

TC-RX80ES

SERVICE MANUAL

RTV servis Horvat

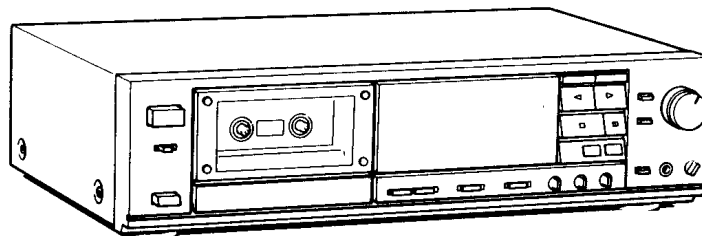
Tel: ++385-31-856-842

Tel/fax: ++385-31-856-139

Mob: 098-788-319

www.rtv-horvat-dj.hr

*US Model
Canadian Model
AEP Model
UK Model
E Model*



Model Name Using Similar Mechanism	TC-R503ES
Tape Transport Mechanism Type	TCM-CMAY B-22

SPECIFICATIONS

Recording system

4-track 2-channel stereo

Fast-forward and rewind time

Approx. 90 sec. (with C-60 cassette)

Bias

AC Bias

Signal-to-noise ratio (NAB, at peak level)

Dolby NR switch	OFF	B-TYPE ON	C-TYPE ON
Cassette			
TYPE IV (Sony METAL-ES)	59 dB	66 dB	72 dB
TYPE II (Sony UX-S)	58 dB	65 dB	71 dB
TYPE I (Sony HF-S)	54 dB	61 dB	67 dB

Total harmonic distortion

1.0% (with Sony METAL-ES cassettes)

Frequency response

DOLBY NR OFF

- With TYPE IV cassette (Sony METAL-ES)

20–20,000Hz (±3dB) : US model

30–20,000Hz (±3dB) : Canadian, AEP, UK, E model

30–15,000 Hz (±3 dB, 0VU recording)

- With TYPE II cassette (Sony UX-S)

30–17,000 Hz (±3 dB)

- With TYPE I cassette (Sony HF-S)

30–15,000 Hz (±3 dB)

Wow and flutter

0.05% WRMS (NAB)

Inputs

Line inputs (phono jacks)

Sensitivity 77.5 mV (–20 dB)

Input impedance 50 kilohms

Outputs

Line outputs (phono jacks)

Rated output level 0.44 V (–5 dB) at

load impedance 47 kilohms

Load impedance over 10 kilohms

Headphone output (stereo phone jack)

Output level variable from –20 dB to
–∞ dB at load impedance 8 ohms

General

Power requirements

120V AC, 60Hz : US, Canadian model

220V AC, 50/60Hz : AEP model

240V AC, 50/60Hz : UK model

120, 220, 240V AC, 50/60Hz : E model

Power consumption

24 W

Dimensions

Approx. 430×118×285 mm (w/h/d)

(17×4¾×11¼ inches)

Weight

Approx. 5.1 kg (11 lbs 4 oz)

Supplied accessories

Connecting cord (2)

Remote control cord with 4-pin connectors
(1)

* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

"DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

STEREO CASSETTE DECK
SONY

www.rtv-horvat-dj.hr



FEATURES

The TC-RX80ES is an auto-reverse cassette deck equipped with a laseramorphous magnetic alloy head using LC-OFC winding for recording and playback, and features the following functions.

- **Quick-reverse function** prevents tape transport on the leader tape.
- **Bias calibration** adjusts bias current to the optimum level for any tape, and **record level calibration** allows optimum performance of the Dolby NR system.
- **The Dolby HX PRO* system** improves the linearity of the tape's high range response during recording.
- **Easy-to-read digital linear counter** shows the elapsed recording or playback time.
- **AMS, blank skip and music scan functions** provide easy access to a desired selection.

SAFETY CHECK-OUT

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 2V AC range are suitable. (See Fig. A)

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.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  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.

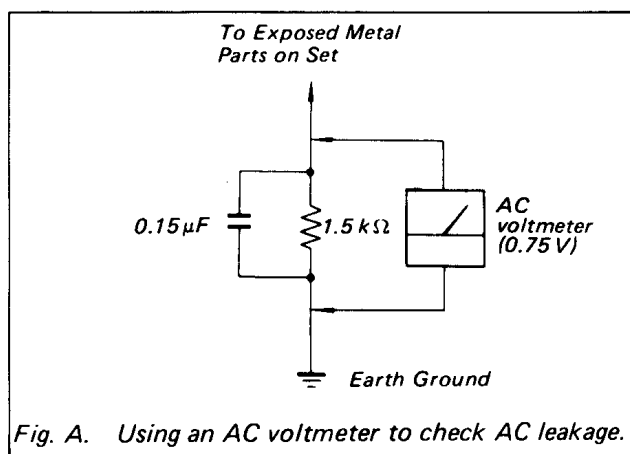


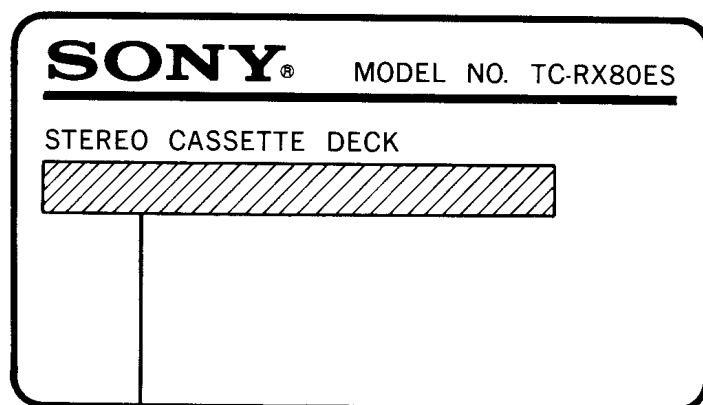
Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1 GENERAL

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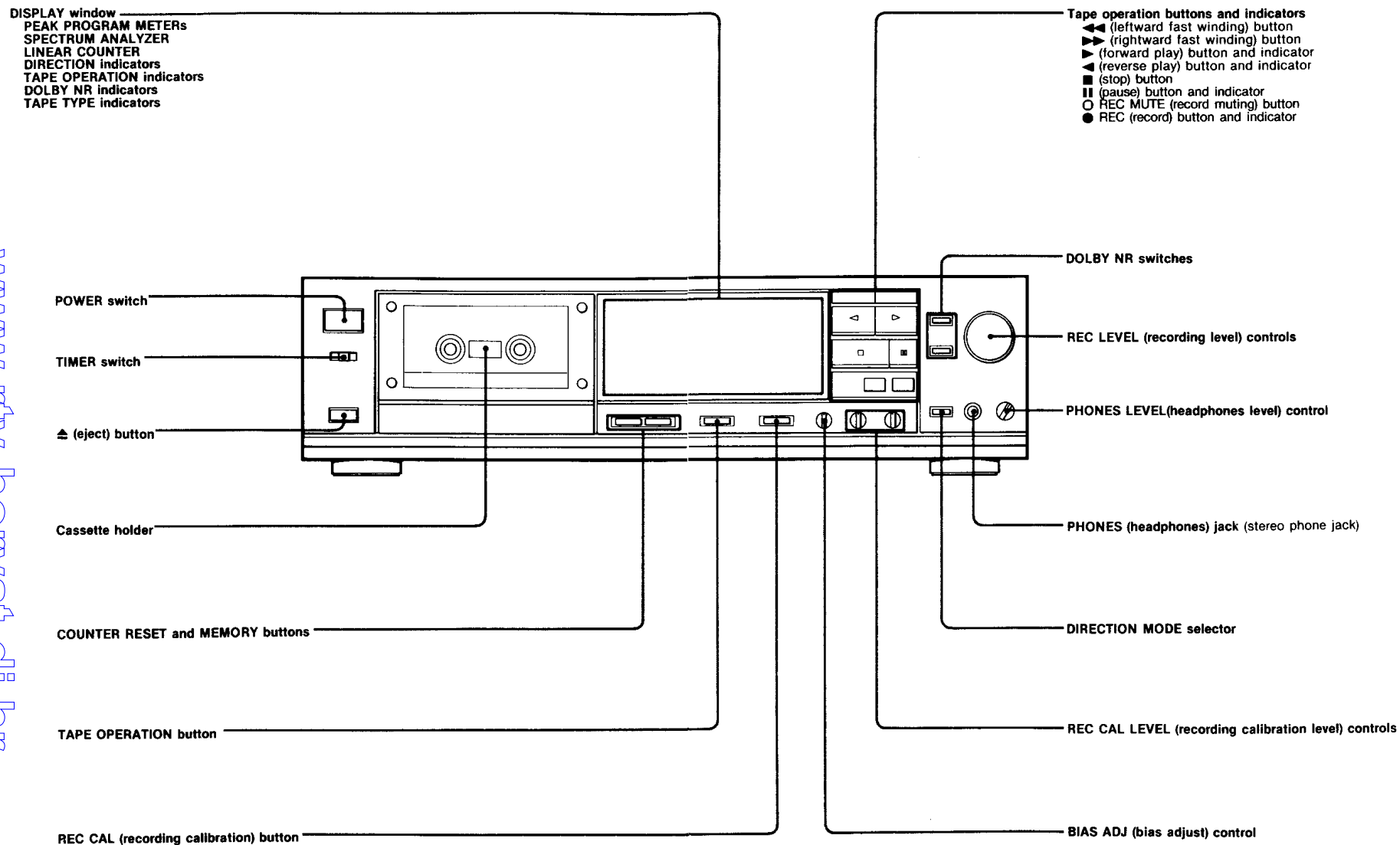
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1-1. MODEL IDENTIFICATION (Specification Label)



US model:	AC 120V~60Hz	24W
Canadian model:	AC 120V~60Hz	24W
AEP model:	AC 220V~50/60Hz	24W
UK model:	AC 240V~50/60Hz	24W
E model:	AC 120, 220, 240V~50/60Hz	24W

1-2. LOCATION OF CONTROLS



SECTION 2 MECHANICAL ADJUSTMENT

PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab :

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers
- Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque Meter	Torque
Forward	CQ-102C	25–75g·cm (0.35–1.04oz·inch)
FWD back tension	CQ-102C	1–10g·cm (0.01–0.14oz·inch)
Reverse	CQ-102RB	25–75g·cm (0.35–1.04oz·inch)
REV back tension	CQ-102RB	1–10g·cm (0.01–0.14oz·inch)
EF, REW	CQ-201B	80–180g·cm (1.1–2.5oz·inch)

SECTION 3 ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.

The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE switches according to the tape as follows.

Tape	TAPE switch	LED Display
CS-17	AUTO	TYPE I
CS-26	AUTO	TYPE II
CS-42	AUTO	TYPE IV

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch: OFF

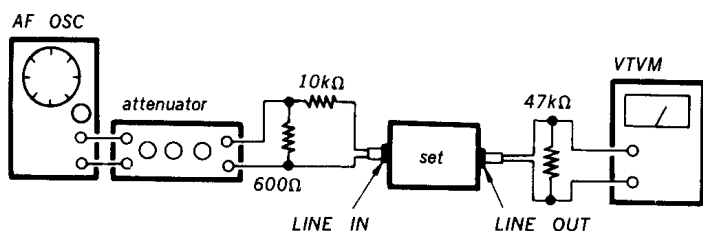
TIMER switch: OFF

REC CAL control: center click

- Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

—Record Mode—



Standard Input Level

	LINE IN
source impedance	10kΩ
input level	0.25V (–10dB)

Standard Output Level

	LINE OUT
load impedance	47kΩ
output level	0.44V (–5dB)

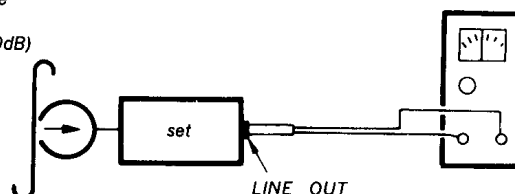
SPEED ADJUSTMENT

Procedure:

Mode: playback

test tape
WS-48A
(3kHz, 0dB)

speed checker
LFM-30
or
digital frequency
counter



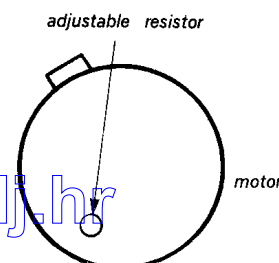
Specification:

Speed checker	Digital frequency counter
–1 – +1%	2,970–3,030Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25Hz).

Adjustment Location:

adjustment the adjustable resistor of built in motor (adjustment by the insert to drirer Speed in fastest that turn the clockurse.)

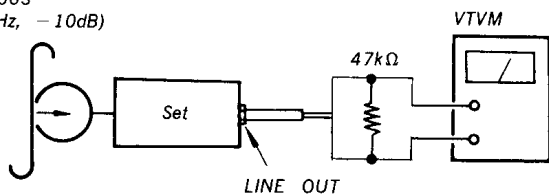


RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

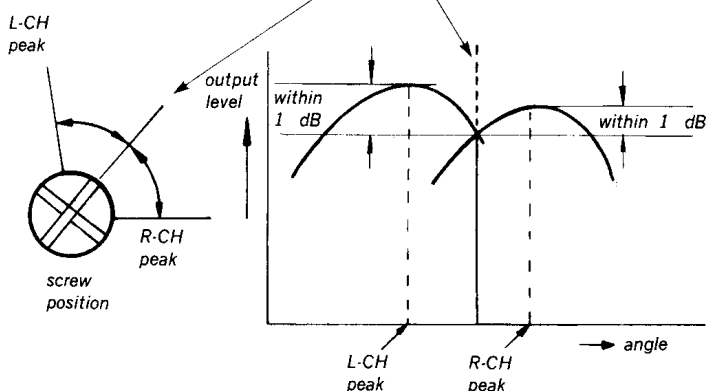
procedure :

1. Mode : playback

test tape
P-4-A063
(6.3kHz, -10dB)

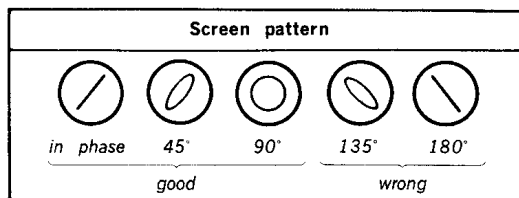
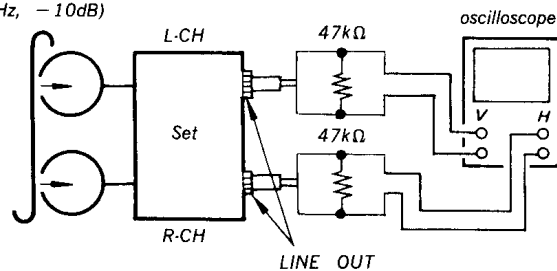


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.

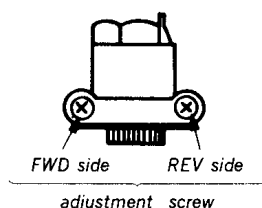


3. phase Check
Mode : playback

test tape
P-4-A063
(6.3kHz, -10dB)



Adjustment Location : REC/PB head

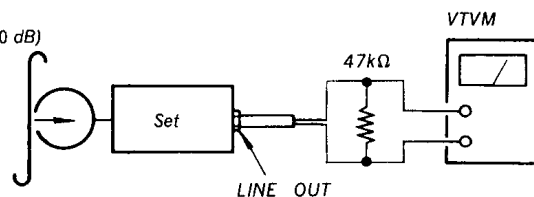


PLAYBACK LEVEL ADJUSTMENT

Procedure :

mode : Playback

test tape
P-4-L300
(315Hz, 0 dB)



Specification :

LIIN OUT Level: 0.41 to 0.46V
(-5.5 to -4.5dB)

Level difference between charrels: within 0.5dB

Make sure that line-output level does not change When rekeating the playback and stop.

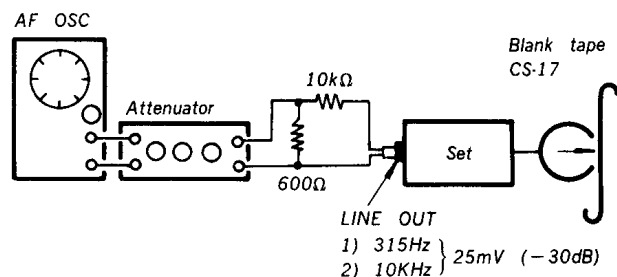
RECORD BIAS ADJUSTMENT

Setting :

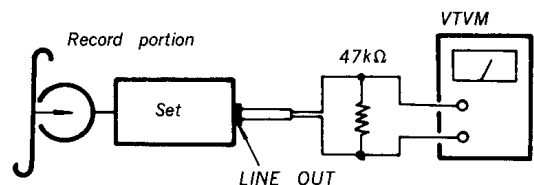
REC LEVEL knob shall be at the specilied record position (see page 5.)

Procedure :

1. Mode Record :

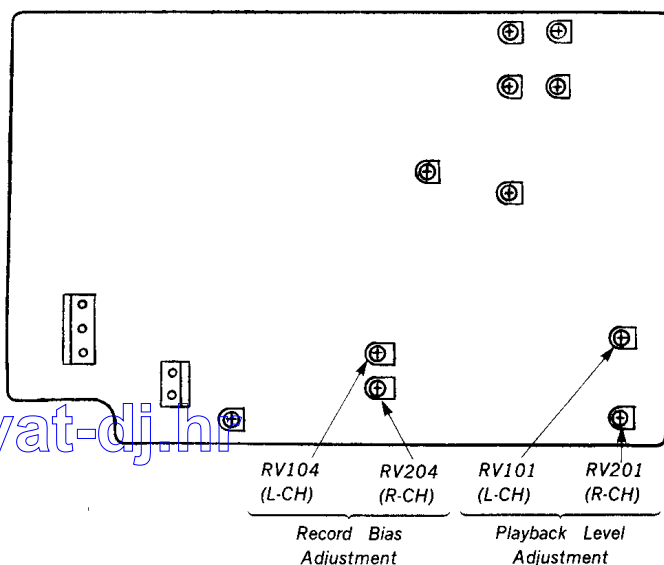


2. Mode : Playback



Adjust RV104, 204 so that playback output of 10KHz is 0 ± 0.5 dB.

Adjustment Location : audio/system control board



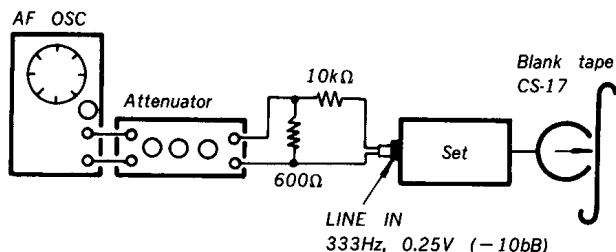
RECORD LEVEL ADJUSTMENT

Setting :

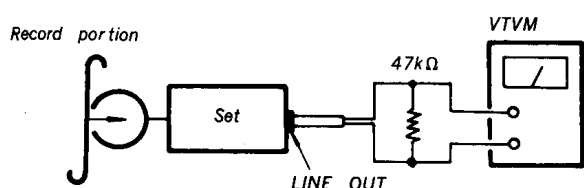
REC LEVEL knob shall be at the specified record position
(See page 5.)

Procedure :

1. Mode Record :



2. Mode Playback :



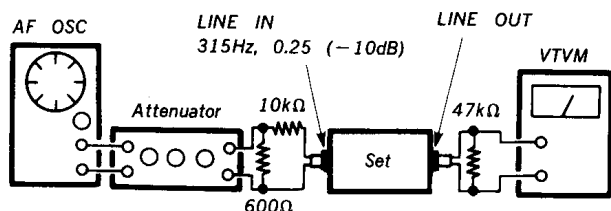
Specification :

LINE OUT Level: CS-17
0.41 to 0.46V
(-5.5 to -4.5dB)

LEVEL METER ADJUSTMENT

Procedure :

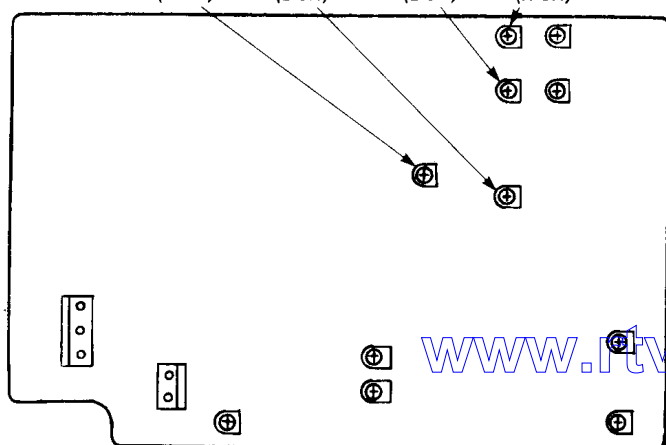
1. Mode Record :



2. Adjust REC LEVEL (RV301) so the level of LINE OUT is -5dB
3. Adjust RV106 (L-CH) 206 (R-CH) so that 0VU (-4dB) segment of meter light on.
4. Be sure that all meters go on when setting the LINE OUT level to -19dB.

Adjustment Location : audio/system control board

Record Level Adjustment		Level Meter Adjustment	
RV203 (R-CH)	RV103 (L-CH)	RV106 (L-CH)	RV206 (R-CH)

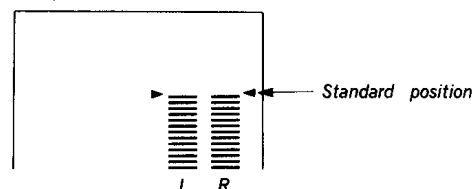


CAL METER(1) LEVEL ADJUSTMENT

Setting :

- REC CAL knob center (center click)
- Connect CNN504 (CAL mode) of system control board to GND-terminal as shown in the diagram (display tube shows CAL-display, and CAL oscillation state (mode) in obtained)

CAL-mode display



Procedure :

1. Record for about 10 seconds by setting the blank tape CS-17 to record mode.
2. Be sure that the segment lower by one from standard position on the meter goes on at playback time of record part.
In other cases, adjust RV105 (L-CH) and RV205 (R-CH), then, adjust 1 and 2.
3. After adjustment, disconnect CNN504.

QUICK REVERSE SENSITIVITY ADJUSTMENT

Setting :

Direction mode switch:

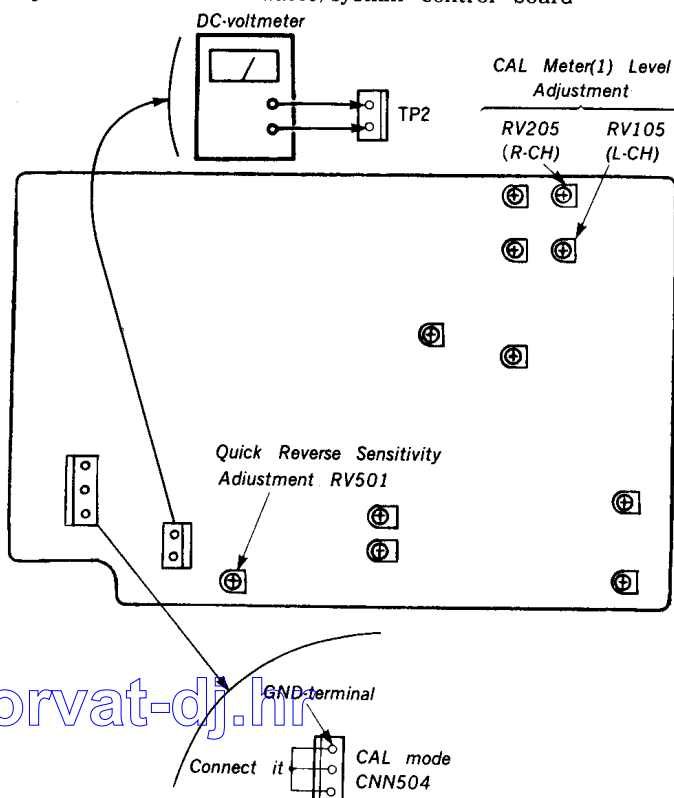
Procedure :

1. Connect DC-voltmeter to TP 2 of system control board.
2. Mount the vacant (blank) cassette to set FWD mode.
3. Adjust RV501 so that the reading of DC-voltmeter is 10V.

Specification : 10V ± 0.5V

4. Repeat FWD and Stop 2-3 times, and again check the voltage.
5. Be sure that reverse is made at the connected part between leader tape and magnetic body.

Adjustment Location : audio/system control board

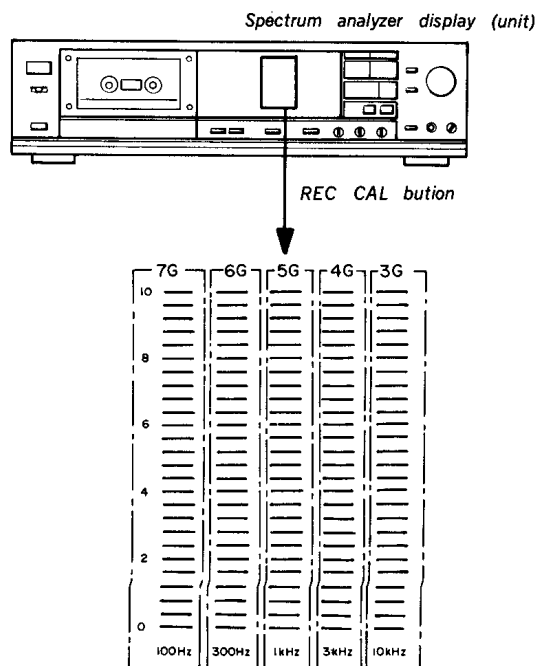


CAL METER(2) LEVEL ADJUSTMENT

Setting :

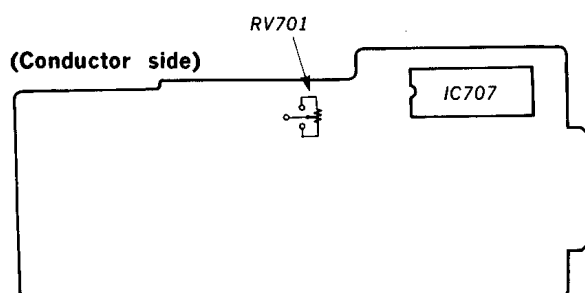
- REC CAL knob Conten (Center Click)
- BIAS ADJ knob Conten (Center Click)

Procedure :



1. Use the blank tape CS-17 and press REC CAL button
 - REC CAL mode state
(With the record of test-tone for about 10 seconds, it is automatically revound by 0.00 and playback is made.)
2. During playback time be sure that the meter of 10kHz and 300Hz at the spectrum-analyzer display is swinging.
3. Adjust RV701 so that level of 10k meter is matched to the level of 300Hz.

Adjustment Location : FL board



CAL OSC LEVEL ADJUSTMENT

Setting :

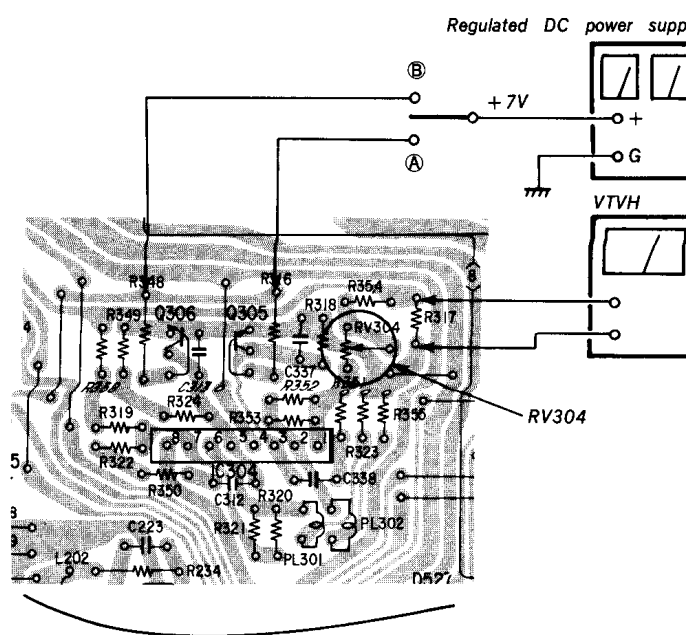
- REC CAL knob.....Center (center click)
- Connect CNN504 (CAL mode) of system control board to GND-terminal.

(Display tube shows CAL display being set to CAL oscillation mode.)

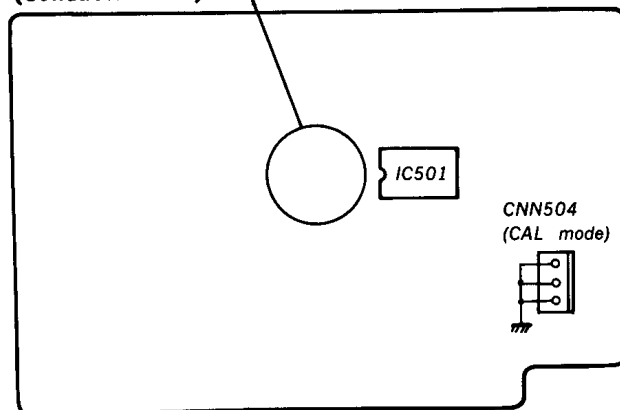
Procedure :

1. Connect DC-power to the side of ① and read and memorize the meter of VTVM.
2. Connect DC-power supply to the side of ②, and read the level of VTVM, then adjust the level of "1".
3. After adjustment, disconnect CNN504.

Connecting and adjusting location : audio/system control board



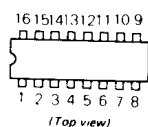
(Conductor side)



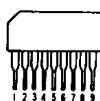
SECTION 4 DIAGRAMS

4-1. SEMICONDUCTOR LEAD LAYOUTS

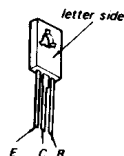
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TC4019BP



NJM2903S
μPC4570HA



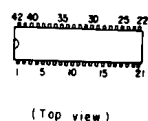
2SB548
2SD414
2SD774
2SD809



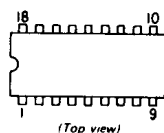
BG5628S
BR5628S



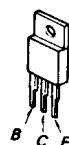
CX20187
LC7566



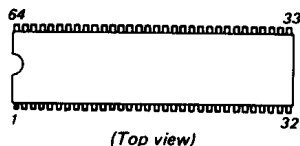
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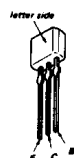
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HD614042SA87



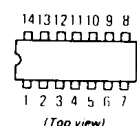
BA1A4M
BN1A4M
BN1L4M
2SA1150
2SA1175



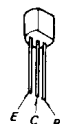
2SK246-GR2



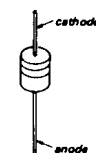
M4066BP
TC4069UBP
μPD4066BC



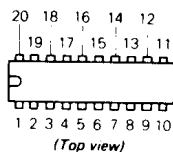
2SA952
2SB642



HZS11B3L
HZS12C1L
HZS6A1L
HZS7B2L
HZS7C1L
HZS7C2L
HZS9C1L



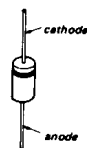
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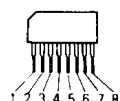
2SA1346
2SC634SP
2SC3399
2SC3400
2SC3901



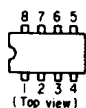
1SS132
10E2



M5201L
M5218L



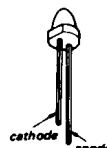
M5218P
M5220P
μPC4570C



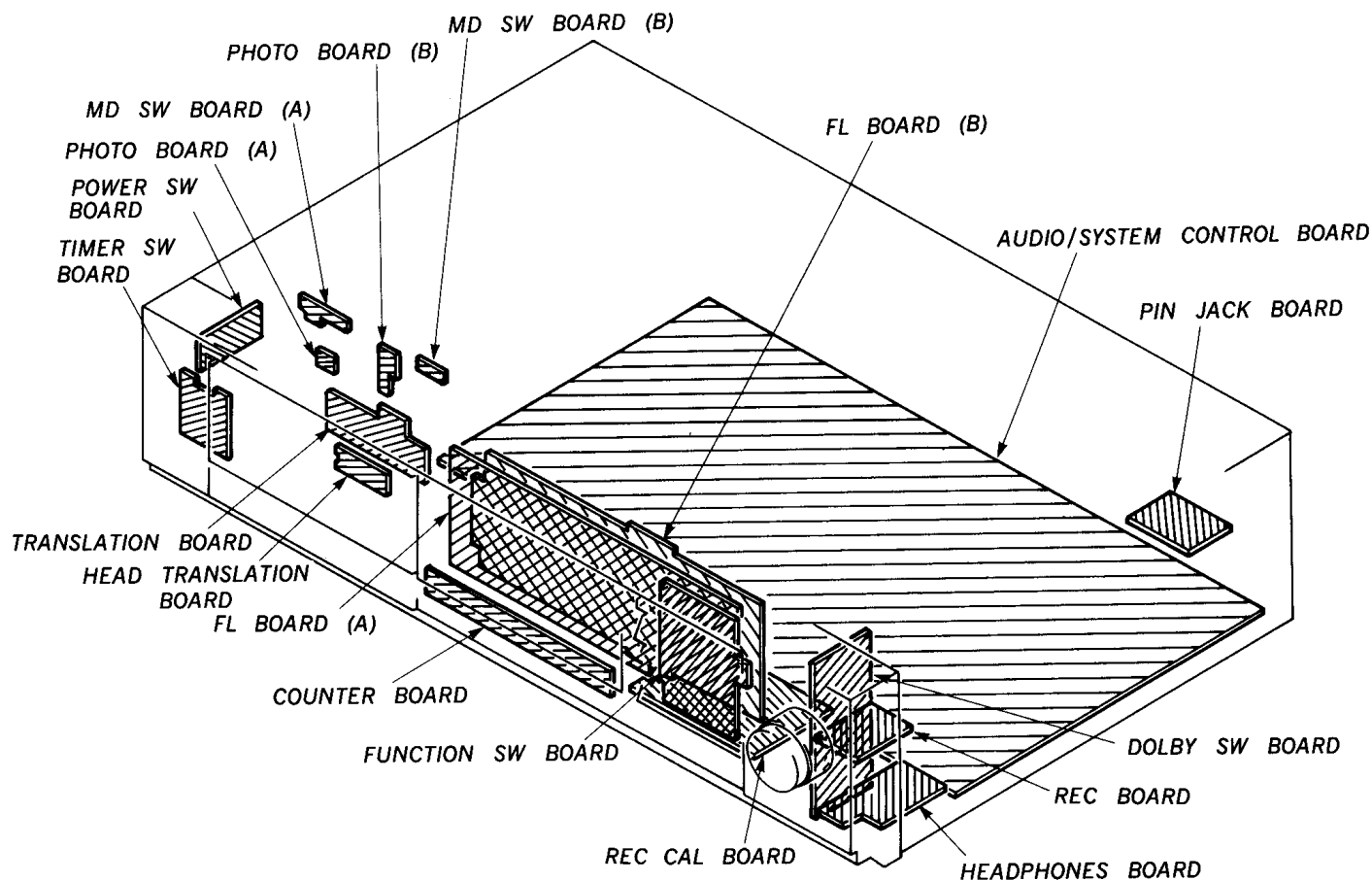
2SA1409-L
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2SC2001
2SC3622-L
2SD1387



AY5638S



4-2. CIRCUIT BOARD LOCATION

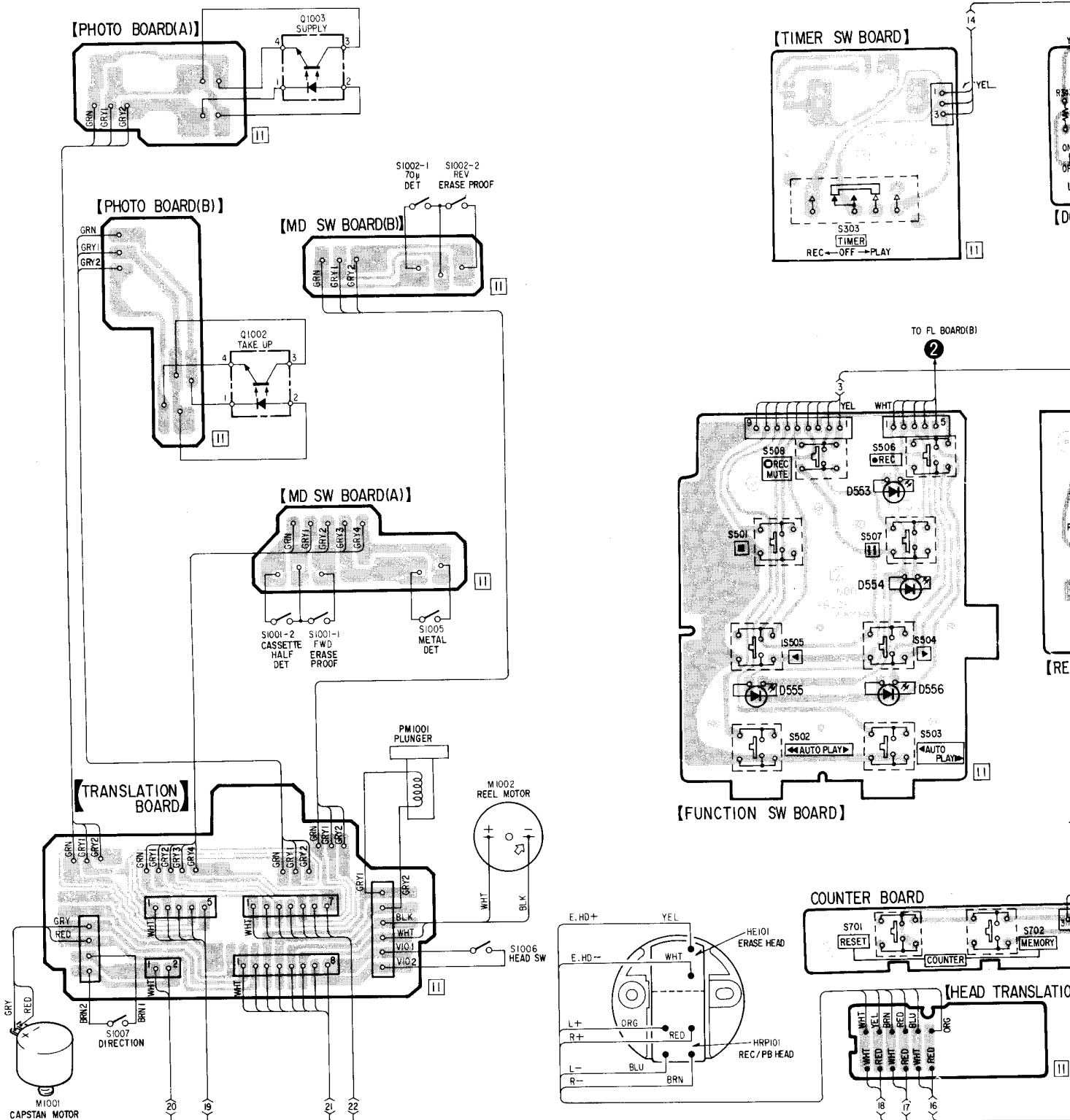


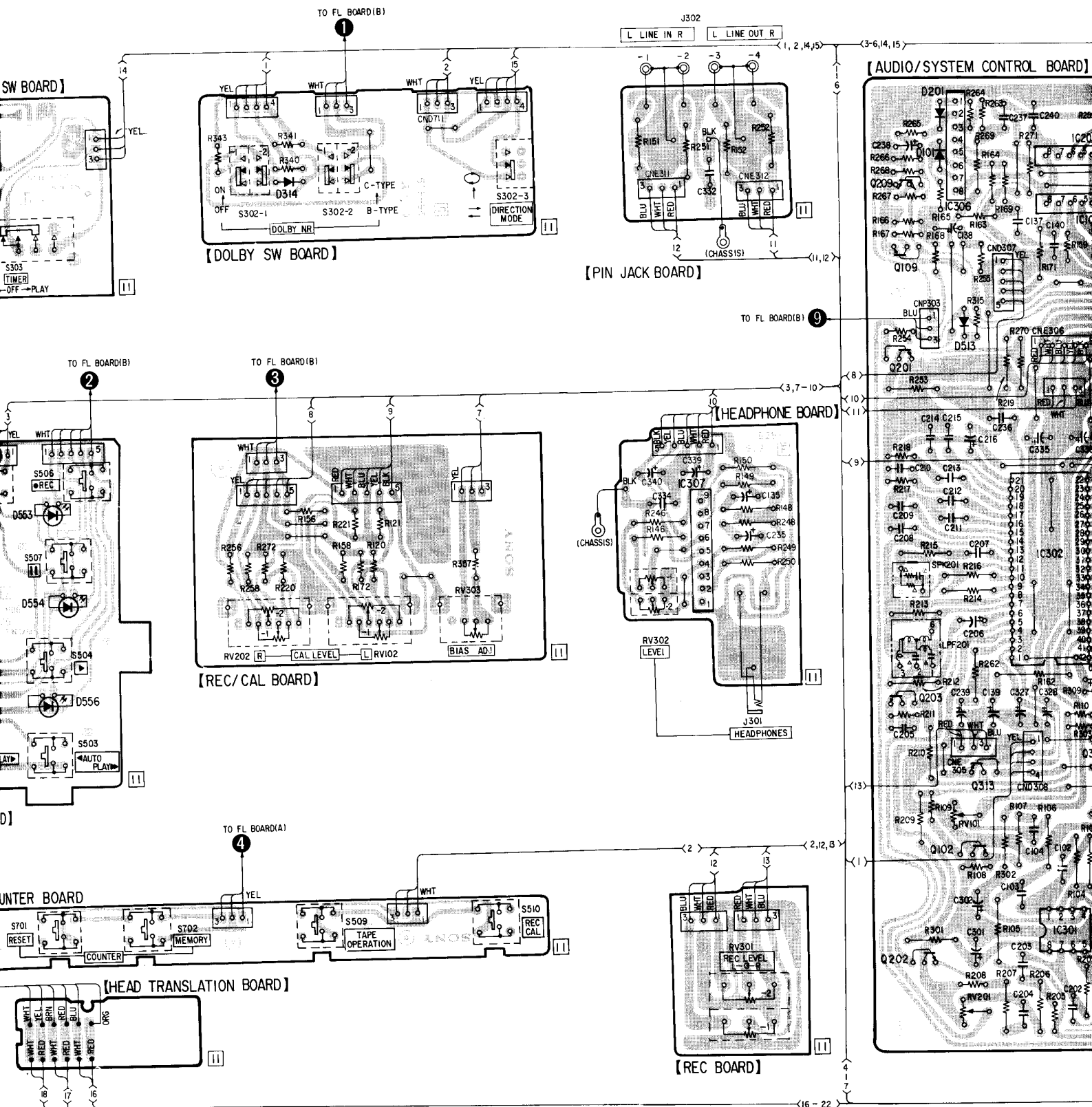
● Semiconductor Location

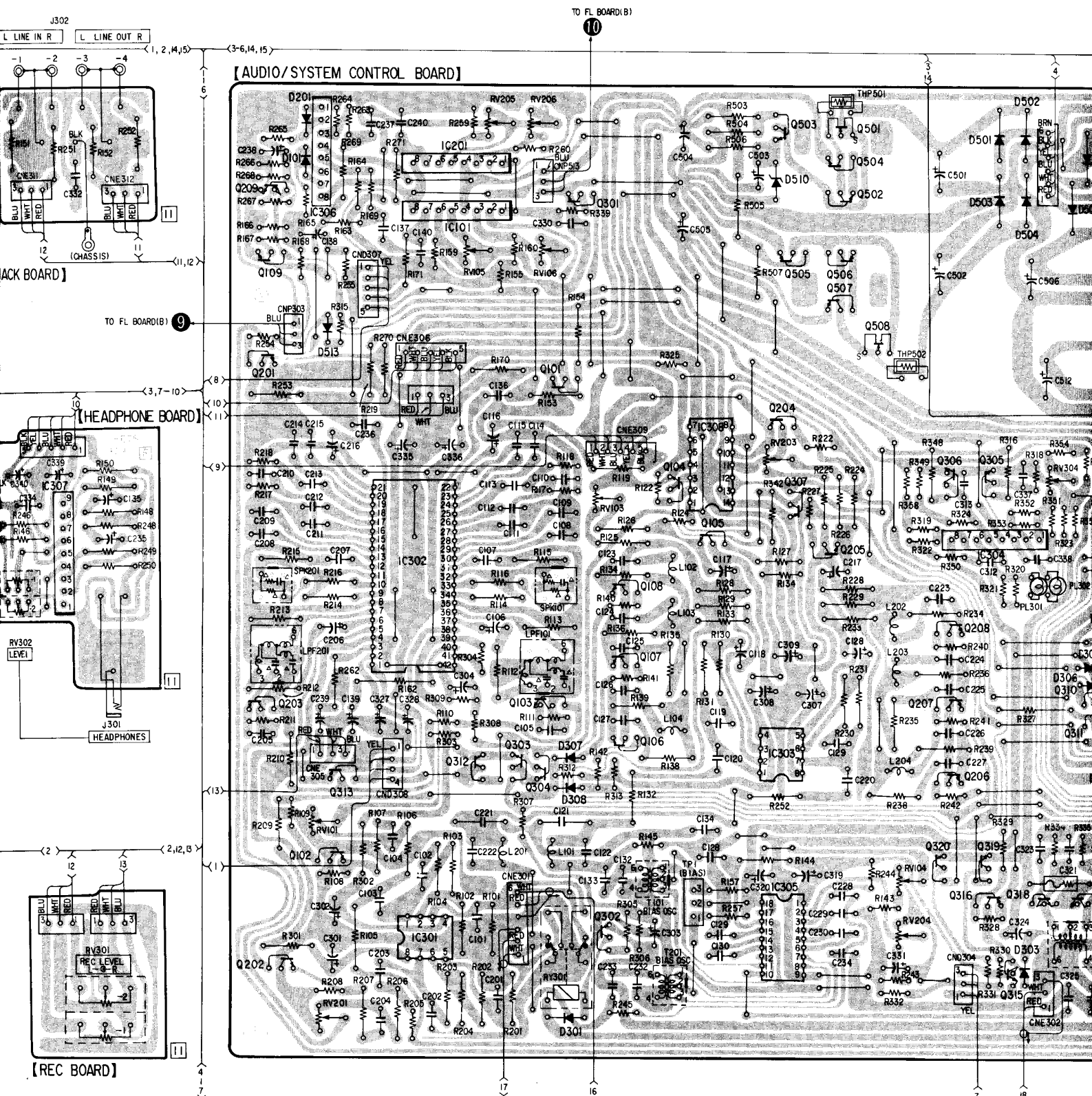
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D101	B-15	D518	B-26	IC306	B-15	Q304	G-17	Q516	C-24
D201	B-15	D519	B-22	IC307	E-13	Q305	E-20	Q518	I-23
D301	I-17	D520	D-22	IC308	D-18	Q306	E-20	Q519	F-23
D302	E-23	D521	C-25	IC501	E-22	Q307	E-19	Q520	F-23
D303	I-21	D522	D-26	IC502	F-24	Q308	G-22	Q521	F-22
D305	F-21	D523	C-22	IC503	H-25	Q309	G-22	Q525	E-26
D306	F-21	D524	C-22	IC504	H-22	Q310	F-21	Q526	F-26
D307	D-17	D525	F-23	IC505	D-25	Q311	G-21	Q527	F-26
D308	D-17	D527	F-21	IC506	F-25	Q312	G-16	Q528	F-25
D310	G-22	D528	F-22			Q313	G-15	Q529	G-25
D311	G-22	D530	E-22	Q101	D-17	Q315	I-20	Q530	G-25
D312	I-24	D531	E-24	Q102	H-15	Q316	H-20	Q531	G-26
D313	I-24	D532	G-21	Q103	F-17	Q317	H-21	Q532	G-25
D314	B-10	D533	G-21	Q104	E-18	Q318	H-21	Q533	F-25
D501	B-20	D534	C-25	Q105	E-18	Q319	H-20	Q534	I-23
D502	B-21	D540	B-23	Q106	H-17	Q320	H-20	Q535	I-22
D503	B-20	D548	F-26	Q107	F-17	Q501	B-19	Q536	I-22
D504	B-21	D549	F-26	Q108	F-17	Q502	B-19	Q537	G-22
D505	B-21	D550	C-25	Q109	C-14	Q503	B-19	Q538	C-22
D506	B-21	D553	E-8	Q201	D-14	Q504	B-19	Q539	E-23
D507	B-22	D554	F-8	Q202	I-15	Q505	C-19	Q540	F-23
D508	B-21	D555	F-7	Q203	G-14	Q506	C-19	Q541	F-23
D519	B-21	D556	F-8	Q204	D-19	Q507	C-19	Q542	C-26
D510	B-19			Q205	E-19	Q508	D-19	Q543	C-25
D511	B-23	IC101	C-16	Q206	G-20	Q509	I-23	Q544	C-25
D512	F-23	IC201	B-16	Q207	F-20	Q510	G-23	Q1002	D-3
D513	C-15	IC301	H-16	Q208	F-20	Q511	B-25	Q1003	B-3
D514	C-22	IC302	E-16	Q209	B-15	Q512	B-26		
D515	B-24	IC303	G-19	Q301	B-17	Q513	D-22		
D516	B-24	IC304	E-20	Q302	H-17	Q514	D-23		
D517	B-24	IC305	H-19	Q303	G-16	Q515	C-25		

WIRING BOARD—AUDIO/SYSTEM CONTROL SECTION—
 e 9 for Semiconductor Lead Layouts.
 10 for Semiconductor Location.

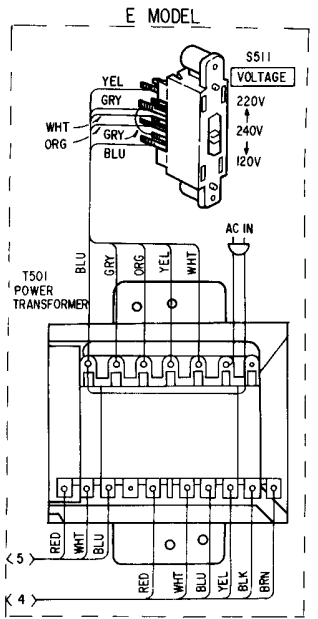
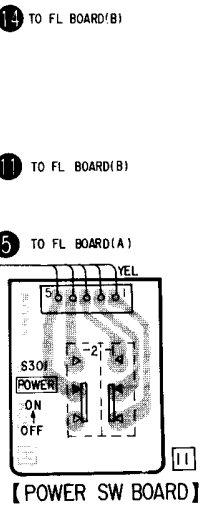
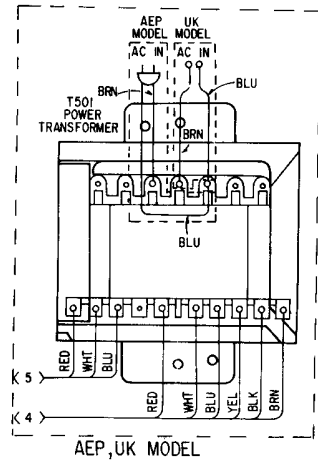
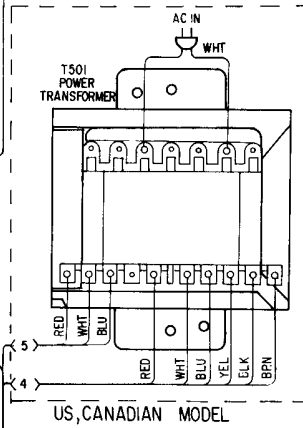
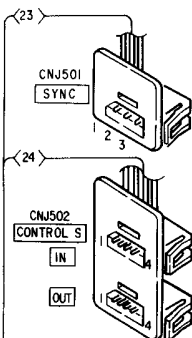
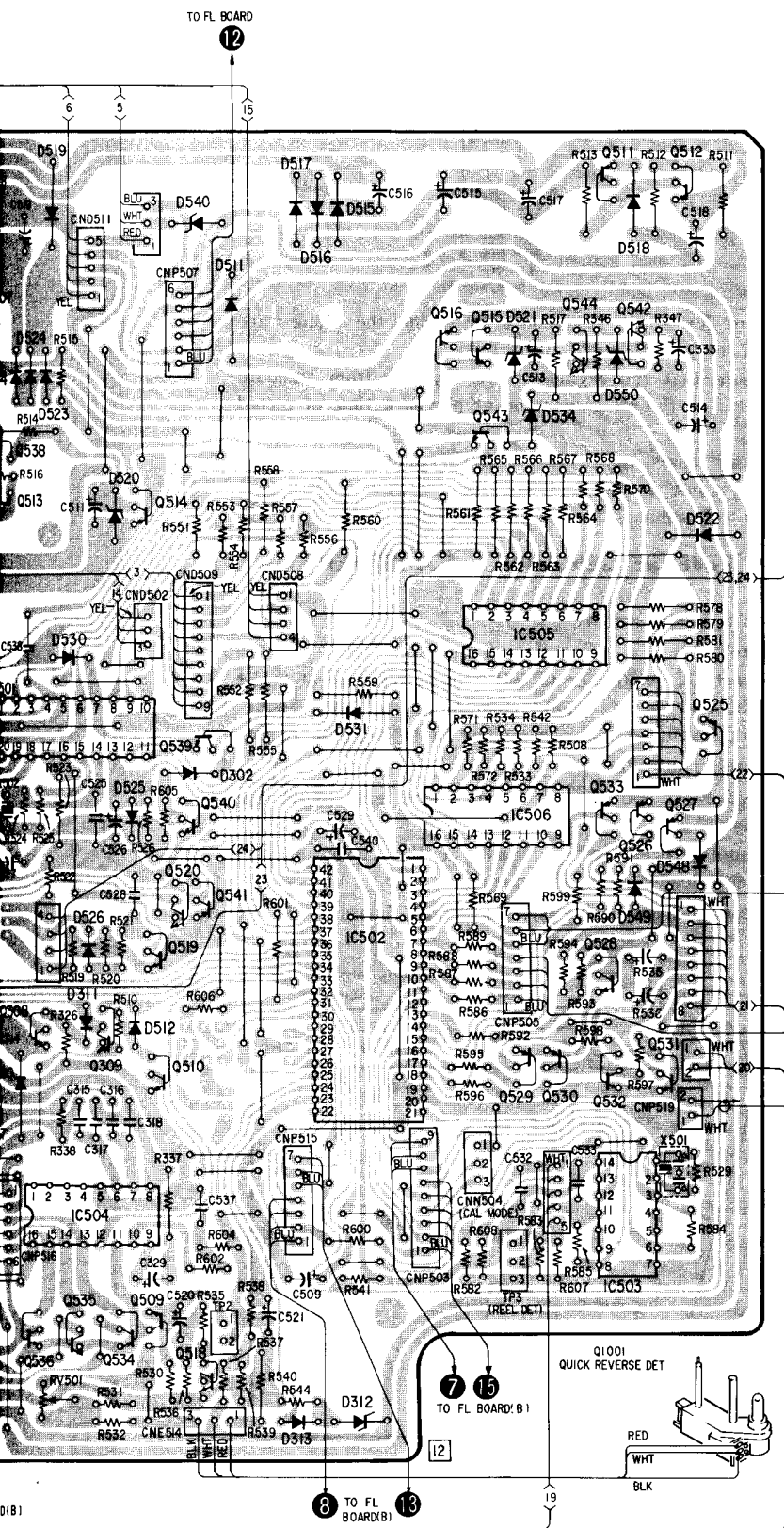
• — : parts extracted from the component side.





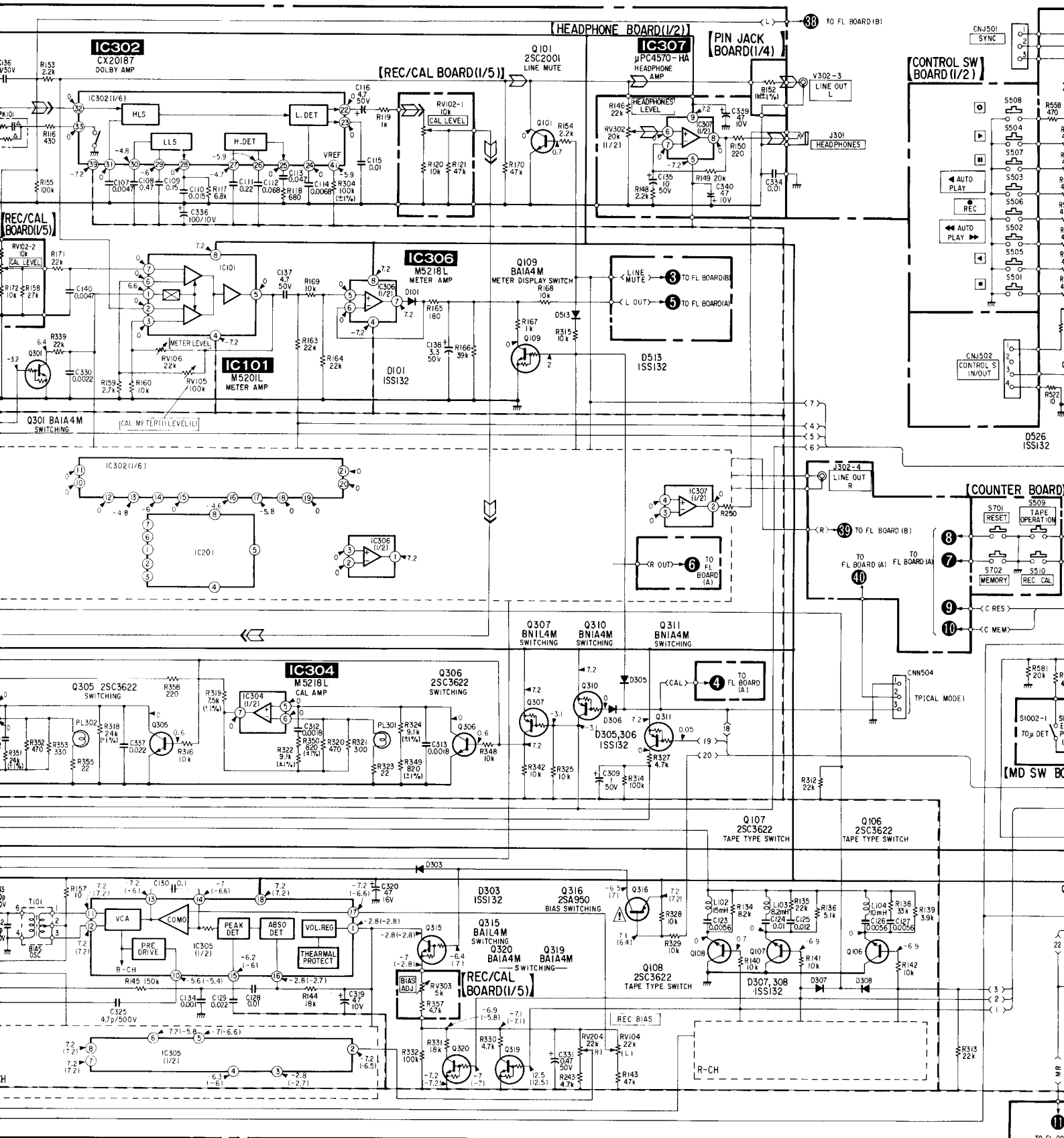


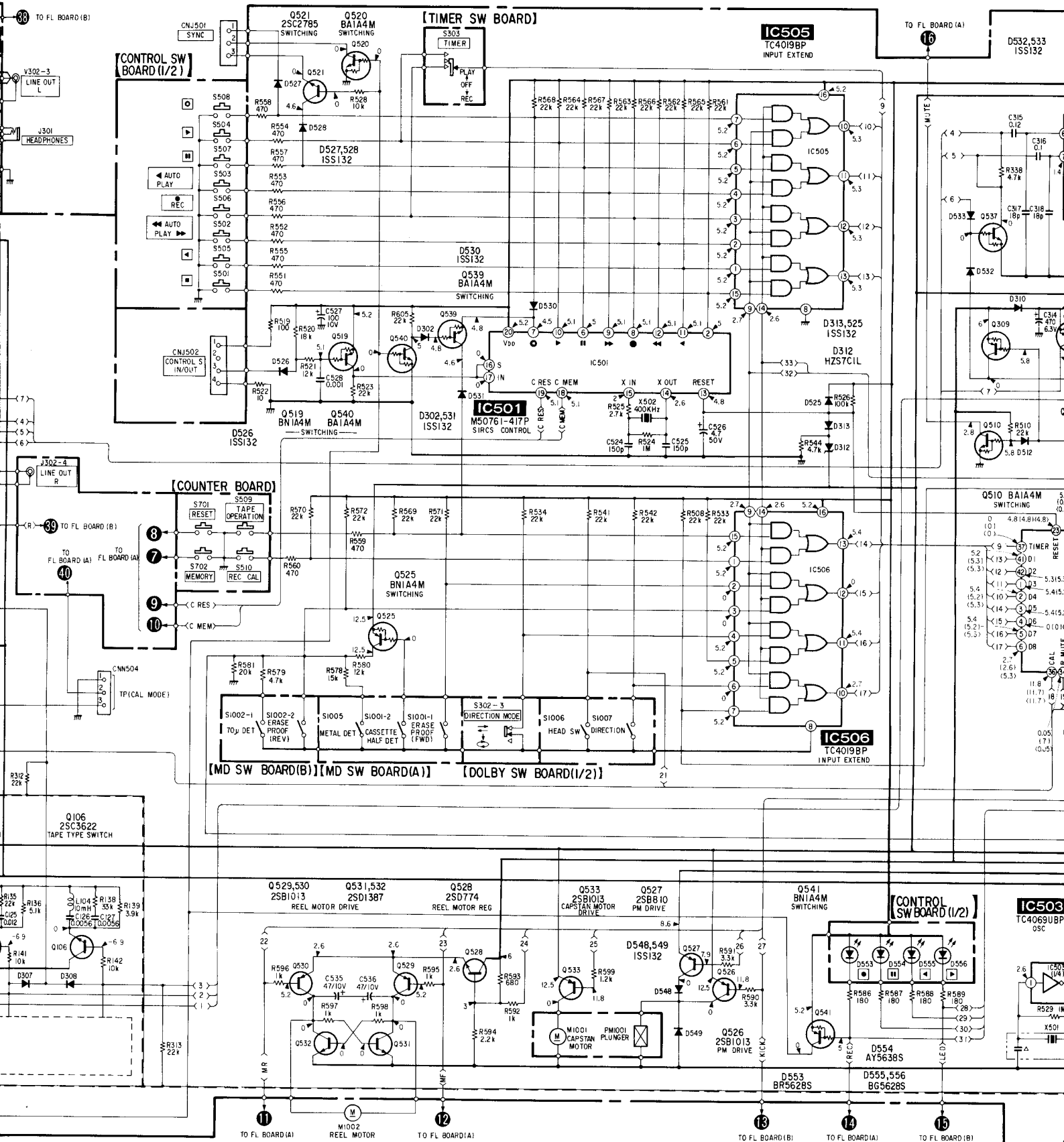


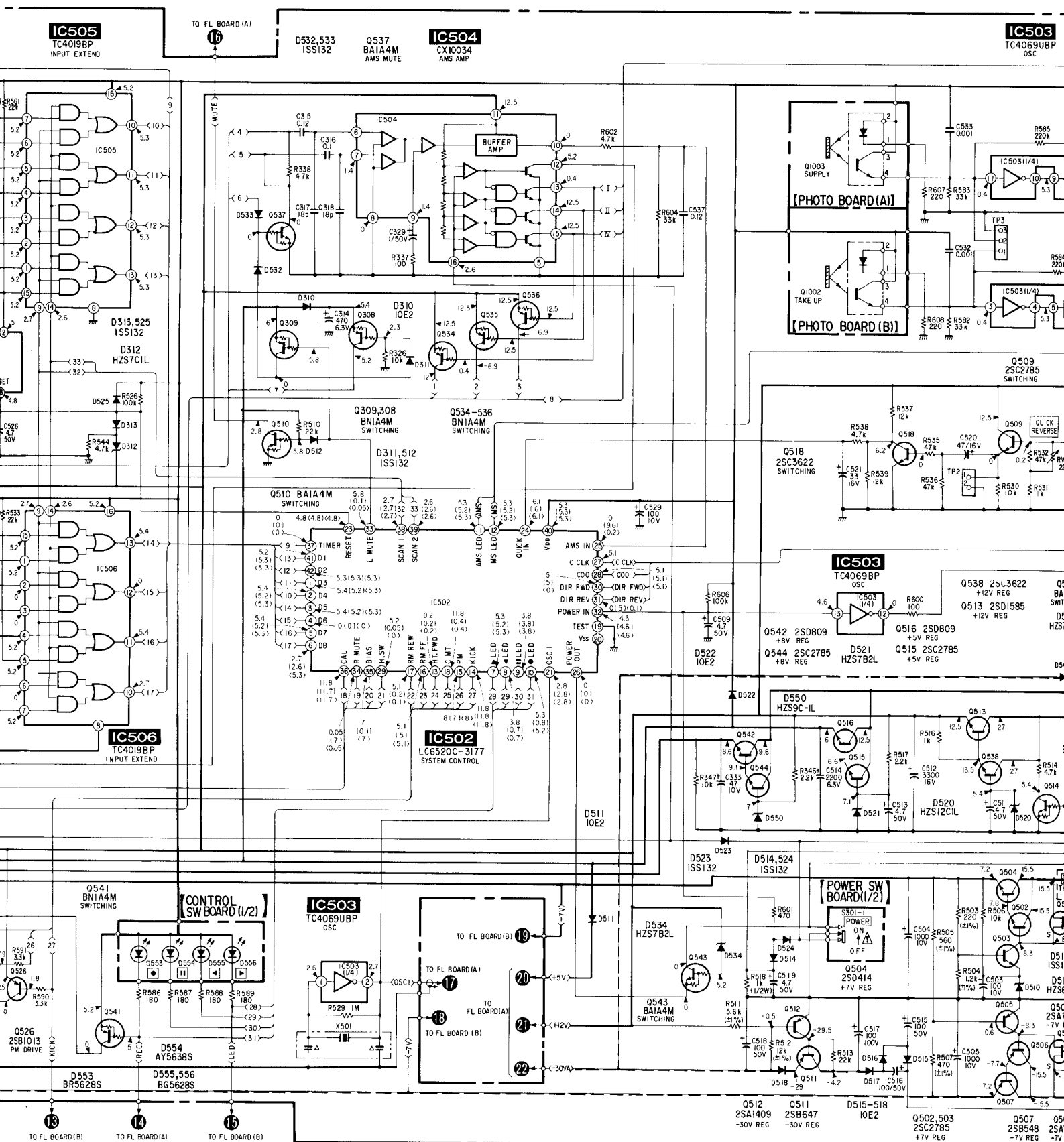


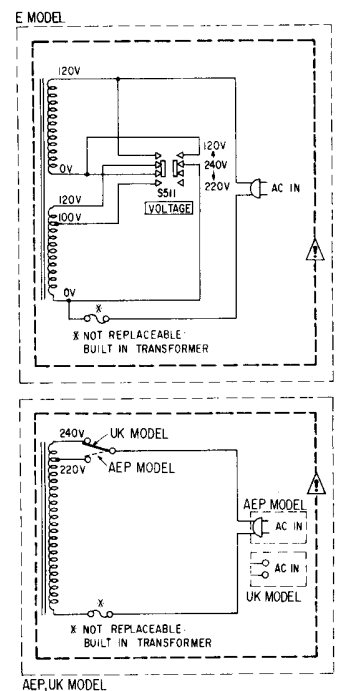
1	2	3	4	5	6	7	8
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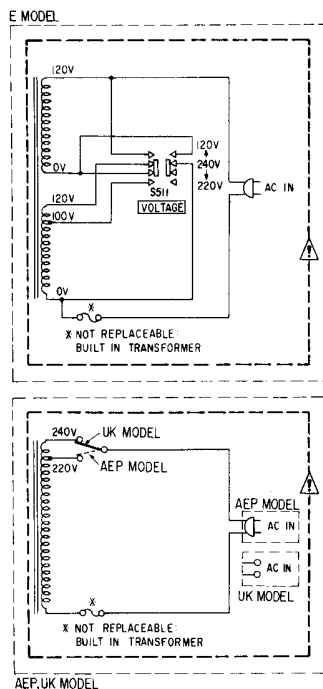












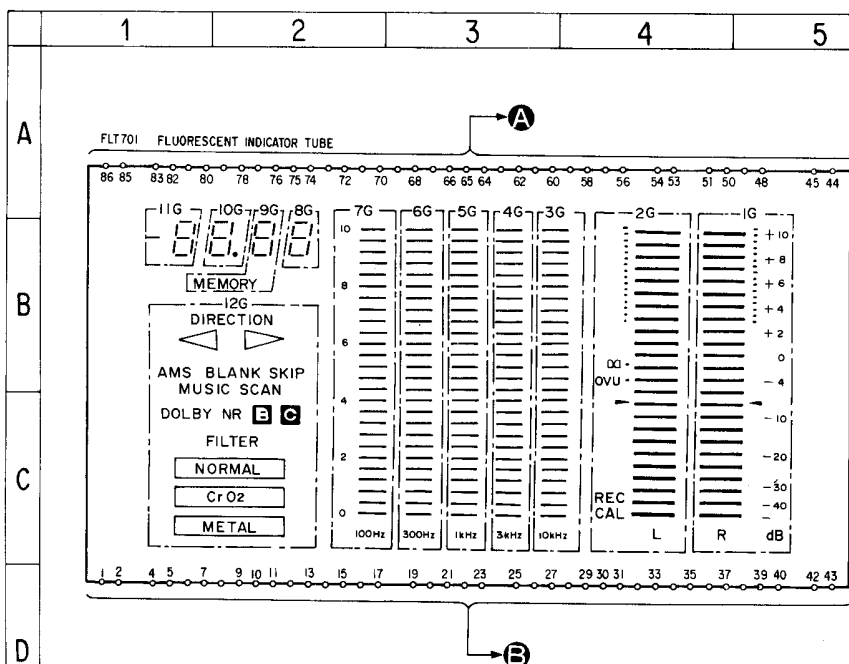
- All capacitors are in μF unless otherwise noted. $\text{pF} : \mu\text{F}$ 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.
- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
-  : fusible resistor.
- Switch

-  : B+ Line
-  : B- Line
-  : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
no mark : STOP
() : REC
< > : PLAY
- Voltages are taken with a VOM (50 k Ω /V).
Voltage variations may be noted due to normal production tolerances.
- Signal path.
 : PB
 : REC

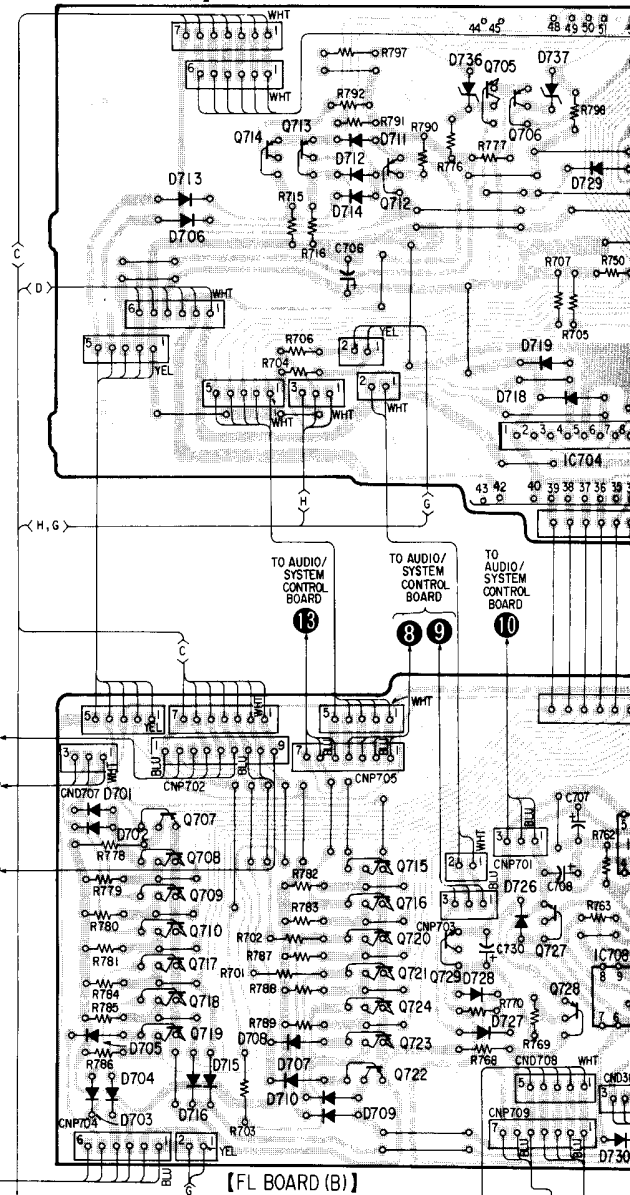
Note:
Les composants identifiés par une marque  sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

4-5. PRINTED WIRING BOARD—DISPLAY SECTION—

• — : parts extracted from the component side.



【FL BOARD (A)】



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D701	F-6	D727	G-8	Q704	B-12
D702	F-6	D728	G-8	Q705	B-8
D703	G-6	D729	B-9	Q706	B-8
D704	G-6	D730	H-9	Q707	F-6
D705	G-6	D731	G-12	Q708	F-6
D706	B-6	D732	G-11	Q709	F-6
D707	G-7	D733	G-12	Q710	F-6
D708	G-7	D734	G-10	Q712	B-8
D709	G-7	D735	G-11	Q713	B-7
D710	G-7	D736	A-9	Q714	B-7
D711	B-7	D737	A-9	Q715	F-8
D712	B-7			Q716	F-8
D713	B-6	IC701	B-10	Q717	G-6
D714	B-7	IC702	F-12	Q718	G-6
D715	G-7	IC703	F-11	Q719	G-6
D716	G-7	IC704	C-9	Q720	F-8
D718	C-9	IC705	F-10	Q721	G-8
D719	C-9	IC706	C-11	Q722	G-8
D720	F-12	IC707	E-12	Q723	G-8
D721	F-12	IC708	G-9	Q724	G-8
D722	G-11	IC709	F-9	Q725	G-12
D723	F-12			Q726	G-12
D724	G-10	Q701	B-12	Q727	F-9
D725	F-10	Q702	B-12	Q728	G-9
D726	F-8	Q703	B-12	Q729	F-8
				Q730	C-11

TO AUDIO/SYSTEM CONTROL BOARD

【FL BOARD (B)】

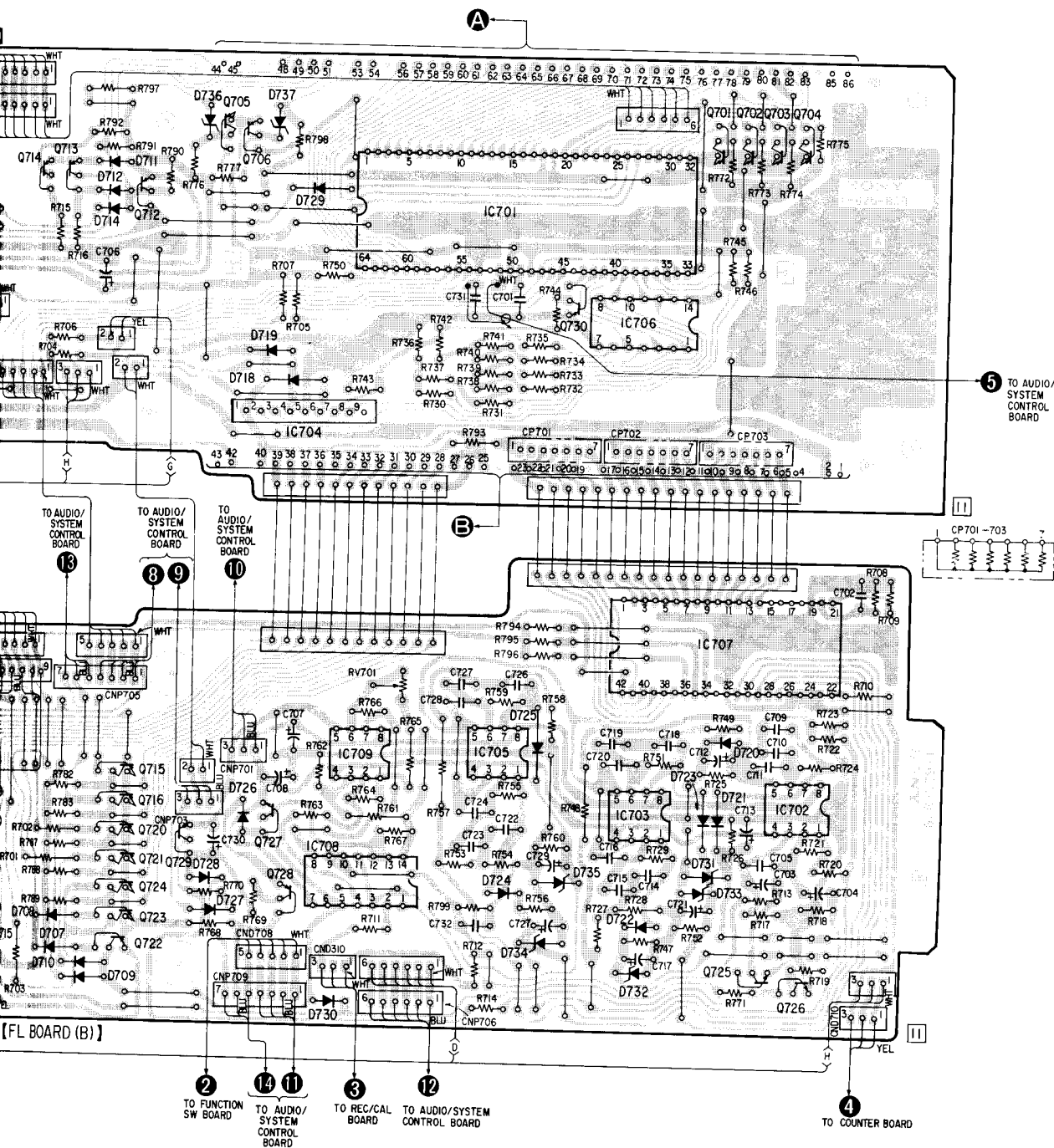
TO FUNCTION SW BOARD

TO AUDIO/SYSTEM CONTROL BOARD

Note on Sc

- All capacitors are 50WV and tan δ = 0.001
- All resistors are specified in %

7	8	9	10	11	12	13	14
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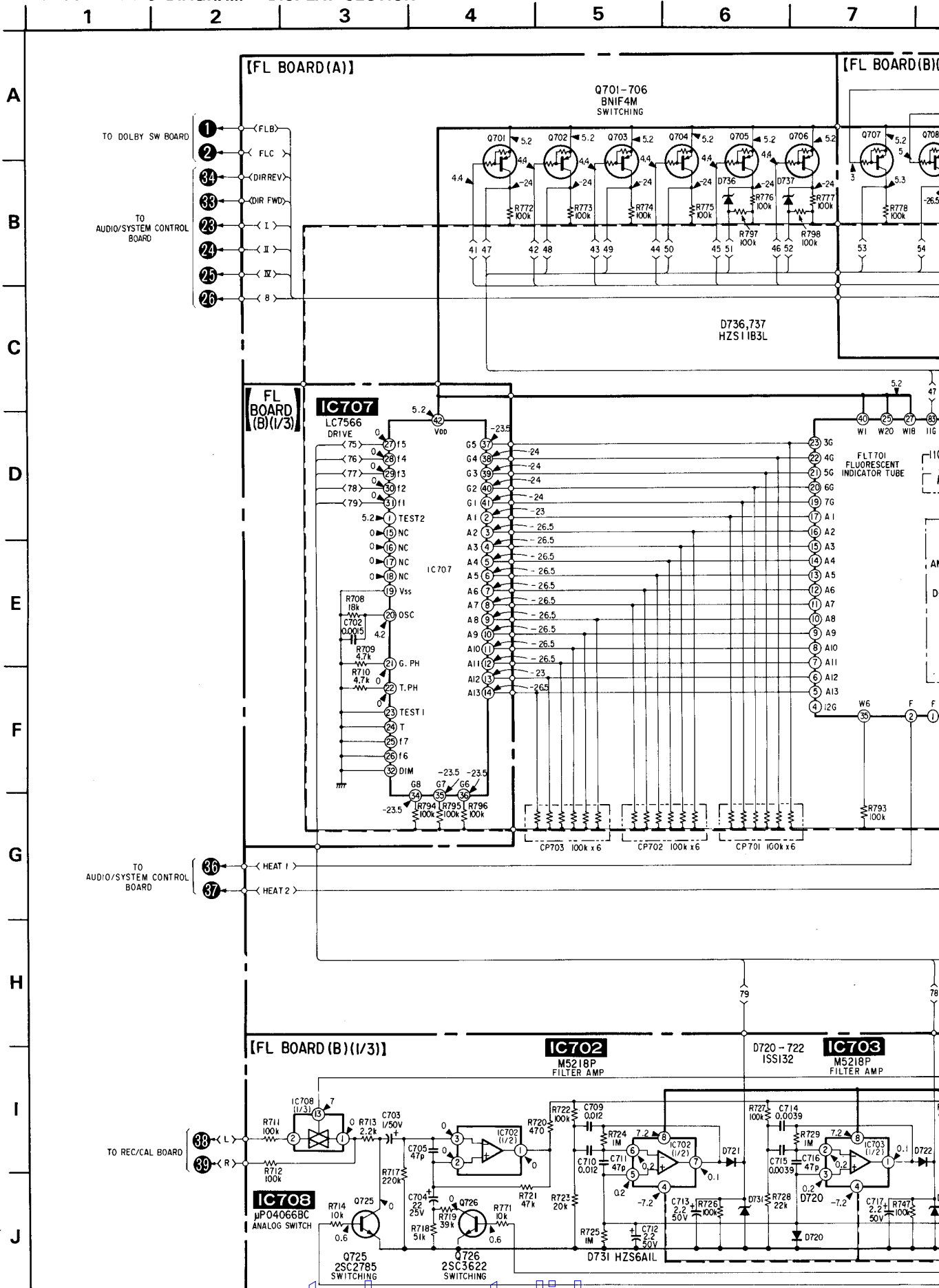


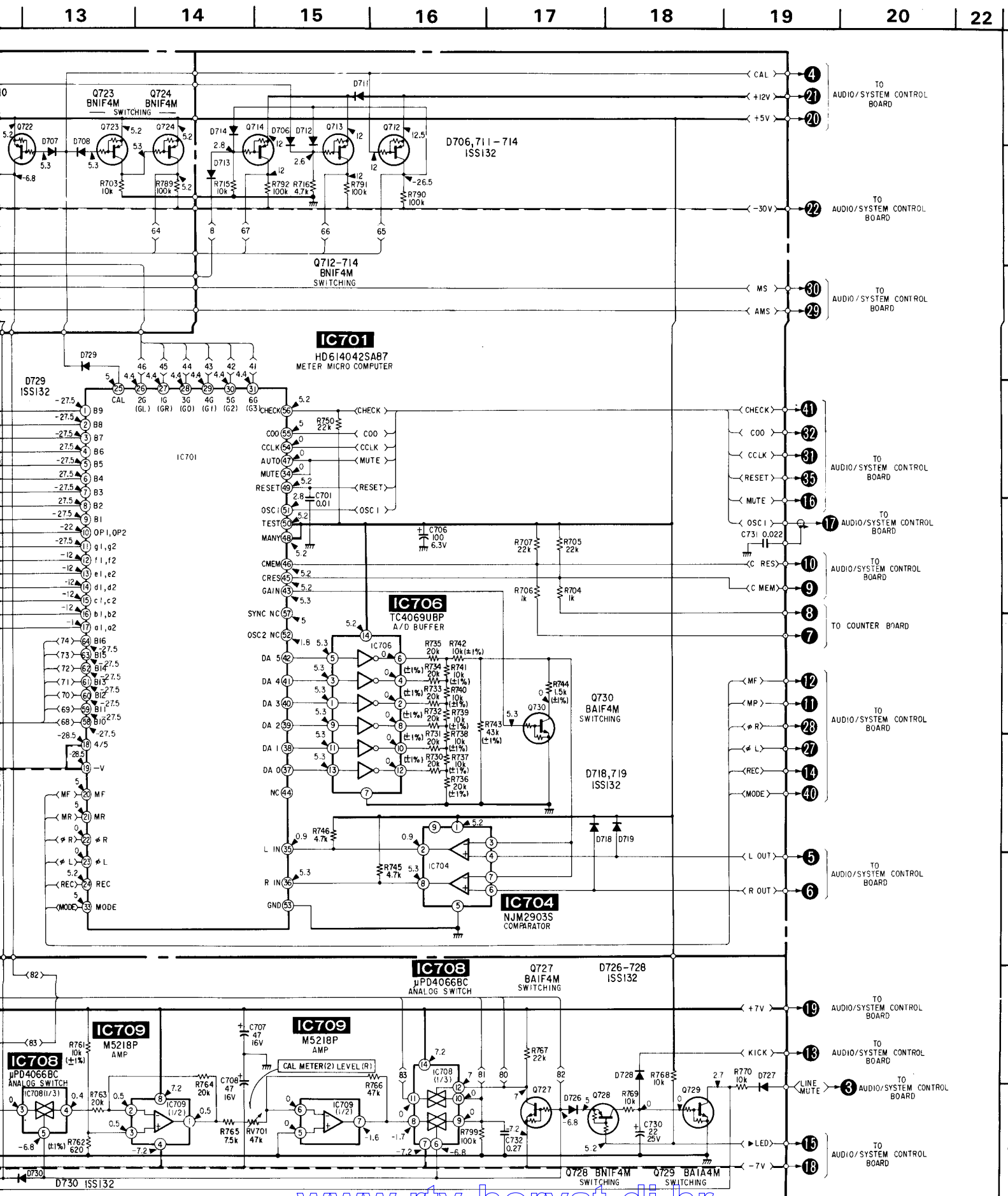
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : μF 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.
- % : indicates tolerance.

- — : 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 (50 $\text{k}\Omega/\text{V}$).
Voltage variations may be noted due to normal production tolerances.

4-6. SCHEMATIC DIAGRAM — DISPLAY SECTION —





SECTION 5 EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

- Color Indication of Appearance Parts
Example:

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



Cabinet's Color

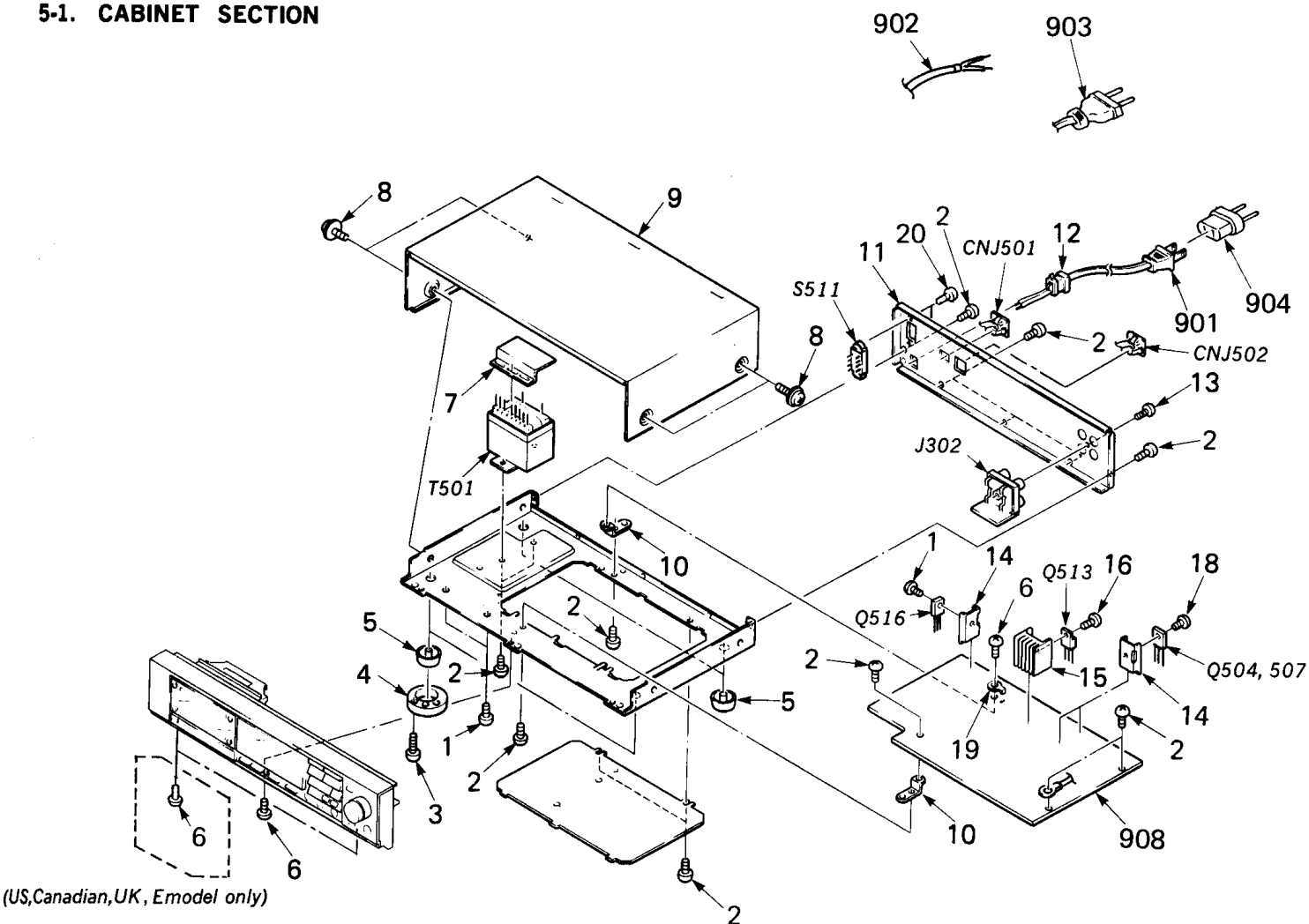


Parts' Color

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.

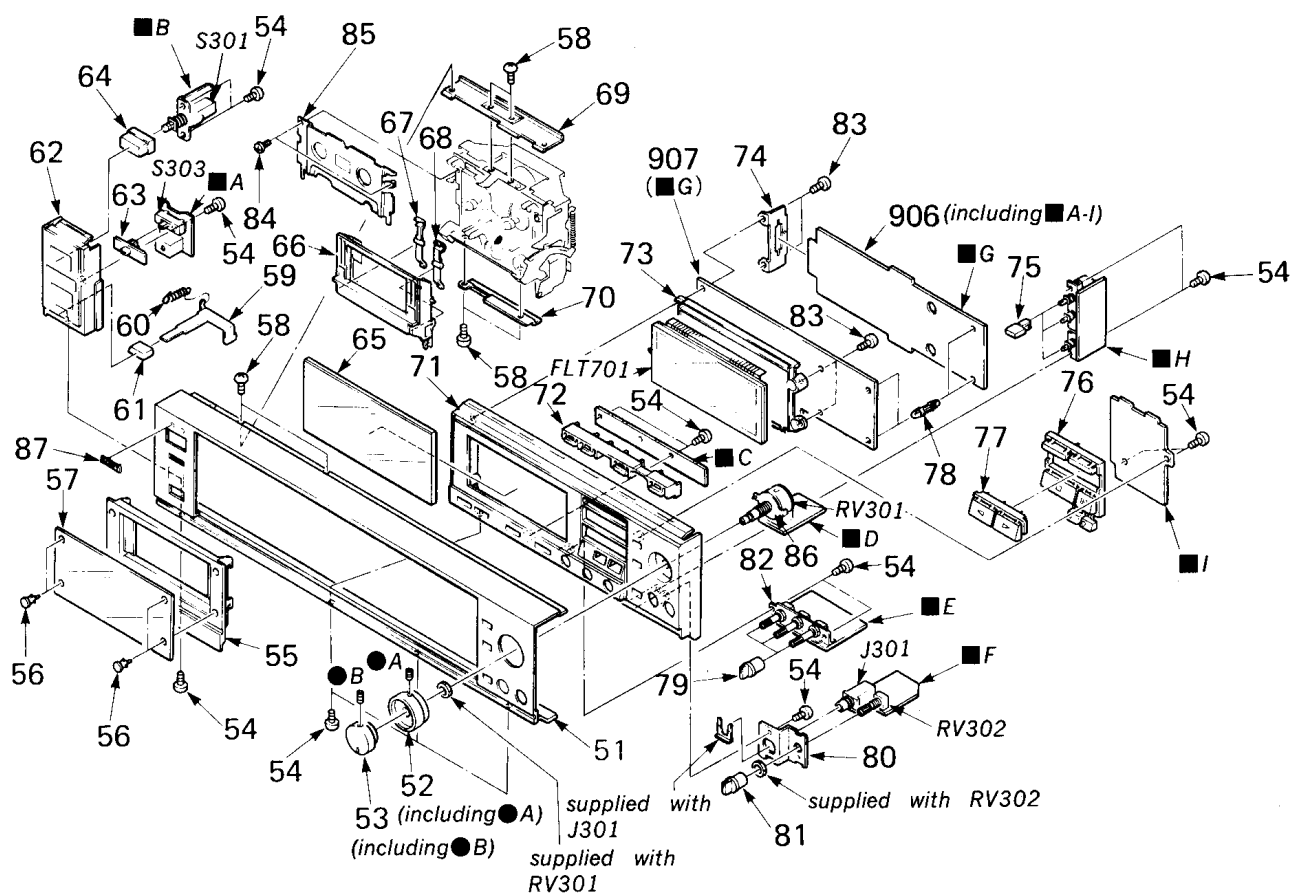
5-1. CABINET SECTION



Ref.No	Part No.	Description	Remark
1	7-682-147-01	SCREW +BVTT 3X6 (S)	
2	7-682-548-04	SCREW +BVTT 3X8 (S)	
3	7-685-873-09	(AEP)...SCREW +BVTT 3X10 (S)	
4	3-332-580-01	(AEP)...COVER (FOOT)	
5	X-4922-001-1	FOOT ASSY	
6	3-703-685-21	SCREW (+BV 3X8)	
7	*3-337-136-01	COVER, TRANSFORMER SAFETY	
8	3-704-366-01	SCREW (CASE) (M3X8)	
9	3-332-578-01	CASE	
10	*3-332-563-01	BRACKET (P)	
11	*3-332-577-01	(US)...PANEL, BACK	
11	*3-332-577-11	(UK)...PANEL, BACK	
11	*3-332-577-21	(AE1)...PANEL, BACK	
11	*3-332-577-31	(AE2)...PANEL, BACK	
11	*3-332-577-41	(E)...PANEL, BACK	
12	3-703-244-00	(EXCEPT FOR E)...BUSHING (2104), CORD	
12	3-703-571-00	(E)...BUSHING (S) (4516), CORD	
13	7-621-849-00	SCREW, TAPPING	
14	*4-861-002-00	HEAT SINK	
15	*4-363-146-21	HEAT SINK, V.OUT	

Ref.No	Part No.	Description	Remark
16	7-685-646-79	SCREW BVTP 3X8 TYPE2 IT-3	
17	-----		
18	7-682-147-15	SCREW, TR	
19	4-870-539-00	PLATE, GROUND	
20	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
901	1-551-188-XX	(E)...CORD, POWER	
901	1-551-511-00	(US, Canadian)...CORD, POWER	
902	1-556-035-00	(UK)...CORD, POWER	
903	1-555-795-00	(AEP)...CORD, POWER, EULO PLUG	
904	1-526-565-12	(E)...AC PLUG ADAPTOR	
908	*A-2056-415-A	(EXCEPT FOR US)...MOUNTED PCB, SYSTEM CONTROL	
908	*A-2056-460-A	(US)...MOUNTED PCB, SYSTEM CONTROL	
CNJ501	*1-558-520-11	CORD (WITH CONNECTOR) (SYNC)	
CNJ502	*1-559-235-11	CORD (WITH CONNECTOR) (SYNC)	
J302	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)	
S901	1-570-307-11	(E)...SWITCH, VOLTAGE CHANGE	
T501	1-449-272-11	(US, Canadian)...TRANSFORMER, POWER	
T501	1-449-273-11	(AEP, UK)...TRANSFORMER, POWER	
T501	1-449-274-11	(E)...TRANSFORMER, POWER	

5-2. FRONT PANEL SECTION



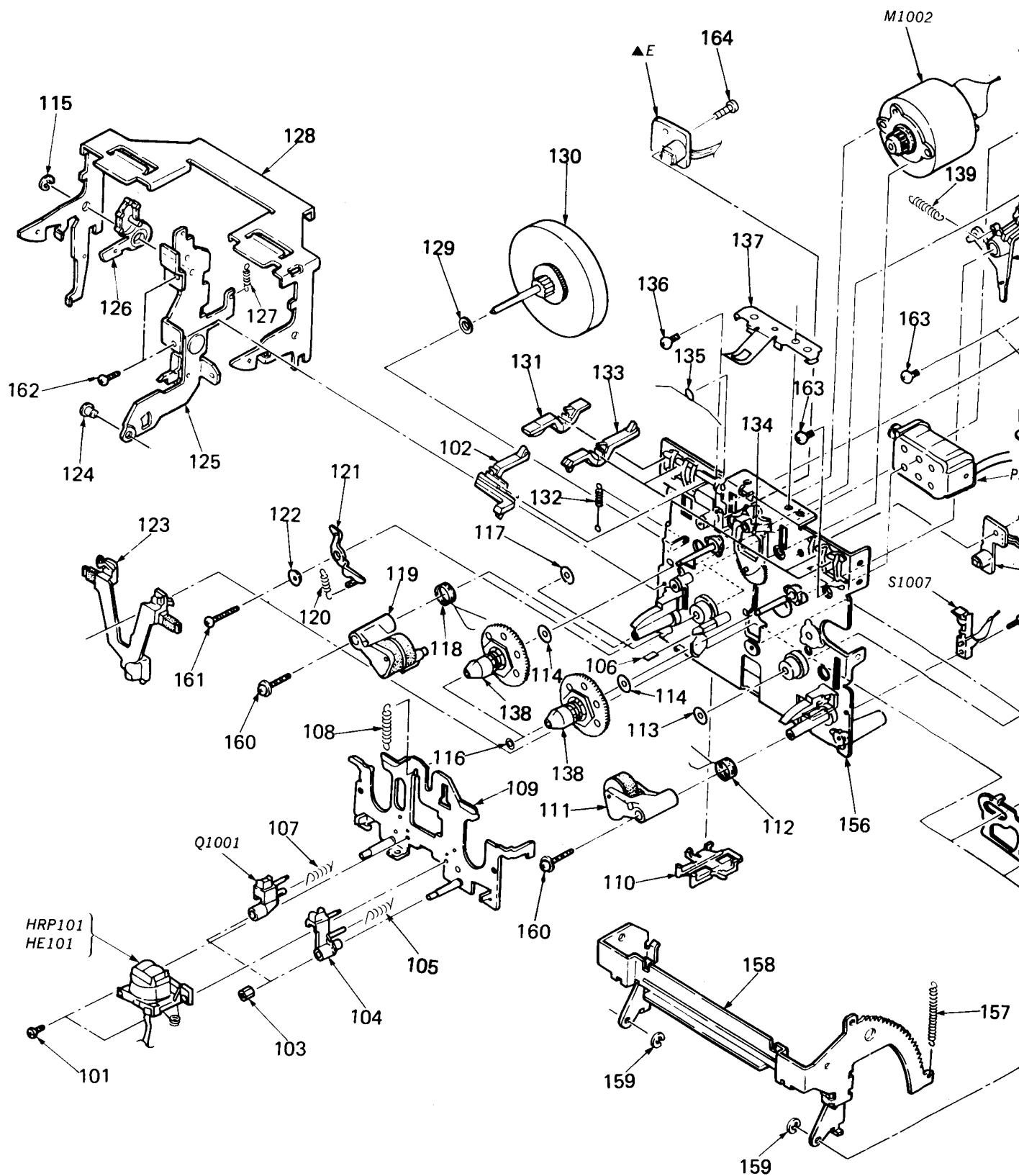
Note:
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

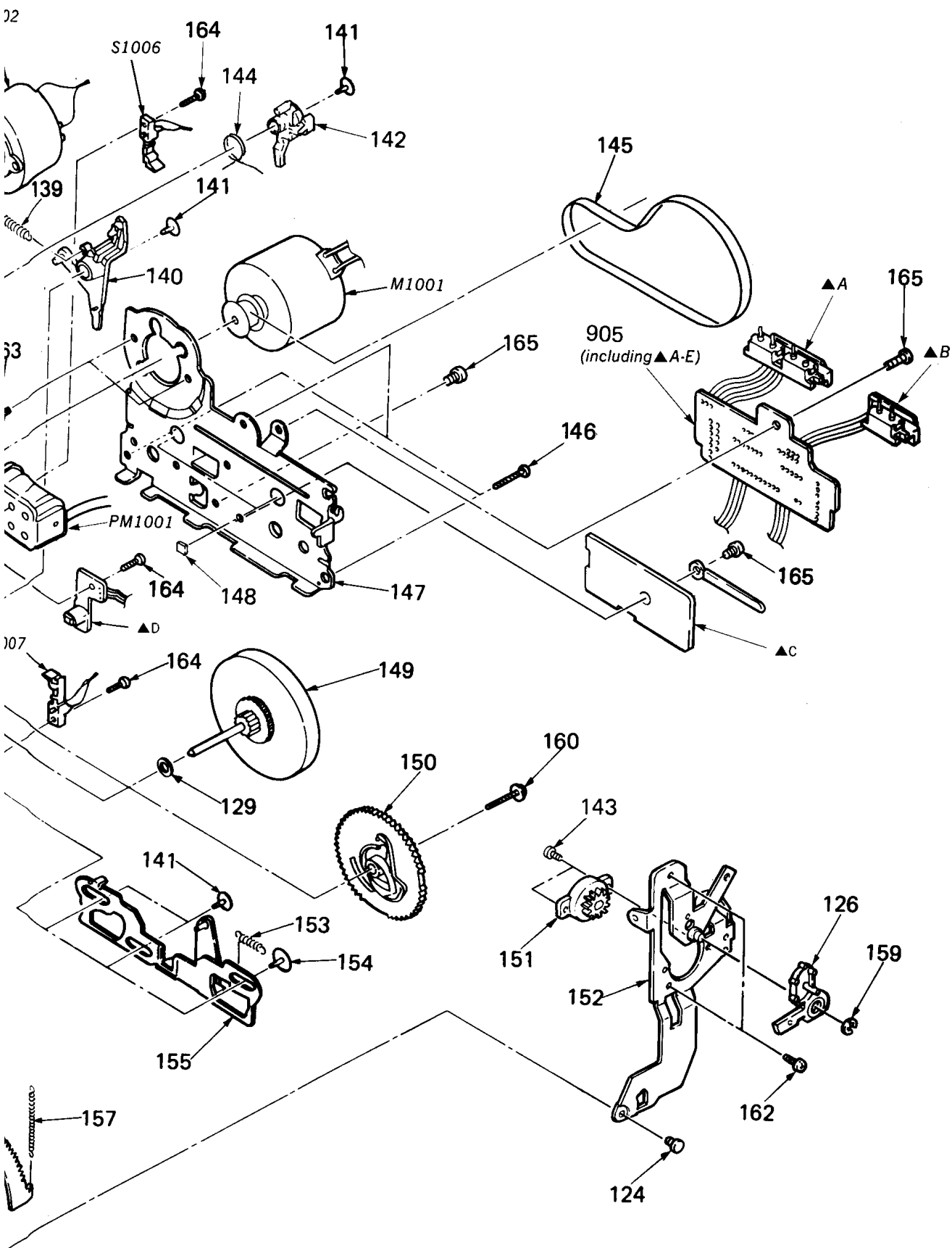
Note:
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark
51	3-332-572-11	(US, Canadian)....PANEL, FRONT	
51	3-332-575-21	(AEP, UK, E) PANEL, FRONT	
52	X-3332-530-1	KNOB (LEFT) ASSY	
53	X-3332-525-1	KNOB (RIGHT) ASSY	
54	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
55	3-332-572-01	(EXCEPT FOR US)....LID, CASSETTE	
55	3-332-572-11	(US)....LID, CASSETTE	
56	*3-337-123-01	PIN, STOPPER, CASSETTE WINDOW	
57	3-332-557-01	WINDOW (C)	
58	7-682-147-01	SCREW +BVTT 3X6 (S)	
59	*3-332-564-01	SLIDER (EJC)	
60	3-571-829-01	SPRING,TENSION	
61	3-323-410-31	BUTTON, EJECT	
62	3-332-574-01	ESCUTCHEON (LEFT)	
63	3-307-538-21	KNOB, SWITCH, TIMER	
64	4-917-460-01	KNOB, POWER	
65	3-332-571-01	WINDOW (M)	
66	X-3332-448-1	HOLDER ASSY, CASSETTE	
67	3-307-371-00	SPRING (LEFT)	
68	3-307-372-00	SPRING (RIGHT)	
69	*3-332-561-01	BRACKET (MDU)	
70	*3-332-560-01	BRACKET (MDB)	
71	3-332-576-01	ESCUTCHEON (RIGHT)	

Ref.No	Part No.	Description	Remark
72	3-332-570-01	BUTTON (C)	
73	*3-332-569-01	HOLDER (FL)	
74	*3-332-565-01	BRACKET (P2)	
75	4-864-410-21	KNOB (4X10), SQUARE	
76	X-3332-528-1	BUTTON (A) ASSY	
77	X-3332-529-1	BUTTON (B) ASSY	
78	*3-682-419-11	HOLDER, P.C.B	
79	4-921-921-11	KNOB (M)	
80	*3-332-559-01	BRACKET (HD)	
81	4-901-708-11	KNOB, LOV	
82	*3-332-562-01	BRACKET (CAL)	
83	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S	
84	7-621-772-00	SCREW +B 2X3	
85	*3-332-547-01	PLATE, ORNAMENTAL	
86	*3-330-012-01	LUG, REC VOL	
87	4-908-848-01	EMBLEM, SONY	
906	*A-2056-409-A	MOUNTED PCB, FL (■A-I)	
907	*1-625-809-11	PC BOARD, FL	
FLT701	1-519-446-11	INDICATOR TUBE, FLUORESCENT	
J301	1-507-796-21	JACK (HEADPHONES)	
RV301	1-226-740-00	RES, VAR, CARBON 20K/20K (REC LEVEL)	
S301	1-570-103-21	SWITCH,PUSH (1 KEY) (POWER)	

5-3. MECHANISM SECTION (TCM-CMAY B-22)





Ref.No	Part No.	Description	Remark
101	3-391-109-01	SCREW, WASHER	
102	3-391-193-01	LEVER, METAL	
103	3-391-110-01	NUT, ADJUSTMENT	
104	3-391-111-01	GUIDE, TAPE	
105	3-391-112-01	SPRING (RIGHT)	
106	3-391-162-01	REFLECTOR	
107	3-391-187-01	SPRING (LEFT)	
108	3-391-114-01	SPRING	
109	X-3391-154-1	PLATE ASSY, HEAD	
110	3-391-137-01	HOLDER, LEAD	
111	X-3391-104-1	PINCH ROLLER ASSY	
112	3-391-115-01	SPRING (RIGHT)	
113	3-391-119-01	SEAL,WASHER OIL	
114	3-701-437-11	WASHER	
115	7-624-105-04	STOP RING 2.3	
116	3-701-436-11	WASHER, 1.6	
117	3-391-117-01	SEAL, WASHER OIL	
118	3-391-116-01	SPRING (LEFT)	
119	X-3391-105-1	PINCH POLLER ASSY	
120	3-391-122-01	SPRING (A)	
121	3-391-121-01	ARM, EJECT SAFETY	
122	3-391-120-01	CALLOR	
123	X-3391-108-1	BRAKE ASSY	
124	3-391-183-01	SHAFT (B), HOLDER FULCRUM	
125	*X-3391-152-1	ARM ASSY, EJECT	
126	3-391-158-01	LEVER, STOP	
127	3-391-181-01	SPRING, RETURN LEVER	
128	*3-391-180-01	ARM,EJECT	
129	3-701-438-11	WASHER, 2.5	
130	X-3391-125-1	FLYWHEEL ASSY	
131	3-391-178-01	LEVER,PACK	
132	3-391-139-01	SPRING	
133	3-391-188-01	LEVER, REC	
134	X-3391-111-1	IDLER ASSY	
135	3-391-124-01	SPRING	
136	7-628-254-15	SCREW, WASHER	
137	3-391-177-01	SPRING	

Ref.No	Part No.	Description	Remark
138	X-3391-142-1	REEL (T) ASSY	
139	3-391-133-01	SPRING	
140	X-3391-146-1	ARM ASSY, PLAY	
141	3-391-126-01	CAP	
142	3-392-701-01	ARM, DIRECTION	
143	7-685-780-04	SCREW +PTT 2X3 (S)	
144	3-391-199-01	SPRING (DIRECTION)	
145	3-391-192-01	BELT, MAIN	
146	7-685-131-19	SCREW +P 2.6X4 TYPE2 NON-SLIT	
147	*3-391-130-01	BRACKET (B), F/W	
148	3-391-129-01	SPACER	
149	X-3391-145-1	FLYWHEEL ASSY	
150	3-391-197-01	GEAR (I), CAM	
151	X-3391-151-1	DAMPER ASSY	
152	*X-3391-150-1	BKT ASSY, DAMPER	
153	3-391-127-01	SPRING	
154	3-391-143-01	CAP	
155	X-3391-112-1	PLATE ASSY, SLIDE	
156	X-3391-110-1	CHASSIS ASSY	
157	3-391-184-01	SPRING	
158	*3-391-182-01	HOLDER, CASSETTE	
159	7-624-102-04	STOP RING 1.5, TYPE-E	
160	7-685-107-19	SCREW +P 2X12 TYPE2 SLIT	
161	7-685-105-19	SCREW +P 2X8 TYPE2 SLIT	
162	7-685-790-04	SCREW +PTT 2.6X4 (S)	
163	7-628-253-90	SCREW +PS 2.6X4	
164	7-685-104-19	SCREW +P 2X6 TYPE2 SLIT	
165	7-685-750-04	SCREW +PTT 3X5 (S)	
905	1-589-052-11	PCB BOARD ASSY	
HRP101	X-3391-143-1	HEAD ASSY, ROTARY	
HE101			
M1001	X-3391-130-1	MOTOR ASSY	
M1002	X-3391-156-1	MOTOR ASSY	
PM1001	1-454-440-11	SOLENOID, PLUNGER	
S1006	1-570-719-11	SWITCH, LEAF	
S1007	1-570-721-11	SWITCH, LEAF	

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.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF: μ F, PF: μ PF.

RESISTORS

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORS

In each case, U: μ , for example:

UA....: μ A...., UPA....: μ PA....,

UPC....: μ PC, UPD....: μ PD....

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

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	Ref.No	Part No.	Description	Remark
901	Δ 1-551-188-XX	(E)....CORD, POWER		C202	1-130-487-00	MYLAR	0.022MF 5% 50V
901	Δ 1-551-511-00	(US, Canadian)....CORD, POWER		C203	1-124-657-00	ELECT	10MF 20% 50V
902	Δ 1-551-035-00	(UK)....CORD, POWER		C204	1-130-488-00	MYLAR	0.027MF 5% 50V
903	Δ 1-555-795-00	(AEP)....CORD, POWER, EULO PLUG		C205	1-106-353-00	MYLAR	0.0027MF 5% 50V
904	Δ 1-526-565-12	(E)....AC PLUG ADAPTOR		C206	1-124-927-11	ELECT	4.7MF 20% 50V
905	1-589-052-11	PCB BOARD ASSY		C207	1-106-359-00	MYLAR	0.0047MF 5% 50V
906	★A-2056-409-A	MOUNTED PCB, FL		C208	1-136-173-00	FILM	0.47MF 5% 50V
907	★1-625-809-11	PC BOARD, FL		C209	1-136-167-00	FILM	0.15MF 5% 50V
908	★A-2056-406-A	(US)....MOUNTED PCB, SYSTEM CONTOL		C210	1-136-155-00	FILM	0.015MF 5% 50V
908	★A-2056-415-A	(EXCEPT FOR US)....MOUNTED PCB, SYSTEM CONTOL		C211	1-136-169-00	FILM	0.22MF 5% 50V
CAPACITOR				C212	1-136-163-00	FILM	0.068MF 5% 50V
C101	1-110-222-11	MYLAR	0.0012MF 5% 50V	C213	1-136-161-00	FILM	0.047MF 5% 50V
C102	1-130-487-00	MYLAR	0.022MF 5% 50V	C214	1-130-481-00	MYLAR	0.0068MF 5% 50V
C103	1-124-657-00	ELECT	10MF 20% 50V	C215	1-136-153-00	FILM	0.01MF 5% 50V
C104	1-130-488-00	MYLAR	0.027MF 5% 50V	C216	1-124-927-11	ELECT	4.7MF 20% 50V
C105	1-106-353-00	MYLAR	0.0027MF 5% 50V	C217	1-124-927-11	ELECT	4.7MF 20% 50V
C106	1-124-927-11	ELECT	4.7MF 20% 50V	C218	1-124-908-11	ELECT	22MF 20% 25V
C107	1-106-359-00	MYLAR	0.0047MF 5% 50V	C219	1-110-241-11	MYLAR	0.047MF 5% 50V
C108	1-136-173-00	FILM	0.47MF 5% 50V	C220	1-124-657-00	ELECT	10MF 20% 50V
C109	1-136-167-00	FILM	0.15MF 5% 50V	C221	1-162-285-31	CERAMIC	180PF 10% 50V
C110	1-136-155-00	FILM	0.015MF 5% 50V	C222	1-107-210-00	MICA	22PF 5% 500V
C111	1-136-169-00	FILM	0.22MF 5% 50V	C223	1-130-480-00	MYLAR	0.0056MF 5% 50V
C112	1-136-163-00	FILM	0.068MF 5% 50V	C224	1-130-483-00	MYLAR	0.01MF 5% 50V
C113	1-136-161-00	FILM	0.047MF 5% 50V	C225	1-130-484-00	MYLAR	0.012MF 5% 50V
C114	1-130-481-00	MYLAR	0.0068MF 5% 50V	C226	1-130-480-00	MYLAR	0.0056MF 5% 50V
C115	1-136-153-00	FILM	0.01MF 5% 50V	C227	1-130-480-00	MYLAR	0.0056MF 5% 50V
C116	1-124-927-11	ELECT	4.7MF 20% 50V	C228	1-136-153-00	FILM	0.01MF 5% 50V
C117	1-124-927-11	ELECT	4.7MF 20% 50V	C229	1-130-487-00	MYLAR	0.022MF 5% 50V
C118	1-124-908-11	ELECT	22MF 20% 25V	C230	1-136-165-00	FILM	0.1MF 5% 50V
C119	1-110-241-11	MYLAR	0.047MF 5% 50V	C232	1-136-272-00	FILM	68PF 5% 630V
C120	1-124-657-00	ELECT	10MF 20% 50V	C233	1-136-433-11	FILM	100PF 5% 630V
C121	1-162-285-31	CERAMIC	180PF 10% 50V	C234	1-130-471-00	MYLAR	0.001MF 5% 50V
C122	1-107-210-00	MICA	22PF 5% 500V	C235	1-123-875-11	ELECT	10MF 20% 50V
C123	1-130-480-00	MYLAR	0.0056MF 5% 50V	C236	1-124-657-00	ELECT	10MF 20% 50V
C124	1-130-483-00	MYLAR	0.01MF 5% 50V	C237	1-124-274-00	ELECT	4.7MF 20% 50V
C125	1-130-484-00	MYLAR	0.012MF 5% 50V	C238	1-123-382-00	ELECT	3.3MF 20% 50V
C126	1-130-480-00	MYLAR	0.0056MF 5% 50V	C239	1-124-927-11	ELECT	4.7MF 20% 50V
C127	1-130-480-00	MYLAR	0.0056MF 5% 50V	C240	1-130-479-00	MYLAR	0.0047MF 5% 50V
C128	1-136-153-00	FILM	0.01MF 5% 50V	C301	1-124-444-00	ELECT	220MF 20% 10V
C129	1-130-487-00	MYLAR	0.022MF 5% 50V	C302	1-124-444-00	ELECT	220MF 20% 10V
C130	1-136-165-00	FILM	0.1MF 5% 50V	C303	1-124-927-11	ELECT	4.7MF 20% 50V
C132	1-136-272-00	FILM	68PF 5% 630V	C304	1-124-927-11	ELECT	4.7MF 20% 50V
C133	1-136-433-11	FILM	100PF 5% 630V	C307	1-124-444-00	ELECT	220MF 20% 10V
C134	1-130-471-00	MYLAR	0.001MF 5% 50V	C308	1-124-444-00	ELECT	220MF 20% 10V
C135	1-123-875-11	ELECT	10MF 20% 50V	C309	1-124-499-11	ELECT	1MF 20% 50V
C136	1-124-657-00	ELECT	10MF 20% 50V	C312	1-130-474-00	MYLAR	0.0018MF 5% 50V
C137	1-124-274-00	ELECT	4.7MF 20% 50V	C313	1-130-474-00	MYLAR	0.0018MF 5% 50V
C138	1-123-382-00	ELECT	3.3MF 20% 50V	C314	1-124-472-11	ELECT	470MF 20% 6.3V
C139	1-124-927-11	ELECT	4.7MF 20% 50V	C315	1-136-166-00	FILM	0.12MF 5% 50V
C140	1-130-479-00	MYLAR	0.0047MF 5% 50V	C316	1-136-165-00	FILM	0.1MF 5% 50V
C201	1-110-222-11	MYLAR	0.0012MF 5% 50V	C317	1-162-205-31	CERAMIC	18PF 5% 50V
				C318	1-162-205-31	CERAMIC	18PF 5% 50V

Ref.No	Part No.	Description	Remark		
C319	1-124-446-11	ELECT	47MF	20%	10V
C320	1-124-477-11	ELECT	47MF	20%	16V
C321	1-136-230-00	FILM	0.0022MF	5%	100V
C322	1-136-230-00	FILM	0.0022MF	5%	100V
C323	1-130-856-00	FILM	0.0068MF	5%	100V
C324	1-123-875-11	ELECT	10MF	20%	50V
C325	1-107-046-00	MICA	4.7PF	0.5PF	500V
C326	1-136-558-11	FILM	0.0039MF	5%	630V
C327	1-124-499-11	ELECT	1MF	20%	50V
C328	1-124-499-11	ELECT	1MF	20%	50V
C329	1-124-499-11	ELECT	1MF	20%	50V
C330	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C331	1-124-902-00	ELECT	0.47MF	20%	50V
C332	1-130-487-00	MYLAR	0.022MF	5%	50V
C333	1-124-446-11	ELECT	47MF	20%	10V
C334	1-161-379-00	CERAMIC	0.01MF	20%	25V
C335	1-124-443-00	ELECT	100MF	20%	10V
C336	1-124-443-00	ELECT	100MF	20%	10V
C337	1-136-157-00	FILM	0.022MF	5%	50V
C338	1-136-157-00	FILM	0.022MF	5%	50V
C339	1-124-446-11	ELECT	47MF	20%	10V
C340	1-124-446-11	ELECT	47MF	20%	10V
C501	1-124-563-11	ELECT	2200MF	20%	25V
C502	1-124-563-11	ELECT	2200MF	20%	25V
C503	1-124-443-00	ELECT	100MF	20%	10V
C504	1-124-473-11	ELECT	1000MF	20%	10V
C505	1-124-473-11	ELECT	1000MF	20%	10V
C506	1-124-618-11	ELECT	2200MF	20%	35V
C507	1-124-898-11	ELECT	4700MF	20%	16V
C509	1-124-927-11	ELECT	4.7MF	20%	50V
C511	1-124-927-11	ELECT	4.7MF	20%	50V
C512	1-124-887-00	ELECT	3300MF	20%	16V
C513	1-124-927-11	ELECT	4.7MF	20%	50V
C514	1-124-893-11	ELECT	2200MF	20%	6.3V
C515	1-124-122-11	ELECT	100MF	20%	50V
C516	1-124-122-11	ELECT	100MF	20%	50V
C517	1-123-605-00	ELECT	100MF	20%	100V
C518	1-124-122-11	ELECT	100MF	20%	50V
C519	1-124-927-11	ELECT	4.7MF	20%	50V
C520	1-124-477-11	ELECT	47MF	20%	16V
C521	1-124-963-11	ELECT	33MF	20%	16V
C524	1-162-284-31	CERAMIC	150PF	10%	50V
C525	1-162-284-31	CERAMIC	150PF	10%	50V
C526	1-124-927-11	ELECT	4.7MF	20%	50V
C527	1-124-443-00	ELECT	100MF	20%	10V
C528	1-162-294-31	CERAMIC	0.001MF	10%	50V
C529	1-124-443-00	ELECT	100MF	20%	10V
C532	1-162-294-31	CERAMIC	0.001MF	10%	50V
C533	1-162-294-31	CERAMIC	0.001MF	10%	50V
C535	1-124-446-11	ELECT	47MF	20%	10V
C536	1-124-446-11	ELECT	47MF	20%	10V
C537	1-136-166-00	FILM	0.12MF	5%	50V
C701	1-161-379-00	CERAMIC	0.01MF	30%	16V
C702	1-130-473-00	MYLAR	0.0015MF	5%	50V
C703	1-124-499-11	ELECT	1MF	20%	50V
C704	1-124-908-11	ELECT	22MF	20%	25V
C705	1-162-215-31	CERAMIC	47PF	5%	50V
C706	1-123-661-00	ELECT	100MF	20%	6.3V
C707	1-124-477-11	ELECT	47MF	20%	16V
C708	1-124-477-11	ELECT	47MF	20%	16V
C709	1-136-154-00	FILM	0.012MF	5%	50V
C710	1-136-154-00	FILM	0.012MF	5%	50V
C711	1-162-215-31	CERAMIC	47PF	5%	50V
C712	1-124-925-11	ELECT	2.2MF	20%	50V
C713	1-124-925-11	ELECT	2.2MF	20%	50V

Ref.No	Part No.	Description	Remark		
C714	1-130-478-00	MYLAR	0.0039MF	5%	50V
C715	1-130-478-00	MYLAR	0.0039MF	5%	50V
C716	1-162-215-31	CERAMIC	47PF	5%	50V
C717	1-124-925-11	ELECT	2.2MF	20%	50V
C718	1-130-474-00	MYLAR	0.0018MF	5%	50V
C719	1-130-474-00	MYLAR	0.0018MF	5%	50V
C720	1-162-215-31	CERAMIC	47PF	5%	50V
C721	1-124-925-11	ELECT	2.2MF	20%	50V
C722	1-130-473-00	MYLAR	0.0015MF	5%	50V
C723	1-130-473-00	MYLAR	0.0015MF	5%	50V
C724	1-162-215-31	CERAMIC	47PF	5%	50V
C725	1-124-925-11	ELECT	2.2MF	20%	50V
C726	1-130-474-00	MYLAR	0.0018MF	5%	50V
C727	1-130-474-00	MYLAR	0.0018MF	5%	50V
C728	1-162-215-31	CERAMIC	47PF	5%	50V
C729	1-124-925-11	ELECT	2.2MF	20%	50V
C730	1-124-908-11	ELECT	22MF	20%	25V
C731	1-161-494-00	CERAMIC	0.022MF	5%	25V
C732	1-136-170-00	FILM	0.27MF	5%	50V
CND304	*1-564-337-51	PIN, CONNECTOR 3P			
CND307	*1-564-339-51	PIN, CONNECTOR 5P			
CND308	*1-564-338-71	PIN, CONNECTOR 4P			
CND310	*1-564-337-51	PIN, CONNECTOR 3P			
CND502	*1-564-337-71	PIN, CONNECTOR 3P			
CND508	*1-564-338-51	PIN, CONNECTOR 4P			
CND509	*1-506-503-11	PIN, CONNECTOR 9P			
CND511	*1-564-339-71	PIN, CONNECTOR 5P			
CND707	*1-564-337-71	PIN, CONNECTOR 3P			
CND708	*1-564-339-51	PIN, CONNECTOR 5P			
CND710	*1-564-337-61	PIN, CONNECTOR 3P			
CND711	*1-564-337-81	PIN, CONNECTOR 3P			
CNE301	*1-564-509-11	PLUG, CONNECTOR 6P			
CNE302	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE305	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE306	*1-564-508-11	PLUG, CONNECTOR 5P			
CNE309	*1-564-508-11	PLUG, CONNECTOR 5P			
CNE311	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE312	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE514	*1-564-506-11	PLUG, CONNECTOR 3P			
CNJ501	*1-558-520-11	CORD (WITH CONNECTOR) (SYNC)			
CNJ502	*1-559-235-11	CORD (WITH CONNECTOR) (CONTROL S)			
CNN504	*1-560-061-00	PIN, CONNECTOR 3P			
CNP303	*1-564-705-21	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP503	1-564-711-11	PIN, CONNECTOR (SMALL TYPE) 9P			
CNP505	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNP507	*1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CNP513	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP515	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNP516	*1-564-708-21	PIN, CONNECTOR (SMALL TYPE) 6P			
CNP519	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP701	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP702	1-564-711-11	PIN, CONNECTOR (SMALL TYPE) 9P			
CNP703	*1-564-705-21	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP704	*1-564-708-21	PIN, CONNECTOR (SMALL TYPE) 6P			
CNP705	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNP706	*1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CNP709	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CP701	1-232-967-11	COMPOSITION CIRCUIT BLOCK 100KX6			
CP702	1-232-967-11	COMPOSITION CIRCUIT BLOCK 100KX6			
CP703	1-232-967-11	COMPOSITION CIRCUIT BLOCK 100KX6			
D101	8-719-940-76	DIODE 1SS132			
D201	8-719-940-76	DIODE 1SS132			

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

Note:
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	Ref.No	Part No.	Description	Remark
D301	8-719-940-76	DIODE 1SS132		D713	8-719-940-76	DIODE 1SS132	
D302	8-719-940-76	DIODE 1SS132		D714	8-719-940-76	DIODE 1SS132	
D303	8-719-940-76	DIODE 1SS132		D715	8-719-940-76	DIODE 1SS132	
D305	8-719-940-76	DIODE 1SS132		D716	8-719-940-76	DIODE 1SS132	
D306	8-719-940-76	DIODE 1SS132		D718	8-719-940-76	DIODE 1SS132	
D307	8-719-940-76	DIODE 1SS132		D719	8-719-940-76	DIODE 1SS132	
D308	8-719-940-76	DIODE 1SS132		D720	8-719-940-76	DIODE 1SS132	
D310	8-719-200-02	DIODE 10E2		D721	8-719-940-76	DIODE 1SS132	
D311	8-719-940-76	DIODE 1SS132		D722	8-719-940-76	DIODE 1SS132	
D312	8-719-933-49	DIODE HZS7C1L		D723	8-719-940-76	DIODE 1SS132	
D313	8-719-940-76	DIODE 1SS132		D724	8-719-940-76	DIODE 1SS132	
D314	8-719-940-76	DIODE 1SS132		D725	8-719-940-76	DIODE 1SS132	
D501	△ 8-719-200-02	DIODE 10E2		D726	8-719-940-76	DIODE 1SS132	
D502	△ 8-719-200-02	DIODE 10E2		D727	8-719-940-76	DIODE 1SS132	
D503	△ 8-719-200-02	DIODE 10E2		D728	8-719-940-76	DIODE 1SS132	
D504	△ 8-719-200-02	DIODE 10E2		D729	8-719-940-76	DIODE 1SS132	
D505	△ 8-719-200-02	DIODE 10E2		D730	8-719-940-76	DIODE 1SS132	
D506	△ 8-719-200-02	DIODE 10E2		D731	8-719-933-33	DIODE HZS6A1L	
D507	8-719-200-02	DIODE 10E2		D732	8-719-933-33	DIODE HZS6A1L	
D508	△ 8-719-200-02	DIODE 10E2		D733	8-719-933-33	DIODE HZS6A1L	
D509	△ 8-719-200-02	DIODE 10E2		D734	8-719-933-33	DIODE HZS6A1L	
D510	8-719-933-33	DIODE HZS6A1L		D735	8-719-933-33	DIODE HZS6A1L	
D511	8-719-200-02	DIODE 10E2		D736	8-719-933-68	DIODE HZS11B3L	
D512	8-719-940-76	DIODE 1SS132		D737	8-719-933-68	DIODE HZS11B3L	
D513	8-719-940-76	DIODE 1SS132		FLT701	1-519-446-11	INDICATOR TUBE, FLUORESCENT	
D514	8-719-940-76	DIODE 1SS132		HRP101	X-3391-143-1	HEAD ASSY, ROTARY	
D515	8-719-200-02	DIODE 10E2		HE101			
D516	8-719-200-02	DIODE 10E2		IC101	8-759-602-48	IC M5201L	
D517	8-719-200-02	DIODE 10E2		IC201	8-759-602-48	IC M5201L	
D518	8-719-200-02	DIODE 10E2		IC301	8-759-602-01	IC M5220P	
D519	8-719-940-76	DIODE 1SS132		IC302	8-752-018-70	IC CX20187	
D520	8-719-933-79	DIODE HZS12C1L		IC303	8-759-106-41	IC UPC4570C	
D521	8-719-933-47	DIODE HZS7B2L		IC304	8-759-600-02	IC M5218L	
D522	8-719-200-02	DIODE 10E2		IC305	8-759-106-56	IC UPC1297CA	
D523	8-719-940-76	DIODE 1SS132		IC306	8-759-600-02	IC M5218L	
D524	8-719-940-76	DIODE 1SS132		IC307	8-759-112-93	IC UPC4570HA	
D525	8-719-940-76	DIODE 1SS132		IC308	8-759-601-43	IC M4066BP	
D526	8-719-940-76	DIODE 1SS132		IC501	8-759-602-47	IC M50761-417P	
D527	8-719-940-76	DIODE 1SS132		IC502	8-759-803-38	IC LC6520C-3177	
D528	8-719-940-76	DIODE 1SS132		IC503	8-759-240-69	IC TC4069UBP	
D530	8-719-940-76	DIODE 1SS132		IC504	8-759-700-46	IC CX10034	
D531	8-719-940-76	DIODE 1SS132		IC505	8-759-240-19	IC TC4019BP	
D532	8-719-940-76	DIODE 1SS132		IC506	8-759-240-19	IC TC4019BP	
D533	8-719-940-76	DIODE 1SS132		IC701	8-759-302-98	IC HD614042SA87	
D534	8-719-933-47	DIODE HZS7B2L		IC702	8-759-601-02	IC M5218P	
D540	8-719-933-50	DIODE HZS7C2L		IC703	8-759-601-02	IC M5218P	
D548	8-719-940-76	DIODE 1SS132		IC704	8-759-700-48	IC NJM2903S	
D549	8-719-940-76	DIODE 1SS132		IC705	8-759-601-02	IC M5218P	
D550	8-719-933-59	DIODE HZS9C1L		IC706	8-759-240-69	IC TC4069UBP	
D553	8-719-956-28	DIODE BR5628S		IC707	8-759-820-07	IC LC7566	
D554	8-719-941-83	DIODE AY5638S		IC708	8-759-140-66	IC UPD4066BC	
D555	8-719-900-79	DIODE BG5628S		IC709	8-759-601-02	IC M5218P	
D556	8-719-900-79	DIODE BG5628S		J301	1-507-796-21	JACK (HEADPHONES)	
D701	8-719-940-76	DIODE 1SS132		J302	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)	
D702	8-719-940-76	DIODE 1SS132		L101	1-410-780-11	INDUCTOR 27MMH	
D703	8-719-940-76	DIODE 1SS132		L102	1-410-777-11	INDUCTOR 15MMH	
D704	8-719-940-76	DIODE 1SS132		L103	1-410-774-11	INDUCTOR 8.2MMH	
D705	8-719-940-76	DIODE 1SS132		L104	1-410-775-21	INDUCTOR 10MMH	
D706	8-719-940-76	DIODE 1SS132		L201	1-410-780-11	INDUCTOR 27MMH	
D707	8-719-940-76	DIODE 1SS132		L202	1-410-777-11	INDUCTOR 15MMH	
D708	8-719-940-76	DIODE 1SS132		L203	1-410-774-11	INDUCTOR 8.2MMH	
D709	8-719-940-76	DIODE 1SS132		L204	1-410-775-21	INDUCTOR 10MMH	
D710	8-719-940-76	DIODE 1SS132					
D711	8-719-940-76	DIODE 1SS132					
D712	8-719-940-76	DIODE 1SS132					

Note:

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

Note:

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

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
LPF101	1-236-147-11	FILTER, LOW PASS		Q520	8-729-115-79	TRANSISTOR BA1A4M	
LPF201	1-236-147-11	FILTER, LOW PASS		Q521	8-729-600-27	TRANSISTOR 2SC634SP	
M1001	X-3391-130-1	MOTOR ASSY		Q525	8-729-115-15	TRANSISTOR BN1A4M	
M1002	X-3391-156-1	MOTOR ASSY		Q526	8-729-801-83	TRANSISTOR 2SB1013	
				Q527	8-729-205-02	TRANSISTOR 2SA1150	
PL301	1-518-471-31	LAMP, PILOT		Q528	8-729-177-43	TRANSISTOR 2SD774	
PL302	1-518-471-31	LAMP, PILOT		Q529	8-729-801-83	TRANSISTOR 2SB1013	
PM1001	1-454-440-11	SOLENOID, PLUNGER		Q530	8-729-801-83	TRANSISTOR 2SB1013	
Q101	8-729-100-13	TRANSISTOR 2SC2001		Q531	8-729-801-93	TRANSISTOR 2SD1387	
Q102	8-729-107-91	TRANSISTOR 2SC3622		Q532	8-729-801-93	TRANSISTOR 2SD1387	
Q103	8-729-107-91	TRANSISTOR 2SC3622		Q533	8-729-801-83	TRANSISTOR 2SB1013	
Q104	8-729-107-91	TRANSISTOR 2SC3622		Q534	8-729-115-15	TRANSISTOR BN1A4M	
Q105	8-729-107-91	TRANSISTOR 2SC3622		Q535	8-729-115-15	TRANSISTOR BN1A4M	
Q106	8-729-107-91	TRANSISTOR 2SC3622		Q536	8-729-115-15	TRANSISTOR BN1A4M	
Q107	8-729-107-91	TRANSISTOR 2SC3622		Q537	8-729-115-79	TRANSISTOR BA1A4M	
Q108	8-729-107-91	TRANSISTOR 2SC3622		Q538	8-729-107-91	TRANSISTOR 2SC3622	
Q109	8-729-115-79	TRANSISTOR BA1A4M		Q539	8-729-115-79	TRANSISTOR BA1A4M	
Q201	8-729-100-13	TRANSISTOR 2SC2001		Q540	8-729-115-79	TRANSISTOR BA1A4M	
Q202	8-729-107-91	TRANSISTOR 2SC3622		Q541	8-729-115-15	TRANSISTOR BN1A4M	
Q203	8-729-107-91	TRANSISTOR 2SC3622		Q542	8-729-180-93	TRANSISTOR 2SD809	
Q204	8-729-107-91	TRANSISTOR 2SC3622		Q543	8-729-115-79	TRANSISTOR BA1A4M	
Q205	8-729-107-91	TRANSISTOR 2SC3622		Q544	8-729-600-27	TRANSISTOR 2SC634SP	
Q206	8-729-107-91	TRANSISTOR 2SC3622		Q701	8-729-806-16	TRANSISTOR 2SA1346	
Q207	8-729-107-91	TRANSISTOR 2SC3622		Q702	8-729-806-16	TRANSISTOR 2SA1346	
Q208	8-729-107-91	TRANSISTOR 2SC3622		Q703	8-729-806-16	TRANSISTOR 2SA1346	
Q209	8-729-115-79	TRANSISTOR BA1A4M		Q704	8-729-806-16	TRANSISTOR 2SA1346	
Q301	8-729-115-79	TRANSISTOR BA1A4M		Q705	8-729-806-16	TRANSISTOR 2SA1346	
Q302	8-729-600-27	TRANSISTOR 2SC634SP		Q706	8-729-806-16	TRANSISTOR 2SA1346	
Q303	8-729-115-79	TRANSISTOR BA1A4M		Q707	8-729-806-16	TRANSISTOR 2SA1346	
Q304	8-729-806-38	TRANSISTOR 2SC3399		Q708	8-729-806-16	TRANSISTOR 2SA1346	
Q305	8-729-107-91	TRANSISTOR 2SC3622		Q709	8-729-806-16	TRANSISTOR 2SA1346	
Q306	8-729-107-91	TRANSISTOR 2SC3622		Q710	8-729-806-16	TRANSISTOR 2SA1346	
Q307	8-729-115-12	TRANSISTOR BN1L4M		Q712	8-729-806-16	TRANSISTOR 2SA1346	
Q308	8-729-115-15	TRANSISTOR BN1A4M		Q713	8-729-806-16	TRANSISTOR 2SA1346	
Q309	8-729-115-15	TRANSISTOR BN1A4M		Q714	8-729-806-16	TRANSISTOR 2SA1346	
Q310	8-729-115-15	TRANSISTOR BN1A4M		Q715	8-729-806-16	TRANSISTOR 2SA1346	
Q311	8-729-115-15	TRANSISTOR BN1A4M		Q716	8-729-806-16	TRANSISTOR 2SA1346	
Q312	8-729-115-79	TRANSISTOR BA1A4M		Q717	8-729-806-16	TRANSISTOR 2SA1346	
Q313	8-729-115-15	TRANSISTOR BN1A4M		Q718	8-729-806-16	TRANSISTOR 2SA1346	
Q315	8-729-806-38	TRANSISTOR 2SC3399		Q719	8-729-806-16	TRANSISTOR 2SA1346	
Q316	8-729-195-23	TRANSISTOR 2SA952		Q720	8-729-115-15	TRANSISTOR BN1A4M	
Q317	8-729-600-27	TRANSISTOR 2SC634SP		Q721	8-729-115-15	TRANSISTOR BN1A4M	
Q318	8-729-600-27	TRANSISTOR 2SC634SP		Q722	8-729-806-16	TRANSISTOR 2SA1346	
Q319	8-729-115-79	TRANSISTOR BA1A4M		Q723	8-729-806-16	TRANSISTOR 2SA1346	
Q320	8-729-115-79	TRANSISTOR BA1A4M		Q724	8-729-115-15	TRANSISTOR BN1A4M	
Q501	8-729-201-56	TRANSISTOR 2SK246GR2		Q725	8-729-600-27	TRANSISTOR 2SC634SP	
Q502	8-729-600-27	TRANSISTOR 2SC634SP		Q726	8-729-107-91	TRANSISTOR 2SC3622-L	
Q503	8-729-600-27	TRANSISTOR 2SC634SP		Q727	8-729-806-34	TRANSISTOR 2SC3400	
Q504	8-729-141-43	TRANSISTOR 2SD414		Q728	8-729-115-15	TRANSISTOR BN1A4M	
Q505	8-729-117-54	TRANSISTOR 2SA1175		Q729	8-729-115-79	TRANSISTOR BA1A4M	
Q506	8-729-117-54	TRANSISTOR 2SA1175		Q730	8-729-806-34	TRANSISTOR 2SC3400	
Q507	8-729-154-83	TRANSISTOR 2SB548		Q1001	X-3391-141-1	SENSOR ASSY	
Q508	8-729-201-56	TRANSISTOR 2SK246-GR2		Q1002	1-807-509-11	PHOTO SENSER	
Q509	8-729-600-27	TRANSISTOR 2SC634SP		Q1003	1-807-509-11	PHOTO SENSER	
Q510	8-729-115-79	TRANSISTOR BA1A4M					
Q511	8-729-364-72	TRANSISTOR 2SB647					
Q512	8-729-110-68	TRANSISTOR 2SA1409-L					
Q513	8-729-107-25	TRANSISTOR 2SD1585-L					
Q514	8-729-806-26	TRANSISTOR 2SC3901					
Q515	8-729-600-27	TRANSISTOR 2SC634SP					
Q516	8-729-180-93	TRANSISTOR 2SD809					
Q518	8-729-107-91	TRANSISTOR 2SC3622					
Q519	8-729-115-15	TRANSISTOR BN1A4M					

RESISTOR

R101	1-214-763-00	METAL	27K	1%	1/4W
R102	1-214-104-00	METAL	68	1%	1/4W
R103	1-249-603-11	CARBON	130K	5%	1/4W
R104	1-214-746-00	METAL	5.1K	1%	1/4W
R105	1-249-431-11	CARBON	15K	5%	1/4W
R106	1-247-717-11	CARBON	2.2K	5%	1/4W
R107	1-247-718-11	CARBON	2.7K	5%	1/4W
R108	1-247-887-00	CARBON	220K	5%	1/4W
R109	1-249-429-11	CARBON	10K	5%	1/4W
R110	1-249-429-11	CARBON	10K	5%	1/4W

Ref.No	Part No.	Description			Remark	Ref.No	Part No.	Description			Remark
R111	1-249-441-11	CARBON	100K	5%	1/4W	R208	1-247-887-00	CARBON	220K	5%	1/4W
R112	1-247-719-11	CARBON	3.3K	5%	1/4W	R209	1-249-429-11	CARBON	10K	5%	1/4W
R113	1-247-152-00	CARBON	7.5K	5%	1/4W	R210	1-249-429-11	CARBON	10K	5%	1/4W
R114	1-247-146-00	CARBON	4.3K	5%	1/4W	R211	1-249-441-11	CARBON	100K	5%	1/4W
R115	1-249-561-11	CARBON	2.4K	5%	1/4W	R212	1-247-719-11	CARBON	3.3K	5%	1/4W
R116	1-249-543-11	CARBON	430	5%	1/4W	R213	1-247-152-00	CARBON	7.5K	5%	1/4W
R117	1-249-427-11	CARBON	6.8K	5%	1/4W	R214	1-247-146-00	CARBON	4.3K	5%	1/4W
R118	1-249-415-11	CARBON	680	5%	1/4W	R215	1-249-561-11	CARBON	2.4K	5%	1/4W
R119	1-247-713-11	CARBON	1K	5%	1/4W	R216	1-249-543-11	CARBON	430	5%	1/4W
R120	1-259-452-11	CARBON	10K	5%	1/6W	R217	1-249-427-11	CARBON	6.8K	5%	1/4W
R121	1-259-468-11	CARBON	47K	5%	1/6W	R218	1-249-415-11	CARBON	680	5%	1/4W
R122	1-249-429-11	CARBON	10K	5%	1/4W	R219	1-247-713-11	CARBON	1K	5%	1/4W
R124	1-249-433-11	CARBON	22K	5%	1/4W	R220	1-259-452-11	CARBON	10K	5%	1/6W
R125	1-247-725-11	CARBON	10K	5%	1/4W	R221	1-259-468-11	CARBON	47K	5%	1/6W
R126	1-247-725-11	CARBON	10K	5%	1/4W	R222	1-249-429-11	CARBON	10K	5%	1/4W
R127	1-249-421-11	CARBON	2.2K	5%	1/4W	R224	1-249-433-11	CARBON	22K	5%	1/4W
R128	1-249-469-11	CARBON	100K	5%	1/4W	R225	1-247-725-11	CARBON	10K	5%	1/4W
R129	1-247-723-11	CARBON	6.8K	5%	1/4W	R226	1-247-725-11	CARBON	10K	5%	1/4W
R130	1-249-590-11	CARBON	39K	5%	1/4W	R227	1-249-421-11	CARBON	2.2K	5%	1/4W
R131	1-249-596-11	CARBON	68K	5%	1/4W	R228	1-249-469-11	CARBON	100K	5%	1/4W
R132	1-247-723-11	CARBON	6.8K	5%	1/4W	R229	1-247-723-11	CARBON	6.8K	5%	1/4W
R133	1-247-704-11	CARBON	220	5%	1/4W	R230	1-249-590-11	CARBON	39K	5%	1/4W
R134	1-247-152-00	CARBON	8.2K	5%	1/4W	R231	1-249-596-11	CARBON	68K	5%	1/4W
R135	1-249-462-11	CARBON	22K	5%	1/4W	R232	1-247-723-11	CARBON	6.8K	5%	1/4W
R136	1-247-148-00	CARBON	5.1K	5%	1/4W	R233	1-247-704-11	CARBON	220	5%	1/4W
R138	1-249-497-11	CARBON	33K	5%	1/4W	R234	1-247-152-00	CARBON	8.2K	5%	1/4W
R139	1-247-720-11	CARBON	3.9K	5%	1/4W	R235	1-249-462-11	CARBON	22K	5%	1/4W
R140	1-249-429-11	CARBON	10K	5%	1/4W	R236	1-247-148-00	CARBON	5.1K	5%	1/4W
R141	1-249-429-11	CARBON	10K	5%	1/4W	R238	1-249-497-11	CARBON	33K	5%	1/4W
R142	1-249-429-11	CARBON	10K	5%	1/4W	R239	1-247-720-11	CARBON	3.9K	5%	1/4W
R143	1-249-425-11	CARBON	4.7K	5%	1/4W	R240	1-249-429-11	CARBON	10K	5%	1/4W
R144	1-249-432-11	CARBON	18K	5%	1/4W	R241	1-249-429-11	CARBON	10K	5%	1/4W
R145	1-247-883-00	CARBON	150K	5%	1/4W	R242	1-249-429-11	CARBON	10K	5%	1/4W
R146	1-249-462-11	CARBON	22K	5%	1/4W	R243	1-249-425-11	CARBON	4.7K	5%	1/4W
R148	1-259-436-11	CARBON	2.2K	5%	1/6W	R244	1-249-432-11	CARBON	18K	5%	1/4W
R149	1-259-459-11	CARBON	20K	5%	1/6W	R245	1-247-883-00	CARBON	150K	5%	1/4W
R150	1-247-704-11	CARBON	220	5%	1/4W	R246	1-249-462-11	CARBON	22K	5%	1/4W
R151	1-214-765-00	METAL	33K	1%	1/4W	R248	1-259-436-11	CARBON	2.2K	5%	1/6W
R152	1-214-729-00	METAL	1K	1%	1/4W	R249	1-259-459-11	CARBON	20K	5%	1/6W
R153	1-214-737-00	METAL	2.2K	1%	1/4W	R250	1-247-704-11	CARBON	220	5%	1/4W
R154	1-249-421-11	CARBON	2.2K	5%	1/4W	R251	1-214-765-00	METAL	33K	1%	1/4W
R155	1-249-441-11	CARBON	100K	5%	1/4W	R252	1-214-729-00	METAL	1K	1%	1/4W
R156	1-249-417-11	CARBON	1K	5%	1/4W	R253	1-214-737-00	METAL	2.2K	1%	1/4W
R157	1-249-393-11	CARBON	10	5%	1/4W	R254	1-249-421-11	CARBON	2.2K	5%	1/4W
R158	1-249-434-11	CARBON	27K	5%	1/4W	R255	1-249-441-11	CARBON	100K	5%	1/4W
R159	1-249-422-11	CARBON	2.7K	5%	1/4W	R256	1-249-417-11	CARBON	1K	5%	1/4W
R160	1-249-429-11	CARBON	10K	5%	1/4W	R257	1-249-393-11	CARBON	10	5%	1/4W
R162	1-247-713-11	CARBON	1K	5%	1/4W	R258	1-249-434-11	CARBON	27K	5%	1/4W
R163	1-249-433-11	CARBON	22K	5%	1/4W	R259	1-249-422-11	CARBON	2.7K	5%	1/4W
R164	1-249-433-11	CARBON	22K	5%	1/4W	R260	1-249-429-11	CARBON	10K	5%	1/4W
R165	1-249-408-11	CARBON	180	5%	1/4W	R262	1-247-713-11	CARBON	1K	5%	1/4W
R166	1-249-436-11	CARBON	39K	5%	1/4W	R263	1-249-433-11	CARBON	22K	5%	1/4W
R167	1-249-417-11	CARBON	1K	5%	1/4W	R264	1-249-433-11	CARBON	22K	5%	1/4W
R168	1-249-429-11	CARBON	10K	5%	1/4W	R265	1-249-408-11	CARBON	180	5%	1/4W
R169	1-249-429-11	CARBON	10K	5%	1/4W	R266	1-249-436-11	CARBON	39K	5%	1/4W
R170	1-249-465-11	CARBON	47K	5%	1/4W	R267	1-249-417-11	CARBON	1K	5%	1/4W
R171	1-249-433-11	CARBON	22K	5%	1/4W	R268	1-249-429-11	CARBON	10K	5%	1/4W
R172	1-249-429-11	CARBON	10K	5%	1/4W	R269	1-249-429-11	CARBON	10K	5%	1/4W
R201	1-214-763-00	METAL	27K	1%	1/4W	R270	1-249-465-11	CARBON	47K	5%	1/4W
R202	1-214-104-00	METAL	68	1%	1/4W	R271	1-249-433-11	CARBON	22K	5%	1/4W
R203	1-249-603-11	CARBON	130K	5%	1/4W	R272	1-249-429-11	CARBON	10K	5%	1/4W
R204	1-214-746-00	METAL	5.1K	1%	1/4W	R301	1-247-704-11	CARBON	220	5%	1/4W
R205	1-249-431-11	CARBON	15K	5%	1/4W	R302	1-247-704-11	CARBON	220	5%	1/4W
R206	1-247-717-11	CARBON	2.2K	5%	1/4W	R303	1-249-433-11	CARBON	22K	5%	1/4W
R207	1-247-718-11	CARBON	2.7K	5%	1/4W	R304	1-215-469-00	METAL	100K	1%	1/6W

Ref.No	Part No.	Description	Remark
R305	1-249-429-11	CARBON 10K 5%	1/4W
R306	1-249-431-11	CARBON 15K 5%	1/4W
R307	1-249-421-11	CARBON 2.2K 5%	1/4W
R308	1-249-405-11	CARBON 100 5%	1/4W
R309	1-249-441-11	CARBON 100K 5%	1/4W
R312	1-249-433-11	CARBON 22K 5%	1/4W
R313	1-249-433-11	CARBON 22K 5%	1/4W
R314	1-249-441-11	CARBON 100K 5%	1/4W
R315	1-249-429-11	CARBON 10K 5%	1/4W
R316	1-249-429-11	CARBON 10K 5%	1/4W
R317	1-249-405-11	CARBON 100 5%	1/4W
R318	1-215-454-00	METAL 24K 1%	1/6W
R319	1-215-442-00	METAL 7.5K 1%	1/6W
R320	1-249-413-11	CARBON 470 5%	1/4W
R321	1-249-411-11	CARBON 330 5%	1/4W
R322	1-215-444-00	METAL 9.1K 1%	1/6W
R323	1-249-397-11	CARBON 22 5%	1/4W
R324	1-215-444-00	METAL 9.1K 1%	1/6W
R325	1-249-429-11	CARBON 10K 5%	1/4W
R326	1-249-429-11	CARBON 10K 5%	1/4W
R327	1-249-425-11	CARBON 4.7K 5%	1/4W
R328	1-249-429-11	CARBON 10K 5%	1/4W
R329	1-249-429-11	CARBON 10K 5%	1/4W
R330	1-249-425-11	CARBON 4.7K 5%	1/4W
R331	1-249-432-11	CARBON 18K 5%	1/4W
R332	1-249-441-11	CARBON 100K 5%	1/4W
R333	1-249-437-11	CARBON 47K 5%	1/4W
R335	1-249-437-11	CARBON 47K 5%	1/4W
R336	1-212-849-00	FUSIBLE 4.7 5%	1/4W
R337	1-249-405-11	CARBON 100 5%	1/4W
R338	1-249-425-11	CARBON 4.7K 5%	1/4W
R339	1-249-433-11	CARBON 22K 5%	1/4W
R340	1-249-433-11	CARBON 22K 5%	1/4W
R341	1-249-417-11	CARBON 1K 5%	1/4W
R342	1-249-429-11	CARBON 10K 5%	1/4W
R343	1-249-417-11	CARBON 1K 5%	1/4W
R346	1-247-717-11	CARBON 2.2K 5%	1/4W
R347	1-249-429-11	CARBON 10K 5%	1/4W
R348	1-249-429-11	CARBON 10K 5%	1/4W
R349	1-215-419-00	METAL 820 1%	1/6W
R350	1-215-419-00	METAL 820 1%	1/6W
R351	1-215-454-00	METAL 24K 1%	1/6W
R352	1-249-413-11	CARBON 470 5%	1/4W
R353	1-249-411-11	CARBON 330 5%	1/4W
R354	1-249-425-11	CARBON 4.7K 5%	1/4W
R355	1-249-397-11	CARBON 22 5%	1/4W
R357	1-249-425-11	CARBON 4.7K 5%	1/4W
R358	1-249-409-11	CARBON 220 5%	1/4W
R503	1-214-713-00	METAL 220 1%	1/4W
R504	1-214-731-00	METAL 1.2K 1%	1/4W
R505	1-214-723-00	METAL 560 1%	1/4W
R506	1-247-725-11	CARBON 10K 5%	1/4W
R507	1-214-721-00	METAL 470 1%	1/4W
R508	1-249-433-11	CARBON 22K 5%	1/4W
R510	1-249-433-11	CARBON 22K 5%	1/4W
R511	1-214-747-00	METAL 5.6K 1%	1/4W
R512	1-214-755-00	METAL 12K 1%	1/4W
R513	1-249-462-11	CARBON 22K 5%	1/4W
R514	1-247-721-11	CARBON 4.7K 5%	1/4W
R515	1-249-426-11	CARBON 5.6K 5%	1/4W
R516	1-249-417-11	CARBON 1K 5%	1/4W
R517	1-247-717-11	(Canadian, AEP, UK, E) ... CARBON 2.2K 5%	1/4W
R517	1-249-421-11	(US) ... CARBON 2.2K 5%	1/4W
R518	1-247-752-11	CARBON 1K 5%	1/2W
R519	1-249-405-11	CARBON 100 5%	1/4W

Ref.No	Part No.	Description	Remark
R520	1-249-432-11	CARBON 18K 5%	1/4W
R521	1-249-430-11	CARBON 12K 5%	1/4W
R522	1-249-393-11	CARBON 10 5%	1/4W
R523	1-249-433-11	CARBON 22K 5%	1/4W
R524	1-247-903-00	CARBON 1M 5%	1/4W
R525	1-249-422-11	CARBON 2.7K 5%	1/4W
R526	1-249-441-11	CARBON 100K 5%	1/4W
R528	1-249-429-11	CARBON 10K 5%	1/4W
R529	1-247-903-00	CARBON 1M 5%	1/4W
R530	1-249-429-11	CARBON 10K 5%	1/4W
R531	1-249-417-11	CARBON 1K 5%	1/4W
R532	1-249-437-11	CARBON 47K 5%	1/4W
R533	1-249-433-11	CARBON 22K 5%	1/4W
R534	1-249-433-11	CARBON 22K 5%	1/4W
R535	1-249-437-11	CARBON 47K 5%	1/4W
R536	1-249-437-11	CARBON 47K 5%	1/4W
R537	1-249-430-11	CARBON 12K 5%	1/4W
R538	1-249-425-11	CARBON 4.7K 5%	1/4W
R539	1-249-430-11	CARBON 12K 5%	1/4W
R540	1-247-708-11	CARBON 470 5%	1/4W
R541	1-249-433-11	CARBON 22K 5%	1/4W
R542	1-249-433-11	CARBON 22K 5%	1/4W
R544	1-249-425-11	CARBON 4.7K 5%	1/4W
R551	1-249-413-11	CARBON 470 5%	1/4W
R552	1-249-413-11	CARBON 470 5%	1/4W
R553	1-249-413-11	CARBON 470 5%	1/4W
R554	1-249-413-11	CARBON 470 5%	1/4W
R555	1-249-413-11	CARBON 470 5%	1/4W
R556	1-249-413-11	CARBON 470 5%	1/4W
R557	1-249-413-11	CARBON 470 5%	1/4W
R558	1-249-413-11	CARBON 470 5%	1/4W
R559	1-249-413-11	CARBON 470 5%	1/4W
R560	1-249-413-11	CARBON 470 5%	1/4W
R561	1-249-433-11	CARBON 22K 5%	1/4W
R562	1-249-433-11	CARBON 22K 5%	1/4W
R563	1-249-433-11	CARBON 22K 5%	1/4W
R564	1-249-433-11	CARBON 22K 5%	1/4W
R565	1-249-433-11	CARBON 22K 5%	1/4W
R566	1-249-433-11	CARBON 22K 5%	1/4W
R567	1-249-433-11	CARBON 22K 5%	1/4W
R568	1-249-433-11	CARBON 22K 5%	1/4W
R569	1-249-433-11	CARBON 22K 5%	1/4W
R570	1-249-433-11	CARBON 22K 5%	1/4W
R571	1-249-433-11	CARBON 22K 5%	1/4W
R572	1-249-433-11	CARBON 22K 5%	1/4W
R578	1-249-431-11	CARBON 15K 5%	1/4W
R579	1-249-425-11	CARBON 4.7K 5%	1/4W
R580	1-249-430-11	CARBON 12K 5%	1/4W
R581	1-215-452-00	CARBON 20K 5%	1/4W
R582	1-249-435-11	CARBON 33K 5%	1/4W
R583	1-249-435-11	CARBON 33K 5%	1/4W
R584	1-247-887-00	CARBON 220K 5%	1/4W
R585	1-247-887-00	CARBON 220K 5%	1/4W
R586	1-249-408-11	CARBON 180 5%	1/4W
R587	1-249-408-11	CARBON 180 5%	1/4W
R588	1-249-408-11	CARBON 180 5%	1/4W
R589	1-249-408-11	CARBON 180 5%	1/4W
R590	1-249-423-11	CARBON 3.3K 5%	1/4W
R591	1-249-423-11	CARBON 3.3K 5%	1/4W
R592	1-249-417-11	CARBON 1K 5%	1/4W
R593	1-249-415-11	CARBON 680 5%	1/4W
R594	1-249-421-11	CARBON 2.2K 5%	1/4W
R595	1-249-417-11	CARBON 1K 5%	1/4W
R596	1-249-417-11	CARBON 1K 5%	1/4W
R597	1-249-417-11	CARBON 1K 5%	1/4W

Note:

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

Note:

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

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R598	1-249-417-11	CARBON	1K 5% 1/4W	R756	1-249-441-11	CARBON	100K 5% 1/4W
R599	1-249-418-11	CARBON	1.2K 5% 1/4W	R757	1-215-437-00	METAL	4.7K 1% 1/6W
R600	1-249-405-11	CARBON	100 5% 1/4W	R758	1-215-433-00	METAL	3.3K 1% 1/6W
R601	1-249-413-11	CARBON	470 5% 1/4W	R759	1-215-461-00	METAL	47K 1% 1/6W
R602	1-249-425-11	CARBON	4.7K 5% 1/4W	R760	1-249-441-11	CARBON	100K 5% 1/4W
R604	1-249-435-11	CARBON	33K 5% 1/4W	R761	1-215-445-00	METAL	10K 1% 1/6W
R605	1-249-433-11	CARBON	22K 5% 1/4W	R762	1-215-416-00	METAL	620 1% 1/6W
R606	1-249-441-11	CARBON	100K 5% 1/4W	R763	1-215-452-00	CARBON	20K 5% 1/4W
R607	1-249-409-11	CARBON	220 5% 1/4W	R764	1-215-452-00	CARBON	20K 5% 1/4W
R608	1-249-409-11	CARBON	220 5% 1/4W	R765	1-215-442-00	CARBON	7.5K 5% 1/4W
R701	1-249-429-11	CARBON	10K 5% 1/4W	R766	1-249-437-11	CARBON	47K 5% 1/4W
R702	1-249-429-11	CARBON	10K 5% 1/4W	R767	1-249-433-11	CARBON	22K 5% 1/4W
R703	1-249-429-11	CARBON	10K 5% 1/4W	R768	1-249-429-11	CARBON	10K 5% 1/4W
R704	1-249-417-11	CARBON	1K 5% 1/4W	R769	1-249-429-11	CARBON	10K 5% 1/4W
R705	1-249-433-11	CARBON	22K 5% 1/4W	R770	1-249-429-11	CARBON	10K 5% 1/4W
R706	1-249-417-11	CARBON	1K 5% 1/4W	R771	1-249-429-11	CARBON	10K 5% 1/4W
R707	1-249-433-11	CARBON	22K 5% 1/4W	R772	1-249-441-11	CARBON	100K 5% 1/4W
R708	1-249-432-11	CARBON	18K 5% 1/4W	R773	1-249-441-11	CARBON	100K 5% 1/4W
R709	1-249-425-11	CARBON	4.7K 5% 1/4W	R774	1-249-441-11	CARBON	100K 5% 1/4W
R710	1-249-425-11	CARBON	4.7K 5% 1/4W	R775	1-249-441-11	CARBON	100K 5% 1/4W
R711	1-249-441-11	CARBON	100K 5% 1/4W	R776	1-249-441-11	CARBON	100K 5% 1/4W
R712	1-249-441-11	CARBON	100K 5% 1/4W	R777	1-249-441-11	CARBON	100K 5% 1/4W
R713	1-249-421-11	CARBON	2.2K 5% 1/4W	R778	1-249-441-11	CARBON	100K 5% 1/4W
R714	1-249-429-11	CARBON	10K 5% 1/4W	R779	1-249-441-11	CARBON	100K 5% 1/4W
R715	1-249-429-11	CARBON	10K 5% 1/4W	R780	1-249-441-11	CARBON	100K 5% 1/4W
R716	1-249-425-11	CARBON	4.7K 5% 1/4W	R781	1-249-441-11	CARBON	100K 5% 1/4W
R717	1-247-887-00	CARBON	220K 5% 1/4W	R782	1-249-441-11	CARBON	100K 5% 1/4W
R718	1-215-462-00	CARBON	51K 5% 1/4W	R783	1-249-441-11	CARBON	100K 5% 1/4W
R719	1-249-436-11	CARBON	39K 5% 1/4W	R784	1-249-441-11	CARBON	100K 5% 1/4W
R720	1-249-413-11	CARBON	470 5% 1/4W	R785	1-249-441-11	CARBON	100K 5% 1/4W
R721	1-249-437-11	CARBON	47K 5% 1/4W	R786	1-249-441-11	CARBON	100K 5% 1/4W
R722	1-249-441-11	CARBON	100K 5% 1/4W	R787	1-249-441-11	CARBON	100K 5% 1/4W
R723	1-215-452-00	CARBON	20K 5% 1/4W	R788	1-249-441-11	CARBON	100K 5% 1/4W
R724	1-247-903-00	CARBON	1M 5% 1/4W	R789	1-249-441-11	CARBON	100K 5% 1/4W
R725	1-247-903-00	CARBON	1M 5% 1/4W	R790	1-249-441-11	CARBON	100K 5% 1/4W
R726	1-249-441-11	CARBON	100K 5% 1/4W	R791	1-249-441-11	CARBON	100K 5% 1/4W
R727	1-249-441-11	CARBON	100K 5% 1/4W	R792	1-249-441-11	CARBON	100K 5% 1/4W
R728	1-249-433-11	CARBON	22K 5% 1/4W	R793	1-249-441-11	CARBON	100K 5% 1/4W
R729	1-247-903-00	CARBON	1M 5% 1/4W	R794	1-249-441-11	CARBON	100K 5% 1/4W
R730	1-215-452-00	METAL	20K 1% 1/6W	R795	1-249-441-11	CARBON	100K 5% 1/4W
R731	1-215-452-00	METAL	20K 1% 1/6W	R796	1-249-441-11	CARBON	100K 5% 1/4W
R732	1-215-452-00	METAL	20K 1% 1/6W	R797	1-249-441-11	CARBON	100K 5% 1/4W
R733	1-215-452-00	METAL	20K 1% 1/6W	R798	1-249-441-11	CARBON	100K 5% 1/4W
R734	1-215-452-00	METAL	20K 1% 1/6W	R799	1-249-441-11	CARBON	100K 5% 1/4W
R735	1-215-452-00	METAL	20K 1% 1/6W	RV101	1-228-994-00	RES, ADJ, CARBON 10K	
R736	1-215-452-00	METAL	20K 1% 1/6W	RV102	1-238-062-11	RES, VAR, CARBON 10K/10K (CAL LEVEL L)	
R737	1-215-445-00	METAL	10K 1% 1/6W	RV103	1-230-632-11	RES, ADJ, CARBON 33K	
R738	1-215-445-00	METAL	10K 1% 1/6W	RV104	1-228-995-00	RES, ADJ, CARBON 22K	
R739	1-215-445-00	METAL	10K 1% 1/6W	RV105	1-228-997-00	RES, ADJ, CARBON 100K	
R740	1-215-445-00	METAL	10K 1% 1/6W	RV106	1-228-995-00	RES, ADJ, CARBON 22K	
R741	1-215-445-00	METAL	10K 1% 1/6W	RV201	1-228-994-00	RES, ADJ, CARBON 10K	
R742	1-215-445-00	METAL	10K 1% 1/6W	RV202	1-238-062-11	RES, VAR, CARBON 10K/10K (CAL LEVEL R)	
R743	1-215-460-00	METAL	43K 1% 1/6W	RV203	1-230-632-11	RES, ADJ, CARBON 33K	
R744	1-215-425-00	METAL	1.5K 1% 1/6W	RV204	1-228-995-00	RES, ADJ, CARBON 22K	
R745	1-249-425-11	CARBON	4.7K 5% 1/4W	RV205	1-228-997-00	RES, ADJ, CARBON 100K	
R746	1-249-425-11	CARBON	4.7K 5% 1/4W	RV206	1-228-995-00	RES, ADJ, CARBON 22K	
R747	1-249-441-11	CARBON	100K 5% 1/4W	RV301	1-226-740-00	RES, VAR, CARBON 20K/20K (REC LEVEL)	
R748	1-249-439-11	CARBON	68K 5% 1/4W	RV302	1-230-313-00	RES, VAR, CARBON 20K/20K (HEAD PHONES LEVEL)	
R749	1-215-448-00	CARBON	13K 5% 1/4W	RV303	1-238-063-11	RES, VAR, CARBON 5K (BIAS ADJ)	
R750	1-249-433-11	CARBON	22K 5% 1/4W	RV304	1-228-994-00	RES, ADJ, CARBON 10K	
R751	1-215-489-00	CARBON	680K 5% 1/4W	RV501	1-228-995-00	RES, ADJ, CARBON 22K	
R752	1-249-441-11	CARBON	100K 5% 1/4W	RV701	1-228-996-00	RES, ADJ, CARBON 47K	
R753	1-249-434-11	CARBON	27K 5% 1/4W	RY301	1-515-683-11	RELAY	
R754	1-249-426-11	CARBON	5.6K 5% 1/4W				
R755	1-247-889-00	CARBON	270K 5% 1/4W				

Ref.No	Part No.	Description	Remark
S301	△1-570-103-21	SWITCH, PUSH (1 KEY) (POWER)	
S302	1-571-369-11	SWITCH, PUSH (3 KEY) (DULBY NR/DIRECTION MODE)	
S303	1-554-423-00	SWITCH, SLIDE (TIMER)	
S501	1-554-303-21	SWITCH, KEY BOARD (■)	
S502	1-554-303-21	SWITCH, KEY BOARD (◀ AUTO PLAY ▶)	
S503	1-554-303-21	SWITCH, KEY BOARD (◀ AUTO PLAY ▶▶)	
S504	1-554-303-21	SWITCH, KEY BOARD (▶)	
S505	1-554-303-21	SWITCH, KEY BOARD (◀)	
S506	1-554-303-21	SWITCH, KEY BOARD (● REC)	
S507	1-554-303-21	SWITCH, KEY BOARD (II)	
S508	1-554-303-21	SWITCH, KEY BOARD (REC MUTE)	
S509	1-554-303-21	SWITCH, KEY BOARD (TAPE OPERATION)	
S510	1-554-303-21	SWITCH, KEY BOARD (REC CAL)	
S701	1-554-303-21	SWITCH, KEY BOARD (COUNTER RESET)	
S702	1-554-303-21	SWITCH, KEY BOARD (COUNTER MEMORY)	
S901	△1-570-307-11	(E)....SWITCH, VOLTAGE CHANGE	
S1001	1-570-720-11	SWITCH, PUSH	
S1002	1-570-720-11	SWITCH, PUSH	
S1005	1-570-723-11	SWITCH, PUSH	
S1006	1-570-719-11	SWITCH, LEAF	
S1007	1-570-721-11	SWITCH, LEAF	
SPK101	1-235-186-00	ENCAPSULATED COMPONENT	
SPK201	1-235-186-00	ENCAPSULATED COMPONENT	
T101	1-433-335-11	TRANSFORMER, BIAS OSCILLATION	
T201	1-433-335-11	TRANSFORMER, BIAS OSCILLATION	
T302	1-433-336-11	TRANSFORMER, BIAS OSCILLATION	
T501	△1-449-272-11	(US, Canadian)....TRANSFORMER, POWER	
T501	△1-449-273-11	(AEP, UK)....TRANSFORMER, POWER	
T501	△1-449-274-11	(E)....TRANSFORMER, POWER	
THP501	△1-202-850-00	SOLID 2.2 1/4W F	
THP502	△1-202-850-00	SOLID 2.2 1/4W F	
TP1	*1-564-506-11	PLUG, CONNECTOR 3P	
TP2	*1-564-505-11	PLUG, CONNECTOR 2P	
TP3	*1-564-506-11	PLUG, CONNECTOR 3P	
X501	1-567-772-11	VIBRATOR, CERAMIC 4.19MHz	
X502	1-527-532-00	OSCILLATOR, CERAMIC 400KHz	

ACCESSORY & PACKING MATERIAL

Part No.	Description	Remark
1-551-734-11	CORD, CONNECTION (RK- 74A)	
1-558-233-11	CORD (WITH CONNECTOR) (SIRCS)4P	
*3-332-555-01	(EXCEPT FOR AEP)....CUSHION	
*3-332-556-11	INDIVIDUAL CARTON	
3-346-203-01	(AEP)....CUSHION	
3-703-450-01	(US)....INSTRUCTION	
*3-704-346-01	SHEET (STANDARD), PROTECTION	
3-769-859-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH : EXCEPT FOR US)	
3-769-859-21	MANUAL, INSTRUCTION (ENGLISH : US)	
3-769-859-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN : AEP)	

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

Note:
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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TROUBLESHOOTING GUIDE

FUNCTION BUTTONS AND TAPE TRANSPORT PROBLEMS		
Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
Playback or recording begins just as the power is turned on.	The TIMER switch is not set to OFF.	Set the TIMER switch to OFF.
● button does not activate.	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape.
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
	The MEMORY function is activated.	Press the MEMORY button to deactivate the function.
	The inside of the cassette holder is illuminated by strong light.	Remove the light source.
Excessively loud tape transport noise when rewinding or fast-forwarding	This depends on the cassette used and is not a problem.	—
The cassette holder does not open.	▲ button was pressed immediately after the ◀, ▶ or ■ button was pressed.	Turn the power off, and then press the button.

RECORDING AND PLAYBACK PROBLEMS		
Symptom	Cause	Remedy
Quick reverse function does not operate.	DIRECTION MODE selector is released □ (↔).	Depress the selector and set to ▢ (↩).
Recording or playback cannot be made or there is a decrease in sound level.	Record/playback and erase heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly.
	Improper setting of the amplifier controls	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions
Incomplete erasure	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies	Improper setting of the DOLBY NR switches.	During playback, set the switches to the same position used in recording.
	The unit is placed near a television set.	Move the deck away from the television set.
The desired selection cannot be located even if you activate the AMS.	There is noise in the space between selections.	—
	The space is less than 4 seconds long.	Press ○ to insert a longer blank space.
	The ◀◀ or ▶▶ button is pressed immediately before or after the beginning of the following selection.	—
Playback or fast-winding may begin in the middle of the selection when AMS or blank skip is activated.	The following will be treated as blanks: — a long pause in the music — a passage of low frequencies or very low volume — gradual increase or decrease of volume	—

NOISE		
Symptom	Cause	Remedy
Hum noise	The deck is stacked on or under the amplifier.	Separate the units.
Noise is recorded.	Recording was made near such equipment as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from the television set or color monitor.