

CDP-M42

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model



Model Name Using Similar Mechanism	CDP-291/391
CD Transport Mechanism Type	CDM14-5BD1
Optical Pick-Up Block Type	BU-5BD1

SPECIFICATIONS

Compact disc player

Frequency response	2 Hz to 20 kHz ± 0.5 dB
Signal-to-noise ratio	More than 100 dB
Dynamic range	More than 92 dB
Harmonic distortion	Less than 0.004%
Channel separation	More than 95 dB
Output	LINE OUT (phono jacks) Output level 2 V (at 50 kohms) Load impedance over 10 kohms
Power requirements	220-230V AC, 50/60Hz (AEP model) 240V AC, 50/60Hz (UK, AUS model) 110-120, 220-240V AC adjustable, 50/60Hz (E, EA model)
Power consumption	12 W
Weight	Approx. 3.3 kg (6 lbs 10 oz)
Dimensions	Approx. 355 $\times$ 95 $\times$ 305 mm (w/h/d, including projections) (14 $\times$ 3 $\frac{3}{4}$ $\times$ 12 $\frac{1}{8}$ inches)
Supplied accessory	Audio connecting cord (1)

Design and specifications subject to change without notice.

Note

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

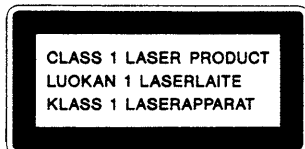
- AUS: Australian model
- EA: Saudi Arabia Model

COMPACT DISC PLAYER
SONY[®]

1. Laser Diode Properties

- Material: GaAlAs
- Wavelength: 780nm
- Emission Duration: continuous

For the United
Kingdom and European countries



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

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

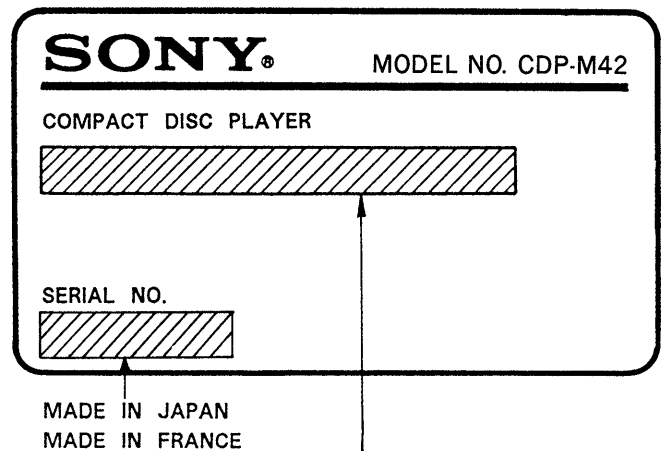
The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe more than 25 cm away from the objective lens.

SAFETY-RELATED COMPONENT WARNING!!

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

MODEL IDENTIFICATION

—Specification Labels—



AEP model: AC: 220-230V~50/60Hz
UK AUS model: AC: 240V~50/60Hz
E, EA model: AC: 110-120, 220-240V~
50/60Hz 12W

AUS: Australian model
EA: Saudi Arabia Model

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 μ 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-diode data

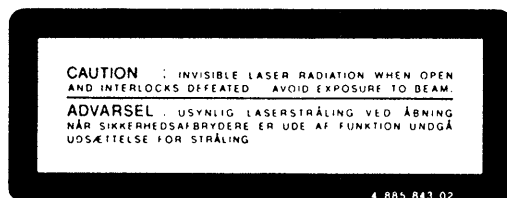
- Materiale: GaAlAs
- Bølgelængde: 780 nm
- Udstråling: Kontinuerlig
- Laseroutput: Max. 0,4 mW*
- * Målt i 1,6 mm afstand fra overfladen af objektiv-linsen på den optiske pick-up enhed.
- Klassifikation: Klasse IIIb.

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

LASER ADVARSEL MÆRKNING

Følgende mærkning findes indvendig i apparatet:

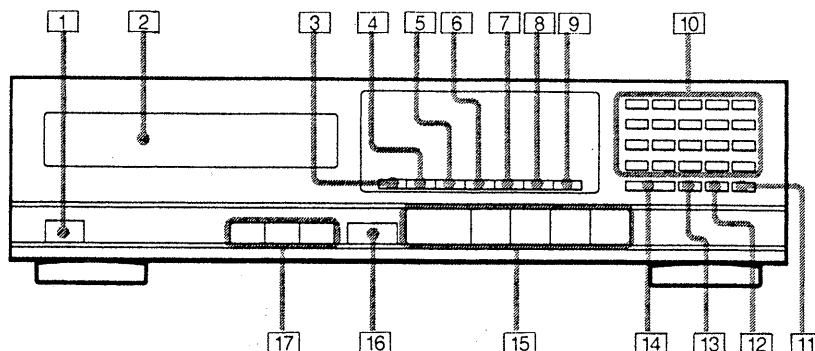
1. Advarsel Mærkning



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

SECTION 1 GENERAL

Location of Controls



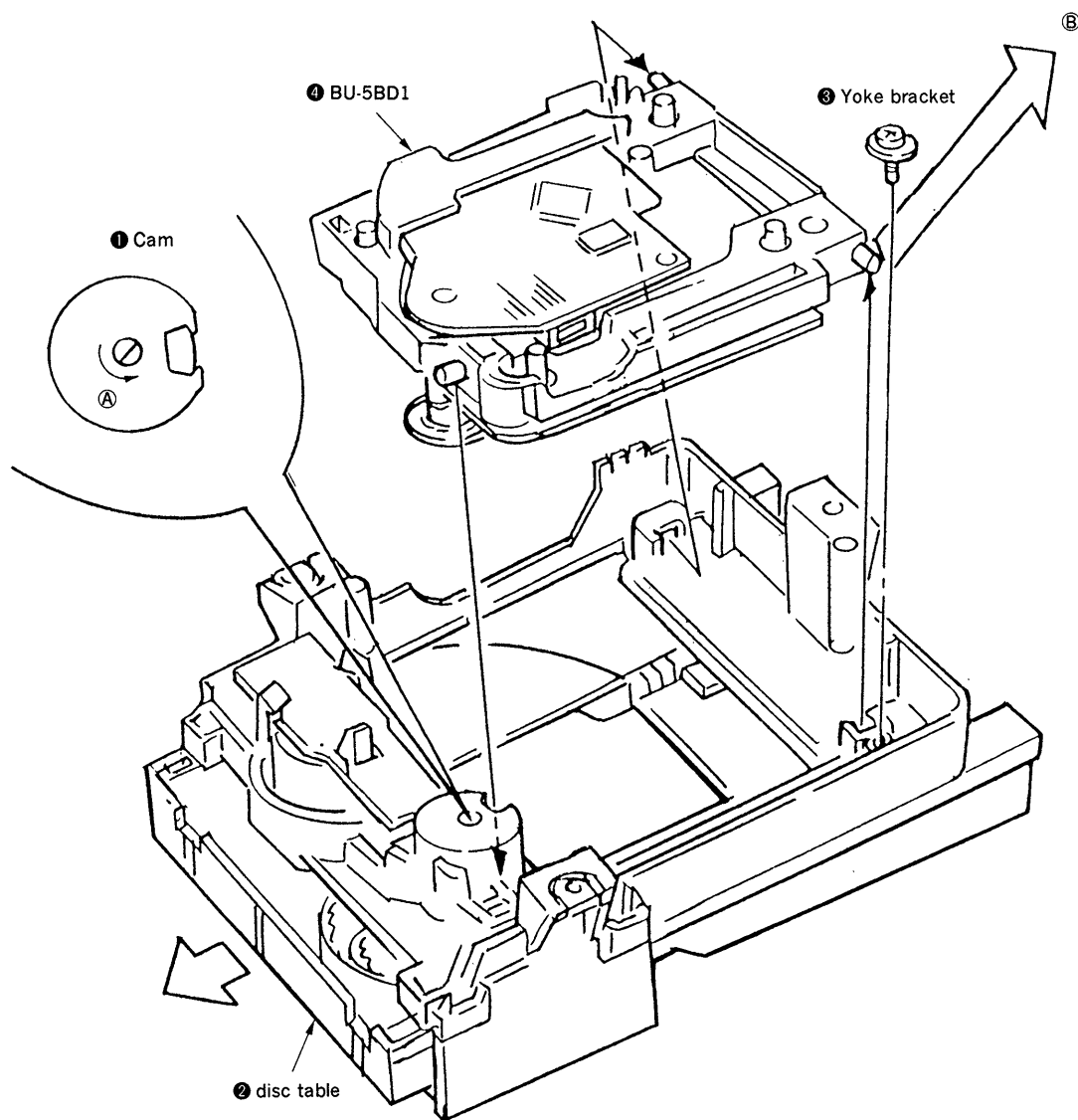
- 1 POWER switch
- 2 Display window
- 3 TIME button
- 4 AUTO SPACE button
- 5 REPEAT button
- 6 PEAK SEARCH button
- 7 FADER button
- 8 EDIT/TIME FADE button
- 9 TIME SET button
- 10 Numeric buttons
- 11 > 20 (over 20) button
- 12 CLEAR button
- 13 CHECK button
- 14 MUSIC SCAN button
- 15 CD operation buttons
- ▶▶▶▶/◀◀◀◀ AMS*/RMS*/manual search, ■ stop,
- || pause, ▶ play
- 16 ▲ OPEN/CLOSE button
- 17 Play mode buttons
- CONTINUE, SHUFFLE, PROGRAM

SECTION 2 DISASSEMBLY

BASE UNIT REMOVAL (BU-5BD1)

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

1. Remove CD mechanism from the set and turn over.
2. Turn the cam ① in the Arrow ④ direction by the $\ominus$ driver.
3. Take out disc table. ②.
4. Remove yoke bracket ③.
5. Remove BU-5BD1 ④ in the Arrow ⑤ direction.

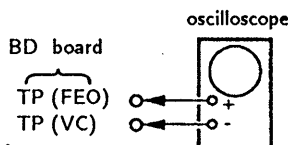


SECTION 3 ELECTRICAL ADJUSTMENT

Note :

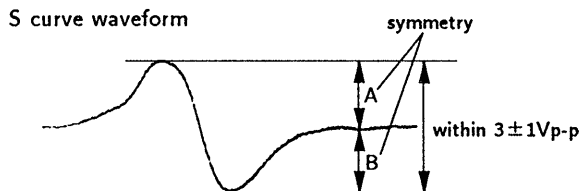
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than $10M\Omega$ impedance.
4. Clean an object lens by an applicator with neutral detergent when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

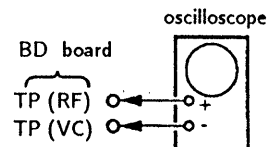


5. After check, remove the lead wire connected in step 2.

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

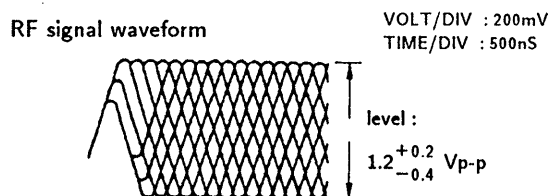


Procedure :

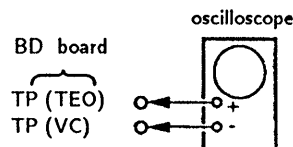
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

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

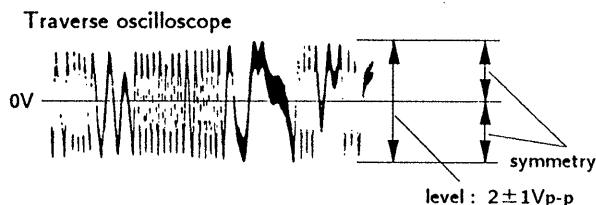


E-F Balance Check



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.

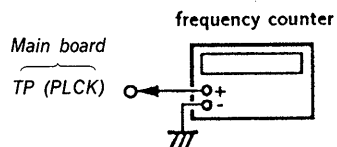


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

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



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

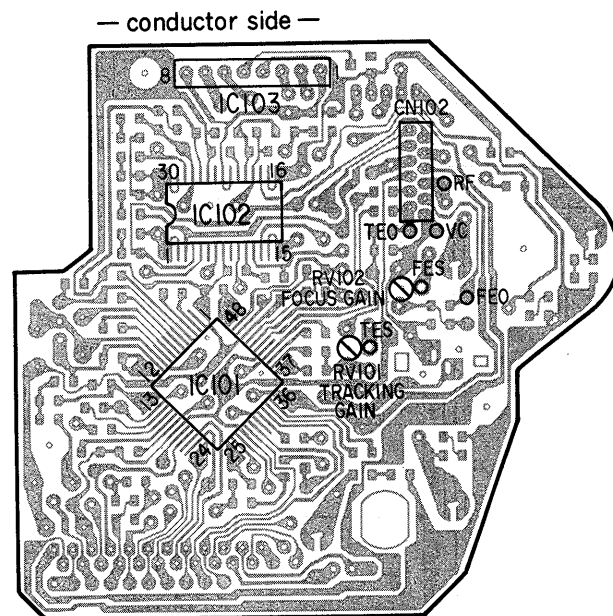
Focus/Tracking Gain

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

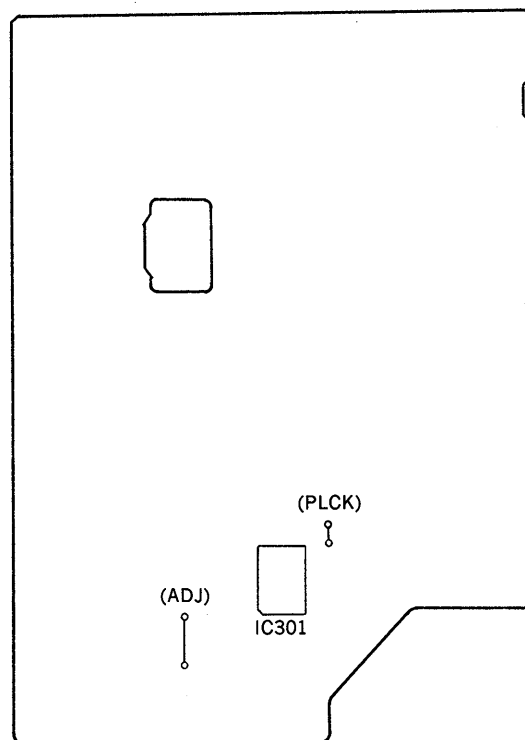
Therefore, do not perform, this adjustment.

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

Adjustment Locations : [BD board]



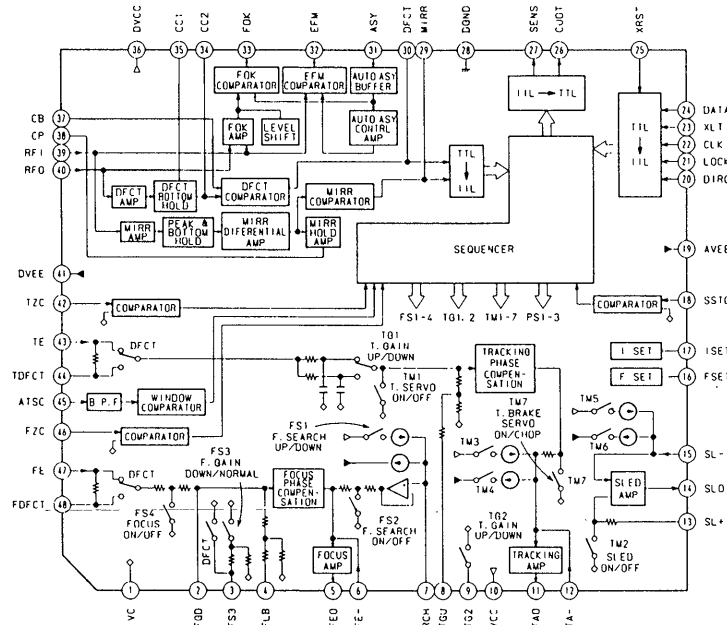
Main board (Componet Side)



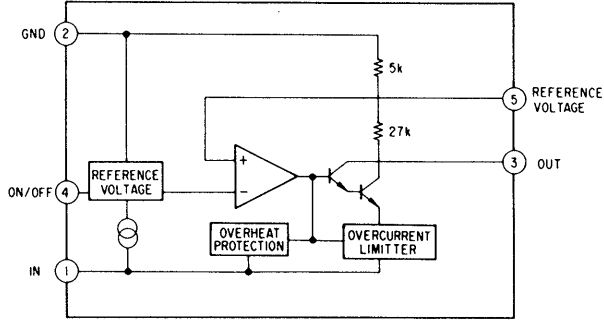
SECTION 5
DIAGRAMS

● IC Block Diagrams

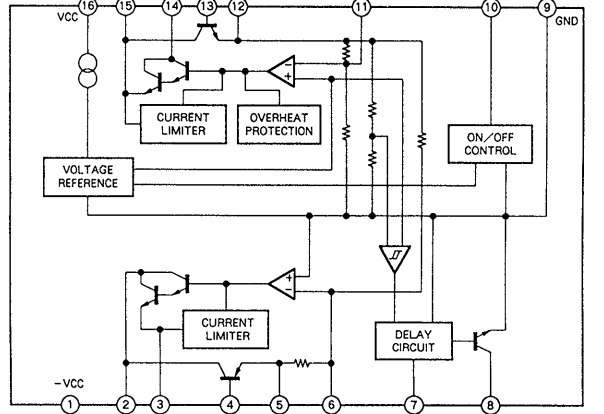
IC101 CXA1372Q



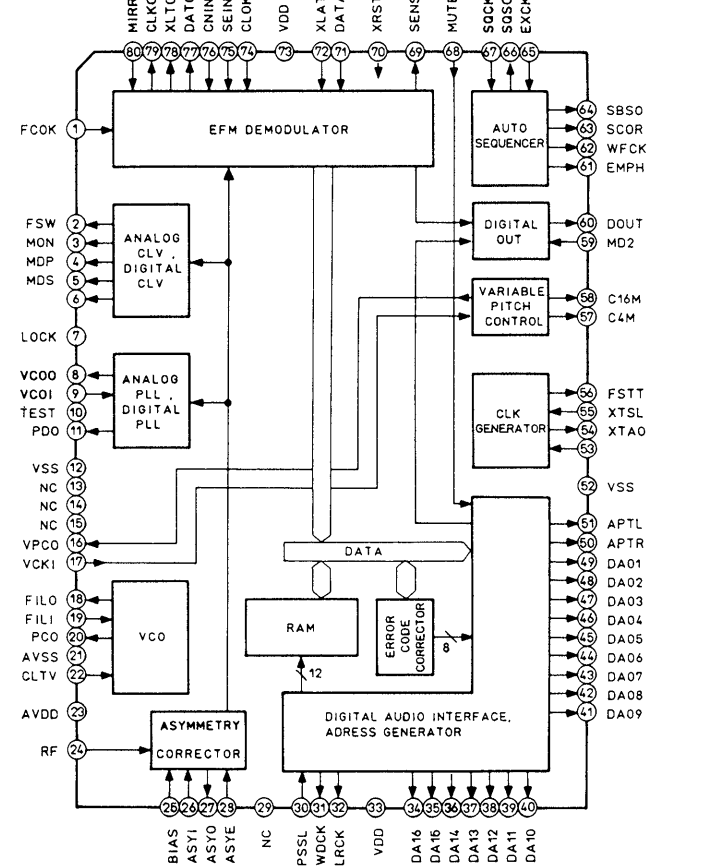
IC201 M5293L



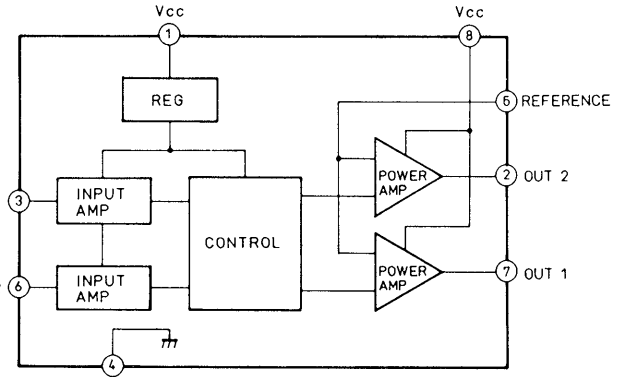
IC202 M5290P



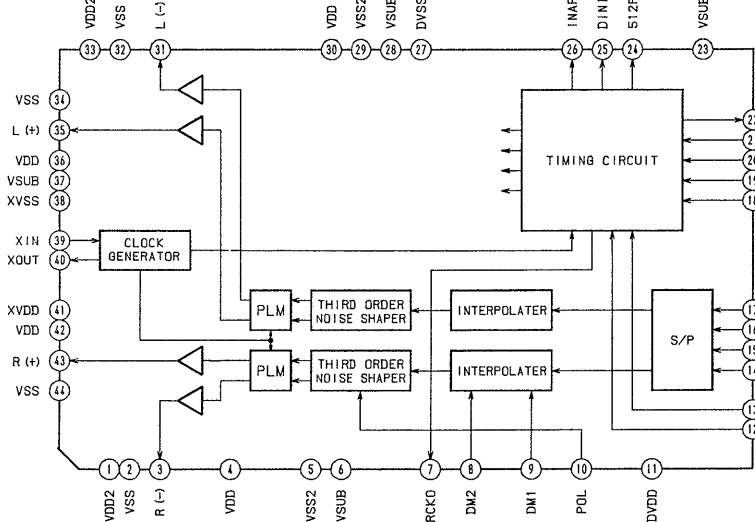
IC301 CXD2500AQ



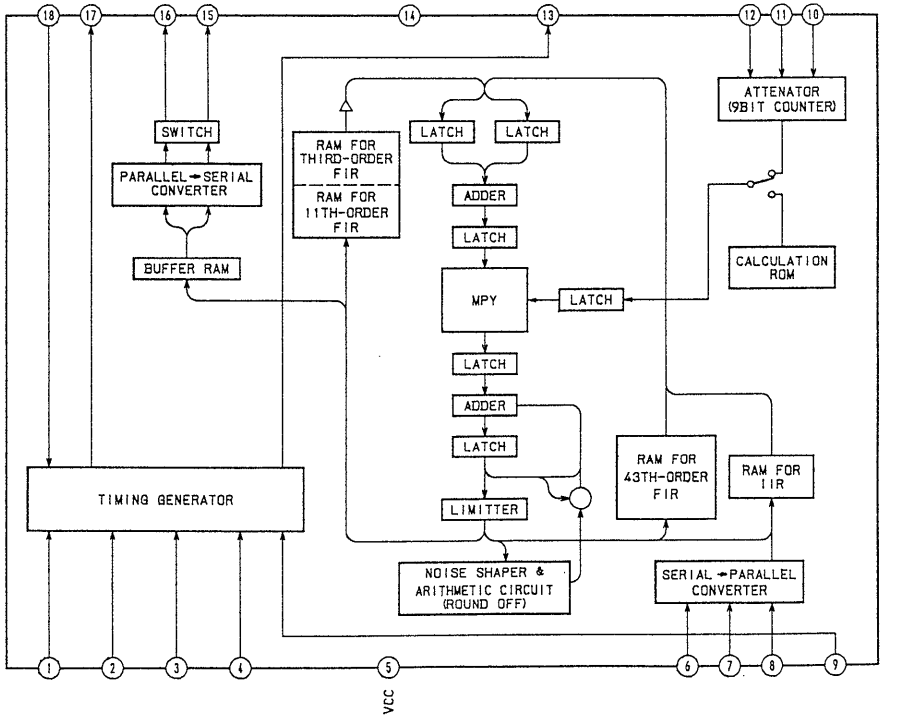
IC103 M54641L



IC305 CXD2552Q



IC302 CXD2550P



SECTION 4
PIN DESCRIPTION

4-1. Description on IC101 (CXA1372Q)

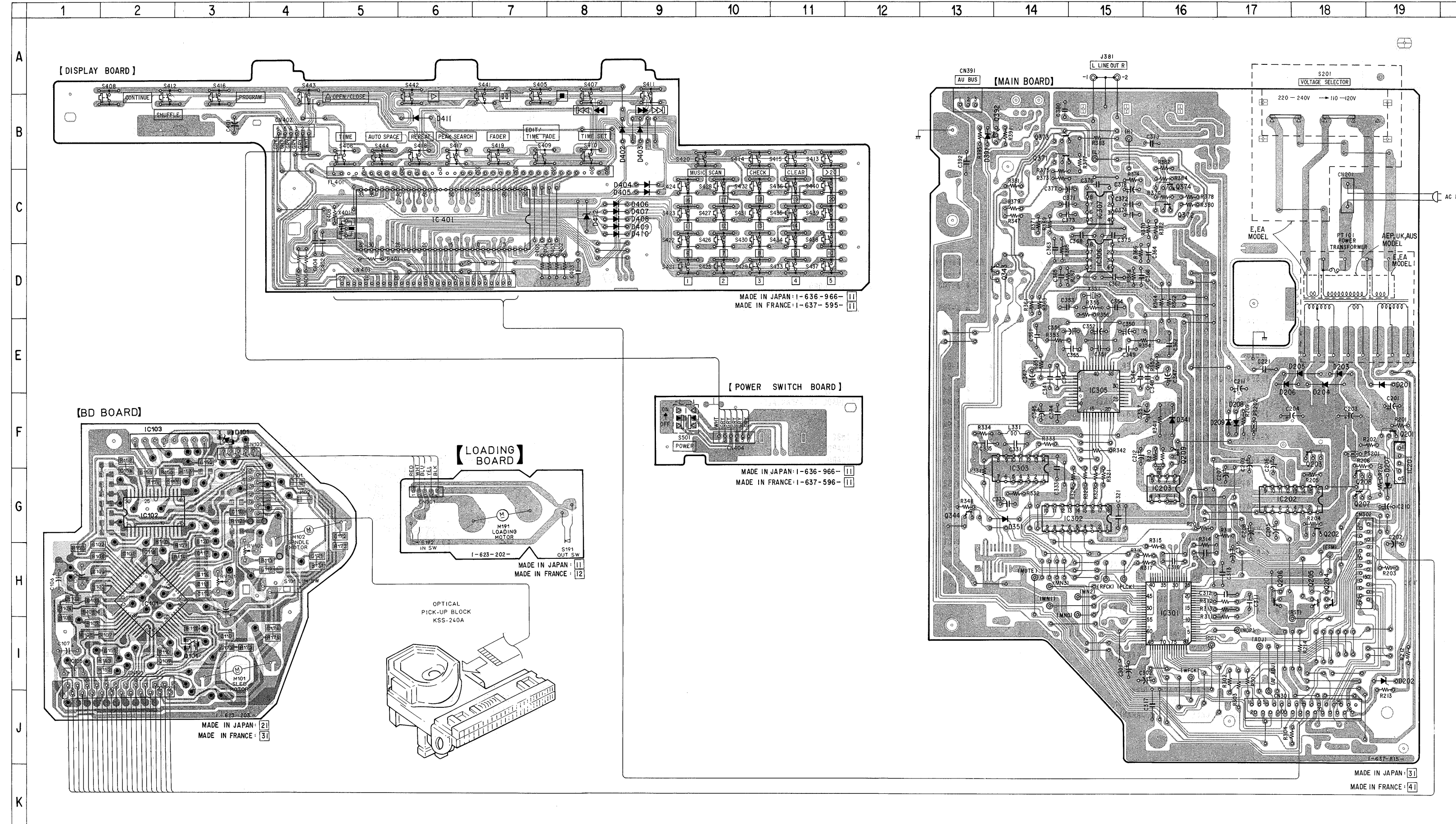
Pin No.	Pin Name	I/O	Pin Description
1	VC		GND when two ($\pm$) dual power supplies are in use, or the center voltage (2.5 V) when a single power supply is in use.
2	FGD	I	Time constants for gain switching in normal mode/down mode and for focus gain are connected between the FGD and FS3 pins.
3	FS3	I	
4	FLB	I	The capacitor for low frequency boost in the focus servo loop is connected.
5	FEO	O	Focus drive output
6	FE-	I	Inverted input to focus amplifier
7	SRCH	I	Time constants to generate the focus search waveform are connected.
8	TGU	I	Time constants for gain switching in normal mode/up mode and for tracking gain are connected between TGU pin and TG2 pin.
9	TG2	I	
10	AVCC		Analog power supply (5 V when $\pm$ dual power supplies are in use, 5 V when a single power supply is in use.)
11	TAO	O	Tracking drive output
12	TA-	I	Inverted input to tracking amplifier
13	SL+	I	Non-inverted input to sled amplifier
14	SLO	O	Sled drive output
15	SL-	I	Non-inverted input to sled amplifier
16	ESET	I	The 610-k Ω phase compensator resistor is connected to this pin.
17	ISET	I	The current setting resistor is connected to this pin.
18	SSTOP	I	The limit switch is connected to this pin.
19	AVEE		Analog power supply (-5 V when $\pm$ dual power supplies are in use, or GND when a single power supply is in use.)
20	DIRC	I	Direct control pin.
21	LOCK	I	Sled run-away prevention circuit operates when this signal is "L".
22	CLK	I	Serial data transfer clock input that is supplied from CPU (or DSP).
23	XLTI	I	Latch input from CPU (or DSP).
24	DATA	I	Serial data input from CPU (or DSP).
25	XRST	I	System reset. "L" to reset.
26	C.OUT	O	Output to tracking counter.
27	SENS	O	SENS output
28	DGND		Digital ground (GND). (GND when $\pm$ dual power supplies are in use. GND when a single power supply is in use.)
29	MIRR	O	Mirror output.
30	DFCT	O	Defect output. "H" when defective.
31	ASY	I	Auto-assymetry control input.
32	EFM	O	EFM comparator output.

Pin No.	Pin Name	I/O	Pin Description
33	FOK	O	Focus OK.
34	CC2	I	Defect-bottom-hold input (input by capacitive coupling).
35	CC1	O	Defect-bottom-hold output.
36	DVCC		Digital power supply (+5 V when $\pm$ dual power supplies in use. +5 V when a single power supply is in use.)
37	CB	I	The defect-bottom-hold capacitor is connected to this pin.
38	CP	I	The mirror hold capacitor is connected to this pin.
39	RF1	I	RF signal input (input by capacitive coupling).
40	RF0	I	RF signal input (input by DC coupling).
41	DVEE		Digital power supply (-5 V when $\pm$ dual power supplis are in use. GND when a single power supply is in use.)
42	TZC	I	Tracking zero cross comparator input.
43	TE	I	Tracking error input.
44	TDFCT	I	The defect prevention hold capacitor is connected to this pin.
45	ATSC	I	Anti-shock input.
46	FZC	I	Focus zero-cross comparator input.
47	FE	I	Focus error input.
48	FDFCT	I	The defect prevention hold capacitor is connected to this pin.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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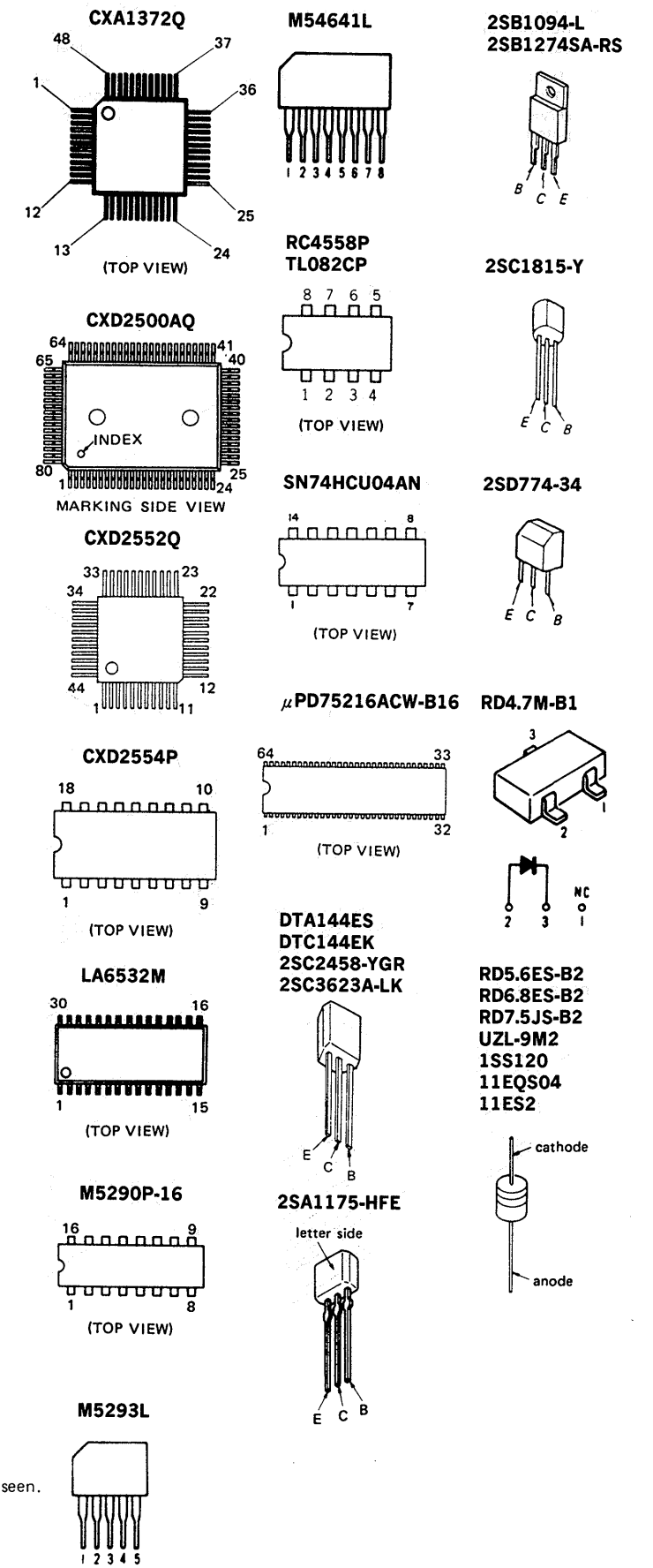
5-2. PRINTED WIRING BOARDS



● Semiconductor Location

Ref. No.	Location
D101	F-3
D201	E-19
D202	I-19
D203	E-18
D204	E-18
D205	E-18
D206	F-17
D207	G-19
D208	F-17
D209	F-17
D341	F-16
D351	H-14
D391	B-13
D402	B-9
D403	B-9
D404	C-9
D405	C-9
D406	C-8
D407	C-8
D408	C-8
D409	C-8
D410	C-8
D411	B-6
D412	C-8
IC101	H-2
IC102	G-2
IC103	F-2
IC201	F-19
IC202	G-17
IC203	G-16
IC301	H-16
IC302	G-15
IC303	F-14
IC305	E-15
IC306	D-15
IC307	C-15
IC401	C-6
Q101	I-3
Q201	F-19
Q202	G-18
Q203	F-18
Q204	H-18
Q205	H-18
Q206	H-17
Q207	G-18
Q208	G-18
Q209	F-16
Q343	D-14
Q344	H-13
Q371	B-14
Q372	C-16
Q373	B-14
Q374	C-16
Q392	B-14

5-3. SEMICONDUCTOR LEAD LAYOUTS



Note:
● — : parts extracted from the component side.
● — : Through hole.
● — : Pattern on the side which is seen.
● — : Pattern of the rear side.
● AUS: Australian model
● EA: Saudi Arabia Model

SECTION 6 EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- -XX, -X mean standardized parts, so they may have some differences from the original one.

- Color Indication of Appearance Parts
Example:

KNOB, BALANCE (WHITE)...(RED)

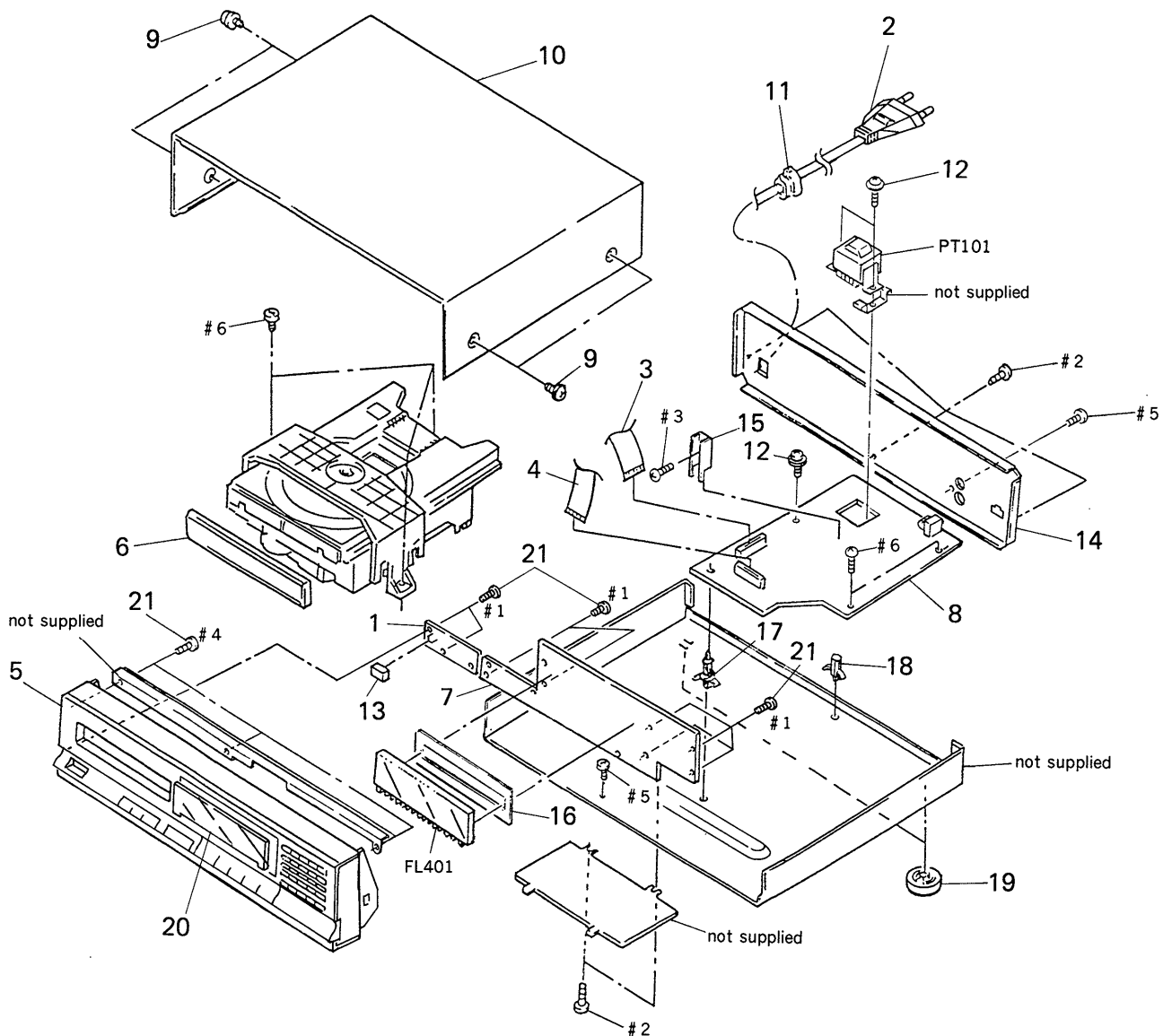
Parts Color Cabinet's Color

- 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.

- AUS: Australian model
- EA: Saudi Arabia Model

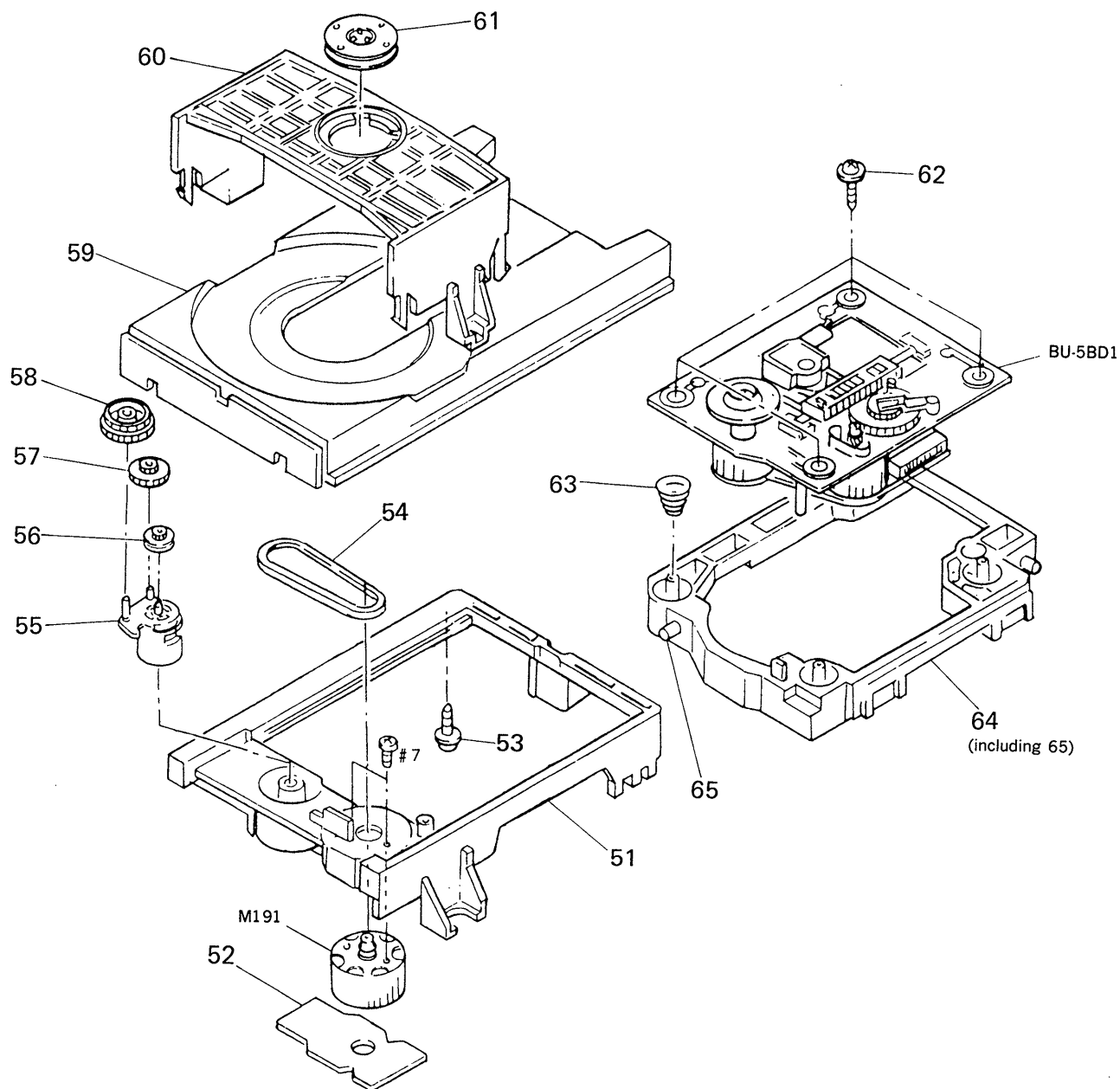
6-1. CABINET BLOCK



Ref. No.	Part No.	Description	Remark
1	* 1-636-967-11	POWER SW BOARD (MADE IN JAPAN)	
1	* 1-637-596-11	POWER SW BOARD (MADE IN FRANCE)	
2	△ 1-575-653-21	CORD, POWER (E)	
2	△ 1-574-127-31	CORD, POWER (MADE IN FRANCE:AEP)	
2	△ 1-590-379-11	CORD, POWER (UK)	
2	△ 1-575-651-21	CORD, POWER (MADE IN JAPAN:AEP, EA)	
2	△ 1-574-358-31	CORD, POWER (AUS)	
3	1-575-160-11	WIRE, FLAT TYPE (22 CORE)	
4	1-535-871-11	JUMPER, FILM (WITH TERMINAL)	
5	X-4941-368-2	PANEL ASSY, FRONT (MADE IN FRANCE:AEP:BLACK)	
5	X-4941-369-2	PANEL ASSY, FRONT (MADE IN FRANCE:AEP:GRAY, UK)	
5	X-4941-465-1	PANEL ASSY, FRONT (MADE IN JAPAN:AEP, AUS)	
5	X-4941-466-1	PANEL ASSY, FRONT (E, EA)	
6	4-941-980-01	PANEL, LOADING (E, EA) (MADE IN FRANCE:AEP:BLACK)	
6	4-941-980-21	PANEL, LOADING (MADE IN JAPAN:AEP, AUS) (MADE IN FRANCE:AEP, GRAY, UK)	
7	* 1-636-966-11	DISPLAY BOARD (MADE IN JAPAN)	
7	* A-4617-673-A	DISPLAY BOARD, COMPLETE (MADE IN FRANCE)	
8	* A-4617-671-A	MAIN BOARD, COMPLETE (MADE IN FRANCE)	
8	* A-4617-740-A	MAIN BOARD, COMPLETE (MADE IN JAPAN:AEP, AUS)	
8	* A-4617-852-A	MAIN BOARD, COMPLETE (E, EA)	
9	3-704-366-01	SCREW (CASE) (M3X8)	
10	4-919-376-31	CASE (MADE IN FRANCE)	
10	* 4-939-802-71	CASE (MADE IN JAPAN)	

Ref. No.	Part No.	Description	Remark
11	* 3-703-244-00	BUSHING (2104), CORD (AEP, UK, EA, AUS)	
11	* 3-703-571-11	BUSHING (S) (4516), CORD (E)	
12	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
13	4-941-982-01	BUTTON (POWER)	
14	* 4-941-467-11	PANEL (ALSACE), BACK (MADE IN FRANCE)	
14	* 4-941-552-71	PANEL, BACK (E, EA)	
14	* 4-941-552-81	PANEL, BACK (AUS)	
14	* 4-941-552-61	PANEL, BACK (MADE IN JAPAN:AEP)	
15	* 4-941-237-01	HEAT SINK	
16	4-941-981-01	HOLDER, FL TUBE	
17	* 4-924-098-31	HOLDER, PC BOARD	
18	* 3-349-025-41	HOLDER, PC BOARD	
19	* 4-931-169-01	FOOT	
20	4-942-330-02	WINDOW (METER) (MADE IN FRANCE)	
21	4-928-635-01	SCREW, +BV (2.6X8) TAPPING (MADE IN FRANCE)	
FL401	1-519-618-11	INDICATOR TUBE, FLUORESCENT	
PT101△	1-449-923-11	TRANSFORMER, POWER (E, EA)	
PT101△	1-449-925-11	TRANSFORMER, POWER (MADE IN FRANCE)	
PT101△	1-449-922-11	TRANSFORMER, POWER (MADE IN JAPAN:AEP, AUS)	

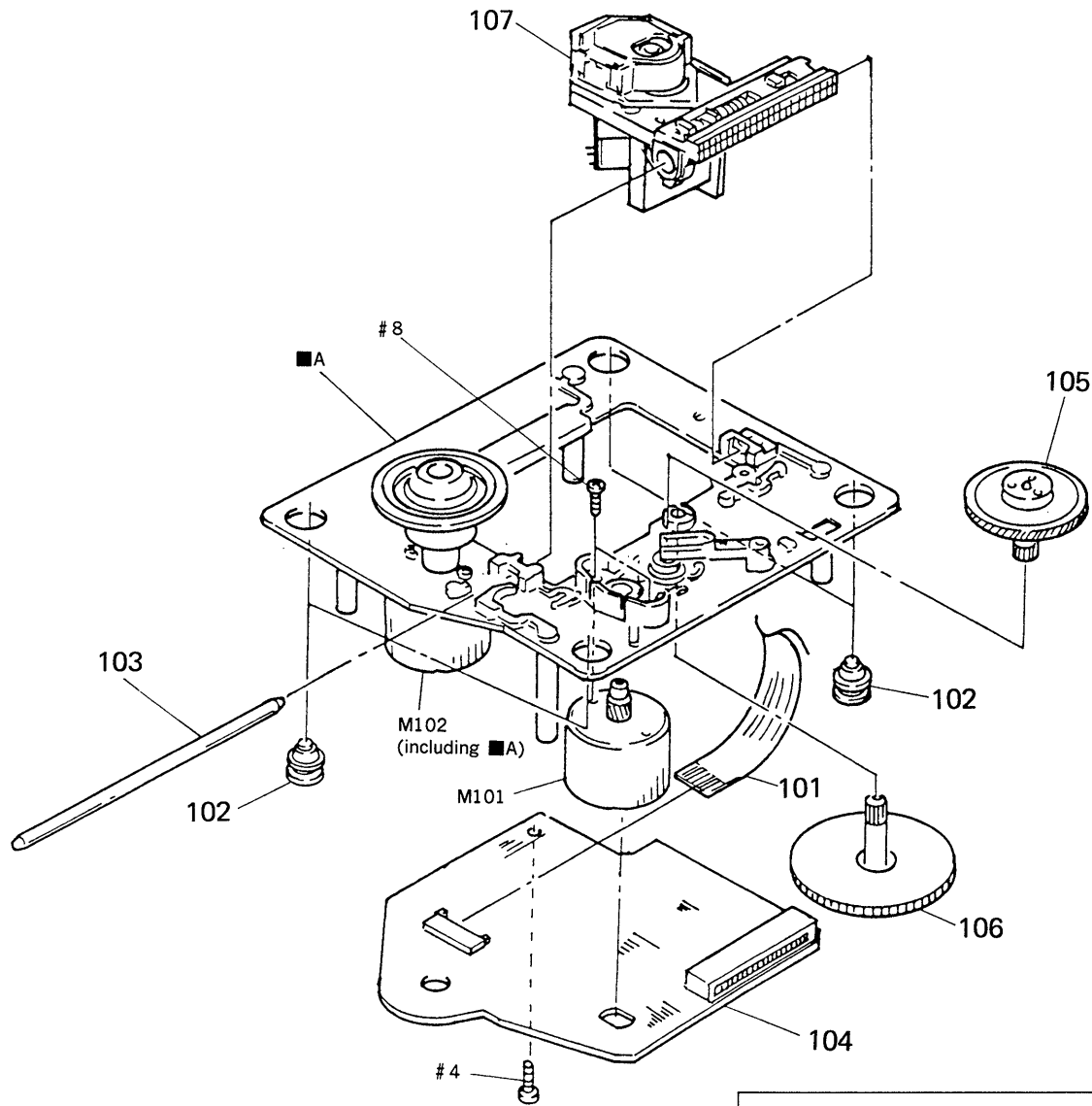
6-2. CD MECHANISM BLOCK (CDM14-5BD1)



Ref. No.	Part No.	Description	Remark
51	4-933-111-01	CHASSIS (MD)	
52	* 1-632-202-11	LOADING BOARD	
53	* 4-917-583-21	BRACKET, YOKE	
54	4-927-649-01	BELT	
55	4-933-109-01	CAM	
56	4-927-651-01	PULLEY (S)	
57	4-927-628-01	GEAR (C)	
58	4-933-107-01	GEAR (PL)	

Ref. No.	Part No.	Description	Remark
59	4-933-112-01	TABLE, DISK	
60	4-933-110-01	HOLDER (MG)	
61	* 1-452-538-11	MAGNET	
62	4-933-134-01	SCREW (+PTPWH M2. 6X6)	
63	4-917-541-01	SPRING (B)	
64	4-933-129-01	HOLDER (BU)	
65	4-933-108-01	SHAFT (CAM)	
M191	A-4604-363-A	MOTOR (L) ASSY	

6-3. OPTICAL PICK-UP BLOCK (BU-5BD1)



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

Ref. No.	Part No.	Description	Remark
101	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
102	4-933-126-01	INSULATOR (A)	
103	4-917-565-01	SHAFT, SLED	
104	* A-4617-161-A	BD BOARD, COMPLETE	
105	4-917-567-01	GEAR (M)	
106	4-917-564-01	GEAR (P), FLATNESS	
107	$\triangle$ 8-848-144-11	DEVICE, OPTICAL KSS-240A	
M101	X-4917-523-3	MOTOR ASSY (SLED)	
M102	X-4917-504-1	MOTOR ASSY (SPINDLE) (MADE IN JAPAN)	

BD

SECTION 7

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.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- CAPACITORS
uF: μ F

- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...

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

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

- AUS: Australian model
- EA: Saudi Arabia Model

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	* A-4617-161-A	BD BOARD, COMPLETE				< CONNECTOR >	

		< CAPACITOR >					
C101	1-163-038-00	CERAMIC CHIP 0.1uF	25V	CN101	1-568-796-11	SOCKET, CONNECTOR 22P	
C102	1-163-989-11	CERAMIC CHIP 0.033uF	10% 25V	CN102	1-568-795-11	SOCKET, CONNECTOR 12P	
C103	1-126-163-11	ELECT 4.7uF	20% 50V	CN103	* 1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P	
C104	1-163-038-00	CERAMIC CHIP 0.1uF	25V			< DIODE >	
C105	1-126-154-11	ELECT 47uF	20% 6.3V	D101	8-719-105-72	DIODE RD4.7M-B1	
						< IC >	
C106	1-126-154-11	ELECT 47uF	20% 6.3V	IC101	8-752-050-82	IC CXA1372Q	
C107	1-126-154-11	ELECT 47uF	20% 6.3V	IC102	8-759-821-94	IC LA6532M	
C108	1-163-038-00	CERAMIC CHIP 0.1uF	25V	IC103	8-759-633-65	IC M54641L	
C109	1-163-038-00	CERAMIC CHIP 0.1uF	25V			< JACK >	
C110	1-163-989-11	CERAMIC CHIP 0.033uF	10% 25V	J101	1-216-295-00	METAL CHIP 0 5% 1/10W	
C111	1-131-367-00	TANTALUM 22uF	10% 20V	J102	1-216-295-00	METAL CHIP 0 5% 1/10W	
C112	1-164-232-11	CERAMIC CHIP 0.01uF	50V			< TRANSISTOR >	
C113	1-164-232-11	CERAMIC CHIP 0.01uF	50V	Q101	8-729-901-01	TRANSISTOR DTC144EK	
C114	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V			< RESISTOR >	
C115	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	R101	1-216-097-00	METAL CHIP 100K 5% 1/10W	
C117	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R102	1-216-095-00	METAL CHIP 82K 5% 1/10W	
C118	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R103	1-216-091-00	METAL CHIP 56K 5% 1/10W	
C119	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	R104	1-216-099-00	METAL CHIP 120K 5% 1/10W	
C120	1-163-989-11	CERAMIC CHIP 0.033uF	10% 25V	R105	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
C151	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V	R106	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
C152	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R107	1-216-114-00	METAL GLAZE 510K 5% 1/10W	
C153	1-163-006-11	CERAMIC CHIP 560PF	10% 50V	R108	1-216-105-00	METAL CHIP 220K 5% 1/10W	
C154	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V	R109	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
C155	1-163-023-00	CERAMIC CHIP 0.015uF	5% 50V	R110	1-216-049-00	METAL CHIP 1K 5% 1/10W	
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				

BD

DISPLAY

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 (LIMIT)	

* A-4617-673-A DISPLAY BOARD, COMPLETE (MADE IN FRANCE)			
* 1-636-966-11 DISPLAY BOARD (MADE IN JAPAN)			

1-535-871-11 JUMPER, FILM (WITH TERMINAL)			
4-941-981-01 HOLDER, FL TUBE			
< CAPACITOR >			
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	
< 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	

Ref. No.	Part No.	Description	Remark
D410	8-719-912-20	DIODE 1SS120	
D411	8-719-912-20	DIODE 1SS120	
D412	8-719-001-15	DIODE UZL-9M2	
< FILTER >			
FL401	1-519-618-11	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC401	8-759-151-90	IC uPD75216ACW-B16	
< 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 >			
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/TIMEFADE)	
S410	1-554-303-21	SWITCH, TACTILE (TIME 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 (PROGRAM)	
S417	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)	
S418	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S419	1-554-303-21	SWITCH, TACTILE (FADER)	
S420	1-554-303-21	SWITCH, TACTILE (MUSIC 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)	

DISPLAY

LOADING

MAIN

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 (OPEN/CLOSE)	
S444	1-554-303-21	SWITCH, TACTILE (AUTO SPACE)	
< CERAMIC >			
X401	1-577-082-11	VIBRATOR, CERAMIC (4MHz)	

* 1-632-202-11 LOADING BOARD			

< CONNECTOR >			
CN301	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P	
< SWITCH >			
S191	1-572-086-11	SWITCH, LEAF (LOAD OUT)	
S192	1-572-086-11	SWITCH, LEAF (LOAD IN)	

* A-4617-671-A MAIN BOARD, COMPLETE (MADE IN FRANCE)			
* A-4617-740-A MAIN BOARD, COMPLETE			
(MADE IN JAPAN:AEP, AUS)			
* A-4617-825-A MAIN BOARD, COMPLETE (E, EA)			

* 4-941-237-01 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	

Ref. No.	Part No.	Description	Remark
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	
C335	1-162-205-31	CERAMIC 18PF 5% 50V	
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	

Ref. No.	Part No.	Description	Remark
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 (AU BUS)
CN301	* 1-568-844-11	SOCKET, CONNECTOR 29P
CN302	* 1-568-822-11	SOCKET, CONNECTOR 22P
CN391	* 1-565-561-11	PIN, CONNECTOR 3P

< DIODE >

D201	8-719-200-82	DIODE 11ES2
D202	8-719-109-97	DIODE RD6.8ES-B2
D203	8-719-200-82	DIODE 11ES2
D204	8-719-200-82	DIODE 11ES2
D205	8-719-200-82	DIODE 11ES2

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
D391	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	8-752-337-09	IC CXD2554P
IC303	8-759-917-18	IC SN74HCU04AN
IC305	8-752-334-87	IC CXD2552Q
IC306	8-759-990-82	IC TL082CP
IC307	8-759-945-58	IC RC4558P

< JACK >

J381	1-569-442-11	JACK, PIN 2P (LINE OUT)
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< COIL >

L331	1-408-403-00	INDUCTOR 3.3uH
PS201	△ 1-532-685-00	LINK, IC 0.8A
PS202	△ 1-532-637-00	LINK, IC 1.0A

Ref. No.	Part No.	Description	Remark
		< 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
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
Q392	8-729-900-80	TRANSISTOR DTC114ES

< 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

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

MAIN

Ref. No.	Part No.	Description	Remark
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
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
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	1-247-838-00	CARBON	2K 5% 1/4W
R362	1-247-838-00	CARBON	2K 5% 1/4W
R363	1-247-838-00	CARBON	2K 5% 1/4W
R364	1-247-838-00	CARBON	2K 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
R391	1-249-417-11	CARBON	1K 5% 1/4W
R395	1-249-429-11	CARBON	10K 5% 1/4W

< SWITCH >

S201 Δ 1-571-722-11 SWITCH, VOLTAGE SELECTION
(VOLTAGE SELECTOR) (E, EA)

< CRYSTAL >

X351 1-579-161-11 VIBRATOR, CRYSTAL

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

Ref. No.	Part No.	Description	Remark
	* 1-636-967-11	POWER SW BOARD (MADE IN JAPAN)	
	* 1-637-596-11	POWER SW BOARD (MADE IN FRANCE)	

	< SWITCH >		
S501	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	

	MISCELLANEOUS		

	Δ 1-574-127-31	CORD, POWER (MADE IN FRANCE:AEP)	
	Δ 1-574-358-31	CORD, POWER (AUS)	
	Δ 1-575-651-21	CORD, POWER	
	Δ 1-575-653-21	CORD, POWER (E)	
	Δ 1-590-379-11	CORD, POWER (UK)	
	1-575-160-11	WIRE, FLAT TYPE (22 CORE)	
	1-535-871-11	JUMPER, FILM (WITH TERMINAL)	
	* 1-636-966-11	DISPLAY BOARD (MADE IN JAPAN)	
	* 1-452-538-11	MAGNET	
	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
	Δ 8-848-144-11	DEVICE, OPTICAL KSS-240A	
M101	X-4917-523-3	MOTOR ASSY (SLED)	
M102	X-4917-504-1	MOTOR ASSY (SPINDLE) (MADE IN JAPAN)	
M191	A-4604-363-A	MOTOR (L) ASSY	
PT101 Δ	1-449-923-11	TRANSFORMER, POWER (E, EA)	
PT101 Δ	1-449-925-11	TRANSFORMER, POWER (MADE IN FRANCE)	
PT101 Δ	1-449-922-11	TRANSFORMER, POWER (MADE IN JAPAN:AEP, AUS)	

ACCESSORY & PACKING MATERIAL

1-558-271-11 CORD, CONNECTION (MADE IN FRANCE)
1-559-533-11 CORD, CONNECTION (MADE IN JAPAN)
1-569-007-11 ADAPTOR, CONVERSION 2P (E)
1-569-008-11 ADAPTOR, CONVERSION 2P (EA)

* 3-795-629-11 INSTRUCTION (MADE IN JAPAN:AEP)

* 4-922-998-01 CUSHION (MADE IN JAPAN:AEP, AUS)

* 4-929-563-01 CUSHION (E, EA)

* 4-941-548-01 LABEL, CLASS 1

* 4-942-085-21 INDIVIDUAL CARTION (MADE IN JAPAN)

* 4-942-788-11 INDIVIDUAL CARTION (MADE IN FRANCE)

HARDWARE LIST

#1 7-621-773-93 SCREW (PANEL 2.6 TP2) (MADE IN JAPAN)
#2 7-682-548-09 SCREW +BVTT 3X8 (S)
#3 7-682-547-09 SCREW +B 3X6
#4 7-685-134-19 SCREW +BTP 2.6X8 TYPE2 N-S
(MADE IN JAPAN)
#5 7-685-646-79 SCREW +BVTP 3X8 TYPE2 N-S
#6 7-682-547-04 SCREW +BVTT 3X6 (S)
#7 7-621-775-10 SCREW +B 2.6X4
#8 7-621-255-15 SCREW +P 2X3