

WM-EX1/EX1HG

SERVICE MANUAL

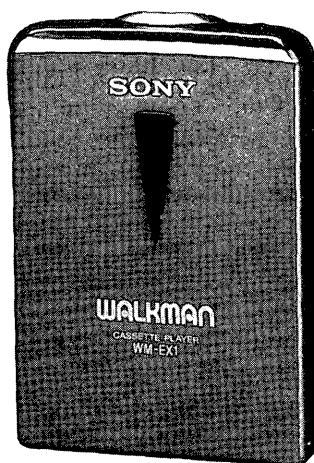


Photo : WM-EX1

US Model
WM-EX1
AEP Model
UK Model
WM-EX1HG
Canadian Model
E Model
Tourist Model
WM-EX1/EX1HG

Model Name Using Similer Mechanism	NEW
Tape Transport Mechanism Type	MT-WMEX1-112

SPECIFICATIONS

Tape section

Frequency response
(Dolby NR* off)

Playback: 30-18,000 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

One R6 (size AA) battery

Dimensions (w/h/d)

Approx. 79.7 x 111.8 x 21.1 mm,
incl. projecting parts and controls

Mass

EX1: Approx. 160 g

EX1HG: Approx. 165 g

Incl. rechargeable battery,
headphones with remote control
and cassette:

EX1: Approx. 220 g

EX1HG: Approx. 225 g

Supplied accessories

Battery case (1)

Stereo headphones with remote
control (1)

Ear adaptors (2)

Battery charger (1)

Rechargeable battery (NH-9WM
(S), 1.2 V, 1,000 mAh, Ni-MH) (1)
Carrying pouch (1)
Cleaning cloth (1) (EX1HG only):
Supplied in the carrying pouch.

Design and specifications subject to
change without notice.

When to charge the battery

Charge the battery when the BATT
lamp goes off and "CD" in the
display of remote control flashes.
You can charge the battery about
300 times.

Battery life (Approx. hours)

Rechargeable battery (NH-9WM (S))

Tape playback	12
	36 (with Sony alkaline AM3 (N))

If using the NC-6WM rechargeable battery

Charge it in the same procedure as
that of the NH-9WM (S)
rechargeable battery indicated
before. For full-charging, it takes 30
minutes.

Battery life (Approx. hours)

Rechargeable battery (NC-6WM)	
Tape playback	8

Notes

- Do not tear off the film on the rechargeable battery.
- Use the Sony NH-9WM (S) or NC-6WM rechargeable battery only with the supplied battery charger.
- Do not leave the charger plugged in for more than 20 hours. Overcharging may damage the rechargeable battery.
- The battery charger and the rechargeable battery may become warm during charging, but it is not a problem.

House Current

Remove the rechargeable battery if inserted and attach the battery case and connect the AC power adaptor (AC-E15HG not supplied) to the DC IN 1.5 V of the battery case and to the wall outlet. Do not use any other AC power adaptor.



CASSETTE PLAYER
SONY



TABLE OF CONTENTS

Notes on chip component replacement

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

Flexible Circuit Board Repairing

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

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SAFETY-RELATED COMPONENT WARNING !!

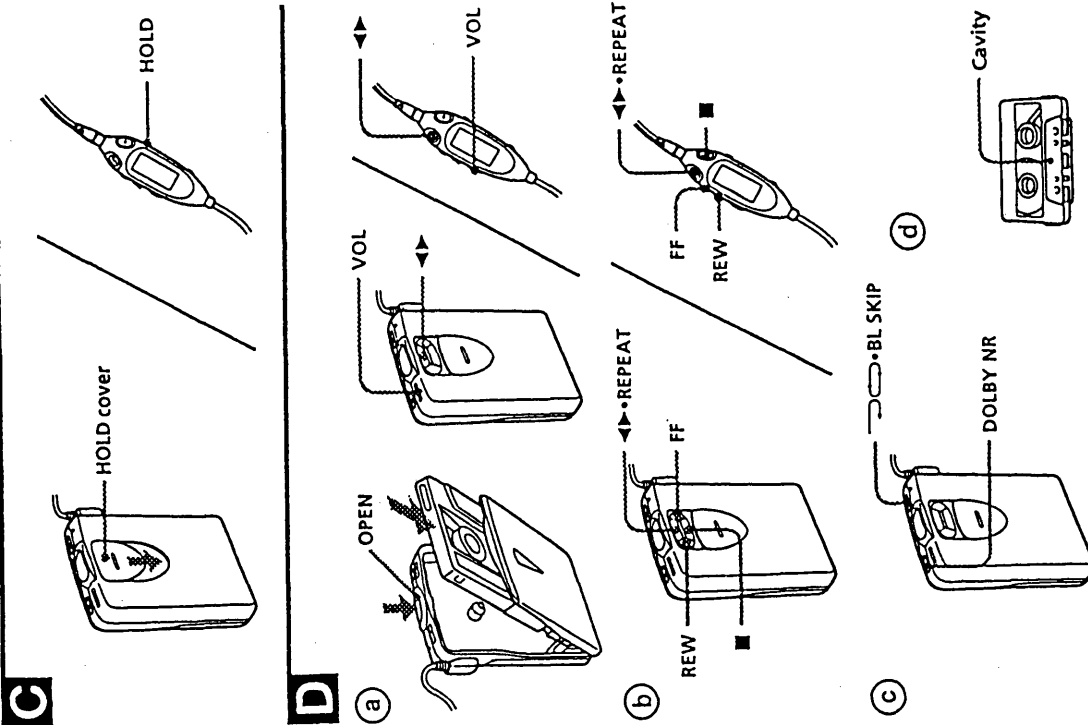
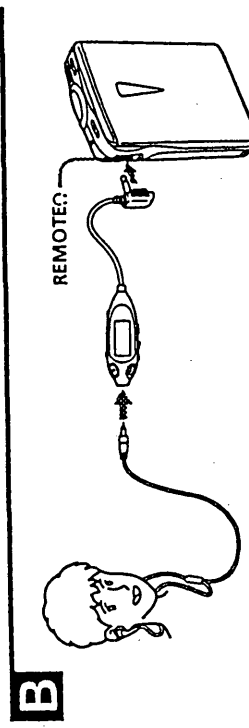
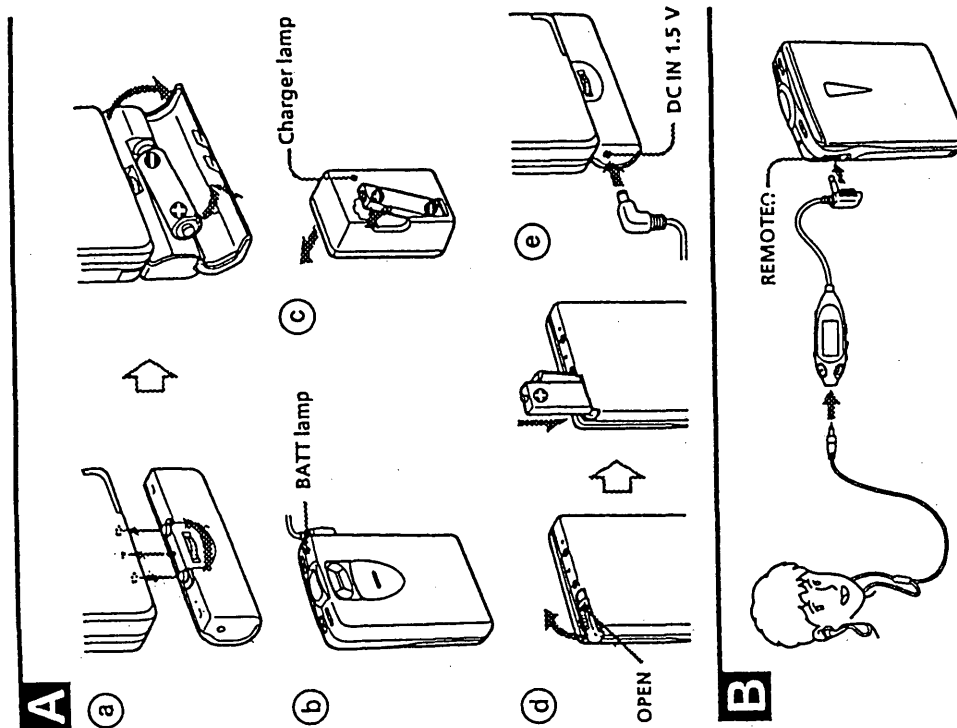
COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE Δ 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.

SECTION 1 GENERAL

This section is extracted
from instruction manual.



SECTION 2

SERVICE NOTE

[Service Mode]

Mode which enables the mechanism to be operated with the MAIN board opened.

1. Setting
 - 1) Refer to "Disassembly" and remove the cabinet and open the MAIN board.
 - 2) Connect the MAIN board to the motor and plunger using a jumper wire. Use "Extension tool (1-769-143-11)" (one set 10 tools)" to make connection simple.
 - 3) Short-circuit the service mode land (TP701) by soldering.
 - 4) Remove R726 on the MAIN board.
 - 5) Short-circuit S704 with the jumper wire.
 - 6) Turn OFF the BL SKIP switch (S702) of the SW flexible board (MODE).
 - 7) Supply 1.2V to the battery terminals (+) and (-) using a stabilized power supply.
2. Preset State

This state must be set to set the PLAY, FF, and REW modes.

 - 1) Check that the lever (NR SW) is at the center and N/R switch (S701) is at the center. If not, set the preset state as follows.
 - 2) Move the N/R switch (S701) according to the side faced by the lever (NR SW).
 - 3) Turn OFF the stabilized power supply switch once and then turn it ON again so that the lever (NR SW) can be moved. Move the N/R switch (S701) according to this timing and set to the center.
3. FF REW Mode
 - 1) Check the "2. Preset State" and press the FF switch and REW switch.
4. PLAY Mode
 - 1) Check the "2. Preset State".
 - 2) Press the <D> switch. The lever (NR SW) will move to the N side once and then to the R side. Move the N/R switch (S701) according to this timing to set the PLAY (R side) mode. Press the <D> switch another time and move the N/R switch (S701) according to the movement of the lever (NR SW) to set the PLAY (N side) mode.

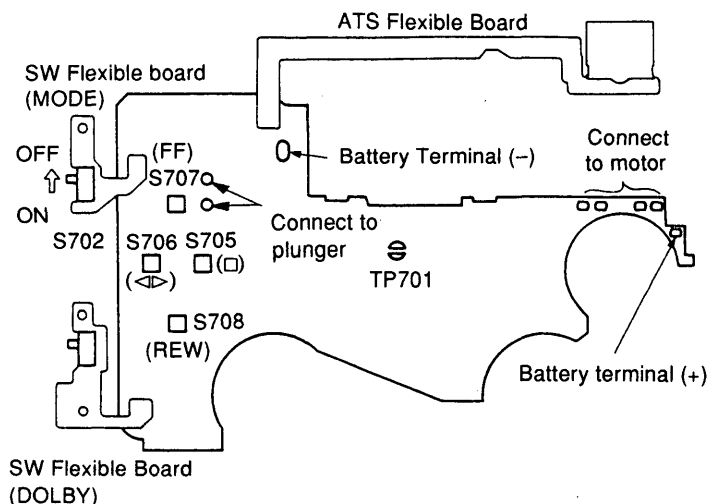
Note 1 : If the above cannot be performed, start again from preset.

Note 2 : Use the remote control <D>, □, FF, and REW switches as much as possible. If the remote control is not available, do not touch S705 to S708 with the hand and use something with a round tip to press them.

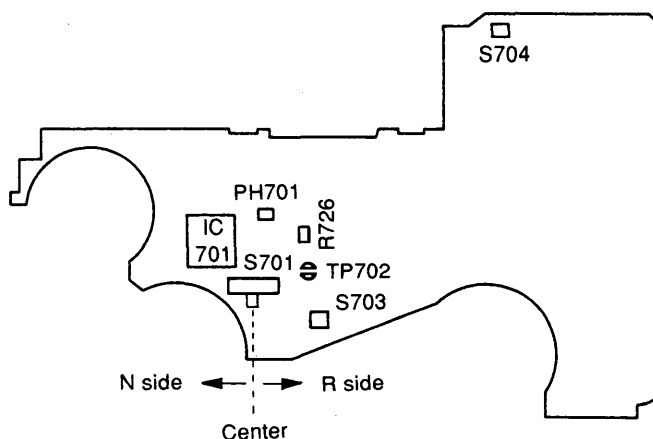
Note 3 : By using a headphone, the timing for moving S701 can be known by the beep.

[MAIN Board]

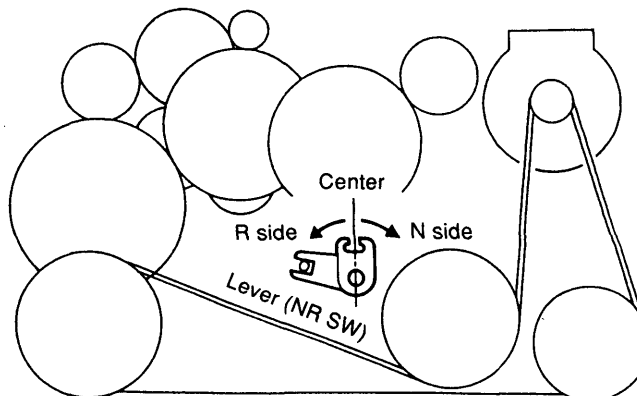
— Conductor Side —



— Component Side —

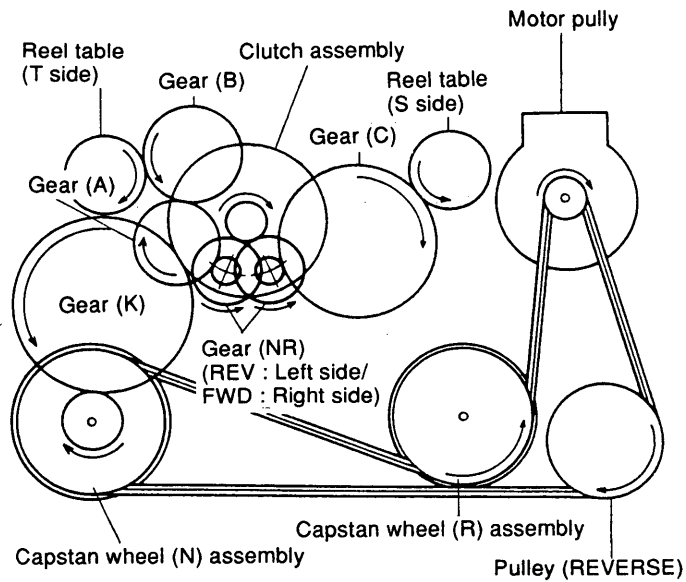


[Lever (NR SW)]

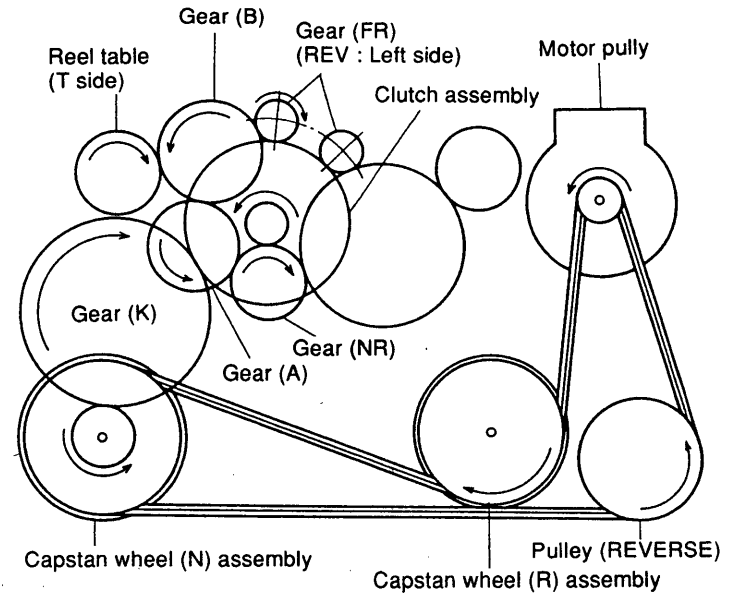


[Rotation system]

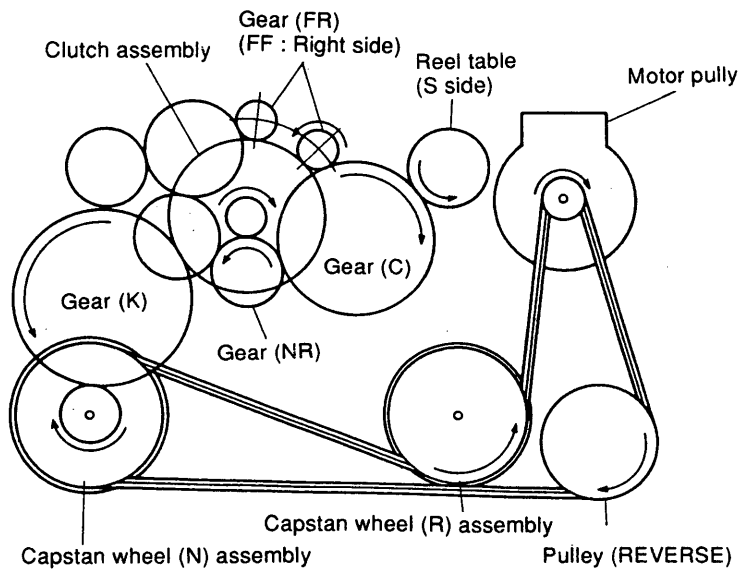
Rotation system during PLAY.



Rotation system during REW.



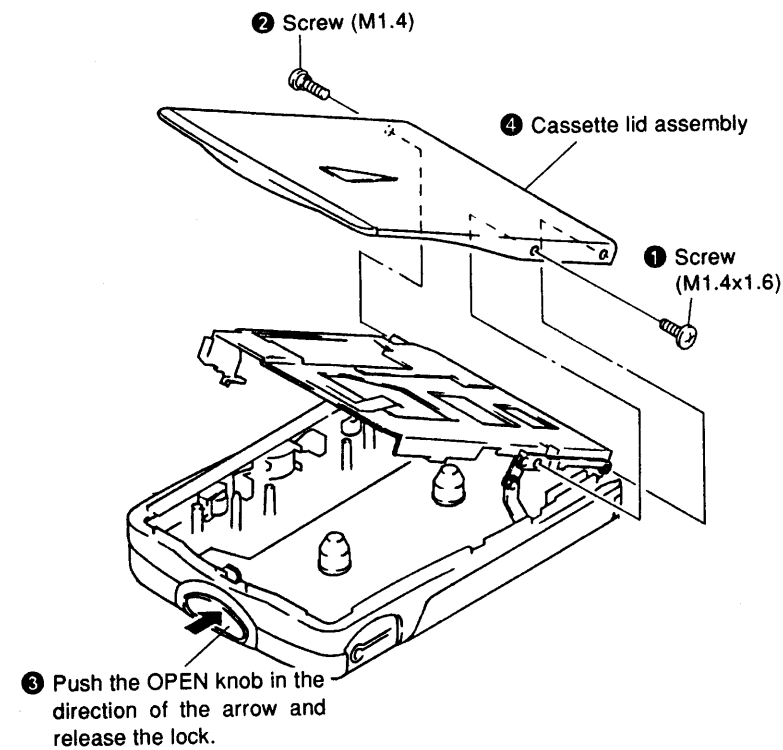
Rotation system during FF.



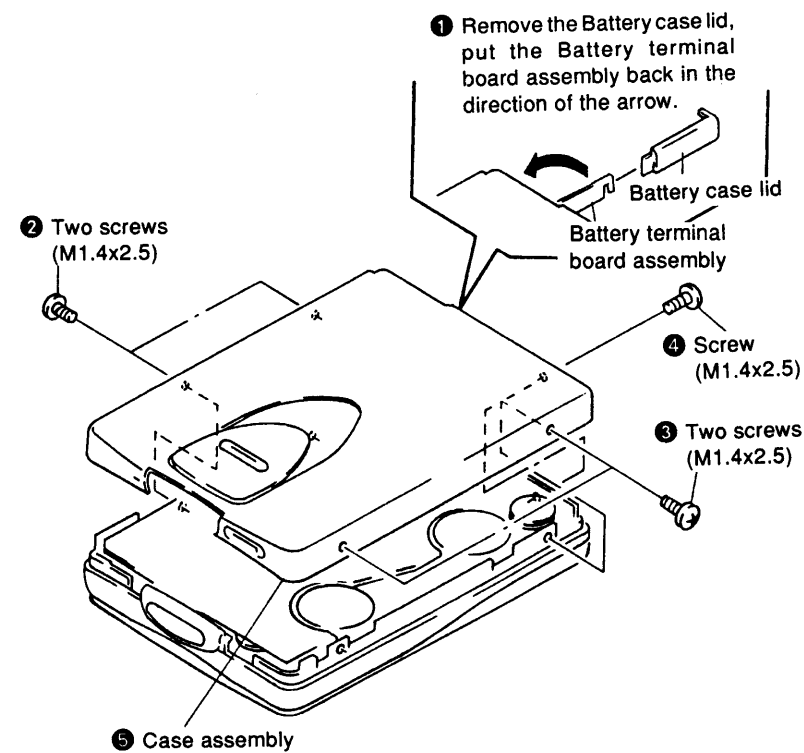
SECTION 3 DISASSEMBLY

3-1. CASSETTE LID ASSEMBLY

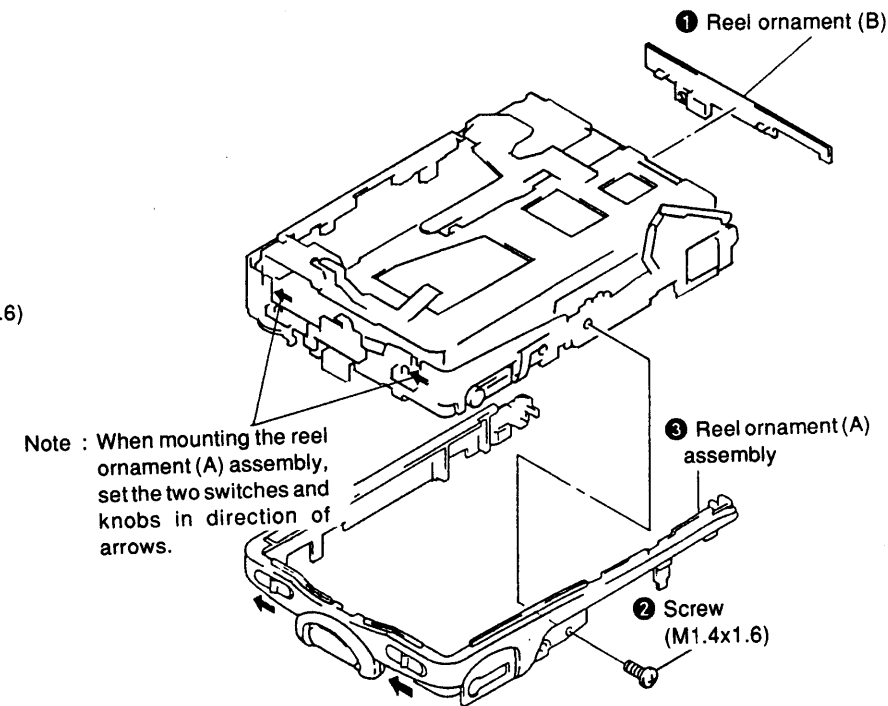
- Remove by priority of number as ① in the figure.



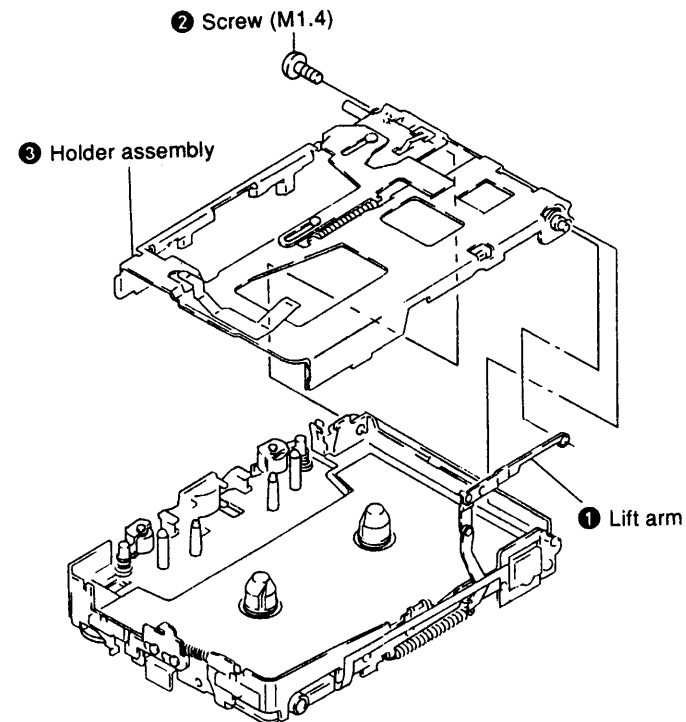
3-2. CASE ASSEMBLY



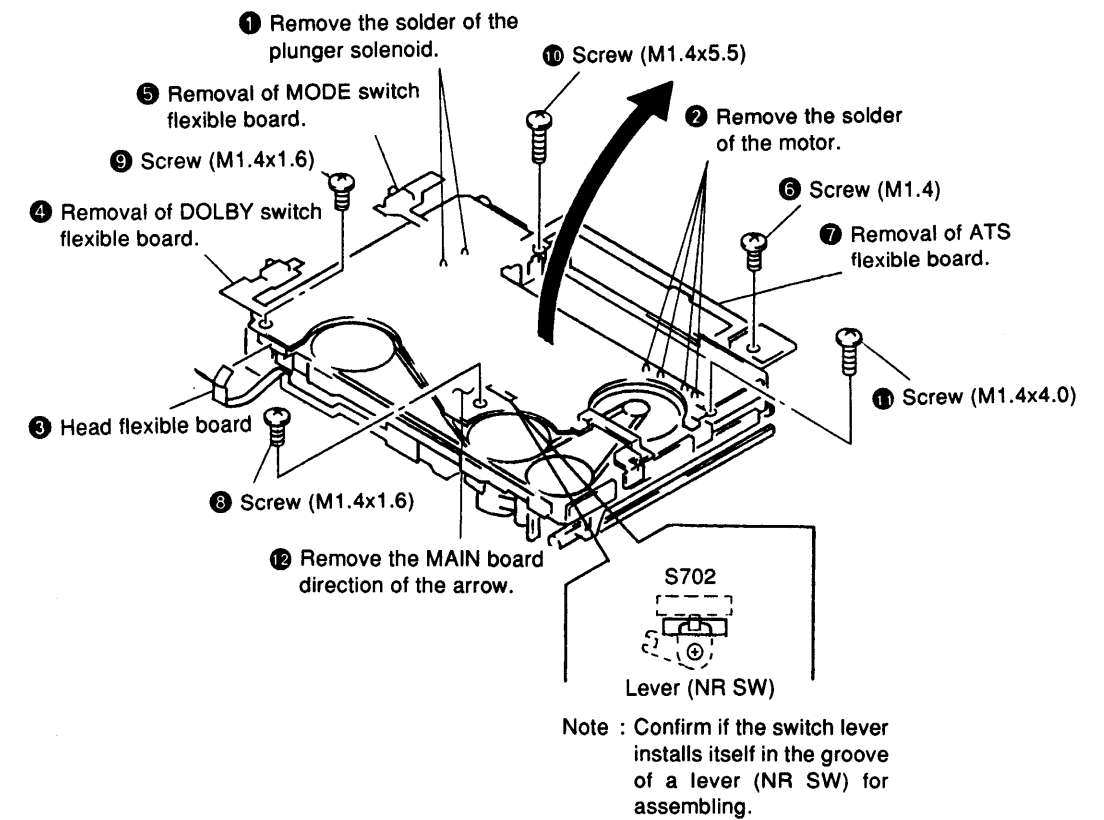
3-3. REEL ORNAMENT



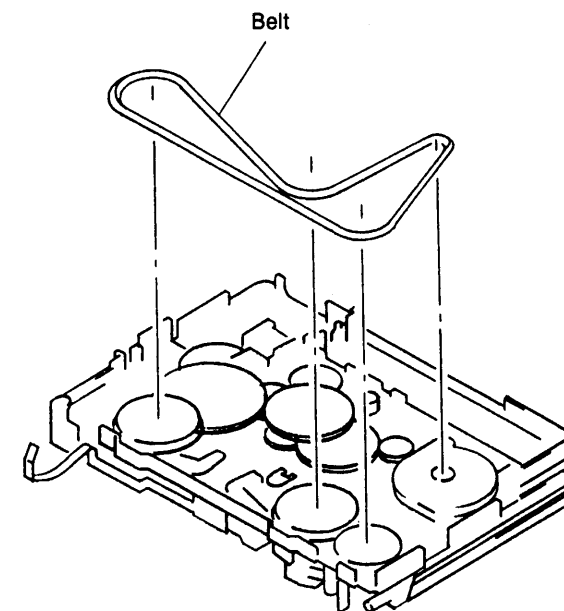
3-4. HOLDER ASSEMBLY



3-5. MAIN BOARD



3-6. BELT



SECTION 4 MECHANICAL ADJUSTMENTS

PRECAUTION

1. Before adjusting, clean the following parts with a piece of cotton moistened with alcohol.
 playback head pinch roller
 rubber belt capstan
2. Demagnetize the playback head using a head demagnetizer.
3. Do not use a magnetized screwdriver for adjustments.
4. After adjusting, apply screw-locking compound onto the adjusted parts.
5. Unless specified otherwise, use a specified voltage (1.3V) to perform the adjustments.

[Torque Measurement]

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	18 — 28 g • cm
FWD Back tension		0.5 — 3.0 g • cm
REV	CQ-201RC	18 — 28 g • cm
REV Back tension		0.5 — 3 g • cm
FF	CQ-201B	More than 40 g • cm
REW		

SECTION 5 ELECTRICAL ADJUSTMENTS

PRECAUTION

1. Specified voltage : 1.3V.
2. Switch position
 DOLBY NR switch : OFF
 EX DBB switch : NORM (Only remote control)

Cassette Section

Standard tape

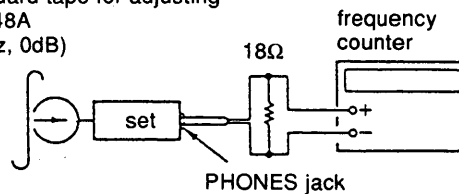
Product name	Recorded contents	Purpose
WS-48A	3 kHz, 0 dB	For adjusting speed

0dB = 0.775V

[Tape speed adjustment]

Procedure :

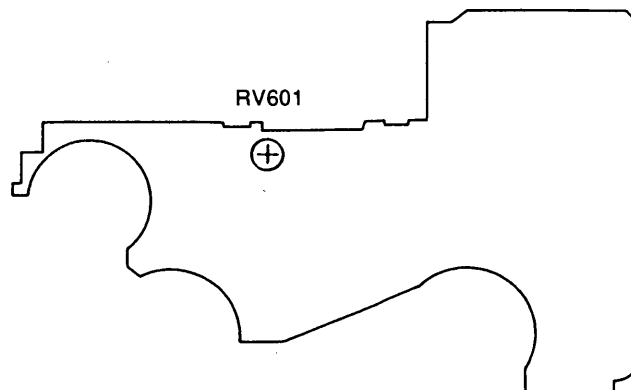
Standard tape for adjusting
 WS-48A
 (3kHz, 0dB)



1. Playback WS-48A (tape center part) in the FWD state and adjust RV601 so that the frequency counter reading becomes 3000 ± 10 Hz.
2. Playback WS-48A (tape center) in the REV state.
 Check that the frequency counter reading is within 2.5% of the reading of step 1.

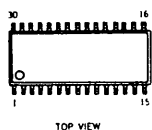
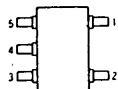
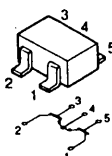
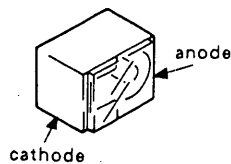
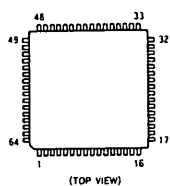
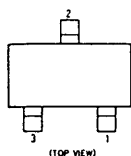
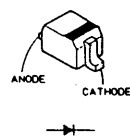
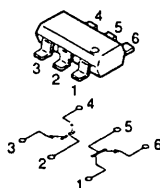
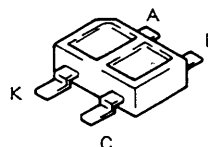
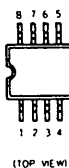
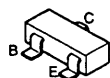
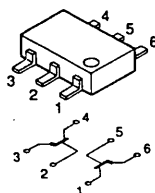
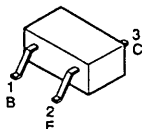
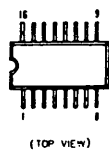
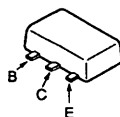
Adjustment Point :

MAIN BOARD — Component Side —



SECTION 6 DIAGRAMS

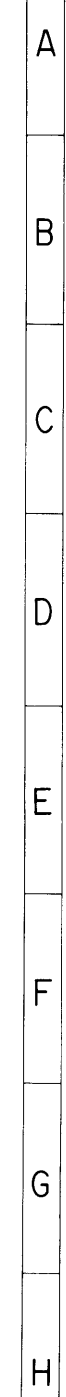
6-1. SEMICONDUCTOR LEAD LAYOUTS

LB1679V
PST9010NL
S-81211SG-QA
S-81218SG-QR

XN1215
XP1215
**CL-200HR-C**
MB89131PFV-G
TA2072F
**XC61AN1402MX****MA110****XN4215****NJL5183K-F20****MM1210-XFF**
DTC144TU
UN5215
2SB1218A-QRS
2SB1295-UL6
2SD1935
**XN4404****UN5110-QRS****MPC1850VM****2SB1302-S**


• Semiconductor Location

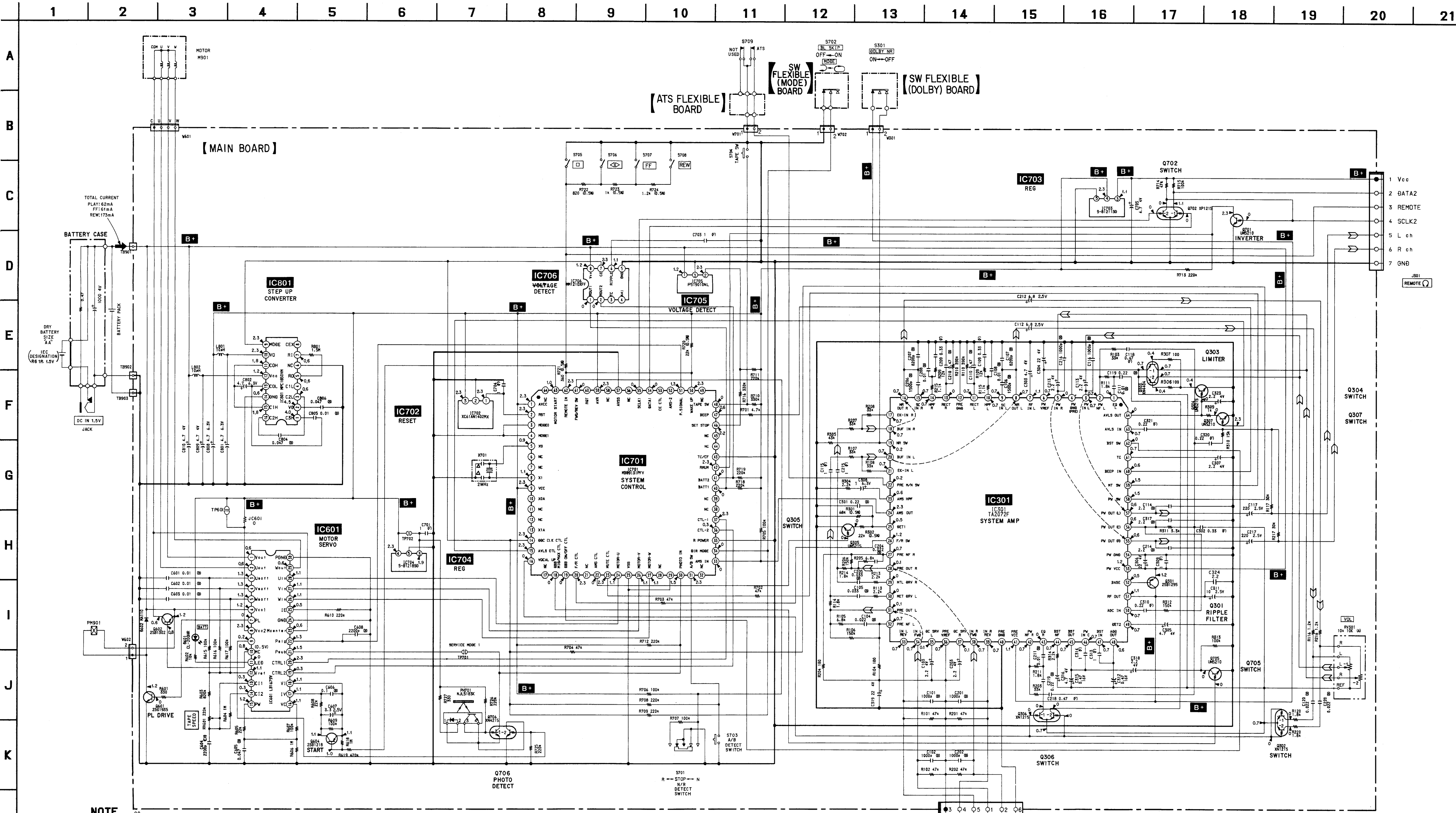
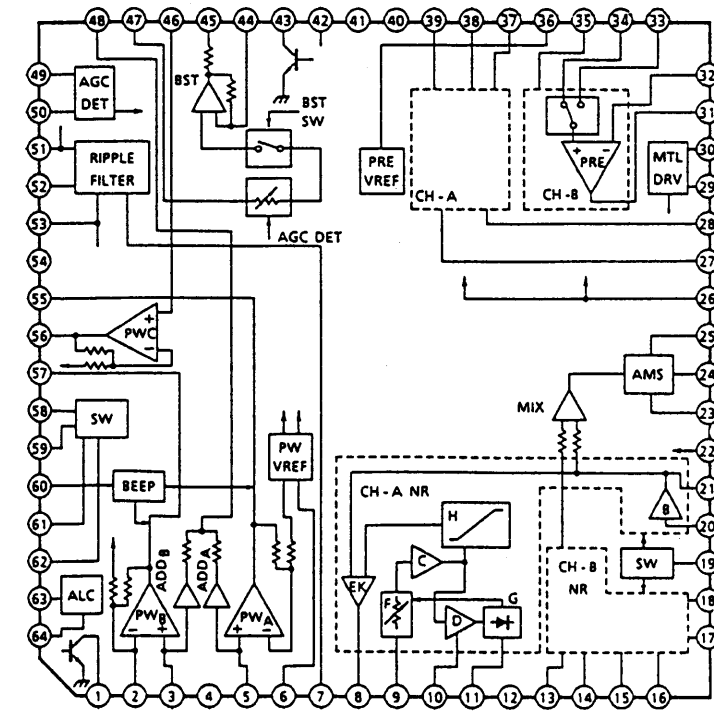
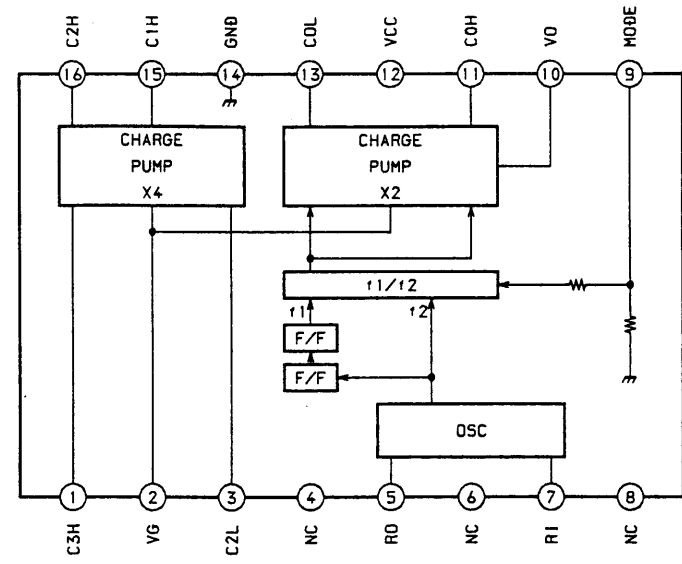
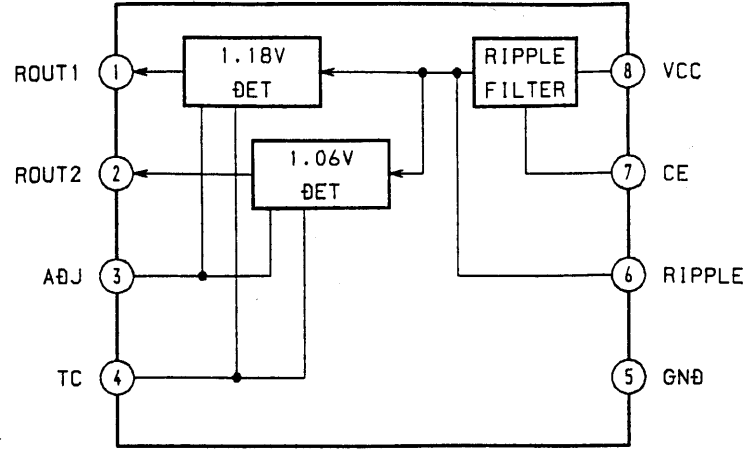
Ref. No.	Location
D601	B-22
D602	D-19
IC301	D-21
IC601	C-15
IC701	E-15
IC702	E-14
IC703	D-19
IC704	E-17
IC705	F-18
IC706	C-18
IC801	B-20
PH701	D-16
Q301	E-22
Q302	F-21
Q303	B-2
Q304	B-3
Q305	F-18
Q306	F-21
Q307	A-2
Q601	D-19
Q602	C-15
Q604	C-7
Q701	D-19
Q702	D-19
Q705	F-22
Q706	E-16

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
--	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	--






Note:

- : Through hole.
- △ : internal component.
-  : Pattern from the side which enable seeing.
(The other layer's patterns are not indicated.)

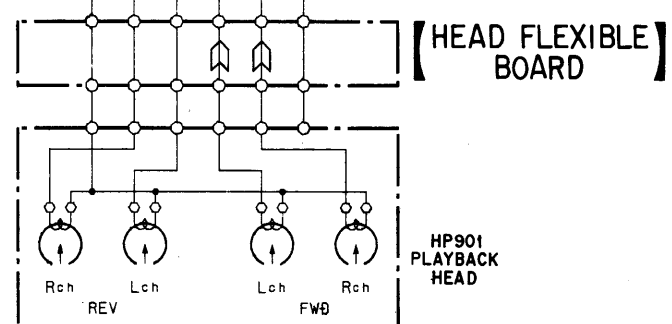


NOTE

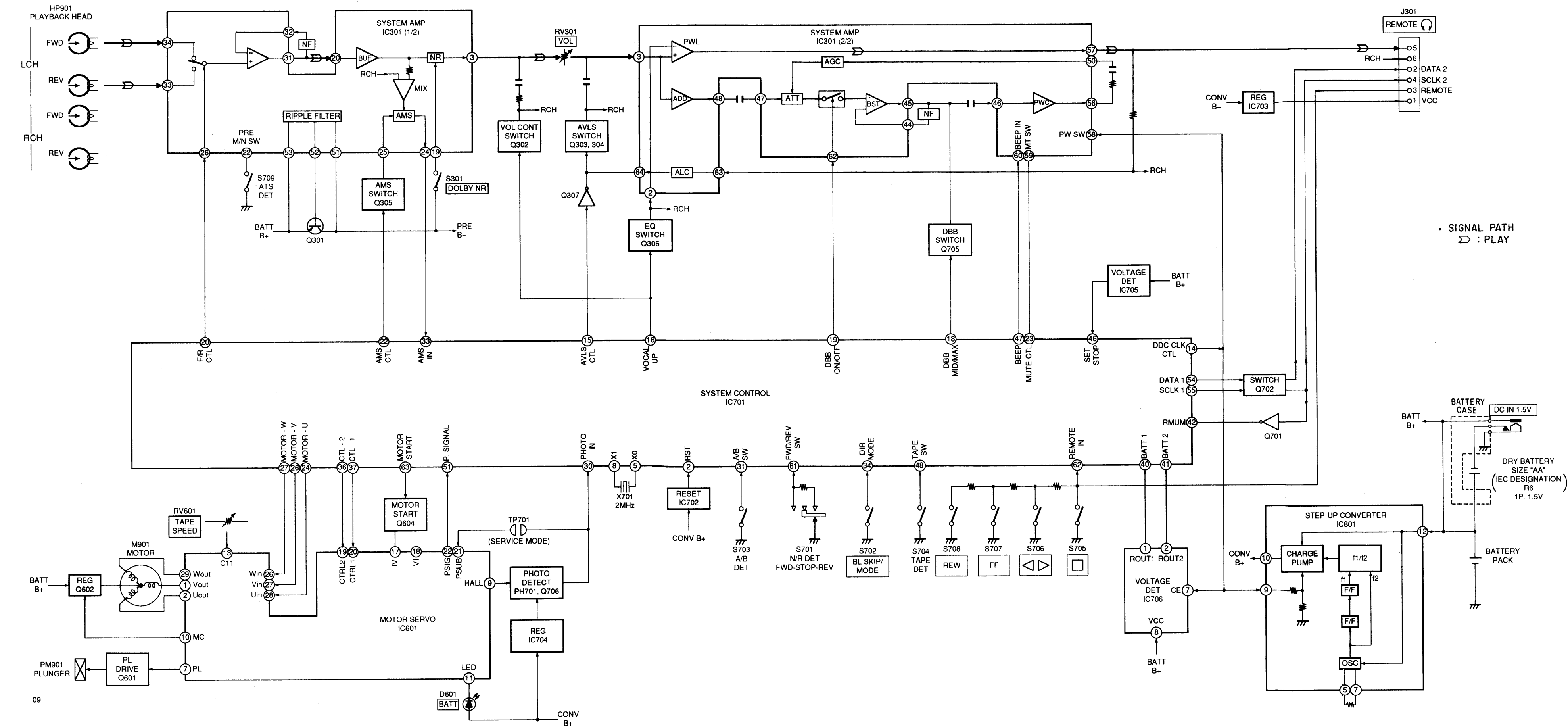
- All capacitors are in μF unless otherwise noted, pF ; μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- $\%$: indicates tolerance.
- Δ : internal component.
-  : panel designation.
-  : BT Line.
-  : adjustment for repair.
- Power voltage is dc 1.2V and fed with regulated dc power supply from battery terminal.
- Total current is measured with no cassette installed

- Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark:PLAY FWD
- Voltages are taken with a VOM (input impedance $10M\Omega$). Voltage variations may be noted due to normal production tolerances.

- Signal path.
 :PB



6-4. BLOCK DIAGRAM



6-5. IC PIN FUNCTIONS
• IC601 Motor Driver (LB1679V)

Pin No.	Pin Name	I/O	Function
1	VOUT	O	V phase output
2	UOUT	O	U phase output
3	USOFT	I	U phase software switching
4	VSOF	I	V phase software switching
5	WSOFT	I	W phase software switching
6	VCC1	-	Power supply 1 (0.9V to 1.8V)
7	PL	O	PL driver output
8	VCC2	-	Power supply 2 (VCC1x2=1.8V to 3.6V)
9	HALL	O	HALL element bias output. When 2mA:0.7V IO MAX = 10mA
10	MC	O	External TR drive IO MAX = 20mA
11	LED	O	LED1 driver output IO MAX = 5mA
12	VREF	I	Reference voltage 1.1V
13	CI1	I	Comparator input (Adjust rotation speed according to the external constant of C and R)
14	CI2	I	CI1 charge current in half-wave driving IO MAX = 30μA
15	PW	O	Comparator output
16	VC	O	Buffer output
17	IV	O	VI conversion output
18	VI	O	IV conversion output
19	CTRL2	I	Start, stop, and LED PL switching 3-value input (H, M, L) H:1.7V to VCC2, M:Pin open (0.24V), L:0 mV to 50 mV
20	CTRL1	I	Start, stop, and LED PL switching 3-value input (H, M, L) H:1.7V to VCC2, M:Pin open (0.24V), L:0 mV to 50 mV
21	PSUB	O	MCENTER and U phase output comparator output
22	PSIG	O	PSIG output
23	MCENTER	I	PSIG section motor middle point voltage input
24	GND	-	GND
25	IE	I	Adjusts software switching pin current with external resistor
26	WIN	I	W phase input
27	VIN	I	V phase input
28	UIN	I	U phase input
29	WOUT	O	W phase input
30	PGND	-	POWER block GND

• IC701 System Controller (MB8913PFV)

Pin No.	Pin Name	I/O	Function
1	AVCC	–	Analog section power supply
2	RST	I	Reset
3	MODE0	I	Operation mode specified input (Connected to GND)
4	MODE1	I	Operation mode specified input (Connected to GND)
5	X0	–	High speed clock connection (2 MHz ceramics oscillator)
6	NC	–	Not used
7	NC	–	Not used
8	X1	–	High speed clock connection (2 MHz ceramics oscillator)
9	VCC	–	Logic section power supply
10	X0A	–	Low speed clock connection (Not used)
11	NC	–	
12	NC	–	
13	X1A	–	Low speed clock connection (Not used)
14	DDC CTL	O	DDC oscillation frequency change output (L:Waiting state)
15	AVLS CTL	O	AVLS control output (AVLS:L)
16	VOCAL UP	O	Sound quality control output (VOCAL UP:H)
17	NC	–	Not used
18	DBB 1 CTL	O	Sound quality control output (DBB1:H)
19	DBB ON/OFF CTL	O	Sound quality control output (DBB1, DBB2:H)
20	F/R CTL	O	FWD:H, REV:L
21	NC	–	Not used
22	AMS CTL	O	AMS sensitivity control output (FF/REW:H)
23	MUTE CTL	O	AUDIO POWER AMP MUTING (MUTE:L)
24	MOTOR-U	O	Motor U phase control output
25	VSS	–	GND
26	MOTOR-V	O	Motor V phase control output
27	MOTOR-W	O	Motor W phase control output
28	NC	–	Not used
29		–	Not used
30	PHOTO IN	I	Rotation detection input
31	A/B SW	I	Tape A/B side detection SW input (Side A top:L, Side B top:H)
32	NC	–	Not used
33	AMS IN	I	Recording detection input (Music:H)
34	DIR MODE	I	DIRECTION MODE selection and BL, SKIP ON/OFF input SHUT OFF, BL SKIP OFF = L, ENDLESS, BL SKIP ON = H
35		–	Not used (Connected to GND)
36	CTL2	O	Servo IC control output
37	CTL1	O	Servo IC control output
38	NC	–	Not used
39	NC	–	Not used

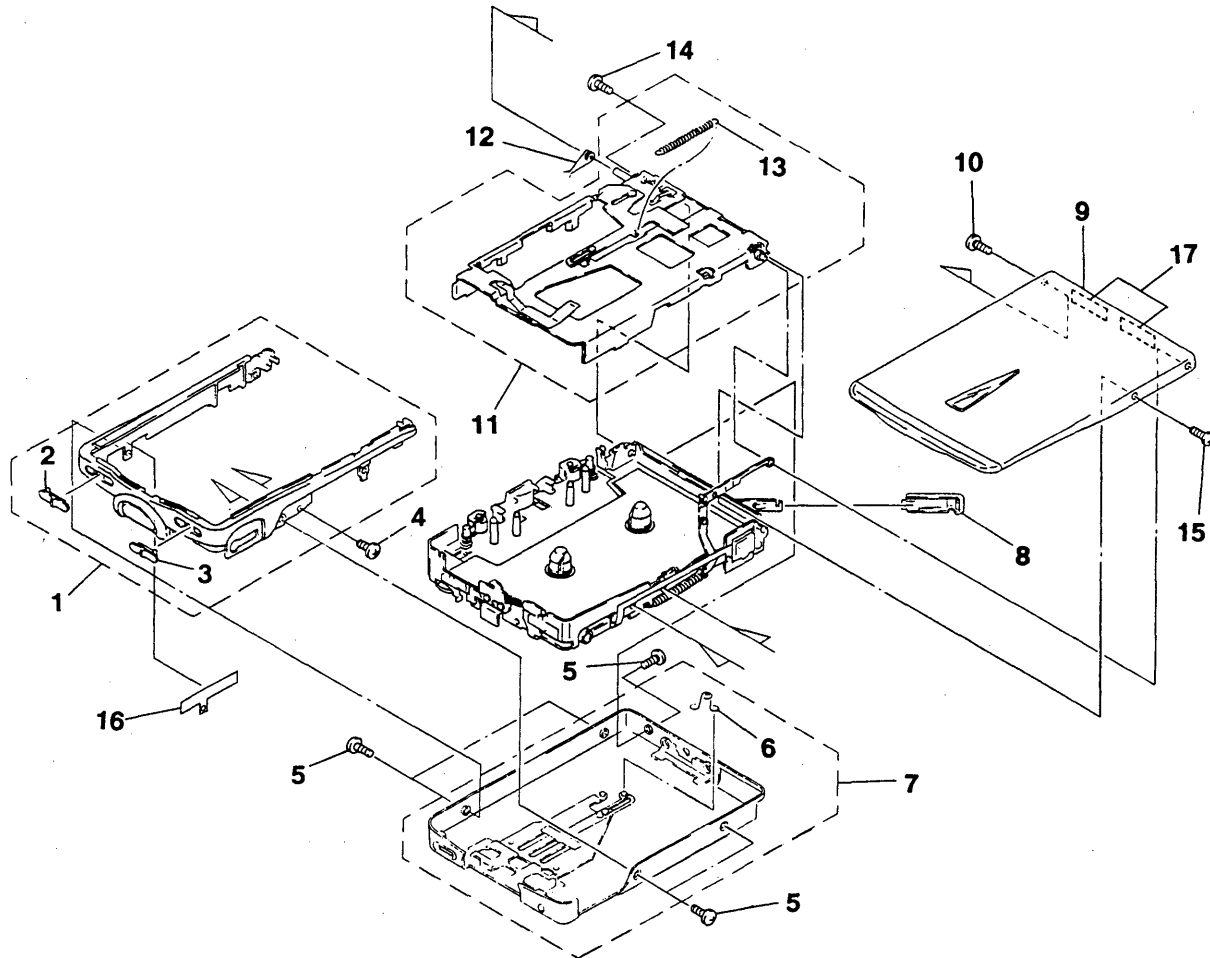
Pin No.	Pin Name	I/O	Function
40	BATT1	I	LEVEL1 : BATT1 = H, BATT2 = H (LOW)
41	BATT2	I	LEVEL2 : BATT1 = H, BATT2 = L (MIDDLE)
42	RMUM	I	LEVEL3 : BATT1 = L, BATT2 = L (HIGH)
43		I	Remote control detection (Present:H, Absent:L)
44	NC	–	Not used (Connected to GND)
45	NC	–	Not used
46	SET STOP	I	For power failure STOP
47	BEEP	O	Beep sound output
48	TAPE SW	I	Tape presence detection input (Present:L)
49	NC	–	Not used
50	WAKE UP	I	Stop mode release interruption
51	P-SIGNAL	I	Motor rotation control
52		–	Not used
53		–	Not used
54	DATA1	O	Serial data output
55	SCLK1	O	Serial clock output
56	NC	–	Not used
57	AVSS	–	Analog section (GND)
58	NC	–	Not used
59	AVR	–	Analog section reference potential input
60		–	Not used
61	FWD/REV SW	I	F/R SW input (Analog input)
62	REMOTE IN	I	Key input (Analog input)
63	MOTOR START	O	Motor start-up control output (Motor start-up:Outputs L for 200 ms)
64	NC	–	Not used

SECTION 7 EXPLODED VIEWS

NOTE:

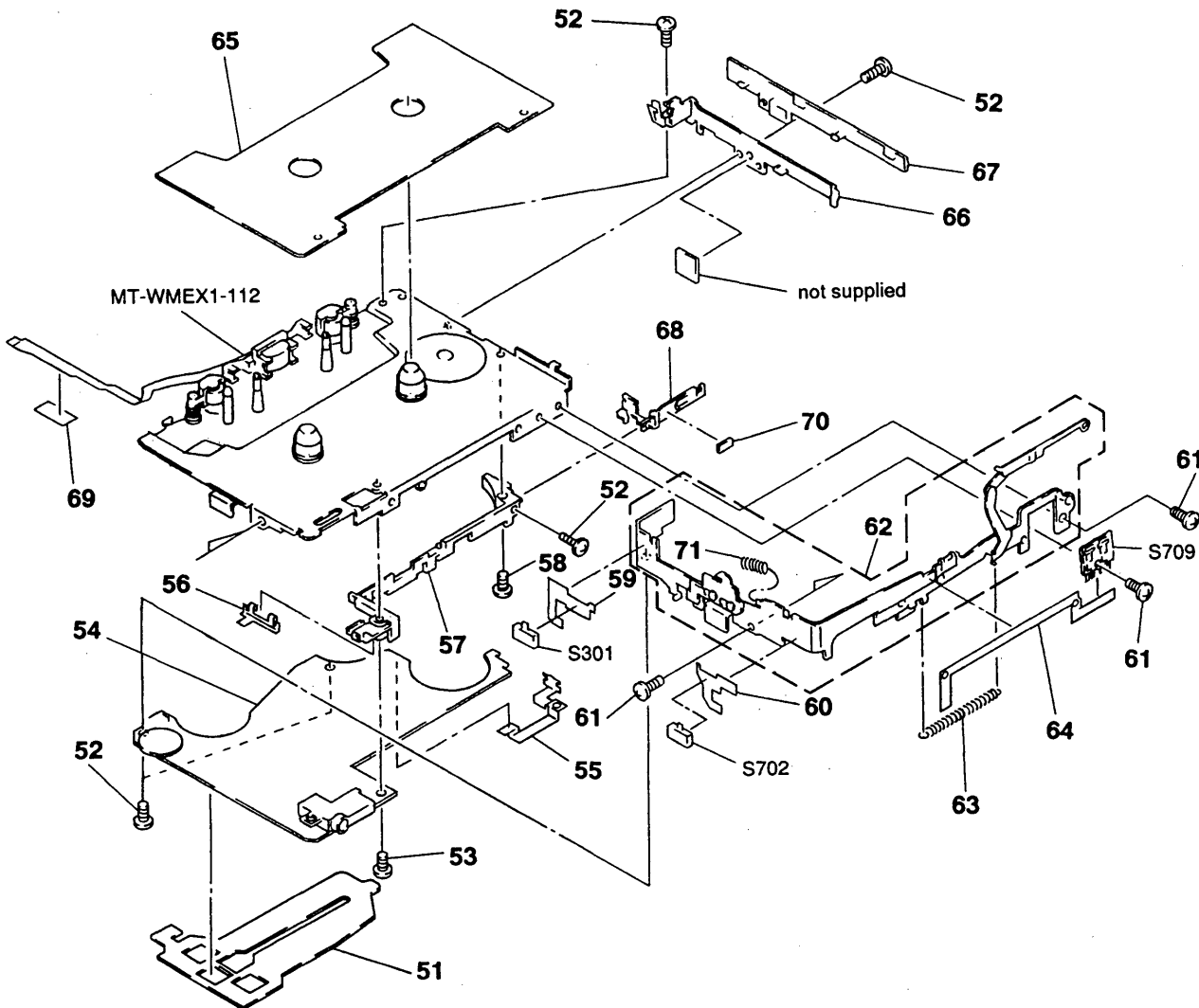
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.

7-1. ORNAMENT SECTION



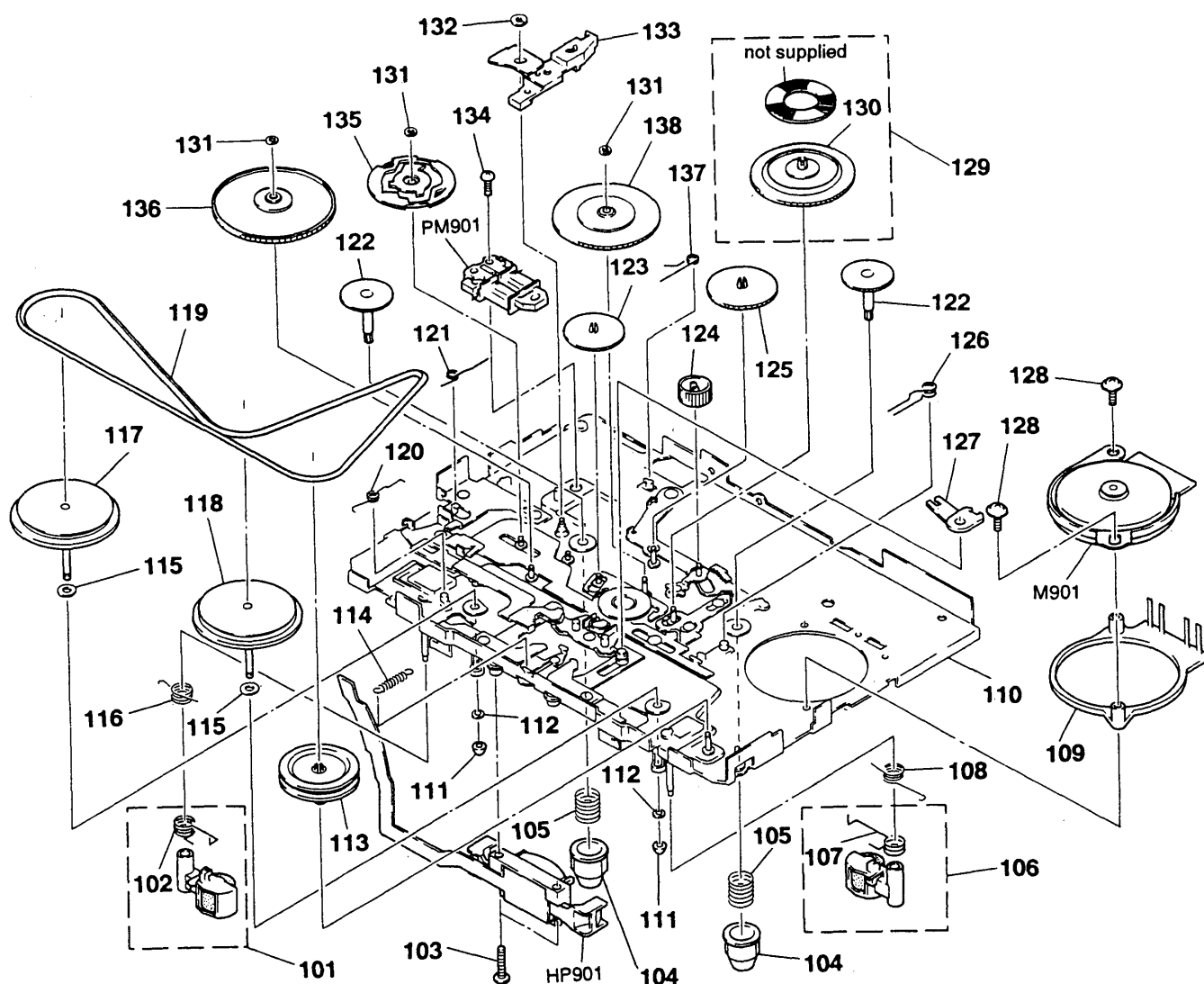
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3368-787-1	ORNAMENT (A) ASSY (K), REEL (EX1)		9	X-3368-790-1	LID ASSY (B), CASSETTE (EX1)	
1	X-3368-815-1	ORNAMENT (A) ASSY (H), REEL (EX1HG)		9	X-3369-069-1	LID ASSY (HG), CASSETTE (EX1HG)	
2	3-916-267-01	KNOB (DOLBY) (EX1)		10	3-907-009-01	SCREW (M1.4) (EX1HG)	
2	3-916-267-11	KNOB (DOLBY) (EX1HG)		10	3-907-009-11	SCREW (M1.4) (EX1)	
3	3-916-268-01	KNOB (MODE) (EX1)		* 11	X-3368-786-1	HOLDER ASSY	
3	3-916-268-11	KNOB (MODE) (EX1HG)		12	3-916-245-01	SPRING (LOCK LEVER)	
4	3-704-197-01	SCREW (M1.4X1.6), LOCKING		13	3-916-246-01	SPRING, TENSION	
5	3-704-197-21	SCREW (M1.4X2.5), LOCKING (EX1HG)		14	3-365-630-02	SCREW (M1.4)	
5	3-704-197-23	SCREW (M1.4X2.5), LOCKING (EX1)		15	3-704-197-03	SCREW (M1.4X1.6), LOCKING (EX1HG)	
6	3-916-288-01	SPRING (HOLD)		15	3-704-197-01	SCREW (M1.4X1.6), LOCKING (EX1)	
7	X-3368-791-1	CASE ASSY (B) (EX1)		* 16	3-918-043-01	PAPER (H), SHIELD	
7	X-3369-070-1	CASE ASSY (HG) (EX1HG)		17	3-920-724-01	SHEET (RT)	
8	3-916-242-01	LID, BATTERY CASE (EX1)					
8	3-916-242-31	LID, BATTERY CASE (EX1HG)					

7-2. MAIN BOARDS SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	3-918-322-03	SPACER (SW)		64	1-653-415-11	ATS FLEXIBLE BOARD	
52	3-704-197-01	SCREW (M1. 4X1.6), LOCKING		65	3-916-250-01	COVER, MD	
53	3-366-746-61	SCREW (M1. 4X5.5)					
54	A-3016-612-A	MAIN BOARD, COMPLETE		66	X-3368-785-1	BRACKET (B) ASSY	
55	3-916-248-01	TERMINAL BOARD		67	3-916-247-01	ORNAMENT (B), REEL (EX1)	
				67	3-916-247-21	ORNAMENT (B), REEL (EX1HG)	
56	3-912-020-01	TERMINAL BOARD (MINUS), BATTERY		68	X-3368-789-1	TERMINAL BOARD ASSY, BATTERY	
* 57	3-916-252-01	HOLDER, BATTERY		69	3-831-441-XX	SPACER, KNOB	
58	3-704-197-61	SCREW (M1. 4X4.0), LOCKING					
59	1-653-416-11	DOLBY SWITCH FLEXIBLE BOARD		70	9-911-838-XX	CUSHION	
60	1-653-417-11	MODE SWITCH FLEXIBLE BOARD		71	3-365-617-11	SPRING (OPEN), COMPRESSION	
				S301	1-572-922-11	SWITCH, SLIDE (DOLBY NR)	
61	3-366-892-01	SCREW (M1. 4)		S702	1-572-922-11	SWITCH, SLIDE (BL SKIP)	
62	X-3368-788-7	BRACKET (A) ASSY		S709	1-572-580-11	SWITCH, LEAF (ATS)	
63	3-916-241-01	SPRING, TENSION					

7-3. MECHANISM SECTION (MT-WMEX1-112)



Ref. No.	Part No.	Description
101	X-3368-776-1	PINCH LEVER (N) ASSY
102	3-916-341-01	SPRING (PINCH N)
103	3-704-413-31	SCREW (M1. 4X7. 2)
104	3-916-357-01	GEAR (REEL)
105	3-366-058-01	SPRING, COMPRESSION
106	X-3368-777-1	PINCH LEVER (R) ASSY
107	3-916-342-01	SPRING (PINCH R)
108	3-916-344-01	SPRING (RETURN R)
* 109	3-916-337-01	DECK, FIXED, TERMINAL
110	X-3368-781-1	CHASSIS ASSY
111	3-366-017-01	BUSHING (CAPSTAN)
112	3-918-943-01	WASHER, STOPPER
113	3-916-350-01	PULLEY (REVERSE)
114	3-916-346-01	SPRING, TENSION
115	3-386-694-01	WASHER
116	3-916-343-01	SPRING (RETURN N)
117	X-3368-779-1	WHEEL (N) ASSY, CAPSTAN
118	X-3368-778-1	WHEEL (R) ASSY, CAPSTAN
119	3-916-349-01	BELT
120	3-916-345-01	SPRING (LOCK LEVER)
121	3-916-340-01	SPRING (EJECT), TORSION

Ref. No.	Part No.	Description
122	3-365-801-01	TABLE, REEL
123	3-916-353-01	GEAR (A)
124	3-916-352-01	GEAR (FR)
125	3-916-354-01	GEAR (B)
126	3-916-347-01	SPRING (NR), TORSION
127	3-916-339-01	LEVER (NRSW)
128	3-358-455-11	SCREW, PRECISION WASHER HEAD
129	A-3042-517-A	GEAR (C)
130	3-916-355-01	GEAR (C)
131	3-338-645-31	WASHER (0. 8-2. 5)
132	3-348-953-41	WASHER
133	3-916-338-01	LEVER (TRIGGER)
134	3-366-521-51	SCREW (M1. 4X3. 5)
135	3-916-356-01	GEAR (CAM)
136	3-916-351-01	GEAR (K)
137	3-916-348-01	SPRING (TRIGGER), TORSION
138	X-3368-780-1	CLUTCH ASSY
M901	1-698-368-11	MOTOR
HP901	1-500-091-21	HEAD, MAGNETIC (PLAYBACK)
PM901	1-454-674-11	SOLENOID, PLUNGER

ELECTRICAL PARTS LIST

NOTE:

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

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

When indicating parts by reference number, please include the board 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.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Abbreviation
CND : Canadian model
EA : Saudi Arabia model
JEW : Tourist model

- 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
	1-653-415-11	ATS FLEXIBLE BOARD *****		C211	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	< SWITCH >			C212	1-109-937-11	TANTAL. CHIP 6.8uF 20%	2.5V
S709	1-572-580-11	SWITCH, LEAF (ATS)		C213	1-135-187-21	TANTAL. CHIP 2.2uF 20%	4V
*****				C214	1-109-994-11	CERAMIC CHIP 2.2uF 20%	10V
	A-3016-612-A	MAIN BOARD, COMPLETE *****		C215	1-164-346-11	CERAMIC CHIP 1uF	16V
	< CAPACITOR >			C216	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C101	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C217	1-109-930-11	TANTAL. CHIP 220uF	2.5V
C102	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C218	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C103	1-135-187-21	TANTAL. CHIP 2.2uF 20%	4V	C219	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V
C104	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V	C220	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V
C105	1-164-677-11	CERAMIC CHIP 0.033uF 10%	16V	C301	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V
C106	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V	C302	1-165-112-11	CERAMIC CHIP 0.33uF	16V
C107	1-164-174-11	CERAMIC CHIP 0.0082uF 10%	25V	C303	1-135-151-21	TANTALUM CHIP 4.7uF 20%	4V
C108	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C304	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C109	1-165-112-11	CERAMIC CHIP 0.33uF	16V	C305	1-109-934-11	TANTAL. CHIP 4.7uF 20%	4V
C110	1-107-823-11	CERAMIC CHIP 0.47uF 10%	16V	C306	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C111	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C307	1-135-187-21	TANTAL. CHIP 2.2uF 20%	4V
C112	1-109-937-11	TANTAL. CHIP 6.8uF 20%	2.5V	C308	1-135-337-11	TANTAL. CHIP 1uF 20%	6.3V
C113	1-135-187-21	TANTAL. CHIP 2.2uF 20%	4V	C309	1-164-346-11	CERAMIC CHIP 1uF	16V
C114	1-109-994-11	CERAMIC CHIP 2.2uF 20%	10V	C310	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C115	1-164-346-11	CERAMIC CHIP 1uF	16V	C311	1-107-983-11	TANTAL. CHIP 10uF 20%	2.5V
C116	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C312	1-109-847-11	TANTAL. CHIP 0.47uF 20%	16V
C117	1-109-930-11	TANTAL. CHIP 220uF	2.5V	C313	1-164-346-11	CERAMIC CHIP 1uF	16V
C118	1-164-005-11	CERAMIC CHIP 0.47uF	25V	C314	1-164-346-11	CERAMIC CHIP 1uF	16V
C119	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V	C315	1-109-847-11	TANTAL. CHIP 0.47uF 20%	16V
C120	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V	C316	1-135-151-21	TANTALUM CHIP 4.7uF 20%	4V
C201	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C317	1-109-994-11	CERAMIC CHIP 2.2uF 20%	10V
C202	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C318	1-107-815-11	TANTAL. CHIP 2.2uF 20%	4V
C203	1-135-187-21	TANTAL. CHIP 2.2uF 20%	4V	C319	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C204	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V	C320	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C205	1-164-677-11	CERAMIC CHIP 0.033uF 10%	16V	C321	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C206	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V	C323	1-107-815-11	TANTAL. CHIP 2.2uF 20%	4V
C207	1-164-174-11	CERAMIC CHIP 0.0082uF 10%	25V	C324	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C208	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C601	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C209	1-165-112-11	CERAMIC CHIP 0.33uF	16V	C602	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C210	1-107-823-11	CERAMIC CHIP 0.47uF 10%	16V	C603	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
				C604	1-164-695-11	CERAMIC CHIP 0.0022uF 5%	50V
				C605	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V
				C606	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
				C607	1-109-936-11	TANTAL. CHIP 3.3uF 20%	2.5V
				C608	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
				C701	1-164-346-11	CERAMIC CHIP 1uF	16V

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C703	1-109-996-11	CERAMIC CHIP 1uF	6.3V	Q306	8-729-403-17	TRANSISTOR XN1215	
C704	1-164-346-11	CERAMIC CHIP 1uF	16V	Q307	8-729-421-77	TRANSISTOR UN5210-R	
C705	1-109-934-11	TANTAL. CHIP 4.7uF	20% 4V	Q601	8-729-809-46	TRANSISTOR 2SD1935	
C801	1-109-935-11	TANTAL. CHIP 4.7uF	20% 6.3V	Q602	8-729-822-60	TRANSISTOR 2SB1302-S	
C802	1-109-935-11	TANTAL. CHIP 4.7uF	20% 6.3V	Q604	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
C804	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V	Q701	8-729-421-77	TRANSISTOR UN5210-R	
C805	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	Q702	8-729-426-36	TRANSISTOR XP1215-TXE	
C806	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V	Q705	8-729-421-77	TRANSISTOR UN5210-R	
C808	1-109-935-11	TANTAL. CHIP 4.7uF	20% 6.3V	Q706	8-729-422-54	TRANSISTOR XN4215	
C809	1-109-934-11	TANTAL. CHIP 4.7uF	20% 4V	< RESISTOR >			
C810	1-109-934-11	TANTAL. CHIP 4.7uF	20% 4V	R101	1-216-841-11	METAL CHIP 47K 5%	1/16W
< CONNECTOR >				R102	1-216-841-11	METAL CHIP 47K 5%	1/16W
CN301	1-695-942-21	CONNECTOR, FPC (ZIF) 6P		R103	1-216-839-11	METAL CHIP 33K 5%	1/16W
< DIODE >				R104	1-216-812-11	METAL CHIP 180 5%	1/16W
D601	8-719-989-53	DIODE CL-200HR-C (BATT)		R105	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
D602	8-719-404-46	DIODE MA110		R106	1-216-847-11	METAL CHIP 150K 5%	1/16W
< IC >				R107	1-216-839-11	METAL CHIP 33K 5%	1/16W
IC301	8-759-271-27	IC TA2072F		R108	1-216-839-11	METAL CHIP 33K 5%	1/16W
IC601	8-759-271-28	IC LB1679V		R109	1-216-834-11	METAL CHIP 12K 5%	1/16W
IC701	8-759-296-06	IC MB89131PFV-G		R110	1-216-852-11	METAL CHIP 390K 5%	1/16W
IC702	8-759-163-52	IC XC61AN1402MX		R111	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
IC703	8-759-280-84	IC S-81211SG-QA		R113	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
IC704	8-759-516-90	IC S-81218SG-QR		R114	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
IC705	8-759-280-85	IC PST9010NL		R115	1-218-270-11	METAL GLAZE 1.1K 5%	1/16W
IC706	8-759-180-33	IC MM1210-XFF		R116	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
IC801	8-759-099-82	IC MPC1850VM		R117	1-218-294-11	METAL GLAZE 30K 5%	1/16W
< JACK >				R120	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
J301	1-766-512-21	JACK 7P (REMOTE)		R201	1-216-841-11	METAL CHIP 47K 5%	1/16W
< JUMPER RESISTOR >				R202	1-216-841-11	METAL CHIP 47K 5%	1/16W
JC601	1-216-864-11	METAL CHIP 0 5%	1/16W	R203	1-216-839-11	METAL CHIP 33K 5%	1/16W
< COIL >				R204	1-216-812-11	METAL CHIP 180 5%	1/16W
L801	1-412-006-31	INDUCTOR CHIP 10uH		R205	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
L802	1-412-006-31	INDUCTOR CHIP 10uH		R206	1-216-847-11	METAL CHIP 150K 5%	1/16W
< PHOTO INTERRUPTER >				R207	1-216-839-11	METAL CHIP 33K 5%	1/16W
PH701	8-749-925-05	REFLECTOR NJL5183KA-F20		R208	1-216-839-11	METAL CHIP 33K 5%	1/16W
< TRANSISTOR >				R209	1-216-834-11	METAL CHIP 12K 5%	1/16W
Q301	8-729-807-87	TRANSISTOR 2SB1295-UL6		R210	1-216-852-11	METAL CHIP 390K 5%	1/16W
Q302	8-729-403-17	TRANSISTOR XN1215		R211	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
Q303	8-729-422-39	TRANSISTOR XN4404		R213	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
Q304	8-729-420-50	TRANSISTOR UN5215		R214	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
Q305	8-729-420-50	TRANSISTOR UN5215		R215	1-218-270-11	METAL GLAZE 1.1K 5%	1/16W
				R216	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
				R217	1-218-294-11	METAL GLAZE 30K 5%	1/16W
				R220	1-216-824-11	METAL CHIP 1.8K 5%	1/16W
				R301	1-218-736-11	METAL CHIP 68K 0.50%	1/16W
				R302	1-218-724-11	METAL CHIP 22K 0.50%	1/16W
				R304	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
				R305	1-218-295-11	METAL GLAZE 43K 5%	1/16W
				R306	1-216-809-11	METAL CHIP 100 5%	1/16W
				R307	1-216-809-11	METAL CHIP 100 5%	1/16W

MAIN

SW FLEXIBLE

Ref. No.	Part No.	Description	Remark
R309	1-216-821-11	METAL CHIP	1K 5% 1/16W
R310	1-216-835-11	METAL CHIP	15K 5% 1/16W
R311	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R312	1-216-847-11	METAL CHIP	150K 5% 1/16W
R313	1-216-845-11	METAL CHIP	100K 5% 1/16W
R314	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R601	1-216-815-11	METAL CHIP	330 5% 1/16W
R602	1-216-833-11	METAL CHIP	10K 5% 1/16W
R603	1-216-856-11	METAL CHIP	820K 5% 1/16W
R604	1-216-857-11	METAL CHIP	1M 5% 1/16W
R605	1-216-837-11	METAL CHIP	22K 5% 1/16W
R606	1-216-857-11	METAL CHIP	1M 5% 1/16W
R607	1-216-845-11	METAL CHIP	100K 5% 1/16W
R608	1-216-837-11	METAL CHIP	22K 5% 1/16W
R609	1-216-845-11	METAL CHIP	100K 5% 1/16W
R610	1-216-849-11	METAL CHIP	220K 5% 1/16W
R615	1-216-845-11	METAL CHIP	100K 5% 1/16W
R616	1-216-845-11	METAL CHIP	100K 5% 1/16W
R617	1-216-845-11	METAL CHIP	100K 5% 1/16W
R618	1-216-857-11	METAL CHIP	1M 5% 1/16W
R619	1-216-853-11	METAL CHIP	470K 5% 1/16W
R701	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R702	1-216-841-11	METAL CHIP	47K 5% 1/16W
R703	1-216-841-11	METAL CHIP	47K 5% 1/16W
R704	1-216-841-11	METAL CHIP	47K 5% 1/16W
R705	1-216-845-11	METAL CHIP	100K 5% 1/16W
R706	1-216-845-11	METAL CHIP	100K 5% 1/16W
R707	1-216-845-11	METAL CHIP	100K 5% 1/16W
R708	1-216-849-11	METAL CHIP	220K 5% 1/16W
R709	1-216-849-11	METAL CHIP	220K 5% 1/16W
R710	1-216-851-11	METAL CHIP	330K 5% 1/16W
R711	1-216-849-11	METAL CHIP	220K 5% 1/16W
R712	1-216-849-11	METAL CHIP	220K 5% 1/16W
R713	1-216-849-11	METAL CHIP	220K 5% 1/16W
R714	1-216-841-11	METAL CHIP	47K 5% 1/16W
R715	1-216-845-11	METAL CHIP	100K 5% 1/16W
R716	1-216-851-11	METAL CHIP	330K 5% 1/16W
R718	1-216-849-11	METAL CHIP	220K 5% 1/16W
R719	1-216-849-11	METAL CHIP	220K 5% 1/16W
R720	1-218-724-11	METAL CHIP	22K 0.50% 1/16W
R721	1-218-836-11	METAL CHIP	360 0.50% 1/16W
R722	1-218-845-11	METAL CHIP	820 0.50% 1/16W
R723	1-218-692-11	METAL CHIP	1K 0.50% 1/16W
R724	1-218-694-11	METAL CHIP	1.2K 0.50% 1/16W
R725	1-216-849-11	METAL CHIP	220K 5% 1/16W
R726	1-216-849-11	METAL CHIP	220K 5% 1/16W
R727	1-216-815-11	METAL CHIP	330 5% 1/16W
R801	1-216-859-11	METAL GLAZE	1.5M 5% 1/16W

Ref. No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RV301	1-223-711-21	RES, VAR (VOL)	
RV601	1-223-715-21	RES, ADJ 220K	
		< SWITCH >	
S701	1-572-581-11	SWITCH, SLIDE (N/R DETECT)	
S703	1-692-933-41	SWITCH, PUSH (1 KEY) (A/B DETECT)	
S704	1-692-849-21	SWITCH, PUSH (1 KEY) (TAPE)	
S705	1-692-453-11	SWITCH, KEY BOARD (□)	
S706	1-692-453-11	SWITCH, KEY BOARD (<▷)	
S707	1-692-453-11	SWITCH, KEY BOARD (FF)	
S708	1-692-453-11	SWITCH, KEY BOARD (REW)	
		< VIBRATOR >	
X701	1-579-867-21	VIBRATOR, CERAMIC (2MHz)	

	1-653-416-11	SW FLEXIBLE (DOLBY) BOARD	

		< SWITCH >	
S301	1-572-922-11	SWITCH, SLIDE (DOLBY NR)	

	1-653-417-11	SW FLEXIBLE (MODE) BOARD	

		< SWITCH >	
S702	1-572-922-11	SWITCH, SLIDE (BL SKIP)	

		MISCELLANEOUS	

HP901	1-500-091-21	HEAD, MAGNETIC (PLAYBACK)	
M901	1-698-368-11	MOTOR	
PM901	1-454-674-11	SOLENOID, PLUNGER	
S301	1-572-922-11	SWITCH, SLIDE (DOLBY NR)	
S702	1-572-922-11	SWITCH, SLIDE (BL SKIP)	
S709	1-572-580-11	SWITCH, LEAF (ATS)	

		ACCESSORIES & PACKING MATERIALS	

	1-467-782-11	REMOTE CONTROL UNIT	
	1-528-231-22	BATTERY, NICKEL CADMIUM (NC-6WM) (JEW)	
	1-528-445-11	BATTERY CHARGER (BC-8AT) (JEW)	
	1-528-539-11	BATTERY CASE	
	1-528-551-11	BATTERY, NICKEL HYDROGEN (E)	

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
	1-528-576-11	BATTERY CHARGER (BC-9HU) (EX1:US, CND/EX1HG:CND)	
	1-528-577-11	BATTERY CHARGER (BC-9HY) (EX1HG:AEP, EA)	
	1-528-578-11	BATTERY CHARGER (BC-9HP) (EX1HG:UK)	
	1-528-580-11	BATTERY CHARGER (BC-7HT) (E)	
	1-528-590-11	BATTERY, NICKEL HYDROGEN (EX1:US, CND/EX1HG:EXCEPT JEW, E)	
	1-569-007-11	ADAPTER, CONVERSION 2P (E, JEW)	
*	3-376-784-11	CUSHION	
	3-759-096-11	MANUAL, INSTRUCTION (EX1:US, CND/EX1HG:AEP, CND, UK, EA) (ENGLISH, FRENCH, SPANISH)	
	3-759-096-41	MANUAL, INSTRUCTION (JEW) (JAPANESE, ENGLISH)	
	3-759-096-51	MANUAL, INSTRUCTION (EX1HG:AEP) (GERMAN, DUTCH, SWEDISH)	
	3-759-096-61	MANUAL, INSTRUCTION (EX1HG:AEP) (ITALIAN, PORTUGUESE)	
	3-759-096-71	MANUAL, INSTRUCTION (E) (ENGLISH, SPANISH, CHINESE)	
*	3-914-571-01	INDIVIDUAL CARTON (EX1)	
	3-916-249-01	CASE, CARRYING	
*	3-918-305-01	INDIVIDUAL CARTON (EX1HG)	
	8-953-537-90	HEADPHONE MDR-E741MP//K SET	
	X-3329-657-1	ATTACHMENT	

WM-EX1/EX1HG

SONY SERVICE MANUAL

US Model
WM-EX1



AEP Model
UK Model
WM-EX1HG

Canadian Model
E Model
Tourist Model
WM-EX1/EX1HG

CORRECTION-1

Correct your service manual as shown below.

 : indicates corrected portion.

Page	INCORRECT			CORRECT	
	<u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Description</u>
23	7	X-3368-791-1	CASE ASSY (B) (EX1)	X-3368-791-1	CASE ASSY (B) (EX1)  (except US, Canadian)
				X-3370-068-1	CASE ASSY (B) (EX1) (US, Canadian) 

(ECN-WM401281)