CDP-SP55

SERVICE MANUAL

Ver 1.1 2003.12

AEP Model
UK Model
E Model

CDP-SP55 is the CD section in CMT-SP55MD or CMT-SP55TC.

This stereo system is equipped with the Dolby* B-type noise reduction system.
* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⊡⊡ are trademarks of the Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	NEW
CD Mechanism Type	CDM55C-K6BD38
Base Unit Type	BU-K6BD38
Optical Pick-up Type	KSM-213DAP

SPECIFICATIONS

System	Compact disc and 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 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Frequency response	20 Hz – 20 kHz
Output	
DIGITAL OPTICAL OUT:	Optical

General

Dimensions (w/h/d)	Approx. 202 × 75 × 290 mm
Mass	Approx. 1.5 kg

Design and specifications are subject to change without notice.

MINI Hi-Fi COMPONENT SYSTEM

9-929-538-12
2003L02-1

Sony Corporation
Home Audio Company
Published by Sony Engineering Corporation

SONY®

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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.

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

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

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

Notes on chip component replacement

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

Flexible Circuit Board Repairing

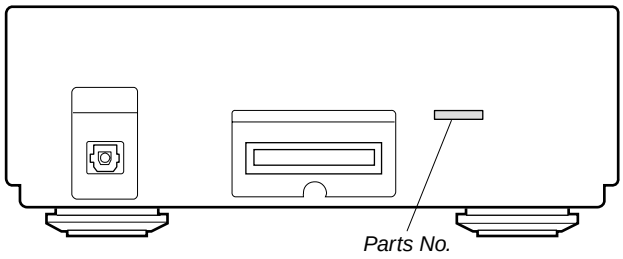
- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

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

MODEL IDENTIFICATION

— BACK PANEL —



MODEL	PARTS No.
AEP,UK,AED models	4-229-674-0☐
HK,MY,SP models	4-229-674-2☐
KR model	4-229-674-3☐

- Abbreviation
  AED : North European model
  HK : Hong Kong model
  MY : Malaysia model
  SP : Singapore model
  KR : Korea model

SECTION 1
SERVICING NOTE

This unit cannot be repaired by itself.
When repairing, connect the whole system except for the speaker.

CD Text Display

- This unit displays CD text.
  Text is displayed for the first 50 track only and will not be displayed from the 51st track onwards. Do not suspect a fault in this case.
  In some cases, some special characters will not be displayed and may be replaced by other characters. Do not suspect a fault in this case.

Cold Reset

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure :

1. When the power ON, press the I/⏻ button (TA) while pressing the TUNING MODE button (ST) and ▶▶▷▷| buttons (CDP) together.
2. "COLD RESET" is displayed on the fluorescent indicator tube and reset is executed.

Hot Reset

- This mode reset the preset data kept in the memory. The hot reset mode functions same as if the power cord is plugged in and out.

Procedure :

1. When the power ON, press the I/⏻ button (TA) while pressing the TUNING MODE button (ST) and |◁◁◀◀ buttons (CDP) together.
2. Turn off the unit and reset is executed.

GC Test Mode

Procedure :

1. When the power ON, press the I/⏻ button (TA) while pressing the TUNING MODE button (ST) and PLAY MODE buttons (CDP) together.
2. Fluorescent indicator tube are all turned on.
3. Press TUNING MODE button (ST) to enter the model destination indecation mode. "SP55 CE2" appears.
4. Every pressing of TUNING MODE button (ST) changes the display in the following order.
   MC Version → CD Version → ST Version → TC Version → TA Version → TM Version → model destination display.
5. Press DISPLAY button (ST) and the date appears as " 00615a "
   Every pressing of DISPLAY button (ST) changes the display in the Version display and model destination display.
6. Press TUNER/BAND button (ST) to enter the key check mode.
7. In the key check mode, the fluorescent indicator tube displays "Key 0 Vol 0". Each time a button is pressed, "Key" value increases. However, once a button is pressed, it is no longer taken into account.
   "Vol" Value increases like "1, 2, 3 ..." if rotating VOLUME knob (TA) in the clockwise direction, or decreases like "0, 9, 8 ..." if rotating in the counterclockwise diretion.
8. To exit from this mode, press three buttons in the same procedure as step 1, or disconnect the power cord.

Aging Mode

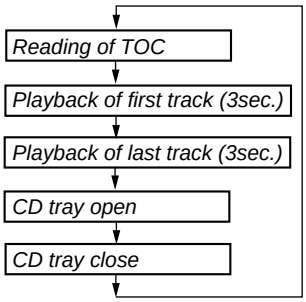
• Mode for repeating operations of the CD player and TC deck automatically.

When errors occur:
Aging stops and a message indicating that an error has occurred such as “CD MEC ERR” is displayed.
(For details of errors, refer to “Error History Display Mode”.)

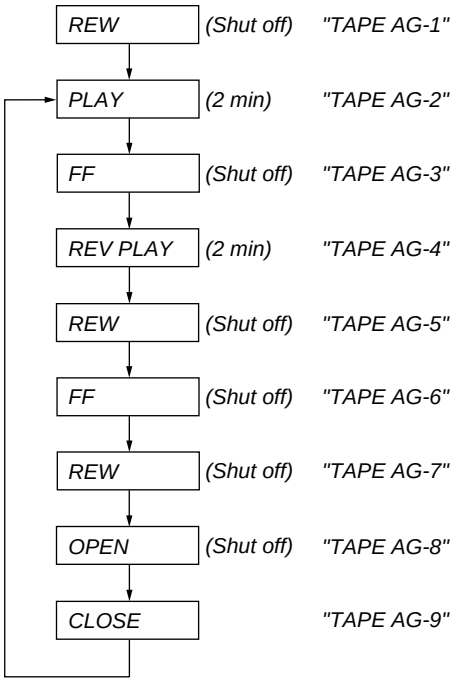
When no errors occur:
Aging is repeatedly performed.

Procedure:
1. Load any CD and a tape.
2. Select the function “ CD ” using the FUNCTION knob (TA).
3. While pressing the TUNING MODE button (ST) and ▷ button (CDP), press the I/⏻ button (TA).
4. “AGING” is displayed on the fluorescent display tube briefly.
5. Operations are performed in the following sequence during aging.
   Every pressing of DISPLAY button (ST) changes the display in the CD display and TAPE display.

CD :



Cassette :



6. To end aging, execute the cold reset.

Error History Display Mode

Mode for checking the history of errors which have occurred in the CD player.
Execute this mode after ending the aging mode.

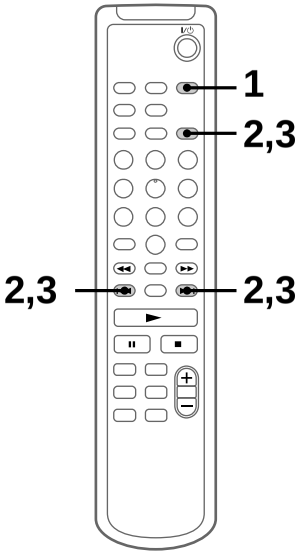
Procedure:
1. Select the function “ CD ” using the FUNCTION knob (TA).
2. While pressing the TUNING MODE button (ST) and ▯▯ button (CDP), press the I/⏻ button (TA).
3. “EMC@@EDC**” id displayed.
   @@ : Number of mechanism errors (Last 3 errors)
   ** : Number of errors (NO DISC ERROR) which occurred after chucking (Last 3 errors)
4. To end, press the I/⏻ button (TA) and turn OFF the power.

Note: To erase the error history, perform cold reset.
(While pressing the TUNING MODE button (ST) and ▶▶▷▷▮ button (CDP), press the I/⏻ button (TA).)

Step 2: Setting the time

You must set the time beforehand to use the timer functions.
The clock is on a 24-hour system for the European model, and a 12-hour system for other models. The 24-hour system is used for illustration purposes.

Set the time before turning on the system.



1 Press CLOCK/TIMER SET while the system is off.
The hour indication flashes.

2 Press ⏮ or ⏭ to set the hour, then press ENTER/YES.
The minute indication flashes.

3 Press ⏮ or ⏭ to set the minute, then press ENTER/YES.
The clock starts.

If you made a mistake

Start over from step 1.

To change the preset time

You can change the preset time while the system is on.

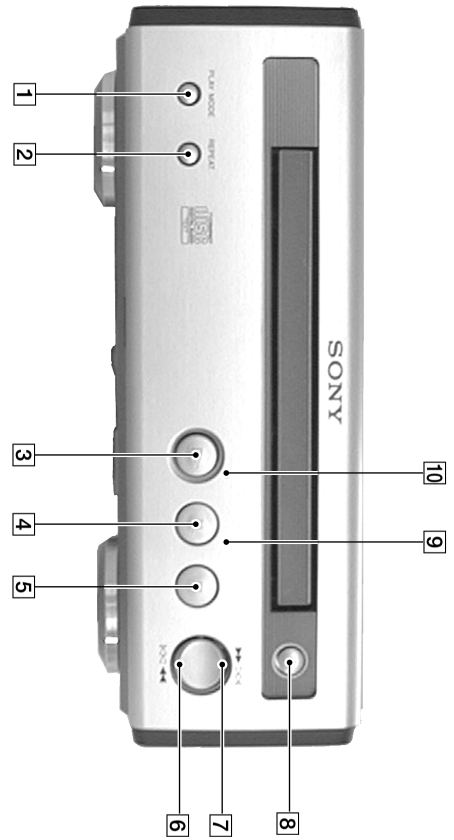
1 Press CLOCK/TIMER SET.
2 Press ⏮ or ⏭ repeatedly until "SET CLOCK" appears, then press ENTER/YES.
3 Repeat steps 2 and 3.

Tips

- The built-in clock shows the time in the display while the system is off. If you press DISPLAY at this time, the display back light lights up, making the clock easier to see.
- The upper dot of the colon flashes for the first 30 seconds, and the lower dot flashes for the last 30 seconds of each minute.

SECTION 2
GENERAL

This section is extracted from instruction manual.



1 PLAY MODE button
2 REPEAT button
3 ▽ button
4 ▯▯ button
5 □ button
6 ⏮△▲⏭ button
7 ▼▽▷⏭ button
8 ⏭ button
9 ▯▯ indicator
10 ▽ indicator

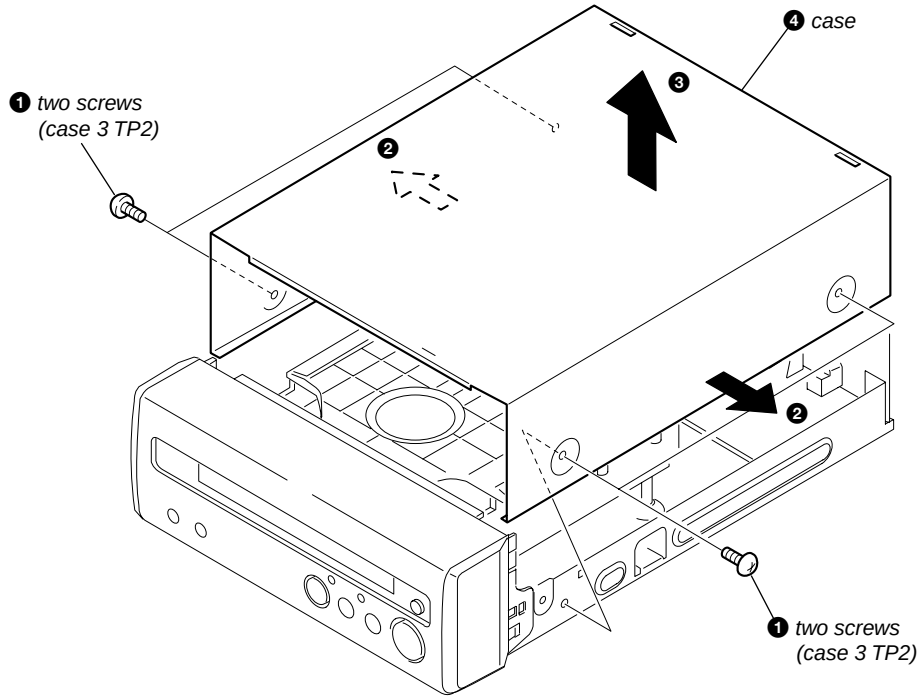
SECTION 3
DISASSEMBLY

Set → Case → Front Panel Assy → Main Board (Page 8)

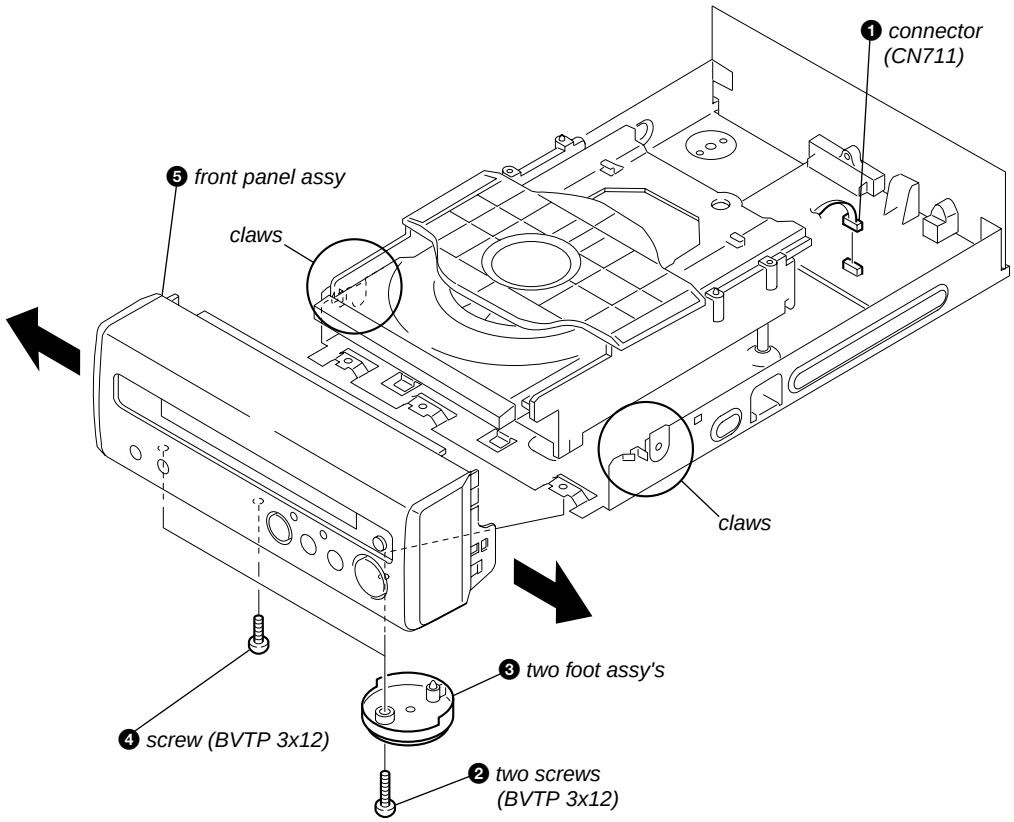
Front Panel Assy → CD Mechanism Deck (CDM55C-K6BD38) (Page 8) → Cam, Gear (Page 9)

Front Panel Assy → Holder Assy (Page 9) → Optical pick-up (Page 10) → BD Board (Page 10)

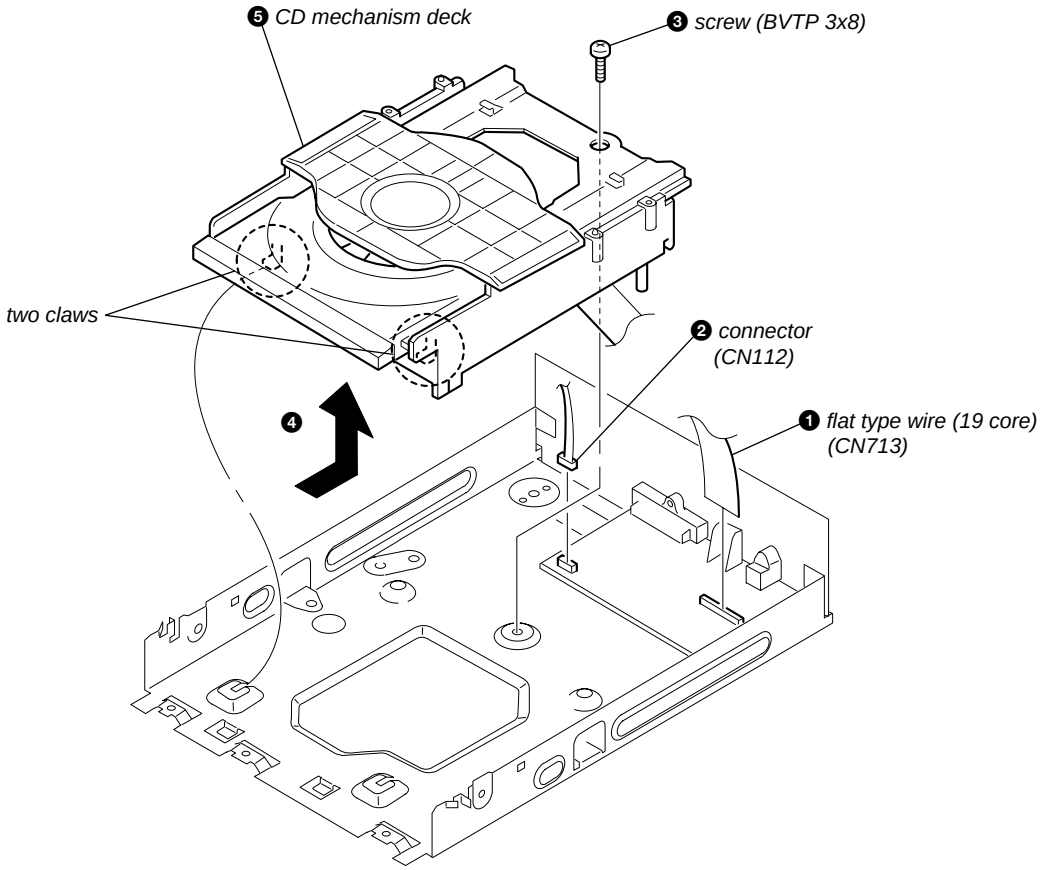
3-1. CASE



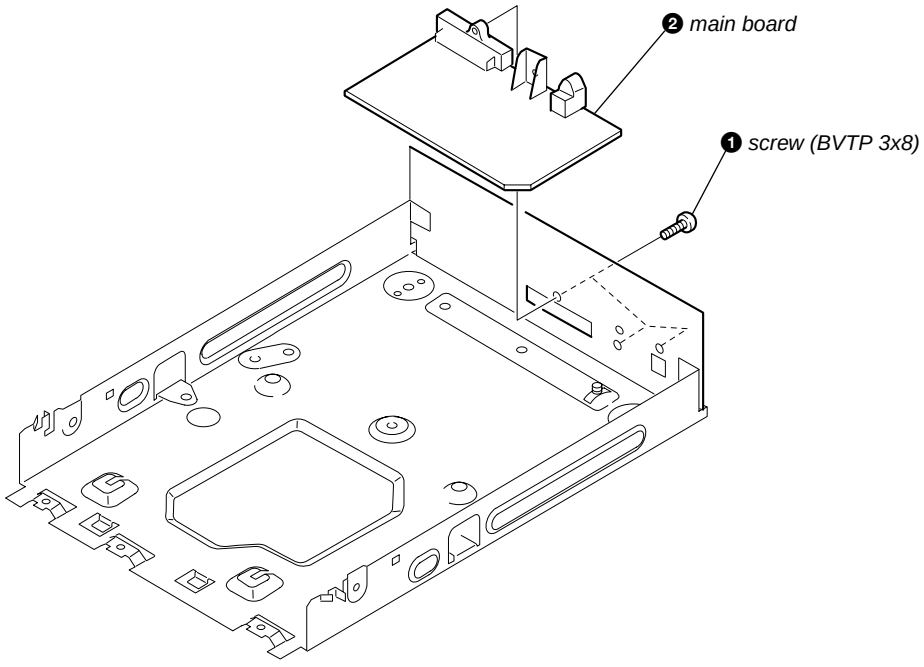
3-2. FRONT PANEL ASSY



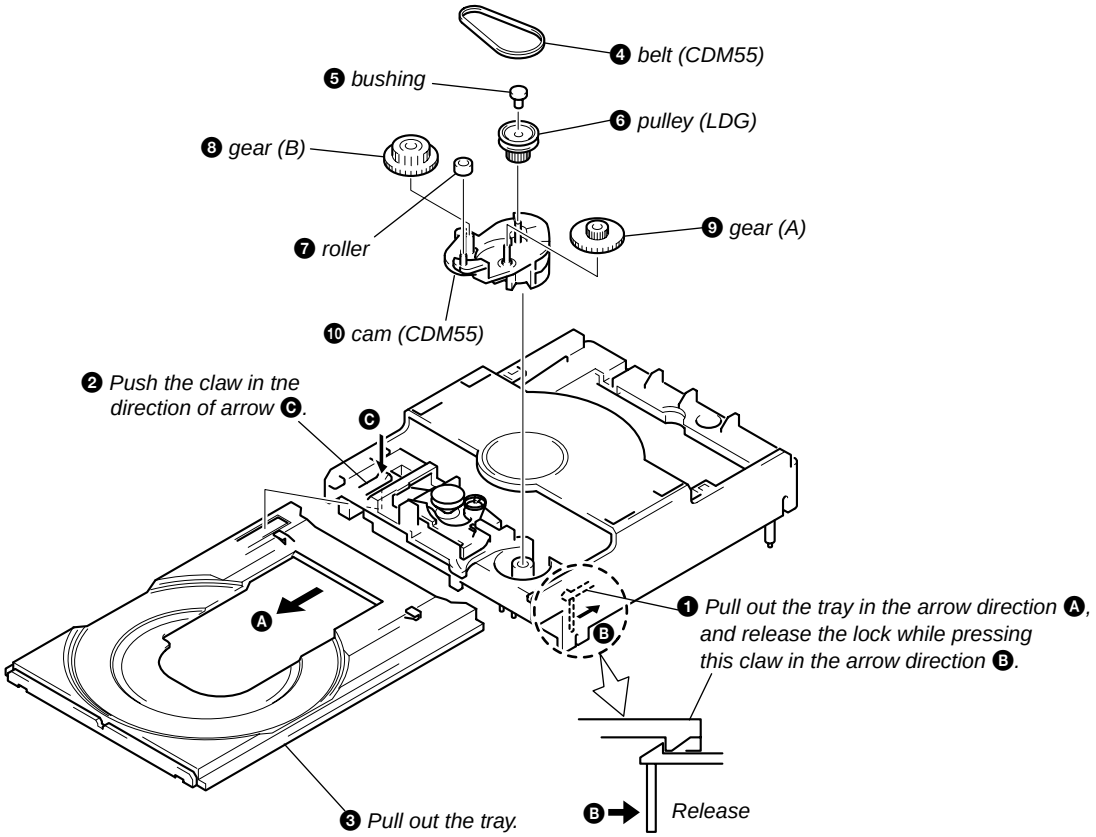
3-3. CD MECHANISM DECK (CDM55C-K6BD38)



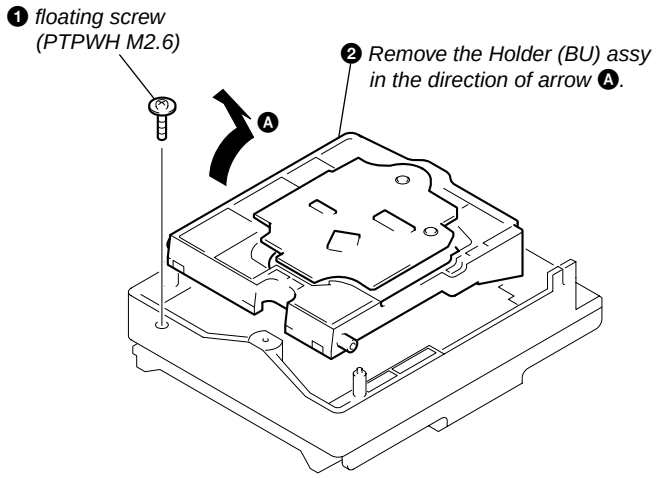
3-4. MAIN BOARD



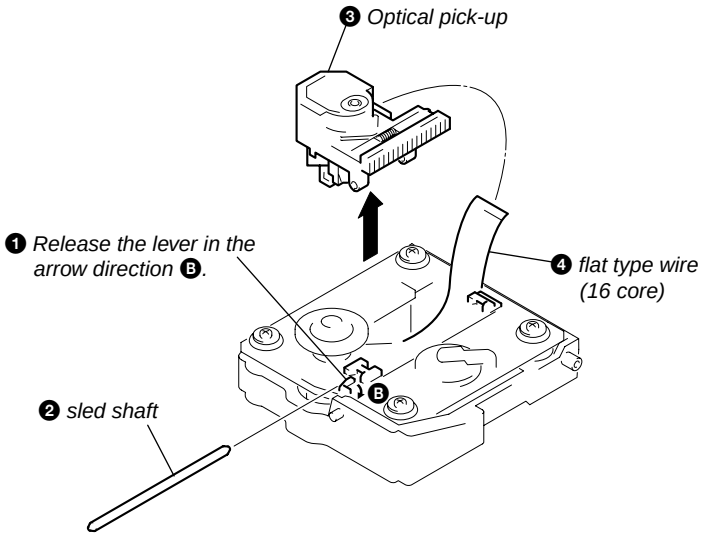
3-5. CAM, GEAR



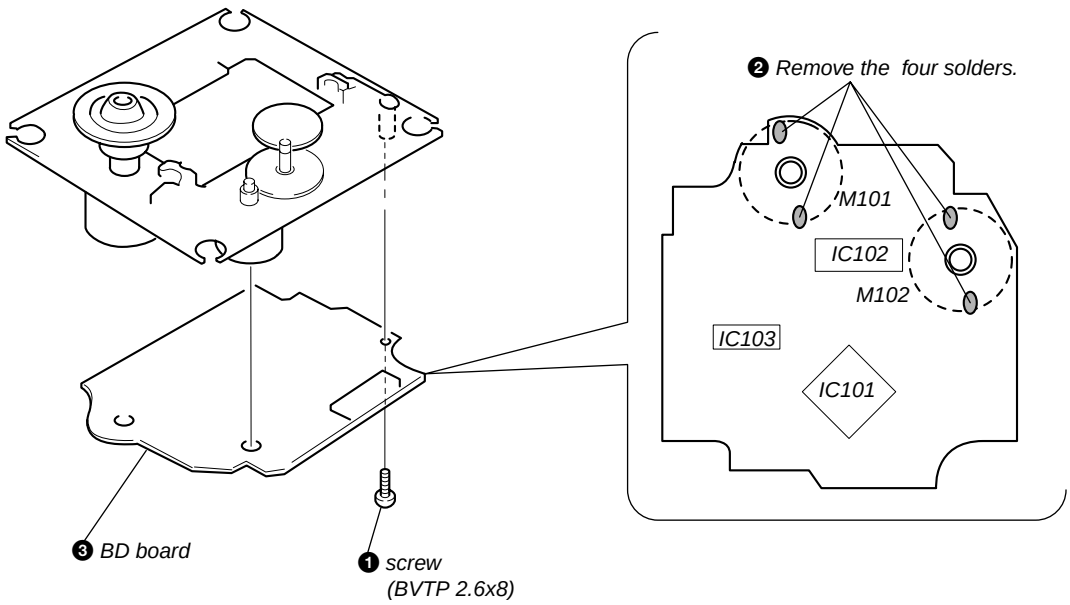
3-6. HOLDER ASSY



3-7. OPTICAL PICK-UP



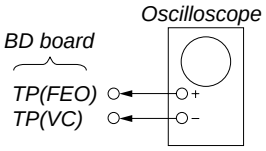
3-8. BD BOARD



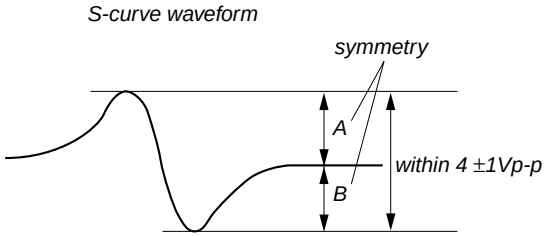
SECTION 4
ELECTRICAL ADJUSTMENT

Note :
1. CD Block is basically designed 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 an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S-Curve Check



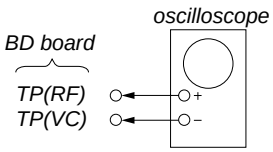
Procedure :
1. Connect oscilloscope to TP (FEO).
2. Connect between TP (FEI) and TP (VC) by lead wire.
3. Connect between TP (AGCCON) and TP (DGND) by lead wire.
4. Press the I/⏻ button (TA).
5. Load a disc (YEDS-18) and actuate the focus search. (In consequence of open and close the disc tray, actuate the focus search)
6. Confirm that the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 4 ±1 Vp-p.



7. After check, remove the lead wire connected in step 2 and 3.

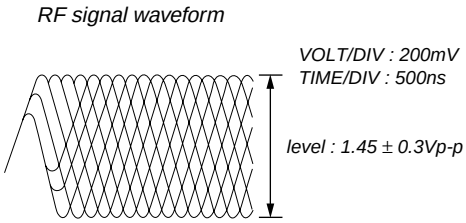
Note :
- Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
- Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

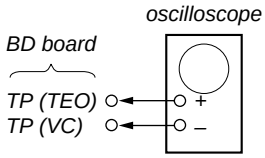


Procedure :
1. Connect oscilloscope to TP (RF).
2. Connect between TP (AGCCON) and TP (DGND) by lead wire.
3. Press the I/⏻ button (TA).
4. Load a disc (YEDS-18) and playback.
5. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
6. After check, remove the lead wire connected in step 2.

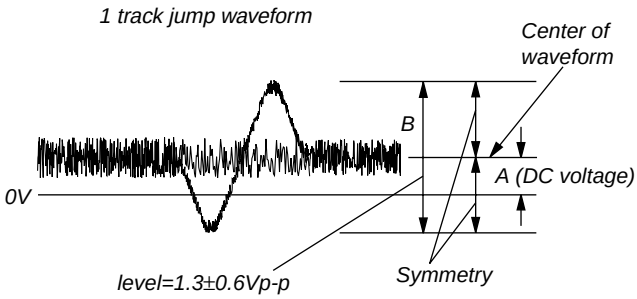
Note: Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



E-F Balance (1 Track jump) Check



Procedure:
1. Connect oscilloscope to TP (TEO) and TP (VC) board.
2. Press the I/⏻ button (TA).
3. Load a disc (YEDS-18) and playback the number five track.
4. Press the ▷ button. (Becomes the 1track jump mode.)
5. Confirm that the level B and A (DC voltage) on the oscilloscope waveform.

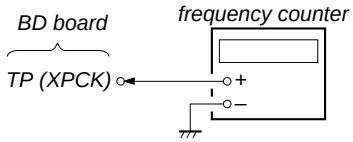


Specification level: $\frac{A}{B}$ x 100=less than ±22%

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

RF PLL Free-run Frequency

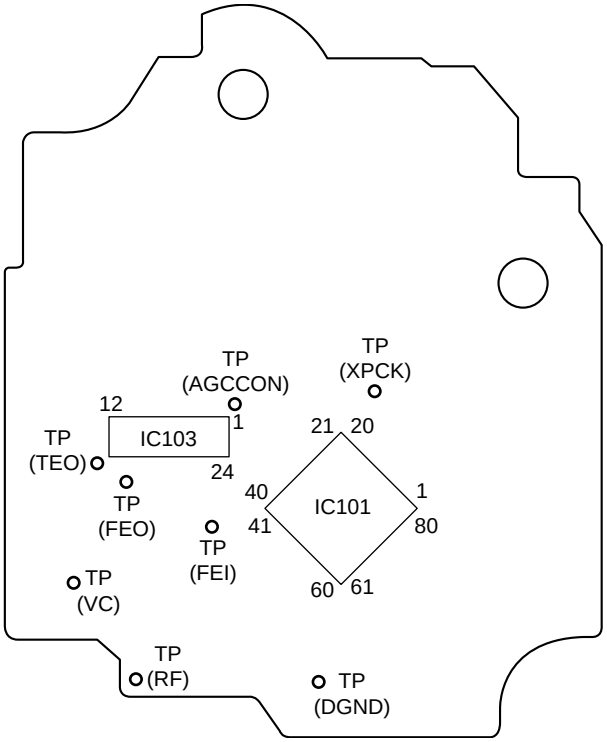
Procedure :
1. Connect frequency counter to test point (XPCK) with lead wire.



2. Press the I/⏻ button (TA).
3. Put the disc (YEDS-18) in to play the number five track. Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location:

[BD BOARD] (Conductor Side)



SECTIOIN 5
DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

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

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

- B+ : B+ Line.
- B– : B– Line.
- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : CD (ANALOG)
  : CD (DIGITAL)
- Abbreviation
  AED : North European model
  HK : Hong Kong model
  MY : Malaysia model
  SP : Singapore model
  KR : Korea model

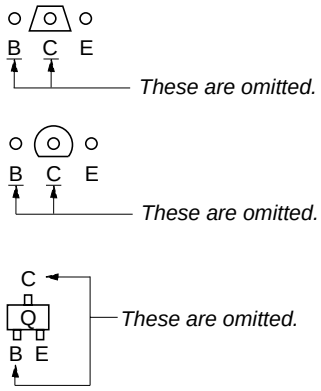
For printed wiring boards.

Note:

- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Pattern from the side which enables seeing.

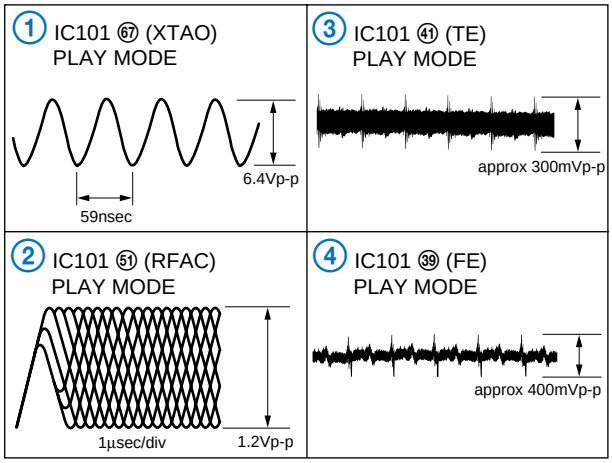
(The other layers' patterns are not indicated.)

- **Indication of transistor**

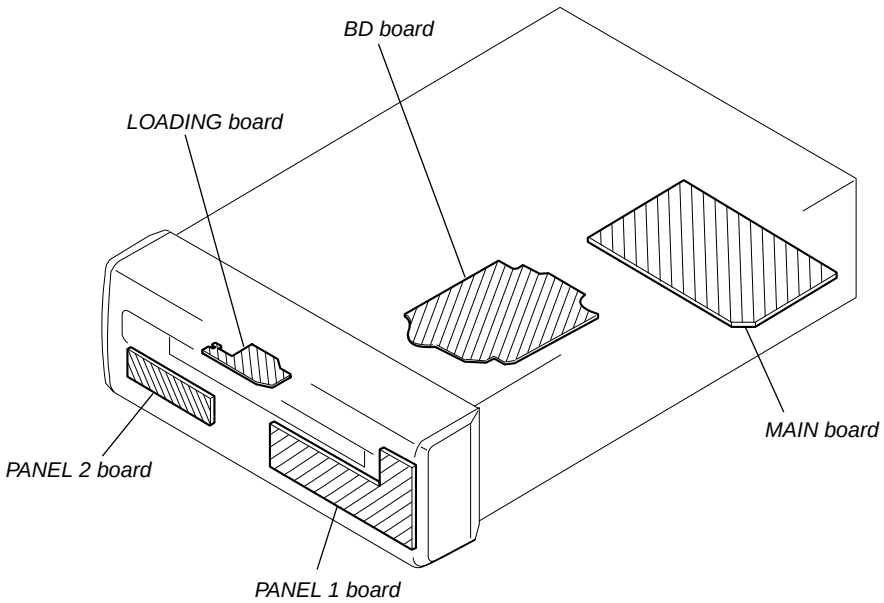


• **WAVEFORMS**

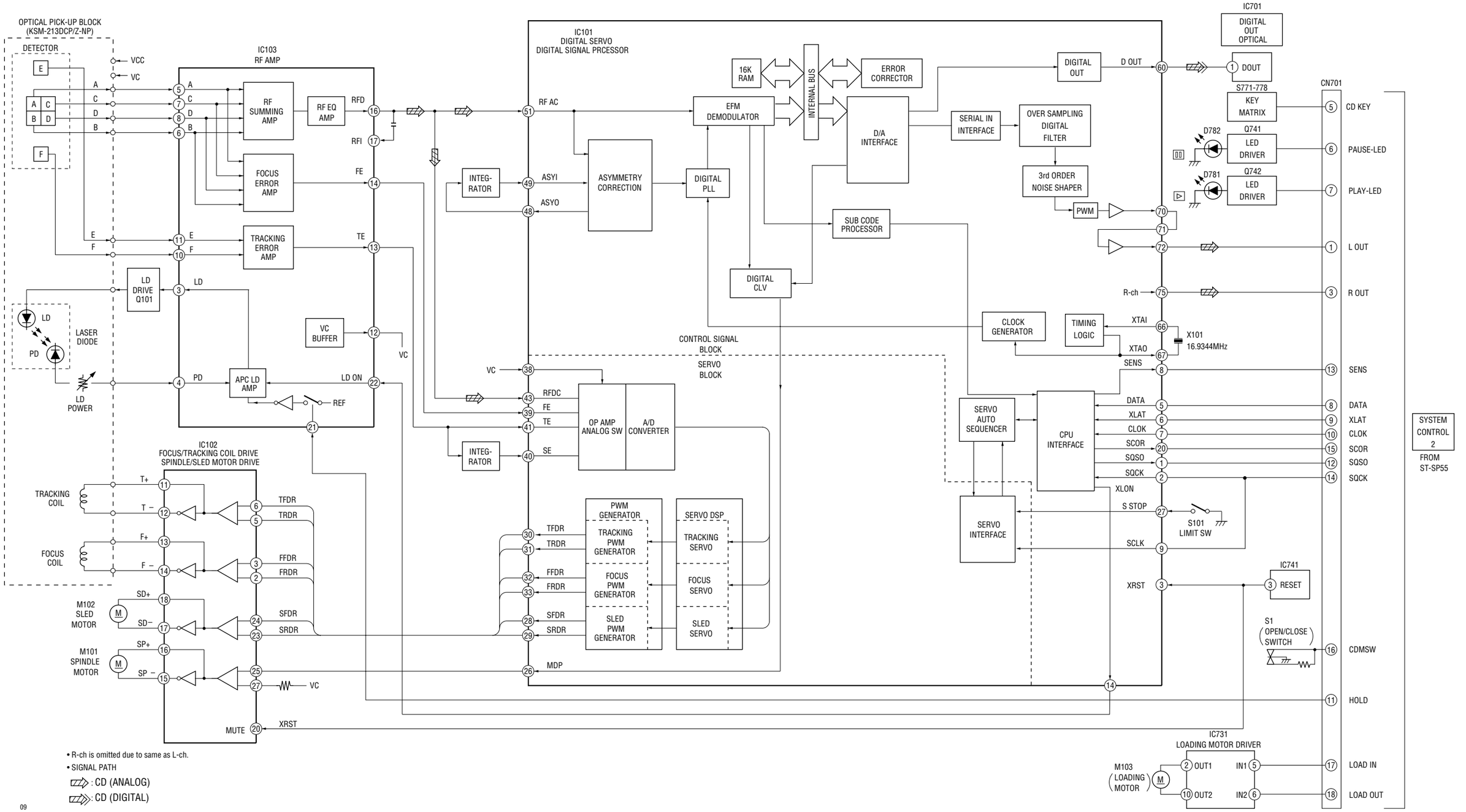
– BD BOARD –



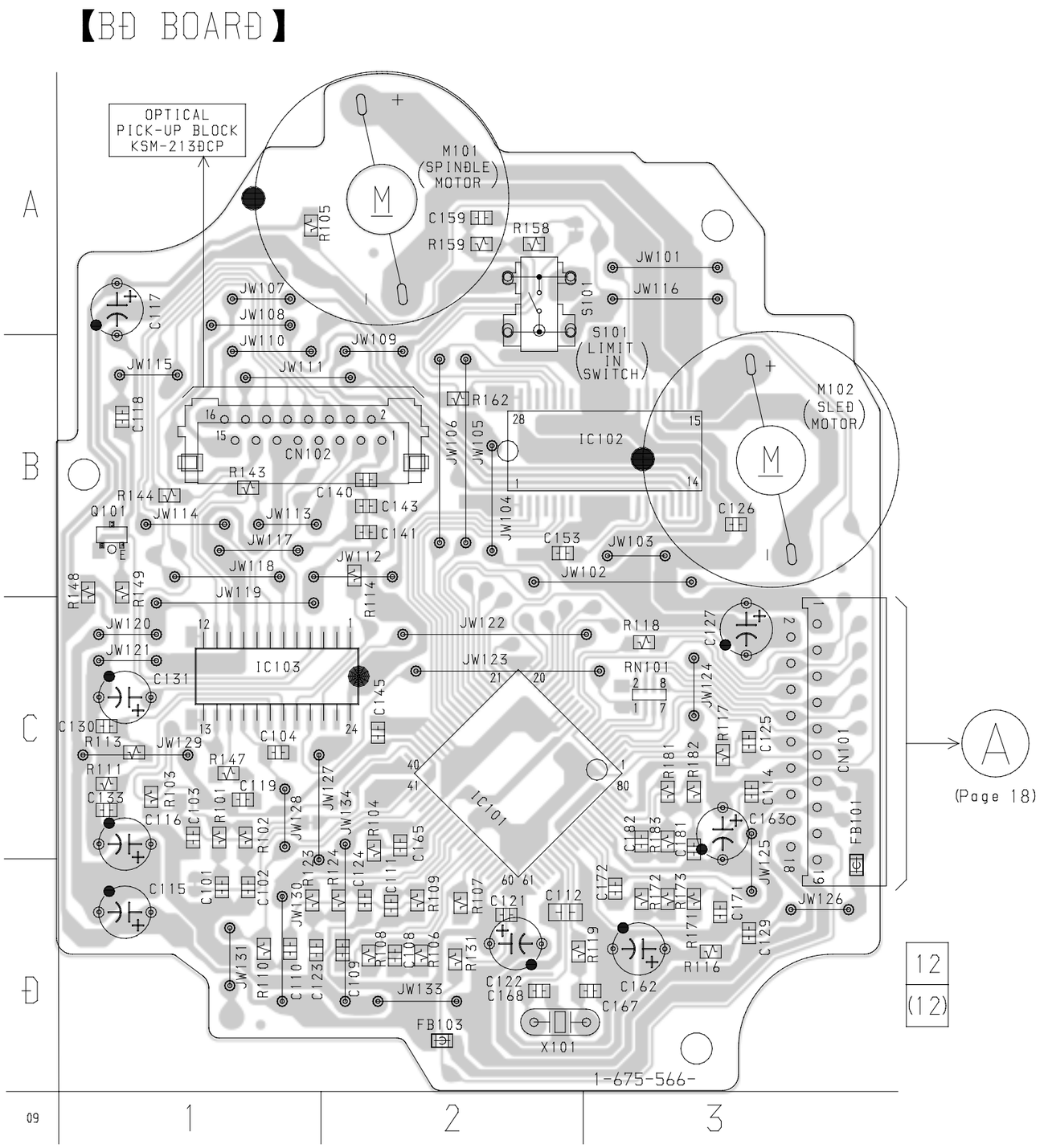
5-1. CIRCUIT BOARDS LOCATION



5-2. BLOCK DIAGRAM

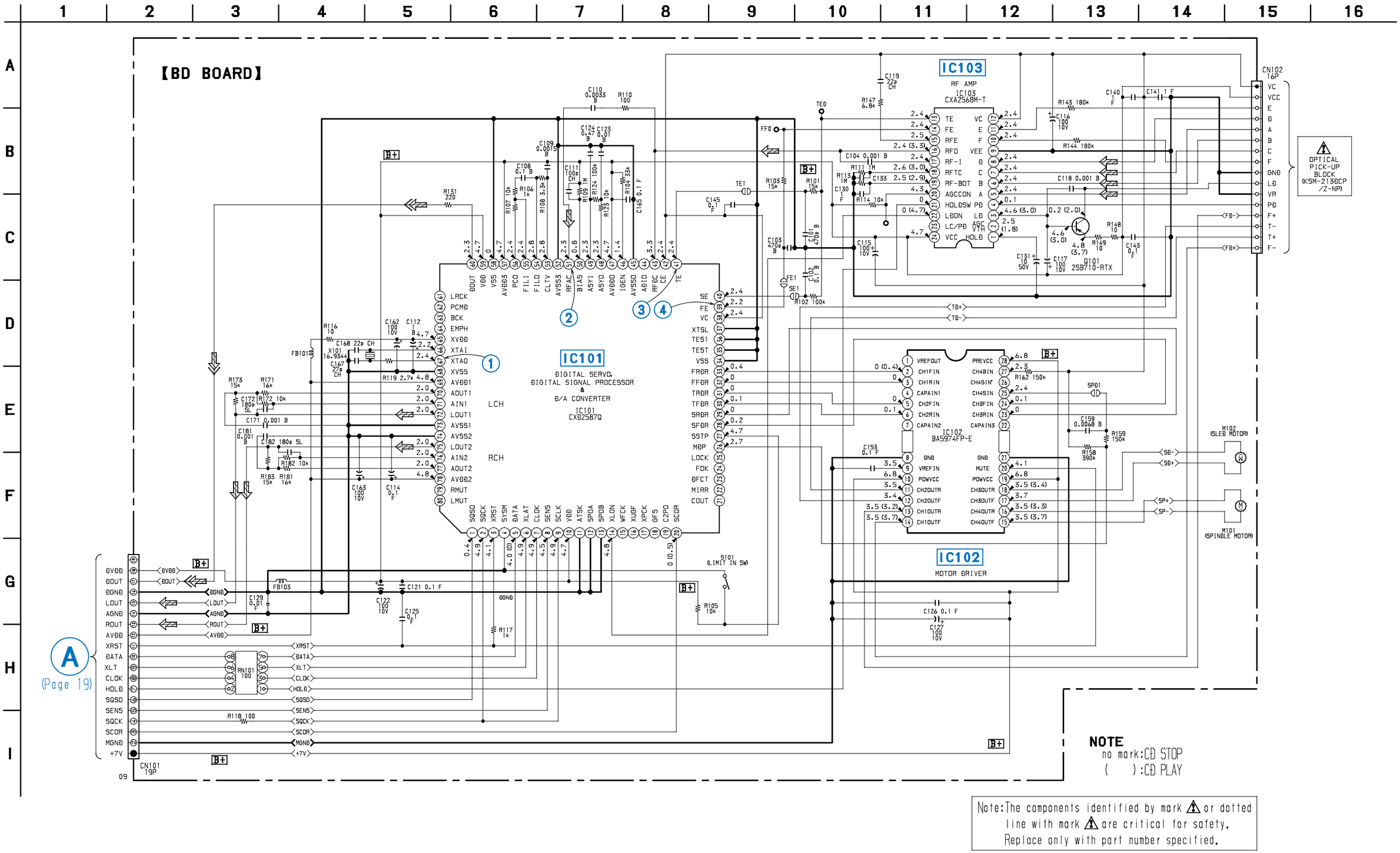


5-3. PRINTED WIRING BOARD – BD SECTION – • See page 14 for Circuit Boards Location.

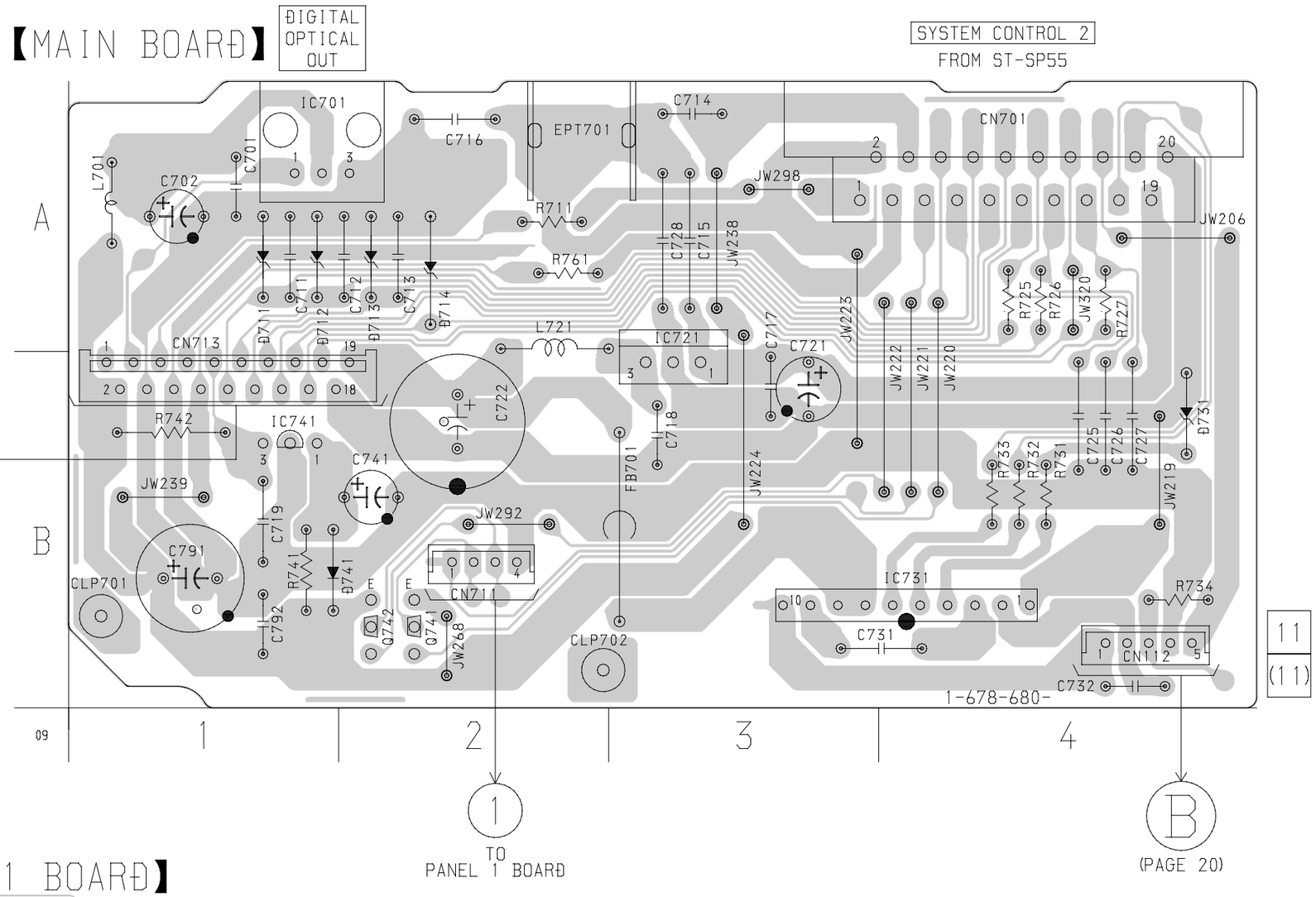


There are a few cases that the part isn't mounted in model is printed on diagram.

5-4. SCHEMATIC DIAGRAM – BD SECTION – • See page 14 for Waveforms. • See page 20 for IC Block Diagrams.



5-5. PRINTED WIRING BOARD – MAIN SECTION – • See page 14 for Circuit Boards Location.

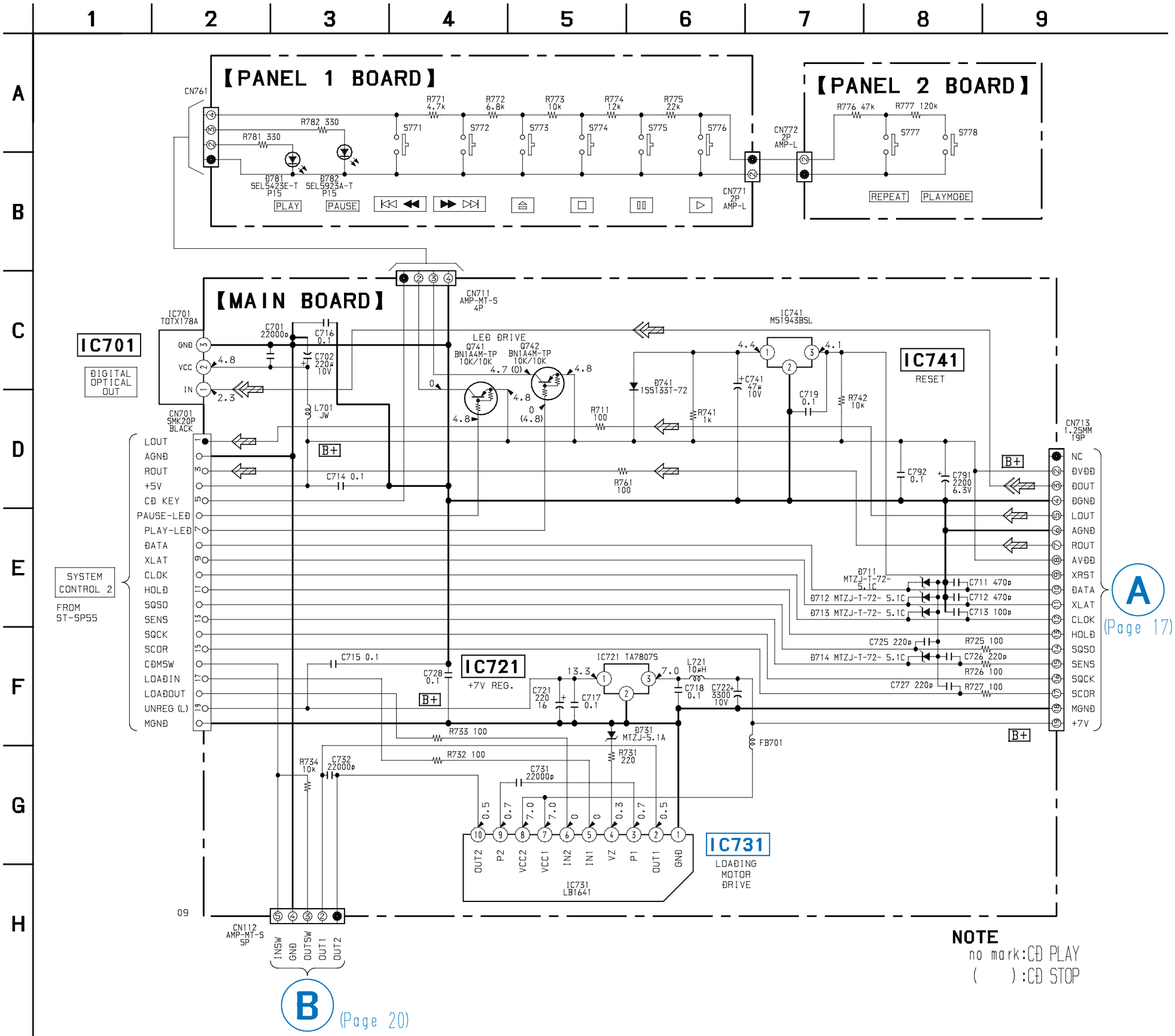


- **Semiconductor Location**

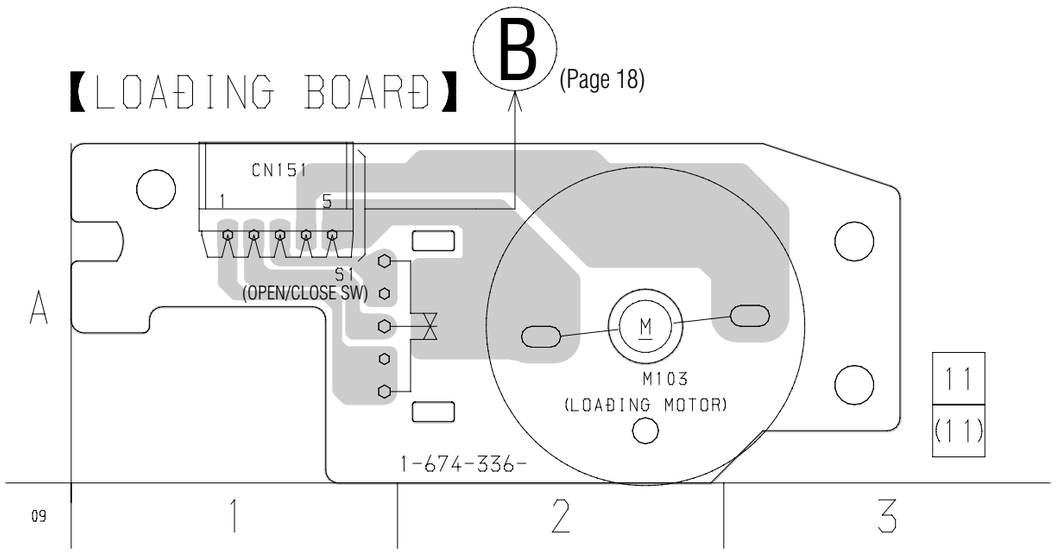
Ref. No.	Location
D711	A-1
D712	A-1
D713	A-2
D714	A-2
D731	B-4
D741	B-1
IC701	A-1
IC721	A-3
IC731	B-4
IC741	B-1
Q741	B-2
Q742	B-2

There are a few cases that the part isn't mounted in model is printed on diagram.

5-6. SCHEMATIC DIAGRAM – MAIN SECTION – • See page 21 for IC Block Diagrams.

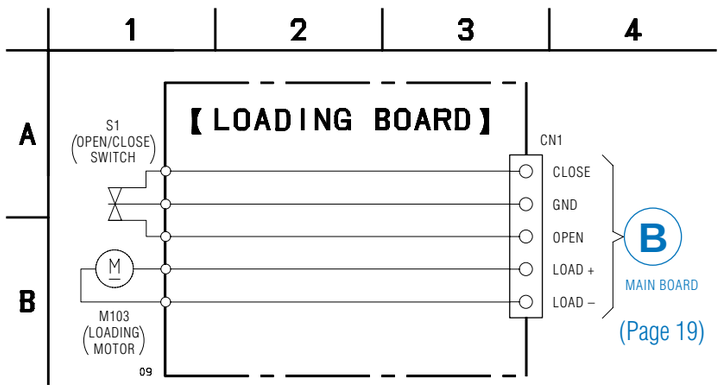


5-7. PRINTED WIRING BOARD – LOADING SECTION –



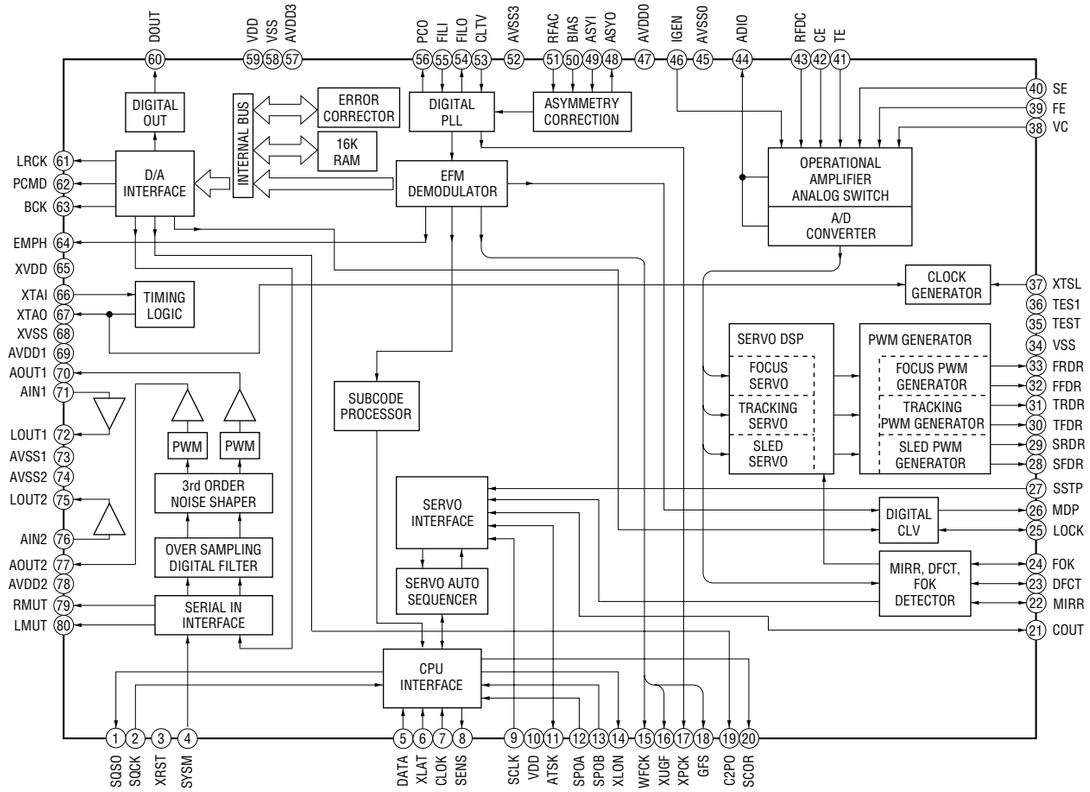
There are a few cases that the part isn't mounted in model is printed on diagram.

5-8. SCHEMATIC DIAGRAM – LOADING SECTION –

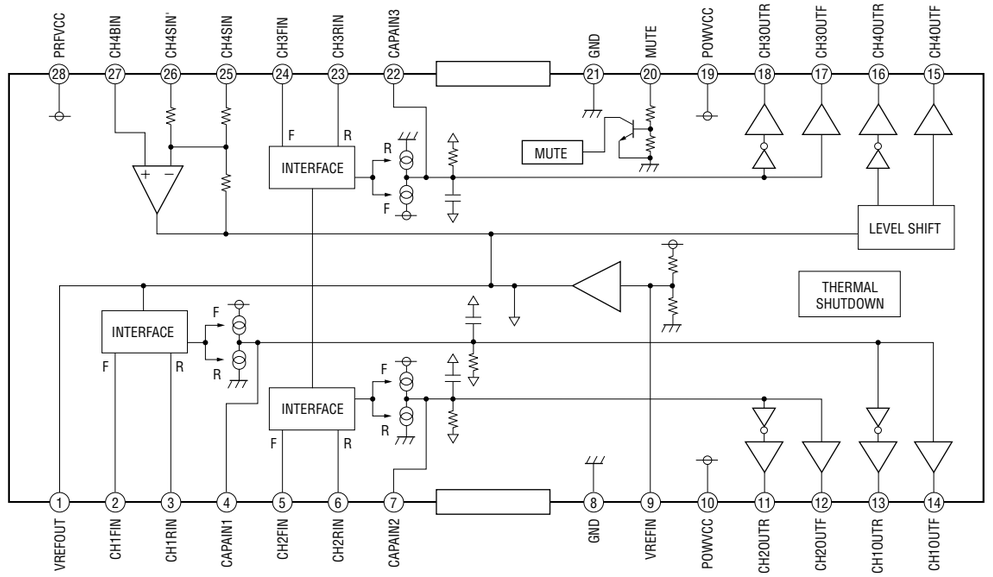


5-9. IC BLOCK DIAGRAM

IC101 CXD2587Q (BD BOARD)

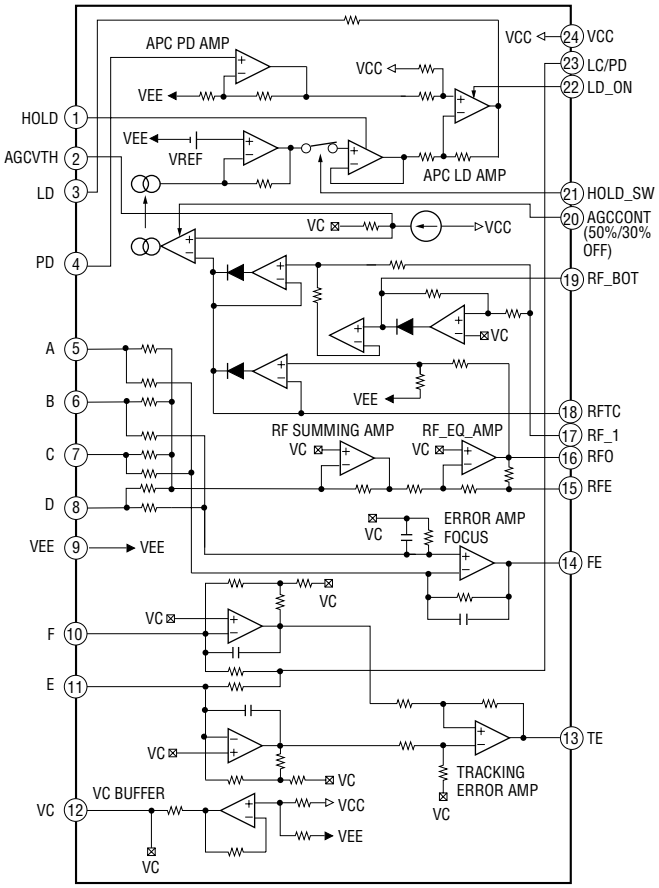


IC102 BA5974FP-E2 (BD BOARD)

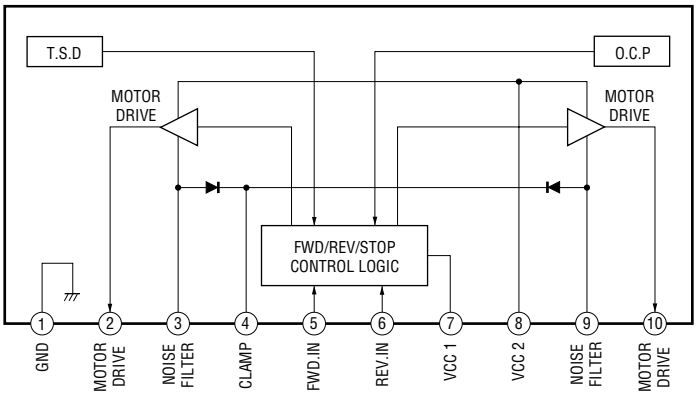


20

IC103 CXA2568M-T6 (BD BOARD)



IC731 LB1641 (MAIN BOARD)



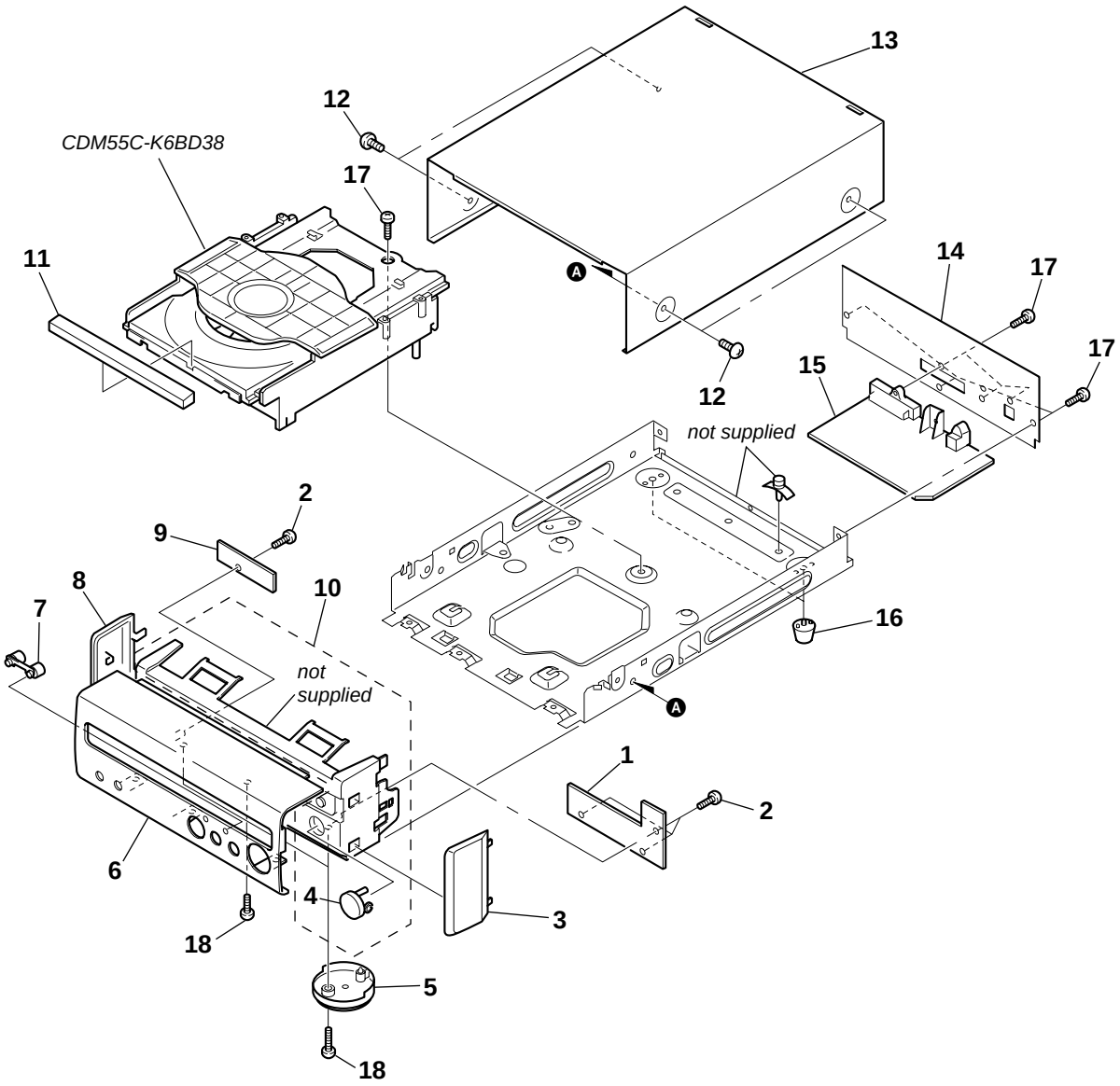
SECTION 6
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  AED : North European model
  HK : Hong Kong model
  MY : Malaysia model
  SP : Singapore model
  KR : Korea model

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

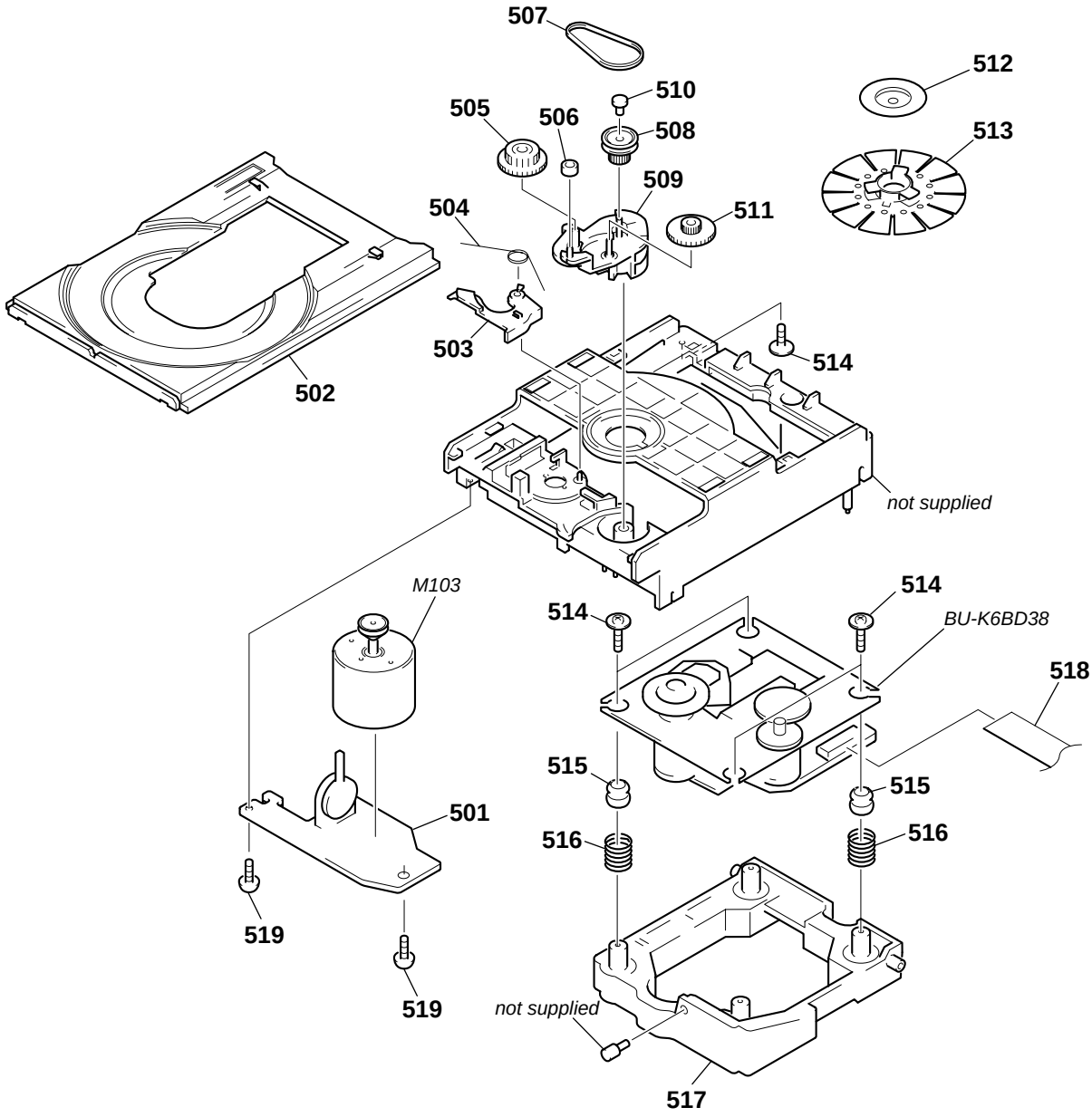
6-1. CASE AND FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks
1	1-678-681-11	PANEL1 BOARD	
2	4-951-620-01	SCREW (2.6X8), +BVTP	
3	4-229-683-01	PLATE (R), SIDE	
4	4-229-678-01	BUTTON (U/D)	
5	X-4953-027-1	FOOT ASSY	
6	4-229-667-01	PANEL (CD), FRONT	
7	4-229-652-11	INDICATOR (PLAY)	
8	4-229-684-01	PLATE (L), SIDE	
9	1-678-682-11	PANEL2 BOARD	
10	X-4953-024-1	PANEL ASSY (CD), SUB	

Ref. No.	Part No.	Description	Remarks
11	4-229-668-01	PANEL, LOADING	
12	3-363-099-51	SCREW (CASE 3 TP2)	
13	4-229-687-11	CASE	
14	4-229-674-01	PANEL, BACK (AEP,UK,AED)	
14	4-229-674-21	PANEL, BACK (MY,SP,HK)	
14	4-229-674-31	PANEL, BACK (KR)	
15	1-678-680-11	MAIN BOARD	
16	4-965-822-01	FOOT	
17	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
18	7-685-648-79	SCREW +BVTP 3X12 TYPE2 N-S	

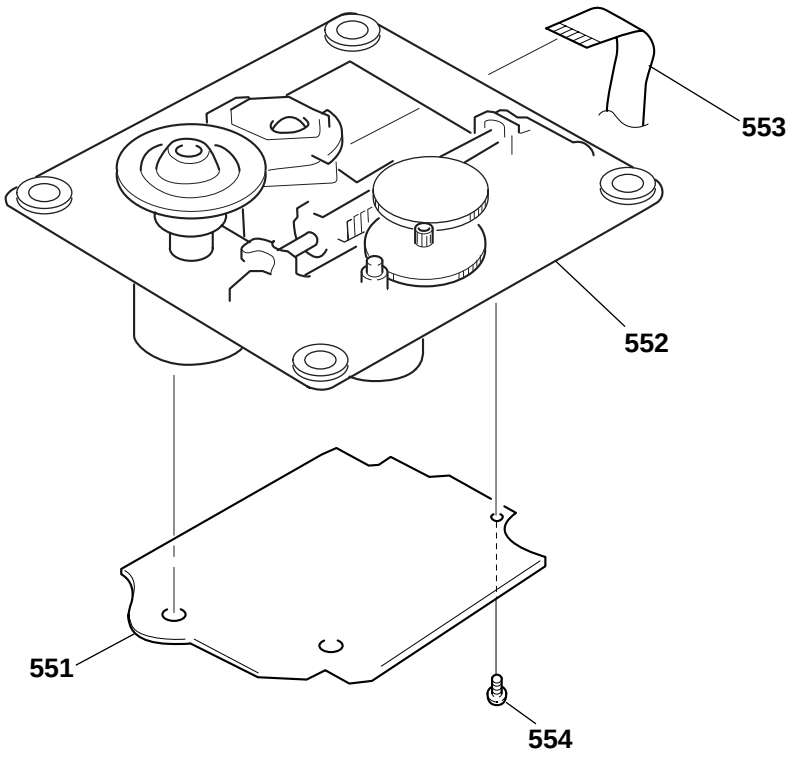
6-2. CD MECHANISM DECK SECTION (CDM55C-K6BD38)



Ref. No.	Part No.	Description	Remarks
501	1-674-336-21	LOADING BOARD	
502	4-224-894-11	TRAY (CDM55D)	
503	4-220-229-01	LEVER (SW)	
504	4-220-239-11	SPRING, TORSION	
505	4-220-237-01	GEAR (A)	
506	4-221-815-01	ROLLER	
507	4-221-816-11	BELT (CDM55)	
508	4-220-233-01	CAM (CDM55)	
509	4-220-234-01	PULLEY (LDG)	
510	4-227-598-01	SPACER (55)	

Ref. No.	Part No.	Description	Remarks
511	4-220-238-01	GEAR (B)	
512	1-452-925-21	MAGNET ASSY	
513	X-4953-195-1	PULLEY (AT) ASSY	
514	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
515	4-227-679-01	INSULATOR (213)	
516	4-229-806-01	SPRING (213), COMPRESSION	
517	X-4953-169-1	HOLDER (BU) ASSY	
518	1-590-578-11	WIRE (FLAT TYPE) (19 CORE)	
519	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
M103	A-4672-984-A	MOTOR (LD) ASSY (LOADING)	

6-3. BASE UNIT SECTION (BU-K6BD38)



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	Remarks
551	A-4724-934-A	BD BOARD, COMPLETE	
⚠552	A-4735-357-A	OP BASE ASSY (KSM-213DAP)	
553	1-792-024-11	WIRE (FLAT TYPE) (16 CORE)	
554	4-951-620-01	SCREW (2.6X8), +BVTP	

SECTION 7
ELECTRICAL PARTS LIST

BD

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, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... , uPB... , µPB... , uPC... , µPC... , uPD..., µPD...

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

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			Remarks
	A-4724-934-A	BD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C104	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C108	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C109	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C110	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C112	1-107-682-11	CERAMIC CHIP	1uF	10.00%	16V
C114	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C115	1-104-665-11	ELECT	100uF	20.00%	10V
C116	1-104-665-11	ELECT	100uF	20.00%	10V
C117	1-104-665-11	ELECT	100uF	20.00%	10V
C118	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C119	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C121	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C122	1-104-665-11	ELECT	100uF	20.00%	10V
C123	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C124	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C125	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C126	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C127	1-104-665-11	ELECT	100uF	20.00%	10V
C129	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C130	1-164-346-11	CERAMIC CHIP	1uF		16V
C131	1-126-964-11	ELECT	10uF	20.00%	50V
C133	1-164-346-11	CERAMIC CHIP	1uF		16V
C140	1-164-346-11	CERAMIC CHIP	1uF		16V
C141	1-164-346-11	CERAMIC CHIP	1uF		16V
C143	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C145	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C153	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C162	1-104-665-11	ELECT	100uF	20.00%	10V
C163	1-104-665-11	ELECT	100uF	20.00%	10V
C165	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C167	1-163-237-11	CERAMIC CHIP	27PF	5.00%	50V
C168	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
C171	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C172	1-163-123-00	CERAMIC CHIP	180PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C181	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C182	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
		< CONNECTOR >			
CN101	1-784-741-11	CONNECTOR, FFC 19P			
CN102	1-793-907-11	CONNECTOR, FFC/FPC 16P			
		< FERRITE BEAD >			
FB101	1-500-445-21	FERRITE	0UH		
FB103	1-500-445-21	FERRITE	0UH		
		< IC >			
IC101	8-752-386-85	IC CXD2587Q			
IC102	8-759-549-28	IC BA5974FP-E2			
IC103	8-752-085-51	IC CXA2568M-T6			
		< TRANSISTOR >			
Q101	8-729-049-31	TRANSISTOR 2SB710-RTX			
		< RESISTOR >			
R101	1-216-077-91	RES-CHIP	15K	5%	1/10W
R102	1-216-097-11	RES-CHIP	100K	5%	1/10W
R103	1-216-077-91	RES-CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-073-00	METAL CHIP	10K	5%	1/10W
R106	1-216-049-11	RES-CHIP	1K	5%	1/10W
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R108	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R109	1-216-121-11	RES-CHIP	1M	5%	1/10W
R110	1-216-025-11	RES-CHIP	100	5%	1/10W
R111	1-216-121-11	RES-CHIP	1M	5%	1/10W
R113	1-216-121-11	RES-CHIP	1M	5%	1/10W
R114	1-216-073-00	METAL CHIP	10K	5%	1/10W
R116	1-216-001-00	METAL CHIP	10	5%	1/10W
R117	1-216-049-11	RES-CHIP	1K	5%	1/10W
R118	1-216-025-11	RES-CHIP	100	5%	1/10W
R119	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-11	RES-CHIP	100K	5%	1/10W
R131	1-216-033-00	METAL CHIP	220	5%	1/10W
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W

BD LOADING MAIN PANEL 1

Ref. No.	Part No.	Description			Remarks
R147	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-001-00	METAL CHIP	10	5%	1/10W
R158	1-216-111-00	METAL CHIP	390K	5%	1/10W
R159	1-216-101-00	METAL CHIP	150K	5%	1/10W
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W
R171	1-216-078-00	RES-CHIP	16K	5%	1/10W
R172	1-216-073-00	METAL CHIP	10K	5%	1/10W
R173	1-216-077-91	RES-CHIP	15K	5%	1/10W
R181	1-216-078-00	RES-CHIP	16K	5%	1/10W
R182	1-216-073-00	METAL CHIP	10K	5%	1/10W
R183	1-216-077-91	RES-CHIP	15K	5%	1/10W
		< RESISTOR ARRAY >			
RN101	1-233-576-11	RES, CHIP NETWORK 100			
		< SWITCH >			
S101	1-771-853-11	SWITCH, DETECTION (LIMIT IN)			
		< VIBRATOR >			
X101	1-579-280-11	VIBRATOR, CRYSTAL (16.9344MHz)			
**********					
	1-674-336-21	LOADING BOARD			
		**********			
		< CONNECTOR >			
* CN1	1-568-943-11	PIN, CONNECTOR 5P			
		< SWITCH >			
S1	1-771-799-11	SWITCH, LEVER (SLIDE) (OPEN/CLOSE)			
**********					
	1-678-680-11	MAIN BOARD			
		*********			
		< CAPACITOR >			
C701	1-161-494-00	CERAMIC	0.022uF		25V
C702	1-126-934-11	ELECT	220uF	20.00%	10V
C711	1-162-290-31	CERAMIC	470PF	10%	50V
C712	1-162-290-31	CERAMIC	470PF	10%	50V
C713	1-162-282-31	CERAMIC	100PF	10%	50V
C714	1-164-159-11	CERAMIC	0.1uF		50V
C715	1-164-159-11	CERAMIC	0.1uF		50V
C716	1-164-159-11	CERAMIC	0.1uF		50V
C717	1-164-159-11	CERAMIC	0.1uF		50V
C718	1-164-159-11	CERAMIC	0.1uF		50V
C719	1-164-159-11	CERAMIC	0.1uF		50V
C721	1-127-719-91	ELECT MELF	220uF	20%	16V
C722	1-128-837-51	ELECT	3300uF	20%	10V
C725	1-162-286-31	CERAMIC	220PF	10%	50V
C726	1-162-286-31	CERAMIC	220PF	10%	50V
C727	1-162-286-31	CERAMIC	220PF	10%	50V
C728	1-164-159-11	CERAMIC	0.1uF		50V
C731	1-161-494-00	CERAMIC	0.022uF		25V
C732	1-161-494-00	CERAMIC	0.022uF		25V
C741	1-104-664-11	ELECT	47uF	20.00%	10V
C791	1-104-656-11	ELECT	2200uF	20.00%	6.3V
C792	1-164-159-11	CERAMIC	0.1uF		50V

Ref. No.	Part No.	Description				
		< CONNECTOR >				
* CN112	1-568-954-11	PIN, CONNECTOR 5P				
CN701	1-794-498-11	SOCKET, CONNECTOR 20P				
CN711	1-506-469-11	PIN, CONNECTOR 4P				
CN713	1-784-780-11	CONNECTOR, FFC 19P				
		< DIODE >				
D711	8-719-921-44	DIODE MTZJ-T-72-5.1C				
D712	8-719-921-44	DIODE MTZJ-T-72-5.1C				
D713	8-719-921-44	DIODE MTZJ-T-72-5.1C				
D714	8-719-921-44	DIODE MTZJ-T-72-5.1C				
D731	8-719-947-16	DIODE MTZJ-T-72-5.1A				
D741	8-719-911-19	DIODE 1SS133T-72				
		< FERRITE BEAD >				
FB701	1-412-473-21	INDUCTOR	0UH			
		< IC >				
IC701	8-749-923-04	IC TOTX178A (DIGITAL OPTICAL OUT)				
IC721	8-759-071-48	IC TA7807S				
IC731	8-759-822-09	IC LB1641				
IC741	8-759-635-63	IC M51943BSL-TP				
		< COIL >				
L721	1-408-117-00	INDUCTOR	10uH			
		< TRANSISTOR >				
Q741	8-729-422-57	TRANSISTOR BN1A4M-TP				
Q742	8-729-422-57	TRANSISTOR BN1A4M-TP				
		< RESISTOR >				
R711	1-247-807-31	CARBON	100	5%	1/4W	
R725	1-247-807-31	CARBON	100	5%	1/4W	
R726	1-247-807-31	CARBON	100	5%	1/4W	
R727	1-247-807-31	CARBON	100	5%	1/4W	
R731	1-249-409-11	CARBON	220	5%	1/4W	F
R732	1-247-807-31	CARBON	100	5%	1/4W	
R733	1-247-807-31	CARBON	100	5%	1/4W	
R734	1-249-429-11	CARBON	10K	5%	1/4W	
R741	1-249-417-11	CARBON	1K	5%	1/4W	F
R742	1-249-429-11	CARBON	10K	5%	1/4W	
R761	1-247-807-31	CARBON	100	5%	1/4W	
**********						
	1-678-681-11	PANEL 1 BOARD				
		**********				
		< DIODE >				
D781	8-719-058-03	DIODE SEL5423E-TP15 (▷)				
D782	8-719-057-97	DIODE SEL5923A-TP15 (▯▯)				
		< RESISTOR >				
R771	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R772	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R773	1-249-429-11	CARBON	10K	5%	1/4W	
R774	1-249-430-11	CARBON	12K	5%	1/4W	
R775	1-249-433-11	CARBON	22K	5%	1/4W	
R781	1-249-411-11	CARBON	330	5%	1/4W	
R782	1-249-411-11	CARBON	330	5%	1/4W	

Ref. No.	Part No.	Description			Remarks
		< SWITCH >			
S771	1-771-410-21	SWITCH, TACTILE (⏮◀◀)			
S772	1-771-410-21	SWITCH, TACTILE (▶▶▷▷⏭)			
S773	1-771-410-21	SWITCH, TACTILE (⏏)			
S774	1-771-410-21	SWITCH, TACTILE (□)			
S775	1-771-410-21	SWITCH, TACTILE (▯▯)			
S776	1-771-410-21	SWITCH, TACTILE (▷)			
**********					
	1-678-682-11	PANEL 2 BOARD			
		**********			
		< RESISTOR >			
R776	1-249-437-11	CARBON	47K	5%	1/4W
R777	1-247-881-00	CARBON	120K	5%	1/4W
		< SWITCH >			
S777	1-771-410-21	SWITCH, TACTILE (REPEAT)			
S778	1-771-410-21	SWITCH, TACTILE (PLAY MODE)			
**********					
		MISCELLANEOUS			
		**********			
512	1-452-925-21	MAGNET ASSY			
518	1-590-578-11	WIRE (FLAT TYPE) (19 CORE)			
⚠552	A-4735-357-A	OP BASE ASSY (KSM-213DAP)			
553	1-792-024-11	WIRE (FLAT TYPE) (16 CORE)			
M103	A-4672-984-A	MOTOR (LD) ASSY (LOADING)			

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