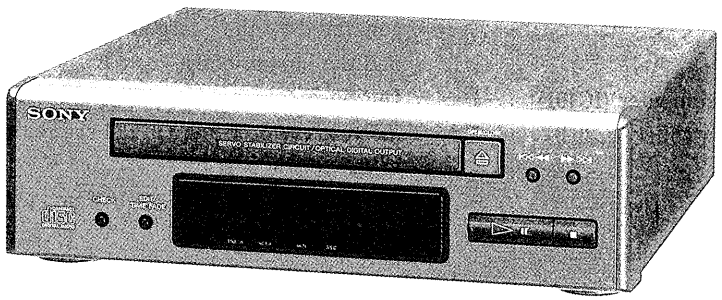
CDP-H4700

SERVICE MANUAL

AEP Model
E Model
Australian Model
Tourist Model



This set is the CD player section in FH-E858, MHC-4700.

Model Name Using Similar Mechanism	CDP-H3700
CD Mechanism Type	CDM13BA-5BD3
Optical Pick-Up Block Type	BU-5BD3

SPECIFICATIONS

System	Compact disc digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max. 44.6 μW* * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.
Signal to noise ratio	More than 90 dB
Dynamic range	More than 90 dB
Harmonic distortion	Less than 0.05% (at 1 kHz)
Channel separation	More than 90 dB
Output level	2 V (at 50 kilohms)
Load impedance	More than 10 kilohms
Outputs	DIGITAL OUT OPTICAL (optical output connector): wave length 660 nm, output level –18 dBm

Design and specifications subject to change without notice.

For the European countries.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

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

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.

使用時は添付資料も参照のこと
Refer to the additional documents.

COMPACT DISC PLAYER

SONY®

TABLE OF CONTENTS

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

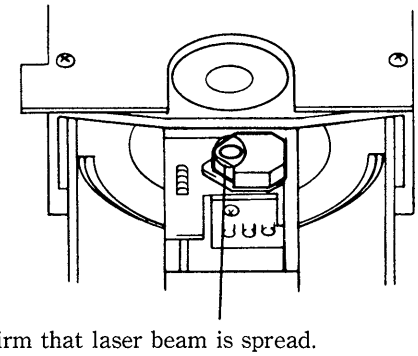
The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential diference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

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

LASER DIODE AND FOCUS SERCH OPERATION CHECK

1. Make POWER switch on with no disc inserted and disc table closed.
2. Confirm that the following operation is performed while observing the objective lens.

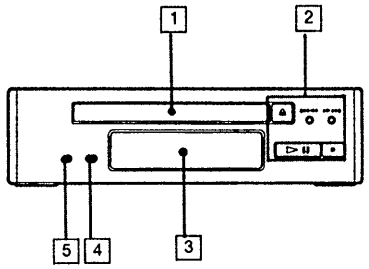


- Confirm that laser beam is spread.
- Up and down motion of the objective lens. (3 times)

SECTION 1
GENERAL

This section is extracted from instruction manual.

1-1. PARTS IDENTIFICATION



1 Disc tray
2 CD operation buttons
⏏ : OPEN/CLOSE
▷II : Play/pause
■ : Stop
⏮ ◀◀ ▶▶ ⏭ : Manual search (when kept depressed)/Automatic Music Sensor (when pressed)
3 Display window
4 EDIT/TIME FADE button (86) (98)
5 CHECK button

SECTION 2
TEST MODES

2-1. Test Mode of Display Microcomputer (IC401)

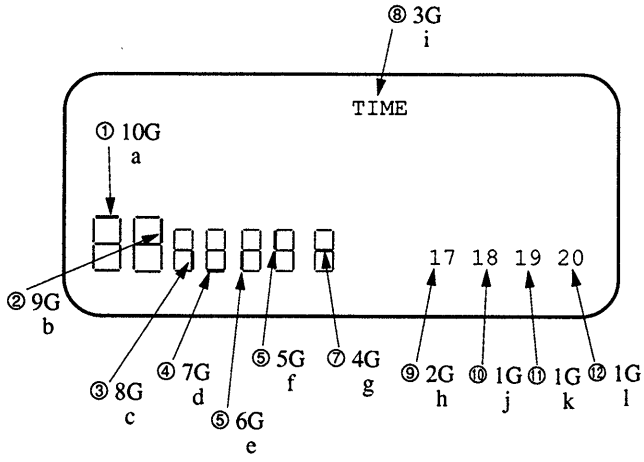
Connect Pin ㉝ of IC401 to ground and turn ON the POWER switch, thus you can test the following 3 tests.

(1) All FL tube ON

This mode is actuated immediately after turning ON the POWER switch.

(2) FL tube segment check

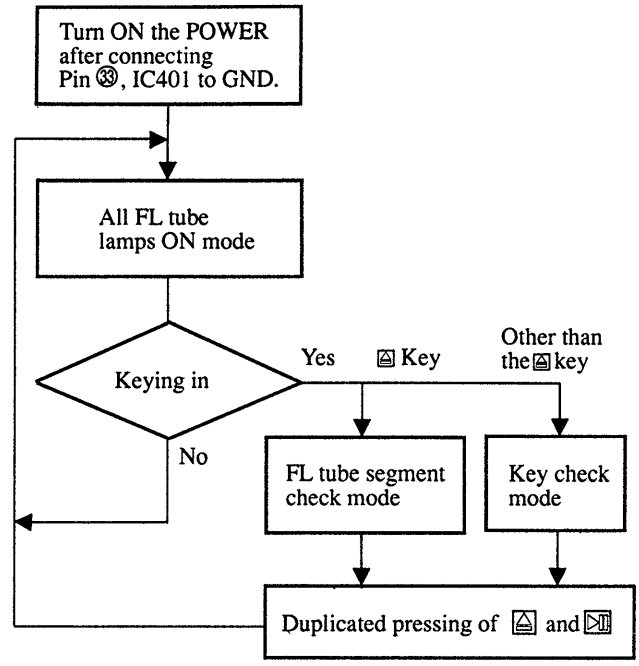
This mode is actuated by pressing the ⏏ key in the state of (1). Every time the ⏏ key is pressed, the segments are indicated sequentially from the segment a. When the last 1 segment is displayed, keying in is no longer accepted while continuing the lighting-up state of the last segment. Conditions are normal provided all lamps light up in the following order.



(3) KEY check

This mode is effected by pressing the ⏏ key in the state of (1), while indicating "1." Every time a new key is pressed subsequently, the indicated number is incremented. Conditions are normal provided "7" is indicated when all types of keys are pressed. Even if a key is pressed again, it is not counted.

* To leave the mode (2) or (3), press the ⏏ and ⏯ keys in duplication, thereby the mode returning to all ON mode.



2-2. Test Modes of CD System Controller (IC202)

(1) ADJUST mode

When this mode is effected, the machine is operated normally except for the following.

- When pin ⑲, IC201 (ADJ) is set to "L" after turning ON the POWER switch:

1. GFS is no longer monitored during PLAY, PAUSE or SEARCH, while not stopping even with GFS remaining still at "L" (NG).
2. No high-speed feeding is activated during SEARCH.
3. Focus gain is reset to normal gain during PLAY (normally, the gain is lowered to reduce noise when FOCUS is locked).

- When Pin ⑬, IC201 (AFADJ) is set to "L" after turning ON the POWER switch:

1. Regardless of Pin ⑲ (ADJ) of the CLV-S fixed function, the CLV mode during PLAY becomes CLV-S (rough servo) only while Pin e remains "L".

(2) AFADJUST mode

In this mode, it is possible to check the interface between the display micon (IC401) and CD syscon (IC201).

- Set Pin ⑬, IC201 (AFADJ) to "L" before turning ON the POWER switch.

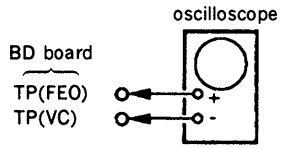
1. Every time the ⏏ key is pressed after turning On the POWER switch, indication on the FL tube is switched correspondingly. Conditions are normal provided the indication repeats the 4 patterns including all lamp ON.

SECTION 3
ELECTRICAL BLOCK CHECKING

Note :

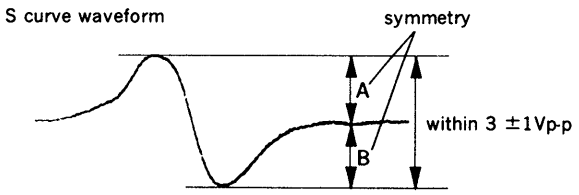
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal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

S Curve Check



Procedure :

1. Connect oscilloscope to test point TP (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±1Vp-p.

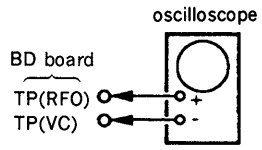


5. After check, remove the lead wire connected in step 2.

Note : • Try to mesure 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

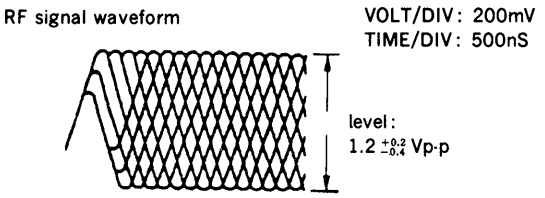


Procedure :

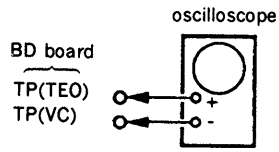
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

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

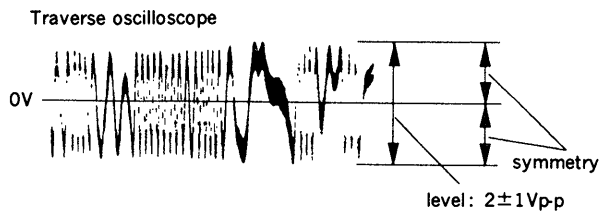


E-F Balance Check



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 osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

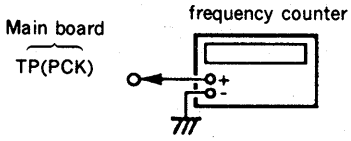


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

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



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

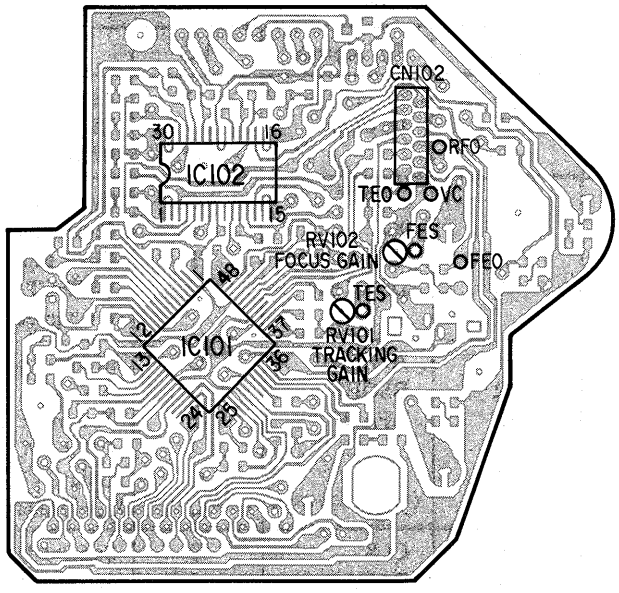
Focus/Tracking Gain

This gain has a margin, so even if it is slightly off.
There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

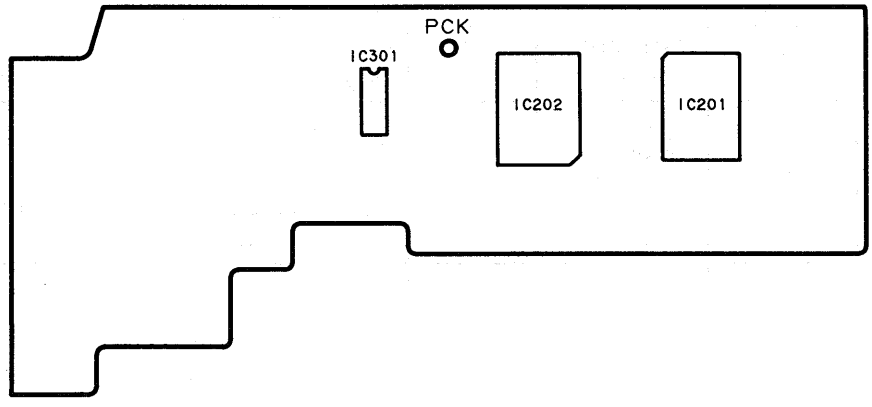
Checking Location :

【BD Board】

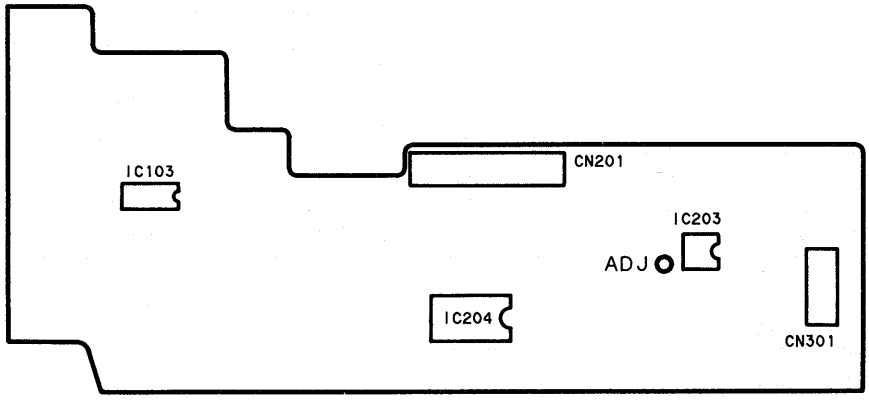
—Conductor Side—



【MAIN Board】 —Component Side—



【MAIN Board】 —Conductor Side—



SECTION 4
DIAGRAMS

4-1. PIN DESCRIPTION

• IC201 CD System Controller (μPD75116GF-F21-3BE)

Functions effected by the captioned controller include IC101 (RF signal processing, servo), IC202 (DSP, digital filter) and loading control in the CD unit, data exchange with IC401 (display controller), audio bus entry, etc.

Pin No.	Pin Name	I/O	Description
1-2	G MUTE, GCLR	O	Not in use with the model (open).
3	DPCLK	O	Display data transfer clock output to IC401 (display micon)
4-6		O	IC204 (CXD2554M) control output.
7	$\overline{\text{RESET}}$	I	System reset input. "L": Reset
8	X2	I	Clock input
9	X1	I	Clock input (4 MHz)
10	DFCT SW	O	DEFECT circuit ON/OFF switching output of IC101 (CXA1372Q). It is turned OFF ("H") to focus-search the DISC flaw detection circuit.
11	AMUTE	O	Muting control output. "H": Mute
12	BSOUT	O	Audio bus output
13	AFADJ	I	Test mode input. Various test operations are effected upon "L" after turning ON the POWER.
14	LDON	O	Optical pickup laser diode ON/OFF switching output. "H": ON
15	XLT	O	Serial data latch output to IC202 (CXD2500AQ)
16	CLK	O	Serial data transfer clock output to IC202 (CXD2500AQ)
17	DATA	O	Serial data output to IC202 (CXD2500AQ)
18	MODE	I	Not in use with the model (GND)
19	ADJ	I	Test mode input. Upon "L," GFS checking is disabled while continuously rotating the spindle no matter whether frame synch is issued during PLAY, PAUSE or SEARCH.
20	GFS	I	GFS signal input from IC202 (CXD2500AQ). "L": NG "H": OK
21	FOK	I	Focus OK signal input from IC101 (CXA1372Q). "H": OK
22 - 23		O	Not in use with the model (open)
24	LODOUT	O	Output to rotate M291 (loading motor) in the loading out direction. *1
25	LODIN	O	Output to rotate M291 (loading motor) in the loading in direction. *1
26	Vss	–	Power terminal (GND)
27	$\overline{\text{IN SW}}$	I	S292 (Loading in switch) input
28	$\overline{\text{OUT SW}}$	I	S291 (Loading out switch) input
29	KEY REQ	I	Key data request input from IC401 (display controller)
30	BS IN	I	Audio bus input
31 - 36			Not in use with the model (GND)
37	SENS	I	SENS input from IC101 (CXA1372Q) and IC202 (CXD2500AQ)
38	$\overline{\text{TIMER}}$	I	Not in use with the model (pull up)
39	D/F 16BIT	I	IC202 (CXD2500AQ) digital filter mode setting input. It is fixed at 16 bit, 4fs with the model (pull up).
40		I	Not in use with the model (GND)
41	SUBQ	I	Subcode Q data input from IC202 (CXD2500AQ)
42		O	Not in use with the model (open)
43	SQCLK	O	Subcode Q data readout clock output to IC202 (CXD2500AQ)
44	SCOR	I	Subcode sync S0 + S1 detection input from IC202 (CXD2500AQ)
45 - 56		O	Not in use with the model (open)
57	N.C.	I	Not in use with the model (+5V)
58	V_{DD}	–	Power terminal (+5V)
59 - 62	DPDATA3-0	I/O	Key data input and display data output with IC401 (display controller)
63 - 64		O	Not in use with the model (open)

*1 Loading motor control

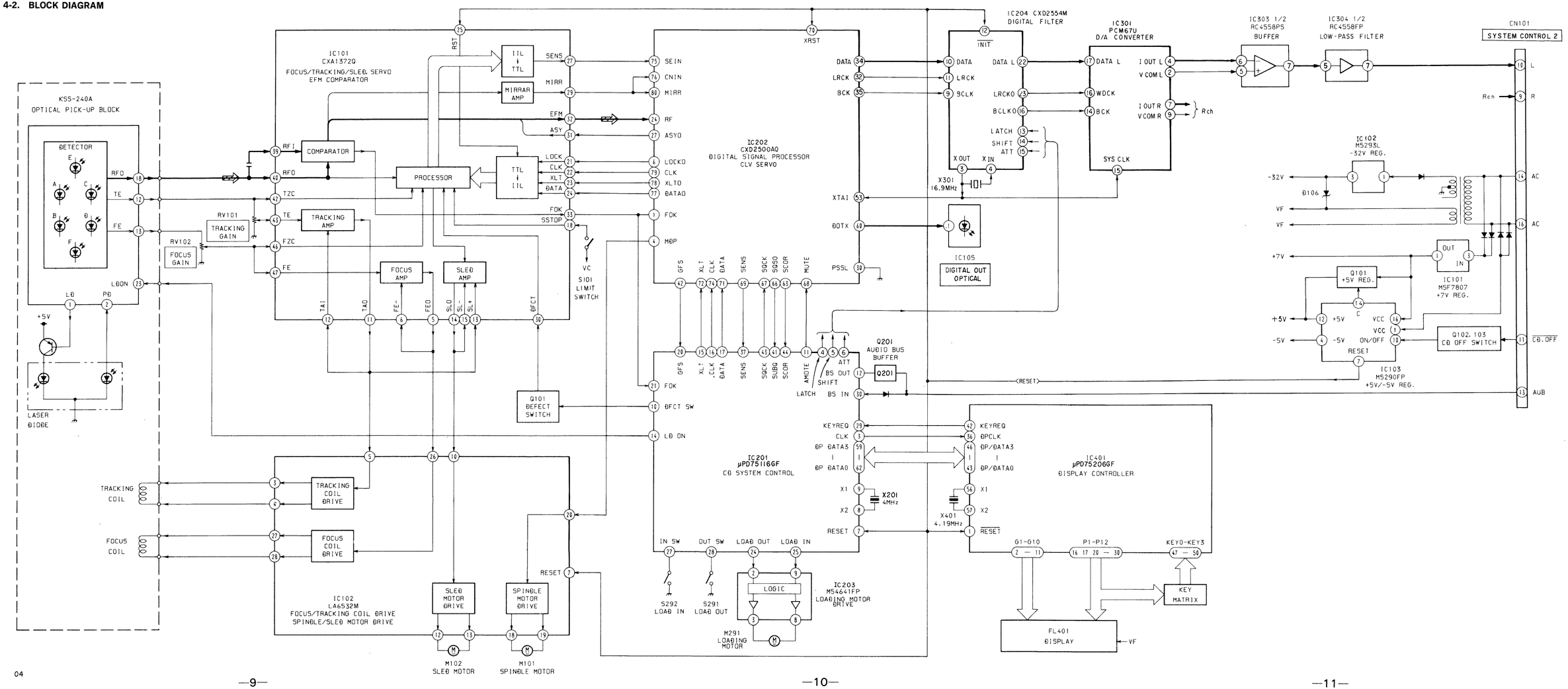
	IN	OUT	BRAKE
LODOUT ㉔	L	H	H
LODIN ㉕	H	L	H

• IC401 Display controller (μPD75206GF-716-3BE)

In charge of displaying the FL tube and keying in, it exchanges data with the IC201 (CD system controller) in 4-bit parallel mode.

Pin No.	Pin Name	I/O	Description
1	$\overline{\text{RESET}}$	I	System reset input. "L": Reset
2 - 11	G1-10	O	Digital output to the FL tube
12 - 15		O	Not in use with the model (open)
16, 17	l, k	O	FL tube segment output
18	VLOAD	–	Power supply for the FL tube controller (builtin) (-32V)
19	VPRE	–	Power supply for the FL tube predriver (-3.5V)
20 - 25	j ~ e	O	FL tube segment output
26	V_{DD}	–	Power terminal (+5V)
27, 28	d, c	O	FL tube segment output
29, 30	b, a	O	FL tube segment, key scan output
31, 32		I	Not in use with the model (GND)
33	$\overline{\text{TEST}}$	I	Test mode input. "L": Test mode
34	SELECT	I	Not in use with the model (pull up)
35	BSIN	I	Not in use with the model (pull up)
36	DPCLK	I	Display data transfer clock input from IC201 (CD system controller)
37, 38		I	Not in use with the model (pull up)
39		O	Not in use with the model (pull up)
40, 41		O	Not in use with the model (open)
42	KEY REQ	O	Key data request output to IC201 (CD system controller)
43 - 46	DPDATA0-3	I/O	Key data output and display data input with IC201 (CD system controller)
47 - 50	KEY0-3	I	Key data input
51, 52		I	Not in use with the model (pull up)
53, 54		I	Not in use with the model (GND)
55		O	Not in use with the model (open)
56	X1	I	System clock input (4.19 MHz)
57	X2	I	System clock input
58	Vss	–	Power supply terminal (GND)
59		I	Not in use with the model (GND)
60 - 64		O	Not in use with the model (open)

4-2. BLOCK DIAGRAM



CDP-H4700 CDP-H4700

4-3. PRINTED WIRING BOARDS

• Refer to page 22 for Semiconductor Lead Layouts.

• Semiconductor Location

Except BD Board

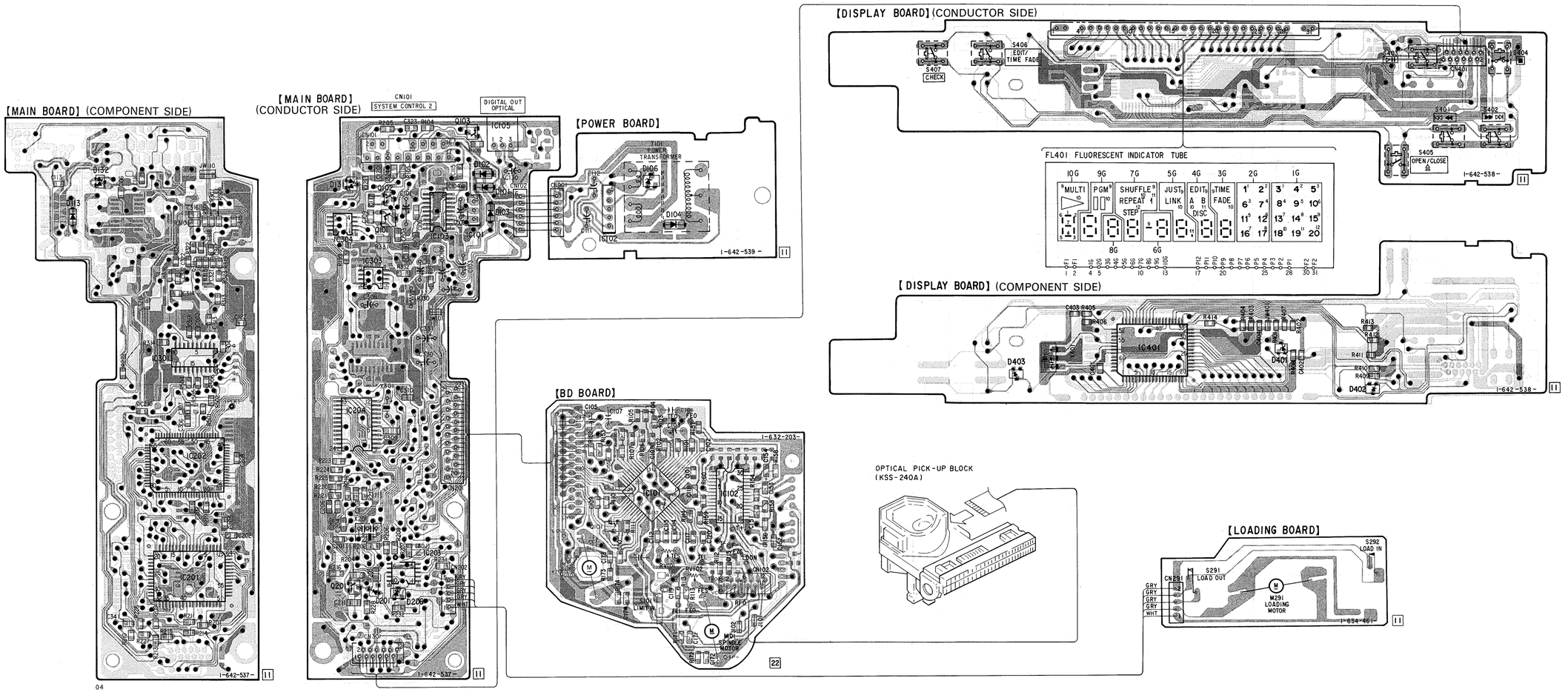
Ref. No.	Location
D101	C-7
D102	C-6
D103	C-7
D104	D-9
D106	C-8
D113	C-2
D131	C-5
D132	C-2
D201	H-5
D206	H-6
D401	E-16
D402	F-17
D403	E-13
IC101	D-6
IC102	C-8
IC103	D-6
IC105	B-7
IC201	H-3
IC202	F-3
IC203	H-6
IC204	F-5
IC301	E-3
IC303	D-5
IC304	D-5
IC401	E-14
Q101	D-5
Q102	C-5
Q103	B-6
Q201	H-5

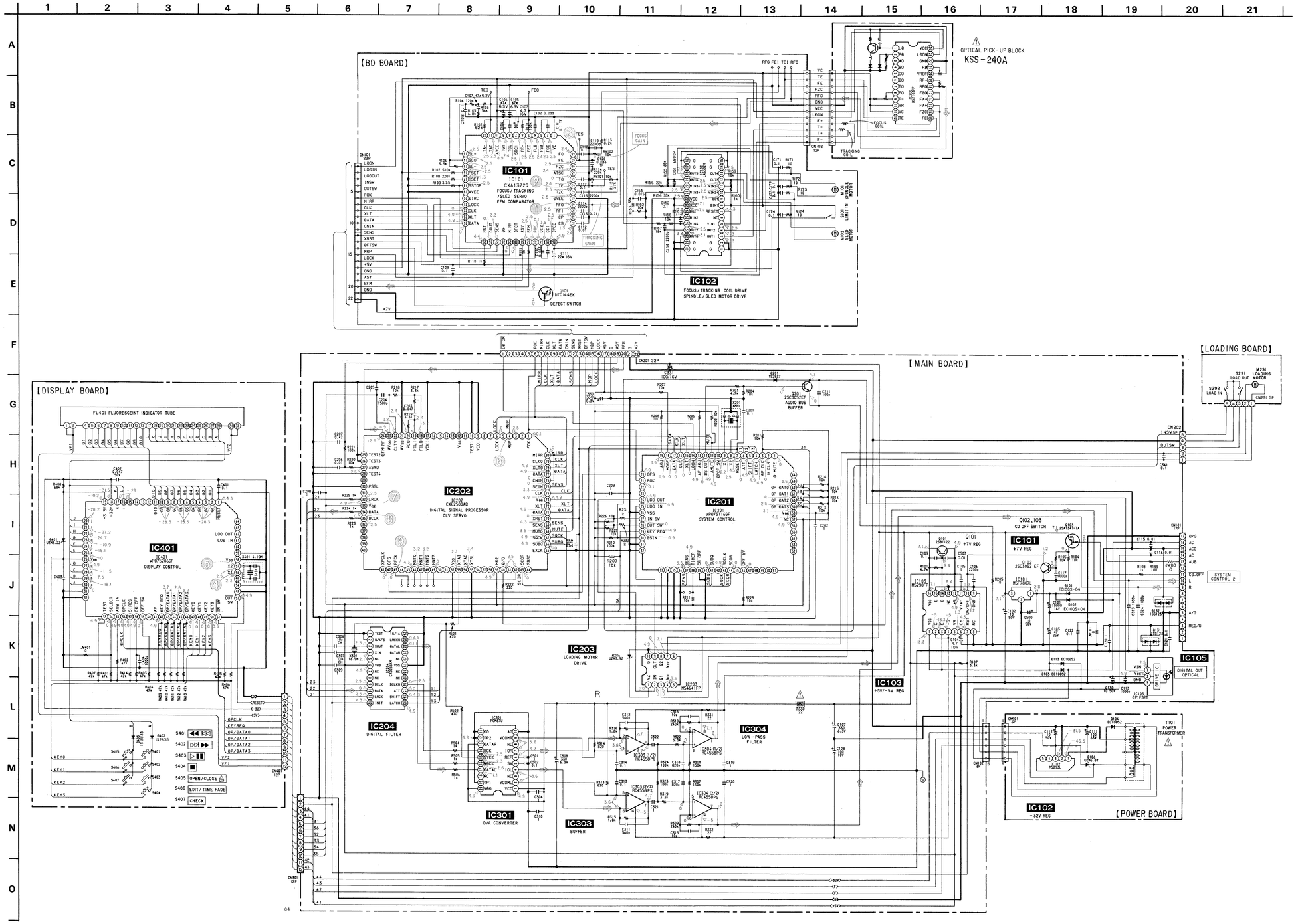
BD Board

Ref. No.	Location
IC101	G-8
IC102	G-9
Q101	G-8

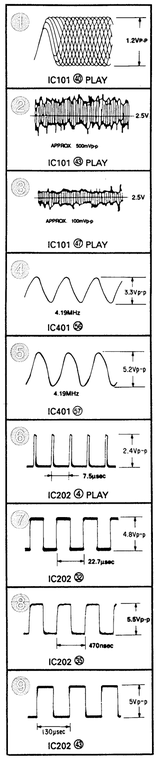
Note:

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





• Waveforms



Note:

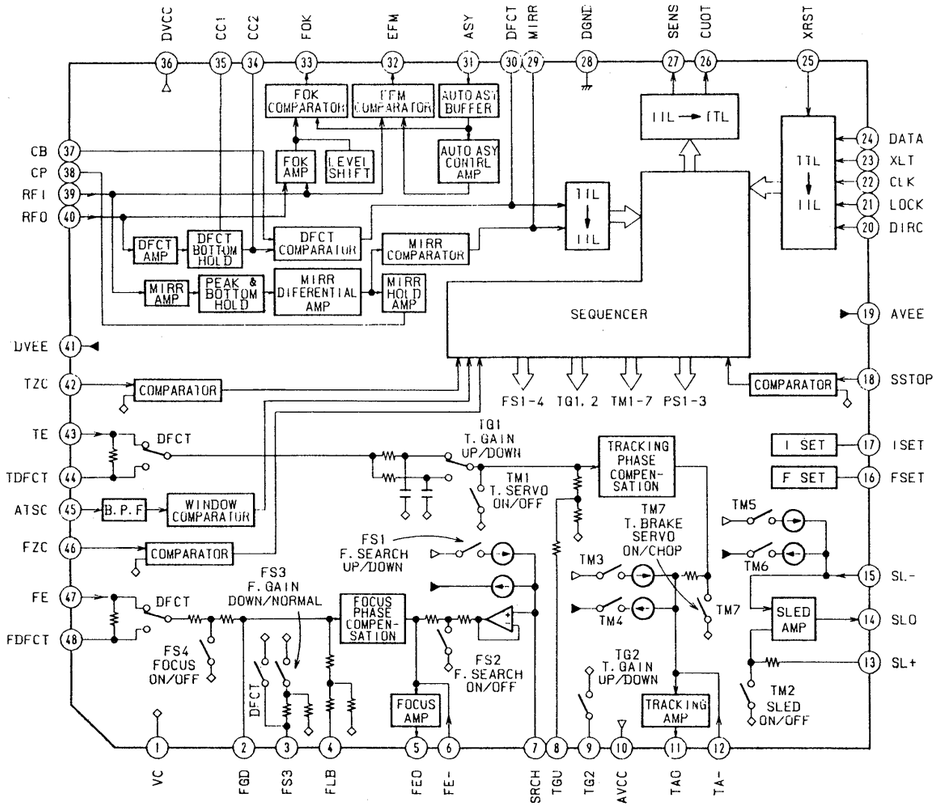
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ⚠ : nonflammable resistor.

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

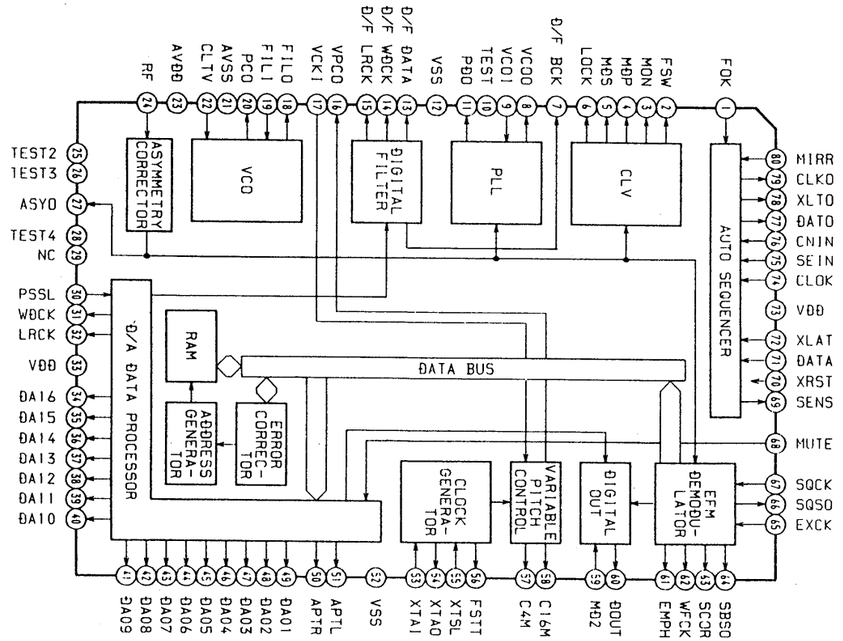
- B+ Line
- B− Line
- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions. no mark : STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to wevsforms.
- **Signal path.** : CD

• IC Block Diagrams

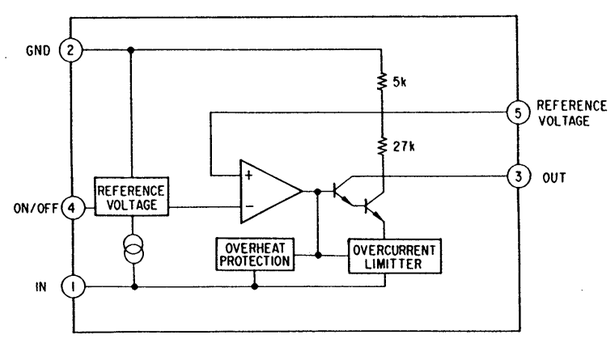
IC101 CXA1372Q (BD Board)



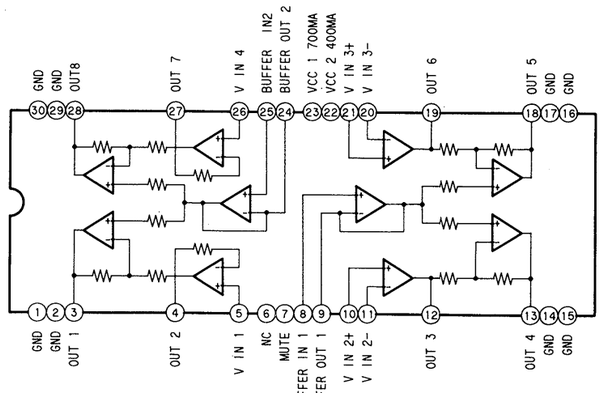
IC202 CXD2500AQ



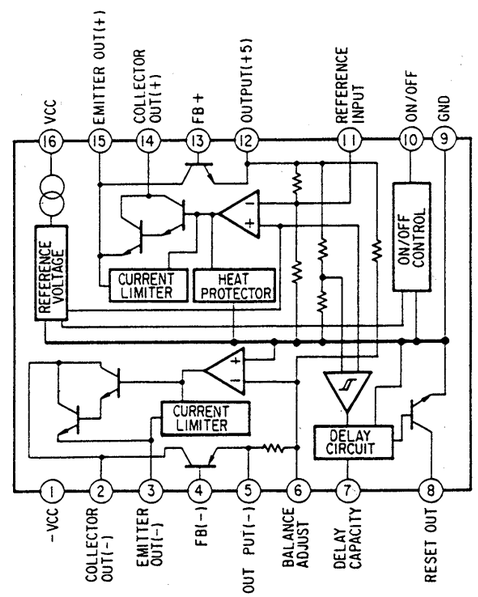
IC102 M5293L (Power Board)



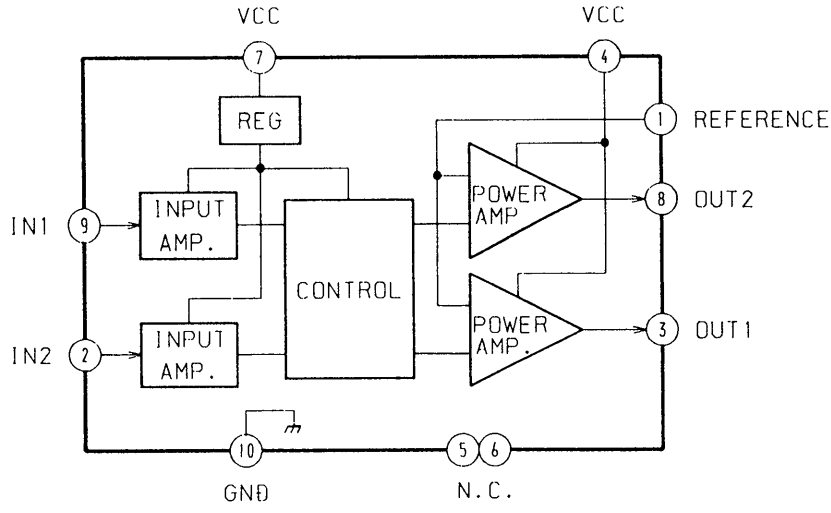
IC102 LA6532M (BD Board)



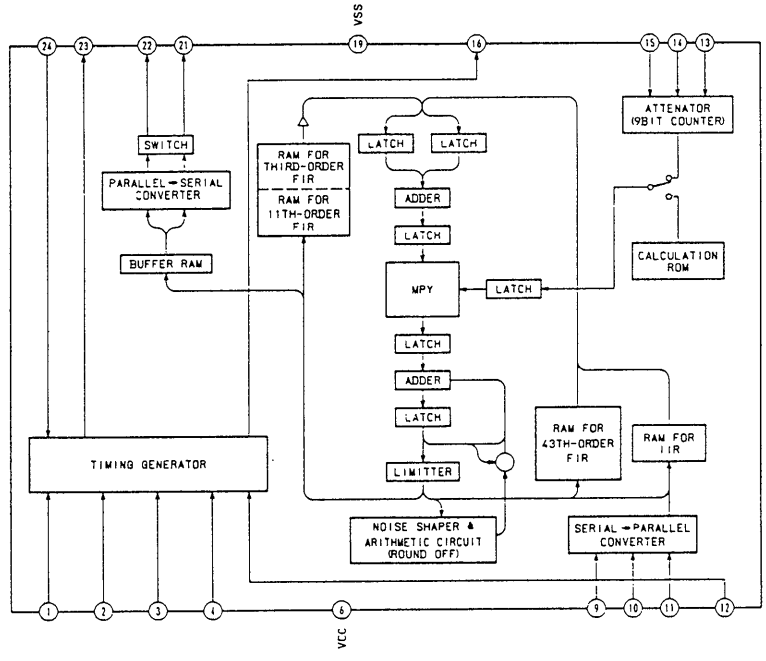
IC103 M5290FP



IC203 M54641FP

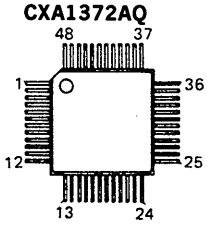


IC204 CXD2554M



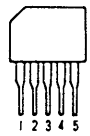
4-5. SEMICONDUCTOR LEAD LAYOUTS

CXA1372AQ



(TOP VIEW)

M5293L



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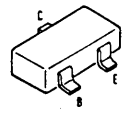
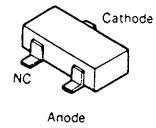
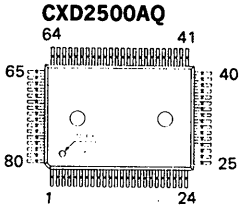
2SC3052-EF



UZM8.2Z

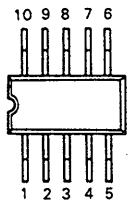


CXD2500AQ

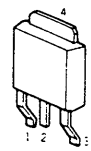


MARKING SIDE VIEW

M54641FP

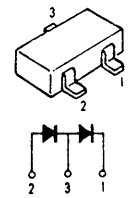


2SA1341

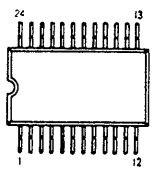


1 BASE
2 COLLECTOR
3 EMITTER
4 COLLECTOR

1SS226

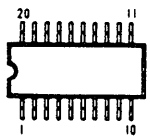


CXD2554M



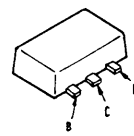
(TOP VIEW)

PCM67U

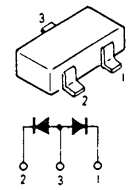


(TOP VIEW)

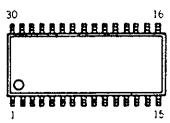
2SB1122-S



1S2836

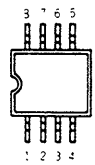


LA6532M



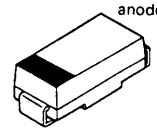
(TOP VIEW)

RC4558PS

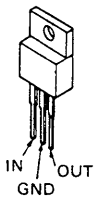


(TOPVIEW)

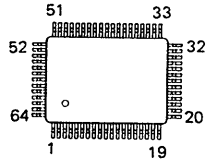
EC10DS2
EC10QS-04



M5F7807L

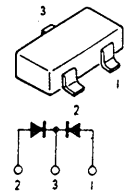


μPD75116GF
-F21-3BE
μPD75206GF
-716-3BE

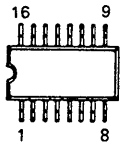


(TOP VIEW)

MA152WK

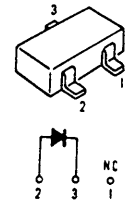


M5290FP



(TOP VIEW)

UZM3.9Z
UZM6.8Y



SECTION 5
EXPLODED VIEWS

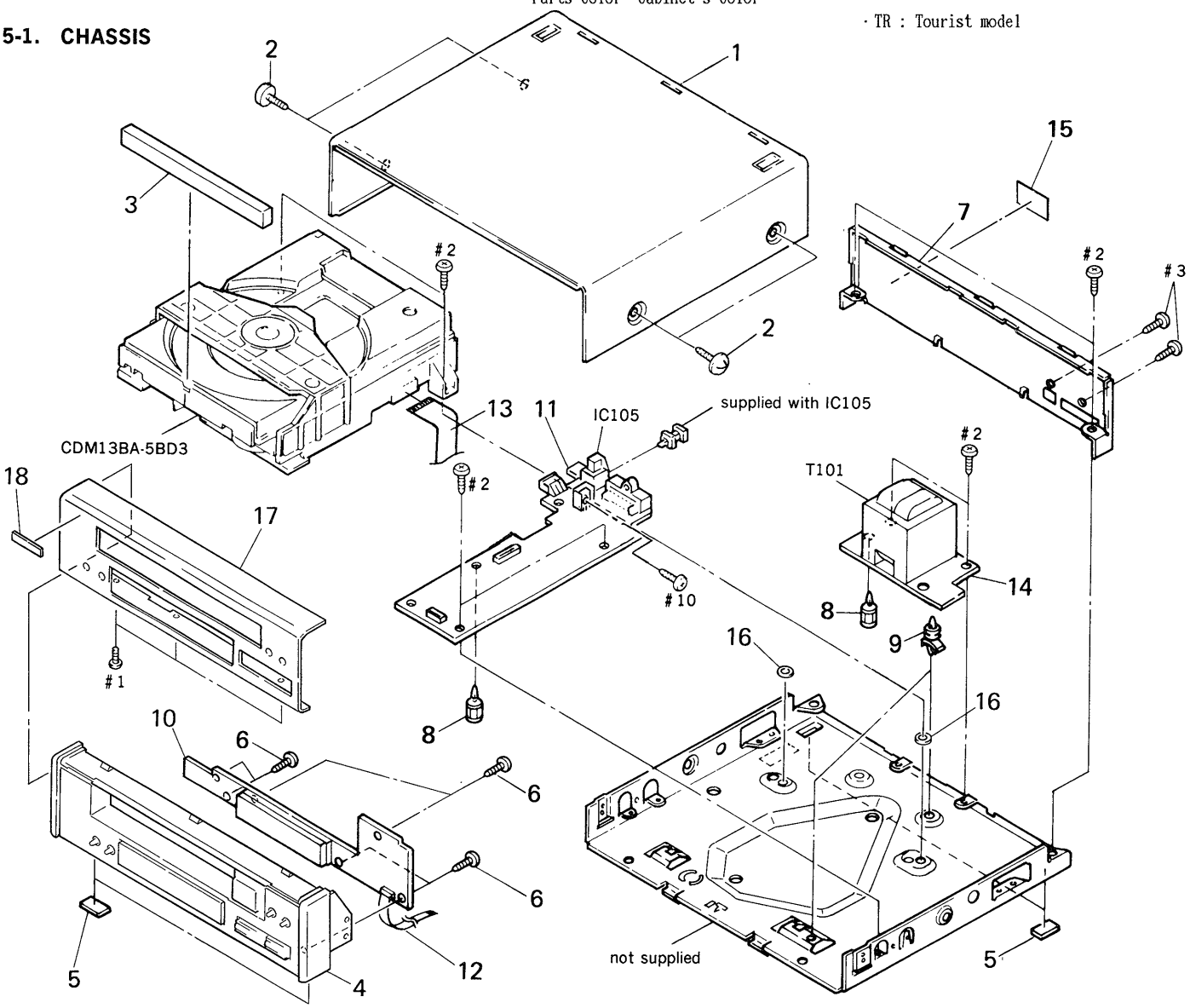
NOTE:

- 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 and -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 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.

· TR : Tourist model

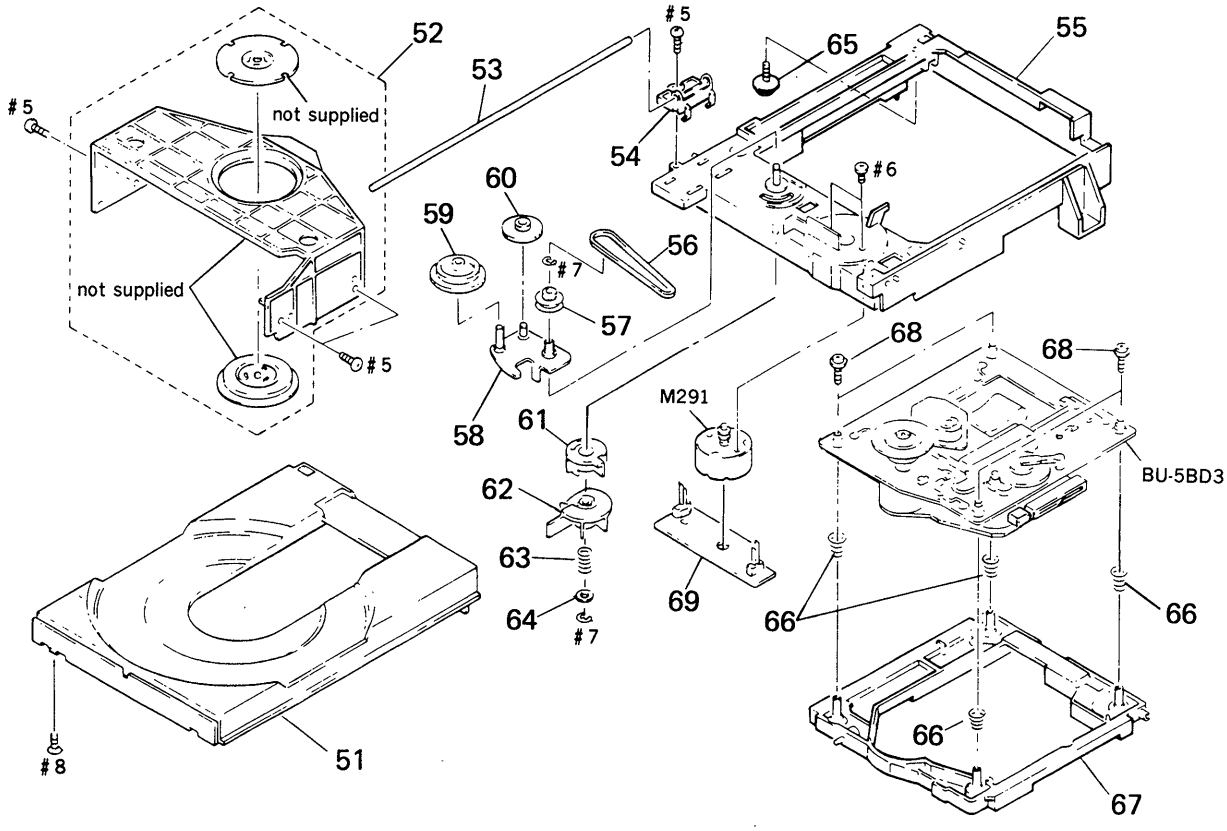
5-1. CHASSIS



Ref. No.	Part No.	Description	Remark
1	4-932-844-01	CASE	
2	3-363-099-01	SCREW (CASE +3X8 TP2)	
3	X-4941-527-1	LID (TRAY) ASSY	
4	X-4941-525-1	PANEL ASSY, FRONT	
5	4-930-336-21	FOOT (FELT)	
6	4-951-620-01	SCREW (2.6X8), +BVTP	
* 7	4-948-753-71	PANEL (CDP), BACK	
* 8	3-669-610-00	SPACER	
* 9	4-924-098-11	HOLDER, PC BOARD	
* 10	A-4649-269-A	DISPLAY BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
* 11	A-4649-264-A	MAIN BOARD, COMPLETE (E, TR)	
* 11	A-4649-268-A	MAIN BOARD, COMPLETE (EXCEPT E, TR)	
12	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
13	1-690-753-11	WIRE (FLAT TYPE) (22 CORE)	
* 14	1-642-539-11	POWER BOARD	
* 15	4-941-548-01	LABLE, CLASS 1	
16	3-555-872-00	SPACER	
17	4-944-445-01	PANEL, FRONT	
18	4-942-636-01	EMBLEM (NO. 3.5), SONY	
⚠T101	1-450-704-11	TRANSFORMER, POWER (EXCEPT E, TR)	
⚠T101	1-450-341-11	TRANSFORMER, POWER (E, TR)	
IC105	8-749-921-12	IC GP1F32T	

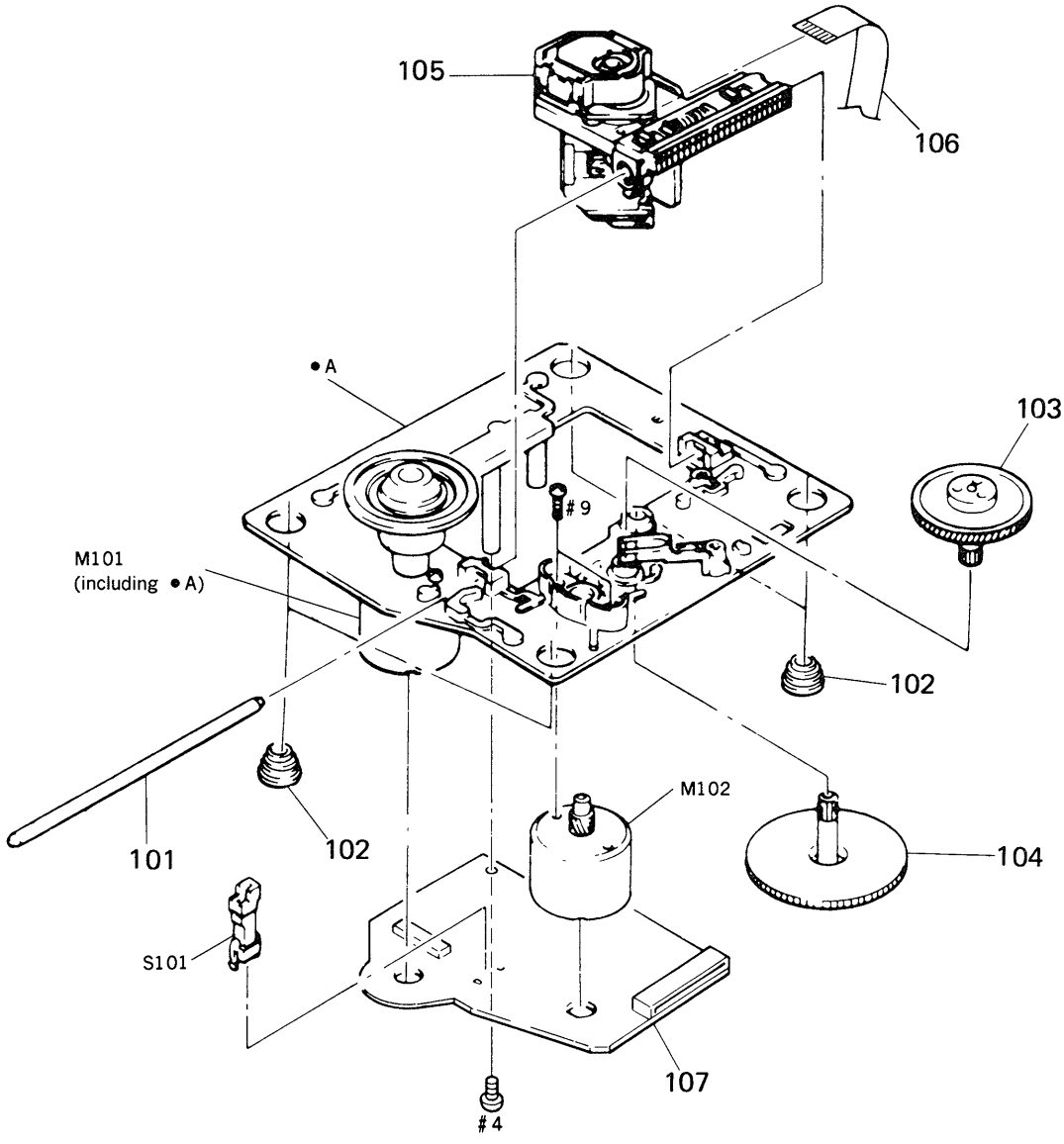
5-2. CD BLOCK (CDM13BA-5BD3)



Ref. No.	Part No.	Description	Remark
51	4-944-012-01	TABLE, DISC	
52	A-4604-752-A	HOLDER (MG) ASSY	
53	4-929-764-01	SHAFT (TABLE GUIDE)	
54	4-944-006-01	BEARING	
55	X-4941-462-1	CHASSIS (MD) ASSY	
56	4-927-649-01	BELT	
57	4-929-724-01	PULLEY (B)	
58	X-4929-703-1	ARM ASSY, SWING	
59	4-927-620-01	GEAR (P)	
60	4-927-628-01	GEAR (C)	

Ref. No.	Part No.	Description	Remark
61	4-929-727-01	CAM (A)	
62	4-929-729-01	CAM (B)	
63	3-659-338-00	SPRING, COMPRESSION	
64	4-927-654-01	WASHER (LIMITER)	
* 65	4-917-583-21	BRACKET, YOKE	
66	4-917-541-01	SPRING (B)	
67	4-929-747-01	HOLDER (BU)	
68	4-933-134-01	SCREW (+PTPWH M2.6X6)	
* 69	1-634-461-11	LOADING BOARD	
M291	A-4608-362-A	MOTOR (L) ASSY	

5-3. OPTICAL PICK-UP BLOCK (BU-5BD3)



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

Ref. No.	Part No.	Description	Remark
101	4-917-565-01	SHAFT, SLED	
102	4-933-126-01	INSULATOR (A)	
103	4-917-567-01	GEAR (M)	
104	4-917-564-01	GEAR (P), FLATNESS	
⚠105	8-848-144-11	DEVICE, OPTICAL KSS-240A	
106	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
* 107	A-4617-371-A	BD BOARD, COMPLETE	
M101	X-4917-523-3	MOTOR ASSY, SPINDLE	
M102	X-4917-504-1	MOTOR ASSY, SLED	
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)	

BD

SECTION 6
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
- 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.

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

· TR : Tourist model

Ref.No.	Part No.	Description		Remark
*	A-4617-371-A	BD BOARD, COMPLETE		
		**********		
		< CAPACITOR >		
C101	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C102	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V
C103	1-126-163-11	ELECT 4.7uF	20%	50V
C104	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C105	1-126-154-11	ELECT 47uF	20%	6.3V
C106	1-126-154-11	ELECT 47uF	20%	6.3V
C107	1-126-154-11	ELECT 47uF	20%	6.3V
C108	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C110	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V
C111	1-131-367-00	TANTALUM 22uF	10%	20V
C112	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C113	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C114	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C115	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C117	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C118	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C119	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C120	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V
C151	1-163-019-00	CERAMIC CHIP 0.0068uF	10%	50V
C152	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C153	1-163-006-11	CERAMIC CHIP 560PF	10%	50V
C154	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C155	1-163-023-00	CERAMIC CHIP 0.015uF	5%	50V
C171	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C172	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C173	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C174	1-163-038-00	CERAMIC CHIP 0.1uF		25V
		< CONNECTOR >		
CN101	1-568-796-11	SOCKET, CONNECTOR 22P		
CN102	1-568-795-11	SOCKET, CONNECTOR 12P		
		< IC >		
IC101	8-752-053-73	IC CXA1372AQ		
IC102	8-759-822-36	IC LA6532M		

Ref.No.	Part No.	Description		Remark
		< JUMPER RESISTOR >		
J101	1-216-295-00	METAL CHIP 0	5%	1/10W
J102	1-216-295-00	METAL CHIP 0	5%	1/10W
		< TRANSISTOR >		
Q101	8-729-901-01	TRANSISTOR DTC144EK		
		< RESISTOR >		
R101	1-216-097-00	METAL CHIP 100K	5%	1/10W
R102	1-216-095-00	METAL CHIP 82K	5%	1/10W
R103	1-216-091-00	METAL CHIP 56K	5%	1/10W
R104	1-216-099-00	METAL CHIP 120K	5%	1/10W
R105	1-216-069-00	METAL CHIP 6.8K	5%	1/10W
R106	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
R107	1-216-114-00	METAL GLAZE 510K	5%	1/10W
R108	1-216-105-00	METAL CHIP 220K	5%	1/10W
R109	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
R110	1-216-049-00	METAL CHIP 1K	5%	1/10W
R111	1-216-049-00	METAL CHIP 1K	5%	1/10W
R112	1-216-083-00	METAL CHIP 27K	5%	1/10W
R113	1-216-071-00	METAL CHIP 8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP 220K	5%	1/10W
R152	1-216-073-00	METAL CHIP 10K	5%	1/10W
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	1-241-630-11	RES, ADJ, CARBON 10K		
RV102	1-241-630-11	RES, ADJ, CARBON 10K		

Ref. No.	Part No.	Description			Remark
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT IN)			
**********					
*	A-4649-269-A	DISPLAY BOARD, COMPLETE			
		**********			
*	A-4649-264-A	MAIN BOARD, COMPLETE (E, TR)			
*	A-4649-268-A	MAIN BOARD, COMPLETE (EXCEPT E, TR)			
		**********			
*	1-642-539-11	POWER BOARD			
		**********			
*	4-880-403-11	HEAT SINK			
*	4-932-810-11	CUSHION (FL)			
*	4-944-444-01	HOLDER (FL TUBE)			
	7-682-548-04	SCREW +BVTT 3X8 (S)			
		< CAPACITOR >			
C101	1-126-939-11	ELECT	10000uF	20%	16V
C102	1-124-907-11	ELECT	10uF	20%	50V
C103	1-124-477-11	ELECT	47uF	20%	25V
C104	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C105	1-164-346-11	CERAMIC CHIP	1uF		16V
C106	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C107	1-124-442-00	ELECT	330uF	20%	6.3V
C108	1-124-443-00	ELECT	100uF	20%	10V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C111	1-126-063-11	ELECT	100uF	20%	63V
C112	1-124-907-11	ELECT	10uF	20%	50V
C113	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C115	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C116	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C117	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C120	1-164-346-11	CERAMIC CHIP	1uF		16V
C121	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C122	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C130	1-124-907-11	ELECT	10uF	20%	50V
C201	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C202	1-164-346-11	CERAMIC CHIP	1uF		16V
C203	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C204	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C205	1-164-346-11	CERAMIC CHIP	1uF		16V
C206	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C207	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C208	1-164-346-11	CERAMIC CHIP	1uF		16V
C209	1-164-346-11	CERAMIC CHIP	1uF		16V
C210	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C211	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C304	1-164-346-11	CERAMIC CHIP	1uF		16V
C306	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C307	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C308	1-124-442-00	ELECT	330uF	20%	6.3V
C309	1-162-638-11	CERAMIC CHIP	1uF		16V
C310	1-164-346-11	CERAMIC CHIP	1uF		16V
C311	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C312	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C313	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C314	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C315	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C316	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C317	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C318	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C319	1-164-346-11	CERAMIC CHIP	1uF		16V
C320	1-164-346-11	CERAMIC CHIP	1uF		16V
C321	1-164-346-11	CERAMIC CHIP	1uF		16V
C322	1-164-346-11	CERAMIC CHIP	1uF		16V
C323	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C324	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C330	1-124-442-00	ELECT	330uF	20%	6.3V
C331	1-124-443-00	ELECT	100uF	20%	10V
C341	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C401	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C402	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C403	1-164-346-11	CERAMIC CHIP	1uF		16V
C404	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C500	1-124-907-11	ELECT	10uF	20%	50V
C501	1-164-346-11	CERAMIC CHIP	1uF		16V
C502	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C503	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
* CN101	1-569-624-11	SOCKET, CONNECTOR 17P (SYSTEM CONTROL 2)			
CN102	1-568-662-11	CONNECTOR, BOARD TO BOARD 6P			
* CN201	1-568-822-11	SOCKET, CONNECTOR 22P			
* CN202	1-564-339-00	PIN, CONNECTOR 5P			
* CN301	1-573-099-11	HOUSING, CONNECTOR 12P			
* CN401	1-573-098-11	HOUSING, CONNECTOR 12P			
CN901	1-568-668-11	CONNECTOR, BOARD TO BOARD 6P			
		< DIODE >			
D101	8-719-210-39	DIODE	EC10QS-04		
D102	8-719-210-39	DIODE	EC10QS-04		
D103	8-719-210-33	DIODE	EC10DS2		
D104	8-719-210-33	DIODE	EC10DS2		
D106	8-719-021-59	DIODE	UZM6.8Y		
D113	8-719-210-33	DIODE	EC10DS2		
D131	8-719-800-76	DIODE	1SS226		
D132	8-719-800-76	DIODE	1SS226		
D201	8-719-400-18	DIODE	MA152WK		

DISPLAY | MAIN | POWER

Ref. No.	Part No.	Description			Remark
D206	8-719-021-13	DIODE UZM3.9Z			
D401	8-719-021-77	DIODE UZM8.2Z			
D402	8-719-104-34	DIODE 1S2836			
D403	8-719-104-34	DIODE 1S2836			
		< FLUORESCENT INDICATOR >			
FL401	1-519-652-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC101	8-759-604-86	IC M5F7807L			
IC102	8-759-633-42	IC M5293L			
IC103	8-759-636-24	IC M5290FP			
IC105	8-749-921-12	IC GP1F32T			
IC201	8-759-059-86	IC uPD75116GF-F21-3BE			
IC202	8-752-337-26	IC CXD2500AQ			
IC203	8-759-636-20	IC M54641FP			
IC204	8-752-337-10	IC CXD2554M			
IC301	8-759-506-63	IC PCM67U			
IC303	8-759-996-43	IC RC4558PS			
IC304	8-759-996-43	IC RC4558PS			
IC401	8-759-154-14	IC uPD75206GF-716-3BE			
		< JUMPER RESISTOR >			
JW101	1-216-296-00	METAL CHIP	0	5% 1/8W	
JW110	1-216-296-00	METAL CHIP	0	5% 1/8W	
JW401	1-216-295-00	METAL CHIP	0	5% 1/10W	
		< TRANSISTOR >			
Q101	8-729-804-41	TRANSISTOR 2SB1122-S			
Q102	8-729-620-06	TRANSISTOR 2SC3052-EF			
Q103	8-729-805-69	TRANSISTOR 2SA1341			
Q201	8-729-620-06	TRANSISTOR 2SC3052-EF			
		< RESISTOR >			
R101	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R104	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R105	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R107	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R108	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R199	1-216-025-00	METAL CHIP	100	5% 1/10W	
R201	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R202	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R203	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R204	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R205	1-216-001-00	METAL CHIP	10	5% 1/10W	
R206	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R207	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R208	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R209	1-216-073-00	METAL CHIP	10K	5% 1/10W	

Ref. No.	Part No.	Description			Remark
R210	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R211	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R213	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R214	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R215	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R216	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R217	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R218	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R219	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R220	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R221	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R222	1-216-033-00	METAL CHIP	220	5% 1/10W	
R223	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R224	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R225	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R226	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R227	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R228	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R231	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R232	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R307	1-216-101-00	METAL CHIP	150K	5% 1/10W	
R308	1-216-101-00	METAL CHIP	150K	5% 1/10W	
R309	1-216-106-00	METAL CHIP	240K	5% 1/10W	
R310	1-216-106-00	METAL CHIP	240K	5% 1/10W	
R313	1-216-047-00	METAL CHIP	820	5% 1/10W	
R314	1-216-047-00	METAL CHIP	820	5% 1/10W	
R315	1-216-055-00	METAL CHIP	1.8K	5% 1/10W	
R316	1-216-055-00	METAL CHIP	1.8K	5% 1/10W	
R319	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R322	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R323	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R324	1-216-097-00	METAL CHIP	100K	5% 1/10W	
⚠R330	1-249-397-11	CARBON	22	5% 1/4W F	
R331	1-216-009-00	METAL CHIP	22	5% 1/10W	
R332	1-216-009-00	METAL CHIP	22	5% 1/10W	
R401	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R402	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R403	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R404	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R405	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R406	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R407	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R408	1-216-093-00	METAL CHIP	68K	5% 1/10W	
R409	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R410	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R411	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R412	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R413	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R414	1-216-089-00	METAL CHIP	47K	5% 1/10W	

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

Ref. No.	Part No.	Description			Remark
R501	1-216-041-00	METAL CHIP	470	5%	1/10W
R502	1-216-041-00	METAL CHIP	470	5%	1/10W
R504	1-216-049-00	METAL CHIP	1K	5%	1/10W
R505	1-216-049-00	METAL CHIP	1K	5%	1/10W
R506	1-216-049-00	METAL CHIP	1K	5%	1/10W
		< SWITCH >			
S401	1-554-303-21	SWITCH, TACTILE (◀◀ ⏮)			
S402	1-554-303-21	SWITCH, TACTILE (⏭ ▶▶)			
S403	1-554-303-21	SWITCH, TACTILE (▷ ❚❚)			
S404	1-554-303-21	SWITCH, TACTILE (■)			
S405	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE ⏏)			
S406	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)			
S407	1-554-303-21	SWITCH, TACTILE (CHECK)			
		< TRANSFORMER >			
⚠T101	1-450-704-11	TRANSFORMER, POWER (EXCEPT E, TR)			
⚠T101	1-450-341-11	TRANSFORMER, POWER (E, TR)			
		< VIBRATOR >			
X201	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			
X301	1-567-908-11	VIBRATOR, CRYSTAL (16.9MHz)			
X401	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)			
**********					
*	1-634-461-11	LOADING BOARD			
		**********			
		< CONNECTOR >			
* CN291	1-564-498-11	PIN, CONNECTOR 5P			
		< SWITCH >			
S291	1-571-924-11	SWITCH, LEAF (LOAD OUT)			
S292	1-571-924-11	SWITCH, LEAF (LOAD IN)			
**********					
		MISCELLANEOUS			
		**********			
12	1-575-001-11	WIRE, FLAT TYPE (12 CORE)			
13	1-690-753-11	WIRE (FLAT TYPE) (22 CORE)			
⚠105	8-848-144-11	DEVICE, OPTICAL KSS-240A			
106	1-575-001-11	WIRE, FLAT TYPE (12 CORE)			
M101	X-4917-523-3	MOTOR ASSY, SPINDLE			
M102	X-4917-504-1	MOTOR ASSY, SLED			
M291	A-4608-362-A	MOTOR (L) ASSY			
**********					

Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-682-547-09	SCREW +BVTT 3X6 (S)	
#2	7-682-547-04	SCREW +BVTT 3X6 (S)	
#3	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#4	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#5	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#6	7-621-775-10	SCREW +B 2.6X4	
#7	7-624-105-04	STOP RING 2.3, TYPE -E	
#8	7-685-234-19	SCREW +KTP 2.6X8 TYPE2NON-SLIT	
#9	7-621-255-15	SCREW +P 2X3	
#10	7-682-548-04	SCREW +BVTT 3X8 (S)	

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

9-957-229-11

Sony Corporation
Audio Group

English
92E0460-1
Printed in Japan

Published by Customer Relations and Service Group

CDP-H4700

SONY®
SERVICE MANUAL

AEP Model
E Model
Australian Model
Tourist Model

SUPPLEMENT-1

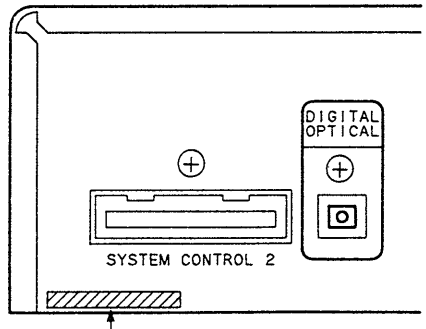
File this supplement with the Service Manual.

Germany model has been added

- The Germany model has been designed based on the CDP-H4700. There for see the CDP-H4700 service manual for the information not contained in this supplement-1.

MODEL IDENTIFICATION

—BACK PANEL—



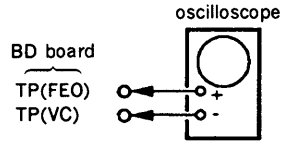
4-948-753-81 (AE4): Germany model

ELECTRICAL BLOCK CHECKING

Note :

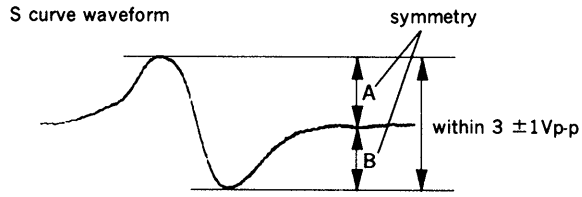
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal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

S Curve Check



Procedure :

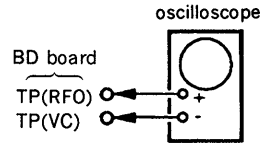
1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turned Power switch on and actuate the focus serch. (actuate the focus serch when disc table is moving in and out.)
4. Check the oscilloscope waveform (S curve) is symmetrical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



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

Note : • Try to mesure 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

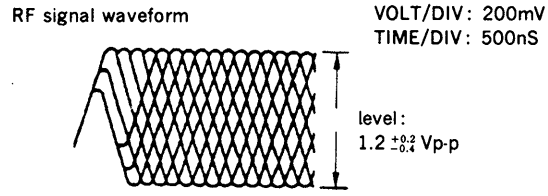


Procedure :

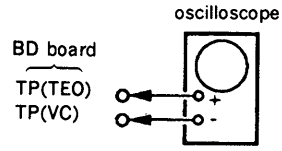
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

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

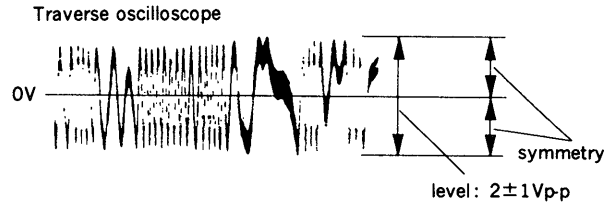


E-F Balance Check



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 osilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

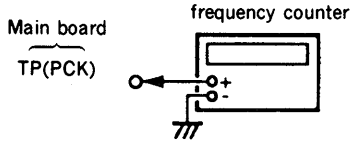


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

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



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

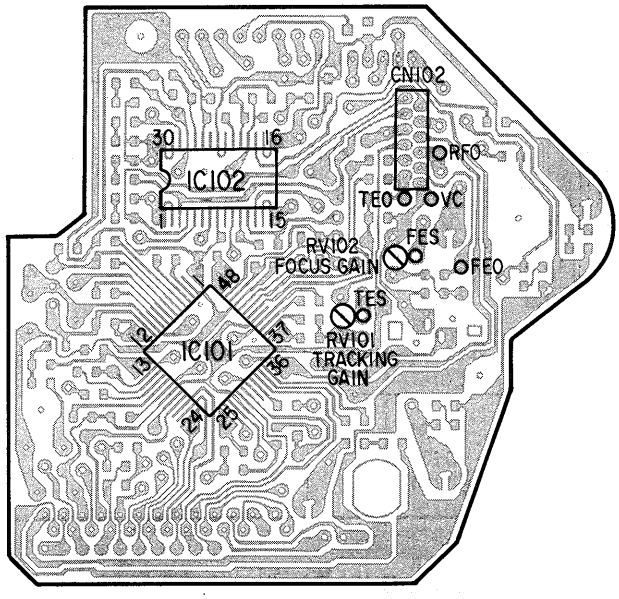
Focus/Tracking Gain

This gain has a margin, so even if it is slightly off.
There is no problem.
Therefore, do not perform, this adjustment.
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

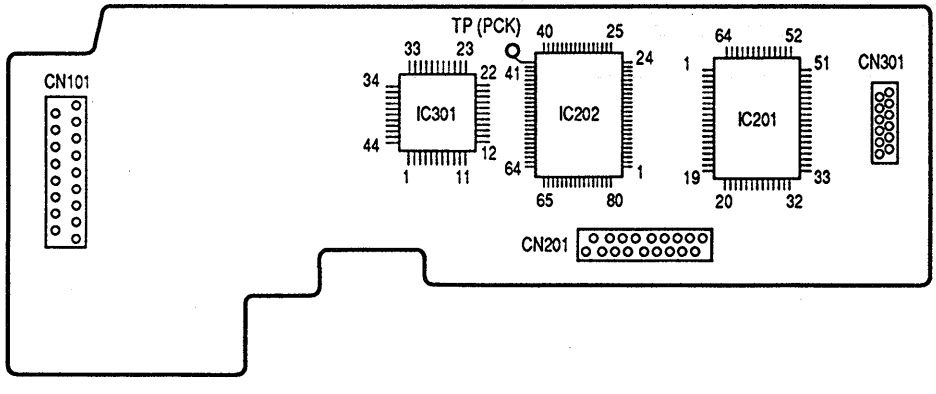
Checking Location :

【BD Board】

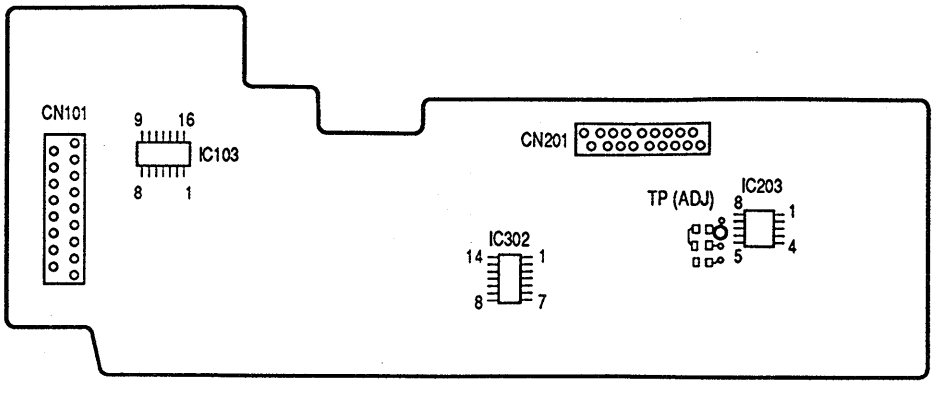
—Conductor Side—



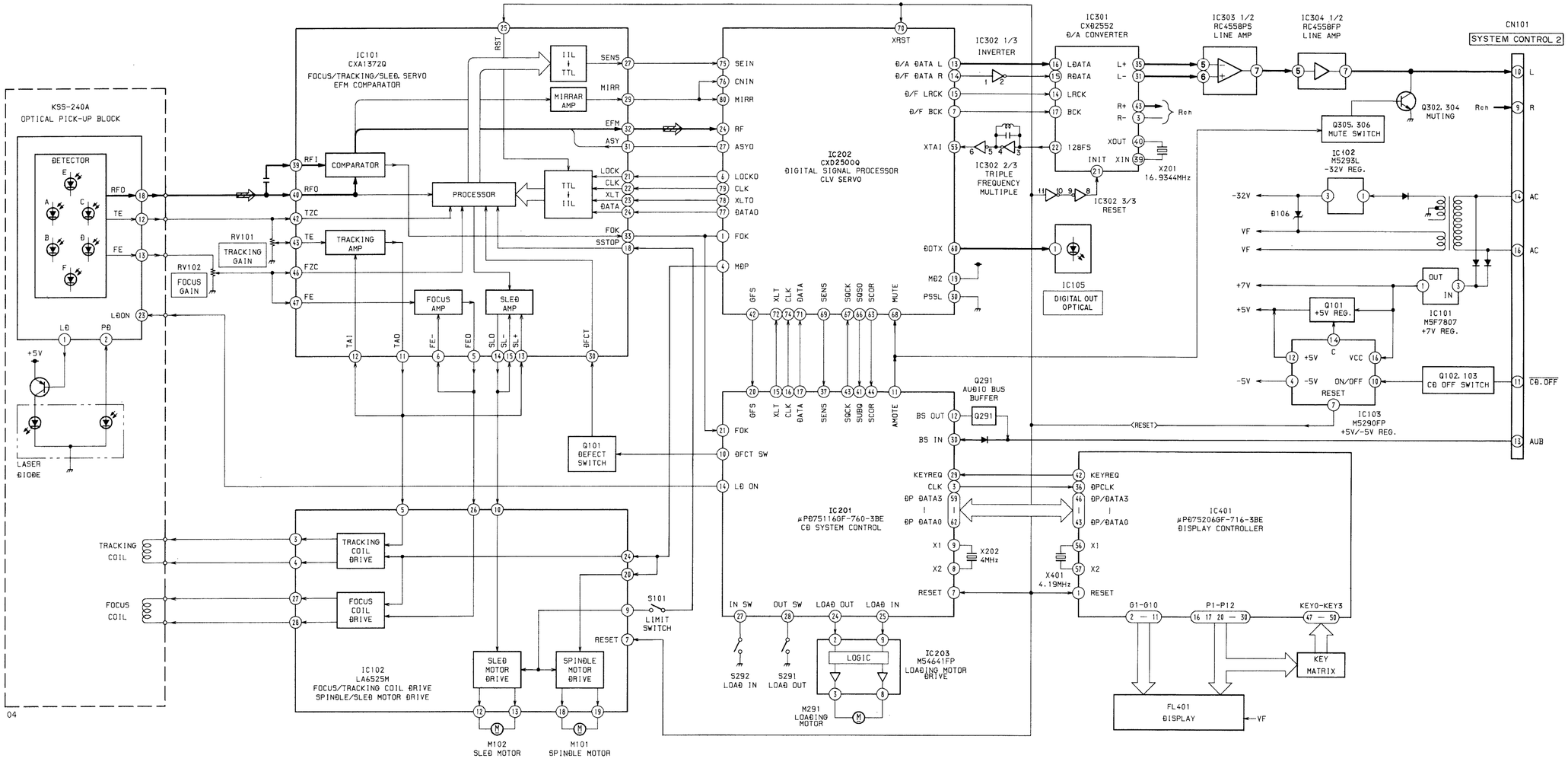
【MAIN Board】 —Component Side—



【MAIN Board】 —Conductor Side—



BLOCK DIAGRAM



CDP-H4700 CDP-H4700

SEMICONDUCTOR LEAD LAYOUTS

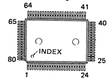
CXA1372AQ

M5293L

DTC144EK
2SA1162G
2SC3052-EF
2SC3624A-L15

UZM8.2

CXD2500Q



M54641FP

2SA1341

1SS226

CXD2552Q

RC4558PS

2SB1122-S

1S2836

LA6532M

SN74HCU04ANS

EC10DS2
EC10QS-04

M5F7807

μPD75116GF
-F21-3BE
μPD75206GF
-716-3BE

MA152WK

M5290FP

UZM3.9Z
UZM6.8Y

● Semiconductor Location

EXCEPT BD BOARD

Ref. No.	Location
D101	B-10
D102	B-10
D103	C-11
D104	B-3
D106	B-3
D113	B-10
D131	B-10
D132	C-10
D201	G-9
D206	G-10
D301	D-9
D302	B-9
D401	D-17
D402	D-18
D403	D-14
IC101	C-6
IC102	B-2
IC103	C-10
IC105	B-5
IC201	G-7
IC202	F-7
IC203	G-9
IC301	E-7
IC302	E-9
IC303	C-7
IC304	C-7
IC401	D-16
Q101	C-9
Q102	B-9
Q103	B-10
Q201	G-9
Q301	C-9
Q302	B-9
Q303	C-9
Q304	B-9
Q305	B-9
Q306	B-9

BD BOARD

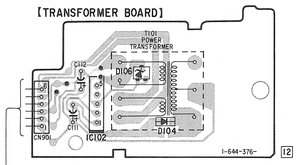
Ref. No.	Location
Q101	F-13
IC101	F-13
IC102	F-14

Note:

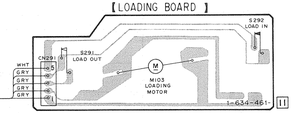
- ● ○—— : parts extracted from the component side.
- ● ● : Through hole.
- ● ▨ : Pattern on the side which is seen.
- ● ▨ : Pattern of the rear side.

PRINTED WIRING BOARDS

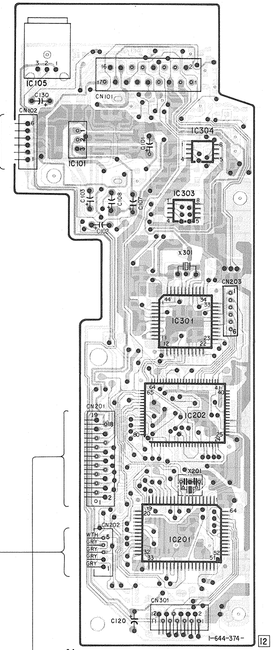
【TRANSFORMER BOARD】



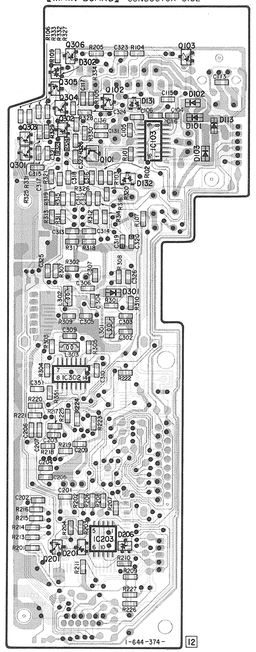
【LOADING BOARD 】



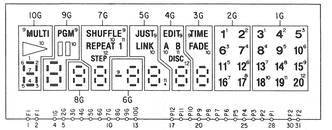
【MAIN BOARD】 COMPONENT SIDE



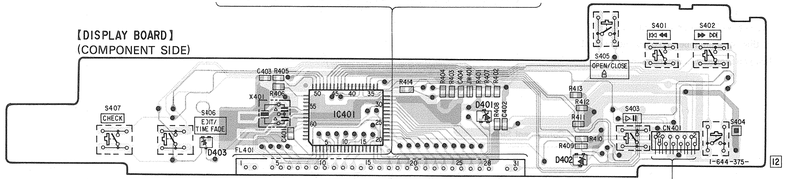
【MAIN BOARD】 CONDUCTOR SIDE



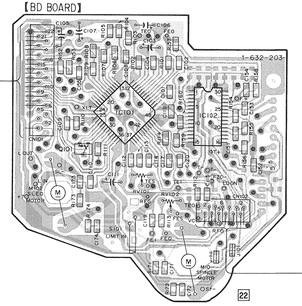
FL401 FLUORESCENT INDICATOR TUBE



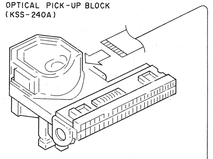
【DISPLAY BOARD】
(COMPONENT SIDE)



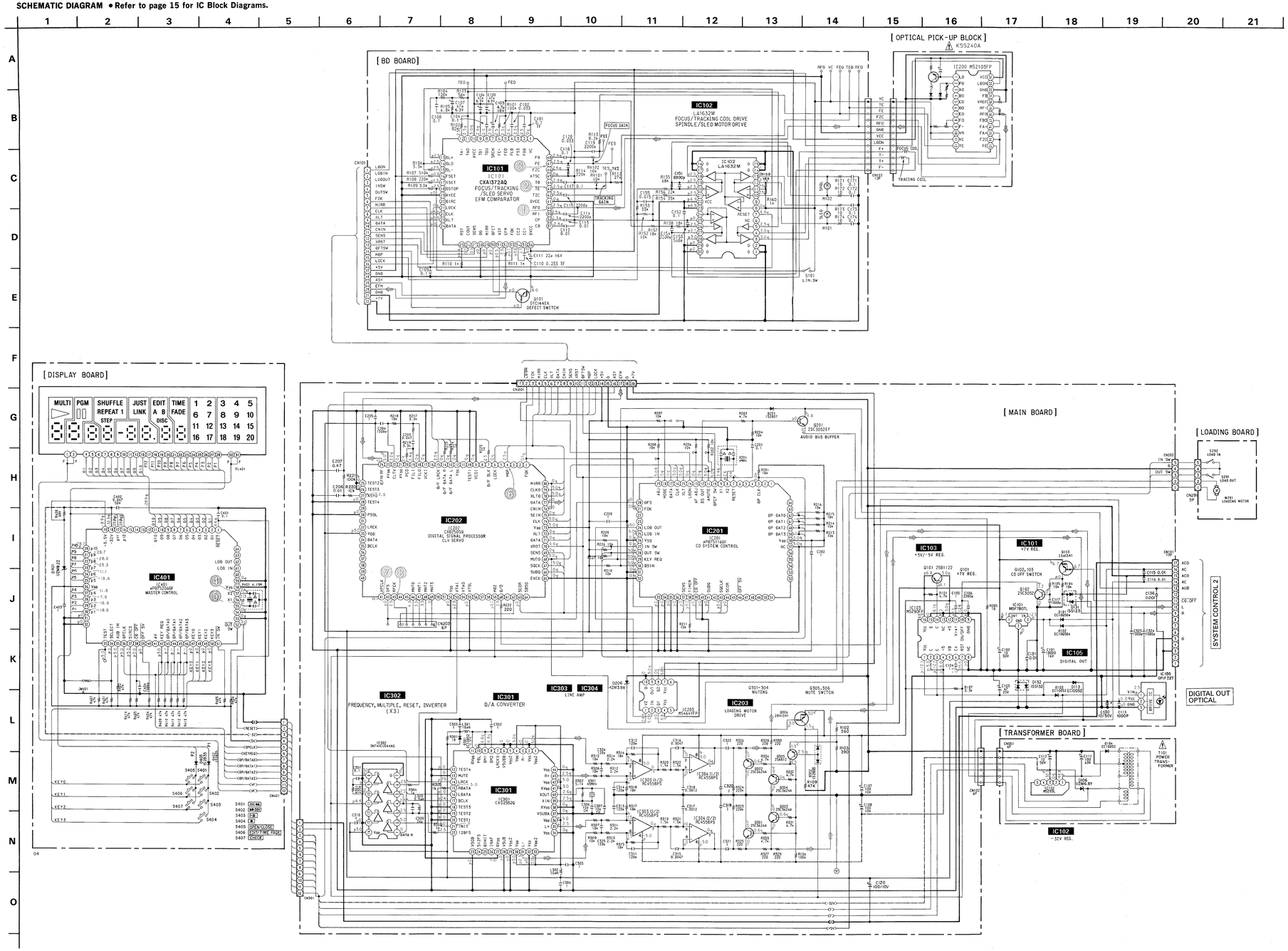
【BD BOARD】



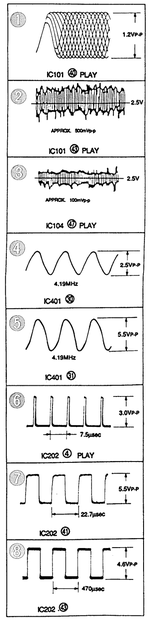
OPTICAL PICK-UP BLOCK
(KSS-240A)



SCHEMATIC DIAGRAM • Refer to page 15 for IC Block Diagrams.



• Waveforms



Note:

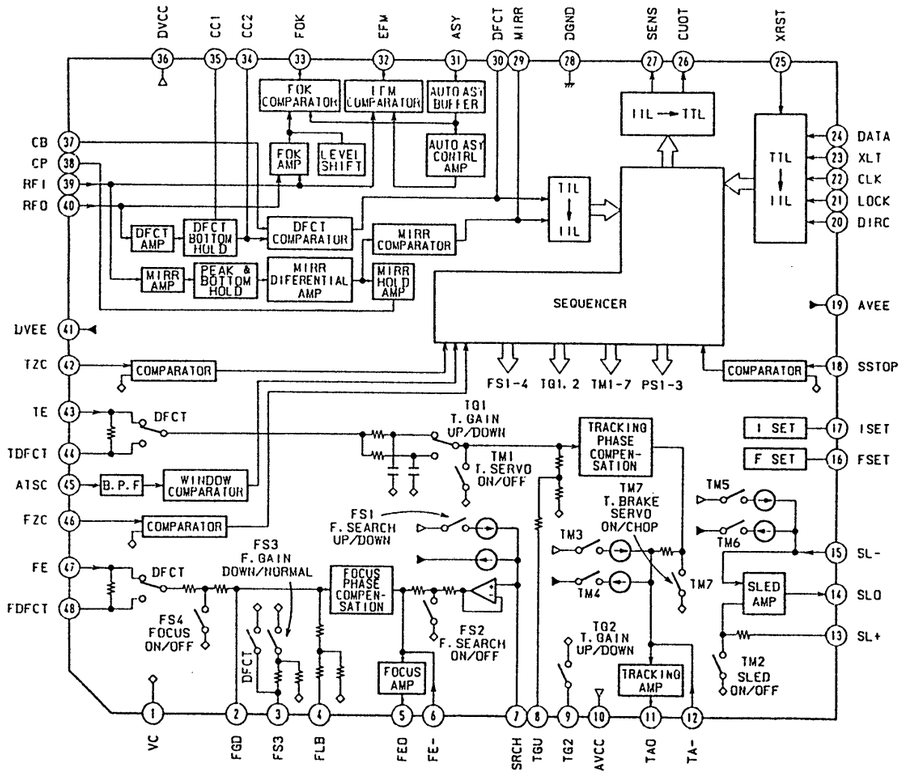
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- △ : internal component.

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

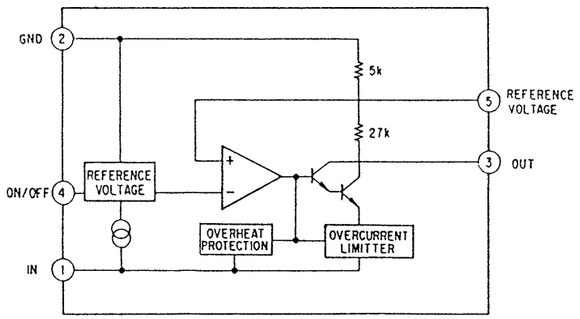
- ▭▭▭ : B+ Line
- ▭▭▭ : B− Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions. no mark : PLAY
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇒ : CD

• **IC Block Diagrams**

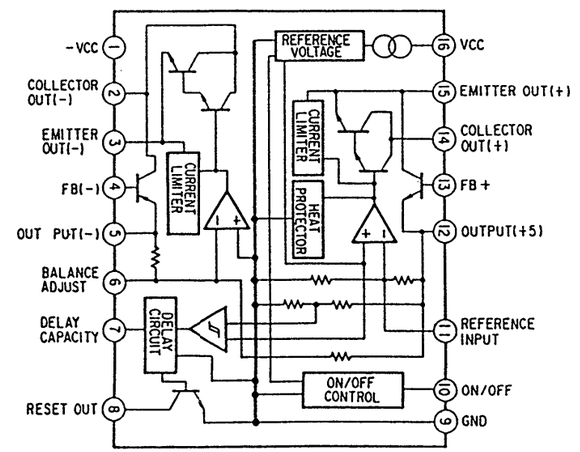
IC101 CXA1372AQ



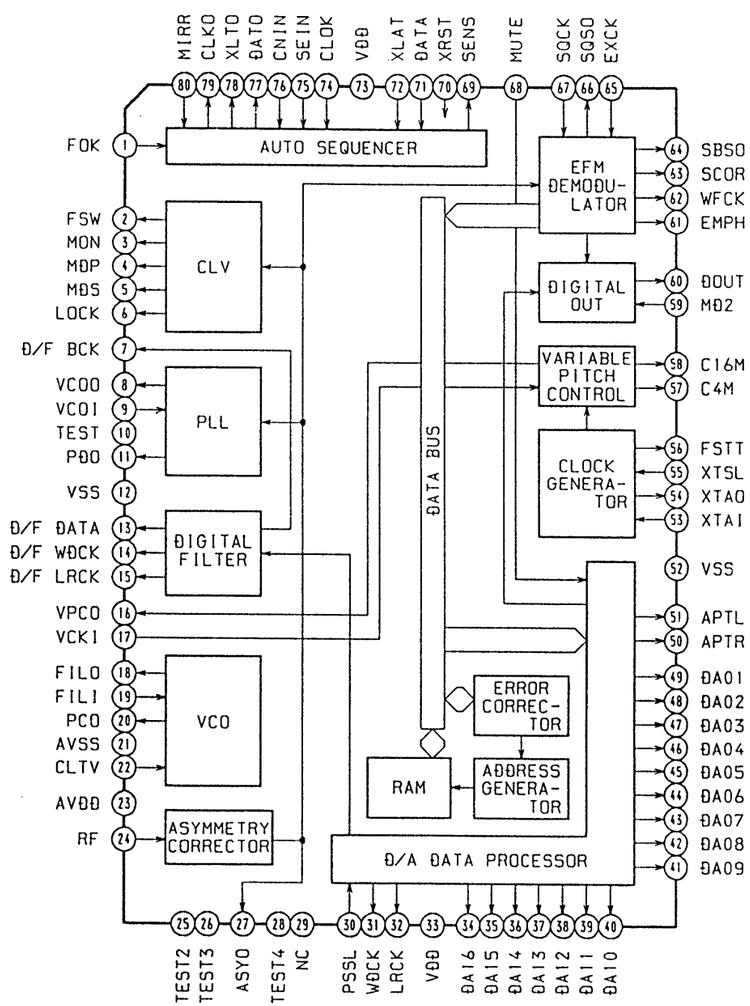
IC102 M5293L



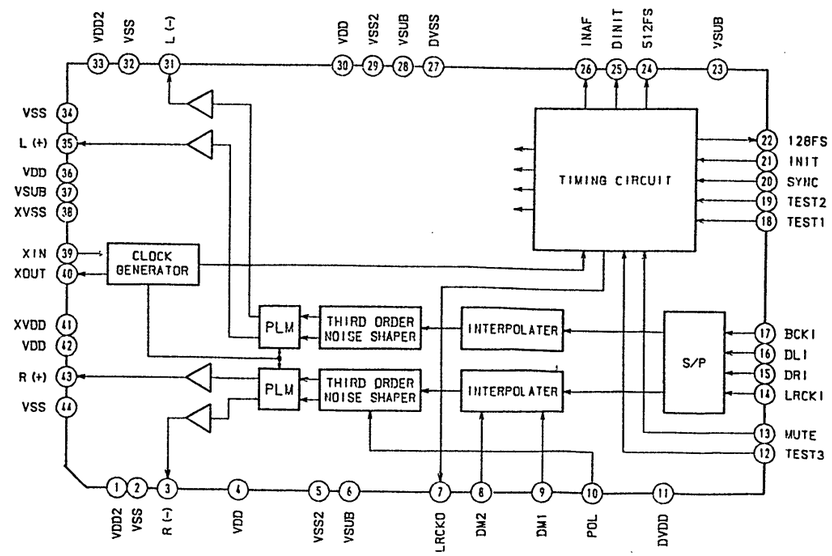
IC103 M5290FP



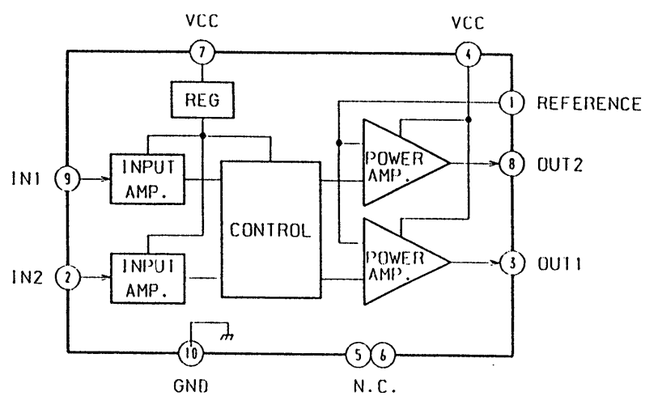
IC202 CXD2505Q



IC301 CXD2552Q



IC203 M54641FP



EXPLODED VIEW

The Difference between AEP Model and Germany Model.

Page	AEP model				Germany model		
	Ref. No.	Part No.	Description	Remark	Part No.	Description	Remark
23	*7	4-948-753-71	PANEL (CDP), BACK		*4-948-753-81	PANEL (CDP), BACK	
	*10	A-4649-269-A	DISPLAY BOARD, COMPLETE		*A-4649-385-A	DISPLAY BOARD, COMPLETE	
	*11	A-4649-268-A	MAIN BOARD, COMPLETE		*A-4649-383-A	MAIN BOARD, COMPLETE	
	13	1-690-753-11	WIER (FLAT TYPE) (22 CORE)		1-535-845-11	JUMPER, FILM (WITH TERMINAL)	
	*14	1-642-539-11	POWER BOARD		*1-644-376-11	TRANSFORMER BOARD	
	⚠T101	1-450-704-11	TRANSFORMER, POWER		⚠1-450-341-11	TRANSFORMER, POWER	

BD

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
- 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.

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

Ref. No.	Part No.	Description		Remark
*	A-4617-371-A	BD BOARD, COMPLETE		
		**********		
		< CAPACITOR >		
C101	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C102	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V
C103	1-126-163-11	ELECT 4.7uF	20%	50V
C104	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C105	1-126-154-11	ELECT 47uF	20%	6.3V
C106	1-126-154-11	ELECT 47uF	20%	6.3V
C107	1-126-154-11	ELECT 47uF	20%	6.3V
C108	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C109	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C110	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V
C111	1-131-367-00	TANTALUM 22uF	10%	20V
C112	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C113	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C114	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C115	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C117	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C118	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C119	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C120	1-163-989-11	CERAMIC CHIP 0.033uF	10%	25V
C151	1-163-019-00	CERAMIC CHIP 0.0068uF	10%	50V
C152	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C153	1-163-006-11	CERAMIC CHIP 560PF	10%	50V
C154	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C155	1-163-023-00	CERAMIC CHIP 0.015uF	5%	50V
C171	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C172	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C173	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C174	1-163-038-00	CERAMIC CHIP 0.1uF		25V
		< CONNECTOR >		
CN101	1-568-796-11	SOCKET, CONNECTOR 22P		
CN102	1-568-795-11	SOCKET, CONNECTOR 12P		
		< IC >		
IC101	8-752-053-73	IC CXA1372AQ		
IC102	8-759-822-36	IC LA6532M		
		< JUMPER RESISTOR >		
J101	1-216-295-00	METAL CHIP 0	5%	1/10W
J102	1-216-295-00	METAL CHIP 0	5%	1/10W
		< TRANSISTOR >		
Q101	8-729-901-01	TRANSISTOR DTC144EK		
		< RESISTOR >		
R101	1-216-097-00	METAL CHIP 100K	5%	1/10W
R102	1-216-095-00	METAL CHIP 82K	5%	1/10W
R103	1-216-091-00	METAL CHIP 56K	5%	1/10W
R104	1-216-099-00	METAL CHIP 120K	5%	1/10W
R105	1-216-069-00	METAL CHIP 6.8K	5%	1/10W
R106	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
R107	1-216-114-00	METAL GLAZE 510K	5%	1/10W
R108	1-216-105-00	METAL CHIP 220K	5%	1/10W
R109	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
R110	1-216-049-00	METAL CHIP 1K	5%	1/10W
R111	1-216-049-00	METAL CHIP 1K	5%	1/10W
R112	1-216-083-00	METAL CHIP 27K	5%	1/10W
R113	1-216-071-00	METAL CHIP 8.2K	5%	1/10W
R114	1-216-105-00	METAL CHIP 220K	5%	1/10W
R152	1-216-073-00	METAL CHIP 10K	5%	1/10W
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

BD | **DISPLAY** | **MAIN** | **TRANSFORMER**

Ref. No.	Part No.	Description			Remark
		< VARIABLE RESISTOR >			
RV101	1-241-630-11	RES, ADJ, CARBON 10K			
RV102	1-241-630-11	RES, ADJ, CARBON 10K			
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
**********					
*	A-4649-385-A	DISPLAY BOARD, COMPLETE			
		**********			
*	A-4649-383-A	MAIN BOARD, COMPLETE			
		**********			
*	1-638-269-11	TRANSFORMER BOARD			
		**********			
*	1-560-242-21	BUS BAR 4P			
*	4-880-403-11	HEAT SINK			
*	4-932-810-11	CUSHION (FL)			
*	4-944-444-01	HOLDER (FL TUBE)			
	4-946-509-01	SPACER			
	7-682-548-04	SCREW +BVTT 3X8 (S)			
		< CAPACITOR >			
C101	1-126-939-11	ELECT	10000uF	20%	16V
C102	1-124-907-11	ELECT	10uF	20%	50V
C103	1-124-477-11	ELECT	47uF	20%	25V
C104	1-164-346-11	CERAMIC CHIP	1uF		16V
C105	1-164-346-11	CERAMIC CHIP	1uF		16V
C106	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C107	1-124-443-00	ELECT	100uF	20%	10V
C108	1-124-443-00	ELECT	100uF	20%	10V
C111	1-126-063-11	ELECT	100uF	20%	63V
C112	1-124-907-11	ELECT	10uF	20%	50V
C113	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C115	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C116	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C117	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C120	1-124-443-00	ELECT	100uF	20%	10V
C130	1-124-907-11	ELECT	10uF	20%	50V
C131	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C136	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C201	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C202	1-164-346-11	CERAMIC CHIP	1uF		16V
C203	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C204	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C205	1-164-346-11	CERAMIC CHIP	1uF		16V
C206	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C207	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C209	1-164-346-11	CERAMIC CHIP	1uF		16V

Ref. No.	Part No.	Description			Remark
C302	1-164-346-11	CERAMIC CHIP	1uF		16V
C303	1-164-346-11	CERAMIC CHIP	1uF		16V
C304	1-164-346-11	CERAMIC CHIP	1uF		16V
C305	1-164-346-11	CERAMIC CHIP	1uF		16V
C306	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C307	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C309	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C310	1-164-346-11	CERAMIC CHIP	1uF		16V
C311	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C312	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C313	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C314	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C315	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C316	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C317	1-163-010-11	CERAMIC CHIP	0.0012uF	10%	50V
C318	1-163-010-11	CERAMIC CHIP	0.0012uF	10%	50V
C319	1-164-346-11	CERAMIC CHIP	1uF		16V
C320	1-164-346-11	CERAMIC CHIP	1uF		16V
C321	1-164-346-11	CERAMIC CHIP	1uF		16V
C322	1-164-346-11	CERAMIC CHIP	1uF		16V
C323	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C324	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C325	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C326	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C351	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C401	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C402	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C403	1-164-346-11	CERAMIC CHIP	1uF		16V
C404	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
* CN101	1-569-624-11	SOCKET, CONNECTOR 17P (SYSTEM CONTROL 2)			
CN102	1-568-662-11	CONNECTOR, BOARD TO BOARD 6P			
CN201	1-568-802-11	SOCKET, CONNECTOR 19P			
* CN202	1-564-339-00	PIN, CONNECTOR 5P			
* CN203	1-564-340-00	PIN, CONNECTOR 6P			
* CN301	1-573-099-11	HOUSING, CONNECTOR 12P			
* CN401	1-573-098-11	HOUSING, CONNECTOR 12P			
CN901	1-568-668-11	CONNECTOR, BOARD TO BOARD 6P			
		< DIODE >			
D101	8-719-210-39	DIODE	EC10QS-04		
D102	8-719-210-39	DIODE	EC10QS-04		
D103	8-719-210-33	DIODE	EC10DS2		
D104	8-719-210-33	DIODE	EC10DS2		
D106	8-719-021-59	DIODE	UZM6.8Y		
D113	8-719-210-33	DIODE	EC10DS2		
D131	8-719-800-76	DIODE	1SS226		
D132	8-719-800-76	DIODE	1SS226		

DISPLAY | MAIN | TRANSFORMER

Ref. No.	Part No.	Description	Remark
D201	8-719-400-18	DIODE MA152WK	
D206	8-719-021-13	DIODE UZM3.9Z	
D301	8-719-210-33	DIODE EC10DS2	
D302	8-719-104-34	DIODE 1S2836	
D401	8-719-021-77	DIODE UZM8.2Z	
D402	8-719-104-34	DIODE 1S2836	
D403	8-719-104-34	DIODE 1S2836	
		< FLUORESCENT INDICATOR >	
FL401	1-519-652-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC101	8-759-604-86	IC M5F7807	
IC102	8-759-633-42	IC M5293L	
IC103	8-759-636-24	IC M5290FP	
IC105	8-749-921-12	IC GP1F32T	
IC201	8-759-059-86	IC uPD75116GF-F21-3BE	
IC202	8-752-340-37	IC CXD2505Q	
IC203	8-759-636-20	IC M54641FP	
IC301	8-752-334-87	IC CXD2552Q	
IC302	8-759-927-29	IC SN74HCU04ANS	
IC303	8-759-996-43	IC RC4558PS	
IC304	8-759-996-43	IC RC4558PS	
IC401	8-759-154-14	IC uPD75206GF-716-3BE	
		< JUMPER RESISTOR >	
JW401	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L301	1-410-381-11	INDUCTOR CHIP 10uH	
L302	1-410-381-11	INDUCTOR CHIP 10uH	
L303	1-410-375-11	INDUCTOR CHIP 3.3uH	
		< TRANSISTOR >	
Q101	8-729-804-41	TRANSISTOR 2SB1122-S	
Q102	8-729-620-06	TRANSISTOR 2SC3052-EF	
Q103	8-729-805-69	TRANSISTOR 2SA1341	
Q201	8-729-620-06	TRANSISTOR 2SC3052-EF	
Q301	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q302	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q303	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q304	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q305	8-729-216-22	TRANSISTOR 2SA1162-G	
Q306	8-729-805-69	TRANSISTOR 2SA1341	
		< RESISTOR >	
R101	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R102	1-216-043-00	METAL CHIP 560 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R103	1-216-039-00	METAL CHIP 390 5% 1/10W	
R104	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R105	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R106	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R107	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R109	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R201	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R202	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R203	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R204	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R205	1-216-001-00	METAL CHIP 10 5% 1/10W	
R206	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R207	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R208	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R209	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R210	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R211	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R213	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R214	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R215	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R216	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R217	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R218	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R219	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R220	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R221	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R222	1-216-033-00	METAL CHIP 220 5% 1/10W	
R223	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R224	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R225	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R226	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R227	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R301	1-216-001-00	METAL CHIP 10 5% 1/10W	
R302	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R303	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R304	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R305	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R307	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R308	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R309	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R310	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R311	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R312	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R313	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R314	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R315	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R316	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R317	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R318	1-216-079-00	METAL CHIP 18K 5% 1/10W	

DISPLAY | MAIN | TRANSFORMER | LOADING

Ref. No.	Part No.	Description			Remark
R319	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R320	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R321	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R322	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R323	1-216-105-00	METAL CHIP	220K	5%	1/10W
R324	1-216-105-00	METAL CHIP	220K	5%	1/10W
R325	1-216-033-00	METAL CHIP	220	5%	1/10W
R326	1-216-033-00	METAL CHIP	220	5%	1/10W
R327	1-216-033-00	METAL CHIP	220	5%	1/10W
R328	1-216-033-00	METAL CHIP	220	5%	1/10W
R329	1-216-033-00	METAL CHIP	220	5%	1/10W
R330	1-216-033-00	METAL CHIP	220	5%	1/10W
R331	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R332	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R333	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R334	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R351	1-216-105-00	METAL CHIP	220K	5%	1/10W
R401	1-216-089-00	METAL CHIP	47K	5%	1/10W
R402	1-216-089-00	METAL CHIP	47K	5%	1/10W
R403	1-216-089-00	METAL CHIP	47K	5%	1/10W
R404	1-216-089-00	METAL CHIP	47K	5%	1/10W
R405	1-216-089-00	METAL CHIP	47K	5%	1/10W
R406	1-216-089-00	METAL CHIP	47K	5%	1/10W
R407	1-216-089-00	METAL CHIP	47K	5%	1/10W
R408	1-216-093-00	METAL CHIP	68K	5%	1/10W
R409	1-216-089-00	METAL CHIP	47K	5%	1/10W
R410	1-216-089-00	METAL CHIP	47K	5%	1/10W
R411	1-216-089-00	METAL CHIP	47K	5%	1/10W
R412	1-216-089-00	METAL CHIP	47K	5%	1/10W
R413	1-216-089-00	METAL CHIP	47K	5%	1/10W
R414	1-216-089-00	METAL CHIP	47K	5%	1/10W
		< SWITCH >			
S401	1-554-303-21	SWITCH, TACTILE (⏮ ◀◀)			
S402	1-554-303-21	SWITCH, TACTILE (▶▶ ⏭)			
S403	1-554-303-21	SWITCH, TACTILE (▷❚❚)			
S404	1-554-303-21	SWITCH, TACTILE (■)			
S405	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE)			
S406	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)			
S407	1-554-303-21	SWITCH, TACTILE (CHECK)			
		< TRANSFORMER >			
⚠T101	1-450-341-11	TRANSFORMER, POWER			
		< VIBRATOR >			
X201	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			
X301	1-577-686-11	VIBRATOR, CRYSTAL (45MHz)			
X401	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)			

Ref. No.	Part No.	Description	Remark
*	1-634-461-11	LOADING BOARD	
		**********	
		< CONNECTOR >	
* CN291	1-564-498-11	PIN, CONNECTOR 5P	
		< SWITCH >	
S291	1-571-924-11	SWITCH, LEAF (LOAD OUT)	
S292	1-571-924-11	SWITCH, LEAF (LOAD IN)	
**********			
		MISCELLANEOUS	
		**********	
12	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
13	1-535-845-11	JUMPER, FILM (WITH TERMINAL)	
⚠105	8-848-144-11	DEVICE, OPTICAL KSS-240A	
106	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
M101	X-4917-523-3	MOTOR ASSY, SPINDLE	
M102	X-4917-504-1	MOTOR ASSY, SLED	
M291	A-4608-362-A	MOTOR (L) ASSY	

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

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