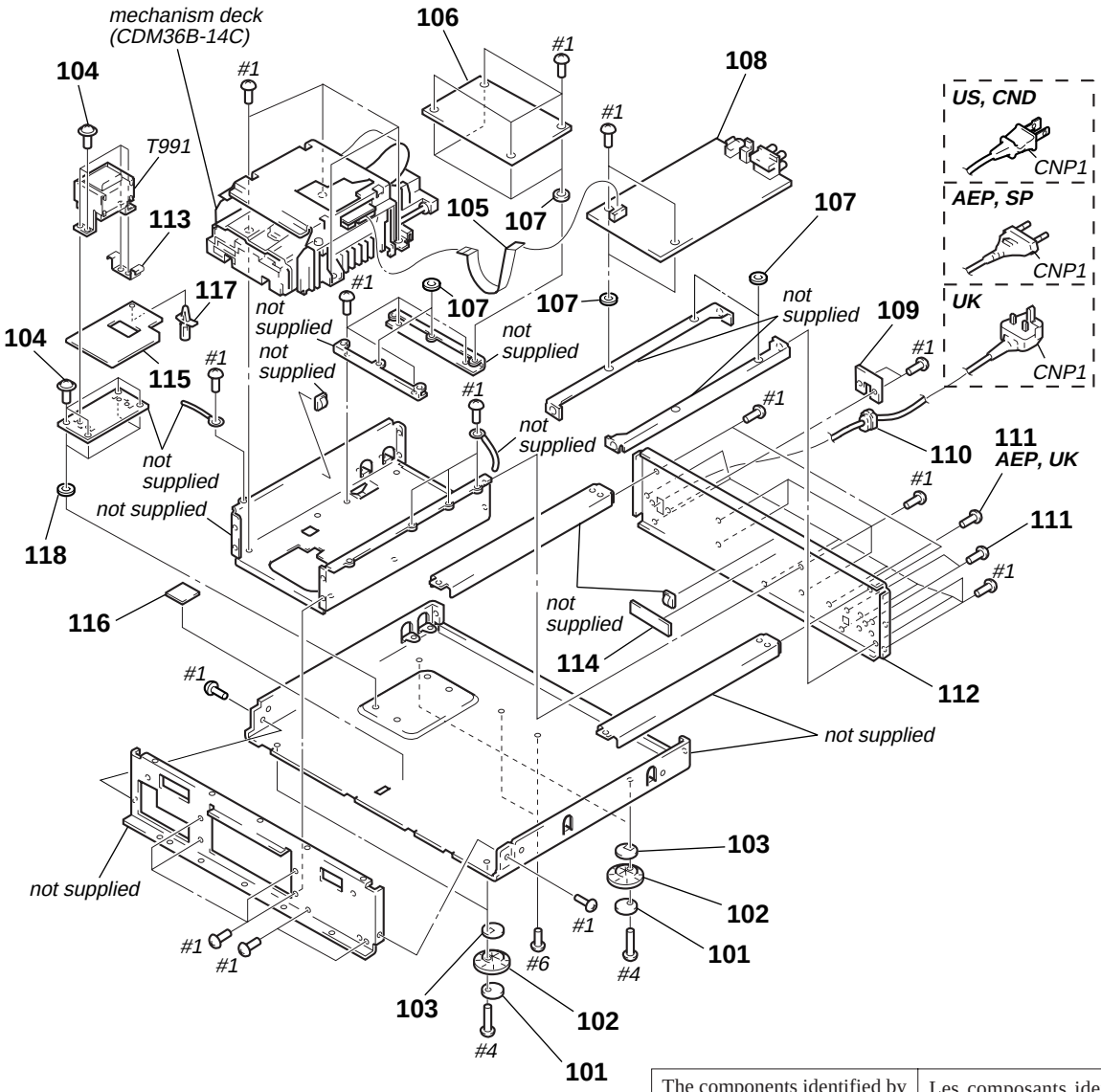
(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-987-121-01	KNOB (AMS) (GOLD) (AEP, SP)	
51	4-987-121-11	KNOB (AMS) (BLACK)	
52	4-950-189-01	KNOB (A) (VOL) (BLACK) (EXCEPT UK)	
52	4-950-189-41	KNOB (A) (VOL) (GOLD) (AEP, SP)	
53	4-942-568-01	EMBLEM (NO.5), SONY (BLACK)	
53	4-942-568-31	EMBLEM (NO.5), SONY (GOLD) (AEP, SP)	
54	4-991-848-01	PANEL, FRONT (BLACK) (AEP, SP)	
54	4-991-848-11	PANEL, FRONT (GOLD) (AEP, SP)	
54	4-991-848-21	PANEL, FRONT (BLACK) (US, CND)	
54	4-991-848-31	PANEL, FRONT (BLACK) (UK)	
55	4-986-670-11	PLATE, INDICATION	
56	4-986-666-01	BASE (L), PANEL (GOLD) (AEP, SP)	
56	4-986-666-11	BASE (L), PANEL (BLACK)	
57	4-923-520-51	KNOB, POWER (BLACK)	
57	4-923-520-61	KNOB, POWER (GOLD) (AEP, SP)	
* 58	1-666-289-11	AC SW BOARD	
59	4-951-620-01	SCREW (2.6X8), +BVTP	
* 60	1-666-288-11	HP BOARD (EXCEPT UK)	
* 62	A-4699-752-A	DISP BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
63	4-986-668-01	BRACKET (PACKING)	
64	4-986-667-01	PACKING	
65	4-986-687-01	BUTTON (P.MODE) (GOLD) (AEP, SP)	
65	4-986-687-11	BUTTON (P.MODE) (BLACK)	
66	4-986-671-01	BUTTON (2) (GOLD) (AEP, SP)	
66	4-986-671-11	BUTTON (2) (BLACK)	
67	4-986-672-01	BUTTON (3) (GOLD) (AEP, SP)	
67	4-986-672-11	BUTTON (3) (BLACK)	
68	4-986-673-01	BUTTON (FF) (◀◀. ▶▶) (GOLD) (AEP, SP)	
68	4-986-673-11	BUTTON (FF) (◀◀. ▶▶) (BLACK)	
* 69	A-4699-747-A	FUNC BOARD, COMPLETE	
* 70	3-362-478-01	HOLDER (T), LED	
71	X-4945-276-1	BUTTON (PLAY) ASSY (⏏ OPEN/CLOSE. ▶. ❚❚. ■) (BLACK)	
71	X-4948-030-1	BUTTON (PLAY) ASSY (⏏ OPEN/CLOSE. ▶. ❚❚. ■)(GOLD) (AEP, SP)	
72	4-986-665-01	BASE (R), PANEL (GOLD) (AEP, SP)	
72	4-986-665-11	BASE (R), PANEL (BLACK)	

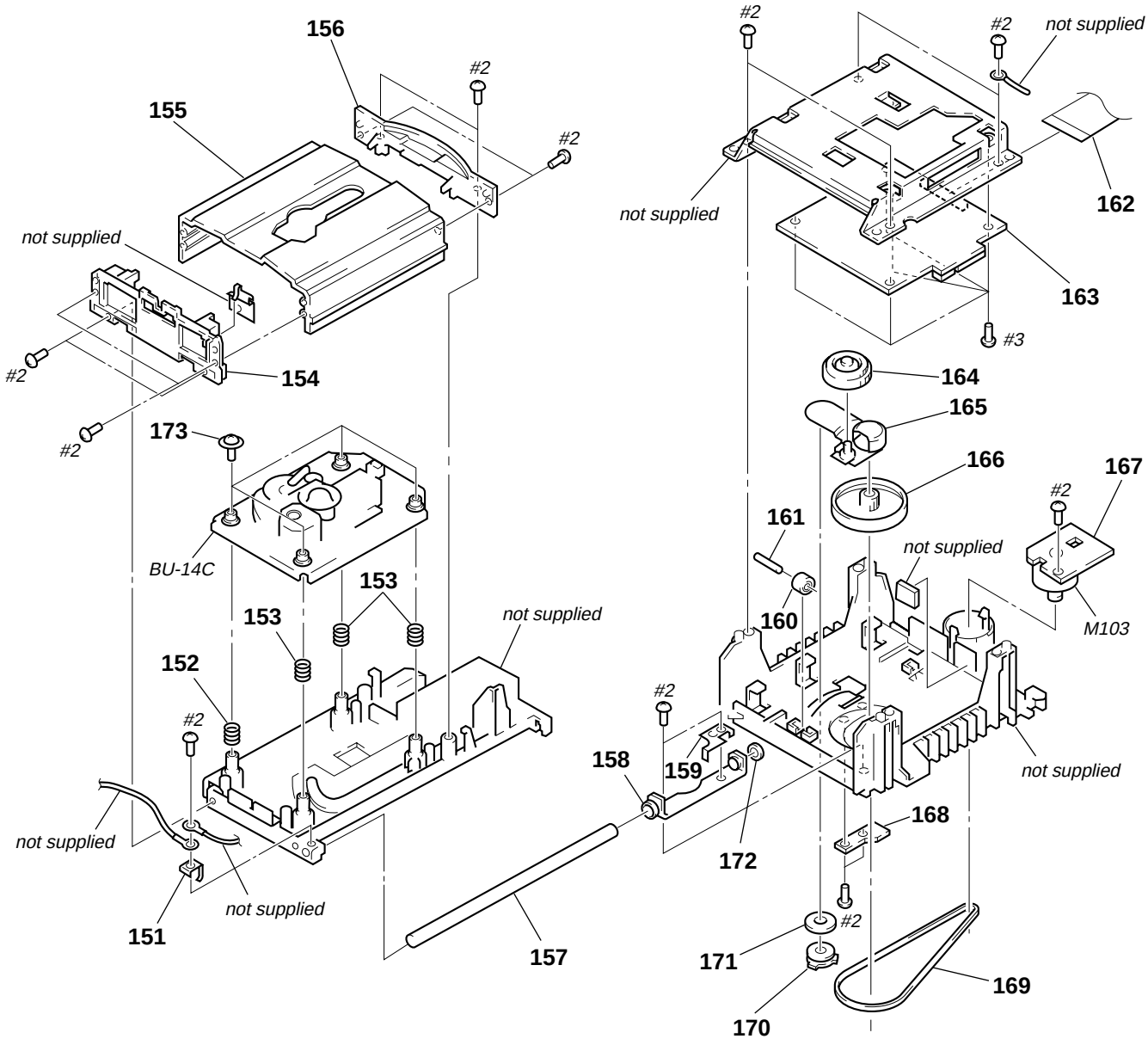
(3) CHASSIS SECTION



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 neméro spécifié.

Ref. No.	Part No.	Description	Remark
101	4-970-124-01	CUSHION (F50180S)	
102	4-970-123-01	FOOT (F50180S)	
103	4-955-939-01	WASHER (CASE)	
104	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
105	1-777-873-11	WIRE (FLAT TYPE) (16 CORE) (10cm)	
* 106	A-4699-751-A	POWER BOARD, COMPLETE (EXCEPT UK)	
* 106	A-4699-756-A	POWER BOARD, COMPLETE (UK)	
107	4-949-302-11	WASHER	
* 108	A-4699-745-A	MAIN BOARD, COMPLETE (US, CND)	
* 108	A-4699-749-A	MAIN BOARD, COMPLETE (AEP)	
* 108	A-4699-755-A	MAIN BOARD, COMPLETE (UK)	
* 108	A-4699-757-A	MAIN BOARD, COMPLETE (SP)	
* 109	4-923-873-01	BRACKET, CORD STOPPER	
* 110	3-703-244-00	BUSHING (2104), CORD	
111	3-704-515-21	SCREW (BV/RING)	
* 112	4-991-138-01	PANEL, BACK (AEP)	
* 112	4-991-138-11	PANEL, BACK (UK)	
* 112	4-991-138-21	PANEL, BACK (SP)	
* 112	4-991-138-31	PANEL, BACK (US)	
* 112	4-991-138-41	PANEL, BACK (CND)	
113	4-952-197-01	PLATE (TR), GROUND	
114	4-959-077-01	DAMPER	
* 115	1-657-094-11	TRANS BOARD (SP)	
* 115	1-666-290-11	TRANS BOARD (EXCEPT SP)	
116	4-962-329-01	DAMPER	
* 117	3-670-570-31	SPACER, SUPPORT	
118	4-929-302-81	WASHER	
⚠CNP1	1-558-568-21	CORD, POWER (AEP, SP)	
⚠CNP1	1-559-583-21	CORD, POWER (US, CND)	
⚠CNP1	1-696-571-11	CORD, POWER (UK)	
⚠T991	1-427-938-11	TRANSFORMER, POWER (AEP, UK)	
⚠T991	1-427-997-11	TRANSFORMER, POWER (SP)	
⚠T991	1-431-437-11	TRANSFORMER, POWER (US, CND)	

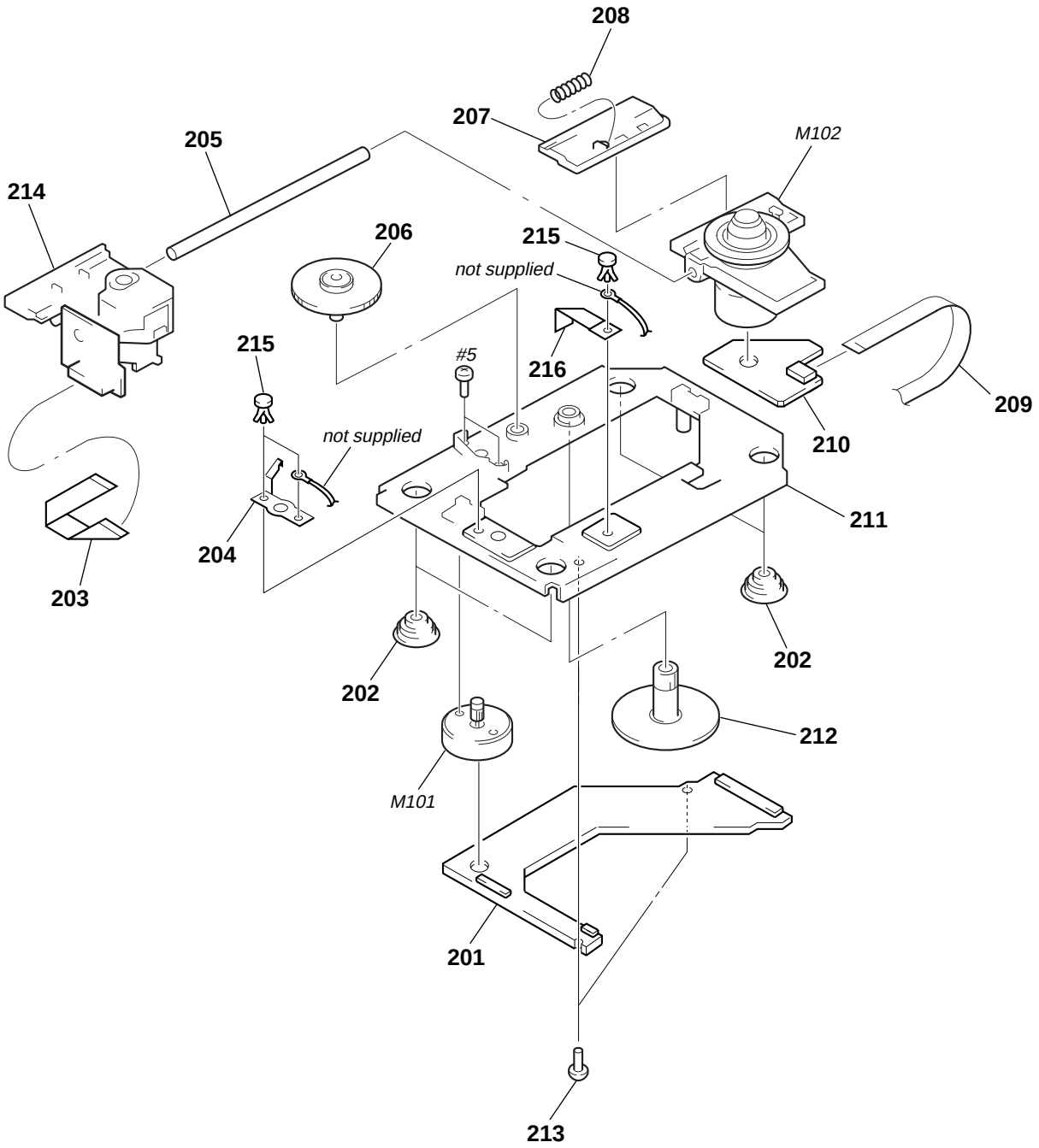
(4) MECHANISM DECK SECTION (CDM36B-14C)



Ref. No.	Part No.	Description	Remark
* 151	4-977-889-01	PLATE (BU), GROUND	
152	4-989-303-01	SPRING (BU-LF), COMPRESSION	
153	4-988-104-01	SPRING (BU), COMPRESSION	
* 154	4-986-917-01	COVER (F) (DRAWER)	
155	4-986-916-01	PANEL (DRAWER)	
* 156	4-986-918-01	COVER (R) (DRAWER)	
* 157	4-977-888-01	SHAFT	
* 158	4-977-892-01	BEARING	
* 159	4-977-891-01	PLATE, GROUND	
160	X-4924-457-1	ROLLER ASSY	
161	4-934-376-01	SHAFT (ROLLER)	
162	1-776-998-11	WIRE (FLAT TYPE) (21 CORE)	

Ref. No.	Part No.	Description	Remark
* 163	A-4699-761-A	SERVO BOARD, COMPLETE	
164	4-977-897-01	GEAR	
165	4-977-898-01	LEVER (SWING)	
166	4-977-896-01	PULLEY	
* 167	A-4699-759-A	LOADING MOTOR BOARD, COMPLETE	
* 168	1-666-163-11	LD IN SW BOARD	
169	4-968-905-01	BELT (CDM)	
170	4-986-919-01	LIMITTER (LEVER)	
171	4-988-103-01	SLIDER (SWING)	
172	4-988-107-01	CUSHION (LD)	
173	4-933-134-01	SCREW +PTPWH M2.6X6	
M103	A-4660-970-A	MOTOR ASSY (LOADING)	

(5) BASE UNIT (BU-14C)



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 neméro spécifié.

Ref. No.	Part No.	Description	Remark
* 201	1-658-709-11	SLED BOARD	
202	4-917-562-01	INSULATOR	
203	1-775-991-11	WIRE (FLAT TYPE) (16 CORE) (8 cm)	
* 204	4-993-919-01	SPRING (A) (OP), LEAF	
205	4-977-923-01	SHAFT, SLED	
206	4-977-921-01	GEAR (B), FLAT	
207	4-977-926-01	RACK, SLIDE	
208	4-977-925-01	SPRING (SLIDE BASE), COMPRESSION	
209	1-775-990-11	WIRE (FLAT TYPE) (5 CORE)	

Ref. No.	Part No.	Description	Remark
* 210	1-658-708-11	SPINDLE BOARD	
* 211	4-977-918-01	BASE (OUTSERT)	
212	4-977-920-01	GEAR (C), FLAT	
213	4-951-620-01	SCREW (2.6X8), +BVTP	
⚠214	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
215	2-279-715-01	RIVET, NYLON	
* 216	4-977-928-01	SPRING (SPINDLE), LEAF	
M101	X-4947-303-1	MOTOR ASSY (SLED)	
M102	X-4948-273-1	MOTOR ASSY (SPINDLE)	

AC SW **BD**

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

- 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 and -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
- Abbreviation
  CND : Canadian
  SP : Singapore
- 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: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

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 critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

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

Ref. No.	Part No.	Description			Remark
*	1-666-289-11	AC SW BOARD			
		**********			
		< CAPACITOR >			
⚠C991	1-113-925-11	CERAMIC	0.01uF	20%	250V
		< SWITCH >			
⚠S991	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)			
**********					
*	A-4699-761-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C104	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C107	1-136-850-11	FILM	0.1uF	5%	63V
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C109	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C111	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C112	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C113	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C115	1-124-673-11	ELECT	100uF	20%	10V
C116	1-124-673-11	ELECT	100uF	20%	10V
C117	1-126-209-11	ELECT	100uF	20%	4V
C118	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C119	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C120	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C131	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C132	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C151	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C152	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C153	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C154	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C155	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C156	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C157	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C158	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C160	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C161	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C162	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C171	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C172	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C173	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C191	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C192	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C193	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C194	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C261	1-126-177-11	ELECT	100uF	20%	10V
C325	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C360	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C370	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C371	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C372	1-126-177-11	ELECT	100uF	20%	10V
		< CONNECTOR >			
CN101	1-691-894-21	SOCKET, CONNECTOR 16P			
* CN102	1-568-864-11	SOCKET, CONNECTOR 21P			
* CN103	1-568-941-11	PIN, CONNECTOR 3P			
CN104	1-564-517-11	PLUG, CONNECTOR 2P			
* CN105	1-564-518-11	PLUG, CONNECTOR 3P			
* CN106	1-568-854-11	SOCKET, CONNECTOR 11P			
* CN107	1-568-850-11	SOCKET, CONNECTOR 7P			
* CN108	1-568-847-11	SOCKET, CONNECTOR 4P			
CN113	1-506-481-11	PIN, CONNECTOR 2P			
		< DIODE >			
D101	8-719-016-74	DIODE 1SS352			
D361	8-719-938-07	LED GL480			
		< IC >			
IC101	8-752-369-78	IC CXD2545Q			
IC102	8-759-071-79	IC BA6297AFP			
IC103	8-752-072-45	IC CXA1821M-T6			

Ref. No.	Part No.	Description			Remark
IC351	8-752-885-59	IC CXP84120-070Q			
IC361	8-749-010-61	IC IS471F			
		< COIL >			
L101	1-414-234-11	INDUCTOR, FERRITE BEAD			
L102	1-414-234-11	INDUCTOR, FERRITE BEAD			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
Q102	8-729-010-08	TRANSISTOR MSB710-R			
Q301	8-729-424-08	TRANSISTOR UN2111			
Q302	8-729-421-22	TRANSISTOR UN2211			
		< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K	5%	1/10W
R102	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R110	1-216-025-00	METAL GLAZE	100	5%	1/10W
R112	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R113	1-216-073-00	METAL CHIP	10K	5%	1/10W
R114	1-216-073-00	METAL CHIP	10K	5%	1/10W
R117	1-216-073-00	METAL CHIP	10K	5%	1/10W
R118	1-216-073-00	METAL CHIP	10K	5%	1/10W
R121	1-216-073-00	METAL CHIP	10K	5%	1/10W
R122	1-216-073-00	METAL CHIP	10K	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R125	1-216-037-00	METAL CHIP	330	5%	1/10W
R126	1-216-037-00	METAL CHIP	330	5%	1/10W
R127	1-216-037-00	METAL CHIP	330	5%	1/10W
R131	1-216-037-00	METAL CHIP	330	5%	1/10W
R133	1-216-073-00	METAL CHIP	10K	5%	1/10W
R134	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R135	1-216-295-00	CONDUCTOR, CHIP (2012)			
R136	1-216-295-00	CONDUCTOR, CHIP (2012)			
R137	1-216-295-00	CONDUCTOR, CHIP (2012)			
R138	1-216-295-00	CONDUCTOR, CHIP (2012)			
R141	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R142	1-216-081-00	METAL CHIP	22K	5%	1/10W
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W
R145	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W
R147	1-216-081-00	METAL CHIP	22K	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-003-11	METAL GLAZE	12	5%	1/10W
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R153	1-216-073-00	METAL CHIP	10K	5%	1/10W
R154	1-216-073-00	METAL CHIP	10K	5%	1/10W
R155	1-216-073-00	METAL CHIP	10K	5%	1/10W
R156	1-216-073-00	METAL CHIP	10K	5%	1/10W
R157	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R158	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R159	1-216-101-00	METAL CHIP	150K	5%	1/10W
R160	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R162	1-216-113-00	METAL CHIP	470K	5%	1/10W
R163	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R168	1-216-295-00	CONDUCTOR, CHIP (2012)			
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W
R172	1-216-073-00	METAL CHIP	10K	5%	1/10W
R173	1-216-073-00	METAL CHIP	10K	5%	1/10W
R174	1-216-073-00	METAL CHIP	10K	5%	1/10W
R175	1-216-073-00	METAL CHIP	10K	5%	1/10W
R176	1-216-073-00	METAL CHIP	10K	5%	1/10W
R177	1-216-025-00	METAL GLAZE	100	5%	1/10W
R181	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R182	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R183	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R184	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R191	1-216-009-00	METAL CHIP	22	5%	1/10W
R192	1-216-009-00	METAL CHIP	22	5%	1/10W
R193	1-216-009-00	METAL CHIP	22	5%	1/10W
R194	1-216-009-00	METAL CHIP	22	5%	1/10W
R301	1-216-623-11	METAL CHIP	68	0.5%	1/10W
R312	1-216-073-00	METAL CHIP	10K	5%	1/10W
R351	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R352	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R353	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R354	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R355	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R356	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R357	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R358	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R359	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R360	1-216-647-11	METAL CHIP	680	0.5%	1/10W
R361	1-216-295-00	CONDUCTOR, CHIP (2012)			
R362	1-216-017-00	METAL GLAZE	47	5%	1/10W
R364	1-216-017-00	METAL GLAZE	47	5%	1/10W
R365	1-216-017-00	METAL GLAZE	47	5%	1/10W
R366	1-216-295-00	CONDUCTOR, CHIP (2012)			
R367	1-216-017-00	METAL GLAZE	47	5%	1/10W
R371	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< SWITCH >			
S153	1-762-930-11	SWITCH, LEVER (LOAD OUT)			
		< VIBRATOR >			
X351	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			

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DISP **FUNC** **HP**

Ref. No.	Part No.	Description			Remark
*	A-4699-752-A	DISP BOARD, COMPLETE			
		**********			
*	4-955-901-01	CUSHION (FL)			
		< CAPACITOR >			
C751	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C752	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C753	1-124-584-00	ELECT	100uF	20%	10V
C754	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C755	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C756	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C757	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C801	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
* CN806	1-568-854-11	SOCKET, CONNECTOR 11P			
		< FLUORECENT INDICATOR >			
FLD801	1-519-757-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC801	8-759-399-58	IC LC75725E			
IC804	8-759-459-83	IC NJL55H400			
		< TRANSISTOR >			
Q701	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R751	1-216-025-00	METAL GLAZE	100	5%	1/10W
R752	1-216-073-00	METAL CHIP	10K	5%	1/10W
R753	1-216-033-00	METAL CHIP	220	5%	1/10W
R754	1-216-033-00	METAL CHIP	220	5%	1/10W
R755	1-216-033-00	METAL CHIP	220	5%	1/10W
R756	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R817	1-216-045-00	METAL CHIP	680	5%	1/10W
		< SWITCH >			
S819	1-554-303-21	SWITCH, TACTILE (TIME)			
S820	1-554-303-21	SWITCH, TACTILE (PLAY MODE)			
**********					
*	A-4699-747-A	FUNC BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN817	1-568-850-11	SOCKET, CONNECTOR 7P			
		< LED >			
D801	8-719-303-02	LED SEL2510C-D (►)			
D802	8-719-301-52	LED SEL2810A-C (❚❚)			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q801	8-729-900-80	TRANSISTOR DTC114ES			
Q802	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R801	1-216-045-00	METAL CHIP	680	5%	1/10W
R802	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R803	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R804	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R805	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R806	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R811	1-216-045-00	METAL CHIP	680	5%	1/10W
R812	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R813	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R814	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R815	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R816	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R821	1-216-027-00	METAL CHIP	120	5%	1/10W
R822	1-216-035-00	METAL CHIP	270	5%	1/10W
R831	1-216-077-00	METAL CHIP	15K	5%	1/10W
R832	1-216-077-00	METAL CHIP	15K	5%	1/10W
		< ROTARY ENCODER >			
RV801	1-475-006-11	ENCODER, ROTARY (⏮◁ AMS ▷⏭ PUSH ENTER)			
		< SWITCH >			
S801	1-554-303-21	SWITCH, TACTILE (AUTO SPACE)			
S802	1-554-303-21	SWITCH, TACTILE (CHECK)			
S803	1-554-303-21	SWITCH, TACTILE (CLEAR)			
S804	1-554-303-21	SWITCH, TACTILE (FADER)			
S805	1-554-303-21	SWITCH, TACTILE (◄◄)			
S806	1-554-303-21	SWITCH, TACTILE (►►)			
S811	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)			
S812	1-554-303-21	SWITCH, TACTILE (REPEAT)			
S813	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)			
S814	1-554-303-21	SWITCH, TACTILE (⏏ OPEN/CLOSE)			
S815	1-554-303-21	SWITCH, TACTILE (►)			
S816	1-554-303-21	SWITCH, TACTILE (❚❚)			
S817	1-554-303-21	SWITCH, TACTILE (■)			
**********					
*	1-666-288-11	HP BOARD (EXCEPT UK)			
		*********			
*	4-962-201-01	PLATE (HP), GROUND			
		< CAPACITOR >			
C371	1-124-443-00	ELECT	100uF	20%	10V
C372	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C471	1-162-294-31	CERAMIC	0.001uF	10%	50V
C472	1-162-294-31	CERAMIC	0.001uF	10%	50V
C473	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
		< CONNECTOR >			
* CN371	1-568-847-11	SOCKET, CONNECTOR 4P			
CN471	1-564-523-11	PLUG, CONNECTOR 8P			
* CN472	1-564-518-11	PLUG, CONNECTOR 3P			
		< IC >			
IC371	8-759-962-08	IC BA6208			
		< JACK >			
J471	1-750-162-61	JACK (LARGE TYPE) (PHONES) (BLACK)			(US, CND, AEP, SP)
J471	1-779-219-11	JACK (LARGE TYPE) (PHONES) (GOLD)			(AEP, SP)
		< COIL >			
L471	1-424-122-11	FILTER, NOISE			
L472	1-424-122-11	FILTER, NOISE			
L473	1-424-122-11	FILTER, NOISE			
		< RESISTOR >			
R371	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R372	1-216-049-11	METAL GLAZE	1K	5%	1/10W
		< VARIABLE RESISTOR >			
RV471	1-223-747-11	RES, VAR, CARBON 10K/10K			(LINE OUT PHONE LEVEL)
**********					
*	1-666-163-11	LD IN SW BOARD			
		**********			
		< SWITCH >			
S152	1-762-424-11	SWITCH, MICRO (LOAD IN)			
**********					
*	A-4699-759-A	LOADING MOTOR BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C181	1-126-023-11	ELECT	100uF	20%	25V
C182	1-126-023-11	ELECT	100uF	20%	25V
C183	1-164-699-11	CERAMIC CHIP	0.0033uF	5%	50V
C184	1-126-059-11	ELECT	10uF	20%	50V
C185	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< IC >			
IC181	8-759-202-01	IC TA7256P			
IC182	8-759-100-96	IC uPC4558G2			
		< RESISTOR >			
R001	1-216-073-00	METAL CHIP	10K	5%	1/10W
R002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R003	1-216-073-00	METAL CHIP	10K	5%	1/10W
R004	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R005	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R006	1-216-047-00	METAL GLAZE	820	5%	1/10W
R007	1-216-025-00	METAL GLAZE	100	5%	1/10W
R008	1-216-045-00	METAL CHIP	680	5%	1/10W
⚠R009	1-249-474-11	CARBON	1	5%	1/2W F
R010	1-216-001-00	METAL CHIP	10	5%	1/10W
**********					
*	A-4699-745-A	MAIN BOARD, COMPLETE (US, CND)			
*	A-4699-749-A	MAIN BOARD, COMPLETE (AEP)			
*	A-4699-755-A	MAIN BOARD, COMPLETE (UK)			
*	A-4699-757-A	MAIN BOARD, COMPLETE (SP)			
		**********			
		< CAPACITOR >			
C259	1-163-033-00	CERAMIC CHIP	0.022uF		50V (AEP, UK)
C260	1-163-109-00	CERAMIC CHIP	47PF	5%	50V (AEP, UK)
C271	1-124-994-11	ELECT	100uF	20%	10V
C272	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C274	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C301	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C302	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C306	1-162-208-31	CERAMIC	24PF	5%	50V
C321	1-128-202-11	ELECT	220uF	20%	63V
C322	1-136-850-11	FILM	0.1uF	5%	63V
C323	1-102-942-00	CERAMIC	5.0PF	±0.5PF	50V
C324	1-102-942-00	CERAMIC	5.0PF	±0.5PF	50V
C353	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C358	1-126-059-11	ELECT	10uF	20%	50V (EXCEPT UK)
C359	1-128-201-11	ELECT	100uF	20%	63V
C370	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C415	1-136-818-11	FILM	0.0047uF	5%	100V
C416	1-136-818-11	FILM	0.0047uF	5%	100V
C420	1-136-850-11	FILM	0.1uF	5%	63V
C502	1-126-023-11	ELECT	100uF	20%	25V
C503	1-136-850-11	FILM	0.1uF	5%	63V
C505	1-136-850-11	FILM	0.1uF	5%	63V
C506	1-136-850-11	FILM	0.1uF	5%	63V
C510	1-128-197-11	ELECT	10uF	20%	50V
C512	1-136-802-11	FILM	0.015uF	5%	100V
C513	1-136-850-11	FILM	0.1uF	5%	63V
C516	1-136-850-11	FILM	0.1uF	5%	63V
C517	1-136-850-11	FILM	0.1uF	5%	63V
C518	1-136-850-11	FILM	0.1uF	5%	63V
C519	1-128-198-11	ELECT	22uF	20%	63V
C520	1-128-198-11	ELECT	22uF	20%	63V
C521	1-130-973-00	FILM	0.022uF	5%	100V
C522	1-130-955-00	FILM	0.01uF	5%	100V
C523	1-130-955-00	FILM	0.01uF	5%	100V
C524	1-136-233-11	FILM	0.0047uF	3%	100V
C525	1-136-233-11	FILM	0.0047uF	3%	100V
C526	1-136-814-11	FILM	0.001uF	5%	100V

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 neméro spécifié.

MAIN

Ref. No.	Part No.	Description			Remark
C527	1-136-814-11	FILM	0.001uF	5%	100V
C530	1-136-816-11	FILM	0.0022uF	5%	100V
C531	1-136-816-11	FILM	0.0022uF	5%	100V
C532	1-128-201-11	ELECT	100uF	20%	50V
C533	1-136-580-11	FILM	0.47uF	10%	200V
C536	1-128-198-11	ELECT	22uF	20%	63V
C537	1-128-201-11	ELECT	100uF	20%	50V
C601	1-136-850-11	FILM	0.1uF	5%	63V
C602	1-126-023-11	ELECT	100uF	20%	25V
C603	1-136-850-11	FILM	0.1uF	5%	63V
C605	1-136-850-11	FILM	0.1uF	5%	63V
C610	1-128-197-11	ELECT	10uF	20%	50V
C612	1-136-802-11	FILM	0.015uF	5%	100V
C613	1-136-850-11	FILM	0.1uF	5%	63V
C616	1-136-850-11	FILM	0.1uF	5%	63V
C617	1-136-850-11	FILM	0.1uF	5%	63V
C618	1-136-850-11	FILM	0.1uF	5%	63V
C619	1-128-198-11	ELECT	22uF	20%	63V
C620	1-128-198-11	ELECT	22uF	20%	63V
C621	1-130-973-00	FILM	0.022uF	5%	100V
C622	1-130-955-00	FILM	0.01uF	5%	100V
C623	1-130-955-00	FILM	0.01uF	5%	100V
C624	1-136-233-11	FILM	0.0047uF	3%	100V
C625	1-136-233-11	FILM	0.0047uF	3%	100V
C626	1-136-814-11	FILM	0.001uF	5%	100V
C627	1-136-814-11	FILM	0.001uF	5%	100V
C630	1-136-816-11	FILM	0.0022uF	5%	100V
C631	1-136-816-11	FILM	0.0022uF	5%	100V
C632	1-128-201-11	ELECT	100uF	20%	50V
C633	1-136-580-11	FILM	0.47uF	10%	200V
C636	1-128-198-11	ELECT	22uF	20%	63V
C637	1-128-201-11	ELECT	100uF	20%	50V
		< CONNECTOR >			
CN201	1-564-506-11	PLUG, CONNECTOR 3P			
* CN301	1-568-835-11	SOCKET, CONNECTOR 16P			
CN303	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			
CN304	1-691-767-11	PLUG (MICRO CONNECTOR) 5P			
CN501	1-564-511-11	PLUG, CONNECTOR 8P (EXCEPT UK)			
* CN502	1-564-506-11	PLUG, CONNECTOR 3P (EXCEPT UK)			
		< DIODE >			
D1	8-719-016-74	DIODE 1SS352 (AEP, UK)			
D2	8-719-016-74	DIODE 1SS352 (AEP, UK)			
D3	8-719-016-74	DIODE 1SS352			
D4	8-719-016-74	DIODE 1SS352			
D302	8-719-010-26	DIODE UZ-3.9BSB-TP			
D303	8-719-016-74	DIODE 1SS352			
D311	8-719-016-74	DIODE 1SS352			
D352	8-719-016-74	DIODE 1SS352 (EXCEPT UK)			
		< IC >			
IC208	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
IC251	8-759-242-70	IC TC7WU04F			
IC302	8-759-370-62	IC CXD8505BQ			
IC501	8-759-371-51	IC CXA8042AS			
IC502	8-759-712-02	IC NJM2114D			
IC503	8-759-602-83	IC M5238P			
IC551	8-759-981-86	IC RC4556MA (EXCEPT UK)			
IC601	8-759-371-51	IC CXA8042AS			
IC602	8-759-712-02	IC NJM2114D			
IC603	8-759-602-83	IC M5238P			
		< JACK >			
J301	1-569-442-21	JACK, PIN 2P (LINE OUT) (UK)			
J301	1-569-443-21	JACK, PIN 4P (LINE OUT) (EXCEPT UK)			
J351	1-770-905-21	JACK, PIN 1P (DIGITAL OUT COAXIAL)			(AEP, UK)
		< COIL >			
L1	1-410-375-11	INDUCTOR CHIP 3.3uH			
L2	1-410-375-11	INDUCTOR CHIP 3.3uH			
L302	1-410-503-11	INDUCTOR 3.3uH			
L303	1-410-322-11	INDUCTOR 3.3uH			
L315	1-410-970-11	INDUCTOR CHIP 6.8uH			
L316	1-410-970-11	INDUCTOR CHIP 6.8uH			
L401	1-410-970-11	INDUCTOR 6.8uH			
		< TRANSISTOR >			
Q301	8-729-900-65	TRANSISTOR DTA144ES			
Q351	8-729-422-57	TRANSISTOR UN4111 (EXCEPT UK)			
Q503	8-729-231-55	TRANSISTOR 2SC2878-AB (EXCEPT UK)			
Q504	8-729-900-65	TRANSISTOR DTA144ES (EXCEPT UK)			
Q551	8-729-141-30	TRANSISTOR 2SC3623A-LK (EXCEPT UK)			
Q603	8-729-231-55	TRANSISTOR 2SC2878-AB (EXCEPT UK)			
Q604	8-729-900-65	TRANSISTOR DTA144ES (EXCEPT UK)			
Q651	8-729-141-30	TRANSISTOR 2SC3623A-LK (EXCEPT UK)			
		< RESISTOR >			
R1	1-216-001-00	METAL CHIP	10	5%	1/10W
R2	1-216-001-00	METAL CHIP	10	5%	1/10W (AEP, UK)
R255	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R256	1-216-017-00	METAL GLAZE	47	5%	1/10W
R258	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R259	1-216-049-11	METAL GLAZE	1K	5%	1/10W (AEP, UK)
R260	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R262	1-216-017-00	METAL GLAZE	47	5%	1/10W (AEP, UK)
R263	1-216-001-00	METAL CHIP	10	5%	1/10W (AEP, UK)
R301	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R302	1-216-073-00	METAL CHIP	10K	5%	1/10W
R306	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R311	1-216-037-00	METAL CHIP	330	5%	1/10W
R312	1-216-037-00	METAL CHIP	330	5%	1/10W
R313	1-216-037-00	METAL CHIP	330	5%	1/10W

Ref. No.	Part No.	Description			Remark
R314	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R316	1-216-037-00	METAL CHIP	330	5%	1/10W
R317	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R318	1-216-113-00	METAL CHIP	470K	5%	1/10W
R319	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R320	1-249-417-11	CARBON	1K	5%	1/4W
R321	1-247-843-11	CARBON	3.3K	5%	1/4W
R322	1-249-417-11	CARBON	1K	5%	1/4W
⚠R351	1-217-997-11	FUSIBLE	10	5%	1/2W F
R352	1-216-049-11	METAL GLAZE	1K	5%	1/10W (EXCEPT UK)
R353	1-249-441-11	CARBON	100K	5%	1/4W (EXCEPT UK)
R501	1-259-380-11	CARBON	10	5%	1/6W
R502	1-259-380-11	CARBON	10	5%	1/6W
R503	1-259-380-11	CARBON	10	5%	1/6W
R504	1-259-380-11	CARBON	10	5%	1/6W
R505	1-249-528-00	CARBON	100	5%	1/4W
R507	1-249-536-91	CARBON	220	5%	1/4W
R508	1-249-911-11	CARBON	330	1%	1/4W
R509	1-249-911-11	CARBON	330	1%	1/4W
R510	1-249-895-11	CARBON	68	1%	1/4W
R511	1-249-895-11	CARBON	68	1%	1/4W
R512	1-249-927-11	CARBON	1.5K	1%	1/4W
R513	1-249-927-11	CARBON	1.5K	1%	1/4W
R514	1-249-929-11	CARBON	1.8K	1%	1/4W
R515	1-249-929-11	CARBON	1.8K	1%	1/4W
R516	1-249-548-91	CARBON	680	5%	1/4W
R517	1-249-548-91	CARBON	680	5%	1/4W
R519	1-249-528-00	CARBON	100	5%	1/4W
R520	1-249-606-11	CARBON	180K	5%	1/4W
R523	1-247-891-00	CARBON	330K	5%	1/4W
R527	1-249-536-91	CARBON	220	5%	1/4W
R528	1-259-412-11	CARBON	220	5%	1/6W (EXCEPT UK)
R530	1-259-380-11	CARBON	10	5%	1/6W (EXCEPT UK)
R539	1-259-416-11	CARBON	330	5%	1/6W
R540	1-259-416-11	CARBON	330	5%	1/6W
R541	1-259-416-11	CARBON	330	5%	1/6W
R542	1-259-416-11	CARBON	330	5%	1/6W
R543	1-249-504-11	CARBON	10	5%	1/4W
R550	1-249-911-11	CARBON	330	1%	1/4W
R551	1-249-560-00	CARBON	2.2K	5%	1/4W
R552	1-216-089-00	METAL GLAZE	47K	5%	1/10W (EXCEPT UK)
R553	1-216-077-00	METAL CHIP	15K	5%	1/10W (EXCEPT UK)
R554	1-216-085-00	METAL CHIP	33K	5%	1/10W (EXCEPT UK)
R555	1-216-021-00	METAL CHIP	68	5%	1/10W (EXCEPT UK)
R556	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (EXCEPT UK)
R557	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (EXCEPT UK)
R560	1-216-097-00	METAL GLAZE	100K	5%	1/10W (EXCEPT UK)
R561	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (EXCEPT UK)
R601	1-259-380-11	CARBON	10	5%	1/6W
R602	1-259-380-11	CARBON	10	5%	1/6W
R603	1-259-380-11	CARBON	10	5%	1/6W
R604	1-259-380-11	CARBON	10	5%	1/6W
R605	1-249-528-00	CARBON	100	5%	1/4W
R607	1-249-536-91	CARBON	220	5%	1/4W
R608	1-249-911-11	CARBON	330	1%	1/4W
R609	1-249-911-11	CARBON	330	1%	1/4W
R610	1-249-895-11	CARBON	68	1%	1/4W
R611	1-249-895-11	CARBON	68	1%	1/4W
R612	1-249-927-11	CARBON	1.5K	1%	1/4W
R613	1-249-927-11	CARBON	1.5K	1%	1/4W
R614	1-249-929-11	CARBON	1.8K	1%	1/4W
R615	1-249-929-11	CARBON	1.8K	1%	1/4W
R616	1-249-548-91	CARBON	680	5%	1/4W
R617	1-249-548-91	CARBON	680	5%	1/4W
R619	1-249-528-00	CARBON	100	5%	1/4W
R620	1-249-606-11	CARBON	180K	5%	1/4W
R623	1-247-891-00	CARBON	330K	5%	1/4W
R627	1-249-536-91	CARBON	220	5%	1/4W
R628	1-259-412-11	CARBON	220	5%	1/6W (EXCEPT UK)
R630	1-259-380-11	CARBON	10	5%	1/6W (EXCEPT UK)
R639	1-259-416-11	CARBON	330	5%	1/6W
R640	1-259-416-11	CARBON	330	5%	1/6W
R641	1-259-416-11	CARBON	330	5%	1/6W
R642	1-259-416-11	CARBON	330	5%	1/6W
R643	1-249-504-11	CARBON	10	5%	1/4W
R650	1-249-911-11	CARBON	330	1%	1/4W
R651	1-249-560-00	CARBON	2.2K	5%	1/4W
R652	1-216-089-00	METAL GLAZE	47K	5%	1/10W (EXCEPT UK)
R653	1-216-077-00	METAL CHIP	15K	5%	1/10W (EXCEPT UK)
R654	1-216-085-00	METAL CHIP	33K	5%	1/10W (EXCEPT UK)
R655	1-216-021-00	METAL CHIP	68	5%	1/10W (EXCEPT UK)
R656	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (EXCEPT UK)
R657	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (EXCEPT UK)
R660	1-216-097-00	METAL GLAZE	100K	5%	1/10W (EXCEPT UK)

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MAIN POWER

Ref. No.	Part No.	Description			Remark
R661	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	(EXCEPT UK)
		< RELAY >			
RY301	1-515-803-11	RELAY			
		< TRANSFORMER >			
T201	1-409-594-11	COIL (WITH CORE) (AEP, UK)			
		< VIBRATOR >			
X321	1-760-955-11	VIBRATOR, CRYSTAL (45MHz)			
**********					
*	A-4699-751-A	POWER BOARD, COMPLETE (EXCEPT UK)			
*	A-4699-756-A	POWER BOARD, COMPLETE (UK)			
		**********			
*	4-363-146-00	HEAT SINK, V.OUT			
	7-685-871-01	SCREW +BVTT 3X6 (S)			
		< CAPACITOR >			
C901	1-124-704-11	ELECT	3300uF	20% 25V	
C902	1-124-704-11	ELECT	3300uF	20% 25V	
C903	1-124-563-11	ELECT	2200uF	20% 25V	
C904	1-124-563-11	ELECT	2200uF	20% 25V	
C905	1-124-689-11	ELECT	1000uF	20% 16V	
C906	1-101-006-00	FILM	0.047uF	50V	
C907	1-101-006-00	FILM	0.047uF	50V	
C908	1-101-006-00	FILM	0.047uF	50V	
C909	1-102-129-00	FILM	0.01uF	10% 50V	
C910	1-162-290-31	CERAMIC	470PF	10% 50V	
C911	1-126-017-11	ELECT	6800uF	20% 16V	
C912	1-128-201-11	ELECT	100uF	20% 63V	
C913	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C914	1-126-162-11	ELECT	3.3uF	20% 50V	
C915	1-128-200-11	ELECT	47uF	20% 63V	
C921	1-124-556-11	ELECT	2200uF	20% 16V	(EXCEPT UK)
C922	1-126-059-11	ELECT	10uF	20% 50V	(EXCEPT UK)
C923	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C951	1-126-063-11	ELECT	100uF	20% 63V	
C952	1-128-198-11	ELECT	22uF	20% 63V	
C953	1-126-059-11	ELECT	10uF	20% 50V	
C954	1-129-702-00	FILM	0.001uF	5% 630V	
		< CONNECTOR >			
CN251	1-564-506-11	PLUG, CONNECTOR 3P			
CN901	1-691-771-11	PLUG (MICRO CONNECTOR) 9P			
CN902	1-691-767-11	PLUG (MICRO CONNECTOR) 5P			
CN903	1-564-505-11	PLUG, CONNECTOR 2P			
CN951	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D901	8-719-210-21	DIODE 11EQS04			
D902	8-719-210-21	DIODE 11EQS04			
D903	8-719-210-21	DIODE 11EQS04			
D904	8-719-210-21	DIODE 11EQS04			
D905	8-719-210-21	DIODE 11EQS04			
D907	8-719-210-21	DIODE 11EQS04			
D911	8-719-210-21	DIODE 11EQS04			
D912	8-719-210-21	DIODE 11EQS04			
D913	8-719-210-21	DIODE 11EQS04			
D914	8-719-210-21	DIODE 11EQS04			
D921	8-719-987-63	DIODE 1N4148M (EXCEPT UK)			
D922	8-719-114-30	DIODE RD5.1JS-B2 (EXCEPT UK)			
D923	8-719-987-63	DIODE 1N4148M (EXCEPT UK)			
D924	8-719-987-63	DIODE 1N4148M (EXCEPT UK)			
D925	8-719-987-63	DIODE 1N4148M (EXCEPT UK)			
D951	8-719-200-82	DIODE 11ES2			
D952	8-719-113-76	DIODE RD27ES-T2B2			
D953	8-719-110-04	DIODE RD7.5ES-B3			
		< GROUND TERMINAL >			
EB901	1-537-770-21	TERMINAL BOARD, GROUND			
EB902	1-537-770-21	TERMINAL BOARD, GROUND			
		< IC >			
IC901	8-759-604-86	IC M5F7807L			
IC902	8-759-604-90	IC M5F7907L			
IC903	8-759-231-53	IC TA7805S			
IC911	8-759-231-53	IC TA7805S			
IC912	8-759-636-16	IC M51957AL			
IC913	8-759-604-86	IC M5F7807L			
		< TRANSISTOR >			
Q951	8-729-140-97	TRANSISTOR 2SB734-34			
		< RESISTOR >			
R911	1-249-436-11	CARBON	39K	5% 1/4W	
R912	1-249-431-11	CARBON	15K	5% 1/4W	
R913	1-247-843-11	CARBON	3.3K	5% 1/4W	
R921	1-249-413-11	CARBON	470	5% 1/4W	(EXCEPT UK)
R922	1-249-417-11	CARBON	1K	5% 1/4W	(EXCEPT UK)
⚠R951	1-212-869-00	FUSIBLE	33	5% 1/4W	F
R952	1-249-429-11	CARBON	10K	5% 1/4W	
R953	1-249-435-11	CARBON	33K	5% 1/4W	
**********					

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Ref. No.	Part No.	Description	Remark
*	1-658-709-11	SLED BOARD	
		**********	
		< CONNECTOR >	
CN104	1-774-380-11	CONNECTOR, FFC/FPC 16P	
CN105	1-568-838-11	SOCKET, CONNECTOR 21P	
* CN106	1-750-737-11	CONNECTOR, FFC/FPC 5P	
**********			
*	1-658-708-11	SPINDLE BOARD	
		**********	
		< CONNECTOR >	
* CN107	1-568-848-11	SOCKET, CONNECTOR 5P	
		< SWITCH >	
S151	1-571-958-11	SWITCH, PUSH (1 KEY) (LIMIT)	
**********			
*	1-657-094-11	TRANS BOARD (SP)	
*	1-666-290-11	TRANS BOARD (EXCEPT SP)	
		**********	
		< CAPACITOR >	
C991	1-164-159-21	CERAMIC 0.1uF 50V (SP)	
⚠C992	1-113-924-11	CERAMIC 0.0047uF 20% 250V	(EXCEPT SP)
⚠C994	1-113-924-11	CERAMIC 0.0047uF 20% 250V	(EXCEPT SP)
		< CONNECTOR >	
CN991	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P	
CN992	1-564-321-00	PIN, CONNECTOR 2P	
		< LINE FILTER >	
⚠L901	1-424-485-11	LINE FILTER (EXCEPT SP)	
		< SWITCH >	
⚠S992	1-571-722-11	SWITCH, VOLTAGE SELECTION (VOLTAGE SELECTOR) (SP)	
**********			

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
6	1-782-503-11	WIRE (FLAT TYPE) (7 CORE)	
7	1-782-504-11	WIRE (FLAT TYPE) (11 CORE)	
12	1-782-502-11	WIRE (FLAT TYPE) (4 CORE)	
105	1-777-873-11	WIRE (FLAT TYPE) (16 CORE) (10cm)	
162	1-776-998-11	WIRE (FLAT TYPE) (21 CORE)	
203	1-775-991-11	WIRE (FLAT TYPE) (16 CORE) (8 cm)	
209	1-775-990-11	WIRE (FLAT TYPE) (5 CORE)	
⚠214	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
⚠CNP1	1-558-568-21	CORD, POWER (AEP, SP)	
⚠CNP1	1-559-583-21	CORD, POWER (US, CND)	
⚠CNP1	1-696-571-11	CORD, POWER (UK)	
M101	X-4947-303-1	MOTOR ASSY (SLED)	
M102	X-4948-273-1	MOTOR ASSY (SPINDLE)	
M103	A-4660-970-A	MOTOR ASSY (LOADING)	
⚠T991	1-427-938-11	TRANSFORMER, POWER (AEP, UK)	
⚠T991	1-427-997-11	TRANSFORMER, POWER (SP)	
⚠T991	1-431-437-11	TRANSFORMER, POWER (US, CND)	
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		**********	
		HARDWARE LIST	
		**********	
#1	7-685-871-09	SCREW +BVTT 3X6 (S)	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#3	7-685-871-01	SCREW +BVTT 3X6 (S)	
#4	7-685-885-09	SCREW +BVTT 4X16 (S)	
#5	7-627-852-07	SCREW, PRECISION +P 1.7X2.5	
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		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-473-720-11	REMOTE COMMANDER (RM-DX50)	
	1-558-271-11	CORD, CONNECTION (108 cm)	
	1-590-925-31	CORD, CONNECTION (58 cm)	
	3-860-005-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, CHINESE)	
	3-860-005-21	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN, PORTUGUESE) (AEP)	
	4-983-956-01	COVER, BATTERY (for RM-DX50)	
	X-4949-009-1	STABILIZER ASSY	

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 neméro spécifié.

9-960-971-11

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