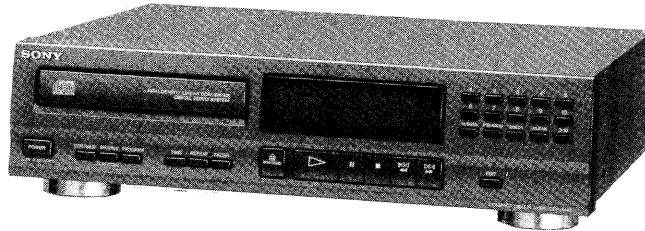


CDP-M46

SERVICE MANUAL

*AEP Model
E Model*



CDP-M46 is the Compact Disc
Player section in LBT-A590/A790.

Model Name Using Similer Mechanism	CDP-M201/M301
CD Mechanism Type	CDM14-5BD10
Base Unit Type	BU-5BD10B
Optical Pick-up Type	KSS-240A

SPECIFICATIONS

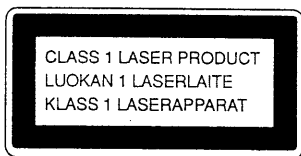
Compact disc player

Laser	Semiconductor laser
Wavelength	780 - 790 nm
Frequency response	2 Hz to 20 kHz (± 0.5 dB)
Signal-to-noise ratio	More than 100 dB
Dynamic range	More than 97 dB
Harmonic distortion	Less than 0.004 % (1 kHz)
Channel separation	More than 95 dB (1 kHz)
Output	LINE OUT (phono jacks) Output level 2 V (at 50 kohms) Load impedance over 10 kohms
Power requirements	AEP model : 220 — 230V AC, 50/60Hz E, Saudi Arabia model : 110 — 120, 220 — 240V AC, adjustable 50/60Hz
Power consumption	10 W
Weight	Approx. 2.8 kg (6 lbs 3 oz)
Dimensions	Approx. 355 x 95 x 320 mm (14 x 3 ³ / ₄ x 12 ⁵ / ₈ inches) (w/h/d, including projections)
Supplied accessory	Audio connecting cord (1)

Design and specifications are subject to change without notice.

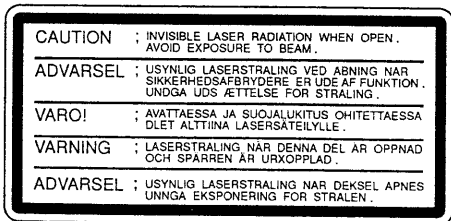
COMPACT DISC PLAYER
SONY®

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



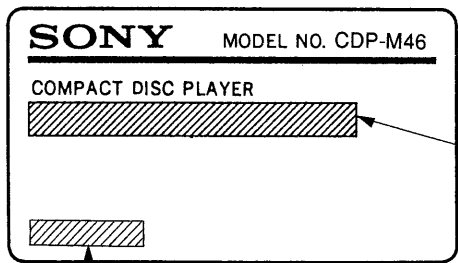
Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside of the unit.



MODEL IDENTIFICATION

— Specification Label —



AEP model : AC220 — 230V~50/60Hz, 10W
 E, Saudi Arabia model : AC110 — 120, 220 — 240V~50/60Hz, 10W

MADE IN JAPAN
 MADE IN FRANCE

TABLE OF CONTENTS

Section	Title	Page
1.	SERVICING NOTE	3
2.	GENERAL	3
3.	ELECTRICAL BLOCK CHECKING	5
4.	DIAGRAMS	
4-1.	Block Diagram	7
4-2.	Circuit Boards Location	9
4-3.	Printed Wiring Boards	10
4-4.	Schematic Diagram	13
4-5.	IC Block Diagrams	17
4-6.	Semiconductor Lead Layouts	18
4-7.	IC Pin Functions	
	• IC101 Digital Servo & DSP (CXD2515Q)	19
	• IC201 Master Control (CXP82316-037Q)	22
5.	EXPLODED VIEWS	
5-1.	Cabinet Section	23
5-2.	CD Mechanism Section	24
5-3.	Optical Pick-up Block Section (BU-5BD10B)	25
6.	ELECTRICAL PARTS LIST	26

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.

Fixible 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.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ 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.

SECTION 1 SERVICING NOTE

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.

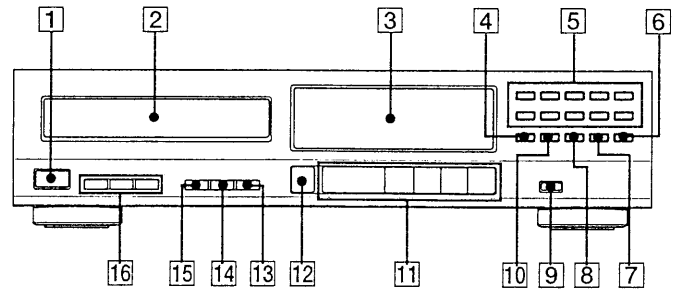
NOTES ON LASER DIODE EMISSION CHECK

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.

SECTION 2 GENERAL

This section is extracted from instruction manual.

D

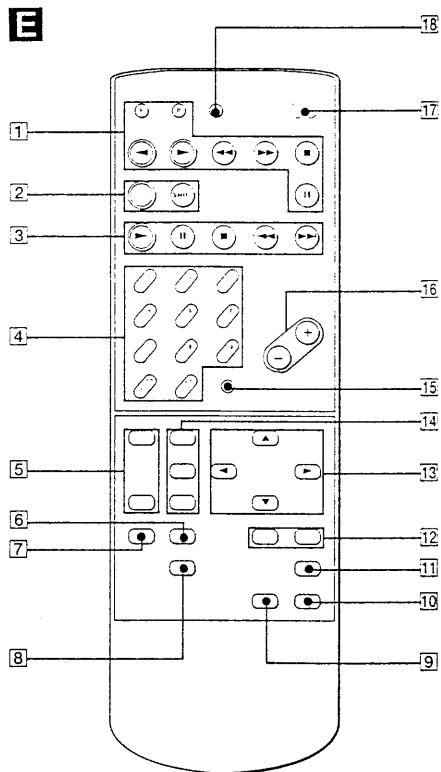


CD Player

D

- 1 POWER switch (18)
- 2 Disc tray
- 3 Display window
- 4 MUSIC SCAN button (58)
- 5 Numeric buttons (58)
- 6 > 10 (over 10) button (58)
- 7 CLEAR button (66, 74)
- 8 CHECK button (66)
- 9 EDIT button (76, 78)
- 10 P. SEARCH button (84)
- 11 CD operation buttons
 ◀◀ ◀ ▶▶ ▶▶ ▶ AMS*,
 ■ stop, || pause, ▶ play
- 12 ▲ OPEN/CLOSE button (54)
- 13 FADER button (82)
- 14 REPEAT button (68)
- 15 TIME button (56)
- 16 Play mode buttons
 CONTINUE, SHUFFLE, PROGRAM

* AMS is the abbreviation of Automatic Music Sensor.



Remote commander (RM-S521)

- E**
- 1** Cassette deck operation buttons
When the remote commander is not in cassette deck control mode, press the TAPE DECK A or B button and then operate these buttons.
 - 2** Tuner operation buttons
When the remote commander is not in tuner control mode, press the TUNER button and then select the preset station with the SHIFT button and numeric button (1 - 0 (10)).
 - 3** CD player operation buttons
When the remote commander is not in CD player control mode, press the ► button and then operate these buttons.
 - 4** Numeric buttons
In tuner control mode: Used to select the preset station number (1 - 0 (10)).
In CD player control mode: Used to directly locate a selection (1 - 10 and >10). The >10 button is used to specify selection number 11 or above. (58)
In amplifier control mode: Used to select a sound pattern among the SELECT 5 settings (HALL, DANCE, MOVIE, WM and CAR) or your individual sound setting (1 - 5) stored in PERSONAL FILE.
Press 1-5 while pressing the SELECT 5 or PERSONAL FILE button.
 - 5** VIDEO/MD and PHONO function selectors
 - 6** SOURCE DIRECT button (88)
 - 7** PROGRAM FUNCTION button (122)
 - 8** DISPLAY button (94)
This button functions only in amplifier control mode.
 - 9** ● REC button
Press to enter recording pause mode.
 - 10** ○ REC MUTE button
 - 11** DYNAMIC BASS button (20)
 - 12** SURROUND MODE and LEVEL buttons (86)
 - 13** CURSOR CONTROL buttons (88, 90, 96, 98)
 - 14** SELECT 5 button (88)
PERSONAL FILE (1-5) button (98)
EQ button (90)
 - 15** DISC SKIP button
Functions only for CDP-C433M.
 - 16** VOLUME control buttons (20)
 - 17** SYSTEM POWER button (18)
 - 18** SLEEP button (114)

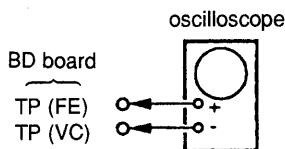
SECTION 3

ELECTRICAL BLOCK CHECKING

Note :

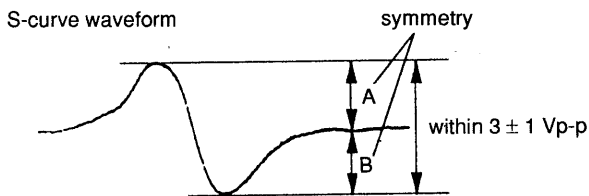
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal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

S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect between test point TP (FEI) and TP (VC) by 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. Check the oscilloscope waveform (S curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 Vp-p.

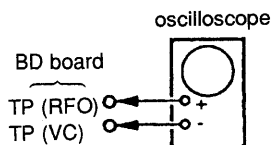


6. After check, remove the lead wire connected in step 2.

Note :

- Try to measure several times to make sure than 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 :

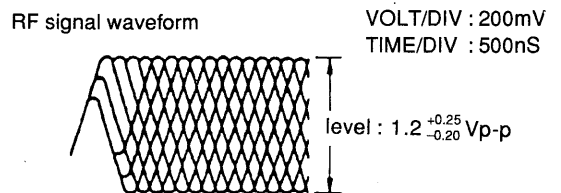
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turned Power switch on.

3. Put disc (YEDS-18) in and playback.

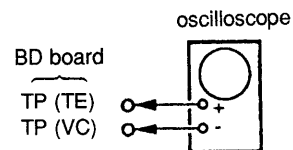
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

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

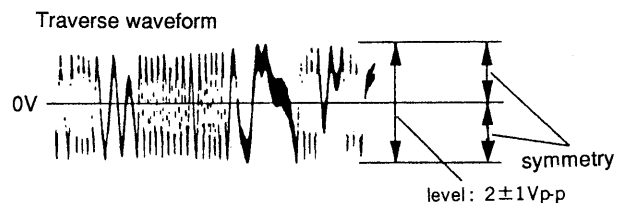


E-F Balance Check



Procedure :

1. Connect test point TP (ADJ) on MAIN board to ground and TP (TEI) to TP (VC) with lead wire.
2. Connect oscilloscope to test point TP (TE) on BD board.
3. Turned 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.

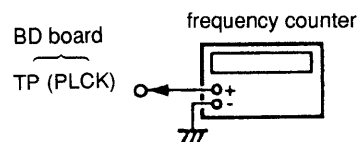


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

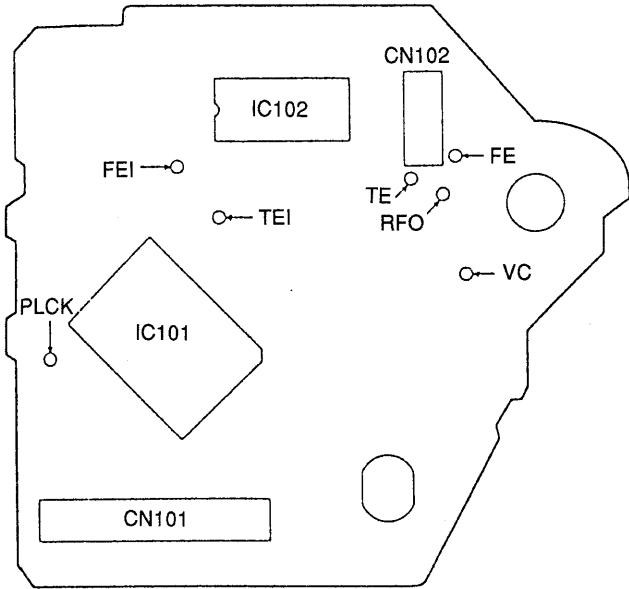
1. Connect frequency counter to test point (PLCK) with lead wire.



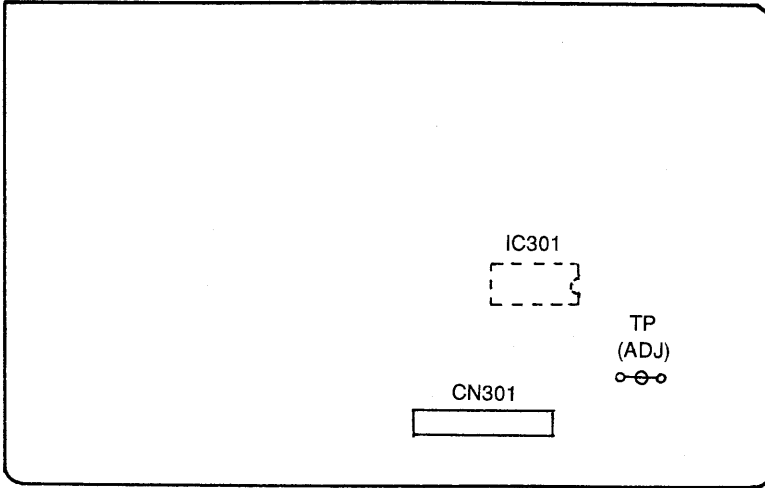
2. Turned Power switch on.
3. Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

[BD BOARD] — Component Side —

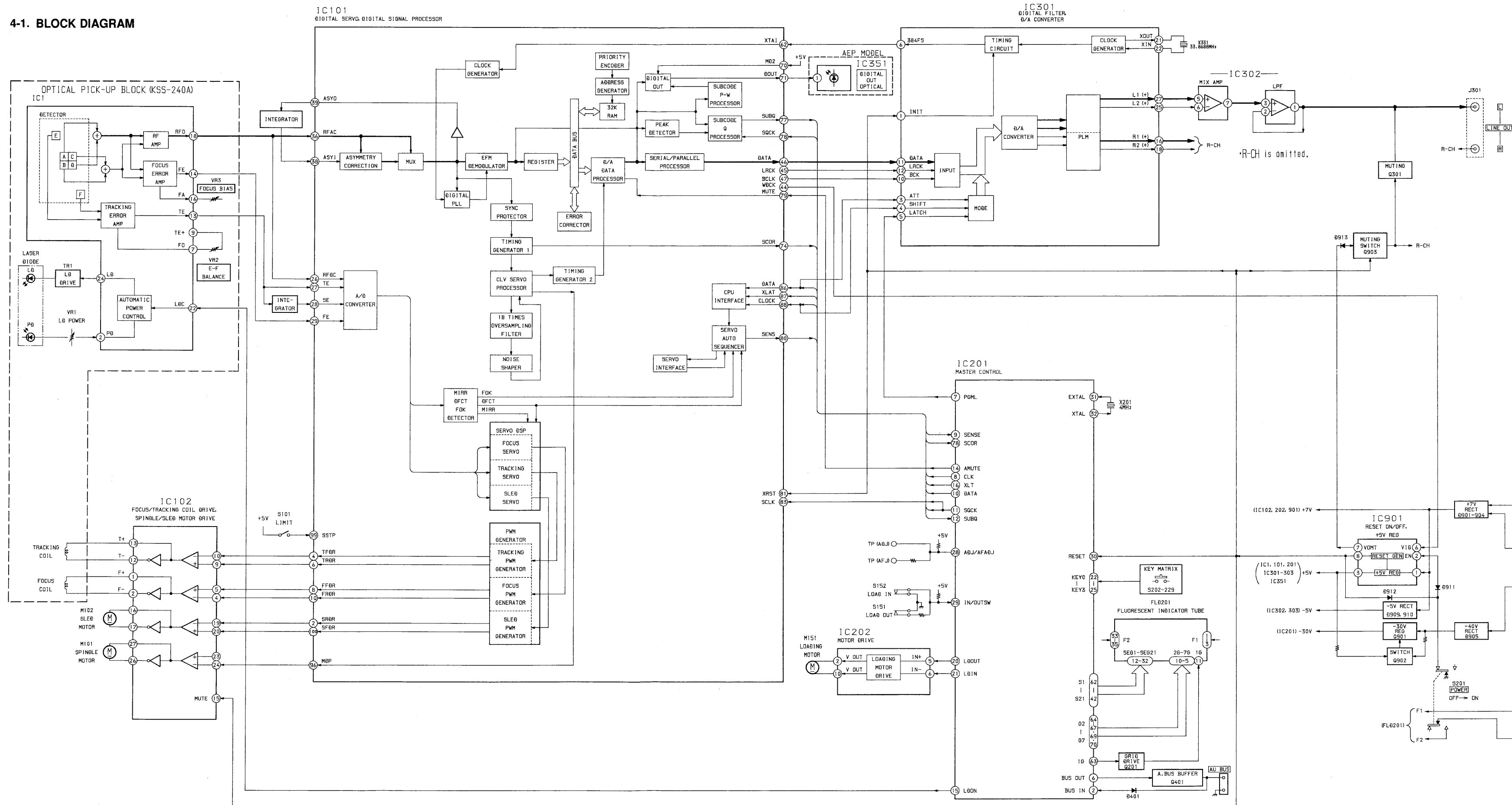


[MAIN BOARD] — Component Side —

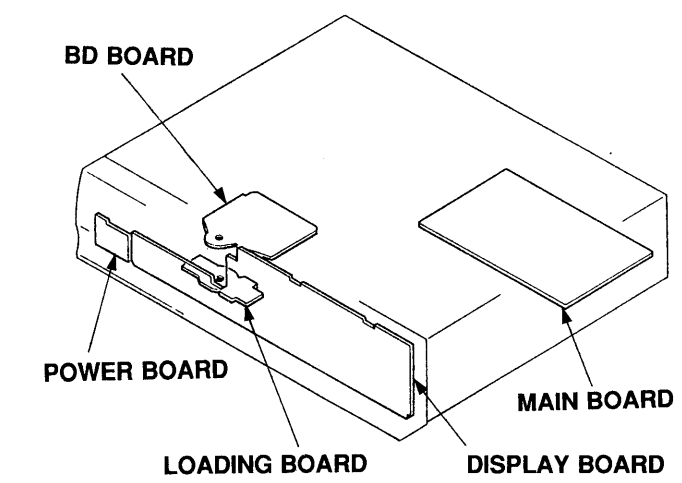


SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM



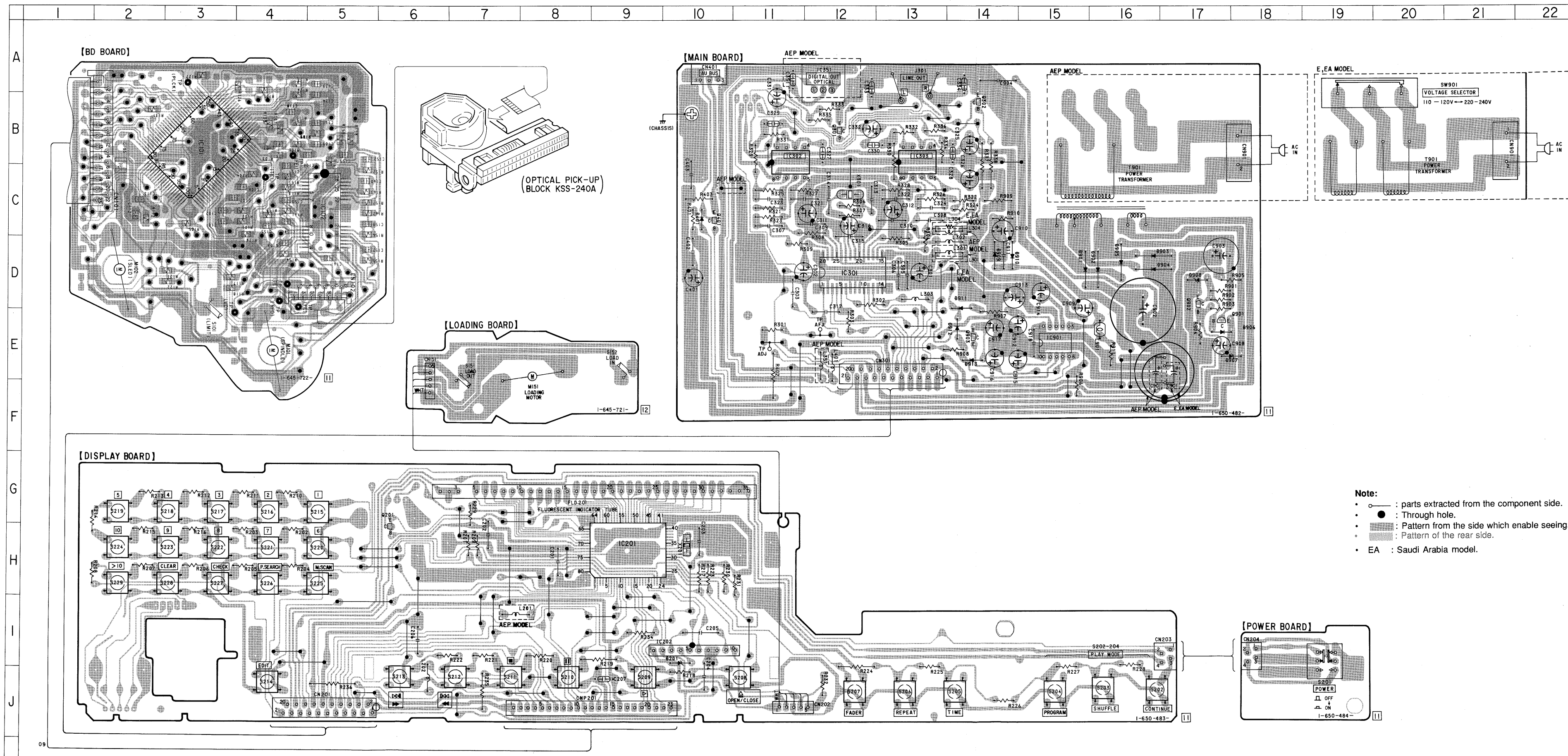
4-2. CIRCUIT BOARDS LOCATION



4-3. PRINTED WIRING BOARDS
 • See page 18 for Semiconductor Lead Layouts.
 • See page 9 for Circuit Boards Location.

• Semiconductor Location

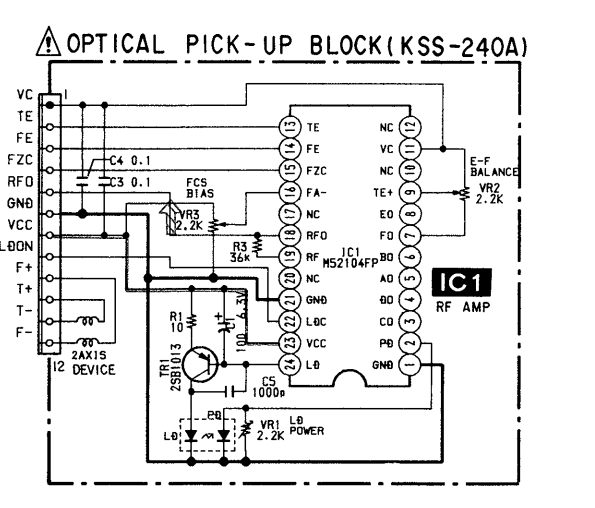
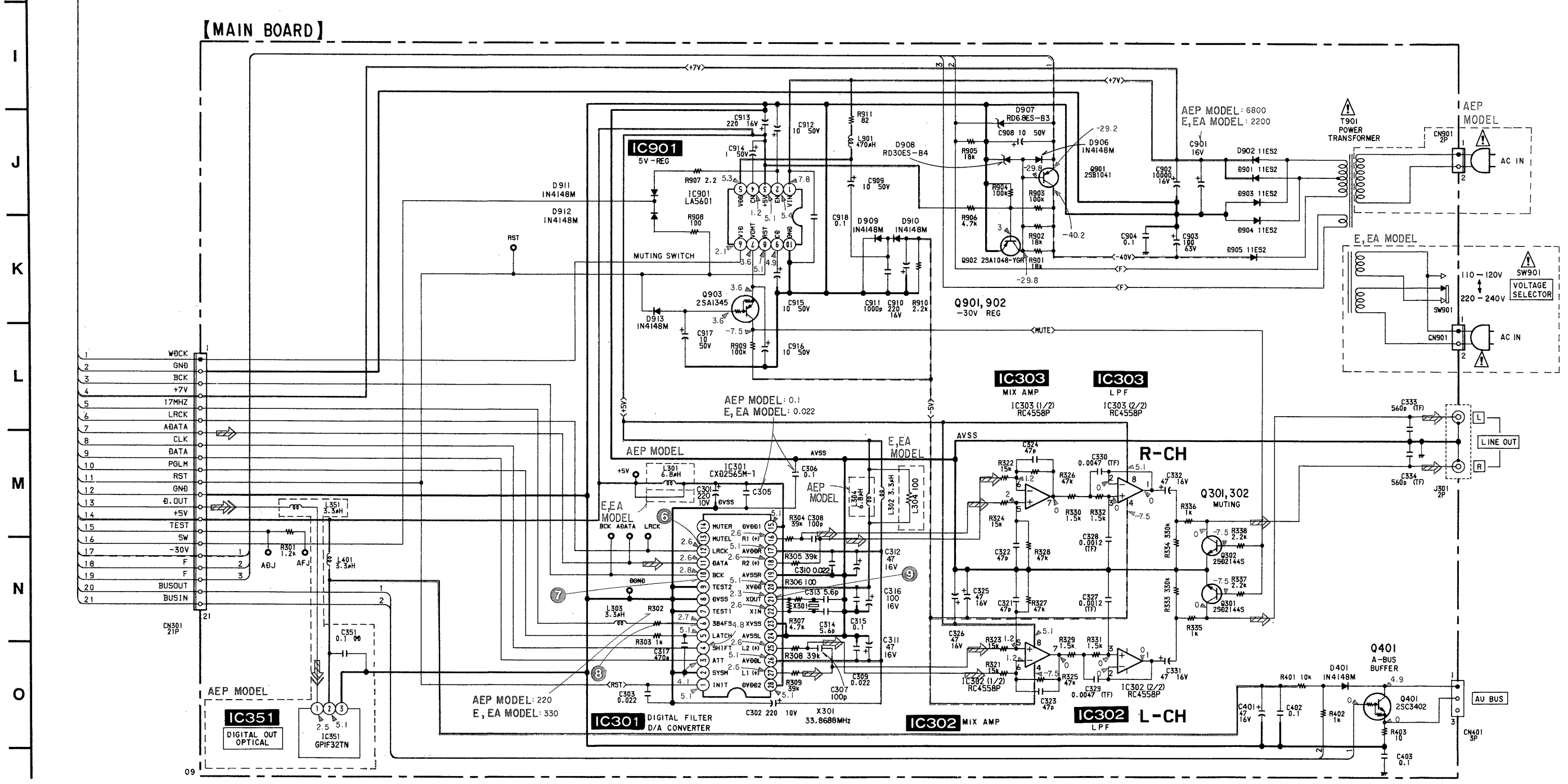
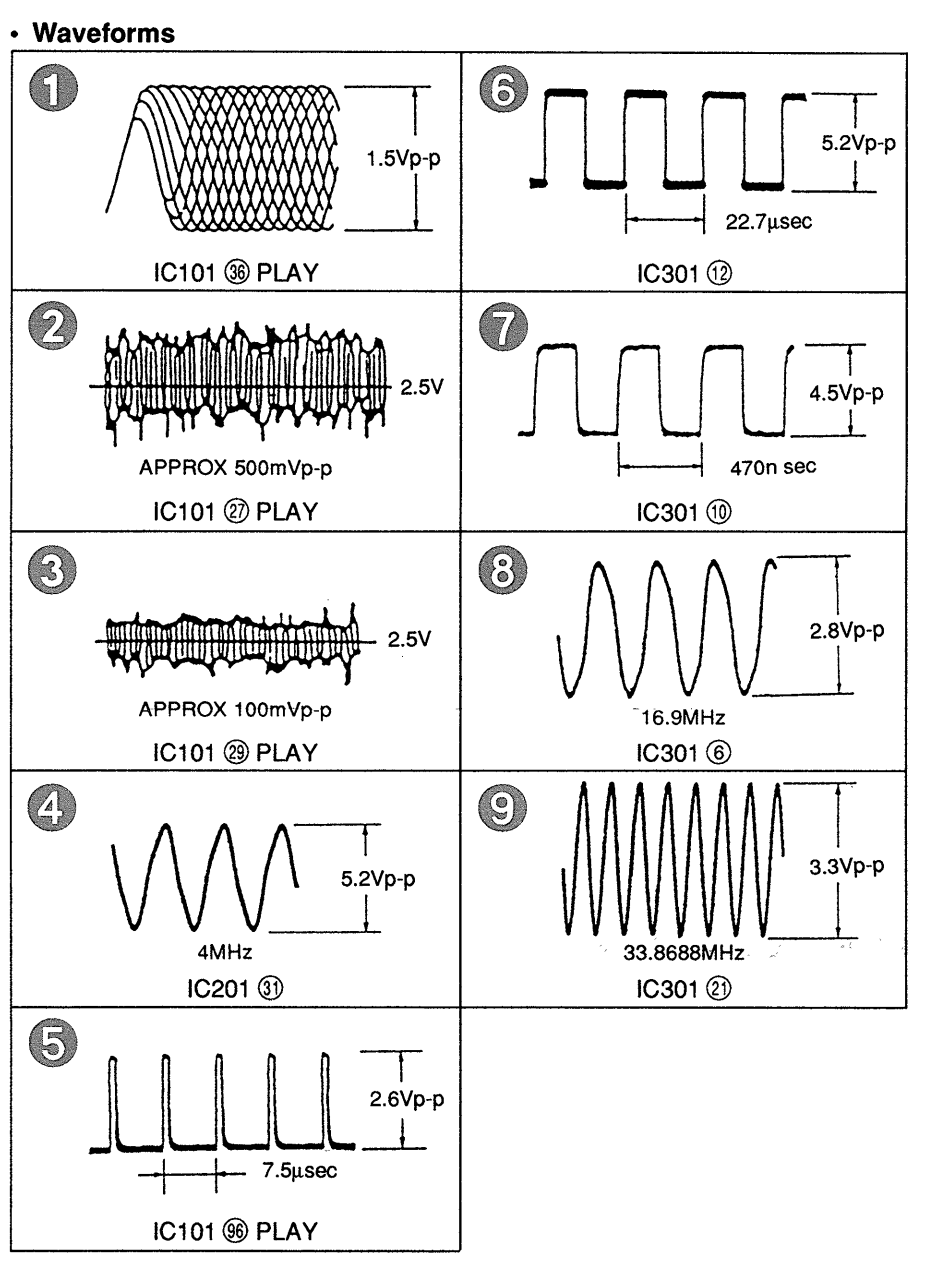
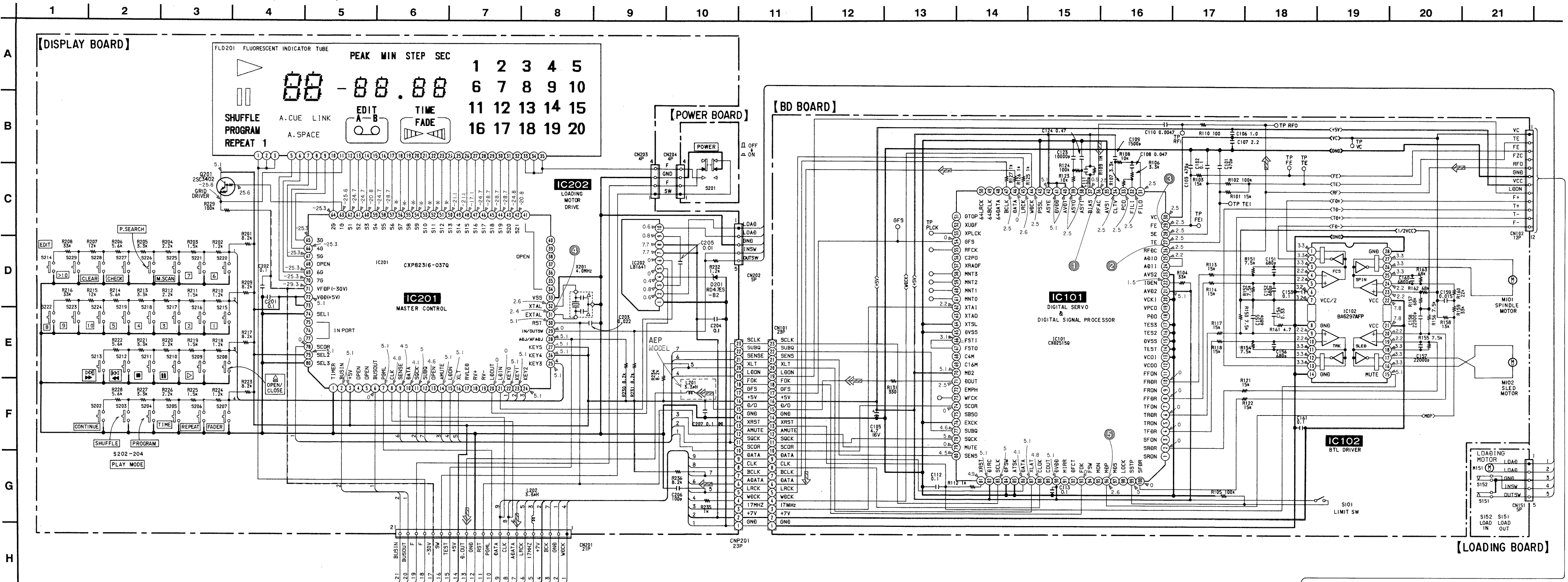
Ref. No.	Location
D201	I-10
D401	C-10
D901	D-15
D902	D-16
D903	D-16
D904	D-16
D905	D-16
D906	E-17
D907	E-18
D908	D-17
D909	D-14
D910	D-14
D911	E-14
D912	E-14
D913	E-14
IC201	H-9
IC202	I-10
IC301	D-12
IC302	B-11
IC303	B-13
IC351	K-12
IC901	E-15
Q201	H-6
Q301	B-12
Q302	B-14
Q401	C-10
Q901	E-17
Q902	D-17
Q903	E-14



Note:

- ○ : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern from the side which enable seeing.
- ▩ : Pattern of the rear side.
- EA : Saudi Arabia model.

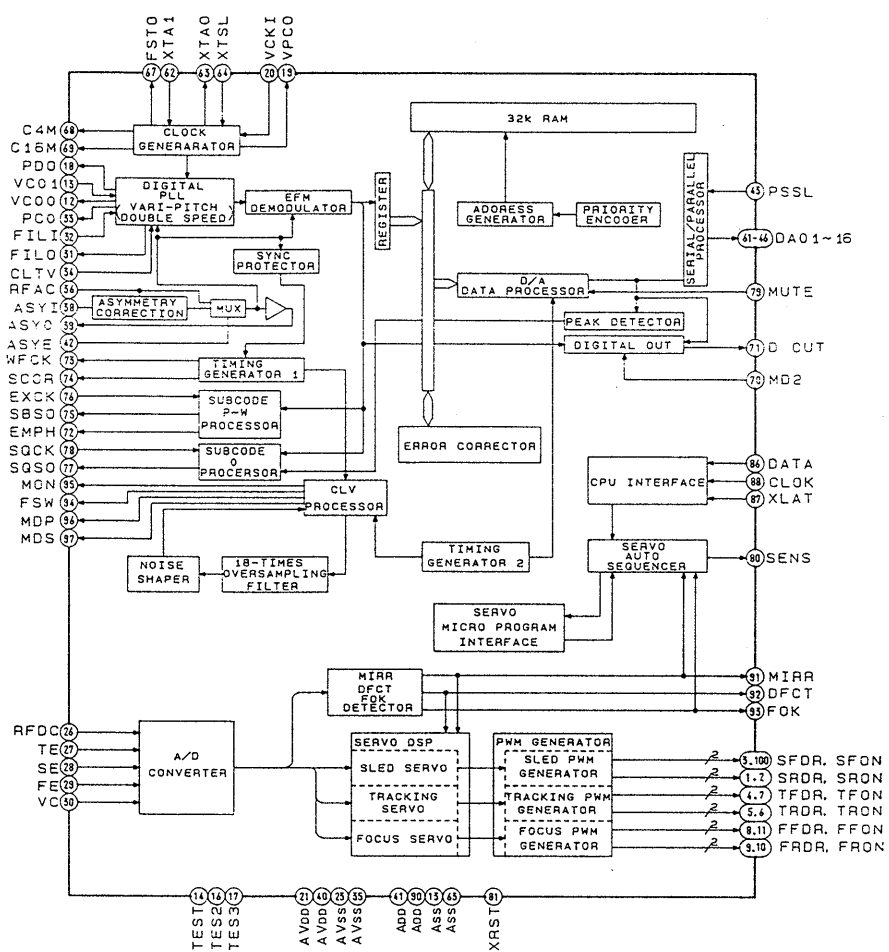
4-4. SCHEMATIC DIAGRAM
See page 17, 18 for IC Block Diagrams.
See page 19 to 22 for IC Pin Functions. (IC101, IC201)



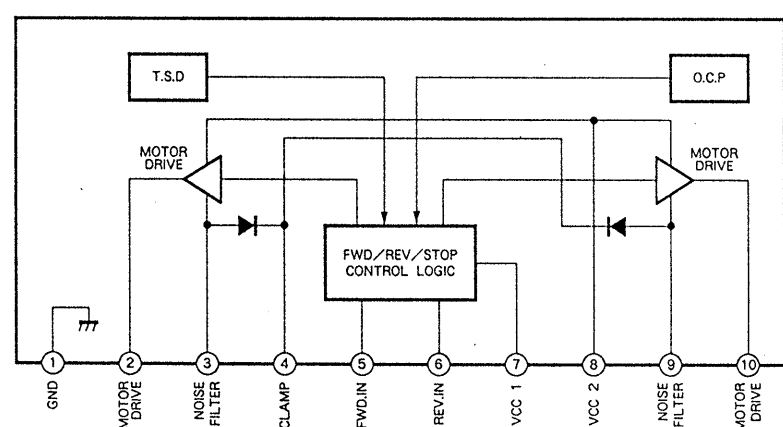
Note:
• All capacitors are in μF unless otherwise noted. pF ; μM 50WV or less are not indicated except for electrolytics and tantalums.
• All resistors are in Ω and 1/4W or less unless otherwise specified.
• Δ : Internal component.
• \square : panel designation.
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.
• — : B+ Line
• — : B- Line
• Voltage and waveforms are dc with respect to ground under no-signal conditions.
• * : can not be measured.
• Voltages are taken with a VOM (input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
• Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
• Circled numbers refer to waveforms.
• Signal path.
• \Rightarrow : CD
• \Rightarrow : digital out
• EA : Saudi Arabia model.

4-5. IC BLOCK DIAGRAMS

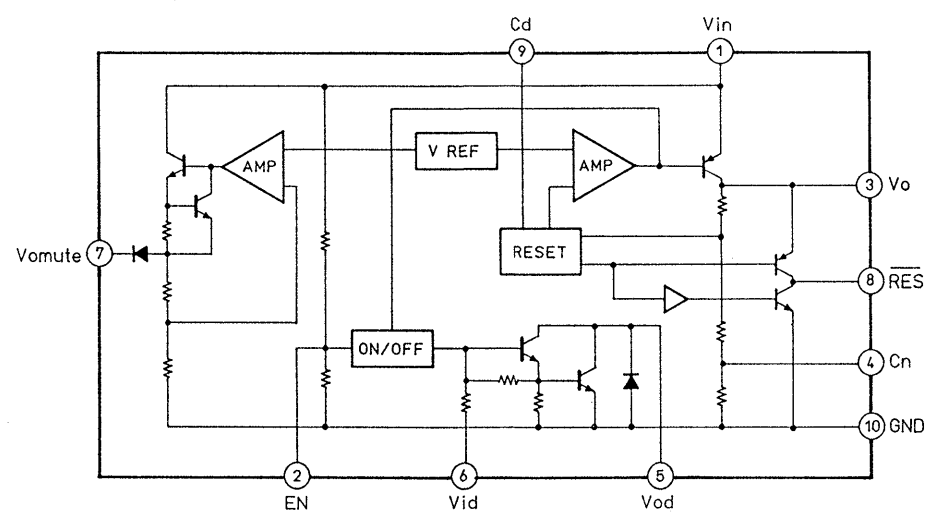
IC101 CXD2515Q



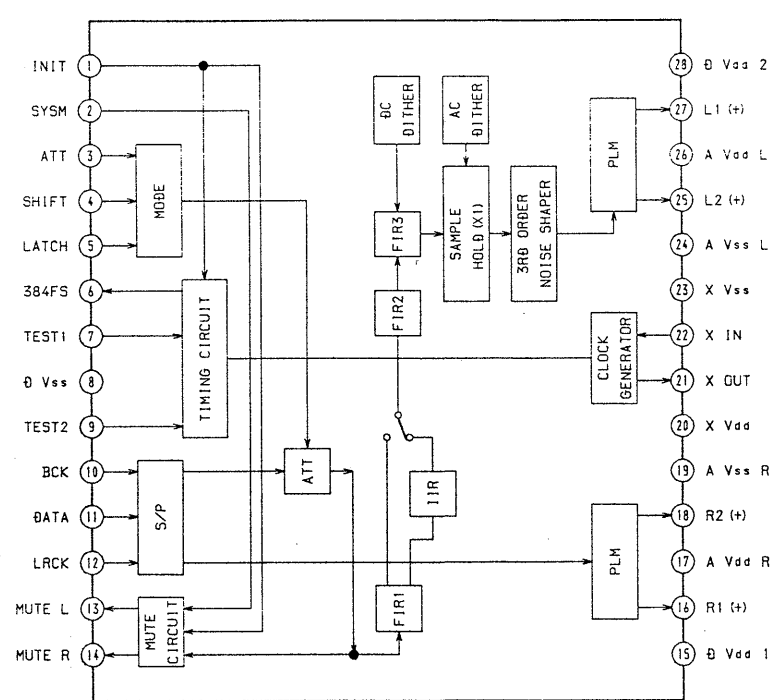
IC202 LB1641



IC901 LA5601

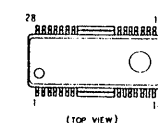


IC301 CXD2565M-1

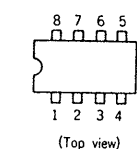


4-6. SEMICONDUCTOR LEAD LAYOUTS

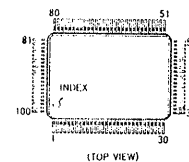
BA6297AFP



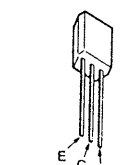
UPC4558C



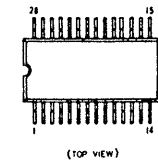
CXD2515Q



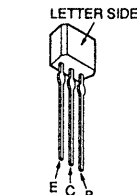
DTA144ES
DTC114ES
2SD2144S



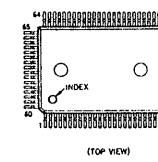
CXD2565M-1



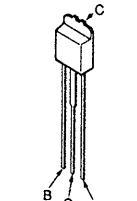
2SA1175-HFE



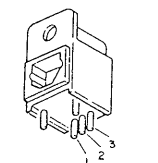
CXP82316-037Q



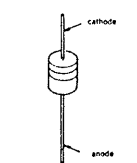
2SB1041



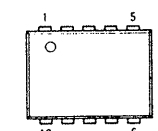
GP1F32TM



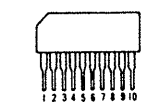
RD4.7ESB2
RD6.8ES-B3
RD30ES-B4
UZ-4.7BSB
UZ-6.8BSC
UZ-30BSD
11ES2



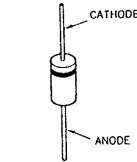
LA5601



LB1641



1N4148M



4-7. IC PIN FUNCTIONS

• IC101 Digital Servo & DSP (CXD2515Q)

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled drive output (Not used)
2	SRDR	O	Sled drive output
3	SFON	O	Sled drive output (Not used)
4	TFDR	O	Tracking drive output
5	TRON	O	Tracking drive output (Not used)
6	TRDR	O	Tracking drive output
7	TFON	O	Tracking drive output (Not used)
8	FFDR	O	Focus drive output
9	FRON	O	Focus drive output (Not used)
10	FRDR	O	Focus drive output
11	FFON	O	Focus drive output (Not used)
12	VCOO	O	VCO output for analog EFM PLL (Not used)
13	VCOI	I	VCO output for analog EFM PLL
14	TEST	I	TEST pin connected normally to GND
15	DVss	—	Digital GND
16	TES2	I	TEST pin connected normally to GND
17	TES3	I	TEST pin connected normally to GND
18	PDO	O	Charge-pump output for analog EFM PLL (Not used)
19	VPCO	O	Charge-pump output for variable pitch PLL (Not used)
20	VCKI	I	Clock input from variable pitch external VCO
21	AVD2	—	Analog power supply
22	IGEN	I	Power supply pin for operational amplifiers
23	AVS2	—	Analog GND
24	ADII	I	Input pin for A/D converter
25	ADIO	O	Operational amplifier output pin
26	RFDC	I	RF signal input
27	TE	I	Tracking error signal input
28	SE	I	Sled error signal input
29	FE	I	Focus error signal input
30	VC	I	Center voltage input pin
31	FILO	O	Filter output for master PLL
32	FILI	I	Filter input for master PLL
33	PCO	O	Charge-pump output for master PLL
34	CLTV	I	Control voltage input for master VCO
35	AVS1	—	Analog GND
36	RFAC	I	EFM signal input
37	BIAS	I	Asymmetry circuit constant current input
38	ASYI	I	Asymmetry compare voltage input
39	ASYO	O	EFM full swing output
40	AVD1	—	Analog power supply

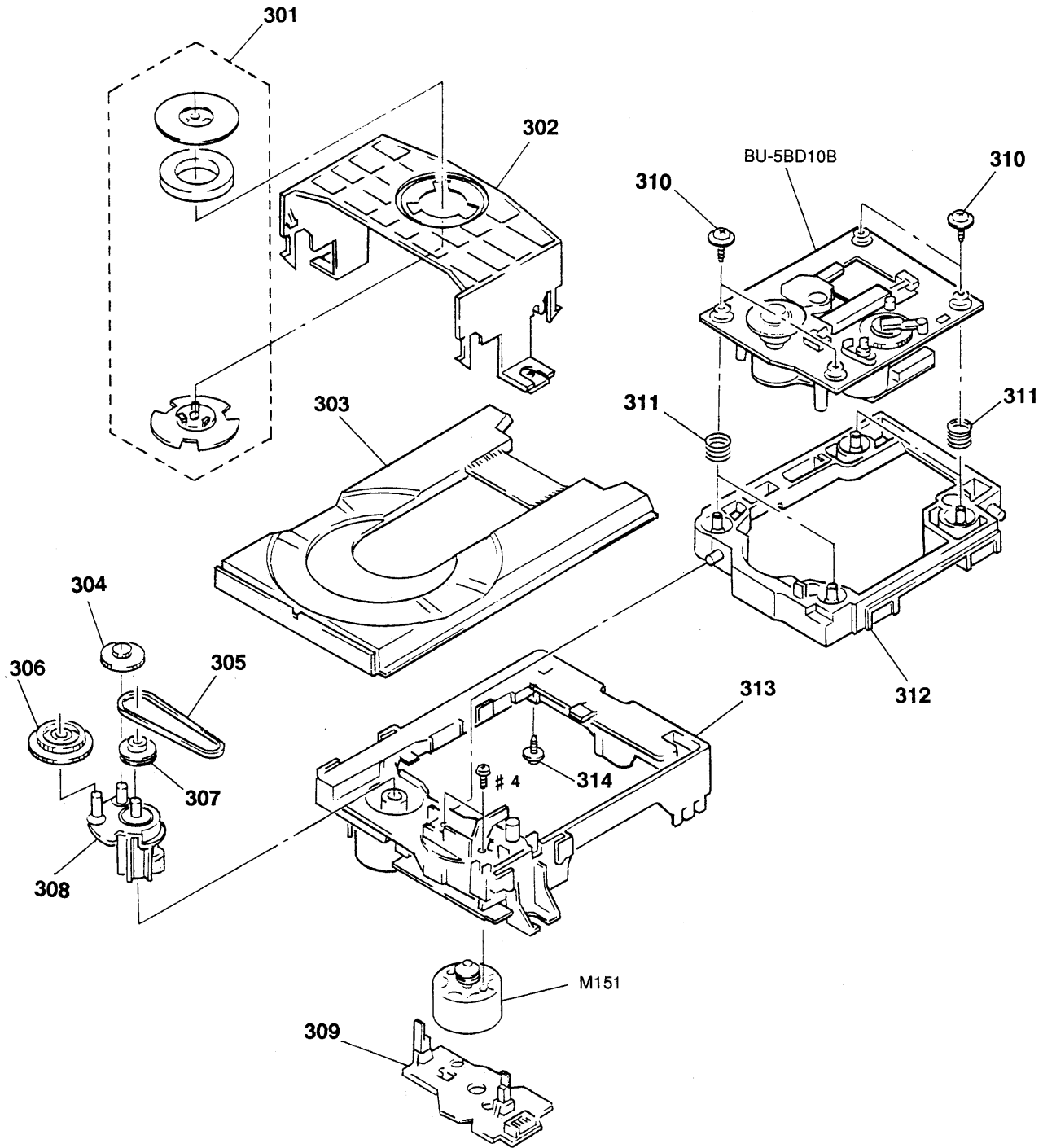
Pin No.	Pin Name	I/O	Function
41	DVDD	–	Digital power supply
42	ASYE	I	Asymmetry circuit ON/OFF
43	PSSL	I	Audio data output mode selection input
44	WDCK	O	48-bit slot D/A interface. Word clock
45	LRCK	O	48-bit slot D/A interface. LR clock
46	DATA	O	DA 16 output when PSSL=1. 48-bit slot serial data when PSSL=0
47	BCLK	O	DA 15 output when PSSL=1. 48-bit slot data when PSSL=0
48	64DATA	O	DA 14 output when PSSL=1. 64-bit slot data when PSSL=0 (Not used)
49	64BCLK	O	DA 13 output when PSSL=1. 64-bit slot data when PSSL=0 (Not used)
50	64LRCK	O	DA 12 output when PSSL=1. 64-bit slot data when PSSL=0 (Not used)
51	GTOP	O	DA 11 output when PSSL=1. GTOP output when PSSL=0 (Not used)
52	XUGF	O	DA 10 output when PSSL=1. XUGF output when PSSL=0 (Not used)
53	XPLCK	O	DA 09 output when PSSL=1. XPLCK output when PSSL=0
54	GFS	O	DA 08 output when PSSL=1. GFS output when PSSL=0
55	PFCK	O	DA 07 output when PSSL=1. RFCK output when PSSL=0
56	C2PO	O	DA 06 output when PSSL=1. C2PO output when PSSL=0 (Not used)
57	XRA0F	O	DA 05 output when PSSL=1. XRA0F output when PSSL=0 (Not used)
58	MNT3	O	DA 04 output when PSSL=1. MNT3 output when PSSL=0
59	MNT2	O	DA 03 output when PSSL=1. MNT2 output when PSSL=0
60	MNT1	O	DA 02 output when PSSL=1. MNT1 output when PSSL=0
61	MNT0	O	DA 01 output when PSSL=1. MNT0 output when PSSL=0
62	XTAI	I	X'tal oscillator circuit input
63	XTAO	O	X'tal oscillator circuit output (Not used)
64	XTSL	I	X'tal selection input pin (Connected to GND)
65	DVss	–	Digital GND
66	FSTI	I	2/3 divider output of pins 62, 63
67	FSTO	O	2/3 divider output of pins 62, 63
68	C4M	O	4.2336 MHz output (Not used)
69	C16M	O	16.9344 MHz output (Not used)
70	MD2	I	Digital-out ON/OFF control pin
71	DOUT	O	Digital-out output pin
72	EMPH	O	Playback disc output in emphasis mode (Not used)
73	WFCK	O	WFCK output
74	SCOR	O	Sub-code sync output
75	SBSO	O	Sub-P through Sub-W serial output (Not used)
76	EXCK	I	Clock input for SBS0 read-out (Connected to GND)
77	SUBQ	O	Sub-Q 80-bit output
78	SQCK	I	Clock input for SQS0 read-out
79	MUTE	I	Muting selection pin
80	SENS	O	SENS output
81	XRST	I	System reset
82	DIRC	I	Used in 1-track jump mode (Connected to +5V)
83	SCLK	I	SENS serial data read-out clock
84	DFSW	I	DFCT selection pin
85	ATSK	I	Input pin for anti-shock

Pin No.	Pin Name	I/O	Function
86	DATA	I	Serial data input, supplied from IC201 (master control)
87	XLAT	I	Latch input, supplied from IC201 (master control)
88	CLOK	I	Serial data transfer clock input, supplied from IC201 (master control)
89	COUT	O	Numbers of track counted signal output (Not used)
90	DVDD	–	Digital power supply
91	MIRR	O	Mirror signal output (Not used)
92	DFCT	O	Defect signal output (Not used)
93	FOK	O	Focus OK output
94	FSW	O	Output to select spindle motor output filter (Not used)
95	MON	O	Output to control ON/OFF of spindle motor (Not used)
96	MDP	O	Output to control spindle motor servo
97	MDS	O	Output to control spindle motor servo (Not used)
98	LOCK	O	GFS is sampled by 460 Hz. H when GFS is H (Not used)
99	SSTP	I	Input signal to detect disc inner most track
100	SFDR	O	Sled drive output

• IC201 Master Control (CXP82316-037Q)

Pin No.	Pin Name	I/O	Function
1	TIMER	—	Connected to GND.
2	BUS IN	I	Audio bus input.
3	+5V	—	Connected to +5V.
4	OPEN	—	} Not used. (open).
5	OPEN	—	
6	BUS OUT	O	Audio bus output.
7	PGML	O	Latch signal output to digital filter (IC301).
8	CLK	O	Serial clock output.
9	SENSE	I	SENSE signal input.
10	DATA	O	Serial data output.
11	SQCK	O	Read out clock output for subcode Q data.
12	SUBQ	I	Subcode Q data input.
13	OPEN	—	Not used. (open)
14	AMUTE	O	Analog muting control signal output.
15	LDON	O	Optical pickup laser diode control output.
16	XLT	O	Serial data latch signal output.
17	RV LED	O	Remote commander volume LED. (Not used. (open))
18	RV+	O	Remote commander volume +. (Not used. (open))
19	RV-	O	Remote commander volume -. (Not used. (open))
20	LDOUT	O	} Loading motor control signal output.
21	LDIN	O	
22 to 27	KEY0 to KEY5	I	Key input. (S202 to S229)
28	ADJ/AFADJ	—	ADJ, AFJ test pin.
29	IN/OUTSW	I	Loading IN/OUT switch input.
30	RST	I	Reset signal input.
31	EXTAL	I	Clock input. (4 MHz)
32	XTAL	O	Clock output. (4 MHz)
33	Vss	—	GND
34 to 41	OPEN	—	Not used. (open)
42 to 62	S1 to S21	O	FL segment output.
63 to 67	1G to 5G	O	FL grid output.
68	OPEN	—	Not used. (open).
69	6G	O	} FL grid output.
70	7G	O	
71	VFDP (-30V)	—	-30V pin for FL display tube.
72	VDD (+5V)	—	} +5V pin.
73	—	—	
74	SEL1	—	Connected to GND.
75	IN PORT	—	} Not used. (open).
76	IN PORT	—	
77	IN PORT	—	
78	SCOR	I	Read out timing signal input for subcode Q data.
79	SEL2	—	Connected to +5V.
80	SEL3	—	Connected to GND.

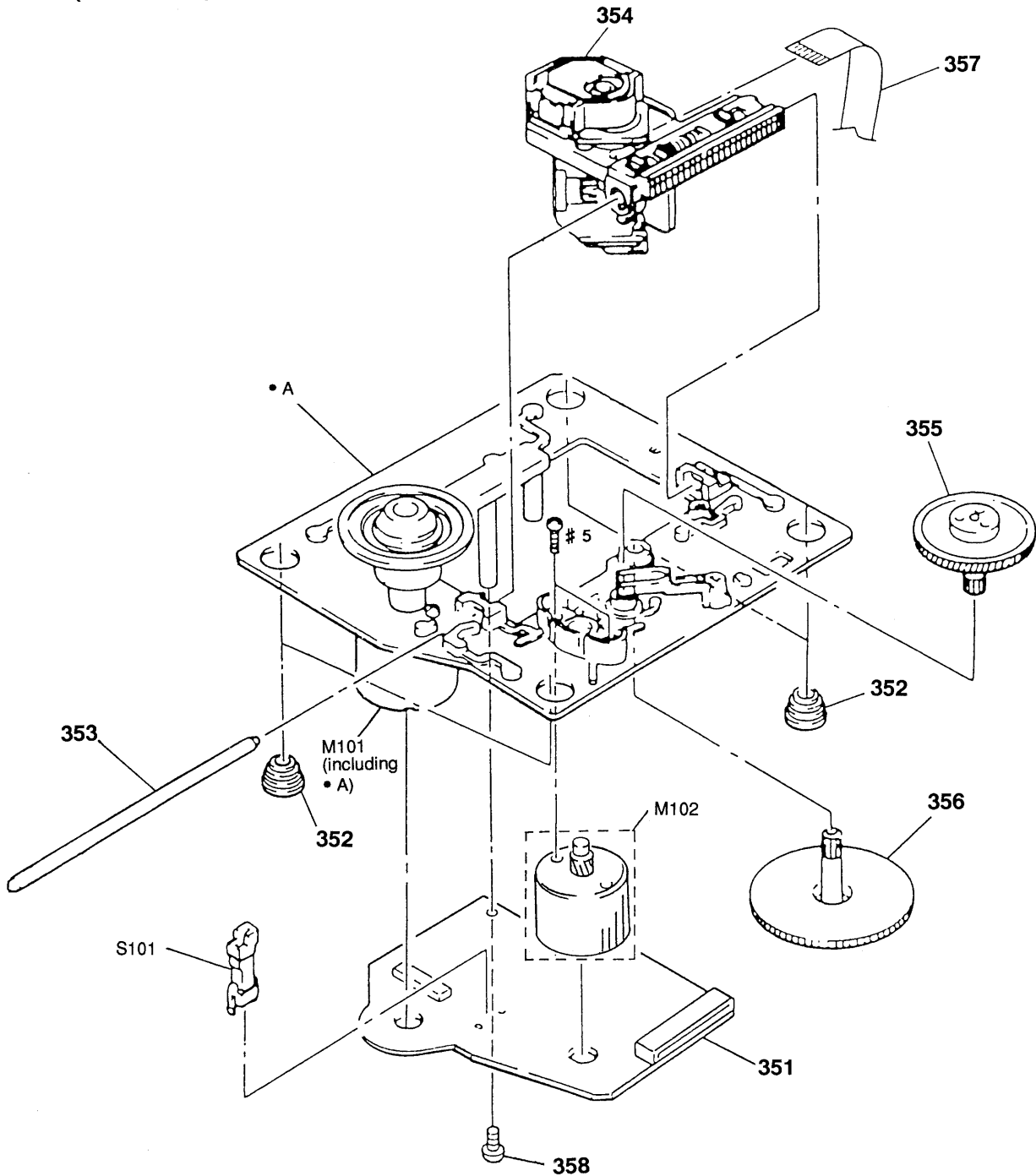
5-2. CD MECHANISM SECTION (CDM14-5BD10)



Ref. No.	Part No.	Description
* 301	1-452-538-11	MAGNET
302	4-933-110-01	HOLDER (MG)
303	4-933-112-01	TABLE, DISK
304	4-927-628-01	GEAR (C)
305	4-927-649-01	BELT
306	4-933-107-01	GEAR (PL)
307	4-927-651-01	PULLEY (S)
308	4-933-109-01	CAM

Ref. No.	Part No.	Description	Remark
* 309	1-645-721-11	LOADING BOARD	
310	4-933-134-01	SCREW (+PTPWH M2. 6X6)	
311	4-959-996-01	SPRING (932), COMPRESSION	
312	4-933-129-01	HOLDER (BU)	
313	4-933-111-01	CHASSIS (MD)	
* 314	4-917-583-21	BRACKET, YOKE	
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)	

**5-3. OPTICAL PICK-UP BLOCK SECTION
(BU-5BD10B)**



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	Ref.No.	Part No.	Description	Remark
* 351	A-4649-432-A	BD BOARD, COMPLETE		357	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
352	4-951-940-01	INSULATOR (BU)		358	4-951-620-01	SCREW (2.6X8), +BVTP	
353	4-917-565-01	SHAFT, SLED		M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
\triangle 354	8-848-144-11	OPTICAL PICK-UP BLOCK (KSS-240A)		M102	X-4917-504-1	MOTOR ASSY (SLED)	
355	4-917-567-01	GEAR (M)		S101	1-572-085-11	SWITCH, LEAF (LIMIT)	
356	4-917-564-01	GEAR (P), FLATNESS					

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

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.

- 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 difference from the original one.
- Color Indication of Appearance Parts Example:
 KNOB, BALANCE (WHITE) . . . (RED)
 ↑ ↑
 Parts color Cabinet's color
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- RESISTORS
 All resistors are in ohms
 METAL: Metal-film resistor
 METAL OXIDE: Metal Oxide-film resistor
 F : nonflammable
- SEMICONDUCTORS
 In each case, u: μ , for example:
 uA...: μ A..., uPA...: μ PA...,
 uPB...: μ PB..., uPC...: μ PC...,
 uPD...: μ PD...
- CAPACITORS
 uF : μ F
- COILS
 uH : μ H
- EA: Saudi Arabia model

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*	A-4649-432-A	BD BOARD, COMPLETE *****		R103	1-216-077-00	METAL CHIP 15K 5%	1/10W
		< CAPACITOR >		R104	1-216-085-00	METAL CHIP 33K 5%	1/10W
C101	1-163-005-11	CERAMIC CHIP 470PF 10%	50V	R105	1-216-097-00	METAL CHIP 100K 5%	1/10W
C102	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R106	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
C103	1-163-005-11	CERAMIC CHIP 470PF 10%	50V	R107	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
C105	1-135-155-21	TANTALUM CHIP 4.7uF 10%	16V	R108	1-216-073-00	METAL CHIP 10K 5%	1/10W
C106	1-164-346-11	CERAMIC CHIP 1uF	16V	R109	1-216-121-00	METAL CHIP 1M 5%	1/10W
C107	1-164-505-11	CERAMIC CHIP 2.2uF	16V	R110	1-216-025-00	METAL CHIP 100 5%	1/10W
C108	1-163-035-00	CERAMIC CHIP 0.047uF	50V	R112	1-216-049-00	METAL CHIP 1K 5%	1/10W
C109	1-163-011-11	CERAMIC CHIP 0.0015uF 10%	50V	R113	1-216-077-00	METAL CHIP 15K 5%	1/10W
C110	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V	R114	1-216-077-00	METAL CHIP 15K 5%	1/10W
C111	1-163-251-11	CERAMIC CHIP 100PF 5%	50V	R117	1-216-077-00	METAL CHIP 15K 5%	1/10W
C112	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R118	1-216-077-00	METAL CHIP 15K 5%	1/10W
C113	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R121	1-216-077-00	METAL CHIP 15K 5%	1/10W
C123	1-164-232-11	CERAMIC CHIP 0.01uF	50V	R122	1-216-077-00	METAL CHIP 15K 5%	1/10W
C124	1-164-005-11	CERAMIC CHIP 0.47uF	25V	R123	1-216-073-00	METAL CHIP 10K 5%	1/10W
C151	1-163-007-11	CERAMIC CHIP 680PF 10%	50V	R124	1-216-097-00	METAL CHIP 100K 5%	1/10W
C152	1-163-007-11	CERAMIC CHIP 680PF 10%	50V	R125	1-216-049-00	METAL CHIP 1K 5%	1/10W
C153	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R126	1-216-049-00	METAL CHIP 1K 5%	1/10W
C154	1-164-336-11	CERAMIC CHIP 0.33uF	25V	R127	1-216-049-00	METAL CHIP 1K 5%	1/10W
C155	1-163-007-11	CERAMIC CHIP 680PF 10%	50V	R131	1-216-037-00	METAL CHIP 330 5%	1/10W
C156	1-163-007-11	CERAMIC CHIP 680PF 10%	50V	R151	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
C157	1-163-033-00	CERAMIC CHIP 0.022uF	50V	R152	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
C158	1-163-033-00	CERAMIC CHIP 0.022uF	50V	R153	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
C159	1-163-023-00	CERAMIC CHIP 0.015uF 5%	50V	R154	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
C160	1-163-019-00	CERAMIC CHIP 0.0068uF 10%	50V	R155	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
C161	1-163-038-00	CERAMIC CHIP 0.1uF	25V	R156	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
		< CONNECTOR >		R157	1-216-093-00	METAL CHIP 68K 5%	1/10W
* CN101	1-568-865-11	SOCKET, CONNECTOR 23P		R158	1-216-076-00	METAL CHIP 13K 5%	1/10W
CN102	1-568-795-11	SOCKET, CONNECTOR 12P		R159	1-216-085-00	METAL CHIP 33K 5%	1/10W
		< IC >		R160	1-216-081-00	METAL CHIP 22K 5%	1/10W
IC101	8-752-361-90	IC CXD2515Q		R161	1-216-308-00	METAL CHIP 4.7 5%	1/10W
IC102	8-759-071-79	IC BA6297AFP		R162	1-216-093-00	METAL CHIP 68K 5%	1/10W
		< RESISTOR >		R163	1-216-093-00	METAL CHIP 68K 5%	1/10W
R101	1-216-077-00	METAL CHIP 15K 5%	1/10W			< SWITCH >	
R102	1-216-097-00	METAL CHIP 100K 5%	1/10W	S101	1-572-085-11	SWITCH, LEAF (LIMIT)	

DISPLAY

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4673-054-A	DISPLAY BOARD, COMPLETE (AEP) *****		R210	1-249-418-11	CARBON 1.2K 5% 1/4W F	
*	A-4673-112-A	DISPLAY BOARD, COMPLETE (E, EA) *****		R211	1-249-419-11	CARBON 1.5K 5% 1/4W F	
		< CAPACITOR >		R212	1-249-421-11	CARBON 2.2K 5% 1/4W F	
C201	1-164-159-11	CERAMIC 0.1uF 50V		R213	1-249-423-11	CARBON 3.3K 5% 1/4W F	
C202	1-164-159-11	CERAMIC 0.1uF 50V		R214	1-249-426-11	CARBON 5.6K 5% 1/4W	
C203	1-161-494-00	CERAMIC 0.022uF 25V		R215	1-249-430-11	CARBON 12K 5% 1/4W	
C204	1-164-159-11	CERAMIC 0.1uF 50V		R216	1-249-435-11	CARBON 33K 5% 1/4W	
C205	1-162-306-11	CERAMIC 0.01uF 20% 16V		R217	1-249-428-11	CARBON 8.2K 5% 1/4W F	
C206	1-162-282-31	CERAMIC 100PF 10% 50V		R218	1-249-418-11	CARBON 1.2K 5% 1/4W F	
C207	1-136-165-00	FILM 0.1uF 5% 50V		R219	1-249-419-11	CARBON 1.5K 5% 1/4W F	
		< CONNECTOR >		R220	1-249-421-11	CARBON 2.2K 5% 1/4W F	
CN201	1-750-999-11	CONNECTOR, FFC/FPC 21P		R221	1-249-423-11	CARBON 3.3K 5% 1/4W F	
CN203	1-750-185-11	CONNECTOR, BOARD TO BOARD 4P		R222	1-249-426-11	CARBON 5.6K 5% 1/4W	
		< CONNECTOR >		R223	1-249-428-11	CARBON 8.2K 5% 1/4W F	
CNP201	1-537-472-11	JUMPER, FILM (WITH TERMINAL) 23P		R224	1-249-418-11	CARBON 1.2K 5% 1/4W F	
		< DIODE >		R225	1-249-419-11	CARBON 1.5K 5% 1/4W F	
D201	8-719-109-81	DIODE RD4.7ESB2		R226	1-249-421-11	CARBON 2.2K 5% 1/4W F	
		< FLUORESCENT INDICATOR >		R227	1-249-423-11	CARBON 3.3K 5% 1/4W F	
FLD201	1-519-752-11	INDICATOR TUBE, FLUORESCENT		R228	1-249-426-11	CARBON 5.6K 5% 1/4W	
		< IC >		R229	1-249-441-11	CARBON 100K 5% 1/4W	
IC201	8-752-851-82	IC CXP82316-037Q		R230	1-249-428-11	CARBON 8.2K 5% 1/4W F	
IC202	8-759-822-09	IC LB1641		R231	1-249-428-11	CARBON 8.2K 5% 1/4W F	
		< COIL >		R232	1-249-418-11	CARBON 1.2K 5% 1/4W F	
L201	1-410-322-11	INDUCTOR 3.3uH (AEP)		R233	1-249-418-11	CARBON 1.2K 5% 1/4W F	
L202	1-410-322-11	INDUCTOR 3.3uH		R234	1-249-428-11	CARBON 8.2K 5% 1/4W F	
		< TRANSISTOR >		R235	1-249-417-11	CARBON 1K 5% 1/4W F	
Q201	8-729-900-80	TRANSISTOR DTC114ES		R236	1-249-428-11	CARBON 8.2K 5% 1/4W F	
		< RESISTOR >				< SWITCH >	
R201	1-249-428-11	CARBON 8.2K 5% 1/4W F		S202	1-554-303-21	SWITCH, TACTILE (CONTINUE)	
R202	1-249-418-11	CARBON 1.2K 5% 1/4W F		S203	1-554-303-21	SWITCH, TACTILE (SHUFFLE)	
R203	1-249-419-11	CARBON 1.5K 5% 1/4W F		S204	1-554-303-21	SWITCH, TACTILE (PROGRAM)	
R204	1-249-421-11	CARBON 2.2K 5% 1/4W F		S205	1-554-303-21	SWITCH, TACTILE (TIME)	
R205	1-249-423-11	CARBON 3.3K 5% 1/4W F		S206	1-554-303-21	SWITCH, TACTILE (REPEAT)	
R206	1-249-426-11	CARBON 5.6K 5% 1/4W		S207	1-554-303-21	SWITCH, TACTILE (FADER)	
R207	1-249-430-11	CARBON 12K 5% 1/4W		S208	1-554-303-21	SWITCH, TACTILE (△ OPEN/CLOSE)	
R208	1-249-435-11	CARBON 33K 5% 1/4W		S209	1-554-303-21	SWITCH, TACTILE (▷)	
R209	1-249-428-11	CARBON 8.2K 5% 1/4W F		S210	1-554-303-21	SWITCH, TACTILE (■)	
				S211	1-554-303-21	SWITCH, TACTILE (■)	
				S212	1-554-303-21	SWITCH, TACTILE (◀◀/▶▶)	
				S213	1-554-303-21	SWITCH, TACTILE (▷▶/◀◀)	
				S214	1-554-303-21	SWITCH, TACTILE (EDIT)	
				S215	1-554-303-21	SWITCH, TACTILE (1)	
				S216	1-554-303-21	SWITCH, TACTILE (2)	
				S217	1-554-303-21	SWITCH, TACTILE (3)	
				S218	1-554-303-21	SWITCH, TACTILE (4)	
				S219	1-554-303-21	SWITCH, TACTILE (5)	
				S220	1-554-303-21	SWITCH, TACTILE (6)	
				S221	1-554-303-21	SWITCH, TACTILE (7)	
				S222	1-554-303-21	SWITCH, TACTILE (8)	
				S223	1-554-303-21	SWITCH, TACTILE (9)	

DISPLAY

LOADING

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
S224	1-554-303-21	SWITCH, TACTILE (10)		C317	1-162-290-31	CERAMIC 470PF 10%	50V
S225	1-554-303-21	SWITCH, TACTILE (M. SCAN)		C321	1-162-215-31	CERAMIC 47PF 5%	50V
S226	1-554-303-21	SWITCH, TACTILE (P. SEARCH)		C322	1-162-215-31	CERAMIC 47PF 5%	50V
S227	1-554-303-21	SWITCH, TACTILE (CHECK)		C323	1-162-215-31	CERAMIC 47PF 5%	50V
S228	1-554-303-21	SWITCH, TACTILE (CLEAR)		C324	1-162-215-31	CERAMIC 47PF 5%	50V
S229	1-554-303-21	SWITCH, TACTILE (>10)		C325	1-124-126-00	ELECT 47uF 20%	16V
		< VIBRATOR >		C326	1-124-126-00	ELECT 47uF 20%	16V
X201	1-577-358-21	VIBRATOR, CERAMIC (4MHz)		C327	1-130-472-00	MYLAR 0.0012uF 5%	50V
*****				C328	1-130-472-00	MYLAR 0.0012uF 5%	50V
*	1-645-721-11	LOADING BOARD		C329	1-130-479-00	MYLAR 0.0047uF 5%	50V
		*****		C330	1-130-479-00	MYLAR 0.0047uF 5%	50V
		< CONNECTOR >		C331	1-124-126-00	ELECT 47uF 20%	16V
* CN151	1-568-943-11	PIN, CONNECTOR 5P		C332	1-124-126-00	ELECT 47uF 20%	16V
		< MOTOR >		C333	1-130-468-00	MYLAR 560PF 5%	50V
M151	A-4640-363-A	MOTOR (L) ASSY (LOADING)		C334	1-130-468-00	MYLAR 560PF 5%	50V
		< SWITCH >		C351	1-136-165-00	FILM 0.1uF 5%	50V (AEP)
S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)		C401	1-124-126-00	ELECT 47uF 20%	16V
S152	1-572-086-11	SWITCH, LEAF (LOAD IN)		C402	1-164-159-11	CERAMIC 0.1uF	50V
*****				C403	1-164-159-11	CERAMIC 0.1uF	50V
*	A-4673-053-A	MAIN BOARD, COMPLETE (AEP)		C901	1-124-894-11	ELECT 6800uF 20%	16V (AEP)
		*****		C901	1-126-768-11	ELECT 2200uF 20%	16V (E, EA)
*	A-4673-055-A	MAIN BOARD, COMPLETE (E, EA)		C902	1-126-939-11	ELECT 10000uF 20%	16V
		*****		C903	1-128-576-11	ELECT 100uF 20%	63V
		< CAPACITOR >		C904	1-164-159-11	CERAMIC 0.1uF	50V
C301	1-126-923-11	ELECT 220uF 20%	10V	C908	1-126-964-11	ELECT 10uF 20%	50V
C302	1-126-923-11	ELECT 220uF 20%	10V	C909	1-126-964-11	ELECT 10uF 20%	50V
C303	1-161-494-00	CERAMIC 0.022uF	25V	C910	1-126-934-11	ELECT 220uF 20%	16V
C305	1-161-494-00	CERAMIC 0.022uF	25V (E, EA)	C911	1-162-294-31	CERAMIC 0.001uF 10%	50V
C305	1-164-159-11	CERAMIC 0.1uF	50V (AEP)	C912	1-126-964-11	ELECT 10uF 20%	50V
C306	1-161-494-00	CERAMIC 0.022uF	25V (E, EA)	C913	1-126-934-11	ELECT 220uF 20%	16V
C306	1-164-159-11	CERAMIC 0.1uF	50V (AEP)	C914	1-124-903-11	ELECT 1uF 20%	50V
C307	1-162-282-31	CERAMIC 100PF 10%	50V	C915	1-126-964-11	ELECT 10uF 20%	50V
C308	1-162-282-31	CERAMIC 100PF 10%	50V	C916	1-126-964-11	ELECT 10uF 20%	50V
C309	1-161-494-00	CERAMIC 0.022uF	25V	C917	1-126-964-11	ELECT 10uF 20%	50V
C310	1-161-494-00	CERAMIC 0.022uF	25V	C918	1-164-159-11	CERAMIC 0.1uF	50V
C311	1-124-126-00	ELECT 47uF 20%	16V			< CONNECTOR >	
C312	1-124-126-00	ELECT 47uF 20%	16V	CN301	1-750-999-11	CONNECTOR, FFC/FPC 21P	
C313	1-162-196-31	CERAMIC 5.6PF 10%	50V	* CN401	1-565-561-11	PIN, CONNECTOR 3P	
C314	1-162-196-31	CERAMIC 5.6PF 10%	50V	* CN901	1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P	
C315	1-164-159-11	CERAMIC 0.1uF	50V			< DIODE >	
C316	1-126-933-11	ELECT 100uF 20%	16V	D401	8-719-987-63	DIODE 1N4148M	
				D901	8-719-200-82	DIODE 11ES2	
				D902	8-719-200-82	DIODE 11ES2	
				D903	8-719-200-82	DIODE 11ES2	
				D904	8-719-200-82	DIODE 11ES2	
				D905	8-719-200-82	DIODE 11ES2	
				D906	8-719-987-63	DIODE 1N4148M	
				D907	8-719-109-98	DIODE RD6.8ES-B3	

MAIN POWER

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D908	8-719-113-90	DIODE RD30ES-T2B4		R325	1-249-437-11	CARBON 47K 5% 1/4W	
D909	8-719-987-63	DIODE 1N4148M		R326	1-249-437-11	CARBON 47K 5% 1/4W	
D910	8-719-987-63	DIODE 1N4148M		R327	1-249-437-11	CARBON 47K 5% 1/4W	
D911	8-719-987-63	DIODE 1N4148M		R328	1-249-437-11	CARBON 47K 5% 1/4W	
D912	8-719-987-63	DIODE 1N4148M		R329	1-249-419-11	CARBON 1.5K 5% 1/4W F	
D913	8-719-987-63	DIODE 1N4148M		R330	1-249-419-11	CARBON 1.5K 5% 1/4W F	
< IC >				R331	1-249-419-11	CARBON 1.5K 5% 1/4W F	
IC301	8-752-360-60	IC CXD2565M-1		R332	1-249-419-11	CARBON 1.5K 5% 1/4W F	
IC302	8-759-145-58	IC UPC4558C		R333	1-247-891-00	CARBON 330K 5% 1/4W	
IC303	8-759-145-58	IC UPC4558C		R334	1-247-891-00	CARBON 330K 5% 1/4W	
IC351	8-759-265-78	IC GPIF32TN (DIGITAL OUT OPTICAL) (AEP)		R335	1-249-417-11	CARBON 1K 5% 1/4W F	
IC901	8-759-821-93	IC LA5601		R336	1-249-417-11	CARBON 1K 5% 1/4W F	
< JACK >				R337	1-249-421-11	CARBON 2.2K 5% 1/4W F	
J301	1-750-679-21	JACK, PIN 2P (LINE OUT)		R338	1-249-421-11	CARBON 2.2K 5% 1/4W F	
< COIL >				R401	1-249-429-11	CARBON 10K 5% 1/4W	
L301	1-410-507-11	INDUCTOR 6.8uH (AEP)		R402	1-249-417-11	CARBON 1K 5% 1/4W F	
L302	1-410-322-11	INDUCTOR 3.3uH		R403	1-249-393-11	CARBON 10 5% 1/4W F	
L303	1-410-322-11	INDUCTOR 3.3uH		R901	1-249-432-11	CARBON 18K 5% 1/4W	
L304	1-247-807-11	CARBON 100 5% 1/4W (E, EA)		R902	1-249-432-11	CARBON 18K 5% 1/4W	
L304	1-410-507-11	INDUCTOR 6.8uH (AEP)		R903	1-249-441-11	CARBON 100K 5% 1/4W	
L351	1-410-322-11	INDUCTOR 3.3uH (AEP)		R904	1-249-441-11	CARBON 100K 5% 1/4W	
L401	1-410-322-11	INDUCTOR 3.3uH		R905	1-249-432-11	CARBON 18K 5% 1/4W	
L901	1-408-429-00	INDUCTOR 470uH		R906	1-249-425-11	CARBON 4.7K 5% 1/4W F	
< TRANSISTOR >				R907	1-249-385-11	CARBON 2.2 5% 1/6W F	
Q301	8-729-922-37	TRANSISTOR 2SD2144S		R908	1-247-807-11	CARBON 100 5% 1/4W	
Q302	8-729-922-37	TRANSISTOR 2SD2144S		R909	1-249-441-11	CARBON 100K 5% 1/4W	
Q401	8-729-900-80	TRANSISTOR DTC114ES		R910	1-249-421-11	CARBON 2.2K 5% 1/4W F	
Q901	8-729-019-64	TRANSISTOR 2SB1041		R911	1-249-404-00	CARBON 82 5% 1/4W	
Q902	8-729-119-76	TRANSISTOR 2SA1175-HFE		< SWITCH >			
Q903	8-729-900-65	TRANSISTOR DTA144ES		△SW901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (E, EA)	
< RESISTOR >				< TRANSFORMER >			
R301	1-249-418-11	CARBON 1.2K 5% 1/4W F		△T901	1-423-979-11	TRANSFORMER, POWER (AEP)	
R302	1-249-409-11	CARBON 220 5% 1/4W F (AEP)		△T901	1-426-622-11	TRANSFORMER, POWER (E, EA)	
R302	1-249-411-11	CARBON 330 5% 1/4W (E, EA)		< VIBRATOR >			
R303	1-249-417-11	CARBON 1K 5% 1/4W F		X301	1-579-833-21	VIBRATOR, CRYSTAL (33.8688MHz) (E, EA)	
R304	1-249-436-11	CARBON 39K 5% 1/4W		X301	1-579-834-11	VIBRATOR, CRYSTAL (33.8688MHz) (AEP)	
R305	1-249-436-11	CARBON 39K 5% 1/4W		*****			
R306	1-247-807-11	CARBON 100 5% 1/4W		*	1-650-484-11	POWER BOARD	
R307	1-249-425-11	CARBON 4.7K 5% 1/4W F				*****	
R308	1-249-436-11	CARBON 39K 5% 1/4W		< CONNECTOR >			
R309	1-249-436-11	CARBON 39K 5% 1/4W		CN204	1-750-194-11	CONNECTOR, BOARD TO BOARD 4P	
R321	1-249-431-11	CARBON 15K 5% 1/4W					
R322	1-249-431-11	CARBON 15K 5% 1/4W					
R323	1-249-431-11	CARBON 15K 5% 1/4W					
R324	1-249-431-11	CARBON 15K 5% 1/4W					

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

POWER

Ref.No.	Part No.	Description	Remark
		< SWITCH >	
S201	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	

		MISCELLANEOUS	

7	1-751-947-11	WIRE (FLAT TYPE) (21 CORE)	
△17	1-575-651-71	CORD, POWER (AEP, EA)	
△17	1-575-656-21	CORD, POWER (E)	
△18	1-569-007-11	ADAPTER, CONVERSION 2P (E)	
△18	1-569-008-11	ADAPTER, CONVERSION 2P (EA)	
19	1-251-199-11	CAP (OPT) (AEP)	
* 301	1-452-538-11	MAGNET	
△354	8-848-144-11	OPTICAL PICK-UP BLOCK (KSS-240A)	
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)	
△T901	1-426-622-11	TRANSFORMER, POWER (E, EA)	
△T901	1-423-979-11	TRANSFORMER, POWER (AEP)	

		ACCESSORIES & PACKING MATERIALS	

	1-558-271-11	CORD, CONNECTION (AUDIO) (108cm AEP)	
*	4-922-998-06	CUSHION (four pieces in one package)	
*	4-948-882-51	INDIVIDUAL CARTON (Made in FRANCE)	
*	4-965-377-01	INDIVIDUAL CARTON (Made in JAPAN)	

		HARDWARE LIST	

#1	7-682-548-04	SCREW +BVTT 3X8 (S)	
#2	7-682-547-09	SCREW +BVTT 3X6 (S)	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#4	7-621-775-10	SCREW +B 2.6X4	
#5	7-621-255-15	SCREW +P 2X3	

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