

CDP-C601ES

SERVICE MANUAL

*US Model
Canadian Model*



Model Name Using Similar Mechanism	CDP-C79ES/C89ES
Optical Pick-up Block Type	BU-5BD8B

SPECIFICATIONS

Compact Disc Player

System	Compact disc digital audio system
Laser	Semiconductor laser
Wavelength	780 - 790 nm
Frequency response	2 Hz - 20 kHz (± 0.3 dB)
Signal to noise ratio	More than 116 dB
Dynamic range	More than 100 dB
Harmonic distortion	Less than 0.0025%
Channel separation	More than 110 dB

Outputs

LINE OUT (FIXED) (phono jacks)	Output level 2 V (at 50 kilohms) Load impedance over 10 kilohms
LINE OUT (VARIABLE) (phono jacks)	Output level max. 2 V (at 50 kilohms) Load impedance over 10 kilohms
DIGITAL OUTPUT (OPTICAL) (optical output connector)	Wave length 660 nm Output level -18 dBm
PHONES (stereo phone jack)	Output level max. 15 mW Load impedance 32 ohms

General

Power requirements	120 V AC, 60 Hz
Power consumption	13 W
Dimensions (w/h/d)	Approx. 430 × 125 × 385 mm (17 × 5 × 15 1/4 inches) Including projecting parts and controls
Mass	Approx. 6.7 kg, net (14 lbs 13 oz)

Remote Commander RM-D515

Remote control system	Infrared control
Power requirements	3 V DC with two size AA batteries (IEC designation R6)
Dimensions	62 × 20 × 175 mm (w/h/d) (2 1/2 × 13/16 × 7 inches)
Mass	130 g including batteries (4.6 oz)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE $\triangle$ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

COMPACT DISC PLAYER
SONY®

SAFETY CHECK-OUT (US Model)

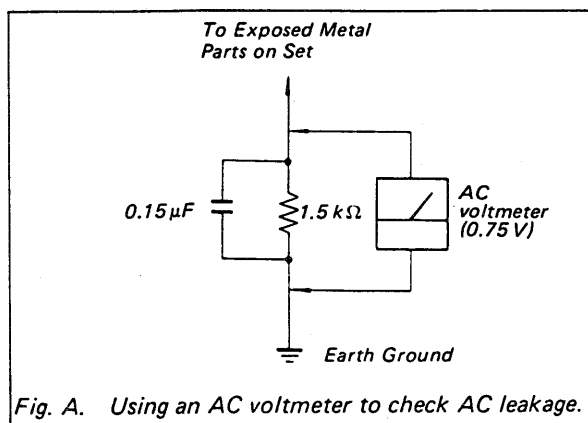
After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



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

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

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

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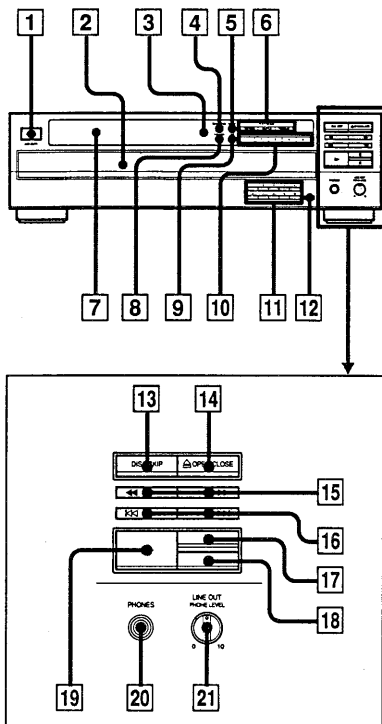
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SECTION 1 GENERAL

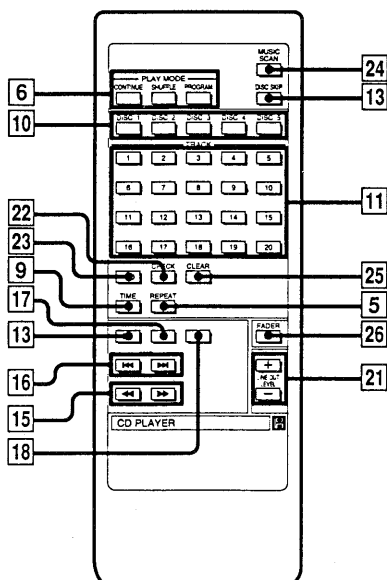
This section is extracted from instruction manual.

Identifying the Parts

A



B



Front Panel **A** Remote Commander **B**

See the pages indicated in () for details.

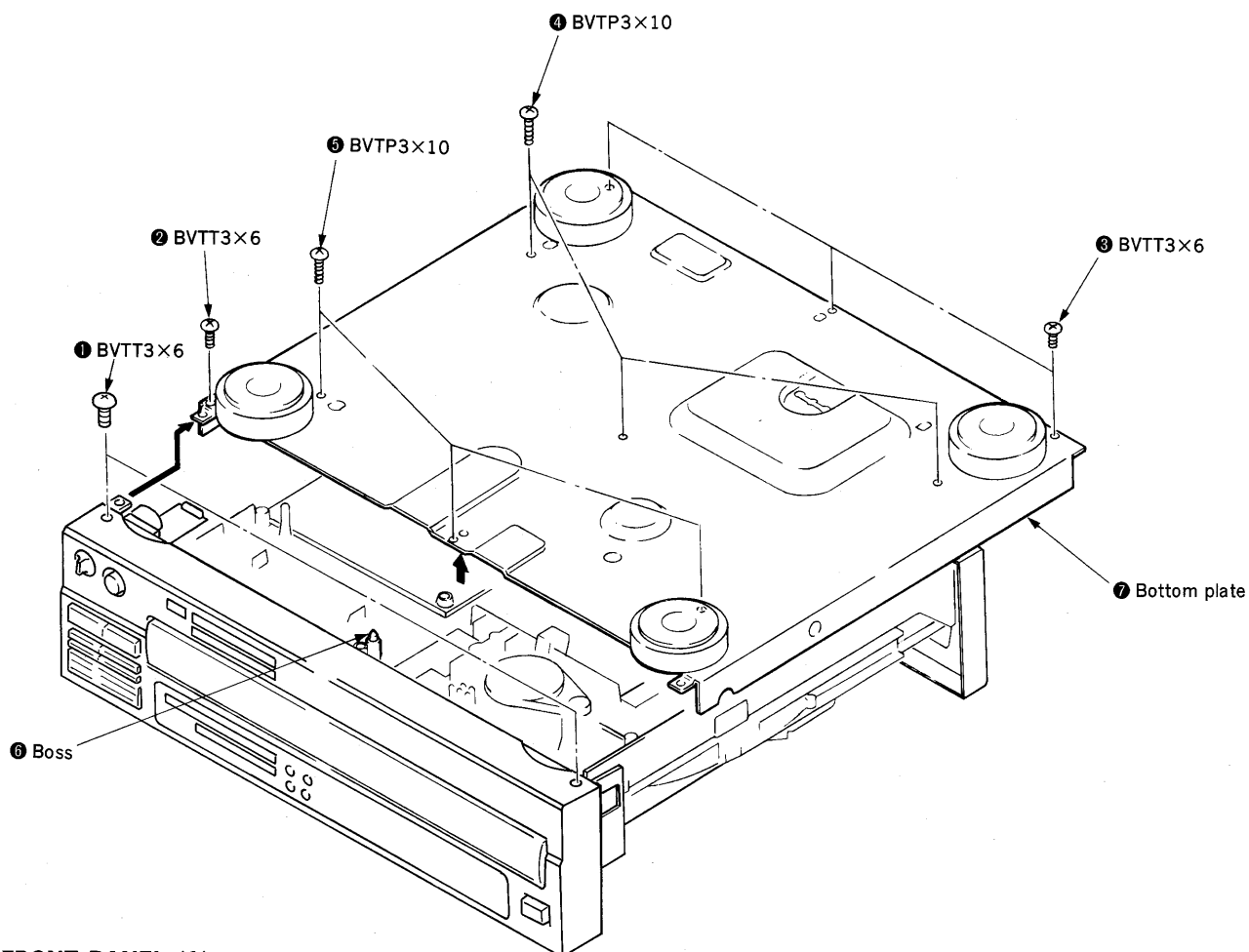
- 1 POWER switch (10)
- 2 Disc tray (10)
- 3 Remote sensor (8)
- 4 EDIT/TIME FADE button (23, 26)
- 5 REPEAT button (22)
- 6 PLAY MODE buttons
CONTINUE button (10)
SHUFFLE button (15)
PROGRAM button (16)
- 7 Display (10)
- 8 P.SEARCH button (28)
- 9 TIME button (12)
- 10 DISC 1-5 buttons (11)
- 11 Numeric buttons (13)
- 12 >10 (over 10) button (13)
- 13 DISC SKIP button (10)
- 14 ▲ OPEN/CLOSE button (10)
- 15 ◀◀▶▶ (manual search) buttons (13)
- 16 ◀◀▶▶ (AMS*) buttons (13)
- 17 || (pause) button (11)
- 18 ■ (stop) button (11)
- 19 ▶ (play) button (11)
- 20 PHONES jack (11)
- 21 LINE OUT/PHONE LEVEL control (LINE OUT LEVEL +/- buttons on the remote commander) (11)
- 22 CHECK button (20)
- 23 >20 (over 20) button (13)
- 24 MUSIC SCAN button (21)
- 25 CLEAR button (20)
- 26 FADER button (14)

* AMS is the abbreviation for Automatic Music Sensor.

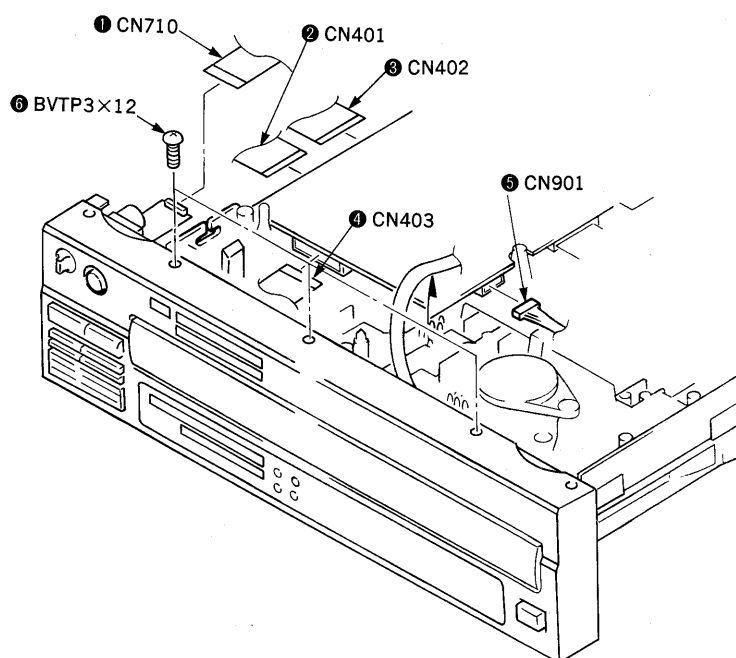
SECTION 2 DISASSEMBLY

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

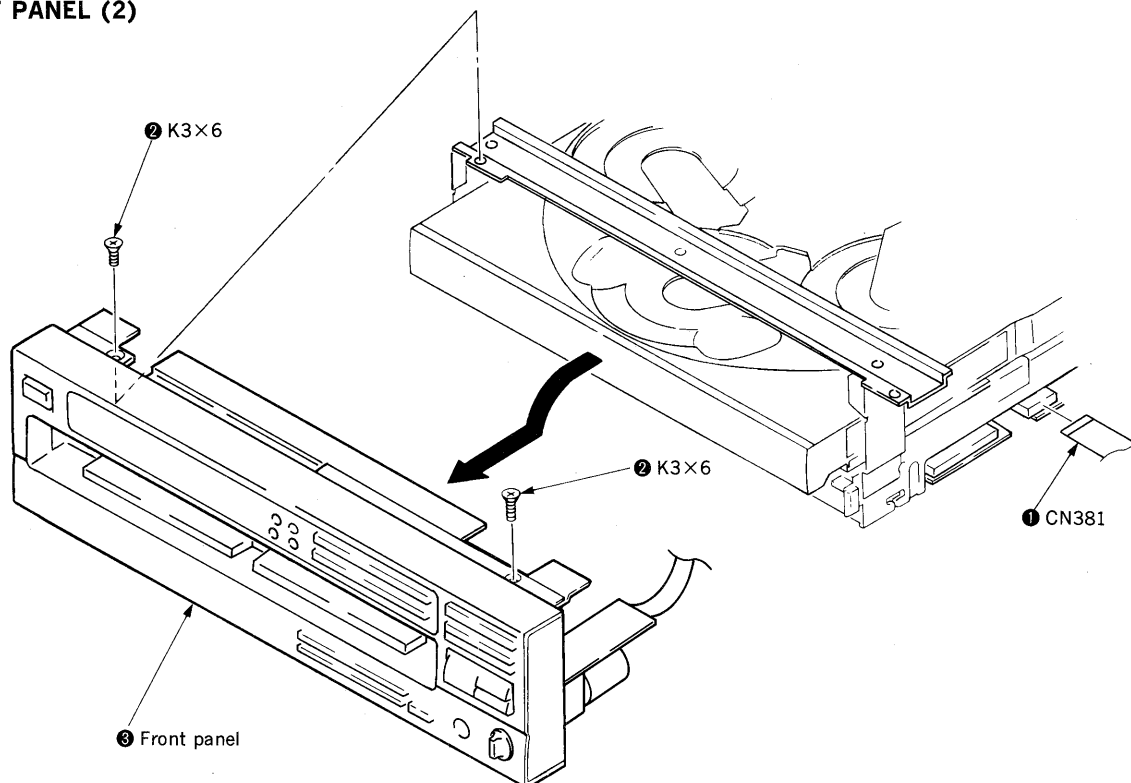
2-1. BOTTOM PLATE



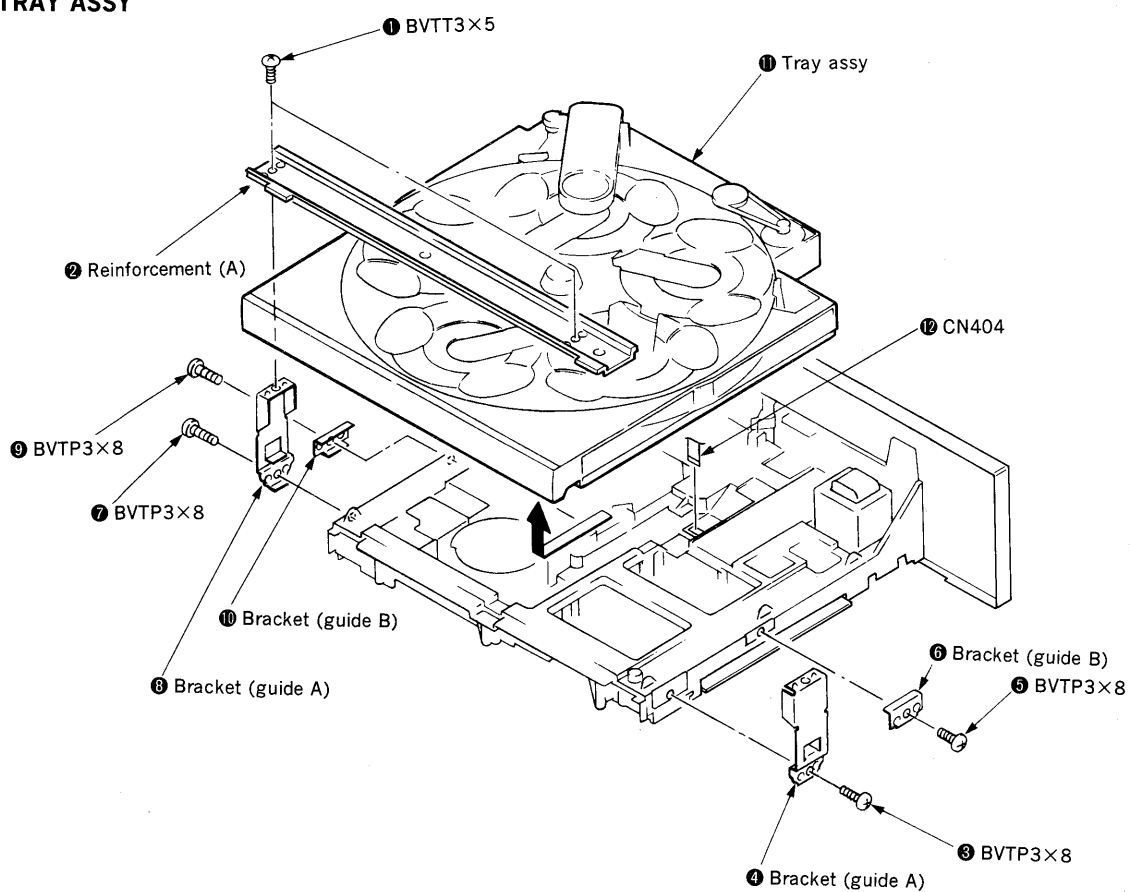
2-2. FRONT PANEL (1)



2-3. FRONT PANEL (2)



2-4. TRAY ASSY

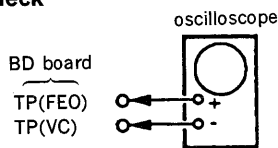


SECTION 3 ELECTRICAL BLOCK CHECKING

Note :

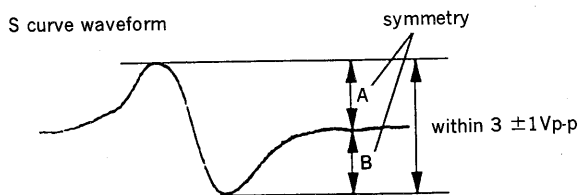
1. CD Block basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10MΩ impedance.
4. Clean an object lens by an applicator with neutral detergent when the signal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

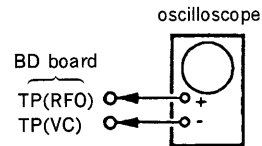


5. After check, remove the lead wire connected in step 2.

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

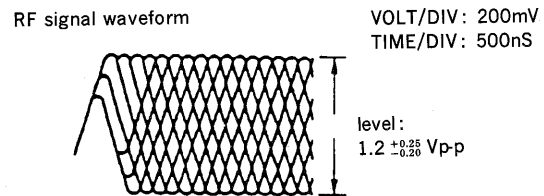


Procedure :

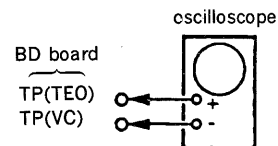
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

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

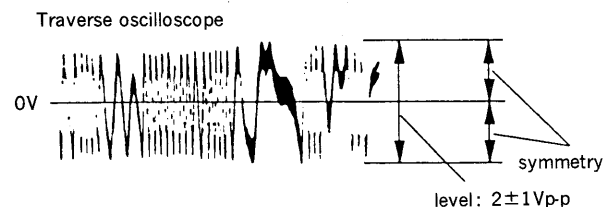


E-F Balance Check



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.

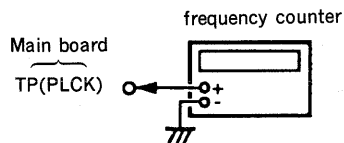


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

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

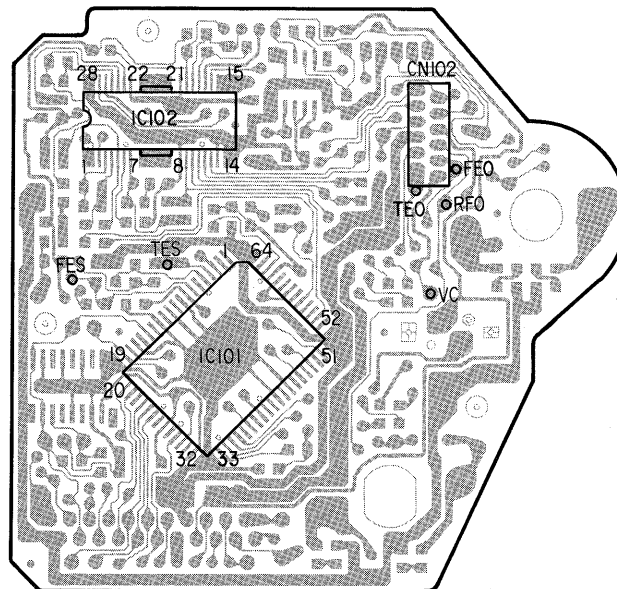


2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Locations :

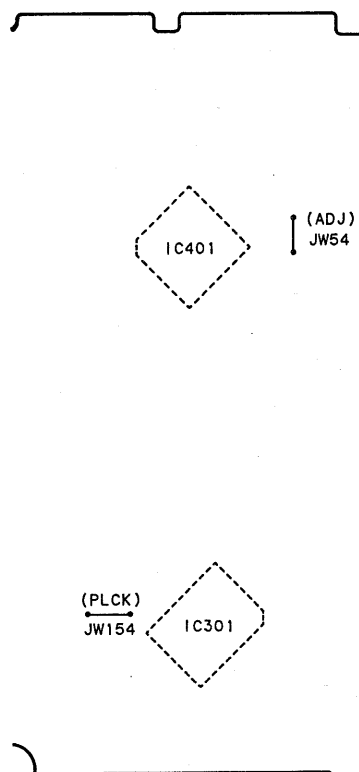
【BD Board】

—Conductor Side—



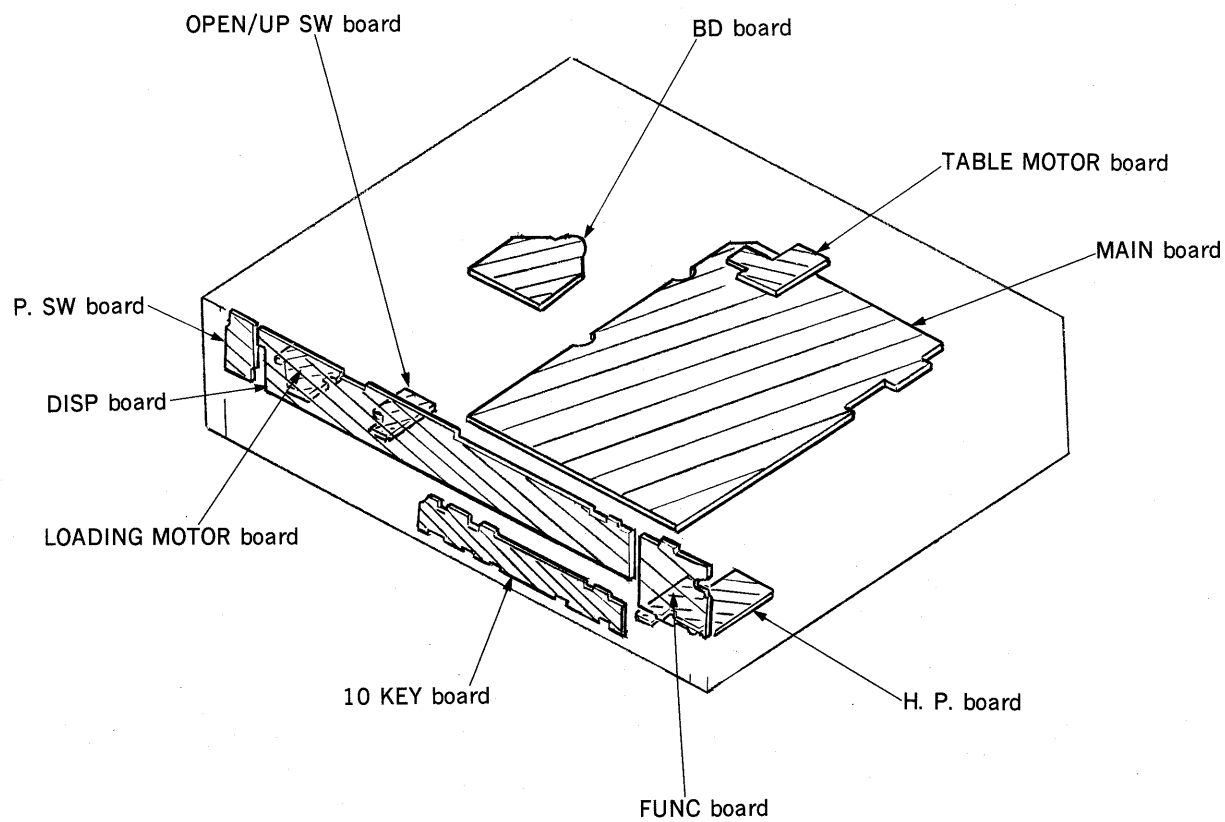
【MAIN Board】

—Component Side—

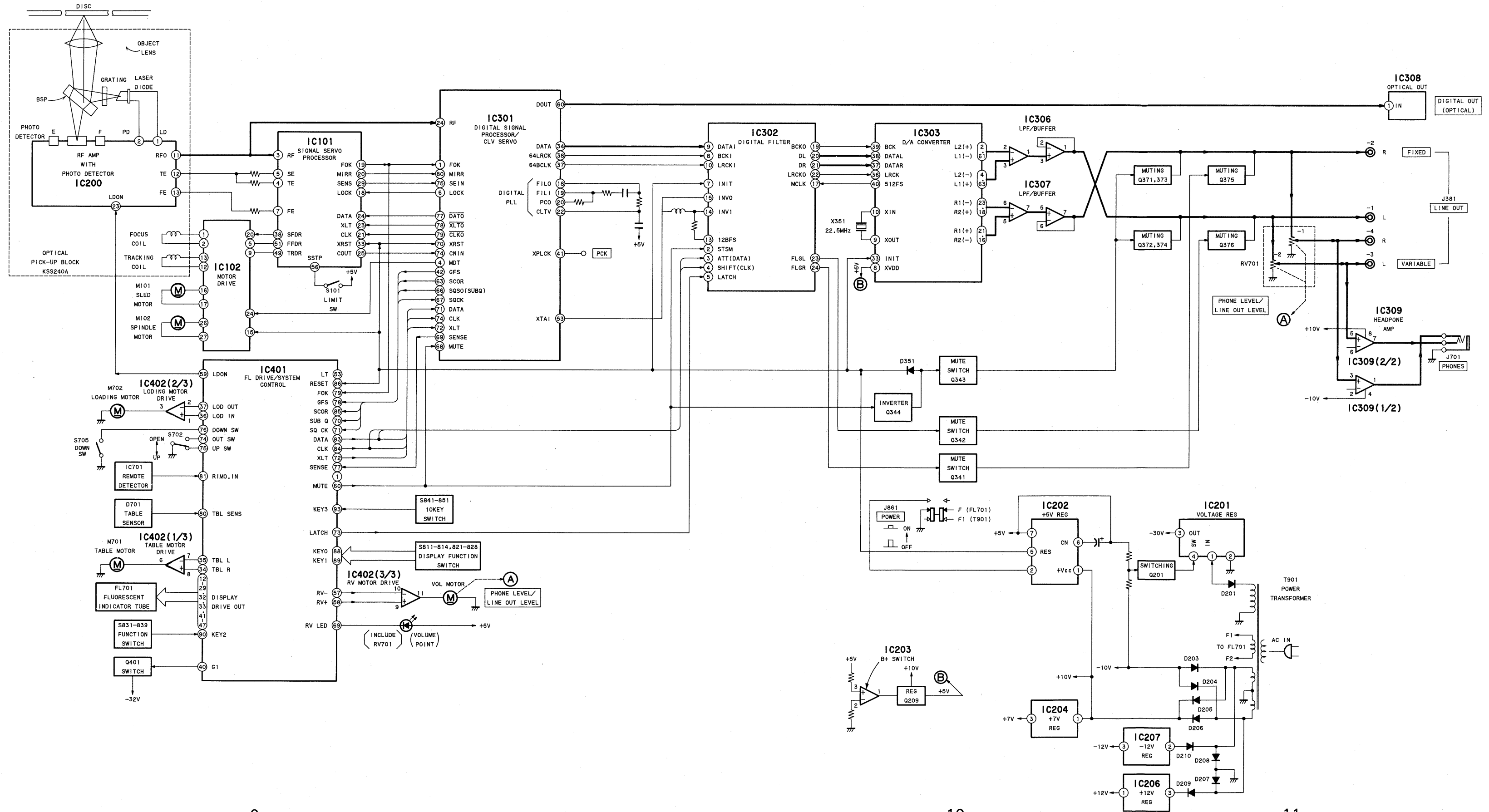


SECTION 4 DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION



4-2. BLOCK DIAGRAMS

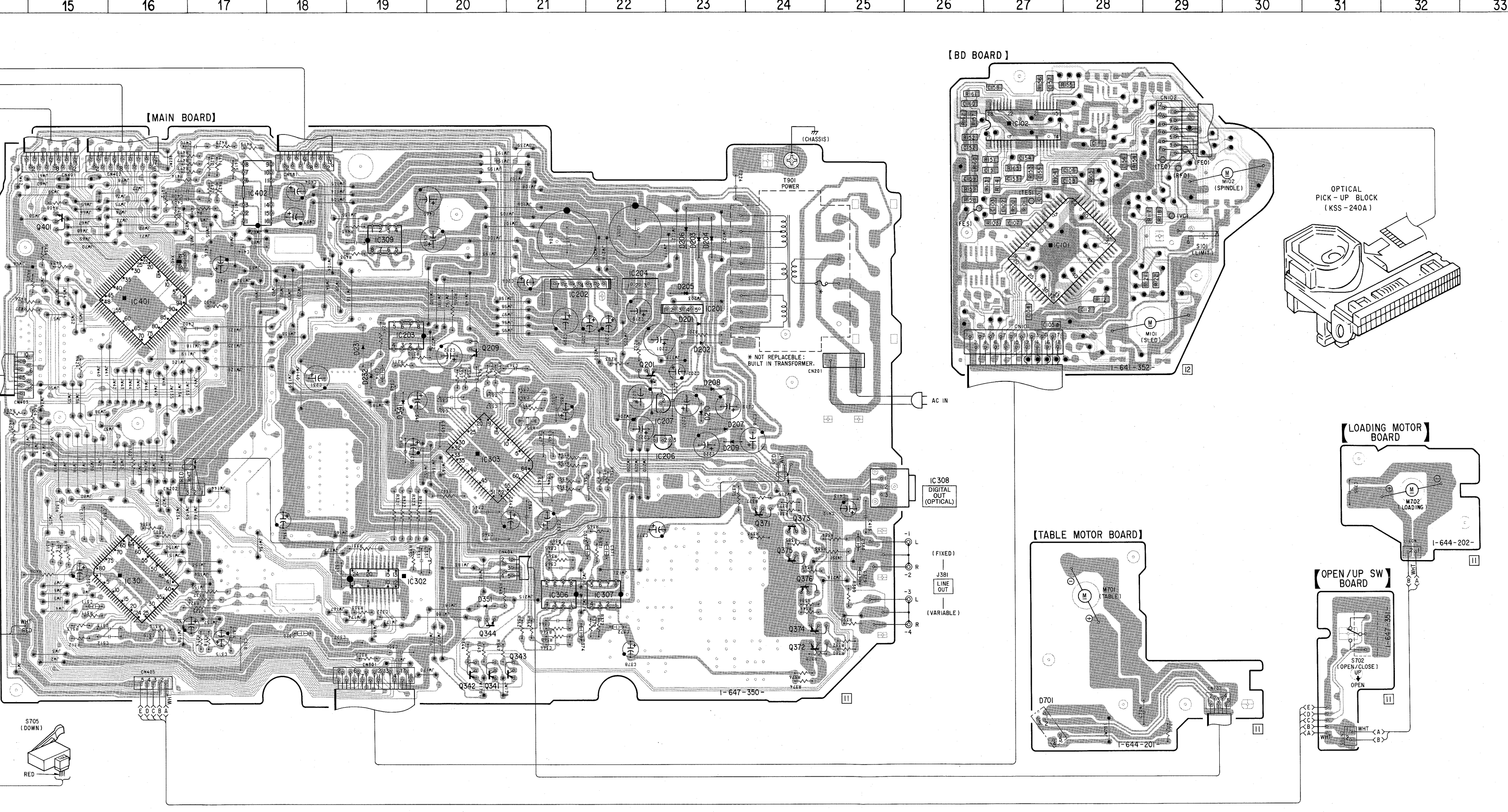
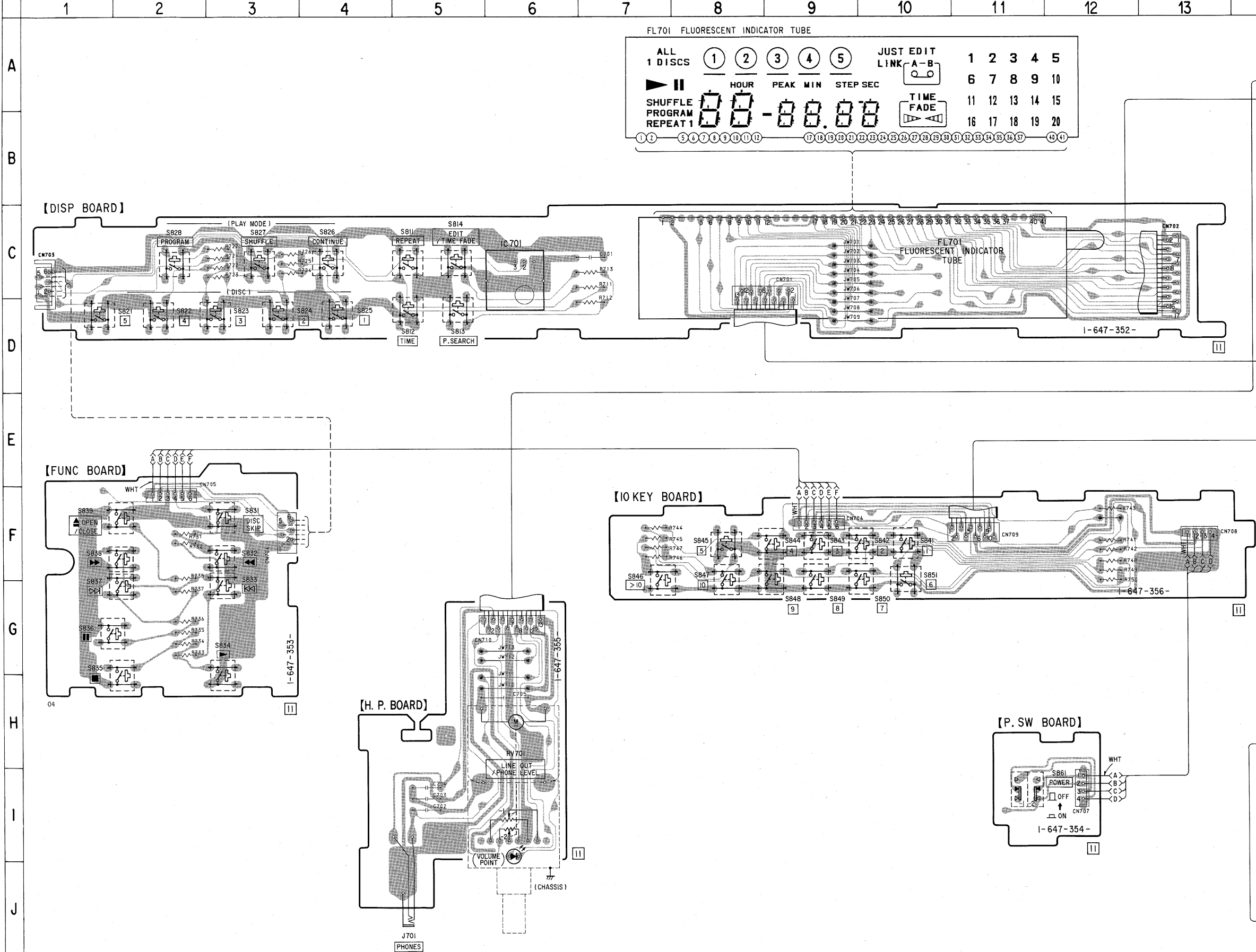


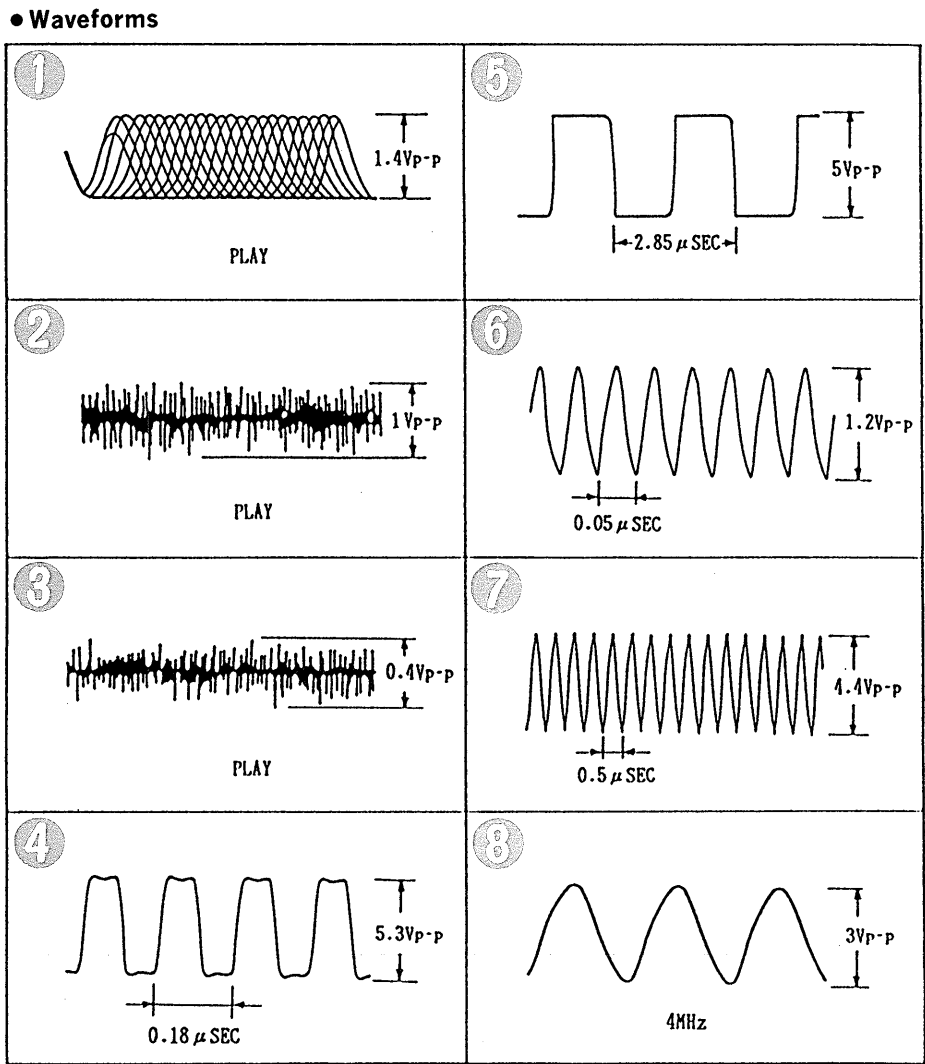
● Semiconductor Location

Ref. No.	Location
D201	D-23
D202	E-23
D203	C-23
D204	C-23
D205	D-23
D206	C-23
D207	F-23
D208	E-23
D209	F-23
D210	F-23
D231	E-19
D232	E-19
D341	E-19
D351	H-20
D701	I-6
IC101	C-27
IC102	B-27
IC201	D-21
IC202	D-21
IC203	E-19
IC204	D-22
IC206	F-22
IC207	E-22
IC301	H-16
IC302	H-19
IC303	F-20
IC306	H-21
IC307	H-22
IC308	F-25
IC309	C-19
IC401	D-16
IC402	C-17
IC701	C-6
Q201	E-22
Q209	E-20
Q341	I-20
Q342	I-20
Q343	I-21
Q344	H-20
Q371	G-24
Q372	H-24
Q373	G-24
Q374	H-24
Q375	G-24
Q376	H-24
Q401	C-15

- Note:
- : parts extracted from the component side.
 - : parts mounted on the conductor side.
 - : Through hole.
 - ▨ : Pattern on the side which is seen.
 - ▩ : Pattern of the rear side.

4-3. PRINTED WIRING BOARDS ● Refer to page 21 for Semiconductor Lead Layouts.





Note:

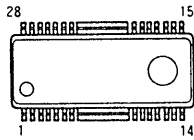
- All capacitors are in μF unless otherwise noted. pF : $\mu\text{M}\text{F}$ 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.

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

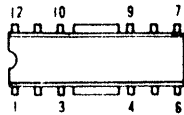
-  : B ÷ Line
-  : G ÷ Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark: CD STOP
- Voltages are taken with a VOM (input impedance 10M Ω).
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
- Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- **Signal path.**
 -  : CD
 -  : digital out

4-5. SEMICONDUCTOR LEAD LAYOUTS

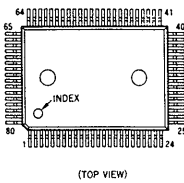
BA6297AFP



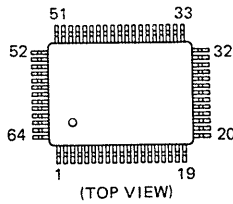
CXA1291P



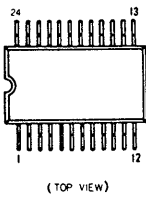
CXD2500BQ



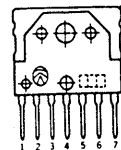
**CXD2501Q
CXD2562Q**



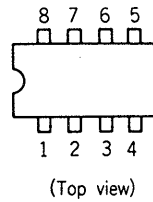
CXD2567M



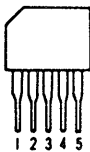
LA5602



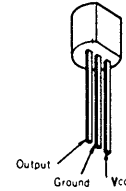
**MC33078P
M5218AP
TL082ACP
 μ PC4558C**



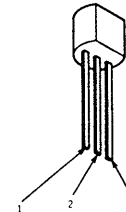
M5293L



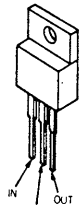
NJM78L12A



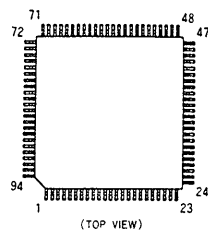
NJM79L12A



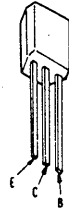
TA7807S-LC



μ PD75237-TTX839



**DTA144ES
2SC1815-Y
2SC3622A-LK**



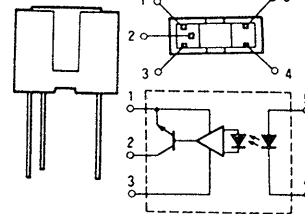
**DTC144ES
2SA1175-HFE**



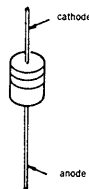
2SC2878-AB



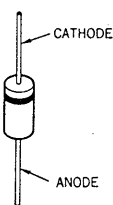
GP1A251



**RD5.1ES-B2
RD8.2ES-B2
11EQS04
11ES2**

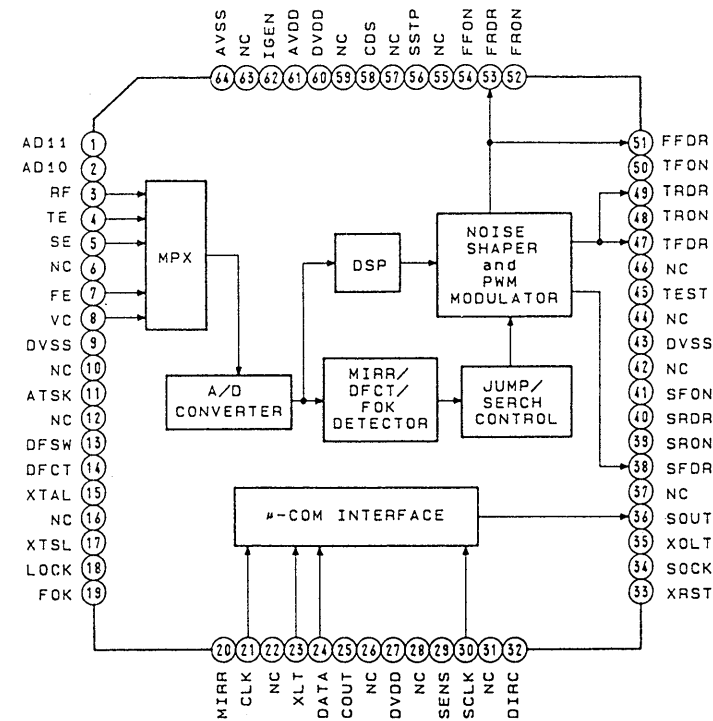


1N4148M

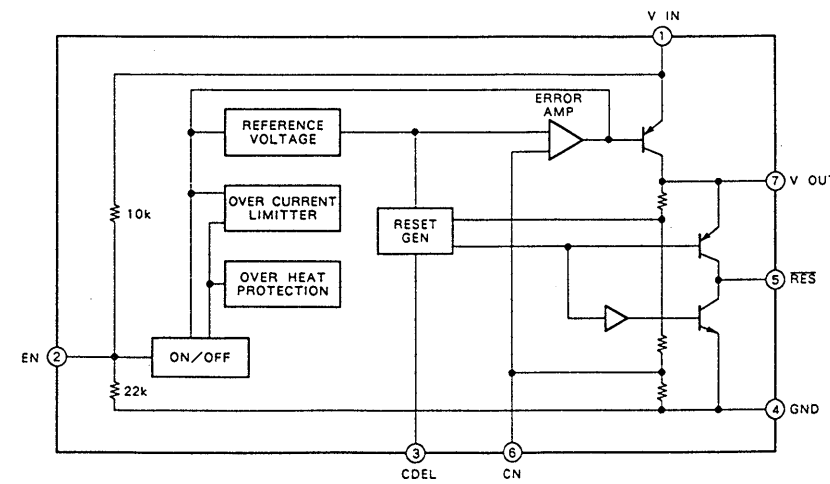


• IC Block Diagrams

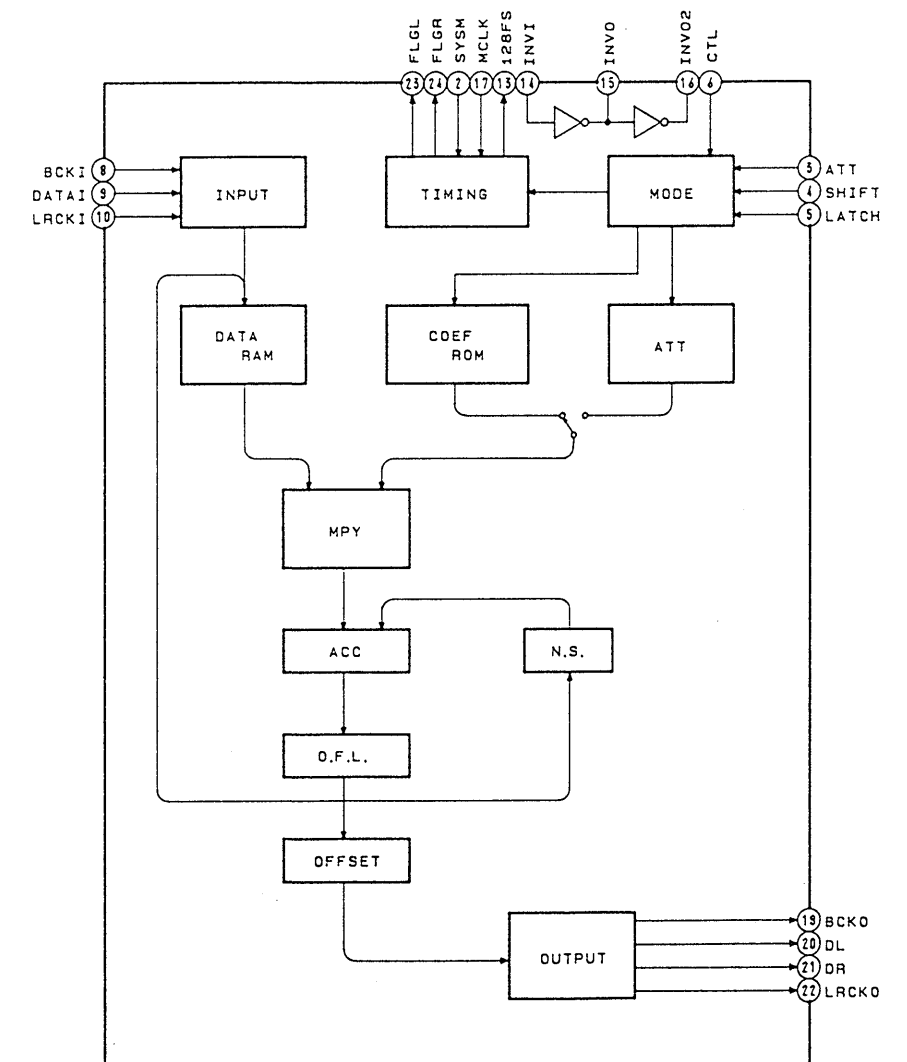
IC101 CXD2501Q



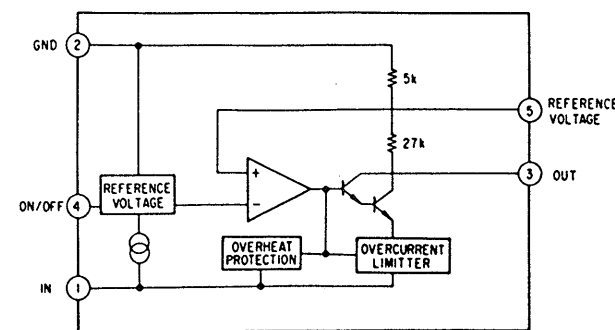
IC202 LA5602



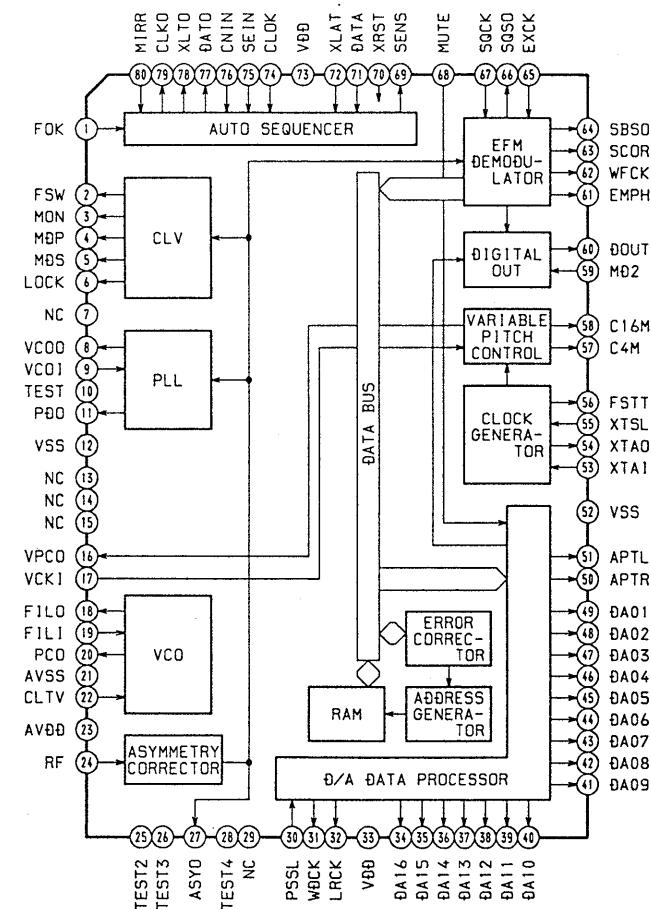
IC302 CXD2567M



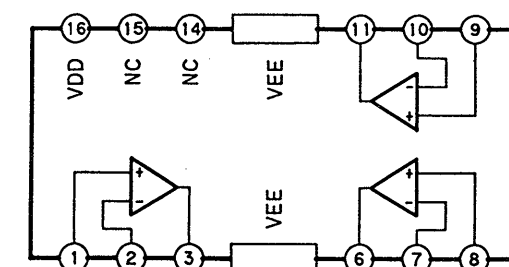
IC201 M5293L



IC301 CXD2500AQ



IC402 CXA1291P



SECTION 5

EXPLODED VIEWS

NOTE:

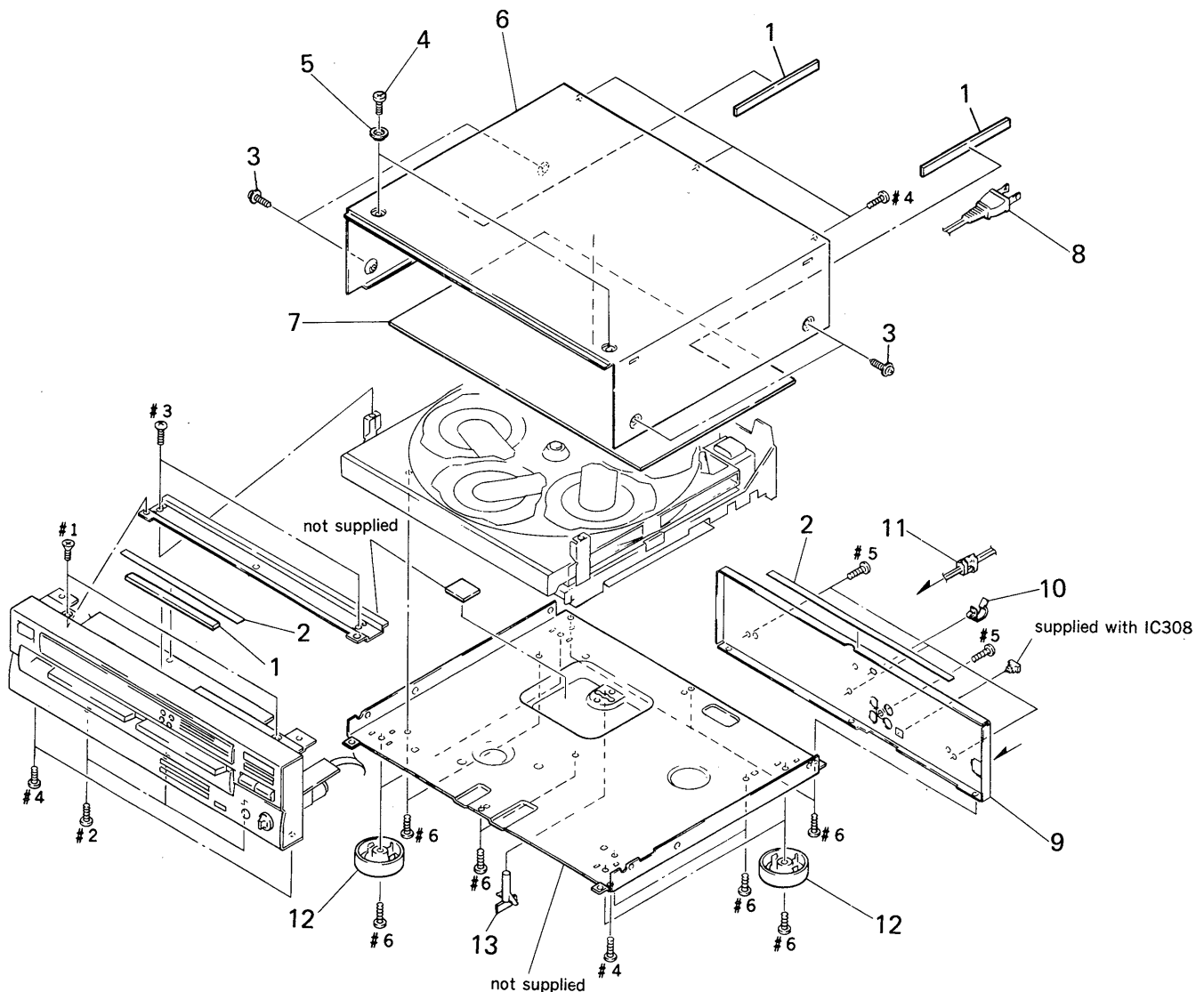
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- -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.

Les composants identifiés par une
marque **A** sont critiques pour
la sécurité.
Ne les remplacer que par une pièce
portant le numéro spécifié.

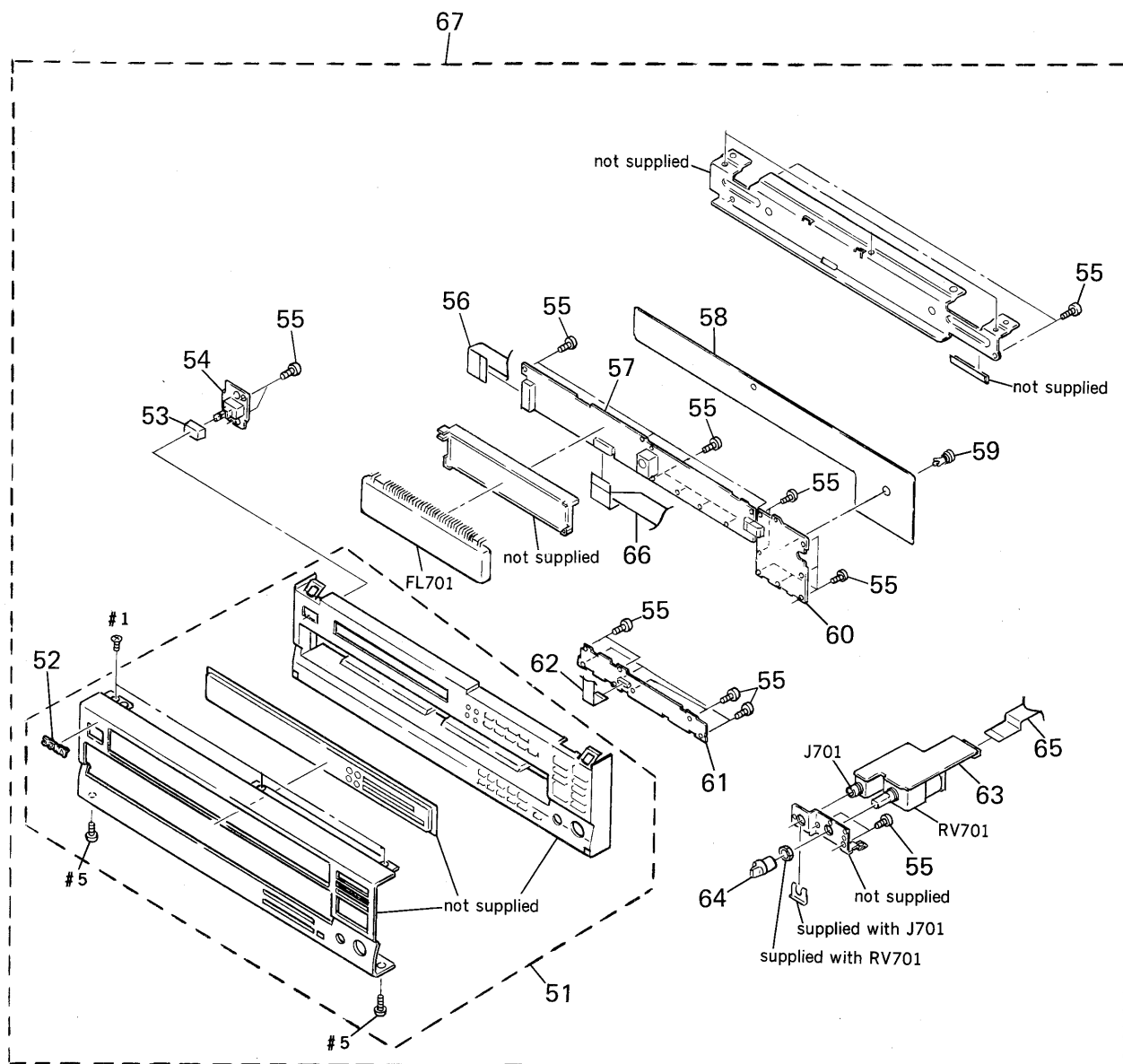
5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
* 1	4-929-561-01	CUSHION (CASE)	
* 2	4-927-653-01	SHEET (F/P)	
3	3-704-366-01	SCREW (CASE) (M3X8)	
4	4-924-242-11	SCREW (M3X6), FLAT HEAD	
5	4-928-025-11	ESCUTCHEON (TOP PLATE)	
* 6	4-937-934-01	CASE	
7	A-4675-309-A	REINFORCEMENT (TOP PLATE) ASSY	

Ref. No.	Part No.	Description	Remark
A8	1-590-926-11	CORD, POWER	
* 9	4-957-460-01	PANEL, BACK	
* 10	4-949-235-01	HOOK	
* 11	3-703-244-00	BUSHING (2104), CORD	
12	X-4924-463-1	FOOT ASSY	
13	4-937-945-01	PLATE (TRANSPORT), LOCK	

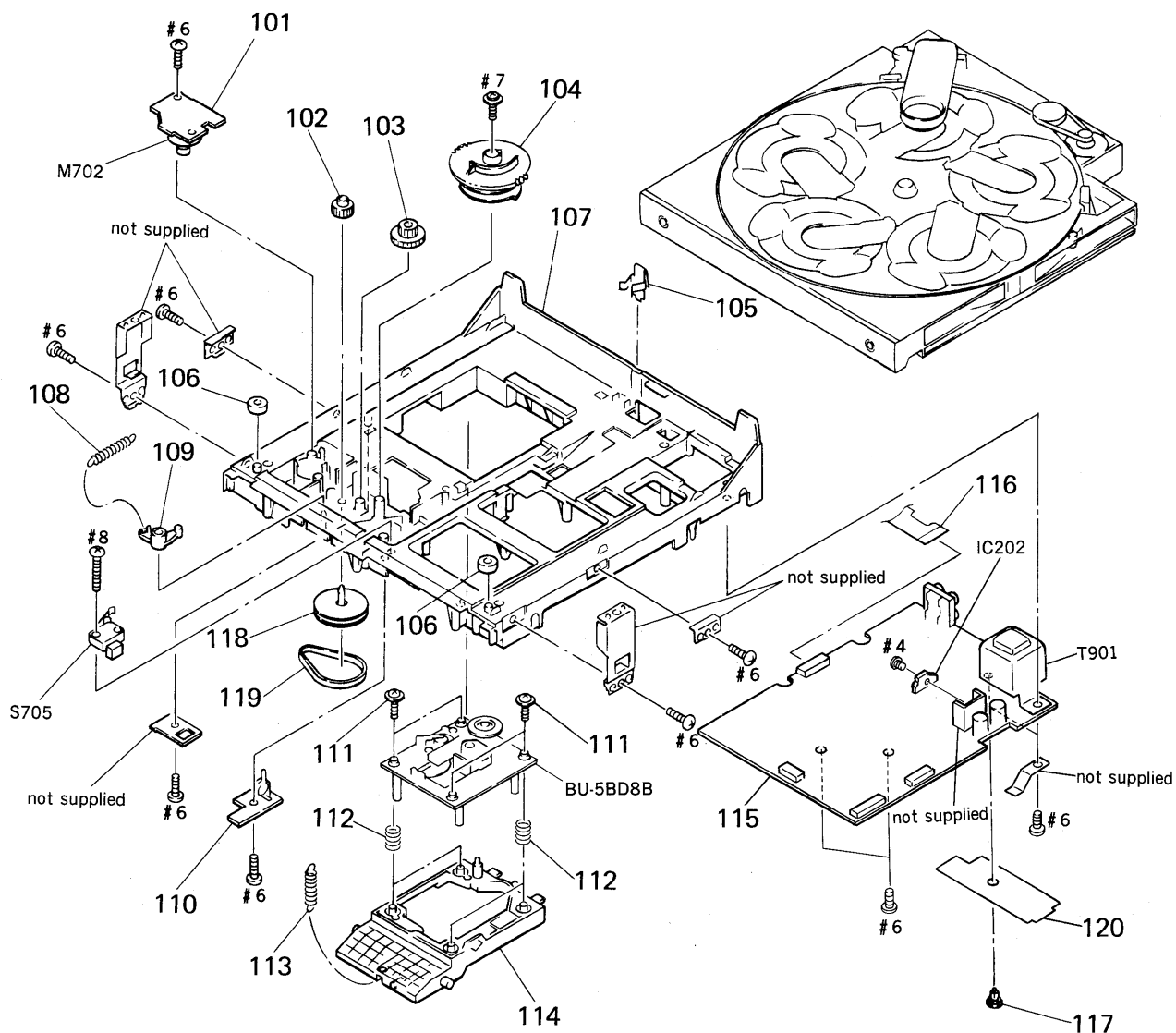
5-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	A-4660-357-A	PANEL ASSY, FRONT	
52	4-942-568-01	EMBLEM (NO. 5), SONY	
53	4-922-921-01	BUTTON (POWER)	
54	1-647-354-11	P. SW BOARD	
55	4-951-620-01	SCREW (2.6X8), +BVTP	
56	1-751-049-11	WIRE (FLAT TYPE) (17 CORE)	
57	1-647-352-11	DISP BOARD	
58	4-957-458-01	SHEET (PANEL)	
59	3-531-576-11	RIVET	
60	1-647-353-11	FUNC BOARD	

Ref. No.	Part No.	Description	Remark
61	1-647-356-11	10 KEY BAORD	
62	1-751-047-11	WIRE (FLAT TYPE) (10 CORE)	
63	1-647-355-11	H.P. BOARD	
64	A-4660-389-A	KNOB (HP) ASSY	
65	1-751-050-11	WIRE (FLAT TYPE) (13 CORE)	
66	1-751-048-11	WIRE (FLAT TYPE) (13 CORE)	
67	A-4660-356-A	PANEL COMPLETE ASSY, FRONT	
FL701	1-519-721-41	INDICATOR TUBE, FLUORESCENT	
J701	1-750-162-61	JACK (LARGE TYPE) (PHONES)	
RV701	1-223-195-11	RES, VAR, CARBON 10K/10K (LINE OUT/PHONE LEVEL)	

5-3. CHASSIS SECTION



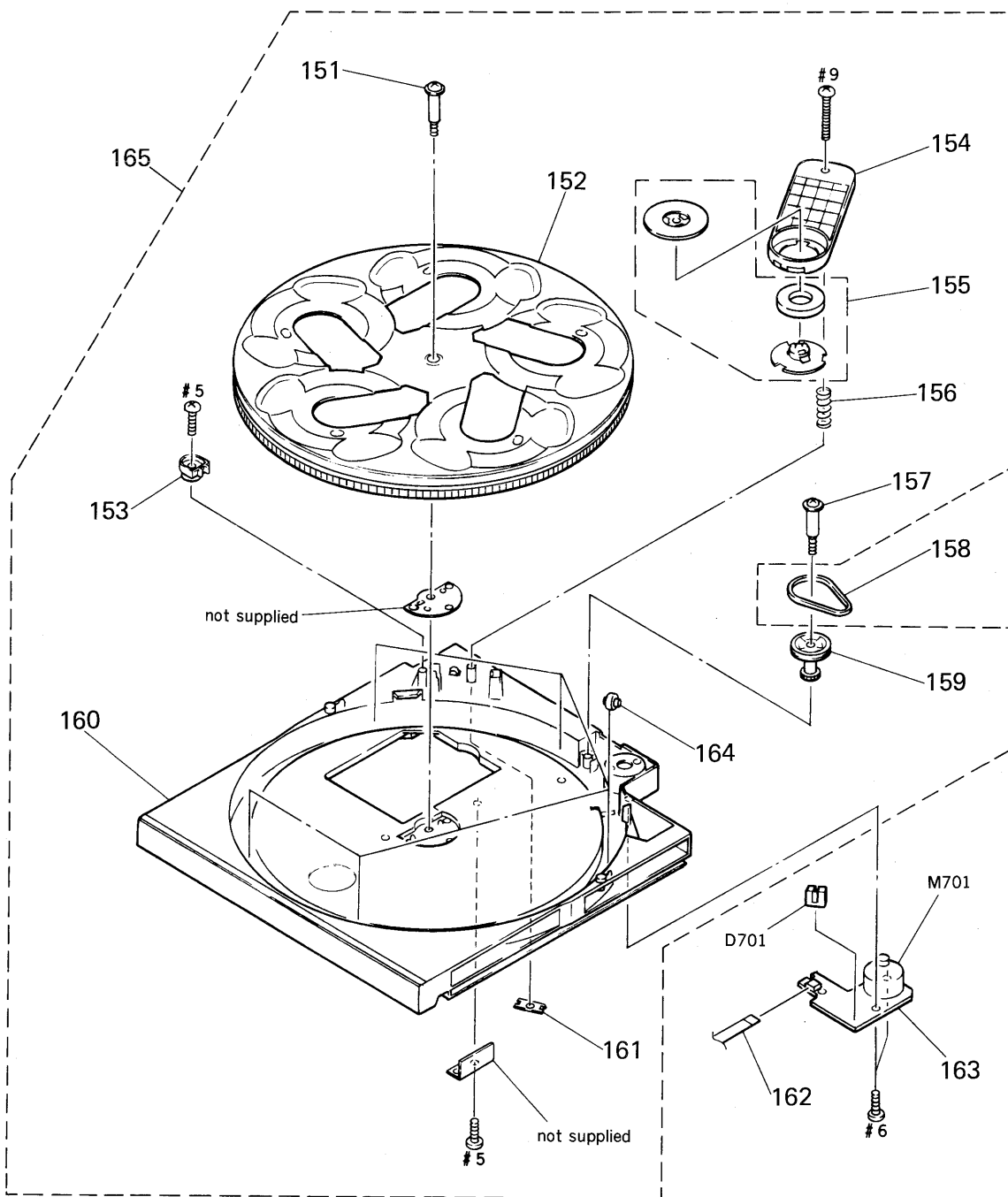
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 101	1-644-202-12	LOADING MOTOR BOARD	
102	4-934-375-01	GEAR (LOADING B)	
103	4-934-381-01	GEAR (LOADING C)	
104	4-934-391-01	GEAR (LOADING A)	
* 105	4-943-996-06	SPRING, LEAF	
* 106	4-951-619-01	CUSHION (A)	
* 107	4-943-997-01	CHASSIS	
108	4-924-412-01	SPRING (B), TENSION	
109	4-917-519-01	LEVER, SET	
* 110	1-647-351-11	OPEN/UP SW BOARD	
111	4-933-134-01	SCREW (+PTPWH M2.6X6)	
112	4-958-593-01	SPRING (BU), COMPRESSION	

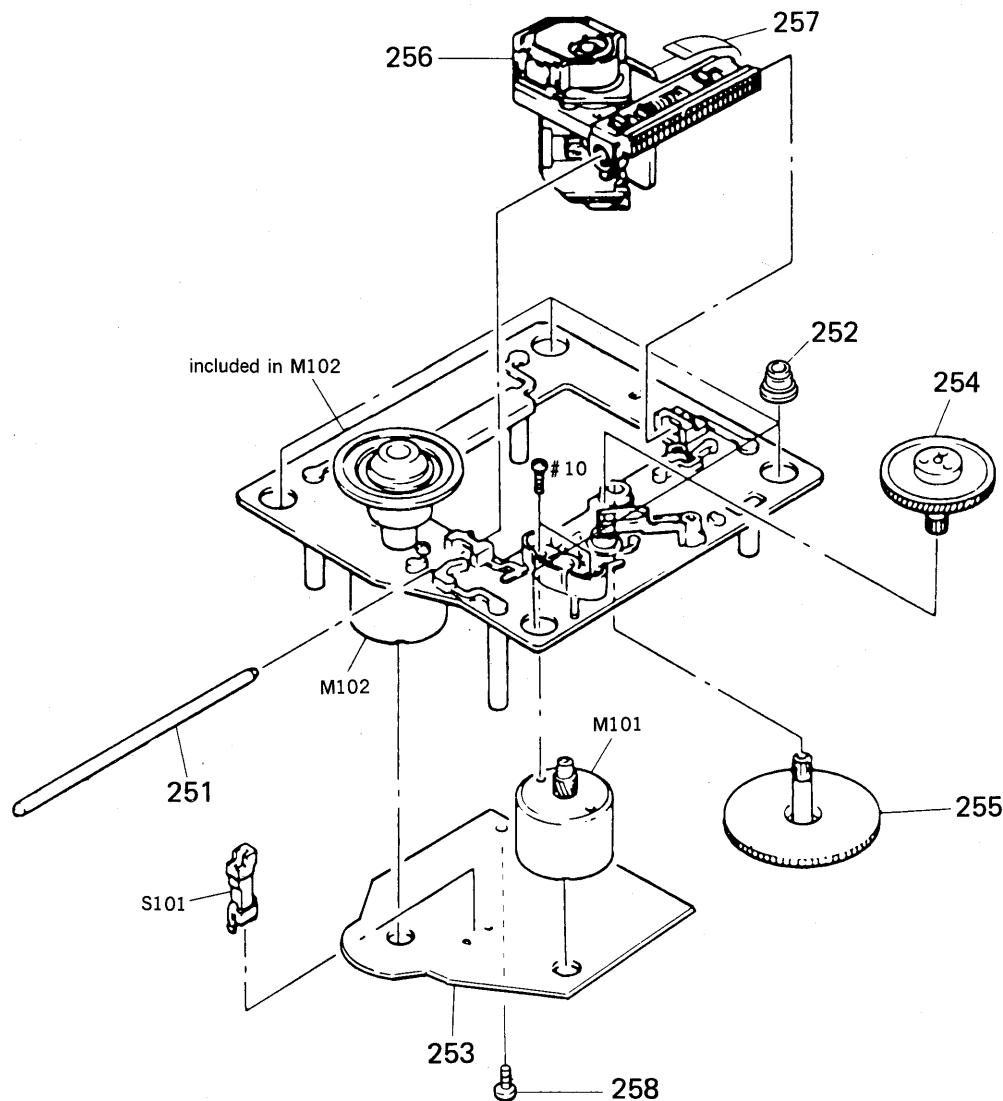
Ref. No.	Part No.	Description	Remark
113	4-937-911-01	SPRING, TENSION	
* 114	4-934-373-01	BRACKET (BU)	
* 115	A-4649-643-A	MAIN BOARD, COMPLETE	
116	1-694-003-11	JAMPER, FILM (WITH TARMINAL)	
117	3-531-576-11	RIVET	
118	X-4941-529-1	PULLEY ASSY	
119	4-944-490-01	BELT (TIMING)	
* 120	4-944-178-01	SHEET (INSULATING)	
IC202	8-759-061-65	IC LA5602	
M702	A-4604-834-A	MOTOR ASSY, LOADING	
S705	1-572-713-11	SWITCH, PUSH (WITH CONNECTOR) (DOWN)	
Δ T901	1-450-876-11	TRANSFORMER, POWER	

5-4. TRAY SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	4-926-384-01	SCREW, STEP		160	4-950-866-51	TABLE (A), DISK	
152	4-926-383-11	TABLE (B), DISK		* 161	4-926-388-01	BRACKET (ADJUSTMENT)	
* 153	4-949-226-01	PLATE, LOCK		162	1-590-849-11	WIRE, FLAT TYPE (5 CORE)	
* 154	4-930-506-02	BRACKET (PRESS PULLEY)		* 163	1-644-201-11	TABLE MOTOR BOARD	
* 155	1-452-538-11	MAGNET		164	X-4924-457-1	ROLLER ASSY	
156	4-926-395-01	SPRING, COMPRESSION		165	A-4660-355-A	TABLE ASSY (CDM16N6), DISK	
157	4-923-597-01	SCREW, STEP		D701	8-719-970-19	DIODE GP1A521	
158	4-926-399-01	BELT		M701	A-4604-585-A	MOTOR ASSY, ROTARY	
159	4-934-380-01	PULLEY (R)					

5-5. OPTICAL PICK-UP BLOCK (BU-5BD8B)



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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
251	4-917-565-01	SHAFT, SLED	
252	4-951-940-01	INSULATOR (BU)	
* 253	A-4649-199-A	BD BOARD, COMPLETE	
254	4-917-567-01	GEAR (M)	
255	4-917-564-01	GEAR (P), FLATNESS	
Δ 256	8-848-144-11	DEVICE, OPTICAL KSS-240A	

Ref. No.	Part No.	Description	Remark
257	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
258	4-951-620-01	SCREW (2. 6X8), +BVTP	
M101	X-4917-504-1	MOTOR ASSY, SLED	
M102	X-4917-523-3	MOTOR ASSY, SPINDLE	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	

SECTION 6 ELECTRICAL PARTS LIST

10 KEY

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 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...: μ A... uPA...: μ PA...
uPB...: μ PB... uPC...: μ PC... uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

Ref.No.	Part No.	Description	Remark
*	1-647-356-11	10 KEY BOARD *****	
		< CONNECTOR >	
CN709	1-750-224-11	CONNECTOR, FFC/FPC 10P < RESISTOR >	
R741	1-249-415-11	CARBON 680 5% 1/4W	
R742	1-247-828-11	CARBON 750 5% 1/4W	
R743	1-249-416-11	CARBON 820 5% 1/4W	
R744	1-249-417-11	CARBON 1K 5% 1/4W	
R745	1-247-834-11	CARBON 1.3K 5% 1/4W	
R746	1-249-419-11	CARBON 1.5K 5% 1/4W	
R747	1-249-420-11	CARBON 1.8K 5% 1/4W	
R748	1-249-421-11	CARBON 2.2K 5% 1/4W	
R749	1-249-422-11	CARBON 2.7K 5% 1/4W	
R750	1-249-424-11	CARBON 3.9K 5% 1/4W	
		< SWITCH >	
S841	1-554-303-21	SWITCH, TACTILE (1)	
S842	1-554-303-21	SWITCH, TACTILE (2)	
S843	1-554-303-21	SWITCH, TACTILE (3)	
S844	1-554-303-21	SWITCH, TACTILE (4)	
S845	1-554-303-21	SWITCH, TACTILE (5)	
S846	1-554-303-21	SWITCH, TACTILE (>10)	
S847	1-554-303-21	SWITCH, TACTILE (10)	
S848	1-554-303-21	SWITCH, TACTILE (9)	
S849	1-554-303-21	SWITCH, TACTILE (8)	
S850	1-554-303-21	SWITCH, TACTILE (7)	
S851	1-554-303-21	SWITCH, TACTILE (6)	

*	A-4649-199-A	BD BOARD, COMPLETE *****	
		< CAPACITOR >	
C101	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C102	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C103	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C104	1-164-505-11	CERAMIC CHIP 2.2uF 16V	

Ref.No.	Part No.	Description	Remark
C105	1-135-155-21	TANTALUM CHIP 4.7uF 10% 16V	
C106	1-164-346-11	CERAMIC CHIP 1uF 16V	
C107	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C108	1-164-346-11	CERAMIC CHIP 1uF 16V	
C112	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C151	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C152	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C153	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C154	1-164-336-11	CERAMIC CHIP 0.33uF 25V	
C155	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C156	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C157	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C158	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C159	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C160	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C181	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
		< CONNECTOR >	
CN101	1-568-861-11	SOCKET, CONNECTOR 18P	
CN102	1-568-795-11	SOCKET, CONNECTOR 12P	
		< IC >	
IC101	8-752-344-48	IC CXD2501Q	
IC102	8-759-071-79	IC BA6297AFP	
		< RESISTOR >	
R101	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R102	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R103	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R104	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R105	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R112	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R113	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R114	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R117	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R118	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R121	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R122	1-216-077-00	METAL CHIP 15K 5% 1/10W	

BD

DISP

FUNC

H. P.

Ref. No.	Part No.	Description	Remark
R151-156			
	1-216-070-00	METAL CHIP 7.5K 5%	1/10W
R157	1-216-085-00	METAL CHIP 33K 5%	1/10W
R158	1-216-076-00	METAL CHIP 13K 5%	1/10W
R159	1-216-085-00	METAL CHIP 33K 5%	1/10W
R160	1-216-081-00	METAL CHIP 22K 5%	1/10W
R161	1-216-093-00	METAL CHIP 68K 5%	1/10W
R162	1-216-085-00	METAL CHIP 33K 5%	1/10W
R163	1-216-308-00	METAL CHIP 4.7 5%	1/10W
< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	

*	1-647-352-11	DISP BOARD	

< CAPACITOR >			
C701	1-161-494-00	CERAMIC 0.022uF	25V
< CONNECTOR >			
CN701	1-750-230-11	CONNECTOR, FFC/FPC 13P	
CN702	1-750-234-11	CONNECTOR, FFC/FPC 17P	
CN703	1-750-195-11	CONNECTOR, BOARD TO BOARD 6P	
< FLUORESCENT INDICATOR >			
FL701	1-519-721-41	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC701	8-741-100-48	IC SBX1610-59	
< RESISTOR >			
R711	1-249-415-11	CARBON 680 5%	1/4W
R712	1-247-828-11	CARBON 750 5%	1/4W
R713	1-249-416-11	CARBON 820 5%	1/4W
R721	1-249-415-11	CARBON 680 5%	1/4W
R722	1-247-828-11	CARBON 750 5%	1/4W
R723	1-249-416-11	CARBON 820 5%	1/4W
R724	1-249-417-11	CARBON 1K 5%	1/4W
R725	1-247-834-11	CARBON 1.3K 5%	1/4W
R726	1-249-419-11	CARBON 1.5K 5%	1/4W
R727	1-249-420-11	CARBON 1.8K 5%	1/4W
< SWITCH >			
S811	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S812	1-554-303-21	SWITCH, TACTILE (TIME)	
S813	1-554-303-21	SWITCH, TACTILE (P. SEARCH)	
S814	1-554-303-21	SWITCH, TACTILE (EDIT/TIME FADE)	
S821	1-554-303-21	SWITCH, TACTILE (DISC 5)	

Ref. No.	Part No.	Description	Remark
S822	1-554-303-21	SWITCH, TACTILE (DISC 4)	
S823	1-554-303-21	SWITCH, TACTILE (DISC 3)	
S824	1-554-303-21	SWITCH, TACTILE (DISC 2)	
S825	1-554-303-21	SWITCH, TACTILE (DISC 1)	
S826	1-554-303-21	SWITCH, TACTILE (CONTINUE)	
S827	1-554-303-21	SWITCH, TACTILE (SHUFFLE)	
S828	1-554-303-21	SWITCH, TACTILE (PROGRAM)	

*	1-647-353-11	FUNC BOARD	

< CONNECTOR >			
CN704	1-750-186-11	CONNECTOR, BOARD TO BOARD 6P	
< RESISTOR >			
R731	1-249-415-11	CARBON 680 5%	1/4W
R732	1-247-828-11	CARBON 750 5%	1/4W
R733	1-249-416-11	CARBON 820 5%	1/4W
R734	1-249-417-11	CARBON 1K 5%	1/4W
R735	1-247-834-11	CARBON 1.3K 5%	1/4W
R736	1-249-419-11	CARBON 1.5K 5%	1/4W
R737	1-249-420-11	CARBON 1.8K 5%	1/4W
R738	1-249-421-11	CARBON 2.2K 5%	1/4W
< SWITCH >			
S831	1-554-303-21	SWITCH, TACTILE (DISC SKIP)	
S832	1-554-303-21	SWITCH, TACTILE (◀)	
S833	1-554-303-21	SWITCH, TACTILE (↔)	
S834	1-554-303-21	SWITCH, TACTILE (▶)	
S835	1-554-303-21	SWITCH, TACTILE (■)	
S836	1-554-303-21	SWITCH, TACTILE (□)	
S837	1-554-303-21	SWITCH, TACTILE (⏏)	
S838	1-554-303-21	SWITCH, TACTILE (⏏)	
S839	1-554-303-21	SWITCH, TACTILE (⏏ OPEN/CLOSE)	

*	1-647-355-11	H. P. BOARD	

< CAPACITOR >			
C702	1-162-291-31	CERAMIC 560PF	10% 50V
C703	1-164-159-11	CERAMIC 0.1uF	50V
C704	1-162-291-31	CERAMIC 560PF	10% 50V
C705	1-161-494-00	CERAMIC 0.022uF	25V
< CONNECTOR >			
CN710	1-750-230-11	CONNECTOR, FFC/FPC 13P	

H. P.

LOADING MOTOR

MAIN

Ref. No.	Part No.	Description	Remark		
< JACK >					
J701	1-750-162-61	JACK (LARGE TYPE) (PHONE)			
< VARIABLE RESISTOR >					
RV701	1-223-195-11	RES, VAR, CARBON 10K/10K (LINE OUT/PHONE LEVEL)			

*	1-644-202-12	LOADING MOTOR BOARD			

< CAPACITOR >					
C705	1-161-375-00	CERAMIC	0.0022uF	20%	50V

*	A-4649-643-A	MAIN BOARD, COMPLETE			

	7-682-547-09	SCREW +BVTT 3X6 (S)			
< CAPACITOR >					
C201	1-124-572-11	ELECT	100uF	20%	63V
C202	1-126-059-11	ELECT	10uF	20%	50V
C203	1-124-887-00	ELECT	3300uF	20%	16V
C204	1-126-937-11	ELECT	4700uF	20%	16V
C205	1-126-163-11	ELECT	4.7uF	20%	50V
C206	1-126-163-11	ELECT	4.7uF	20%	50V
C207	1-126-301-11	ELECT	1uF	20%	50V
C209	1-124-997-11	ELECT	470uF	20%	10V
C210	1-126-024-11	ELECT	220uF	20%	16V
C212	1-124-997-11	ELECT	470uF	20%	10V
C214	1-136-165-00	FILM	0.1uF	5%	50V
C218	1-126-023-11	ELECT	100uF	20%	16V
C219	1-126-023-11	ELECT	100uF	20%	16V
C220	1-124-120-11	ELECT	220uF	20%	25V
C221	1-124-120-11	ELECT	220uF	20%	25V
C222	1-126-024-11	ELECT	220uF	20%	16V
C223	1-126-024-11	ELECT	220uF	20%	16V
C224	1-161-494-00	CERAMIC	0.022uF		25V
C225	1-164-159-11	CERAMIC	0.1uF		50V
C231	1-126-024-11	ELECT	220uF	20%	16V
C301	1-124-589-11	ELECT	47uF	20%	16V
C303	1-164-159-11	CERAMIC	0.1uF		50V
C305	1-126-022-11	ELECT	47uF	20%	16V
C306	1-164-159-11	CERAMIC	0.1uF		50V
C307	1-164-159-11	CERAMIC	0.1uF		50V
C311	1-136-161-00	FILM	0.047uF	5%	50V
C312	1-161-374-11	CERAMIC	0.0015uF	20%	50V
C313	1-161-494-00	CERAMIC	0.022uF		25V

Ref. No.	Part No.	Description	Remark		
C314	1-162-306-11	CERAMIC	0.01uF	20%	16V
C315	1-124-465-00	ELECT	0.47uF	20%	50V
C317	1-161-494-00	CERAMIC	0.022uF		25V
C318	1-164-159-11	CERAMIC	0.1uF		50V
C319	1-162-282-31	CERAMIC	100PF	10%	50V
C320	1-136-153-00	FILM	0.01uF	5%	50V
C321	1-164-159-11	CERAMIC	0.1uF		50V
C322	1-164-159-11	CERAMIC	0.1uF		50V
C331	1-162-208-31	CERAMIC	24PF	5%	50V
C336	1-126-022-11	ELECT	47uF	20%	16V
C339	1-124-589-11	ELECT	47uF	20%	16V
C340	1-126-022-11	ELECT	47uF	20%	16V
C341	1-164-159-11	CERAMIC	0.1uF		50V
C342	1-124-589-11	ELECT	47uF	20%	16V
C343	1-164-159-11	CERAMIC	0.1uF		50V
C344	1-164-159-11	CERAMIC	0.1uF		50V
C345	1-162-205-31	CERAMIC	18PF	5%	50V
C346-349					
	1-164-159-11	CERAMIC	0.1uF		50V
C350	1-126-022-11	ELECT	47uF	20%	16V
C351	1-164-159-11	CERAMIC	0.1uF		50V
C352	1-164-159-11	CERAMIC	0.1uF		50V
C353	1-162-199-31	CERAMIC	10PF	5%	50V
C354	1-162-199-31	CERAMIC	10PF	5%	50V
C355	1-164-159-11	CERAMIC	0.1uF		50V
C356	1-126-022-11	ELECT	47uF	20%	16V
C357-360					
	1-164-159-11	CERAMIC	0.1uF		50V
C361	1-162-280-31	CERAMIC	82PF	10%	50V
C363-366					
	1-162-211-31	CERAMIC	33PF	5%	50V
C367	1-162-280-31	CERAMIC	82PF	10%	50V
C371	1-130-479-00	MYLAR	0.0047uF	5%	50V
C372	1-130-479-00	MYLAR	0.0047uF	5%	50V
C373	1-130-472-00	MYLAR	0.0012uF	5%	50V
C374	1-130-472-00	MYLAR	0.0012uF	5%	50V
C377	1-126-022-11	ELECT	47uF	20%	16V
C378	1-126-022-11	ELECT	47uF	20%	16V
C379	1-130-473-00	MYLAR	0.0015uF	5%	50V
C380	1-130-473-00	MYLAR	0.0015uF	5%	50V
C401	1-126-022-11	ELECT	47uF	20%	16V
C402	1-164-159-11	CERAMIC	0.1uF		50V
C403	1-126-023-11	ELECT	100uF	20%	16V
C404	1-126-023-11	ELECT	100uF	20%	16V
C408-410					
	1-164-159-11	CERAMIC	0.1uF		50V
C412	1-126-022-11	ELECT	47uF	20%	16V
C413	1-161-494-00	CERAMIC	0.022uF		25V
C414	1-161-494-00	CERAMIC	0.022uF		25V

MAIN

Ref. No.	Part No.	Description	Remark
C415	1-164-159-11	CERAMIC 0.1uF	50V
C416	1-164-159-11	CERAMIC 0.1uF	50V
C450	1-126-024-11	ELECT 220uF	20% 16V
C460	1-126-024-11	ELECT 220uF	20% 16V

< CONNECTOR >

* CN201	1-573-047-11	PIN, CONNECTOR (PC BOARD) 2P
* CN202	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P
CN301	1-691-895-21	CONNECTOR, FFC/FPC 18P
CN381	1-750-230-11	CONNECTOR, FFC/FPC 13P
CN401	1-750-230-11	CONNECTOR, FFC/FPC 13P
CN402	1-750-234-11	CONNECTOR, FFC/FPC 17P
CN403	1-750-228-11	CONNECTOR, FFC/FPC 10P
* CN404	1-568-824-11	SOCKET, CONNECTOR 5P
* CN405	1-568-943-11	PIN, CONNECTOR 5P

< DIODE >

D201	8-719-200-82	DIODE 11ES2
D202	8-719-110-08	DIODE RD8.2ES-B2
D203-206	8-719-200-82	DIODE 11ES2
D207-210	8-719-987-63	DIODE 1N4148M
D231	8-719-987-63	DIODE 1N4148M
D232	8-719-109-85	DIODE RD5.1ES-B2
D341	8-719-210-21	DIODE 11EQS04
D351	8-719-987-63	DIODE 1N4148M

< IC >

IC201	8-759-633-42	IC M5293L
IC202	8-759-061-65	IC LA5602
IC203	8-759-145-58	IC uPC4558C
IC204	8-759-605-00	IC TA7807S-LC
IC206	8-759-708-12	IC NJM78L12A
IC207	8-759-700-69	IC NJM79L12A
IC301	8-752-352-93	IC CXD2500BQ
IC302	8-752-356-03	IC CXD2567M
IC303	8-759-044-10	IC CXD2562Q
IC306	8-759-503-91	IC TL082ACP
IC307	8-759-073-60	IC MC33078P
IC308	8-749-921-12	IC GP1F32T
IC309	8-759-634-51	IC M5218AP
IC401	8-759-164-90	IC uPD75237-TTX839
IC402	8-759-821-32	IC CXA1291P

< JACK >

J381	1-569-443-21	JACK, PIN 4P (LINE OUT)
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Ref. No.	Part No.	Description	Remark
		< INDUCTOR >	
L306	1-408-403-00	INDUCTOR	3.3uH
L331	1-408-403-00	INDUCTOR	3.3uH
L343	1-412-473-21	INDUCTOR	0uH

< TRANSISTOR >

Q201	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q209	8-729-281-52	TRANSISTOR 2SC1815-Y
Q341-343	8-729-900-65	TRANSISTOR DTA144ES
Q344	8-729-900-89	TRANSISTOR DTC144ES
Q371-374	8-729-141-26	TRANSISTOR 2SC3622A-LK
Q375	8-729-231-55	TRANSISTOR 2SC2878-AB
Q376	8-729-231-55	TRANSISTOR 2SC2878-AB
Q401	8-729-900-89	TRANSISTOR DTC144ES

< RESISTOR >

R201	1-249-435-11	CARBON 33K 5% 1/4W
R202	1-249-438-11	CARBON 56K 5% 1/4W
R203	1-249-429-11	CARBON 10K 5% 1/4W
R210	1-249-429-11	CARBON 10K 5% 1/4W
R211	1-249-410-11	CARBON 270 5% 1/4W
R215	1-249-429-11	CARBON 10K 5% 1/4W
R231	1-249-414-11	CARBON 560 5% 1/4W
R302	1-249-417-11	CARBON 1K 5% 1/4W
R303	1-249-417-11	CARBON 1K 5% 1/4W
R305	1-249-405-11	CARBON 100 5% 1/4W
R306	1-249-413-11	CARBON 470 5% 1/4W
R309	1-249-405-11	CARBON 100 5% 1/4W
R311	1-249-423-11	CARBON 3.3K 5% 1/4W
R312	1-249-429-11	CARBON 10K 5% 1/4W
R313	1-249-423-11	CARBON 3.3K 5% 1/4W
R314	1-249-429-11	CARBON 10K 5% 1/4W
R315-317	1-249-417-11	CARBON 1K 5% 1/4W
R318	1-249-441-11	CARBON 100K 5% 1/4W
R319	1-247-903-00	CARBON 1M 5% 1/4W
R321-323	1-249-417-11	CARBON 1K 5% 1/4W
R324	1-249-418-11	CARBON 1.2K 5% 1/4W
R325	1-249-417-11	CARBON 1K 5% 1/4W
R326	1-249-420-11	CARBON 1.8K 5% 1/4W
R327	1-249-417-11	CARBON 1K 5% 1/4W
R330	1-249-417-11	CARBON 1K 5% 1/4W
R331	1-249-417-11	CARBON 1K 5% 1/4W
R342	1-249-417-11	CARBON 1K 5% 1/4W
R343	1-249-441-11	CARBON 100K 5% 1/4W
R344	1-249-441-11	CARBON 100K 5% 1/4W

MAIN
OPEN/UP SW
P. SW
TABLE MOTOR

Ref. No.	Part No.	Description	Remark
R345	1-249-425-11	CARBON	4.7K 5% 1/4W
R346	1-249-425-11	CARBON	4.7K 5% 1/4W
R347	1-249-441-11	CARBON	100K 5% 1/4W
R348	1-249-429-11	CARBON	10K 5% 1/4W
R351-358	1-249-436-11	CARBON	39K 5% 1/4W
R359	1-247-848-11	CARBON	5.1K 5% 1/4W
R361-364	1-249-433-11	CARBON	22K 5% 1/4W
R365-368	1-247-872-11	CARBON	51K 5% 1/4W
R369-372	1-249-419-11	CARBON	1.5K 5% 1/4W
R373	1-247-887-00	CARBON	220K 5% 1/4W
R374	1-247-887-00	CARBON	220K 5% 1/4W
R375-378	1-249-409-11	CARBON	220 5% 1/4W
R379	1-249-421-11	CARBON	2.2K 5% 1/4W
R380	1-249-421-11	CARBON	2.2K 5% 1/4W
R381	1-249-425-11	CARBON	4.7K 5% 1/4W
R382	1-249-425-11	CARBON	4.7K 5% 1/4W
R383	1-249-414-11	CARBON	560 5% 1/4W
R384	1-249-414-11	CARBON	560 5% 1/4W
R385	1-249-393-11	CARBON	10 5% 1/4W
R386	1-249-393-11	CARBON	10 5% 1/4W
R389	1-249-414-11	CARBON	560 5% 1/4W
R390	1-249-414-11	CARBON	560 5% 1/4W
R403-406	1-249-425-11	CARBON	4.7K 5% 1/4W
R408	1-249-441-11	CARBON	100K 5% 1/4W
R409	1-249-434-11	CARBON	27K 5% 1/4W
R410	1-249-441-11	CARBON	100K 5% 1/4W
R411	1-247-876-11	CARBON	75K 5% 1/4W
R412	1-247-876-11	CARBON	75K 5% 1/4W
R413	1-249-440-11	CARBON	82K 5% 1/4W
R414	1-247-874-11	CARBON	62K 5% 1/4W
R415	1-249-435-11	CARBON	33K 5% 1/4W
R416-418	1-247-878-00	CARBON	91K 5% 1/4W
R419	1-249-440-11	CARBON	82K 5% 1/4W
R420	1-249-440-11	CARBON	82K 5% 1/4W
R421-423	1-249-393-11	CARBON	10 5% 1/4W
R424	1-249-411-11	CARBON	330 5% 1/4W
R425-427	1-249-429-11	CARBON	10K 5% 1/4W
R430	1-249-429-11	CARBON	10K 5% 1/4W
R433	1-249-429-11	CARBON	10K 5% 1/4W
R434	1-249-429-11	CARBON	10K 5% 1/4W
R453	1-249-402-11	CARBON	56 5% 1/4W

Ref. No.	Part No.	Description	Remark
R463	1-249-402-11	CARBON	56 5% 1/4W
		< VIBRATOR >	
X351	1-579-161-11	VIBRATOR, CRYSTAL (45MHz)	
X401	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	

*	1-647-351-11	OPEN/UP SW BOARD	

		< CONNECTOR >	
CN705	1-573-383-11	PIN, CONNECTOR (PC BOARD) 2P	
		< SWITCH >	
S702	1-571-300-21	SWITCH, ROTARY (OPEN/CLOSE)	

*	1-647-354-11	P. SW BOARD	

		< SWITCH >	
S861	1-572-714-11	SWITCH, PUSH (POWER)	

*	1-644-201-11	TABLE MOTOR BOARD	

		< CAPACITOR >	
C704	1-161-375-00	CERAMIC	0.0022uF 20% 50V
		< CONNECTOR >	
* CN707	1-573-044-11	SOCKET, CONNECTOR 5P	
		< DIODE >	
D701	8-719-970-19	DIODE GP1A521	
		< RESISTOR >	
R701	1-249-416-11	CARBON	820 5% 1/4W

Ref. No.	Part No.	Description	Remark
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MISCELLANEOUS

- | | | | |
|-------|--------------|--------------------------------------|--|
| △8 | 1-590-926-11 | CORD, POWER | |
| 56 | 1-751-049-11 | WIRE (FLAT TYPE) (17 CORE) | |
| 62 | 1-751-047-11 | WIRE (FLAT TYPE) (10 CORE) | |
| 65 | 1-751-050-11 | WIRE (FLAT TYPE) (13 CORE) | |
| 66 | 1-751-048-11 | WIRE (FLAT TYPE) (13 CORE) | |
| 116 | 1-694-003-11 | JAMPER, FILM (WITH TARMINAL) | |
| * 155 | 1-452-538-11 | MAGNET | |
| 162 | 1-590-849-11 | WIRE, FLAT TYPE (5 CORE) | |
| △256 | 8-848-144-11 | DEVICE, OPTICAL KSS-240A | |
| 257 | 1-575-001-11 | WIRE, FLAT TYPE (12 CORE) | |
| M101 | X-4917-504-1 | MOTOR ASSY, SLED | |
| M102 | X-4917-523-3 | MOTOR ASSY, SPINDLE | |
| M701 | A-4604-585-A | MOTOR ASSY, ROTARY | |
| M702 | A-4604-834-A | MOTOR ASSY, LOADING | |
| S705 | 1-572-713-11 | SWITCH, PUSH (WITH CONNECTOR) (DOWN) | |
| △T901 | 1-450-876-11 | TRANSFORMER, POWER | |

ACCESSORIES & PACKING MATERIALS

- | | | | |
|---|--------------|---------------------------------------|--|
| | 1-465-730-11 | REMOTE COMMANDER (RM-D515) | |
| | 1-558-271-11 | CORD, CONNECTION | |
| | 1-590-925-31 | CORD, CONNECTION | |
| | 3-707-584-01 | COVER, BATTERY | |
| | 3-756-599-21 | MANUAL, INSTRUCTION (ENGLISH, FRENCH) | |
| * | 4-944-110-01 | CUSHION (FRONT) | |
| * | 4-944-111-01 | CUSHION (REAR) | |
| * | 4-958-479-01 | INDIVIDUAL CARTON | |

HARDWARE LIST

- | | | |
|-----|--------------|--------------------------------|
| #1 | 7-682-247-09 | SCREW +K 3X6 |
| #2 | 7-685-648-79 | SCREW +BVTP 3X12 TYPE2 N-S |
| #3 | 7-685-870-01 | SCREW +BVTT 3X5 (S) |
| #4 | 7-682-547-09 | SCREW +BV 3X6, S TIGHT |
| #5 | 7-685-647-79 | SCREW, TAPPING |
| #6 | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 N-S |
| #7 | 7-682-961-01 | SCREW +PSW 4X8 |
| #8 | 7-685-136-19 | SCREW +P 2.6X12 TYPE2 NON-SLIT |
| #9 | 7-682-554-04 | SCREW +B 3X25 |
| #10 | 7-621-255-15 | SCREW +P 2X3 |

The components identified by mark △ or dotted line with mark. △ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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