

WM-EX502/EX508

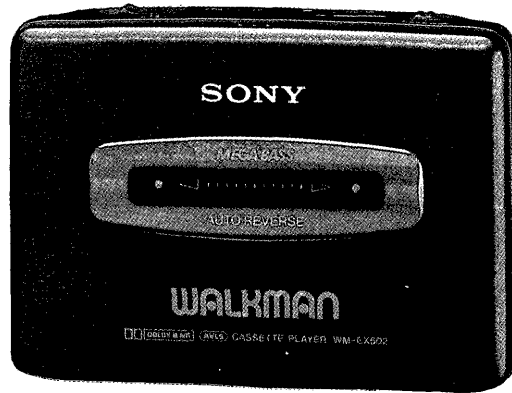
SERVICE MANUAL

AEP Model
E Model

WM-EX502/EX508

UK Model

WM-EX508



WM-EX502

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-WMEX502-60

SPECIFICATIONS

Tape section

Frequency response (Dolby NR* off)


Playback: 40-15,000 Hz

Output

Headphones (REMOTE/⏸ jack)
Load impedance 8-300 ohms

Power output

5 mW + 5 mW (16 ohms)

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

General

Power requirements

1.5 V
Rechargeable battery (NC-6WM)
One R6 (size AA) battery

Dimensions (w/h/d)

Approx. 108.9 x 79.0 x 29.5 mm
(protruding side of the battery lid facing outside; incl. projecting parts and controls)

Approx. 108.9 x 79.0 x 26.7 mm
(protruding side of the battery lid facing inside; incl. projecting parts and controls)

Mass

Approx. 175 g (incl. batteries)


Supplied accessories

Stereo headphones with remote control (1) (EX508)
Clip (1) (EX508)
Stereo headphones (1) (EX502)
Battery charger (1) (EX508)
Rechargeable battery (1) (EX508)
AC plug adaptor (1) (EX508 excluding European models)
Carrying case (1)

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Design and specifications are subject to change without notice.

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CASSETTE PLAYER

SONY®



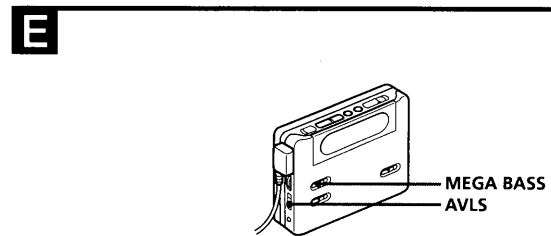
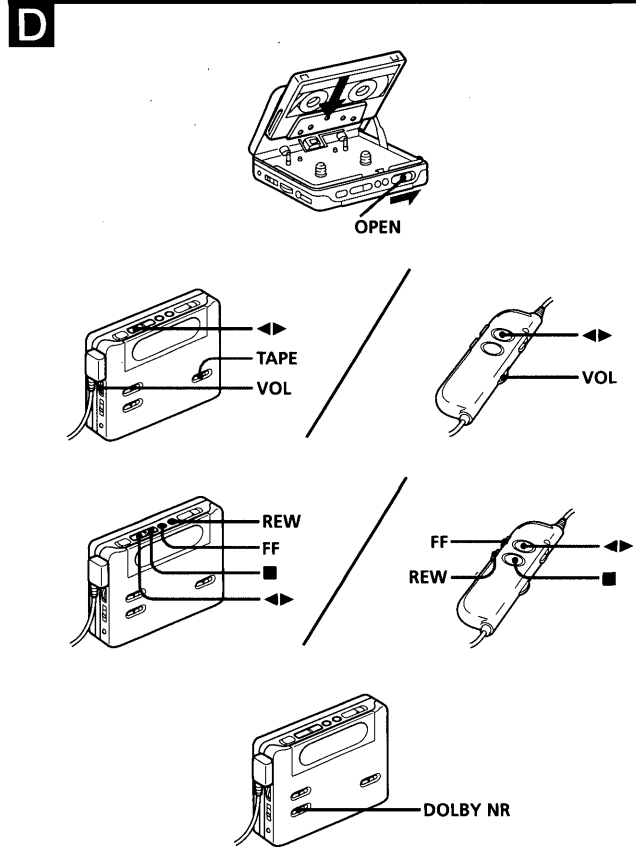
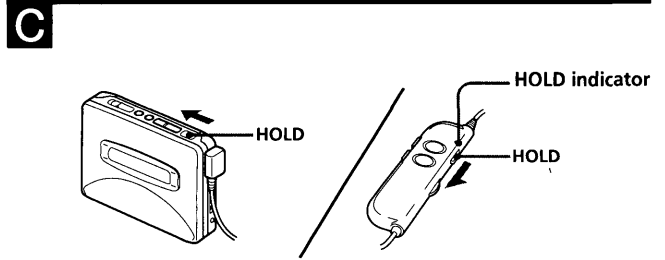
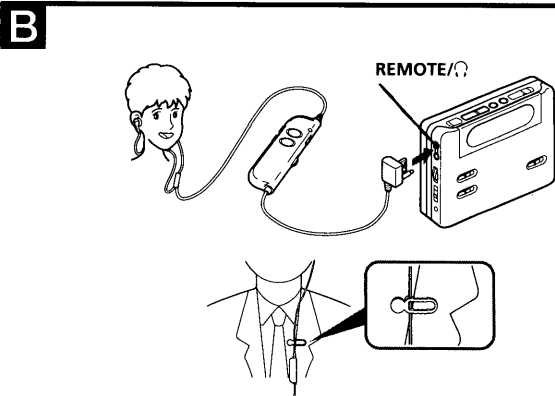
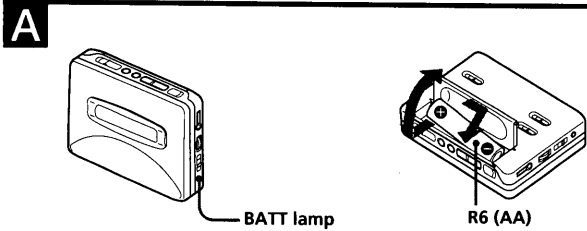
使用時は添付資料も参照のこと
Refer to the additional documents.

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SECTION 1 GENERAL

This section is extracted from instruction manual.



SECTION 2 SERVICING NOTE

This set detects the rotation of GEAR (PH) using the PH701 (reflector). The PH701 is mounted on the AUDIO board, and therefore the GEAR cannot be detected with the AUDIO board removed. As a result, the motor cannot be controlled, causing malfunction.

Further, the S701 (FWD/REV/FF/REW switch) is also mounted on the AUDIO board, and with the board removed, the mechanism position cannot be detected and the operation is not changed over.

Therefore, when the voltage check is executed with the AUDIO board removed, follow the procedure provided below.

Note: Do not move the S701 switch position when removing the AUDIO board.

If it is moved, the set will not be changed over to the selected mode. In this case, reconnect the AUDIO board to the set and retry the work from the beginning.

FF/REW mode

- (1) Input a square wave to the TP (PHOTO, GND) or IC701. (See figure below)
- (2) Press the FF switch or REW switch.
- (3) Remove the AUDIO board.

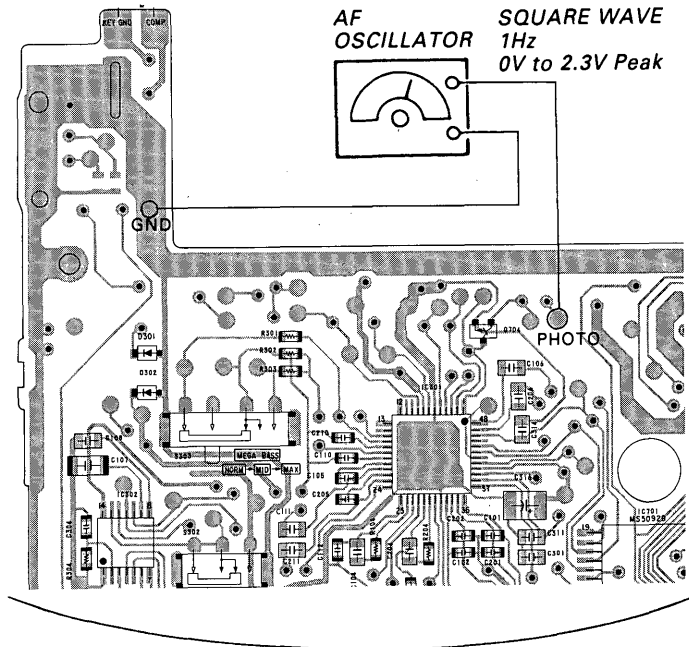
PLAY mode

- (1) Input a square wave to the TP (PHOTO, GND) of IC701. (See figure below)
- (2) Press the PLAY switch.
- (3) Remove the AUDIO board.

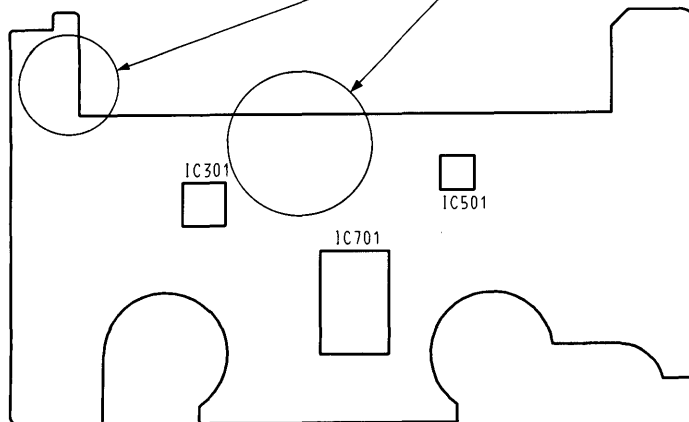
REV mode

- (1) Input a square wave to the TP (PHOTO, GND) of IC701. (See figure below)
- (2) Press the PLAY switch twice. (Each time the switch is pressed, the mode is changed over.)
- (3) Remove the AUDIO board.

**AUDIO BOARD
— SIDE B —**

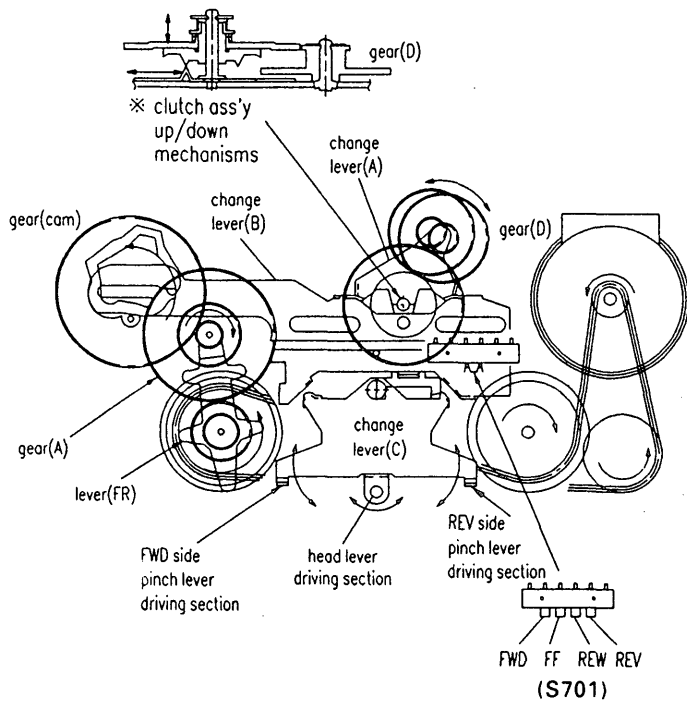


**AUDIO BOARD
— SIDE B —**



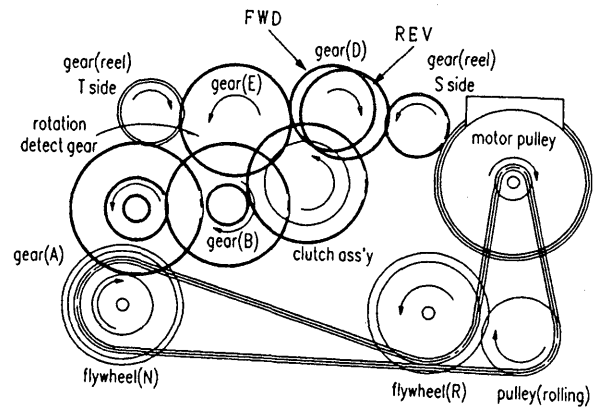
Function of the lever and rotating mechanisms for mode selection

- Mode selection starts when the motor rotates reversely.
- Change lever (B) moves to the left or right when driven with the gear (cam).
- The switch set position of switch S701 (4-position switch) is determined in accordance with the position of Change lever (B). When the switch set position is set appropriately, the motor rotates normally and the tape starts moving.

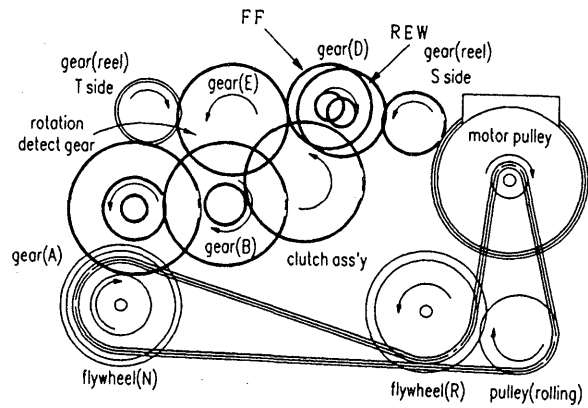


- Lever (FR) is driven with gear (A) by friction, and it swings to the left or right depending on the rotating direction of the motor.
- Selector levers (A) and (C) also swing to the left or right in accordance with the movement of Change lever (B), and the clutch assembly moves upward or downward accordingly.
- The pinch roller is activated and the head is placed in playback position with selector lever (C).
- When the mode is switched from one mode to another, the pinch roller is activated while the motor is rotating reversely (for a short period of time), causing a little slackness in the tape transport.

1. Rotating Mechanisms in PLAY Mode



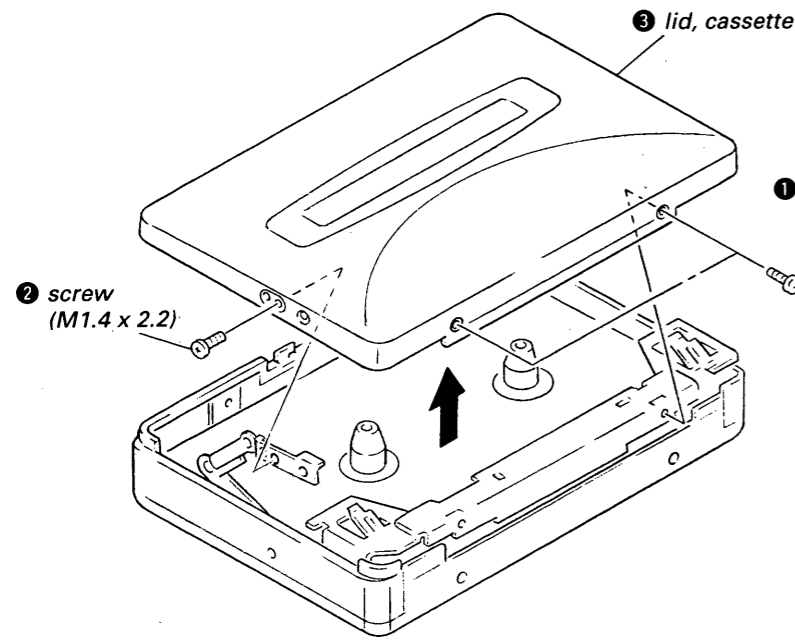
2. Rotating Mechanisms in FF, REW Mode



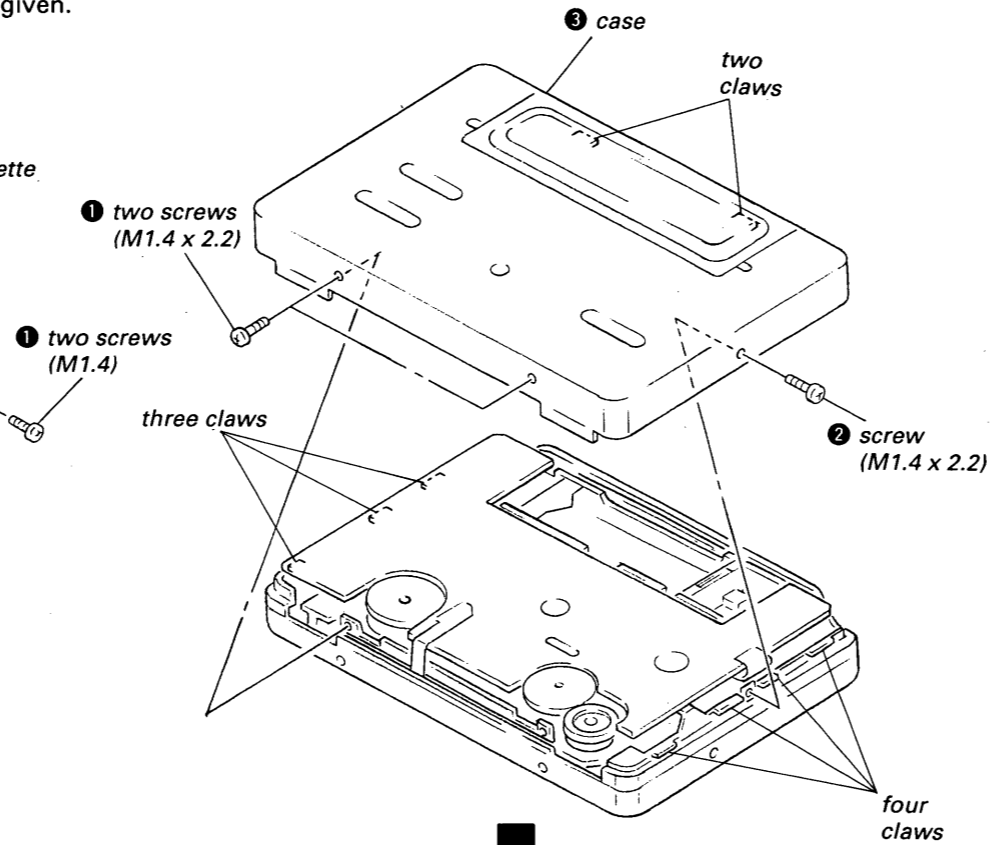
SECTION 3 DISASSEMBLY

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

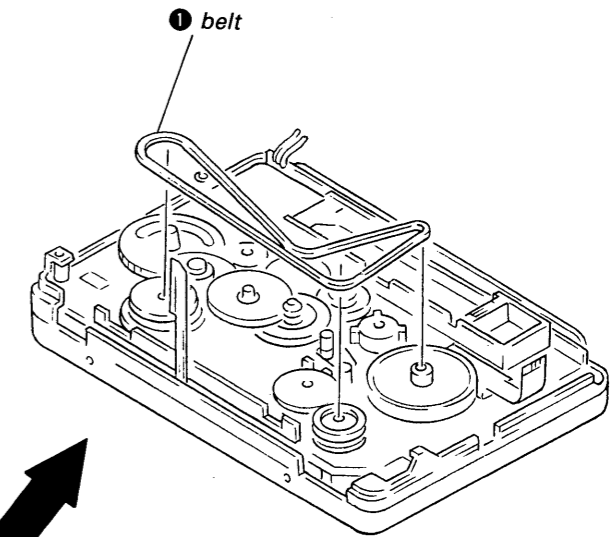
LID, CASSETTE



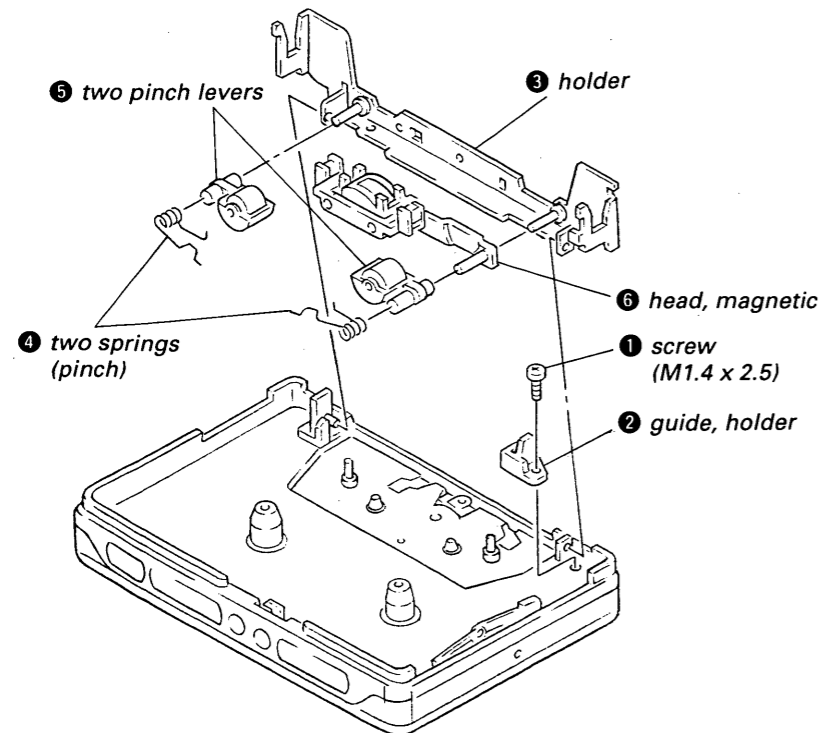
CASE



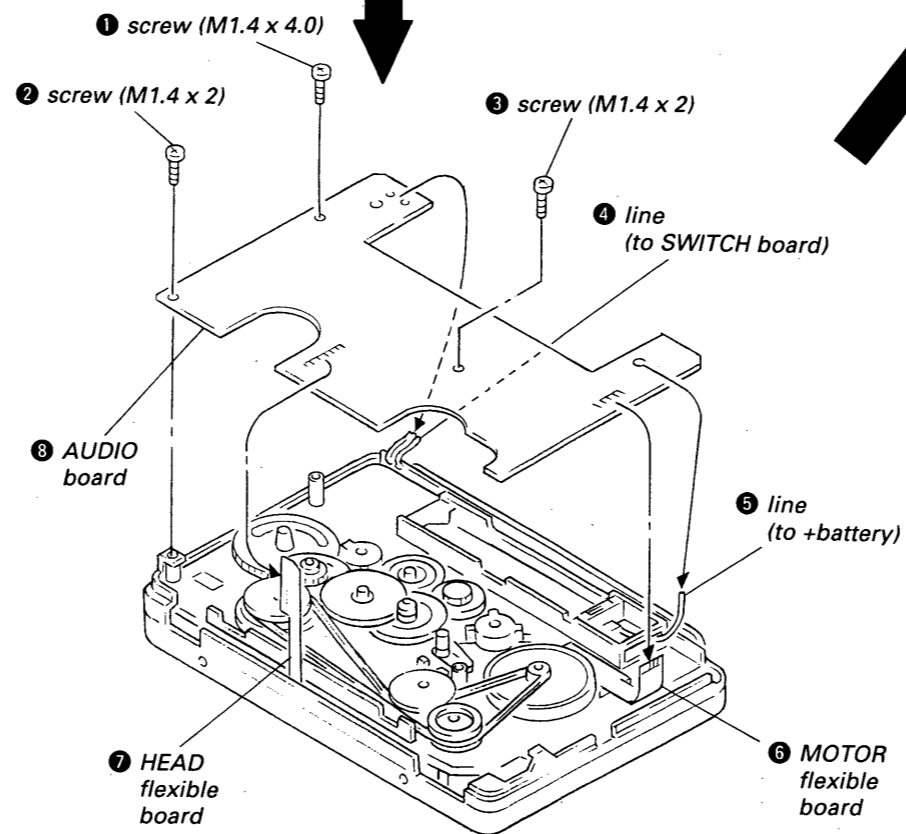
BELT



HOLDER

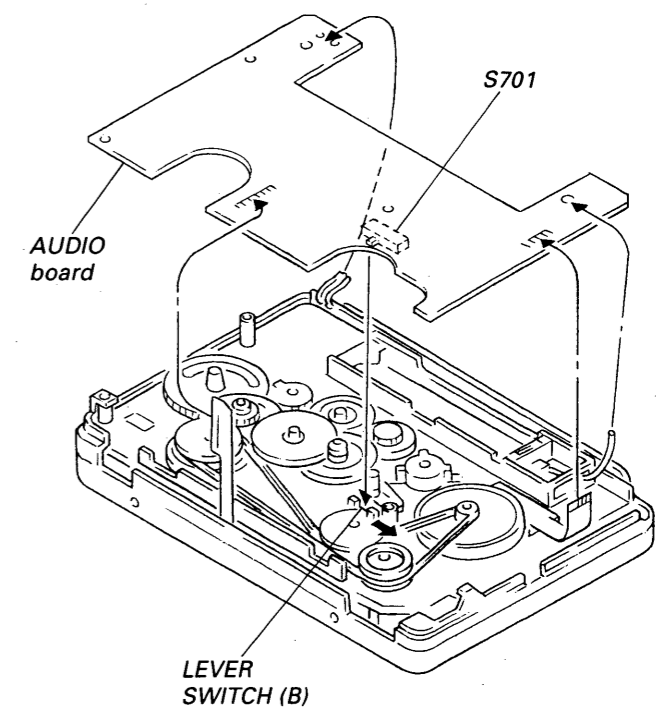


AUDIO BOARD



INSTALLATION AUDIO BOARD

On installation AUDIO board, adjust to the S701 and LEVER SWITCH (B)



SECTION 4 ADJUSTMENTS

MECHANICAL ADJUSTMENTS

PRECAUTION

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

playback head	pinch roller
capstan	rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	21 — 38 g·cm (0.29 — 0.52 oz·inch)
FWD Back Tension		0.5 — 3.0 g·cm (0.01 — 0.04 oz·inch)
REV	CQ-102RC	21 — 38 g·cm (0.29 — 0.52 oz·inch)
REV Back Tension		0.5 — 3.0 g·cm (0.01 — 0.04 oz·inch)
FF	CQ-201B	more than 60 g·cm (more than 0.83 oz·inch)
REW		

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-403A	more than 40 g (more than 1.4 oz)
REV	CQ-403R	

ELECTRICAL ADJUSTMENTS

Notes

1. Reference voltage: 1.3V
2. Switch position

DOLBY switch	: OFF
MEGA BASS switch	: NORM
3. Connect the output to headphone jack after installing the plug converting adapter (Parts No.: 1-568-133-11) supplied to the ear receiver remote control jack.

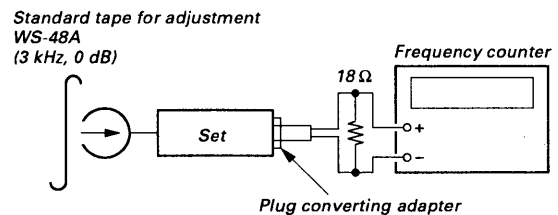
Cassette Block

Standard tape

Name	Contents	Use
WS-48A	3 kHz, 0 dB	For speed adjustment

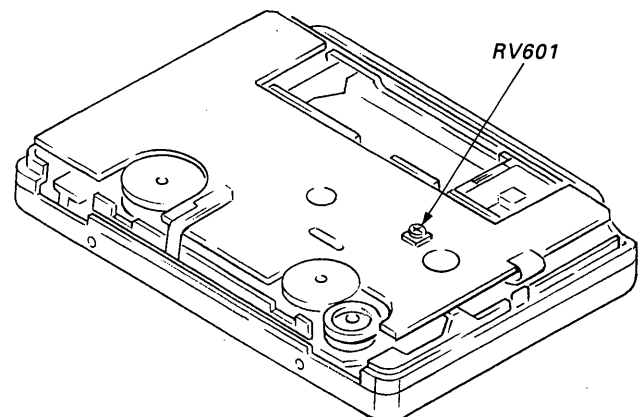
[Tape Speed Adjustment]

Adjusting method:



1. Playback WS-48A (tape center part) in forward direction, and adjust RV601 so that the reading of frequency counter becomes $3,000 \pm 30$ Hz.
2. Playback WS-48A (tape center part) in reserve direction. At this time, make sure that the reading of frequency counter is within 2.0% against the reading in step 1 above.

Adjusting point:



SECTION 5 DIAGRAMS

5-1. IC PIN FUNCTION

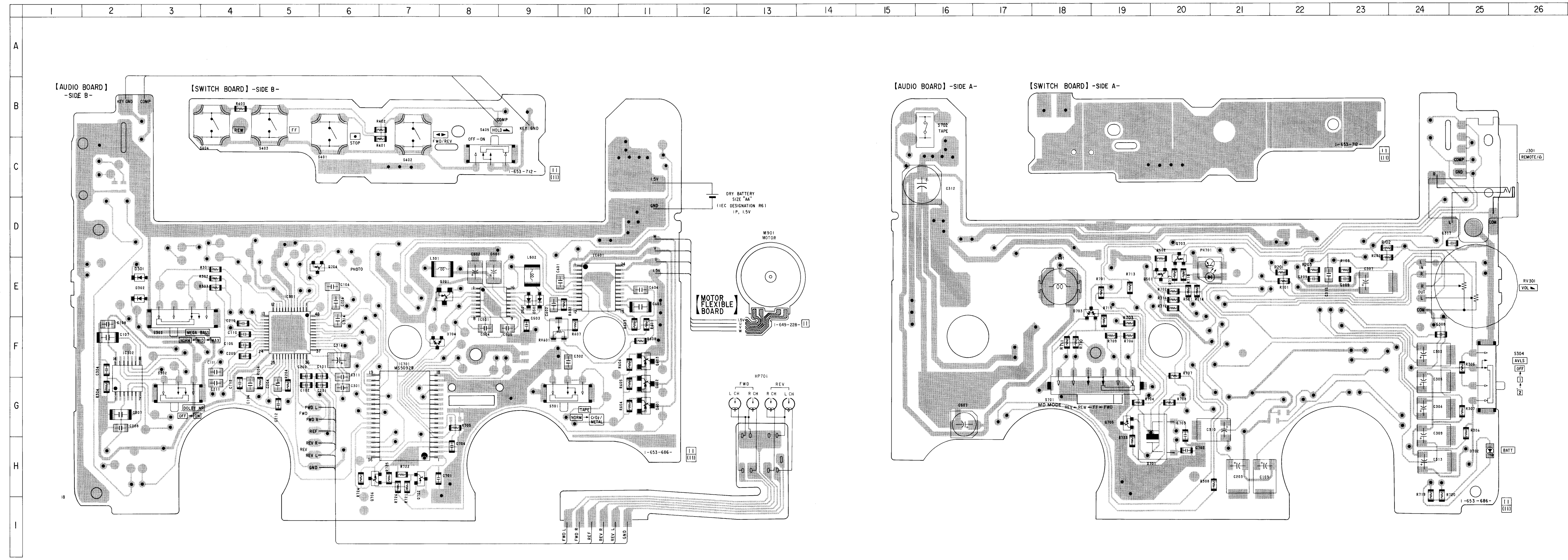
• IC701 SYSTEM CONTROL IC (MS50929-604FP)

Pin No.	Pin Name	I/O	Function
1	RESET	I	Reset pin
2	INT		GND
3	AV _{ss}		
4	V _{ref}		Voltage reference
5	COMP	I	Operation button signal
6	VCHK		"H"=Voltage low
7	AV _{dd}		5V power supply
8	NC		NC
9	FWD.SW	I	Switch pin
10	FF.SW	I	
11	REW.SW	I	
12	REV.SW	I	
13	NC		NC
14	NC		
15	PHOTO	I	PHOTO pin
16	TAPE	I	"L"=with TAPE
17	CNV _{ss}		GND
18	V _{ss}		
19	M.BRK	O	"L"=BREAK ON
20	M.BRK	O	
21	MUTE	O	"H"=MUTE ON
22	AMP	O	"L"=AMP ON
23	N/R	O	"L"=NORMAL
24	DDC.HD	O	"L"=DDC HOLD ON
25	BEEP	O	"H"=BEEP ON
26	NC		NC
27	M.CTL	O	"H"=MOTOR ON
28	M.DIR	O	"H"=MOTOR DIRECTION ON
29	LED	O	"L"=LED ON
30	PULS.IN	I	Motor puls
31	NC		NC
32	NC		
33	Xout		Connected to crystal oscillator for clock
34	XIN		
35	BEEP	O	BEEP pin
36	V _{dd}		5V power supply

5-2. PRINTED WIRING BOARDS • See page 18 for Semiconductor Lead Layouts.

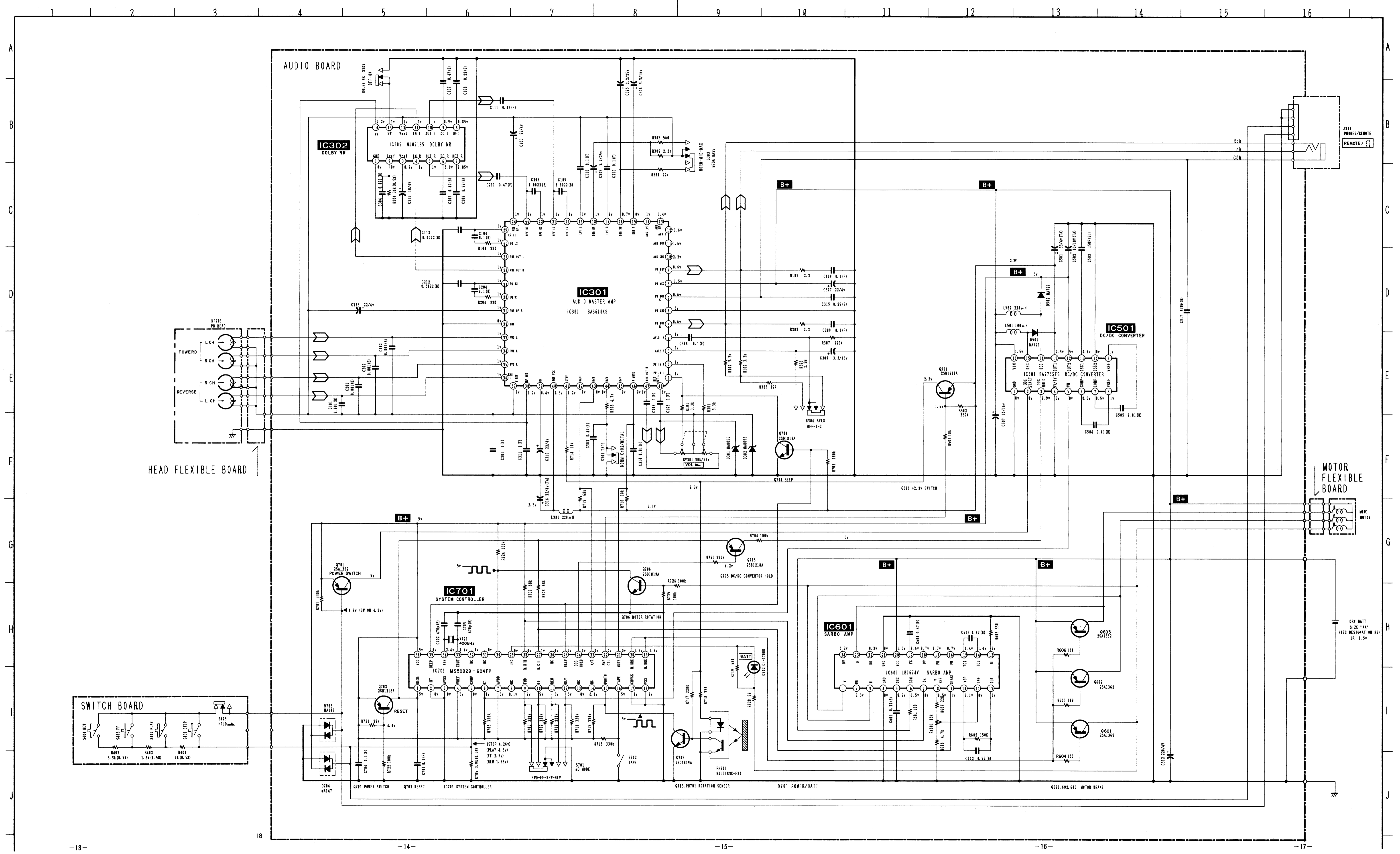
• Semiconductor Location

Ref. No.	Location
D301	E-2
D302	E-2
D501	E-9
D502	E-9
D702	H-25
D703	E-18
D704	F-8
IC301	F-5
IC302	F-2
IC501	E-8
IC601	E-10
IC701	F-7
PH701	E-20
Q501	E-20
Q601	G-11
Q602	G-11
Q603	F-11
Q701	E-8
Q702	H-7
Q703	E-20
Q704	E-6
Q705	G-19
Q706	H-6



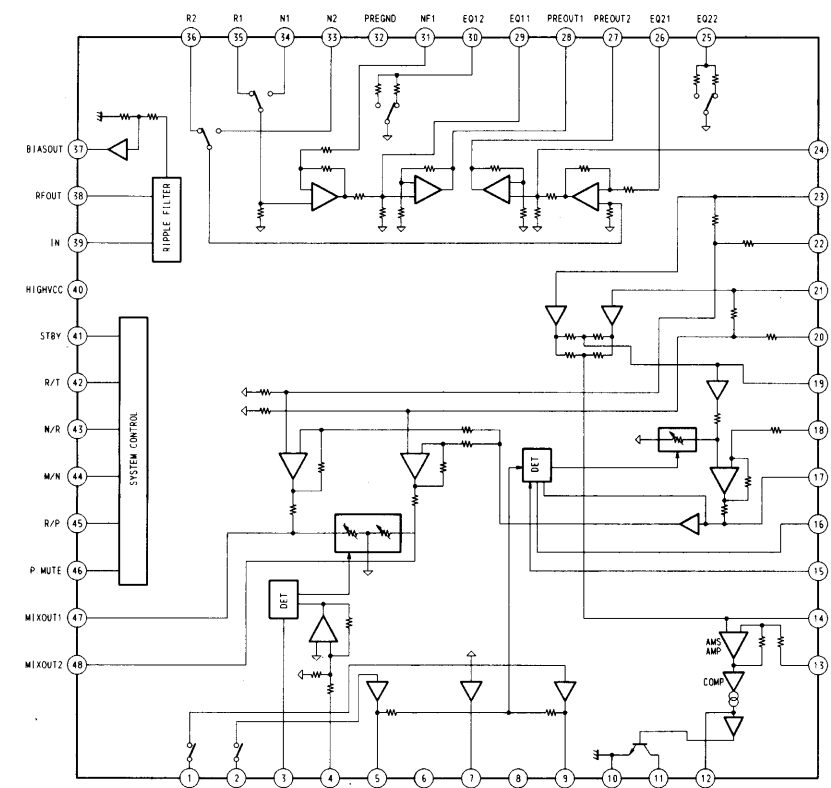
Note:
 • : Through hole.
 • : Pattern on the side which is seen.
 (The other layers' patterns are not indicated.)

Caution:
 Pattern face side: Parts on the pattern face side seen from (Conductor Side) the pattern face are indicated.
 Parts face side: Parts on the parts face side seen from the (Component Side) parts face are indicated.

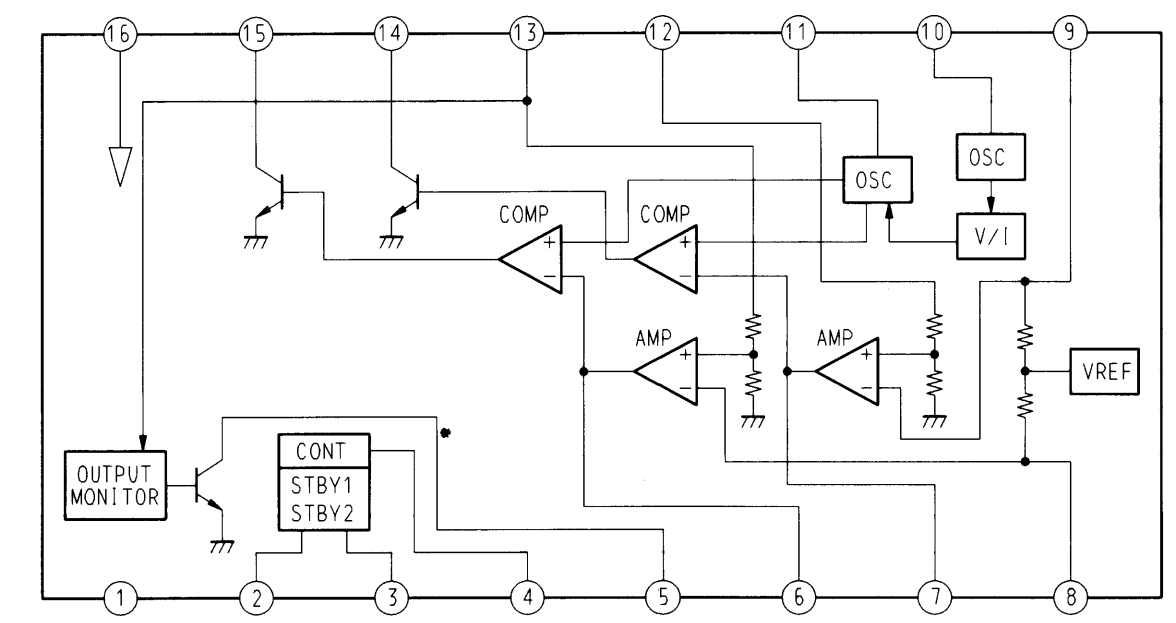


● IC Block Diagrams

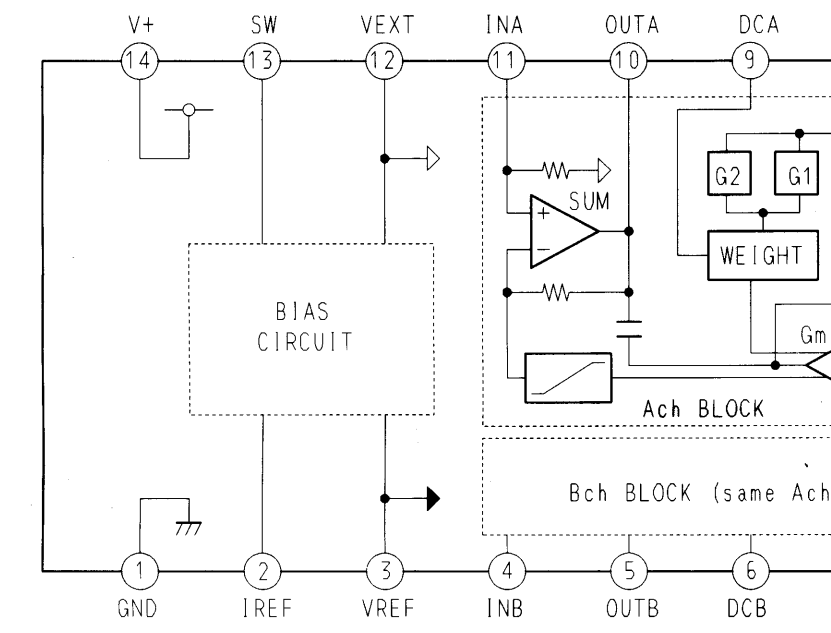
IC301 BA3610KV



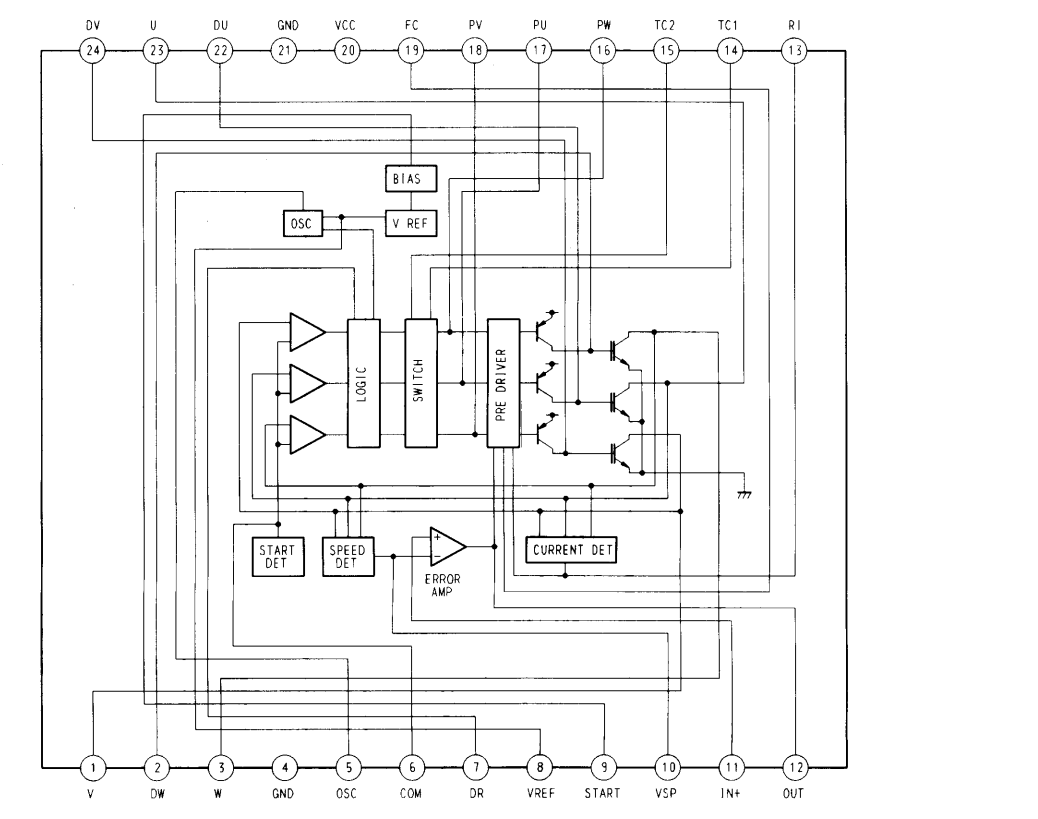
IC501 BA9752FV



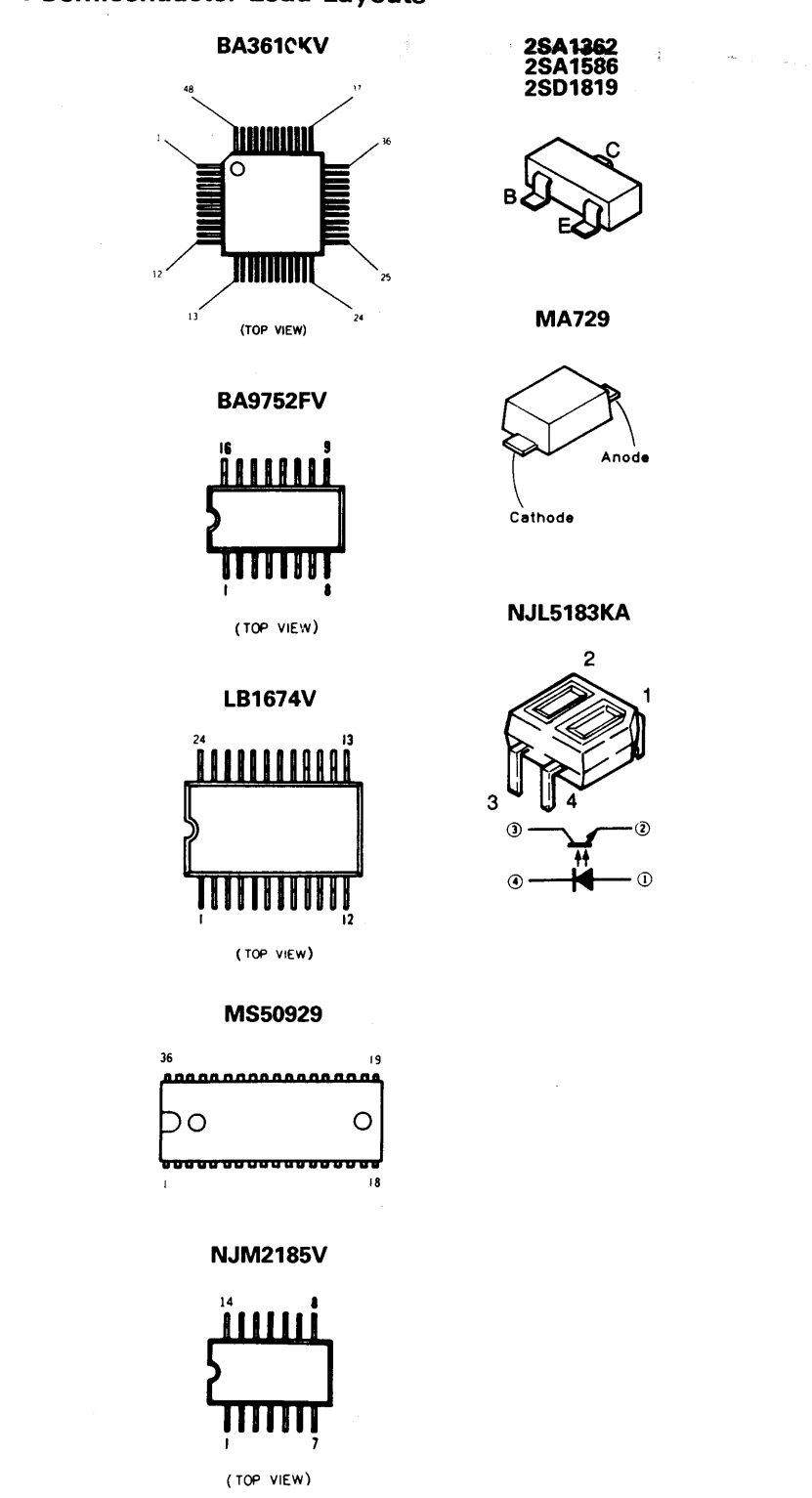
IC302 NJM2185V



IC601 LB1674V

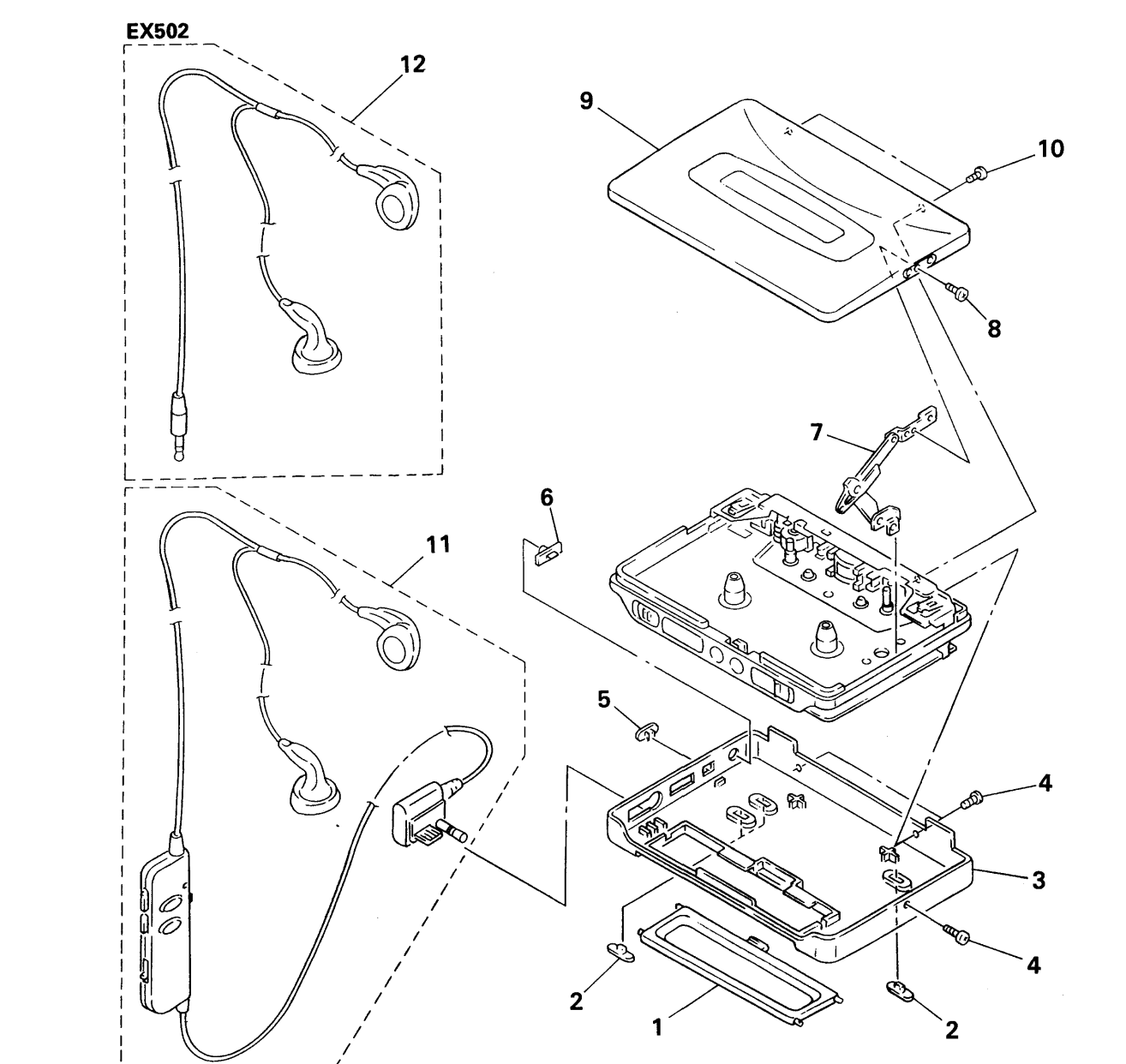


● Semiconductor Lead Layouts



NOTE:
 ● -XX, -X mean standardized parts, so they may have some differences from the original one.
 ● Color Indication of Appearance Parts Example: KNOB, BALANCE (WHITE)...(RED) Parts color Cabinet's color

6-1. CABINET SECTION



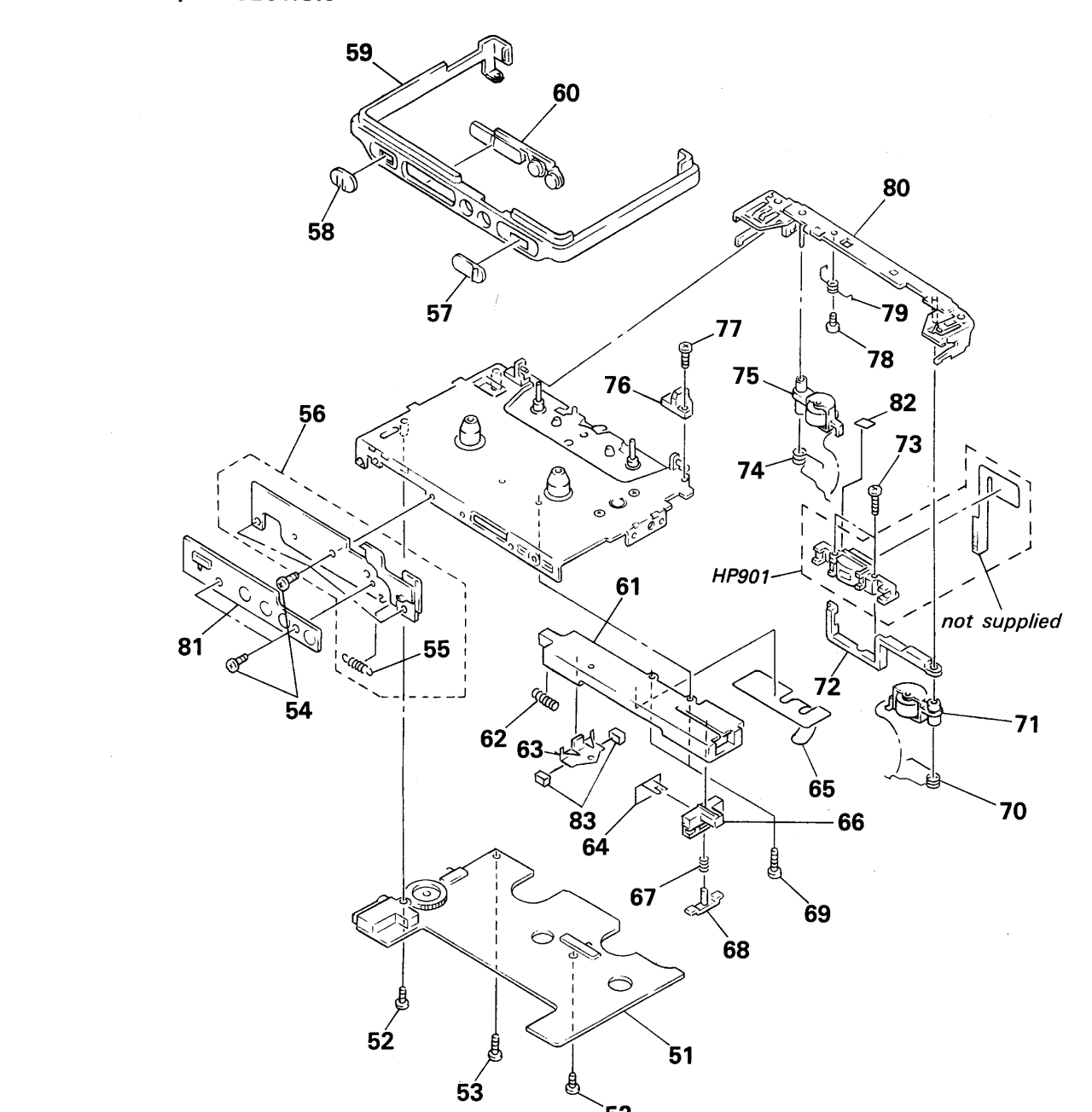
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	
1	3-917-020-01	LID, BATTERY CASE		7	X-3386-975-1	ARM ASSY, CLICK		
2	3-904-655-01	KNOB (NO)		8	3-704-197-03	SCREW (M1.4X4.0), LOCKING		
3	3-917-019-01	CASE (EX502)		9	X-3386-544-1	LID ASSY (TC-1), CASSETTE (EX502)		
4	3-917-019-11	CASE (EX508)		10	X-3386-545-1	LID ASSY (TC-2), CASSETTE (EX508)		
5	3-704-197-42	SCREW (M1.4X2.2), LOCKING		11	3-365-630-11	SCREW (M1.4)		
6	3-917-021-01	KNOB (AVLS)		12	1-504-628-11	HEADPHONE (WITH REMOTE CONTROL) (EX508)		
					12	8-953-538-90	HEADPHONE MDR-E741/K SET (EX502)	

SECTION 6 EXPLODED VIEWS

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

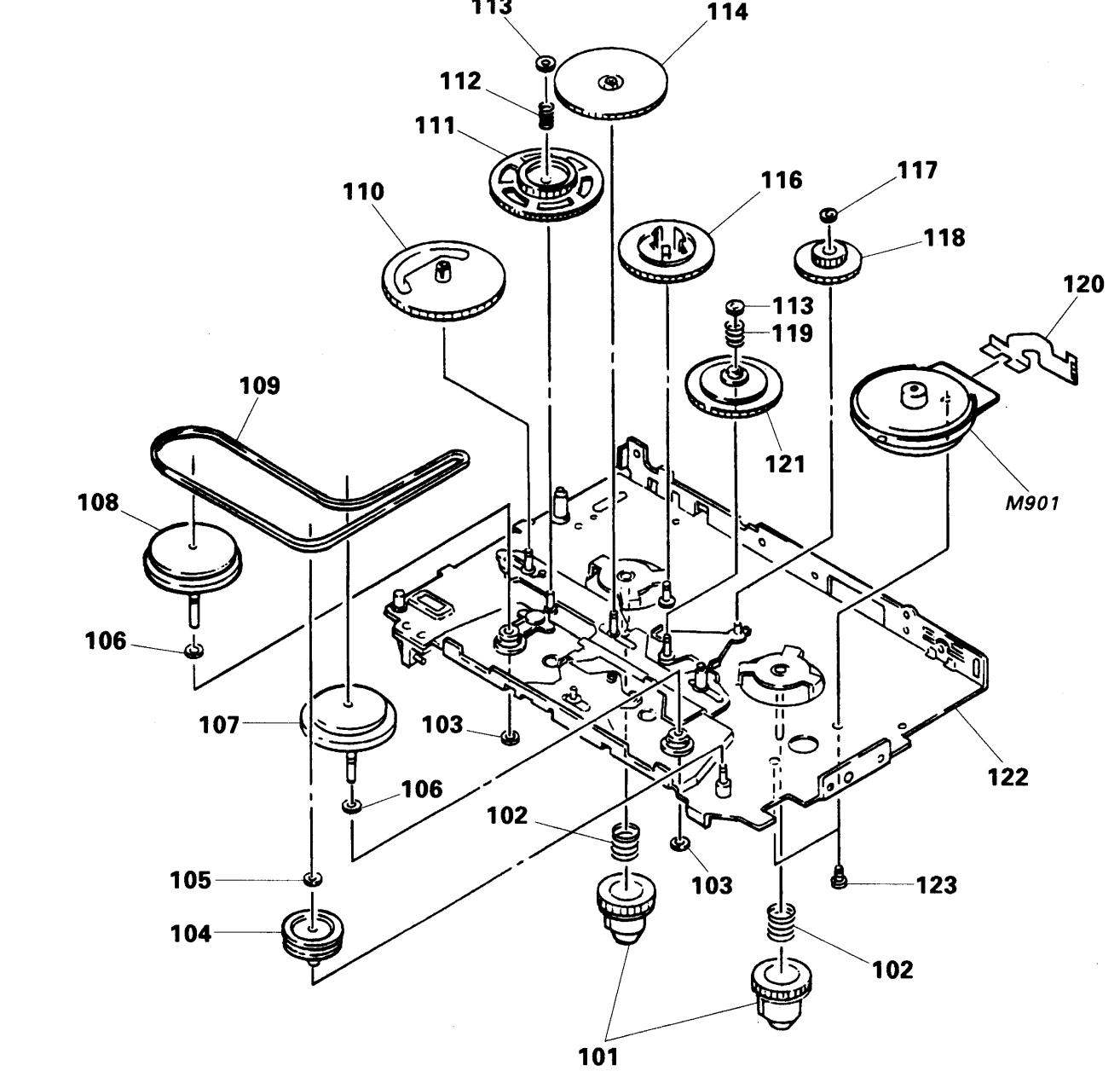
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

6-2. BOARD, MD SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	A-3016-622-A	AUDIO BOARD, COMPLETE		68	3-917-008-01	BUTTON (- TERMINAL)	
52	3-335-797-01	SCREW (M1.4X2), TOOTHED LOCK		69	3-704-197-43	SCREW (M1.4X4.0), LOCKING	
53	3-335-797-61	SCREW (M1.4X4.0), TOOTHED LOCK		70	3-386-685-02	SPRING (PINCH R)	
54	3-386-892-01	SCREW (M1.4)		71	X-3386-296-1	PINCH LEVER (R) ASSY	
55	3-376-248-01	SPRING, TENSION		* 72	3-386-646-01	LEVER, HEAD	
56	X-3386-976-1	BRACKET ASSY		73	3-704-413-31	SCREW (M1.4X7.2)	
57	3-917-019-01	KNOB (OPEN)		74	3-386-684-02	SPRING (PINCH R)	
58	3-917-004-01	KNOB (HOLD)		75	X-3386-296-1	PINCH LEVER (N) ASSY	
59	3-917-016-01	ORNAMENT, REEL		76	3-386-704-01	GUIDE (R), HOLDER	
60	3-917-017-01	BUTTON, CONTROL		77	3-704-197-21	SCREW (M1.4X2.5), LOCKING	
61	3-917-009-01	CASE, BATTERY		78	6-827-553-17	PRECISION SCREW * P X22 TYPE 3	
62	3-917-012-01	SPRING (- TERMINAL)		79	3-386-683-01	SPRING (D)	
63	3-917-011-01	TERMINAL BOARD (-), BATTERY		80	X-3386-299-1	HOLDER ASSY	
64	3-917-006-01	TERMINAL BOARD (+), BATTERY		* 81	1-853-712-11	SWITCH BOARD	
65	3-917-010-01	SHEET (BATTERY)		82	3-907-859-01	SPACER (D)	
66	3-917-005-01	GUIDE (+ TERMINAL)		83	3-918-165-01	SPACER (- TERMINAL)	
67	3-917-007-01	SPRING (BUTTON)		HP901	1-500-149-11	HEAD, MAGNETIC (PLAYBACK)	

6-3. MD SECTION (MT-WMEX502-60)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-386-634-01	GEAR (REEL)		112	3-386-663-01	SPRING, COMPRESSION	
102	3-386-662-01	SPRING, COMPRESSION		113	3-386-694-01	WASHER	
103	3-325-394-01	WASHER, STOPPER		114	3-386-893-01	GEAR (R)	
104	3-386-711-01	PULLEY (REVERSE)		115	3-386-513-01	GEAR (P)	
105	3-338-645-21	WASHER (0.8-2.5)		117	3-338-645-31	WASHER (0.8-2.5)	
106	3-906-633-01	WASHER		118	3-386-632-01	GEAR (D)	
107	X-3386-837-1	WHEEL (RS) ASSY, CAPSTAN		119	3-904-227-01	SPRING, COMPRESSION	
108	X-3386-836-1	WHEEL (NS) ASSY, CAPSTAN		120	1-649-226-11	MOTOR FLEXIBLE BOARD	
109	3-906-638-01	BELT		121	X-3386-293-1	CLUTCH ASSY	
110	3-386-852-01	GEAR (CAM)		122	X-3386-295-1	CHASSIS ASSY (X)	
111	3-386-631-01	GEAR (A)		123	3-906-645-01	SCREW	
				M001	1-688-417-11	MOTOR	

SECTION 7 ELECTRICAL PARTS LIST

AUDIO

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.

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

Ref. No.	Part No.	Description	Remark
	A-3016-622-A	AUDIO BOARD, COMPLETE	
		< CAPACITOR >	
C101	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C102	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C103	1-128-014-11	ELECT. CHIP	10uF 0 4V
C104	1-162-931-11	CERAMIC CHIP	0.01uF 50V
C105	1-164-489-11	CERAMIC CHIP	0.22uF 10% 16V
C106	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C107	1-164-346-11	CERAMIC CHIP	1uF 16V
C108	1-155-330-11	CERAMIC CHIP	0.47uF 10% 16V
C109	1-164-489-11	CERAMIC CHIP	0.22uF 10% 16V
C110	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C111	1-164-005-11	CERAMIC CHIP	0.47uF 25V
C112	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C201	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C202	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C203	1-128-015-11	ELECT. CHIP	22uF 0 4V
C204	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C205	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C206	1-164-346-11	CERAMIC CHIP	1uF 16V
C207	1-165-300-11	CERAMIC CHIP	0.47uF 10% 16V
C208	1-164-489-11	CERAMIC CHIP	0.22uF 10% 16V
C209	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C210	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C211	1-164-005-11	CERAMIC CHIP	0.47uF 25V
C212	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C301	1-164-346-11	CERAMIC CHIP	1uF 16V
C302	1-164-005-11	CERAMIC CHIP	0.47uF 10% 25V
C303	1-128-033-21	ELECT. CHIP	2.2uF 0 25V
C304	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C305	1-128-033-21	ELECT. CHIP	2.2uF 0 25V
C306	1-128-028-11	ELECT. CHIP	3.3uF 0 16V
C307	1-128-015-11	ELECT. CHIP	22uF 0 4V
C308	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C309	1-128-028-11	ELECT. CHIP	3.3uF 0 16V
C310	1-128-015-11	ELECT. CHIP	22uF 0 4V
C311	1-164-346-11	CERAMIC CHIP	1uF 16V

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D301	8-719-977-51	DIODE DT25, 6B	
D302	8-719-977-51	DIODE DT25, 6B	
D501	8-719-420-51	DIODE MAT29	
D502	8-719-420-51	DIODE MAT29	
D702	8-719-028-34	LED CL-1700R-CD (RATT)	
D703	8-719-421-35	DIODE MA147-TX	
D704	8-719-421-35	DIODE MA147-TX	
		< IC >	
IC301	8-759-273-41	IC BA3610KV	
IC302	8-759-275-46	IC NJM2185V-T22	
IC501	8-759-273-39	IC BA9752FV-E1	
IC601	8-759-275-47	IC LB1674V-TM	
IC701	8-759-296-95	IC MS50929-604FP	
		< JACK >	
J301	1-668-568-11	JACK 7P (REMOTE/?)	

AUDIO

Ref. No.	Part No.	Description	Remark
< COIL >			
L301	1-414-406-21	INDUCTOR 220uH	
L501	1-414-449-21	INDUCTOR 100uH	
L502	1-414-406-21	INDUCTOR 220uH	
< PHOTO INTERRUPTER >			
PH701	8-749-925-05	REFLECTOR NJL5183KA-F20-TE1	
< TRANSISTOR >			
Q501	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q601	8-729-230-72	TRANSISTOR 2SA1362YG	
Q602	8-729-230-72	TRANSISTOR 2SA1362YG	
Q603	8-729-230-72	TRANSISTOR 2SA1362YG	
Q701	8-729-230-72	TRANSISTOR 2SA1362YG	
Q702	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q703	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q704	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q705	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q706	8-729-402-32	TRANSISTOR 2SD1819A-R	
< RESISTOR >			
R101	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R102	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R103	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
R104	1-216-815-11	METAL CHIP 330 5% 1/16W	
R201	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R202	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R203	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
R204	1-216-815-11	METAL CHIP 330 5% 1/16W	
R302	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R303	1-216-818-11	METAL CHIP 560 5% 1/16W	
R304	1-218-729-11	METAL CHIP 36K 0.50% 1/16W	
R305	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R306	1-216-861-11	METAL CHIP 2.2M 5% 1/16W	
R307	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R308	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R501	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R502	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R601	1-216-809-11	METAL CHIP 100 5% 1/16W	
R602	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R603	1-216-815-11	METAL CHIP 330 5% 1/16W	
R604	1-216-809-11	METAL CHIP 100 5% 1/16W	
R605	1-216-809-11	METAL CHIP 100 5% 1/16W	
R606	1-216-809-11	METAL CHIP 100 5% 1/16W	
R607	1-216-837-11	METAL CHIP 22K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R608	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R701	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R702	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R703	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R704	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R705	1-218-706-11	METAL CHIP 3.9K 0.50% 1/16W	
R706	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R707	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R708	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R709	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R710	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R711	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R712	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R713	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R714	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R715	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R716	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R717	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R718	1-216-815-11	METAL CHIP 330 5% 1/16W	
R719	1-216-819-11	METAL CHIP 680 5% 1/16W	
R720	1-216-804-11	METAL CHIP 39 5% 1/16W	
R721	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R722	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R723	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R724	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R725	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R726	1-216-845-11	METAL CHIP 100K 5% 1/16W	
< VARIABLE RESISTOR >			
RV301	1-223-730-11	RES, VAR 30K/30K (VOL)	
RV601	1-223-586-21	RES, ADJ, CARBON 10K	
< SWITCH >			
S301	1-762-078-21	SWITCH, SLIDE (TAPE)	
S302	1-762-078-21	SWITCH, SLIDE (DOLBY NR)	
S303	1-762-079-21	SWITCH, SLIDE (MEGA BASS)	
S304	1-762-079-21	SWITCH, SLIDE (AVLS)	
S701	1-692-370-11	SWITCH, SLIDE (MD MODE)	
S702	1-572-287-21	SWITCH, PUSH (TAPE DET)	
< VIBRATOR >			
X701	1-577-248-11	OSCILLATOR, CERAMIC 400KHz	

SWITCH

Ref. No.	Part No.	Description	Remark
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SWITCH BOARD, COMPLETE

* 1-653-712-11 PC BOARD, SWITCH BOARD

< RESISTOR >

R401	1-218-692-11	METAL CHIP	1K 0.50% 1/16W
R402	1-218-698-11	METAL CHIP	1.8K 0.50% 1/16W
R403	1-218-704-11	METAL CHIP	3.3K 0.50% 1/16W

< SWITCH >

S401	1-692-453-11	SWITCH, KEY BOARD (STOP)
S402	1-692-453-11	SWITCH, KEY BOARD (PLAY)
S403	1-692-453-11	SWITCH, KEY BOARD (FF)
S404	1-692-453-11	SWITCH, KEY BOARD (REW)
S405	1-762-078-21	SWITCH, SLIDE (HOLD ↗)

MISCELLANEOUS

11	1-504-628-11	HEADPHONE (WITH REMOTE CONTROL) (EX508)
12	8-953-538-90	HEADPHONE MDR-E741//K SET (EX502)
HP901	1-500-149-11	HEAD, MAGNETIC (PLAYBACK)
M901	1-698-417-11	MOTOR

ACCESSORIES & PACKING MATERIALS

	1-504-628-11	HEADPHONE (WITH REMOTE CONTROL) (EX508)
△	1-528-252-11	BATTERY CHARGER (BC-7S) (EX508:UK)
	1-528-543-11	BATTERY, NICKEL CADMIUM (NC-6WM) (EX508:E)
	1-528-543-21	BATTERY, NICKEL CADMIUM (NC-6WM) (EX508:AEP, UK)
	1-528-544-11	CHARGER, BATTERY (BC-7DT) (EX508:E)
	1-528-546-11	CHARGER, BATTERY (BC-7SY) (EX508:AEP)
△	1-569-007-11	ADAPTER, CONVERSION 2P (EX508:E)
	3-759-345-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH, CHINESE)
	3-759-345-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH) (AEP)
	3-759-345-51	MANUAL, INSTRUCTION (FRENCH, ITALIAN, PORTUGUESE) (AEP)
	3-917-023-01	CASE, CARRYING
*	3-918-135-01	CUSHION
*	3-918-136-01	INDIVIDUAL CARTON (EX502)
*	3-918-138-01	INDIVIDUAL CARTON (EX508:AEP, UK)
*	3-918-141-01	INDIVIDUAL CARTON (EX508:E)
*	8-953-538-90	HEADPHONE MDR-E741//K SET (EX502)

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

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WM-EX502/EX508

SONY®
SERVICE MANUAL

AEP Model
E Model
WM-EX502/EX508

UK Model
Australian Model
WM-EX508

SUPPLEMENT-1

File this supplement with the service manual.

Subject : 1. Model Addition (WM-EX508 : Australian Model)
2. PARTS CHANGED
3. SERVICE PARTS CHANGED
4. Board change

(ECN-WM401154)

1. Model Addition (WM-EX508: Australian model)

- For detailed Australian model, refer to E model.

Difference Table

Page	WM-EX508 (E model)			WM-EX508 (Australian model)		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
24		3-918-141-01	INDIVIDUAL CARTON	*	3-926-069-01	INDIVIDUAL CARTON

2. PARTS CHANGED

Page	FORMER			NEW		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
19	4	3-704-197-42	SCREW (M1. 4X2. 2), LOCKING	4	3-704-197-23	SCREW (M1. 4X2. 5), LOCKING
20	69	3-704-197-63	SCREW (M1. 4X4. 0), LOCKING	69	3-704-197-82	SCREW (M1. 4X5. 0), LOCKING
24		1-528-543-21	BATTERY, NICKEL CADMIUM (NC-6WM) (EX508:AEP, UK)		1-528-543-22	BATTERY, NICKEL CADMIUM (NC-6WM) (EX508:AEP, UK)

3. SERVICE PARTS CHANGED

- Revise your service manual as shown below due to parts supply classification has been changed.

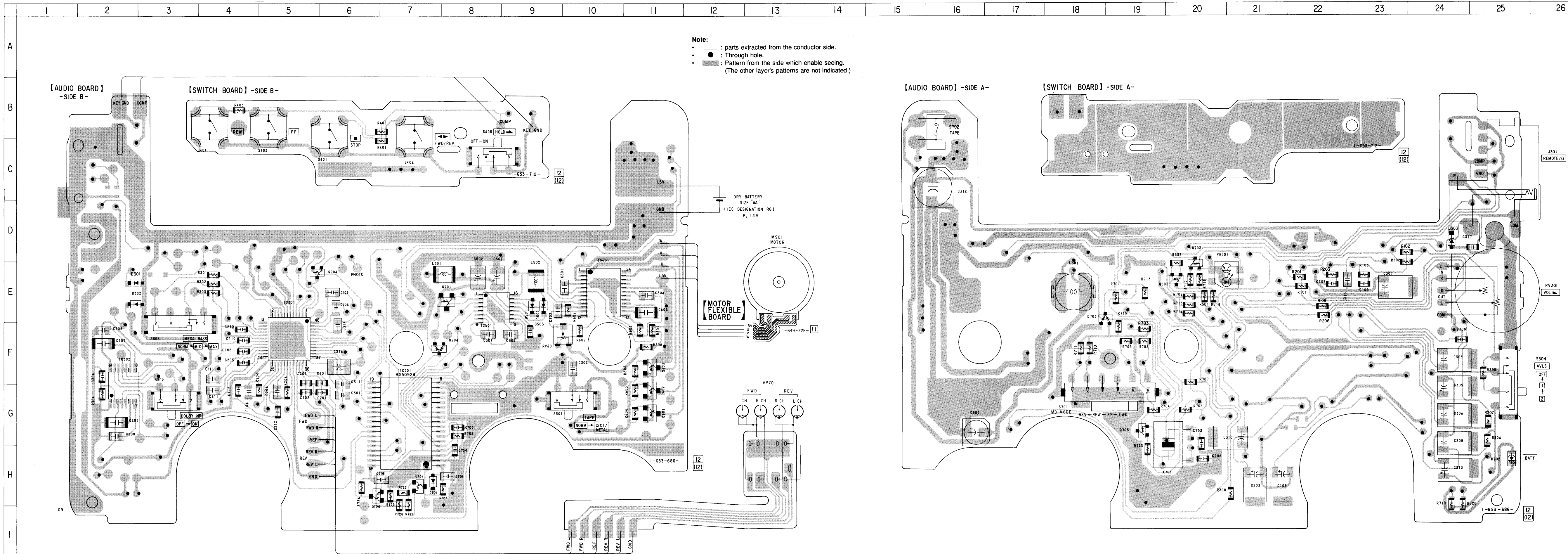
Page	CURRENT			REVISED		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
21	121	X-3366-293-1	CLUTCH ASSY	121	X-3370-392-2	CLUTCH ASSY

4. Board change

PRINTED WIRING BOARD — AUDIO SECTION —

• Semiconductor Location

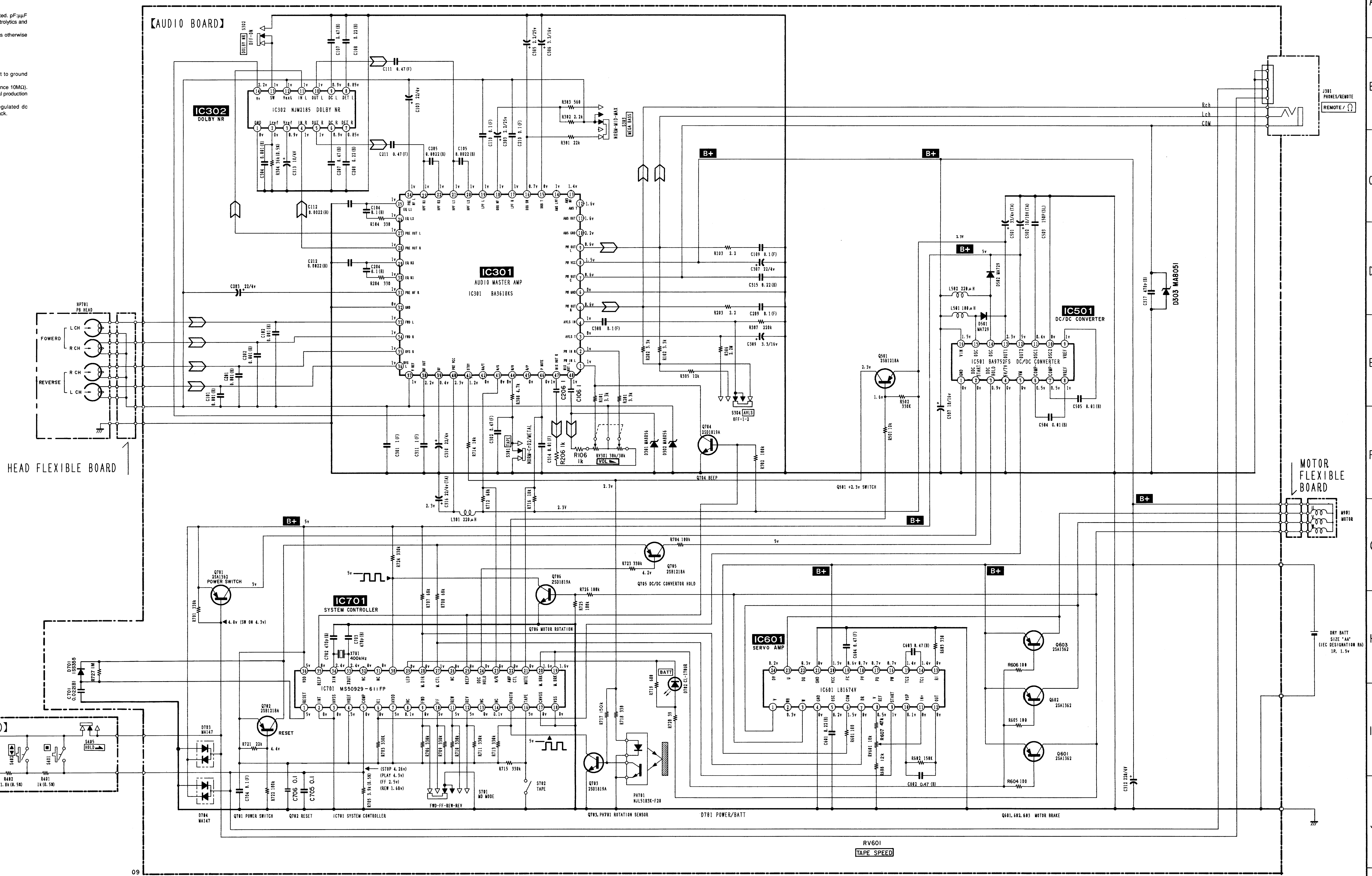
Ref. No.	Location
D301	E-2
D302	E-2
D303	D-24
D501	E-9
D502	E-9
D701	H-7
D702	H-25
D703	E-18
D704	F-8
IC301	F-5
IC302	F-2
IC501	E-8
IC601	E-10
IC701	F-7
PH701	E-20
Q501	E-20
Q601	G-11
Q602	G-11
Q603	F-11
Q701	E-8
Q702	H-7
Q703	E-20
Q704	E-6
Q705	G-19
Q706	H-6



Note:
 • : parts extracted from the conductor side.
 • : Through hole.
 • : Pattern from the side which enable seeing.
 (The other layer's patterns are not indicated.)

SCHEMATIC DIAGRAM — AUDIO SECTION —

- Note:
- All capacitors are in μF unless otherwise noted. $\text{pF} = 10^{-12}\text{F}$, 50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
 - % : indicates tolerance.
 - : panel designation.
 - B+ : B+ Line
 - ↔ : adjustment for repair.
 - Voltage and waveforms are dc with respect to ground under no-signal conditions.
 - Voltages are taken with a VOM (input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
 - Power voltage is dc 1.5V and fed with regulated dc power supply from external power voltage jack.
 - Signal path.
 - : PB



ELECTRICAL PARTS LIST

NOTE:

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

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable

- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA..., uPB...: μ PB...,
uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
uF : μ F
- COILS
uH : μ H

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-3016-622-A	AUDIO BOARD, COMPLETE *****		C316	1-135-202-21	TANTAL. CHIP 22uF 20%	4V
		< CAPACITOR >		C317	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
C101	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C501	1-135-318-11	TANTAL. CHIP 33uF	20% 4V
C102	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C502	1-135-216-11	TANTALUM CHIP 10uF	20% 10V
C103	1-128-015-11	ELECT CHIP 22uF	0 4V	C503	1-162-955-11	CERAMIC CHIP 150PF	5% 50V
C104	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C504	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C105	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V	C505	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C106	1-164-346-11	CERAMIC CHIP 1uF	16V	C507	1-124-779-00	ELECT CHIP 10uF	20% 16V
C107	1-165-320-11	CERAMIC CHIP 0.47uF 10%	16V	C601	1-164-489-11	CERAMIC CHIP 0.22uF	10% 16V
C108	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V	C602	1-107-823-11	CERAMIC CHIP 0.47uF	10% 16V
C109	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C603	1-165-320-11	CERAMIC CHIP 0.47uF	10% 16V
C110	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C604	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C111	1-164-005-11	CERAMIC CHIP 0.47uF	25V	C701	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C112	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V	C702	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
C201	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C703	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
C202	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C704	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C203	1-128-015-11	ELECT CHIP 22uF	0 4V	C705	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C204	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	C706	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C205	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V			< DIODE >	
C206	1-164-346-11	CERAMIC CHIP 1uF	16V	D301	8-719-977-03	DIODE DTZ5.6B	
C207	1-165-320-11	CERAMIC CHIP 0.47uF 10%	16V	D302	8-719-977-03	DIODE DTZ5.6B	
C208	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V	D303	8-719-422-46	DIODE MA8056	
C209	1-164-156-11	CERAMIC CHIP 0.1uF	25V	D501	8-719-420-51	DIODE MA729	
C210	1-164-156-11	CERAMIC CHIP 0.1uF	25V	D502	8-719-420-51	DIODE MA729	
C211	1-164-005-11	CERAMIC CHIP 0.47uF	25V	D701	8-719-988-62	DIODE 1SS355	
C212	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V	D702	8-719-026-34	DIODE CL-170UR-CD	
C301	1-164-346-11	CERAMIC CHIP 1uF	16V	D703	8-719-421-33	DIODE MA147	
C302	1-164-005-11	CERAMIC CHIP 0.47uF	25V	D704	8-719-421-33	DIODE MA147	
C303	1-128-033-11	ELECT CHIP 2.2uF	0 25V			< IC >	
C304	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	IC301	8-759-273-41	IC BA3610KV	
C305	1-128-033-11	ELECT CHIP 2.2uF	0 25V	IC302	8-759-275-48	IC NJM2185V-TE2	
C306	1-128-028-11	ELECT CHIP 3.3uF	0 16V	IC501	8-759-273-39	IC BA9752FV-E1	
C307	1-128-015-11	ELECT CHIP 22uF	0 4V	IC601	8-759-275-47	IC LB1674V-TLM	
C308	1-164-156-11	CERAMIC CHIP 0.1uF	25V	IC701	8-759-325-66	IC MS50929-611FP	
C309	1-128-028-11	ELECT CHIP 3.3uF	0 16V			< JACK >	
C310	1-128-015-11	ELECT CHIP 22uF	0 4V	J301	1-766-568-11	JACK 7P	
C311	1-164-346-11	CERAMIC CHIP 1uF	16V			< COIL >	
C312	1-126-246-11	ELECT CHIP 220uF 20%	4V	L301	1-414-406-11	INDUCTOR 220uH	
C313	1-128-014-11	ELECT CHIP 10uF	0 4V				
C314	1-163-031-11	CERAMIC CHIP 0.01uF	50V				
C315	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V				

AUDIO SWITCH

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
L501	1-414-449-11	INDUCTOR	100uH	R704	1-216-845-11	METAL CHIP	100K 5% 1/16W
L502	1-414-406-11	INDUCTOR	220uH	R705	1-218-706-11	METAL CHIP	3.9K 0.50% 1/16W
< PHOTO INTERRUPTER >				R706	1-216-851-11	METAL CHIP	330K 5% 1/16W
PH701	8-749-925-05	REFLECTOR NJL5183KA-F20-TE1		R707	1-216-843-11	METAL CHIP	68K 5% 1/16W
< TRANSISTOR >				R708	1-216-843-11	METAL CHIP	68K 5% 1/16W
Q501	8-729-030-54	TRANSISTOR	MSB1218A-RT1	R709	1-216-851-11	METAL CHIP	330K 5% 1/16W
Q601	8-729-230-72	TRANSISTOR	2SA1362YG	R710	1-216-851-11	METAL CHIP	330K 5% 1/16W
Q602	8-729-230-72	TRANSISTOR	2SA1362YG	R711	1-216-851-11	METAL CHIP	330K 5% 1/16W
Q603	8-729-230-72	TRANSISTOR	2SA1362YG	R712	1-216-843-11	METAL CHIP	68K 5% 1/16W
Q701	8-729-230-72	TRANSISTOR	2SA1362YG	R713	1-216-851-11	METAL CHIP	330K 5% 1/16W
Q702	8-729-030-54	TRANSISTOR	MSB1218A-RT1	R714	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q703	8-729-030-53	TRANSISTOR	MSD1819A-RT1	R715	1-216-851-11	METAL CHIP	330K 5% 1/16W
Q704	8-729-030-53	TRANSISTOR	MSD1819A-RT1	R716	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q705	8-729-030-54	TRANSISTOR	MSB1218A-RT1	R717	1-216-847-11	METAL CHIP	150K 5% 1/16W
Q706	8-729-030-53	TRANSISTOR	MSD1819A-RT1	R718	1-216-815-11	METAL CHIP	330 5% 1/16W
< RESISTOR >				R719	1-216-819-11	METAL CHIP	680 5% 1/16W
R101	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R720	1-216-804-11	METAL CHIP	39 5% 1/16W
R102	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R721	1-216-837-11	METAL CHIP	22K 5% 1/16W
R103	1-216-789-11	METAL CHIP	2.2 5% 1/16W	R722	1-216-845-11	METAL CHIP	100K 5% 1/16W
R104	1-216-815-11	METAL CHIP	330 5% 1/16W	R723	1-216-851-11	METAL CHIP	330K 5% 1/16W
R106	1-216-821-11	METAL CHIP	1K 5% 1/16W	R724	1-216-851-11	METAL CHIP	330K 5% 1/16W
R201	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R725	1-216-845-11	METAL CHIP	100K 5% 1/16W
R202	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	R726	1-216-845-11	METAL CHIP	100K 5% 1/16W
R203	1-216-789-11	METAL CHIP	2.2 5% 1/16W	R727	1-216-857-11	METAL CHIP	1M 5% 1/16W
R204	1-216-815-11	METAL CHIP	330 5% 1/16W	< VARIABLE RESISTOR >			
R206	1-216-821-11	METAL CHIP	1K 5% 1/16W	RV301	1-223-730-11	RES, VAR, CARBON 30K/30K (VOL ▲)	
R301	1-216-837-11	METAL CHIP	22K 5% 1/16W	RV601	1-223-586-11	RES, ADJ, CARBON 10K	
R302	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	< SWITCH >			
R303	1-216-818-11	METAL CHIP	560 5% 1/16W	S301	1-762-078-11	SWITCH, SLIDE (TAPE)	
R304	1-218-729-11	METAL CHIP	36K 0.50% 1/16W	S302	1-762-078-11	SWITCH, SLIDE (DOLBY NR)	
R305	1-216-834-11	METAL CHIP	12K 5% 1/16W	S303	1-762-079-11	SWITCH, SLIDE (MEGA BASS)	
R306	1-216-861-11	METAL CHIP	2.2M 5% 1/16W	S304	1-762-079-11	SWITCH, SLIDE (AVLS)	
R307	1-216-849-11	METAL CHIP	220K 5% 1/16W	S701	1-692-370-11	SWITCH, SLIDE (MD MODE)	
R308	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	S702	1-572-287-21	SWITCH, PUSH (TAPE DET)	
R501	1-216-833-11	METAL CHIP	10K 5% 1/16W	< VIBRATOR >			
R502	1-216-851-11	METAL CHIP	330K 5% 1/16W	X701	1-577-248-11	OSCILLATOR, CERAMIC (400KHz)	
R601	1-216-809-11	METAL CHIP	100 5% 1/16W	*****			
R602	1-216-847-11	METAL CHIP	150K 5% 1/16W	*	1-653-712-11	SWITCH BOARD	
R603	1-216-815-11	METAL CHIP	330 5% 1/16W	*****			
R604	1-216-809-11	METAL CHIP	100 5% 1/16W	< RESISTOR >			
R605	1-216-809-11	METAL CHIP	100 5% 1/16W	R401	1-218-692-11	METAL CHIP	1K 0.50% 1/16W
R606	1-216-809-11	METAL CHIP	100 5% 1/16W	R402	1-218-698-11	METAL CHIP	1.8K 0.50% 1/16W
R607	1-216-841-11	METAL CHIP	47K 5% 1/16W	R403	1-218-704-11	METAL CHIP	3.3K 0.50% 1/16W
R608	1-216-834-11	METAL CHIP	12K 5% 1/16W				
R701	1-216-851-11	METAL CHIP	330K 5% 1/16W				
R702	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R703	1-216-851-11	METAL CHIP	330K 5% 1/16W				

SWITCH

<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
		< SWITCH >	
S401	1-692-453-11	SWITCH, KEY BOARD (■)	
S402	1-692-453-11	SWITCH, KEY BOARD (◀▶)	
S403	1-692-453-11	SWITCH, KEY BOARD (FF)	
S404	1-692-453-11	SWITCH, KEY BOARD (REW)	
S405	1-762-078-11	SWITCH, SLIDE (HOLD)	

		MISCELLANEOUS	

11	1-504-628-11	HEADPHONE (WITH REMOTE CONTROL) (EX508)	
12	8-953-538-90	HEADPHONE MDR-E741//K SET (EX502)	
120	1-649-228-11	MOTOR FLEXIBLE BOARD	
HP901	1-500-149-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-698-417-11	MOTOR	

WM-EX502/EX508

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AEP Model
E Model

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UK Model

Australian Model

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SUPPLEMENT-2

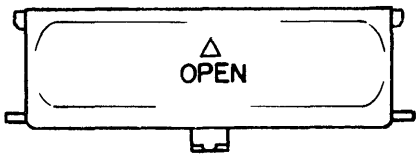
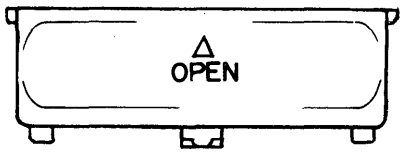
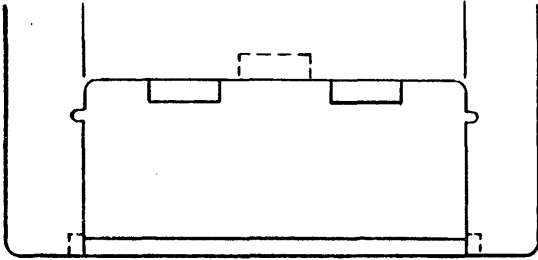
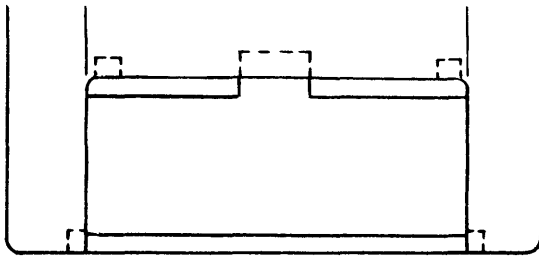
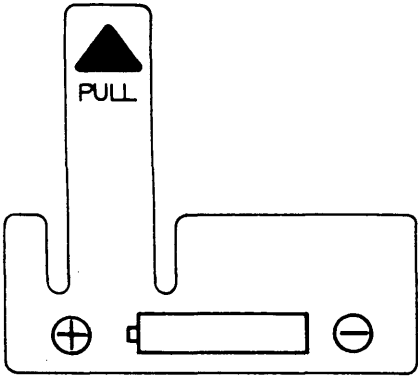
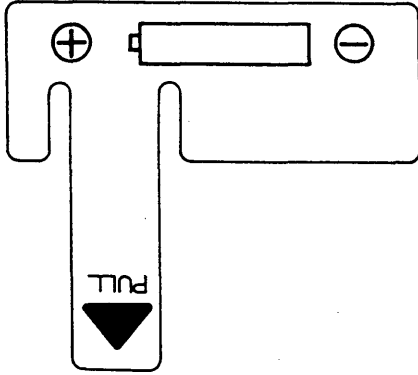
File this supplement with the service manual.

Subject : PARTS CHANGED

(PRC-95086)

- According to the change of parts, there is no interchangeability between the parts FORMER TYPE and the parts of NEW TYPE due to big difference of shapes.
When you order the parts, check the shape whether FORMER TYPE or NEW TYPE in advance.

• The following parts have been changed as below.

FORMER				NEW			
Ref. No	Part No	Description	Remark	Ref. No	Part No	Description	Remark
1	3-917-020-01	LID, BATTERY CASE		1	3-917-020-02	LID, BATTERY CASE	
							
3	3-917-019-01	CASE (TC) (EX502)		3	3-917-019-02	CASE (TC) (EX502)	
3	3-917-019-11	CASE (TC) (EX508)		3	3-917-019-14	CASE (TC) (EX508)	
							
65	3-917-010-01	SHEET (BATTERY)		65	3-925-847-01	SHEET (BATTERY)	
							
3-759-345-11 MANUAL, INSTRUCTION (ENGLISH, SPANISH, CHINESE)				3-759-345-13 MANUAL, INSTRUCTION (ENGLISH, SPANISH, CHINESE)			

• Interchangeability table

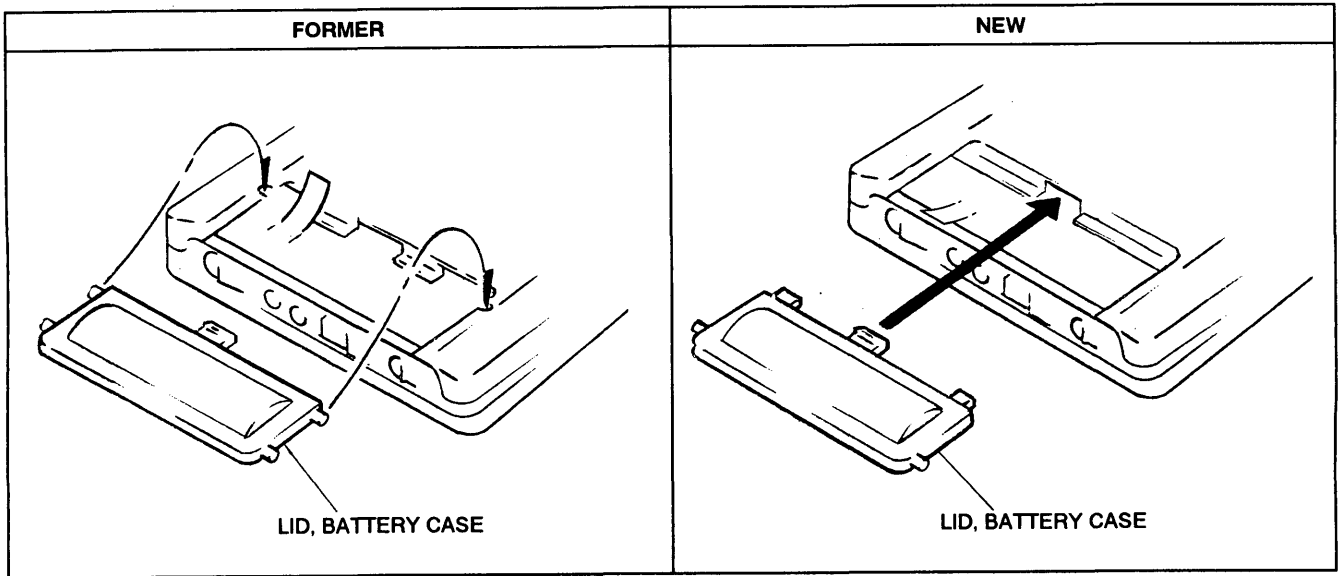
		LID, BATTERY CASE	
		FORMER	NEW
CASE (TC)	FORMER	○	×
	NEW	×	○

		SHEET (BATTERY)	
		FORMER	NEW
CASE (TC)	FORMER	○	×
	NEW	×	○

		LID, BATTERY CASE	
		FORMER	NEW
SHEET (BATTERY)	FORMER	○	×
	NEW	×	○

- The former parts and the new parts have its own way to install.

How to install



WM-EX502/EX508

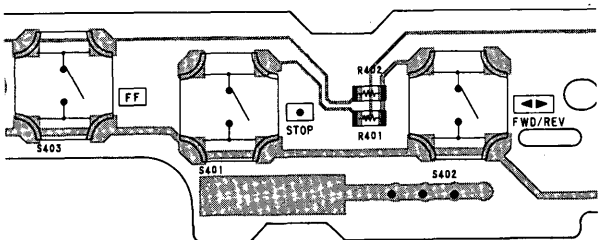
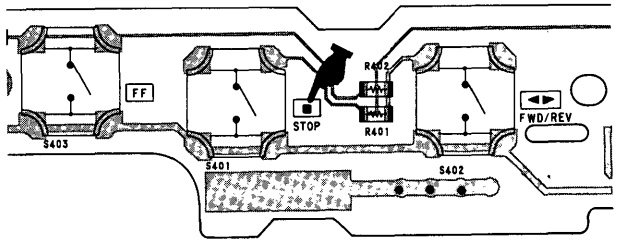
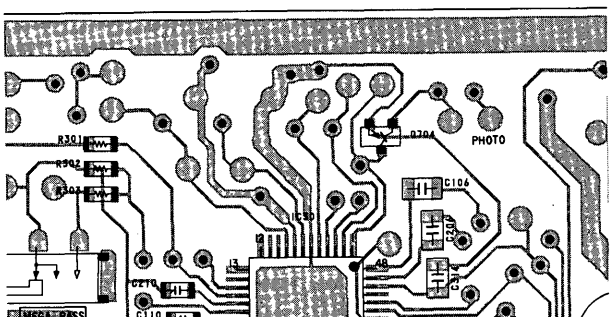
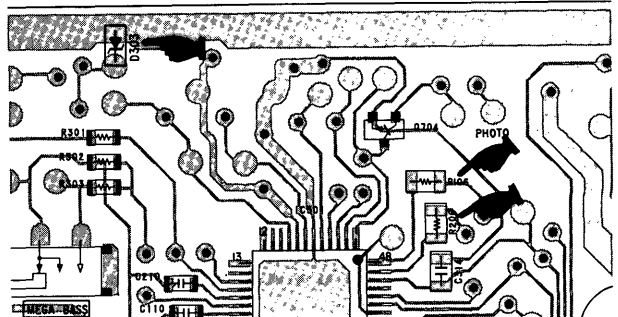
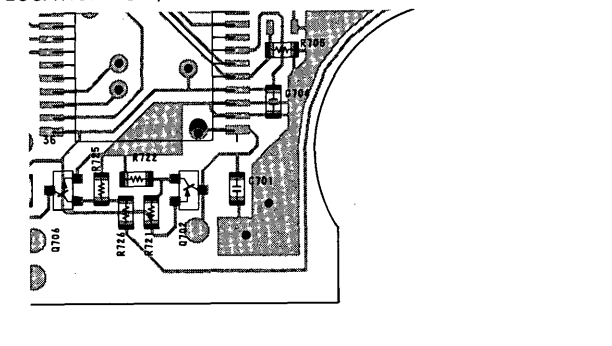
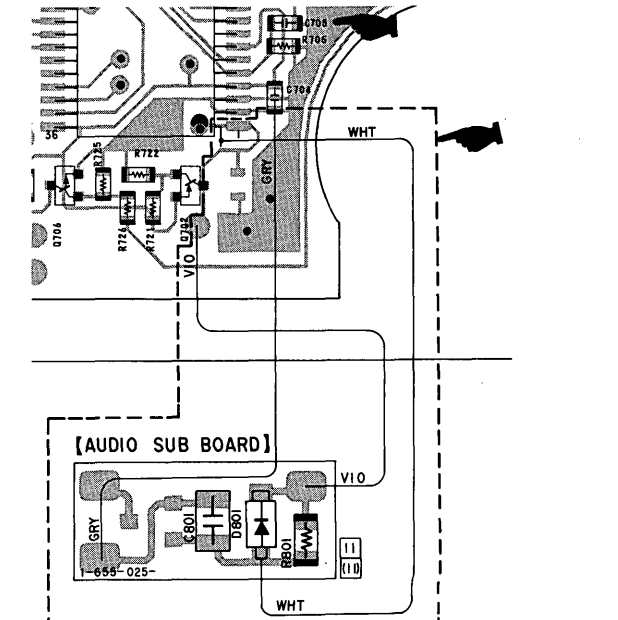
SONY[®] SERVICE MANUAL

AEP Model
E Model
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UK Model
WM-EX508

CORRECTION-1

Correct your service manual as shown below.

 : Indicates corrected portion.

Page	INCORRECT	CORRECT
	<p>LOCATION : B-C, 5-7</p> 	
10	<p>LOCATION : D-F, 4-6</p> 	
	<p>LOCATION : G-I, 6-8</p> 	

Page	INCORRECT	CORRECT
13	<p>LOCATION : H-I, 3-5</p>	<p>CORRECT</p>
15	<p>LOCATION : E-F, 8-9</p>	<p>CORRECT</p>
17	<p>LOCATION : D-E, 14-15</p>	<p>CORRECT</p>
22	<p>C106 1-164-346-11 CERAMIC CHIP 1uF 16V</p> <p>C206 1-164-346-11 CERAMIC CHIP 1uF 16V</p> <p>C701 1-164-156-11 CERAMIC CHIP 0.1uF 25V</p>	<p>DELETE</p> <p>DELETE</p> <p>DELETE</p> <p>C705 1-164-156-11 CERAMIC CHIP 0.1uF 25V</p> <p>D303 8-719-422-37 DIODE MA8051</p>
23		<p>R106 1-216-049-00 METAL CHIP 1K 5% 1/10W</p> <p>R206 1-216-049-00 METAL CHIP 1K 5% 1/10W</p> <p>* 1-655-025-11 AUDIO SUB BOARD</p> <p>*****</p> <p>C801 1-163-037-11 CERAMIC CHIP 0.022uF 10% 25V</p> <p>D801 8-719-988-62 DIODE 1SS355</p> <p>R801 1-216-857-11 METAL CHIP 1M 5% 1/16W</p>