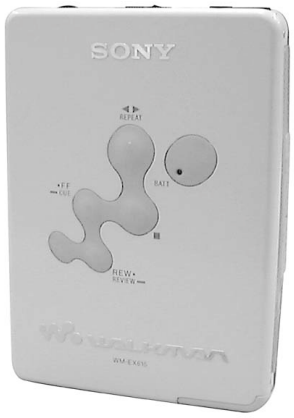
WM-EX615

SERVICE MANUAL

US Model
AEP Model
UK Model
Chinese Model
Tourist Model

Ver 1.0 2000.10



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Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-WMEX610-162

SPECIFICATIONS

Frequency response (Dolby NR off)
Playback: 30 - 18 000 Hz
Output
Headphones (🎧 jack)
Load impedance 8 - 300 Ω
Power requirements
1.5 V
Rechargeable battery
One R6 (size AA) battery
Dimensions (w/h/d)
Approx. 77.1 × 108.6 × 20.6 mm

Mass
Approx. 160 g
Supplied accessories
- Battery case (1)
- Stereo headphones or earphones with remote control (1)
- Battery charger (1)
- Rechargeable battery (NC-6WM, 1.2 V, 600 mAh, Ni-Cd) (1)
- Carrying pouch (1)
- Rechargeable battery carrying case (1)

Design and specifications are subject to change without notice.

CASSETTE PLAYER

SONY®

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Notes on chip component replacement

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

Flexible Circuit Board Repairing

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

SAFETY-RELATED COMPONENT WARNING!!

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

SECTION 1
SERVICE NOTE

[Service Mode]

The service mode enables to operate the mechanism of WM-EX615 while the MAIN board is opened.

Rotation of the idler gear (A) (S side) is detected using the photo-reflector (PH701) in the WM-EX615. PH701 is located on the MAIN board, therefore the rotation of the idler gear (A) (S side) cannot be detected by PH701 when the MAIN board is removed. As a result, the motor cannot be controlled and cannot run correctly. To repair the machine after the MAIN board is removed while the main power is turned on, follow the procedures as described below.

1. Setting

1) Remove the cabinets referring to section "3. DISASSEMBLY". Open the MAIN board.
2) Connect the motor (M901) and the plunger solenoid (PM901) to the MAIN board using the jumper wires. When the extension jig (1-769-143-11) (10 wires as a set) is used, they can be connected easily.
3) Short the TAPE DETECT switch (S901-1) and the ATS switch (S901-2).
4) Connect an AF oscillator to TP53 (P. IN) and TP14 (GND).
5) Connect DC 1.3 V from external regulated power supply to ⊕ and ⊖ terminals of the battery.

2. PRE-SET status

The PLAY, FF and REW modes can be entered only from the PRE-SET status.

1) Check that the slider (NR) is in the center position (S701), and the FWD/REV switch is also in the center position. When these switches are not in the center position, set them to the PRE-SET status as follows.
2) Move the FWD/REV switch (S701) to the same position as the slider (NR) is set.
3) The slider (NR) can be moved when the main power of the regulated power supply is turned OFF once then back ON. Move the FWD/REV switch (S701) to the center position in synchronism with the timing when the slider (NR) is moved.

3. FF, REW modes

1) Check that the PRE-SET status is set.
2) Connect square wave or sine wave to TP53 (P. IN) and TP14 (GND). (See illustration below.)
3) Press the ■ switch (S702) to enter the STOP mode.
4) Press the FF AMS switch (S704) and the REW AMS switch (S705).

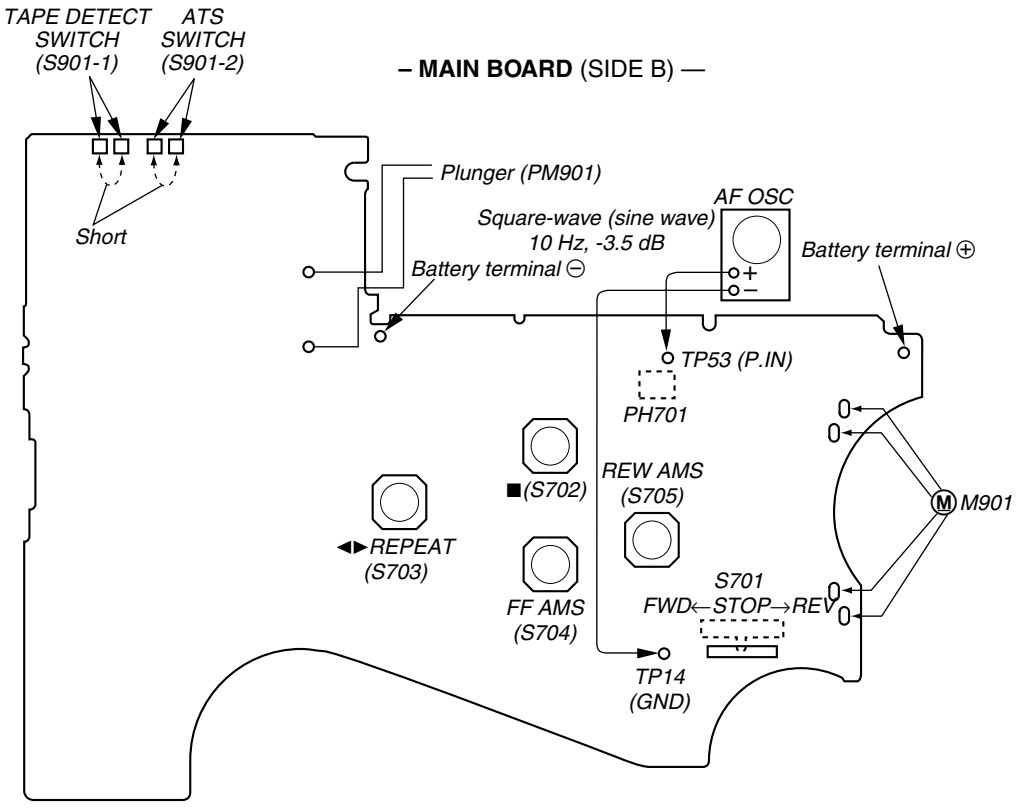
4. PLAY mode

1) Check that the PRE-SET status is set.
2) Connect square wave or sine wave to TP53 (P. IN) and TP14 (GND). (See illustration below.)
3) Press the ■ switch (S702) to enter the stop mode.
4) When the ◄► switch (S703) of the MAIN board is pressed, the slider (N/R) moves once to the F side then moves to the R side. When the FWD/REV switch (S701) is pressed in the synchronism with the above timing, the machine can enter the PLAY (R side) mode. Press the ◄► switch (S703) again, and move the FWD/REV switch (S701) in the synchronism with the motion of slider (NR). It enables the machine to enter into the PLAY (F side) mode.

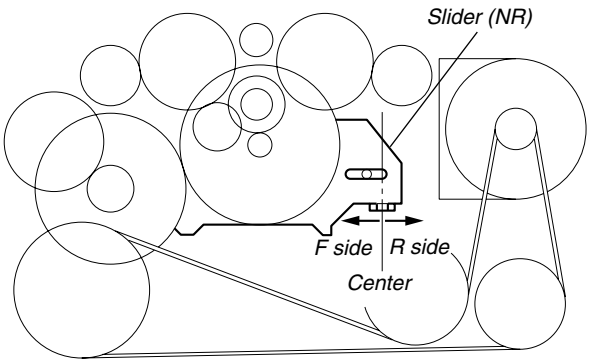
Note 1: When you fail to enter the PLAY mode, re-start from step 1) PRE-SET status.

Note 2: Regarding the ◄► (S703), ■ (S702), FF AMS (S704), and REW AMS (S705) switches, use these switches of the remote control unit as much as possible.

Note 3: If a headphones are used, the beep sound shows the timing of the FWD/REV switch (S701).

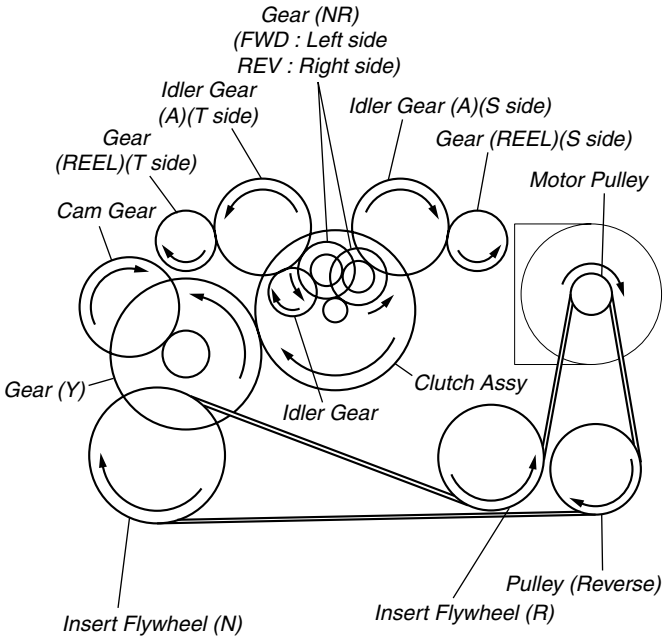


[Slider (NR)]

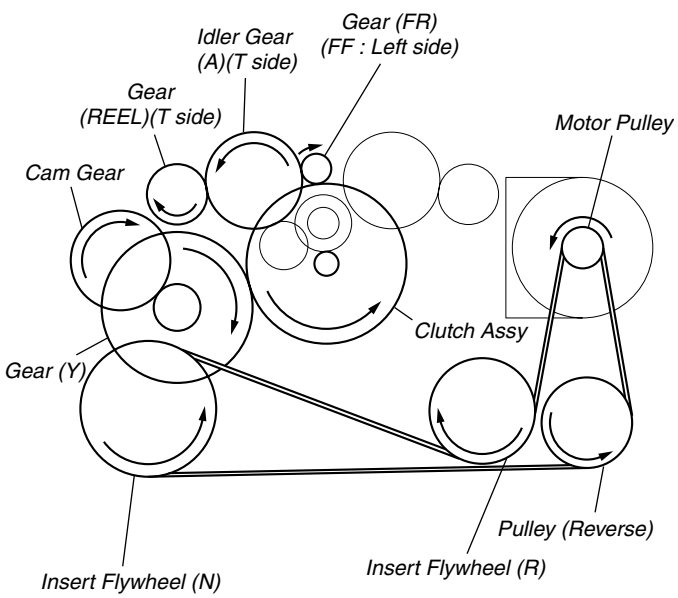


[Tape drive mechanism]

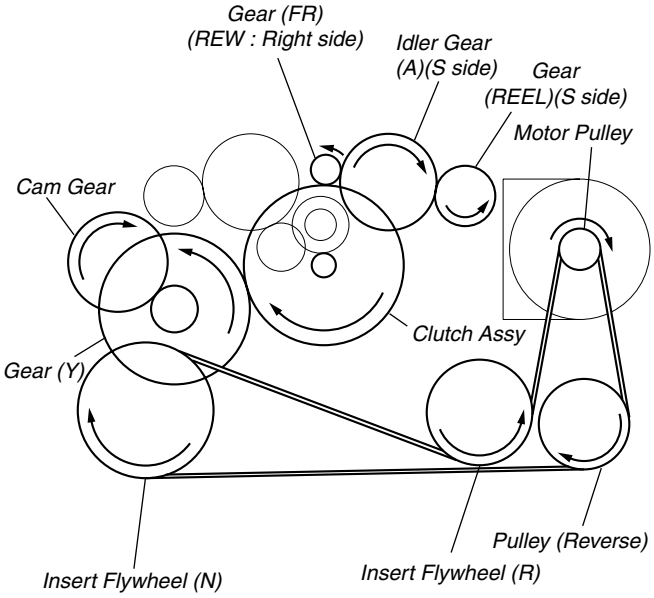
Tape drive mechanism in PLAY mode



Tape drive mechanism in FF mode



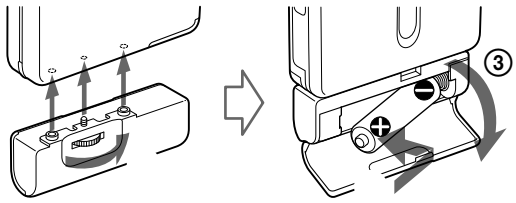
Tape drive mechanism in REW mode



SECTION 2
GENERAL

This section is extracted from instruction manual.

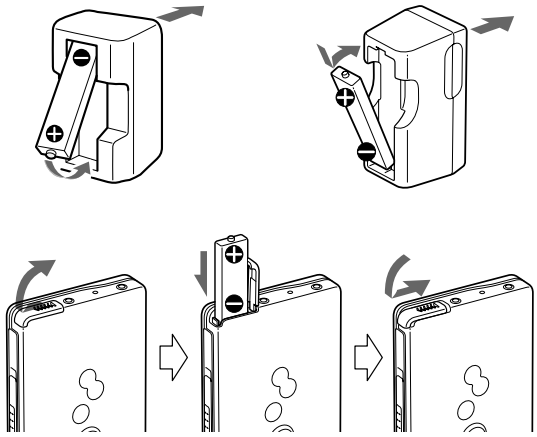
A



B

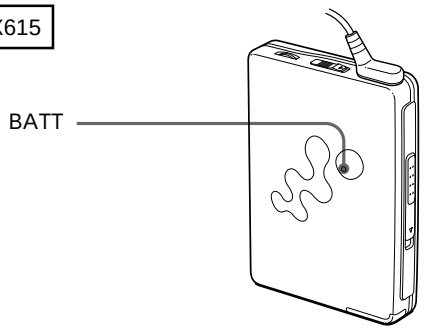
UK, Australian, and Hong Kong model

Other models

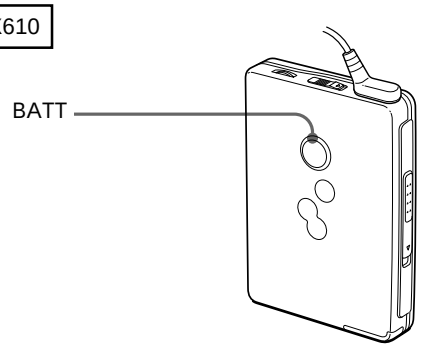


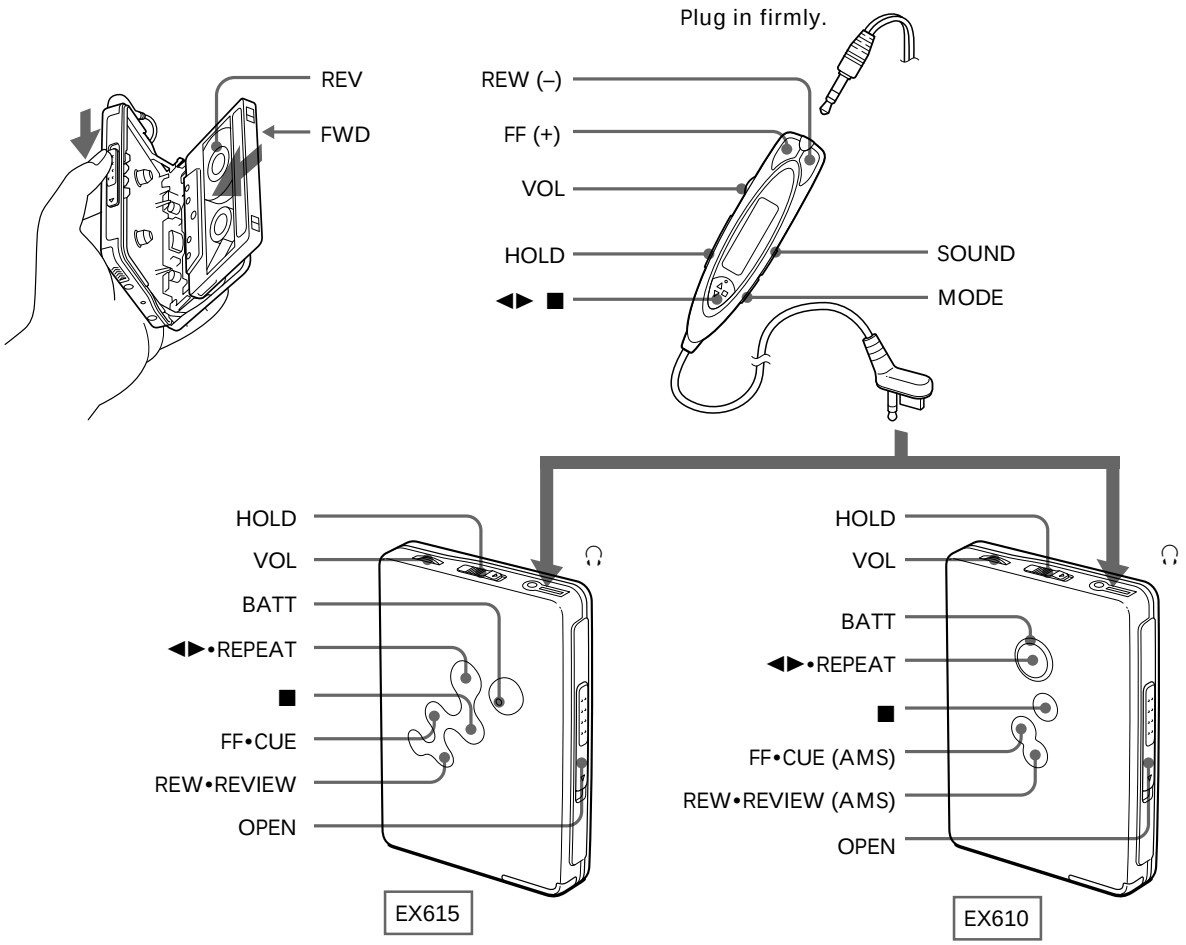
C

EX615



EX610





Preparations

Prepare a dry battey (not supplied) or the rechargeable battery (supplied).

Dry Battery A

Attach the supplied battery case, and then insert one R6 (size AA) battery with correct polarity.

Note

• For maximum performance we recommend that you use a Sony alkaline battery.

Rechargeable Battery B

1 Insert the supplied rechargeable battery (NC-6WM) into the charger with correct polarity.
2 Plug in the charger to the house current (mains).
UK, Australian, and Hong Kong model: Full charging takes about 3.5 hours.
U.S.A., Canada, European Continent and Saudi Arabian model: Full charging takes about 2.5 hours.
Korean model: The full charging time depends on the voltage of your mains.
110 V: 10 hours
220 V: 2.5 hours
Other models: The full charging time depends on the voltage of your mains.
120 V: 10 hours
220 – 240V: 2.5 hours
3 Insert the fully charged battery into the rechargeable battery compartment.

You can charge the battery about 300 times.

When to replace/charge the battery C

Replace or charge the battery when "▭" flashes in the display on the remote control and the BATT lamp on the main unit goes out.

Note

• After the battery is replaced, the setting of the SOUND and MODE buttons will be erased.

Playing a Tape

1 Insert a cassette and if the HOLD function is on, slide the HOLD switch in the opposite direction of the arrow to unlock the controls.
2 Press ◀▶(play)•■(stop) on the remote control and adjust the volume with VOL. (On the main unit, press ◀▶•REPEAT.)

When adjusting the volume on the main unit
Set the VOL control on the remote control at maximum.

When adjusting the volume on the remote control
Set the VOL control on the main unit to around 6.

Operation on the remote control

To	Press
Switch playback to the other side	◀▶•■ more than a second during playback
Stop playback	◀▶•■ once during playback
Fast forward*	FF during stop
Rewind*	REW during stop
Repeat the current track (Repeat Single Track function)	◀▶•■ twice during playback *To stop a single repeat, press ◀▶•■ once*

Operation on the main unit

To	Press
Switch playback to the other side	◀▶•REPEAT during playback
Stop playback	■
Fast forward*	FF•CUE during stop
Rewind*	REW•REVIEW during stop
Repeat the current track (Repeat Single Track function)	◀▶•REPEAT for 2 seconds or more during playback *To stop a single repeat, press it again.*

* If ◀▶•■ on the remote control is pressed during fast forward or rewind, the Walkman switches to playback.

Other tape operations

Use the FF/REW buttons on the remote control, or FF•CUE (AMS)/REW•REVIEW(AMS) on the main unit.

To	Press
Fast forward while listening to the sound (CUE)	Press and hold FF during playback and release it at the point you want.
Rewind while listening to the sound (REVIEW)	Press and hold REW during playback and release it at the point you want.
Play the next track/succeeding 9 tracks from the beginning (AMS*)	FF once/repeatedly during playback
Play the current track/previous 8 tracks from the beginning (AMS*)	REW once/repeatedly during playback
Play the other side from the beginning (Skip Reverse function)	FF for 2 seconds or more during stop
Play the same side from the beginning (Rewind Auto Play function)	REW for 2 seconds or more during stop

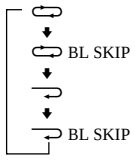
* Automatic Music Sensor

Using Other Functions

Adjusting Playback Mode

You can adjust the playback direction mode (⇆ or ⮌) as well as the BL SKIP mode (on or off).

1 Press MODE repeatedly. With each press the indications change as follows:



• When "BL SKIP" is displayed, the tape is fast-forwarded to the next track if there is a blank space of longer than 12 seconds. You will hear repeated sets of three short beeps when skipping a blank.
• When "⇆" is displayed, both sides of the tape is played repeatedly.
• When "⮌" is displayed, both sides of the tape is played once (if you start from R (REV) side, only REV side will be played).

Note

• You cannot adjust the playback mode during fast-forward or rewind.

Playing a Tape Recorded with the Dolby* B NR System

Hold down SOUND until "◻◻" appears in the display.
To cancel Dolby B NR, hold down SOUND again until "◻◻" disappears.

* Manufactured under license from Dolby Laboratories. "Dolby"and the double-D symbol are trademarks of Dolby Laboratories.

Note

• You cannot turn on/off the Dolby B NR function during fast-forward or rewind.

Emphasizing Sound

1 Press SOUND repeatedly. With each press, the indications change as follows:
RV (Sound Revitalizer): emphasizes treble sound
MB (Mega Bass): emphasizes bass sound (moderate effect)
GRV (Groove): emphasizes bass sound (strong effect)
none: normal (no effect)

Notes

• If the sound is distorted with the mode "GRV", turn down the volume of the main unit or select other modes.
• You cannot change the mode during fast-forward or rewind.

Protecting Your Hearing — AVLS (Automatic Volume Limiter System)

Hold down MODE until "AVLS" appears in the display.
To cancel the AVLS function, hold down MODE again until "AVLS" disappears.

Note

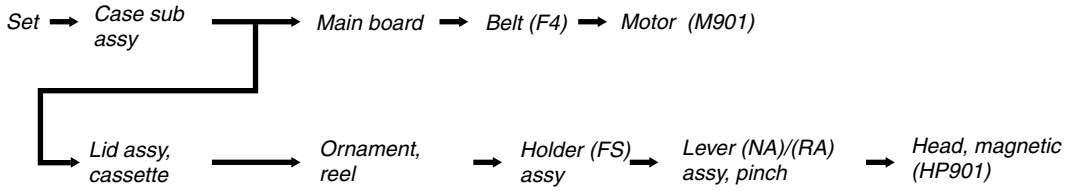
• You cannot turn on/off the AVLS function during fast-forward or rewind.

Locking the Controls — HOLD Function

Slide the HOLD switch in the direction of the arrow to lock the controls of the Walkman or the remote control.

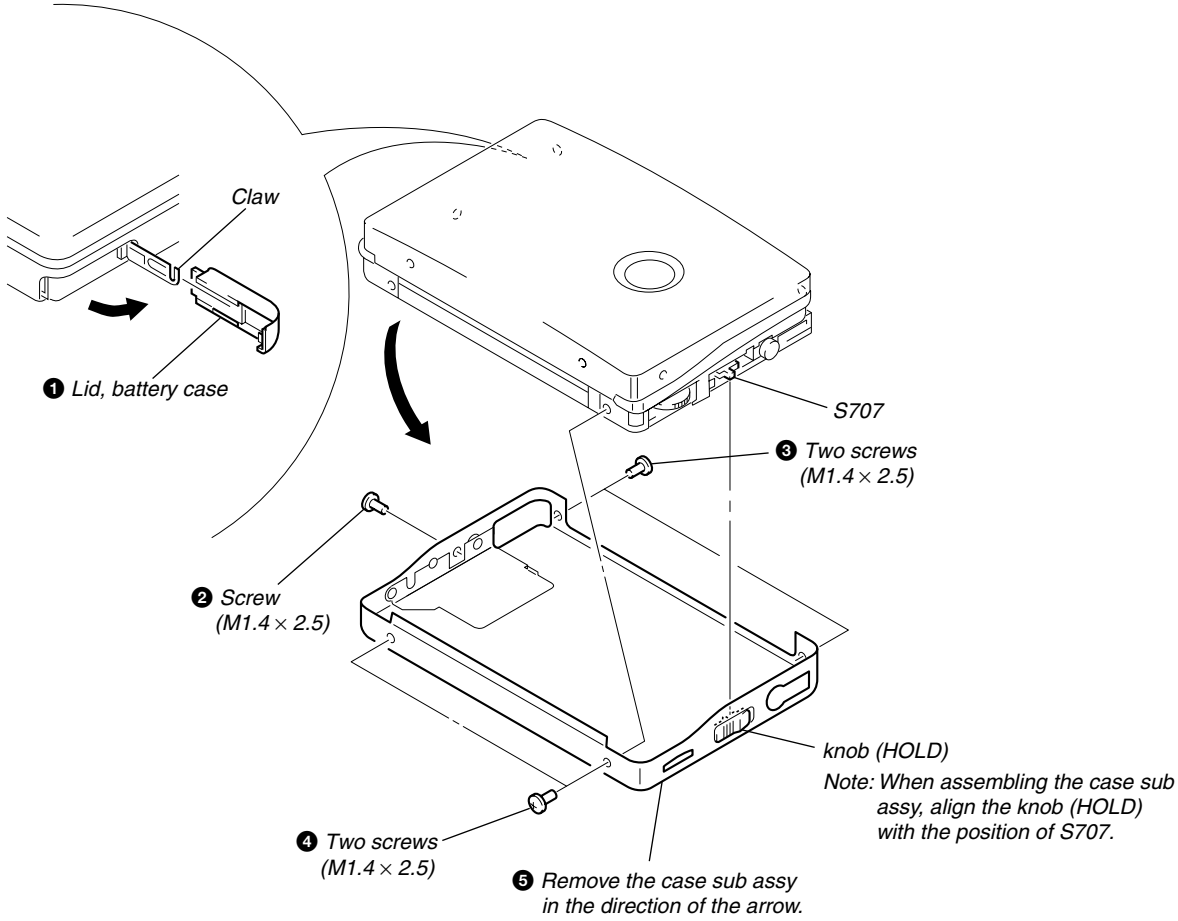
SECTION 3
DISASSEMBLY

Note : Follow the disassembly procedure as shown in the flow chart below.

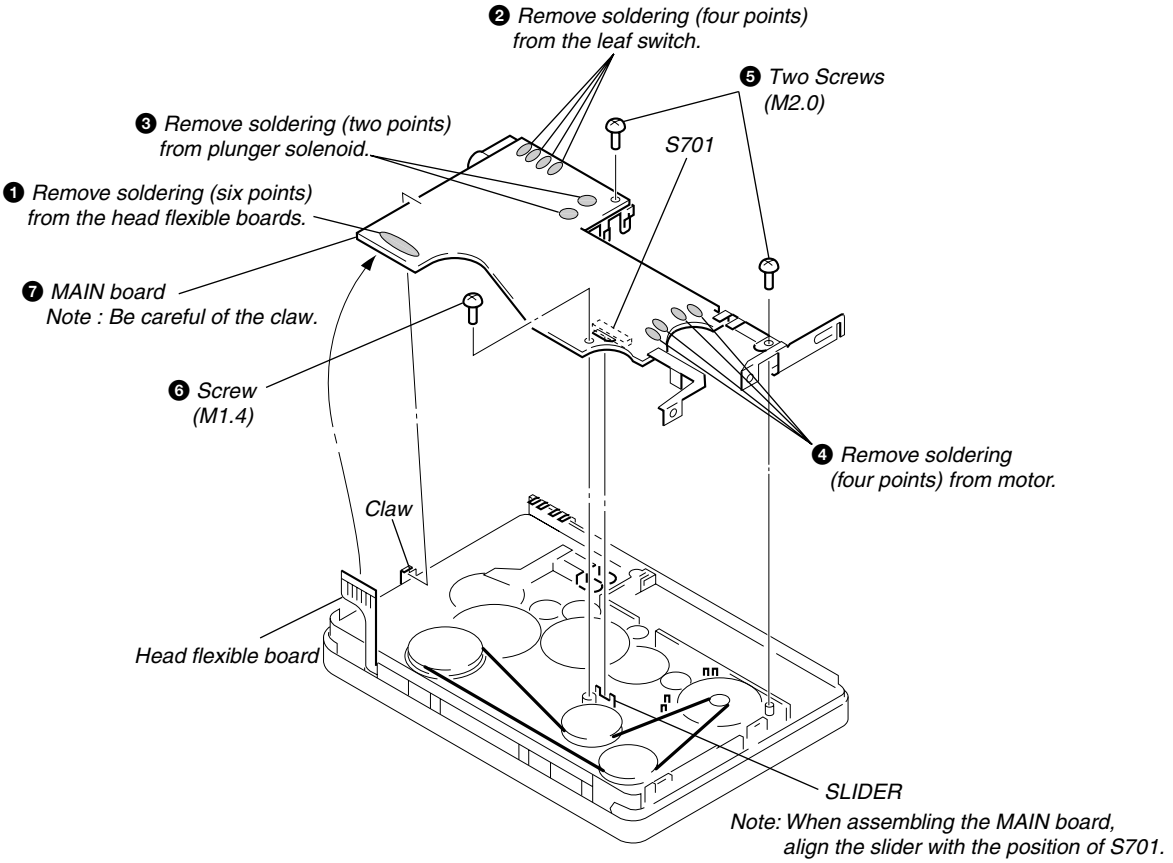


Note : Follow the disassembly procedure in the numerical order given.

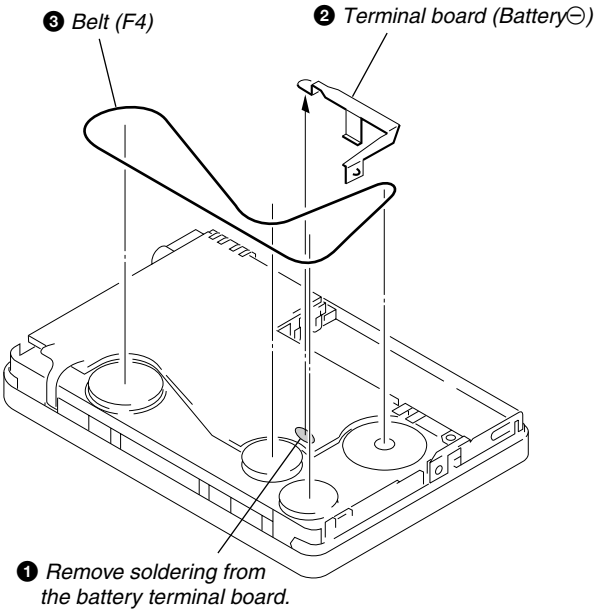
3-1. CASE SUB ASSY



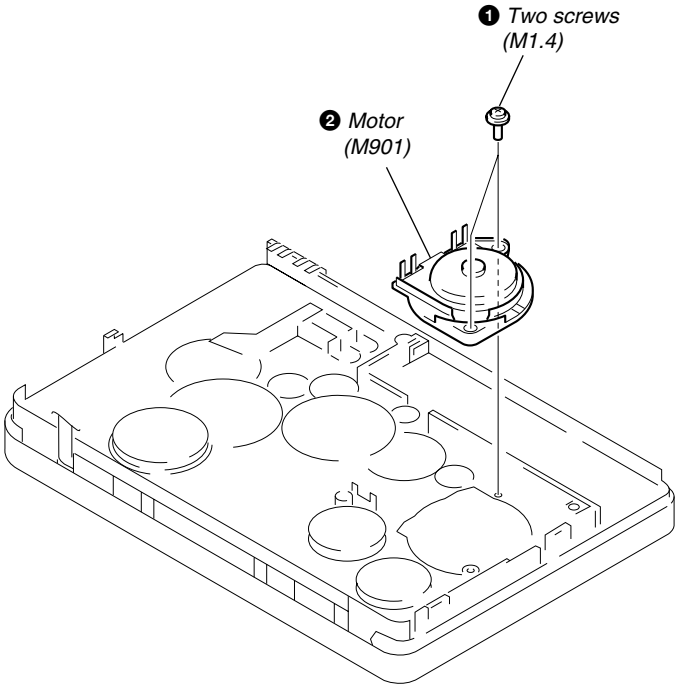
3-2. MAIN BOARD



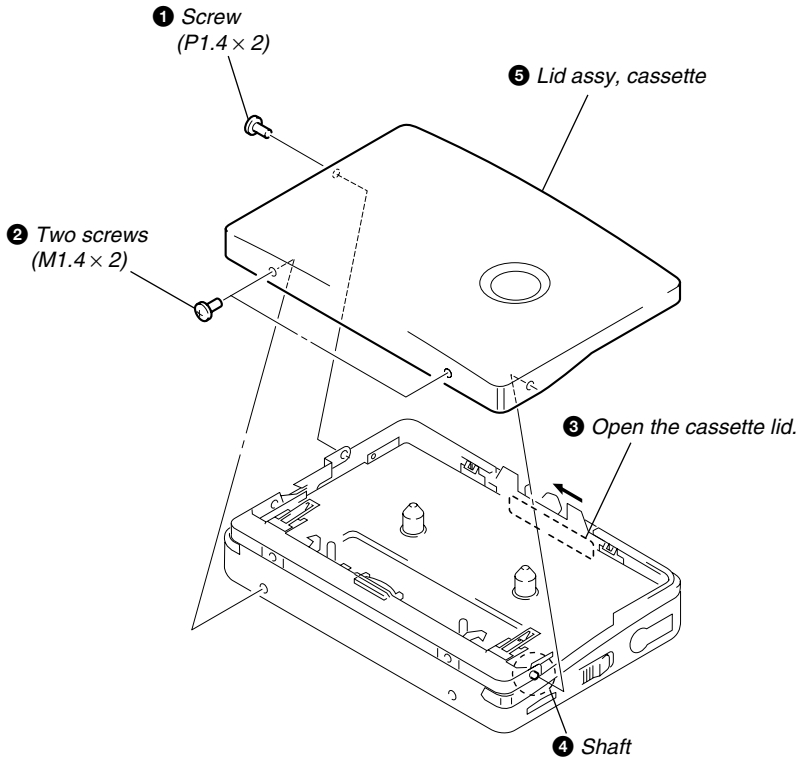
3-3. BELT (F4)



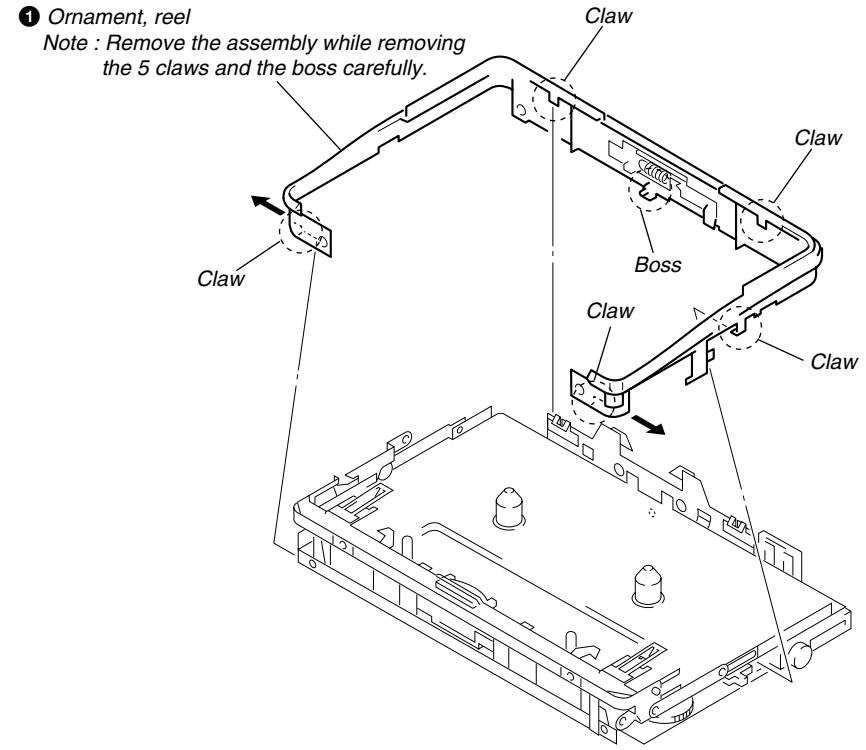
3-4. MOTOR (M901)



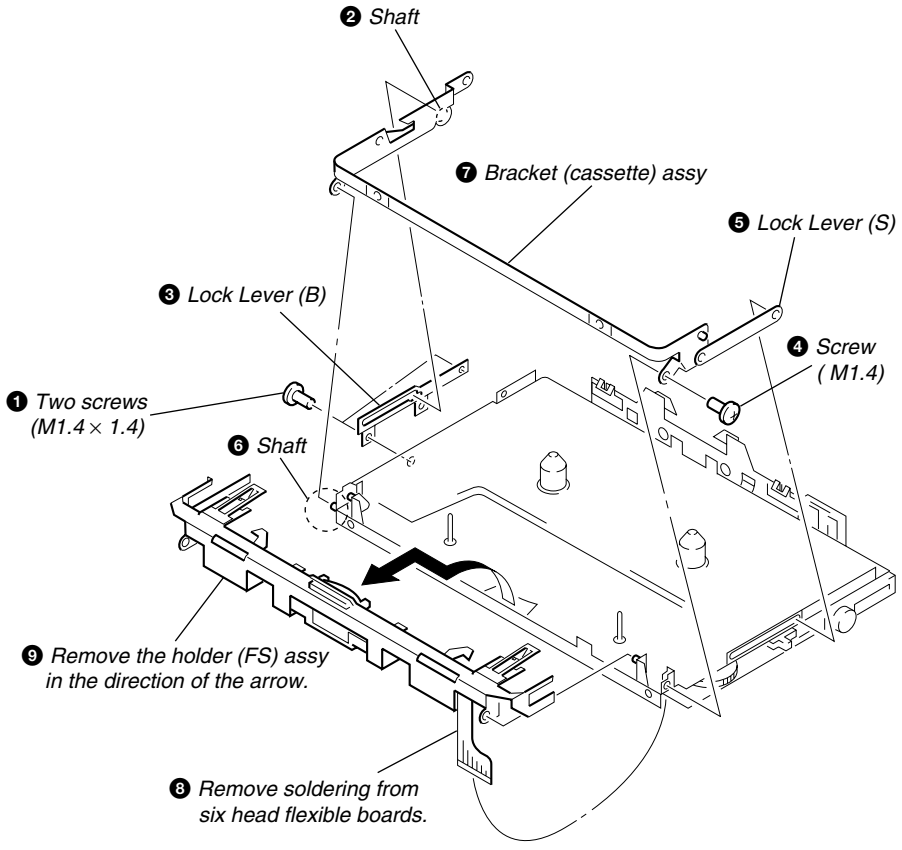
3-5. LID ASSY, CASSETTE



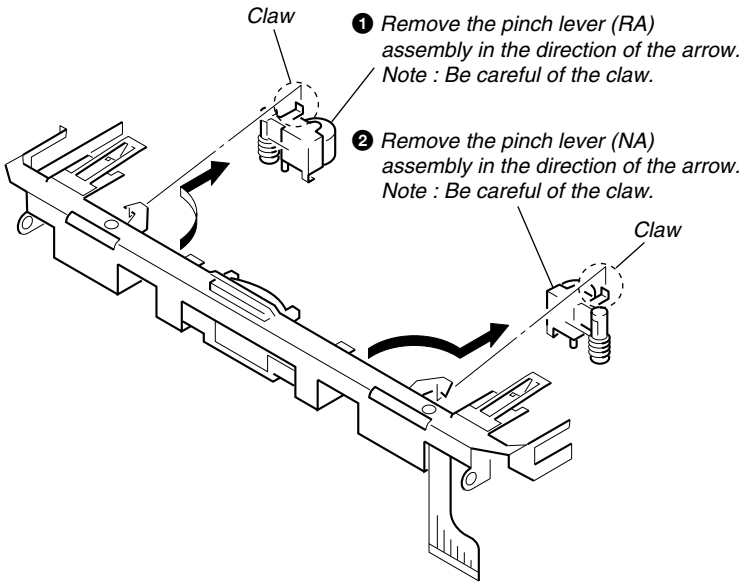
3-6. ORNAMENT, REEL



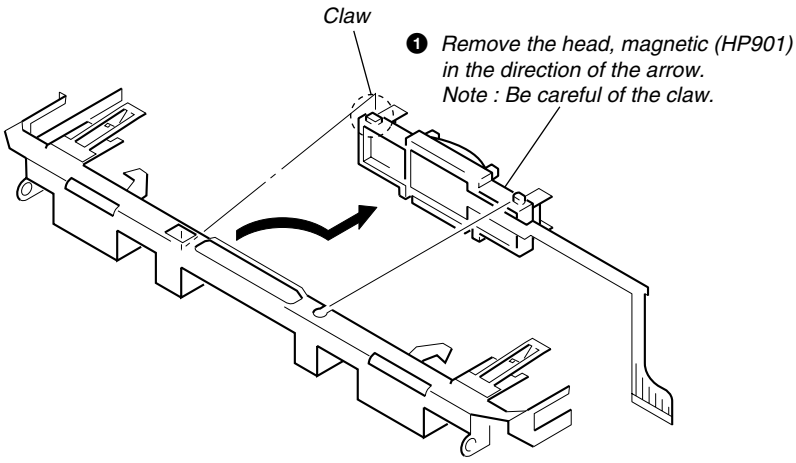
3-7. HOLDER (FS) ASSY



3-8. LEVER (NA)/(RA) ASSY, PINCH



3-9. HEAD, MAGNETIC (HP901)



SECTION 4
MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   playback head — pinch roller
   rubber belts — capstan
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-102D	15 to 25 g•cm (0.22 to 0.34 oz•inch)
FWD Back Tension	CQ-102D	0.3 to 1.5g•cm (0.007 to 0.020 oz•inch)
REW	CQ-102C	15 to 25 g•cm (0.22 to 0.34 oz•inch)
REW Back Tension	CQ-102C	0.3 to 1.5 g•cm (0.007 to 0.020 oz•inch)
FF, REW	CQ-201B	More than 35 g•cm (More than 0.69 oz•inch)

SECTION 5
ELECTRICAL ADJUSTMENT

PRECAUTION

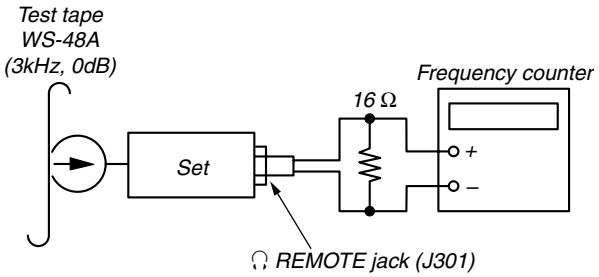
1. Specified voltage: 1.3 V (DC)
2. Switch position (MENU)
   DNR : OFF
   AVLS : OFF
   BL SKIP : OFF
   MB/RV GRV : OFF

Test Tape

Tape	Signal	Used for
WS-48A	3 kHz, 0 dB	Tape Speed Adjustment

Tape Speed Adjustment

Procedure:



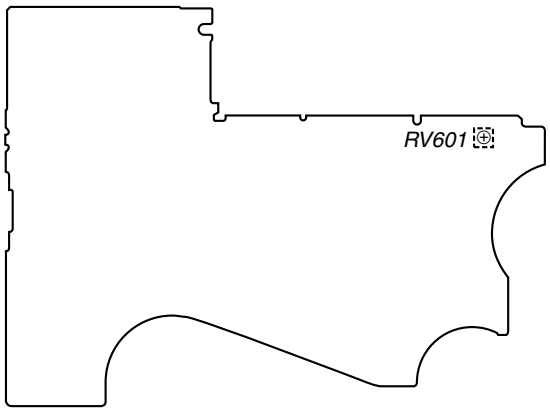
1. Enter the FWD playback mode.
2. Adjust RV601 so that the value of the frequency counter reading becomes 3,000 Hz.
   Specification value:

Frequency counter
2,970 Hz – 3,030 Hz

3. Check that the frequency deviation at the beginning and ending of a tape is within 1.5 % (45 Hz).

Adjustment Point:

[MAIN BOARD] — SIDE B —

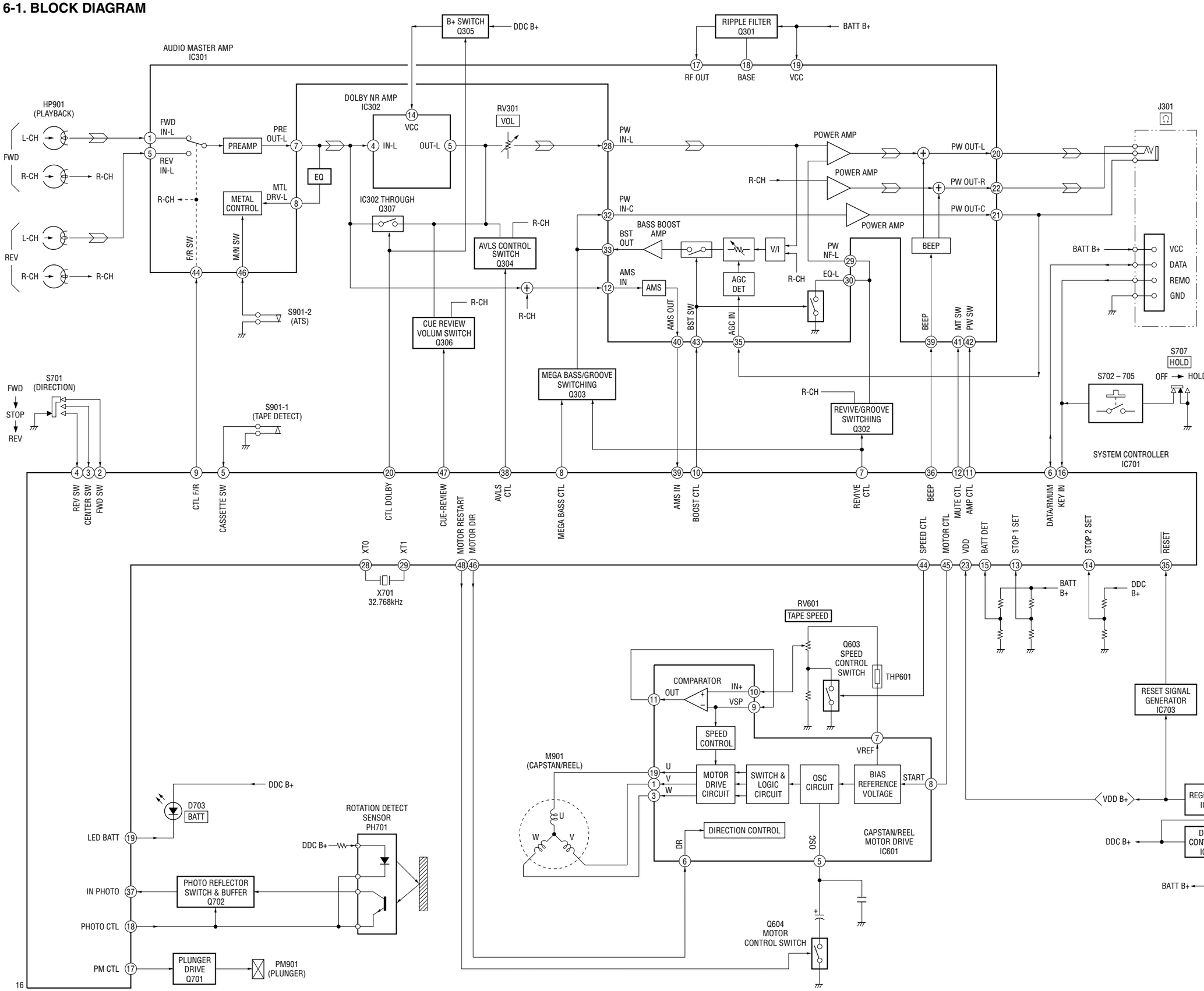


SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM

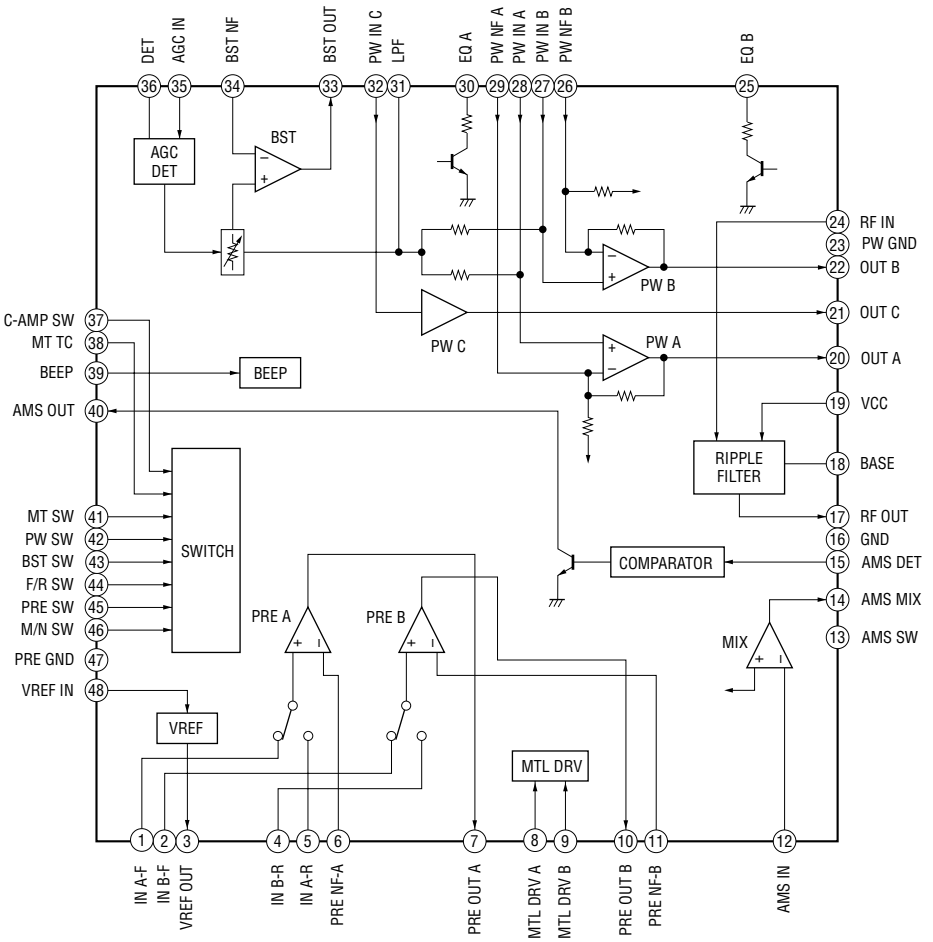
• SIGNAL PATH
: PLAYBACK

R-CH: Same as L-CH

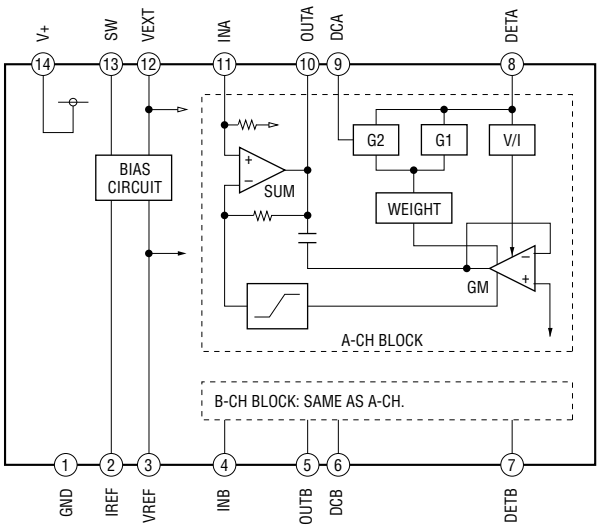


6-2. IC BLOCK DIAGRAMS

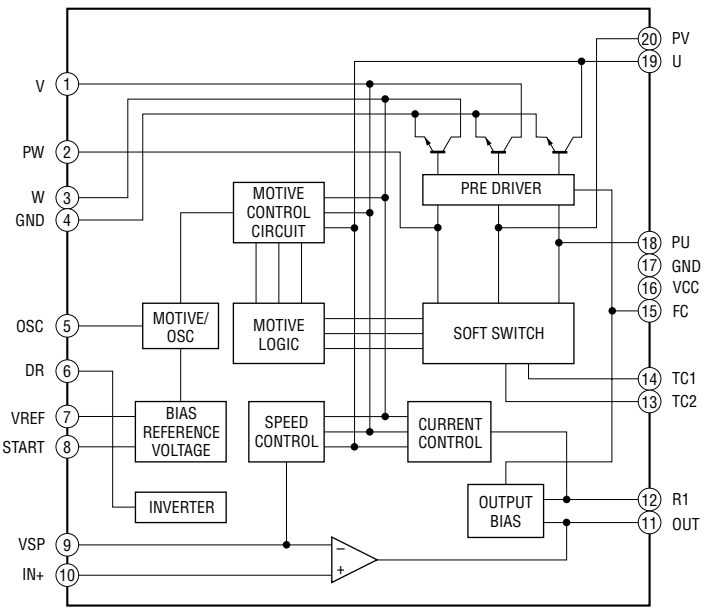
IC301 TA2123AF (EL)



IC302 NJM2185AV-TE2



IC601 MM1279XVBE



6-3. PRINTED WIRING BOARD

• Semiconductor Location

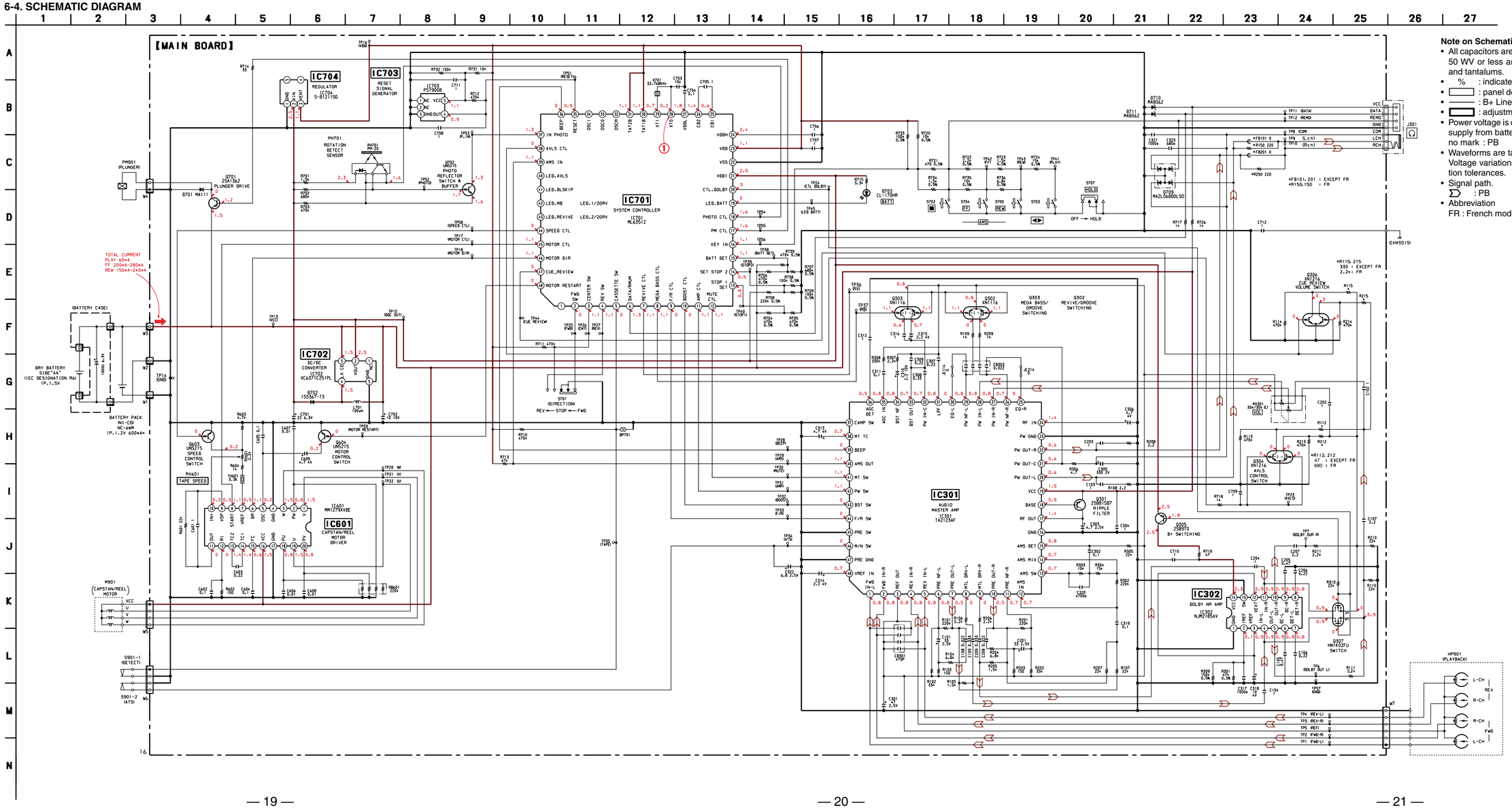
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D701	B-11	IC301	D-7	Q301	D-7	Q603	C-2
D702	F-3	IC302	C-6	Q302	C-10	Q604	D-2
D703	C-12	IC601	D-14	Q303	B-10	Q701	C-4
D709	B-10	IC701	D-5	Q304	C-6	Q702	C-2
D710	A-7	IC702	E-3	Q305	E-11		
D711	A-7	IC703	C-5	Q306	B-11		
		IC704	E-12	Q307	C-10		

Note on Printed Wiring Board:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ● : Through hole.
- ▒ : Pattern of the rear side.

Caution:
Pattern face side: (SIDE B) — Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (SIDE A) — Parts on the parts face side seen from the parts face are indicated.

6-4. SCHEMATIC DIAGRAM



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF
  50 WV or less are not indicated except for electrolytics and tantalums.
- % : indicates tolerance.
- ▭ : panel designation.
- ——— : B+ Line.
- ▬ : adjustment for repair.
- Power voltage is dc 1.5V and fed with regulated dc power supply from battery terminal.
  no mark : PB
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  Σ : PB
- Abbreviation
  FR : French model

6-5. IC PIN FUNCTION

• MAIN BOARD IC701 ML63512-127TBZ060 (SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Description
1	—	–	Not used (Open)
2	FWD SW	I	Detection switch (S701) input terminal "L": FWD
3	CENTER SW	I	Detection switch (S701) input terminal "L": CENTER
4	REV SW	I	Detection switch (S701) input terminal "L": REV
5	CASSETTE SW	I	Cassette detection switch (S901-1) input terminal "L": with cassette "H": without cassette
6	DATA/RMUM	I/O	Serial data output of communication with the remote commander having phone, and the remote control sensing signal input from remote commander having phone
7	REVIVE CTL	O	Tone selection signal output to TA2123F (IC301) "L": REVIVE "H": OFF/MEGA BASS/GROOVE
8	MEGA BASS CTL	O	Tone selection signal output to TA2123F (IC301) "L": MEGA BASS "H": OFF/REVIVE/GROOVE
9	F/R CTL	O	FWD/REV selection signal output to TA2123F (IC301) "L": FWD "H": REV
10	BOOST CTL	O	Bass boost control signal output to TA2123F (IC301) "L": OFF "H": ON
11	AMP CTL	O	Power supply ON/OFF control signal output to TA2123F (IC301) "L": power supply OFF "H": power supply ON (The power supply ON/OFF control of Dolby NR amplifier (IC302) is performed.)
12	MUTE CTL	O	Power mute control signal output to TA2123F (IC301) "L": mute ON "H": mute OFF
13	SET STOP1	I	Battery voltage detection input terminal when the machine is stopped. (A/D input)
14	SET STOP2	I	Reference voltage input terminal when the machine is stopped. (A/D input)
15	BATT DET	I	Battery voltage detection input terminal (A/D input)
16	KEY IN	I	Key input terminal (A/D input)
17	PM CTL	O	Plunger drive signal output "L": plunger ON
18	PHOTO CTL	O	Control signal output to the rotation detection circuit of the capstan/reel motor "L": rotation detection circuit ON
19	LED BATT	O	LED (D703) drive signal output to BATT display "L": LED ON
20	DOLBY CTL	O	Dolby ON/OFF control signal output to Dolby NR amplifier (IC302) "L": Dolby NR, ON, H: Dolby NR OFF
21	VDD1	–	Power supply terminal for external interface (+2.5 V)
22	VSS	–	Ground terminal
23	VDD	–	Power supply terminal (+1.5 V)
24	VDDH	–	Step-up power supply terminal for back-up
25	CB1	–	Terminal to which condenser for step-up power supply is connected
26	CB2	–	Terminal to which condenser for step-up power supply is connected
27	VDDL	–	Power supply terminal for internal logic
28	XT0	–	Terminal to which main system clock is connected (32.768 kHz)
29	XT1	–	Terminal to which main system clock is connected (32.768 kHz)
30	TAT1B	I	Test input terminal Normally, fixed to "H".
31	TAT2B	I	Test input terminal Normally, fixed to "H".
32	OSCM	–	Terminal to which external capacitor for oscillation is connected Not used in this machine (empty terminal)
33	OSC0	I	Terminal to which resistance for high-speed CR oscillation (800 kHz) is connected Not used in this machine (empty terminal)
34	OSC1	O	Terminal to which resistance for high-speed CR oscillation (800 kHz) is connected Not used in this machine (empty terminal)
35	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC703) "L": reset "L" is input for several hundreds msec after power supply starts up, then "H" is input.
36	BEEP	O	Beep sound output to TA2123F (IC301)
37	IN PHOTO	I	Rotation detection input of capstan/reel motor (M901)
38	AVLS CTL	O	AVLS ON/OFF control signal output "L": AVLS OFF, "H": AVLS ON

Pin No.	Pin Name	I/O	Description
39	AMS IN	I	AMS detection signal input from TA2123F (IC301) “H”: No music
40	LED AVLS	O	Drive signal output for AVLS display Not used in this machine (empty terminal)
41	LED BLSKIP	O	Drive signal output for BL SKIP display Not used in this machine (empty terminal)
42	LED MB	O	Drive signal output for MG GRV display Not used in this machine (empty terminal)
43	LED REVIVE	O	Drive signal output for RV GRV display Not used in this machine (empty terminal)
44	SPEED CTL	O	Motor speed control signal output to capstan/reel motor drive IC (IC601) “L”: normal “H”: half speed
45	MOTOR CTL	O	Motor start control signal output to capstan/reel motor drive IC (IC601) “H”: motor ON
46	MOTOR DIR	O	Motor direction control signal output to capstan/reel motor drive IC (IC601) “L”: clockwise “H”: counter-clockwise
47	CVE REVIEW	O	Audio attenuation ON/OFF control signal output to TA2123F (IC301) “L” : OFF “H” : ON (CUE/REVIEW)
48	MOTOR RESTART	O	Signal output for motor start-up status control to capstan/reel motor drive IC (IC601) “H”: during FF/REW motor rotating

SECTION 7
EXPLODED VIEWS

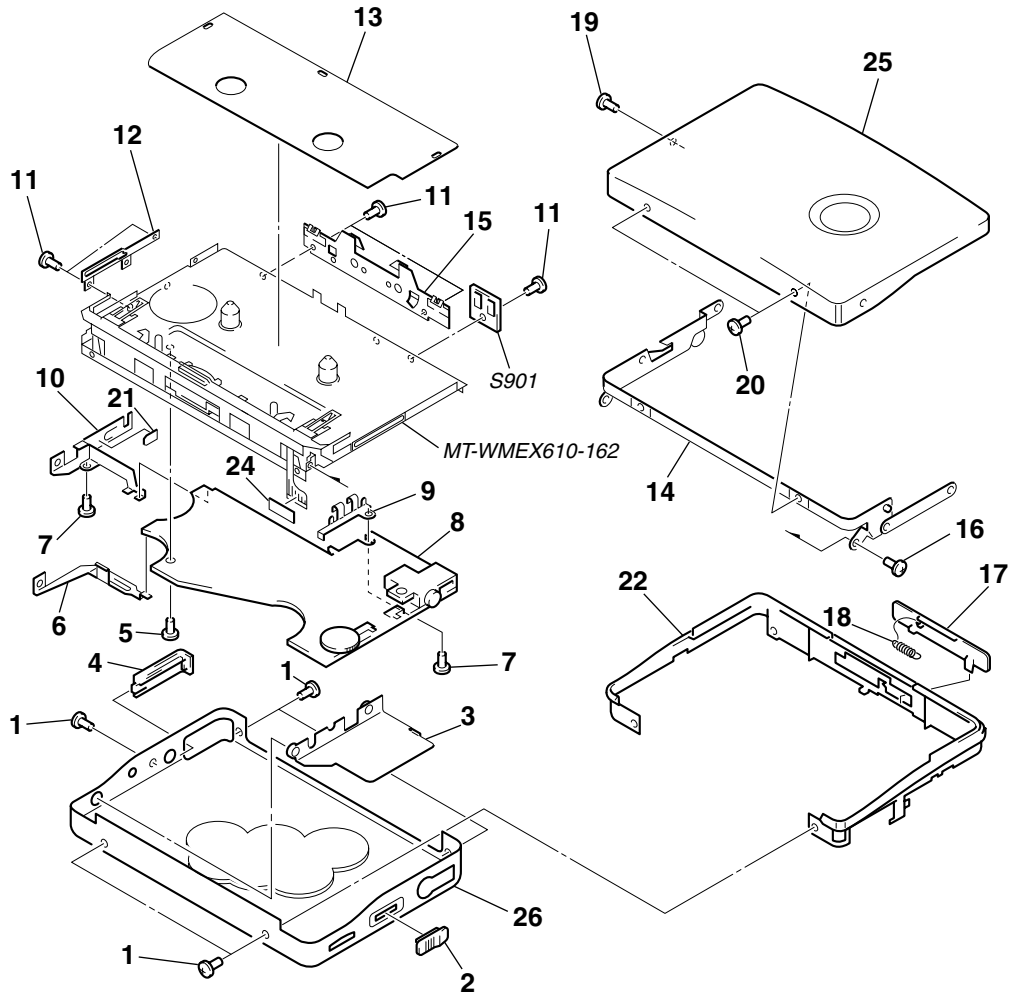
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts of Color Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.

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

- Abbreviation
  FR : French model
  EE : East European model
  CH : Chinese model
  KR : Korean model
  JE : Tourist model

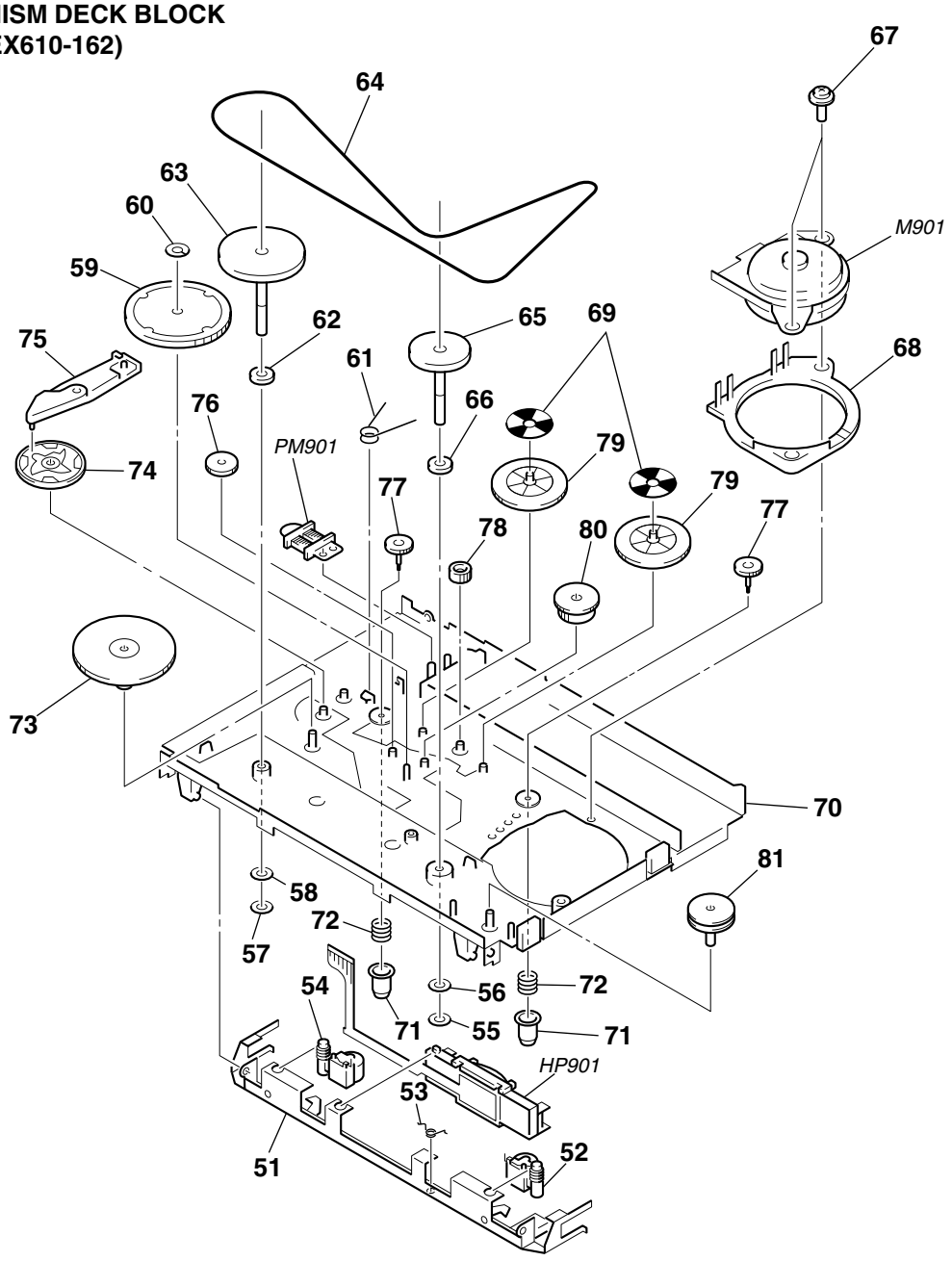
7-1. CABINET BLOCK, MAIN BOARD



Ref. No.	Part No.	Description	Remarks
1	3-704-197-21	SCREW (M1.4X2.5), LOCKING	
2	3-029-230-01	KNOB (HOLD)	
3	3-220-762-01	PLATE (TERMINAL), ORNAMENTAL	
4	3-220-769-21	LID,BATTERY CASE	
5	3-345-648-71	SCREW (M1.4), TOOTHED LOCK	
6	3-029-213-01	TERMINAL BOARD, BATTERY	
7	3-375-114-41	SCREW	
* 8	A-3021-352-A	MAIN BOARD, COMPLETE (EXCEPT FR)	
* 8	A-3021-353-A	MAIN BOARD, COMPLETE (FR)	
9	3-038-056-01	TERMINAL BOARD (MINUS)	
10	X-3377-726-2	TERMINAL BOARD ASSY	
11	3-939-590-05	SCREW (IB LOCK)	
12	3-038-054-01	LEVER (B), LOCK	
13	3-221-643-31	COVER, MD (JE)	
13	3-221-643-41	COVER, MD (US,CH,KR)	
13	3-221-643-51	COVER, MD (AEP,UK,FR,EE)	

Ref. No.	Part No.	Description	Remarks
14	X-3377-719-1	BRACKET (CASSETTE) ASSY	
15	X-3377-717-2	BRACKET ASSY	
16	3-365-630-41	SCREW (M1.4)	
17	3-222-732-01	KNOB (OPEN) (JE)	
17	3-222-732-11	KNOB (OPEN) (EXCEPT JE)	
18	3-029-220-11	SPRING, TENSION	
19	3-704-197-11	SCREW (P1.4X2.0)	
20	3-704-197-11	SCREW (M1.4X2.0), LOCKING	
21	3-031-460-01	SHEET (BT)	
22	3-223-827-11	ORNAMENT, REEL (JE)	
22	3-223-827-21	ORNAMENT, REEL (EXCEPT JE)	
24	3-309-595-11	SHEET, INSULATING, PACK	
25	X-3379-531-1	LID ASSY, CASSETTE (615)	
26	X-3379-896-1	CASE SUB ASSY (W) (EXCEPT JE)	
26	X-3379-895-1	CASE SUB ASSY (W) (JE)	
S901	1-762-553-11	SWITCH, LEAF	

7-2. MECHANISM DECK BLOCK (MT-WMEX610-162)



Ref. No.	Part No.	Description	Remarks
51	X-3378-354-2	HOLDER (FS) ASSY	
52	X-3377-363-1	LEVER (RA) ASSY, PINCH	
53	3-046-789-01	SPRING (HDA)	
54	X-3377-362-1	LEVER (NA) ASSY, PINCH	
55	3-029-275-01	WASHER (STOPPER N)	
56	3-029-278-01	WASHER	
57	3-029-276-01	WASHER (STOPPER R)	
58	3-029-289-01	WASHER	
59	X-3376-813-1	CLUTCH ASSY (F)	
60	3-932-724-21	WASHER	
61	3-040-897-01	SPRING (TGA), TORSION	
62	3-386-694-01	WASHER	
63	3-029-306-11	FLYWHEEL (N), INSERT	
64	3-220-035-01	BELT(F4)	
65	3-029-268-11	FLYWHEEL (R), INSERT	
66	3-007-428-01	WASHER (R)	
67	3-029-765-01	SCREW (M1.4), TOOTHED LOCK	

Ref. No.	Part No.	Description	Remarks
68	3-029-274-01	RETAINER (F2), MOTOR	
69	3-007-433-01	SHEET (N), REFLECTION	
70	X-3377-584-1	CHASSIS ASSY (F)	
71	3-010-274-02	TABLE, REEL	
72	3-010-954-01	SPRING (BT), COMPRESSION	
73	3-029-282-01	GEAR(Y)	
74	3-029-285-01	GEAR, CAM	
75	3-029-284-01	LEVER, TRIGGER	
76	3-029-281-01	GEAR, IDLER (B)	
77	3-010-273-02	GEAR(REEL)	
78	3-029-273-01	GEAR(FR)	
79	3-029-283-01	GEAR, IDLER (A)	
80	3-029-286-01	GEAR(NR)	
81	3-029-288-01	PULLEY, REVERSE	
HP901	1-500-576-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-763-166-11	MOTOR (CAPSTAN/REEL)(WITH PULLEY)	
PM901	1-454-674-31	SOLENOID, PLUNGER	

MAIN

SECTION 8
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.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

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

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

- Abbreviation
  FR : French model
  EE : East European model
  CH : Chinese model
  KR : Korean model
  JE : Tourist model

Ref. No.	Part No.	Description			Remarks
*	A-3021-352-A	MAIN BOARD, COMPLETE (EXCEPT FR)			
		**********			
*	A-3021-353-A	MAIN BOARD, COMPLETE (FR)			
		**********			
	3-032-323-01	PAPER (A), SHIELD			
		< CAPACITOR >			
C101	1-107-520-11	TANTAL. CHIP	33uF	20.00%	2.5V
C102	1-115-156-11	CERAMIC CHIP	1uF		10V
C103	1-115-156-11	CERAMIC CHIP	1uF		10V
C104	1-115-156-11	CERAMIC CHIP	1uF		10V
C105	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V
C106	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C107	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C108	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V
C201	1-107-520-11	TANTAL. CHIP	33uF	20.00%	2.5V
C202	1-115-156-11	CERAMIC CHIP	1uF		10V
C203	1-115-156-11	CERAMIC CHIP	1uF		10V
C204	1-115-156-11	CERAMIC CHIP	1uF		10V
C205	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V
C206	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C207	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C208	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C209	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V
C301	1-119-663-11	TANTAL. CHIP	47uF	20.00%	2.5V
C302	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C303	1-117-181-11	TANTAL. CHIP	4.7uF	20.00%	2.5V
C304	1-115-156-11	CERAMIC CHIP	1uF		10V
C305	1-126-236-11	ELECT	330uF	20.00%	2V
C306	1-109-935-11	TANTAL. CHIP	4.7uF	20.00%	4V
C307	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C308	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C309	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C310	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C311	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C312	1-115-156-11	CERAMIC CHIP	1uF		10V
C313	1-109-935-11	TANTAL. CHIP	4.7uF	20.00%	4V
C314	1-135-187-21	TANTAL. CHIP	2.2uF	20.00%	4V
C315	1-135-187-21	TANTAL. CHIP	2.2uF	20.00%	4V
C316	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C317	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C318	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C319	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C320	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C321	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C322	1-109-937-11	TANTAL. CHIP	6.8uF	20.00%	2.5V
C323	1-115-412-11	CERAMIC CHIP	680PF	5.00%	25V
C324	1-164-230-11	CERAMIC CHIP	220PH	5%	50V
C601	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C602	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C603	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C604	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C605	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C606	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C607	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C608	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C609	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C701	1-119-750-11	TANTAL. CHIP	22uF	20.00%	6.3V
C702	1-104-851-11	TANTAL. CHIP	10uF	20.00%	10V
C703	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C704	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C705	1-115-156-11	CERAMIC CHIP	1uF		10V
C706	1-115-156-11	CERAMIC CHIP	1uF		10V
C707	1-115-156-11	CERAMIC CHIP	1uF		10V
C708	1-115-156-11	CERAMIC CHIP	1uF		10V
C709	1-115-156-11	CERAMIC CHIP	1uF		10V
C710	1-115-156-11	CERAMIC CHIP	1uF		10V
C711	1-115-156-11	CERAMIC CHIP	1uF		10V
C712	1-115-156-11	CERAMIC CHIP	1uF		10V
CB301	1-127-575-21	CERAMIC CHIP	470PF		50V
CB303	1-127-576-21	CERAMIC CHIP	22000PF		25V
		< DIODE >			
D701	8-719-073-01	DIODE MA111-(K8).S0			
D702	8-719-049-09	DIODE 1SS367-T3SONY			
D703	8-719-067-79	LED CL-170HR-CD-T-AB (BATT)			
D709	8-719-068-83	DIODE MAZL068D0LS0-TX/L			
D710	8-719-422-58	DIODE MA8062			
D711	8-719-422-58	DIODE MA8062			
		< FERRITE BEAD >			
FB101	1-469-125-21	FERRITE	0uH		(EXCEPT FR)
FB201	1-469-125-21	FERRITE	0uH		(EXCEPT FR)
		< IC >			
IC301	8-759-579-12	IC TA2123AF(EL)			
IC302	8-759-488-80	IC NJM2185AV-TE2			
IC601	8-759-356-46	IC MM1279XVBE			
IC701	8-759-693-47	IC ML63512-127TBZ060			
IC702	8-759-566-77	IC XC6371C251PL			
IC703	8-759-430-08	IC PST9008NL			
IC704	8-759-280-84	IC S-81211SG-QA-T1			

Ref. No.	Part No.	Description			Remarks
		< JACK >			
J301	1-779-867-11	JACK (REMOTE)			
		< JUMPER CHIP >			
JC114	1-216-864-11	METAL CHIP	0	5%	1/16W
JC214	1-216-864-11	METAL CHIP	0	5%	1/16W
		< COIL >			
L701	1-412-032-11	INDUCTOR CHIP	100uH		
		< PHOTO INTERRUPTER >			
PH701	8-749-014-43	PHOTO PR-20-T			
		< TRANSISTOR >			
Q301	8-729-800-71	TRANSISTOR	2SB815B7-TB		
Q302	8-729-423-75	TRANSISTOR	XN1116		
Q303	8-729-423-75	TRANSISTOR	XN1116		
Q304	8-729-421-23	TRANSISTOR	XN1216		
Q305	8-729-046-89	TRANSISTOR	2SB970-S(TX).S0		
Q306	8-729-421-23	TRANSISTOR	XN1216		
Q307	8-729-038-06	TRANSISTOR	HN1K02FU(TE85L)		
Q603	8-729-420-50	TRANSISTOR	UN5215		
Q604	8-729-420-50	TRANSISTOR	UN5215		
Q701	8-729-230-72	TRANSISTOR	2SA1362YG		
Q702	8-729-420-50	TRANSISTOR	UN5215		
		< RESISTOR >			
R101	1-216-849-11	METAL CHIP	220K	5%	1/16W
R102	1-216-839-11	METAL CHIP	33K	5%	1/16W
R103	1-216-811-11	METAL CHIP	150	5%	1/16W
R104	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R105	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-837-11	METAL CHIP	22K	5%	1/16W
R108	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R109	1-216-821-11	METAL CHIP	1K	5%	1/16W
R110	1-216-837-11	METAL CHIP	22K	5%	1/16W
R111	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R112	1-216-805-11	METAL CHIP	47	5%	1/16W (EXCEPT FR)
R112	1-216-819-11	METAL CHIP	680	5%	1/16W (FR)
R113	1-216-853-11	METAL CHIP	470K	5%	1/16W
R114	1-216-853-11	METAL CHIP	470K	5%	1/16W
R115	1-216-815-11	METAL CHIP	330	5%	1/16W (EXCEPT FR)
R115	1-216-815-11	METAL CHIP	330	5%	1/16W (FR)
R150	1-216-811-11	METAL CHIP	150	5%	1/16W (FR)
R201	1-216-849-11	METAL CHIP	220K	5%	1/16W
R202	1-216-839-11	METAL CHIP	33K	5%	1/16W
R203	1-216-811-11	METAL CHIP	150	5%	1/16W
R204	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R205	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R206	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R207	1-216-837-11	METAL CHIP	22K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R208	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R209	1-216-821-11	METAL CHIP	1K	5%	1/16W
R210	1-216-837-11	METAL CHIP	22K	5%	1/16W
R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R212	1-216-805-11	METAL CHIP	47	5%	1/16W (EXCEPT FR)
R212	1-216-819-11	METAL CHIP	680	5%	1/16W (FR)
R213	1-216-853-11	METAL CHIP	470K	5%	1/16W
R214	1-216-853-11	METAL CHIP	470K	5%	1/16W
R215	1-216-815-11	METAL CHIP	330	5%	1/16W (EXCEPT FR)
R215	1-216-811-11	METAL CHIP	150	5%	1/16W (FR)
R250	1-216-811-11	METAL CHIP	150	5%	1/16W (FR)
R301	1-218-887-11	METAL CHIP	47K	0.5%	1/16W
R302	1-216-849-11	METAL CHIP	220K	5%	1/16W
R303	1-216-833-11	METAL CHIP	10K	5%	1/16W
R304	1-216-835-11	METAL CHIP	15K	5%	1/16W
R305	1-216-837-11	METAL CHIP	22K	5%	1/16W
R306	1-216-793-11	RES-CHIP	4.7	5%	1/16W
R307	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R308	1-216-851-11	METAL CHIP	330K	5%	1/16W
R309	1-218-899-11	METAL CHIP	150K	0.5%	1/16W
R310	1-216-837-11	METAL CHIP	22K	5%	1/16W
R601	1-216-837-11	METAL CHIP	22K	5%	1/16W
R602	1-216-809-11	METAL CHIP	100	5%	1/16W
R603	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R604	1-216-821-11	METAL CHIP	1K	5%	1/16W
R701	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R702	1-216-855-11	METAL CHIP	680K	5%	1/16W
R703	1-216-853-11	METAL CHIP	470K	5%	1/16W
R704	1-218-911-11	METAL CHIP	470K	0.5%	1/16W
R705	1-218-911-11	METAL CHIP	470K	0.5%	1/16W
R706	1-218-911-11	METAL CHIP	470K	0.5%	1/16W
R707	1-218-915-11	METAL CHIP	680K	0.5%	1/16W
R708	1-218-903-11	METAL CHIP	220K	0.5%	1/16W
R709	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R710	1-216-853-11	METAL CHIP	470K	5%	1/16W
R711	1-216-853-11	METAL CHIP	470K	5%	1/16W
R712	1-216-853-11	METAL CHIP	470K	5%	1/16W
R713	1-216-841-11	METAL CHIP	47K	5%	1/16W
R714	1-216-803-11	METAL CHIP	33	5%	1/16W
R715	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R717	1-216-821-11	METAL CHIP	1K	5%	1/16W
R718	1-216-821-11	METAL CHIP	1K	5%	1/16W
R719	1-216-805-11	METAL CHIP	47	5%	1/16W
R720	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R721	1-218-839-11	METAL CHIP	470	0.5%	1/16W
R722	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R723	1-218-851-11	METAL CHIP	1.5K	0.5%	1/16W
R724	1-218-875-11	METAL CHIP	15K	0.5%	1/16W
R726	1-216-821-11	METAL CHIP	1K	5%	1/16W
R731	1-216-833-11	METAL CHIP	10K	5%	1/16W
R732	1-216-847-11	METAL CHIP	150K	5%	1/16W
R733	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R734	1-218-851-11	METAL CHIP	1.5K	0.5%	1/16W
R735	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R736	1-218-867-11	METAL CHIP	6.8K	0.5%	1/16W

MAIN

Ref. No.	Part No.	Description			Remarks
R738	1-218-895-11	METAL CHIP	100K	0.5%	1/16W
R739	1-218-911-11	METAL CHIP	470K	0.5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB601	1-234-243-11	RES, NETWORK 220K		(3216)	
		< VARIABLE RESISTOR >			
RV301	1-225-684-11	RES, VAR, CARBON 30K/30K (VOL)			
RV601	1-225-254-11	RES, ADJ, CARBON 2.2K			
		< SWITCH >			
S701	1-771-475-11	SWITCH, SLIDE (DIRECTI0ON)			
S702	1-771-053-21	SWITCH, KEY BOARD (■)			
S703	1-771-053-21	SWITCH, KEY BOARD (◄►)			
S704	1-771-053-21	SWITCH, KEY BOARD (FF)			
S705	1-771-053-21	SWITCH, KEY BOARD (REW)			
S707	1-572-922-11	SWITCH, SLIDE (HOLD)			
		< THERMISTOR >			
TH601	1-810-794-11	THERMISTOR, POSITIVE			
		< VIBRATOR >			
X701	1-579-258-11	VIBRATOR, CRYSTAL 32.768kHz			
**********					
		MISCELLANEOUS			
		**********			
HP901	1-500-576-11	HEAD, MAGNETIC (PLAYBACK)			
M901	1-763-166-11	MOTOR (CAPSTAN/REEL)(WITH PULLEY)			
PM901	1-454-674-31	SOLENOID, PLUNGER			
S901	1-762-553-11	SWITCH, LEAF			
**********					

Ref. No.	Part No.	Description	Remarks
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-528-299-41	BATTERY, NI-CD (NC-6WM) (AEP,UK,FR,EE)	
	1-528-299-51	BATTERY, NI-CD (NC-6WM) (US)	
	1-528-543-22	BATTERY, NI-CD (NC-6WM) (CH,JE,KR)	
⚠	1-528-580-21	BATTERY CHARGER (BC-7HT) (JE)	
⚠	1-528-661-15	BATTERY CHARGER (BC-7DR) (KR)	
⚠	1-528-713-23	BATTERY CHARGER (BC-7DC) (US)	
⚠	1-528-744-21	BATTERY CHARGER (BC-7DY) (AEP,FR,EE)	
⚠	1-528-822-13	BATTERY CHARGER (BC-7DN) (CH)	
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
⚠	1-756-115-11	CHARGER, BATTERY (BC-7SP2)(UK)	
	1-759-700-22	CASE, BATTERY	
	3-008-521-01	CASE, BATTERY CHARGE	
	3-222-163-01	POUCH, CARRYING	
	3-222-185-01	MANUAL, INSTRUCTION (JAPANESE, ENGLISH, CHINESE, KOREAN)(JE)	
	3-222-185-11	MANUAL, INSTRUCTION (ENGLISH, CHINESE, KOREAN)(US,CH,KR)	
	3-222-185-21	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE, FRENCH, GERMAN)(AEP,FR)	
	3-222-185-31	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN, FINNISH)(AEP)	
	3-222-185-41	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN)(AEP,UK,EE)	
	3-222-185-51	MANUAL, INSTRUCTION (CZECH, SLOVAK, HUNGARIAN, POLISH)(EE)	
	8-953-304-90	RECEIVER MDR-E805SP	
	A-3052-265-A	REMOTE CONTROL ASSY (RM-WME23)	

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

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