

WM-EX631

SERVICE MANUAL

Ver 1.0 2002.10



AEP Model
UK Model
E Model
Chinese Model
Tourist Model

Model Name Using Similar Mechanism	WM-EX621
Tape Transport Mechanism Type	MT-WMEX610-162

SPECIFICATIONS

Frequency response

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 × 108.1 × 20.4 mm (excl. projecting parts and controls)

Mass

Approx. 142 g (main unit only)

Supplied accessories

- Battery case (1)
- AC power adaptor (1)
- Charging stand (1)
- Stereo headphones or earphones with remote control (1)
- Rechargeable battery (NH-10WM, 1.2 V, 900 mAh (MIN), Ni-MH) (1)
- Carrying pouch (1)
- Rechargeable battery carrying case (1)
- AC plug adaptor (1) ("Sony world model" only)

Design and specifications are subject to change without notice.

CASSETTE PLAYER

9-874-181-01
2002J1600-1
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Personal Audio Company
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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.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

**: LEAD FREE MARK**

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350°C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

Notes on the AC power adaptor

- Use only the supplied AC power adaptor. Do not use any other AC power adaptor.



- Connect the AC power adaptor to an easily accessible AC outlet. Should you notice an abnormality in the AC power adaptor, disconnect it from the AC outlet immediately.
- Do not touch the AC power adaptor with wet hands.

SAFETY-RELATED COMPONENT WARNING!!

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

SECTION 1 SERVICE NOTE

[Service Mode]

The service mode enables to operate the mechanism of WM-EX631 while the MAIN board is opened.

Rotation of the idler gear (A) (S side) is detected using the photo-reflector (PH701) in the WM-EX631. 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) (See page 4 for illustration), and the FWD/REV switch (S701) 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 (S703) to enter the STOP mode.
- 4) Press the  switch (S705) or  switch (S706).

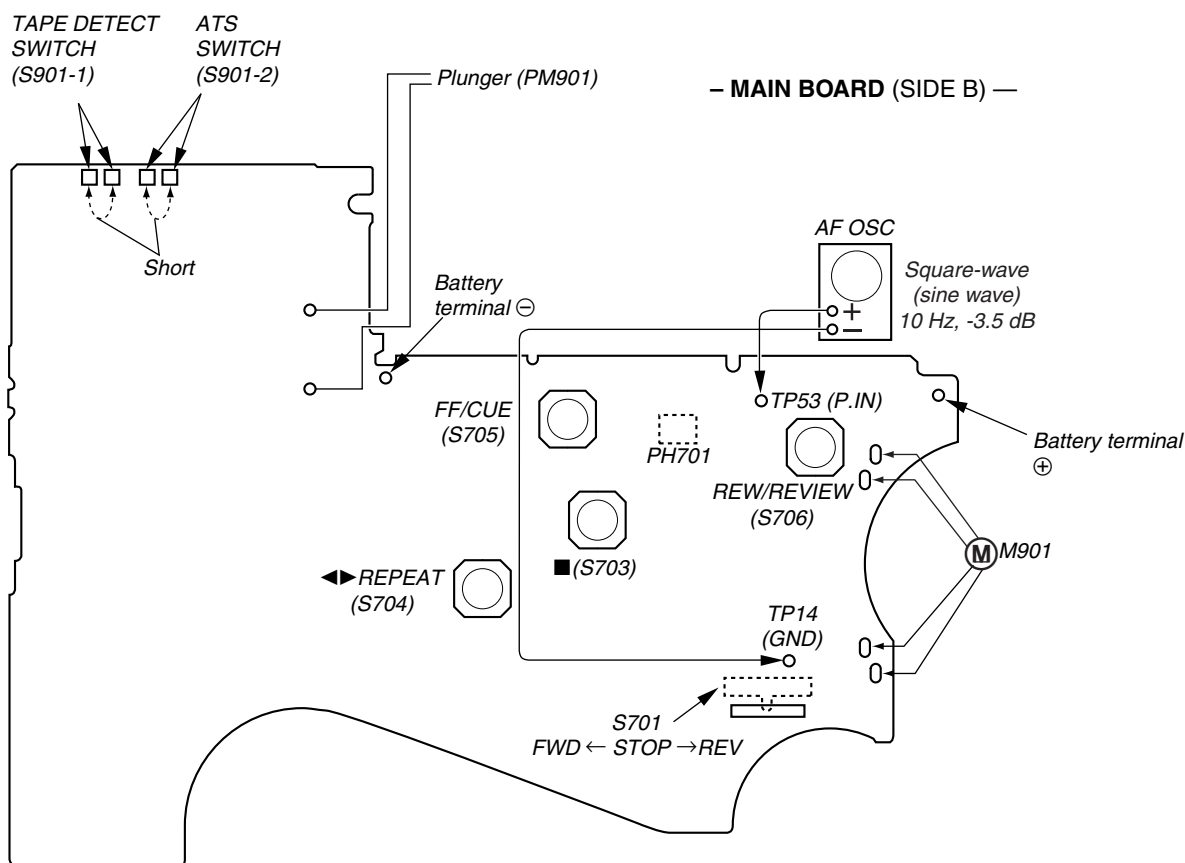
4. PLAY mode

- 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 (S703) to enter the stop mode.
- 4) When the  switch (S704) 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 (S704) 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. (See page 4 for illustration)

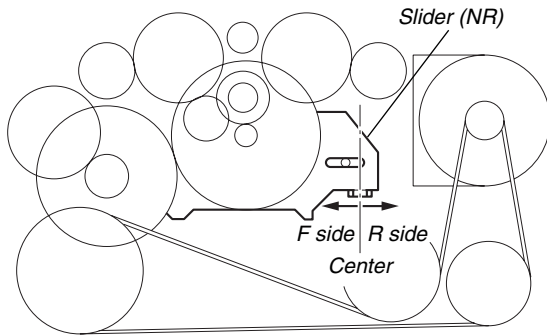
Note 1: When you fail to enter the PLAY mode, re-start from step 2) PRE-SET status.

Note 2: Regarding the  (S704),  (S703),  (S705) and  (S706) 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).

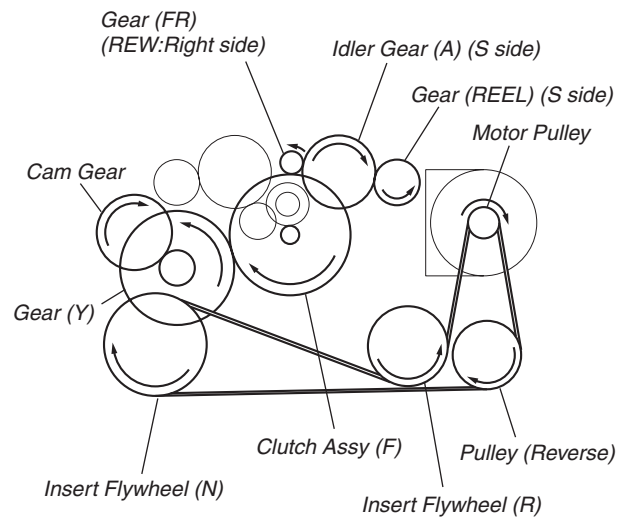


[Slider (NR)]

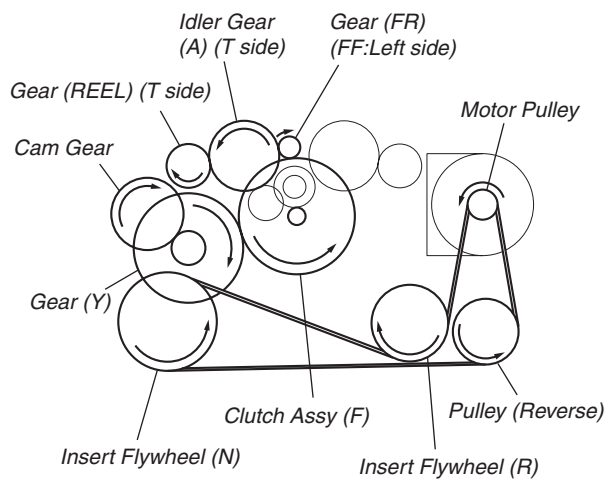


[Tape drive mechanism]

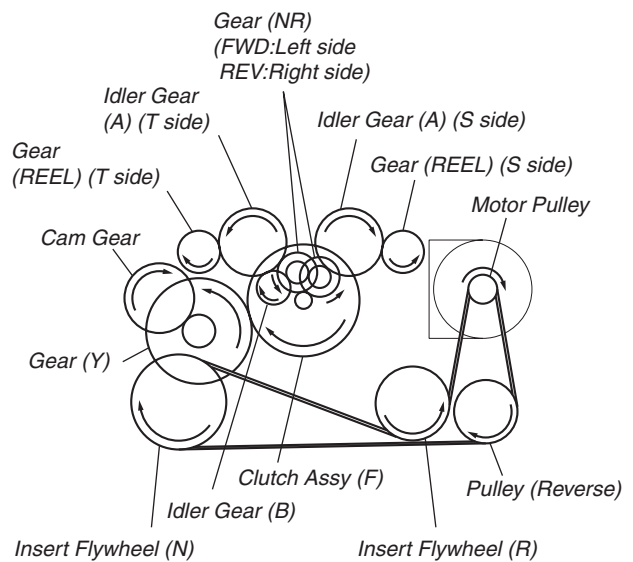
Tape drive mechanism in PLAY mode



Tape drive mechanism in FF mode

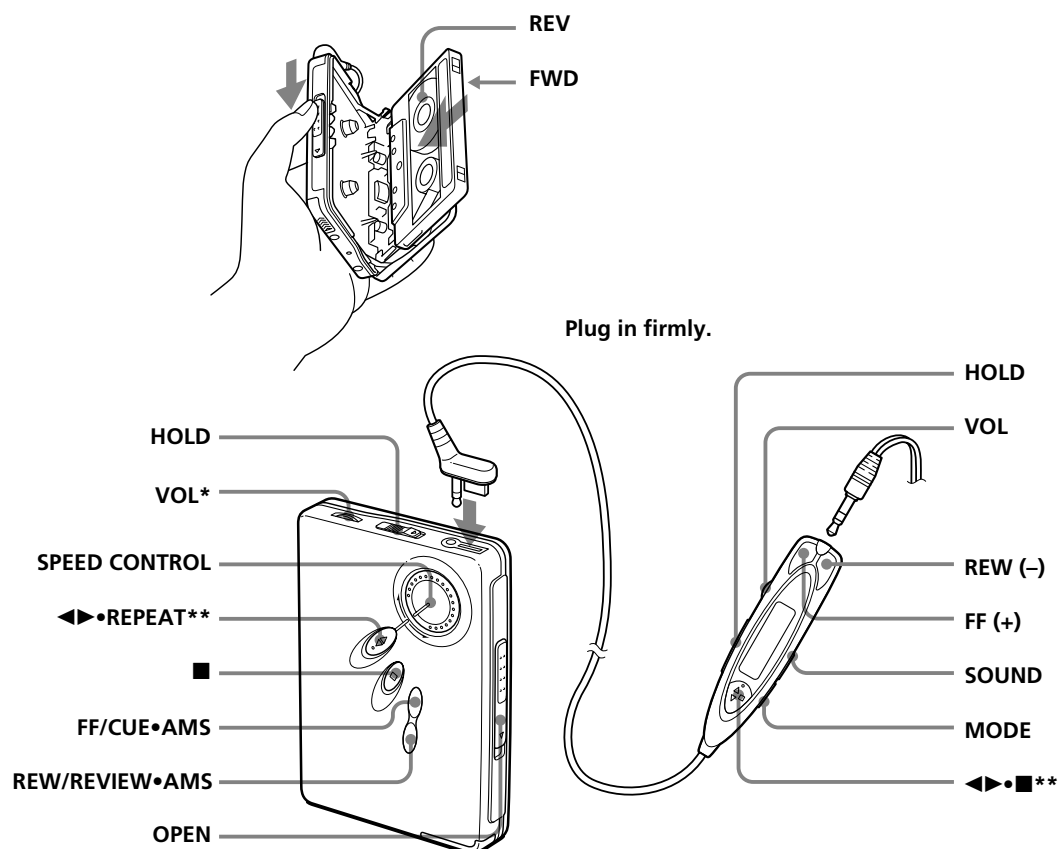


Tape drive mechanism in REW mode



SECTION 2 GENERAL

This section is extracted
from instruction manual.

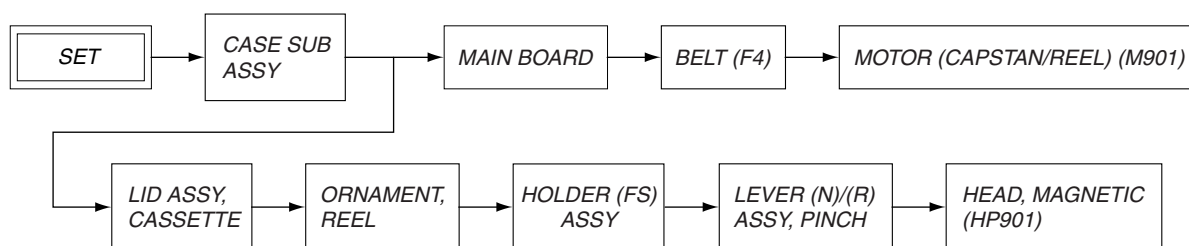


* There is a tactile dot beside VOL on the main unit to show the direction to turn up the volume.

** The button has a tactile dot.

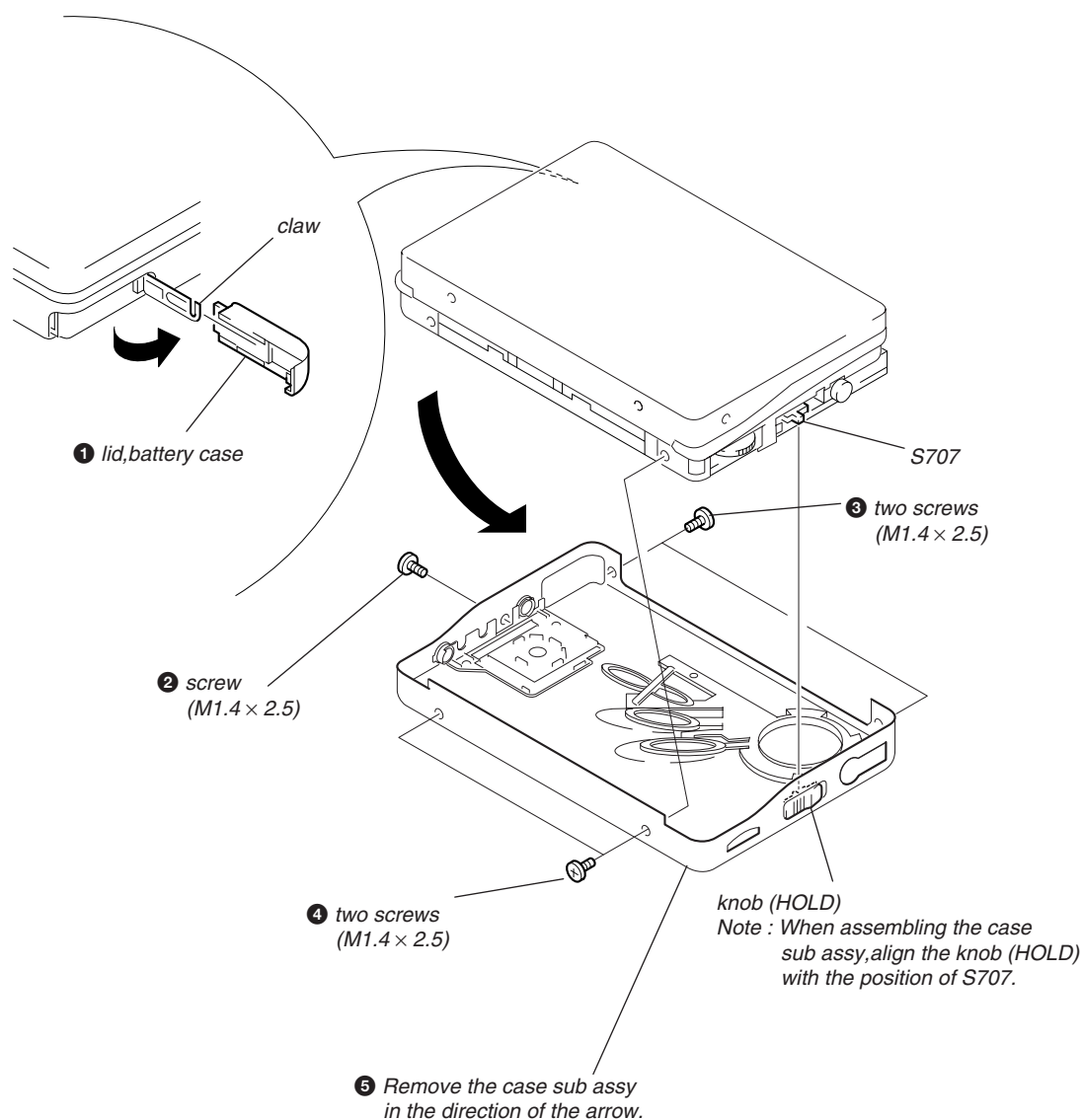
SECTION 3 DISASSEMBLY

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

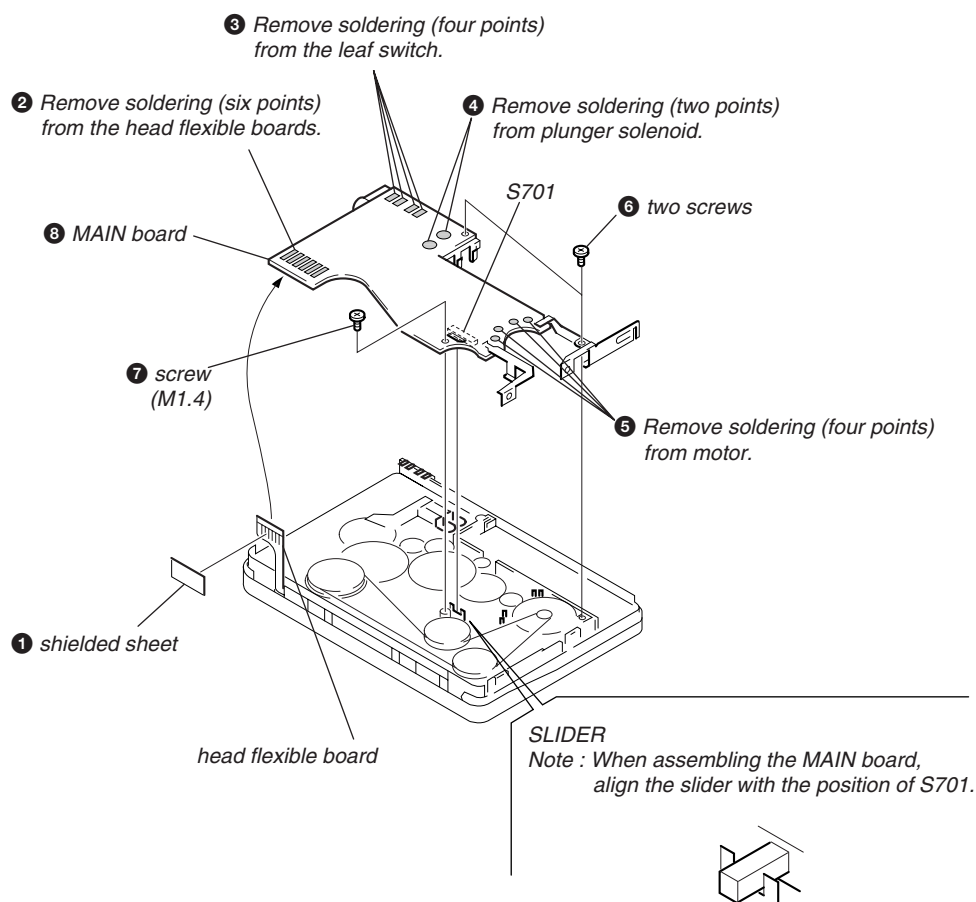


Note : Follow the disassembly procedure in the numerical order given.

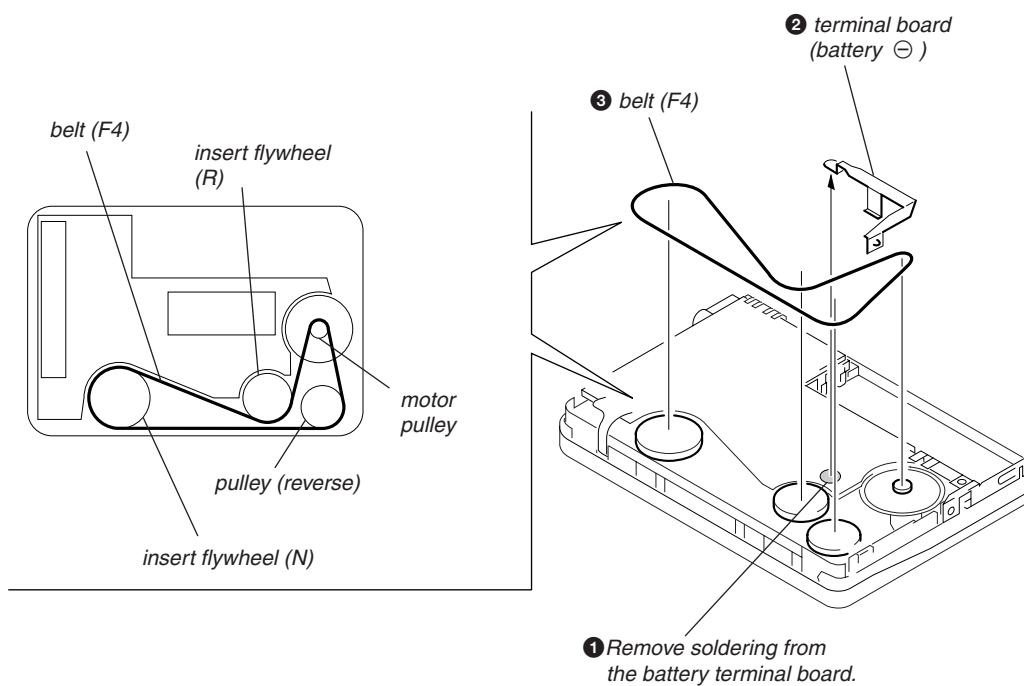
3-1. Case Sub Assy



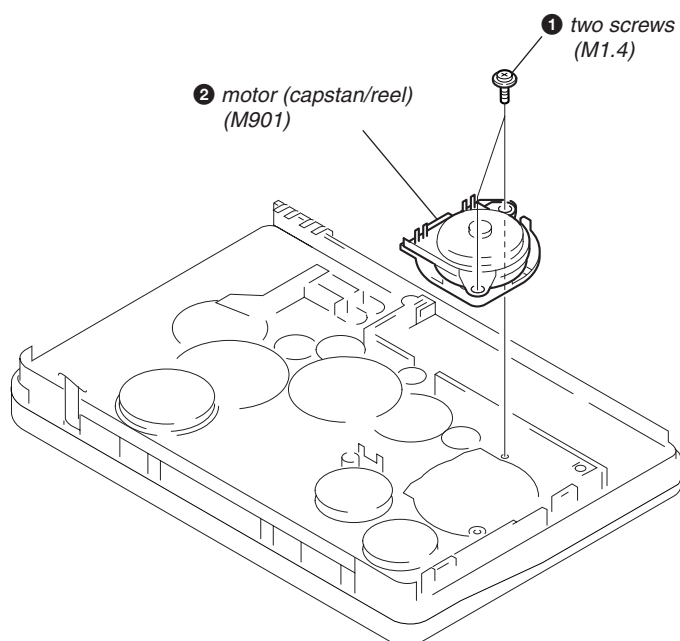
3-2. MAIN Board



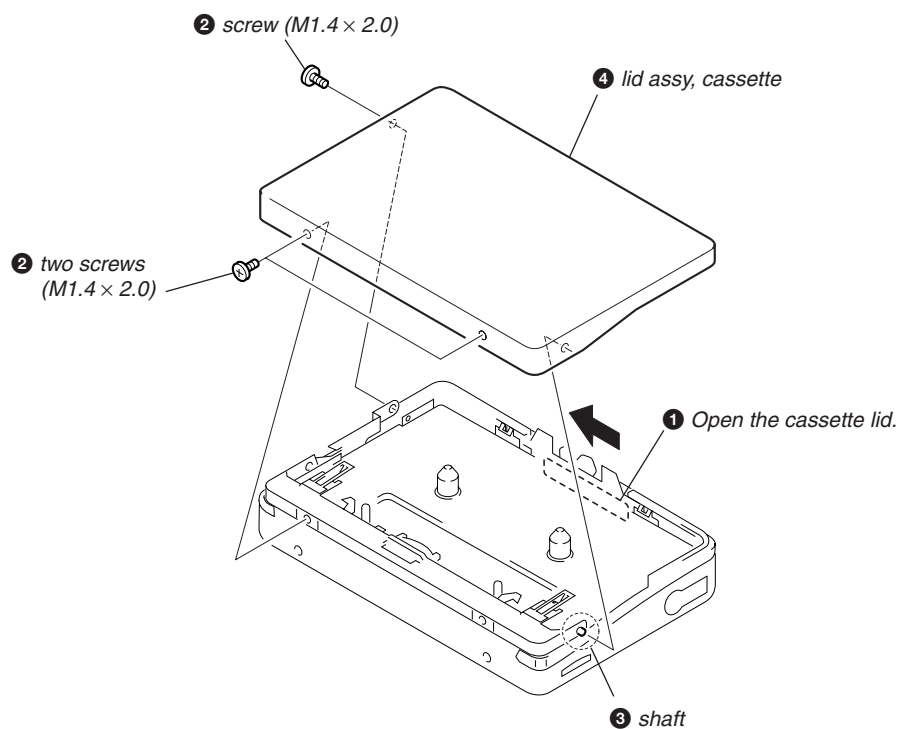
3-3. Belt (F4)



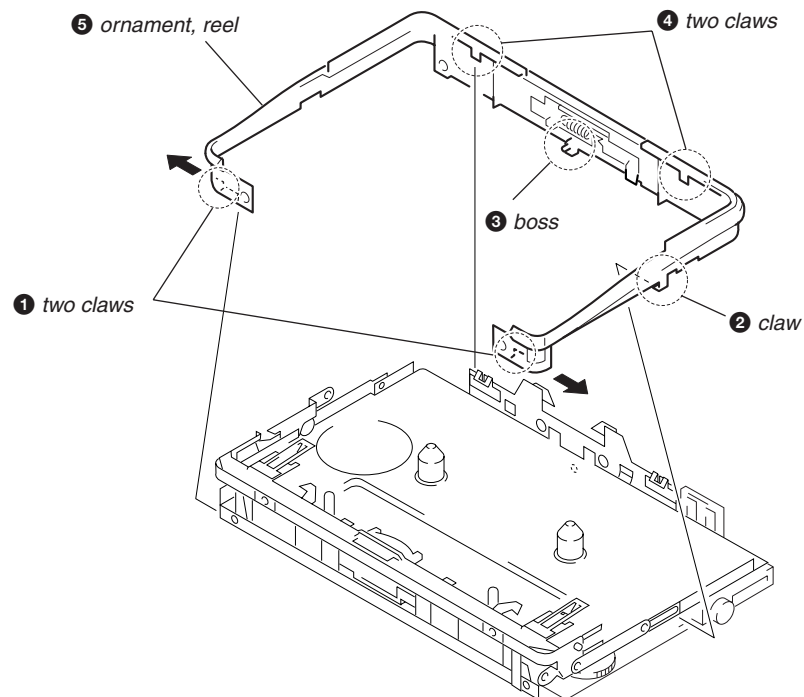
3-4. Motor (Capstan/Reel) (M901)



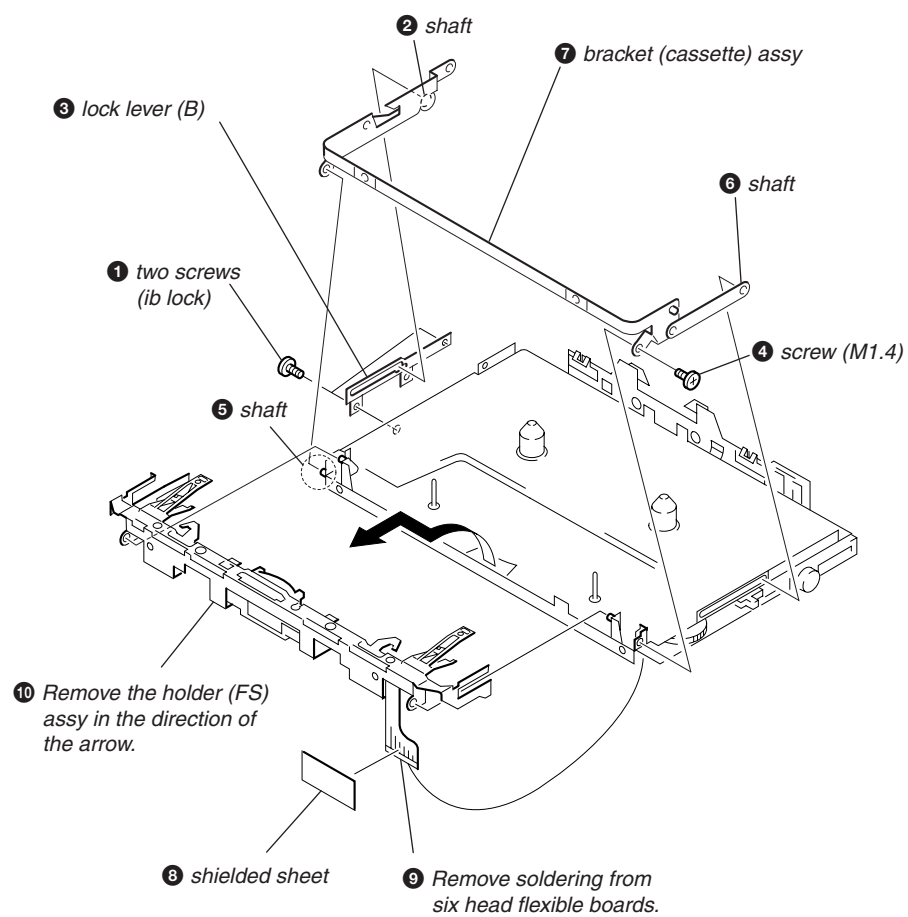
3-5. Lid Assy, Cassette



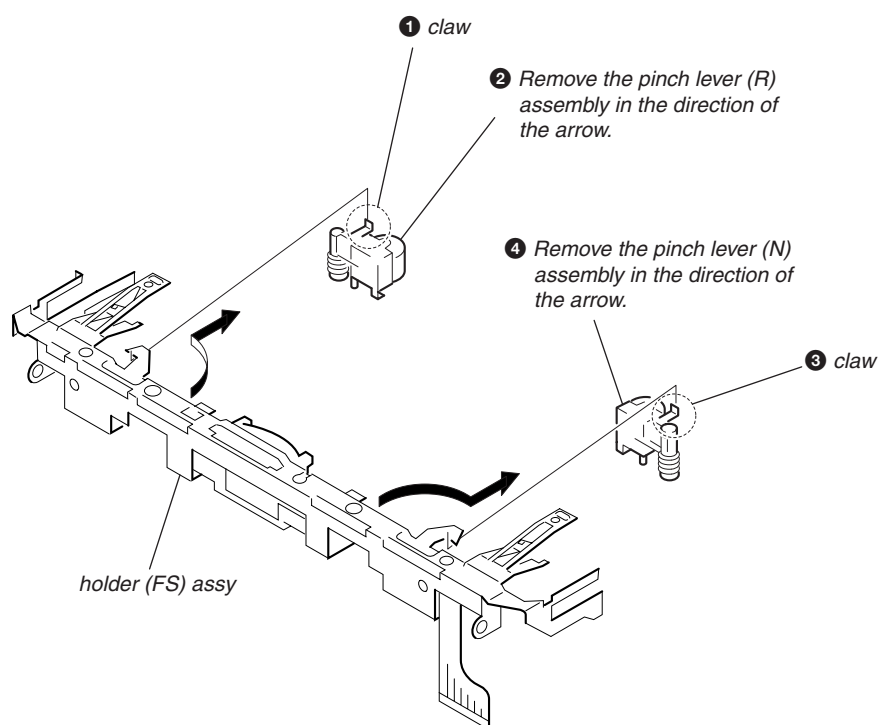
3-6. Ornament, Reel



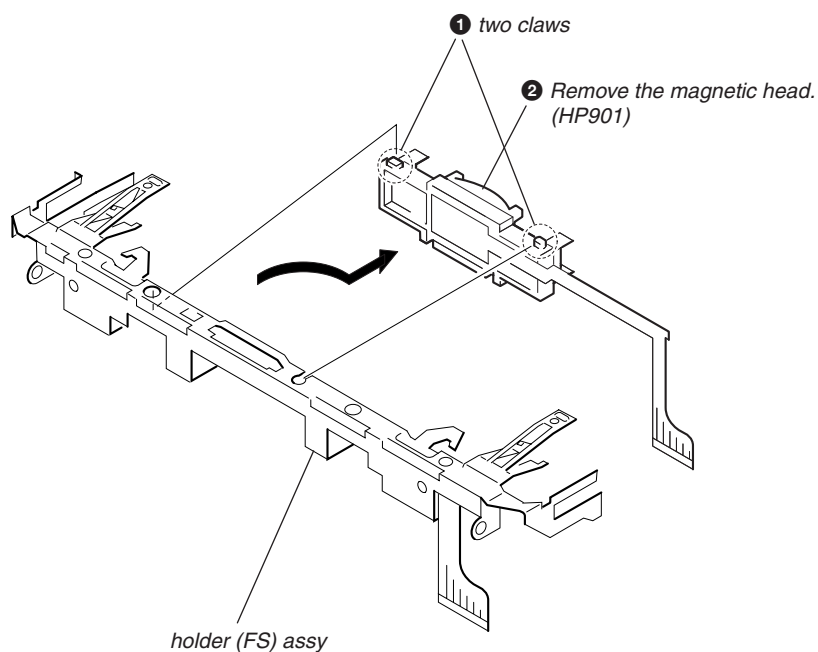
3-7. Holder (FS) Assy



3-8. Lever (N)/(R) Assy, Pinch



3-9. Head, Magnetic (HP901)



SECTION 4
MECHANICAL ADJUSTMENT

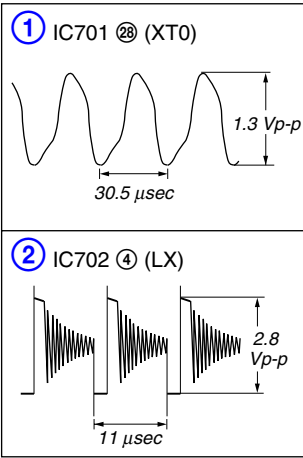
PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab:
 playback head pinch roller
 rubber belts capstan
- Demagnetize the playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

• Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102D	14.7 to 24.5 mN•m (15 to 25 g•cm) (0.22 to 0.34 oz•inch)
FWD Back Tension	CQ-102D	0.294 to 1.96 mN•m (0.3 to 2.0 g•cm) (0.007 to 0.020 oz•inch)
REV	CQ-102C	14.7 to 24.5 mN•m (15 to 25 g•cm) (0.22 to 0.34 oz•inch)
REV Back Tension	CQ-102C	0.294 to 1.96 mN•m (0.3 to 2.0 g•cm) (0.007 to 0.020 oz•inch)
FF, REW	CQ-201B	More than 34.3 mN•m (More than 35 g•cm) (More than 0.69 oz•inch)

• Waveforms



SECTION 5
ELECTRICAL ADJUSTMENT

PRECAUTION

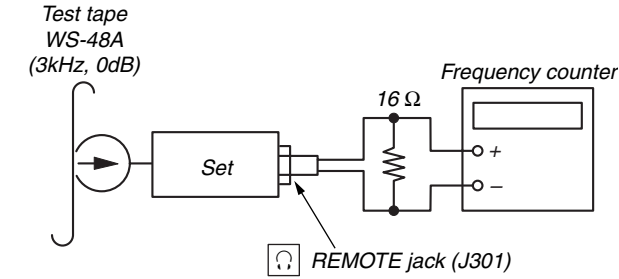
- Specified voltage: 1.3 V (DC)
- Switch position
HOLD : OFF

Test Tape

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

Tape Speed Adjustment

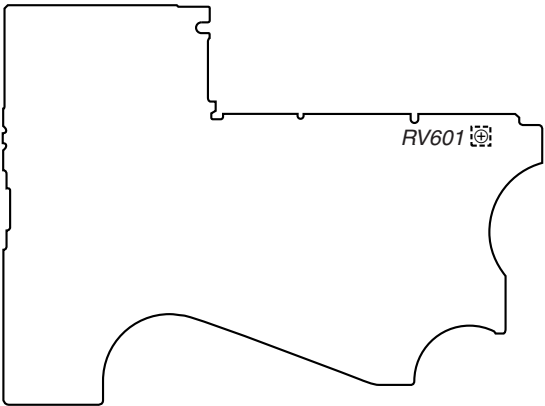
Procedure:



- Enter the FWD playback mode.
- 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
- Check that the frequency deviation at the beginning and ending of a tape is within 1.5 % (45 Hz).

Adjustment Point:

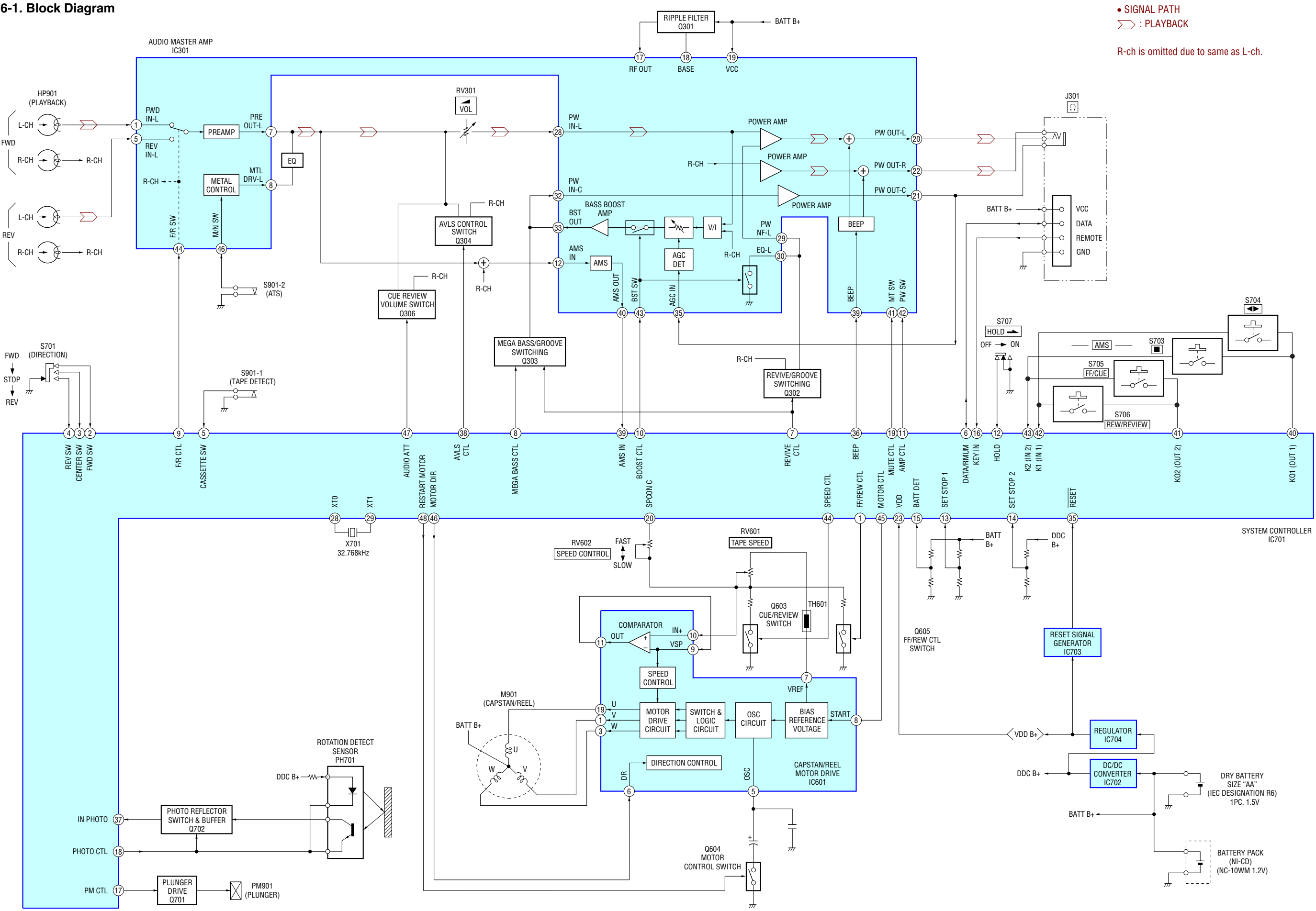
[MAIN BOARD] — SIDE B —



MEMO

SECTION 6
DIAGRAMS

6-1. Block Diagram



• SIGNAL PATH
◁ ▷ : PLAYBACK

R-ch is omitted due to same as L-ch.

6-2. Note For Printed Wiring Board and Schematic Diagram.

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:

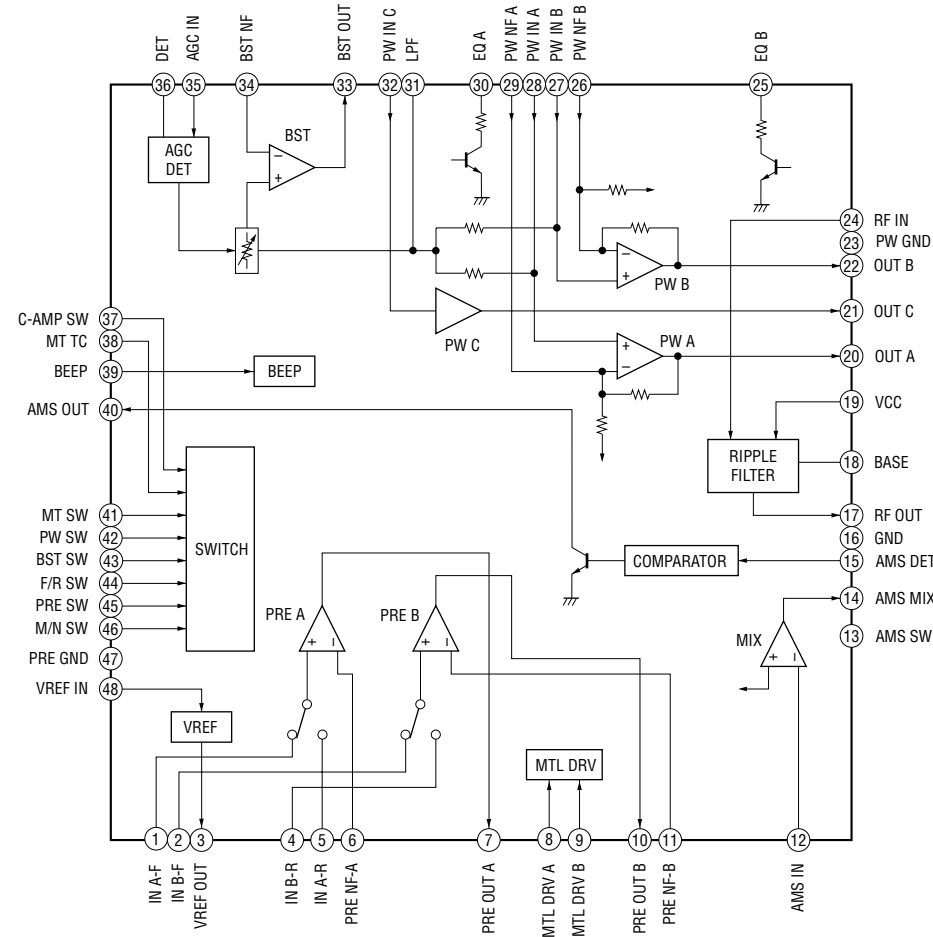
Pattern face side: (SIDE B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (SIDE A)	Parts on the parts face side seen from the parts face are indicated.

Note on Schematic Diagram:

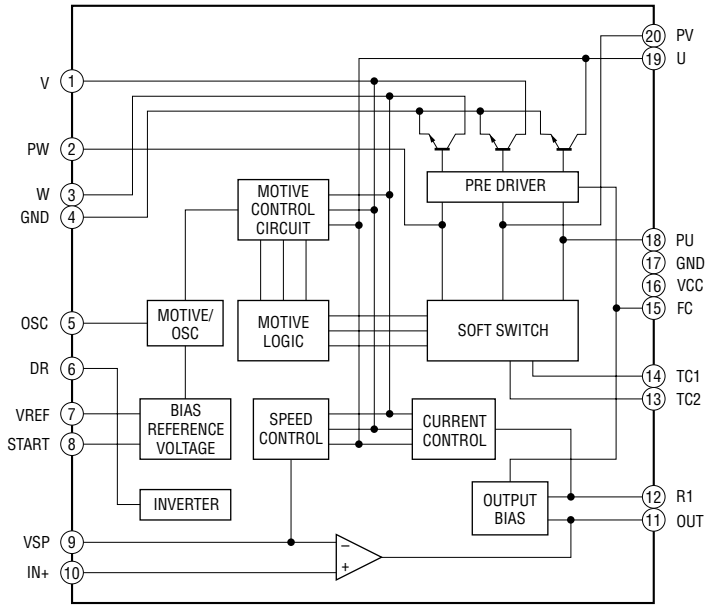
- All capacitors are in μF unless otherwise noted. pF : μF 50 WV or less are not indicated except for electrolytics and tantalums.
- % : indicates tolerance.
- : panel designation.
- : B+ Line.
- : adjustment for repair.
- Power voltage is dc 1.5V and fed with regulated dc power supply from battery terminal.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

6-3. IC Block Diagrams

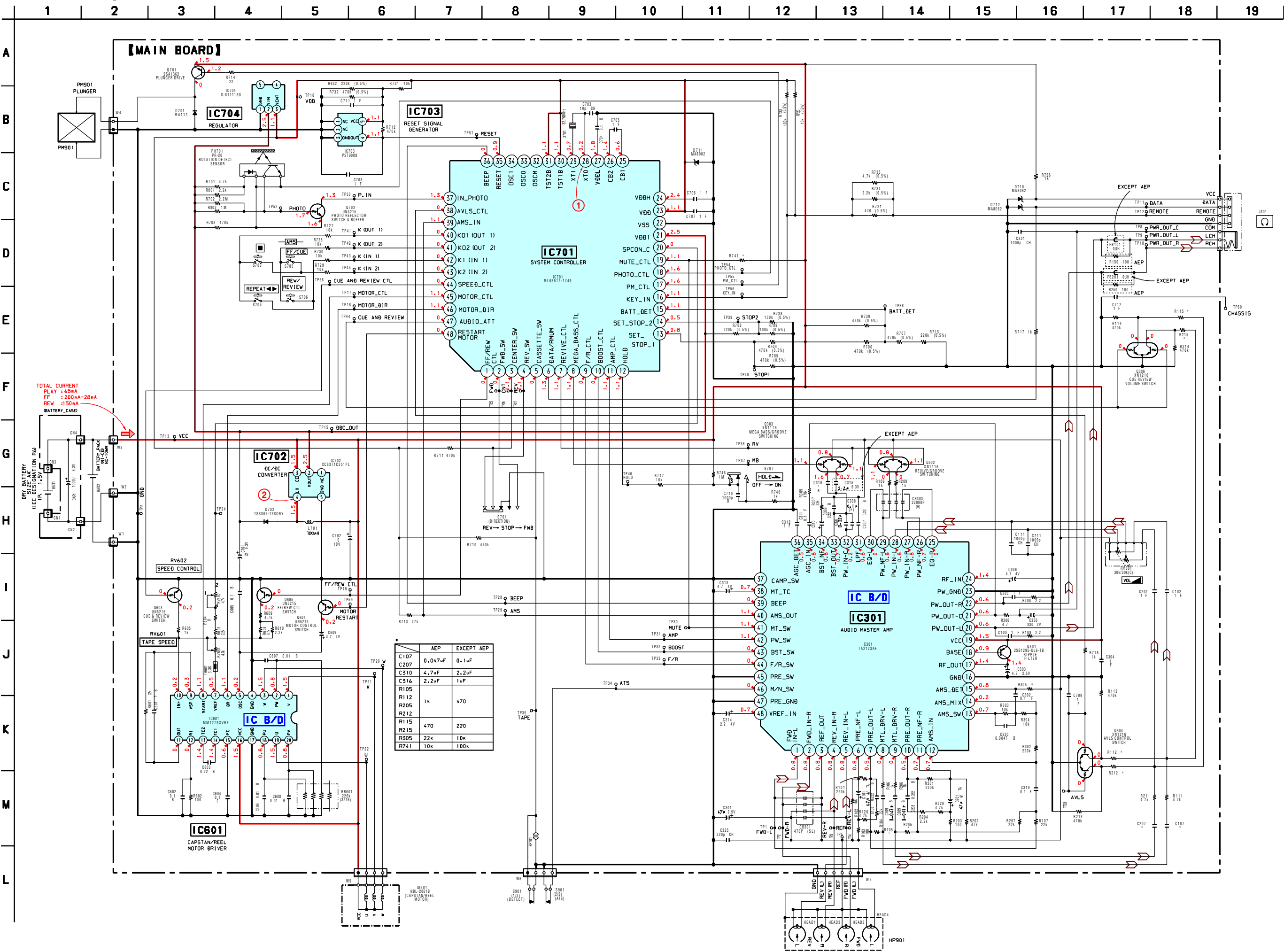
IC301 TA2123AF (EL)




IC601 MM1279XVBE



6-4. Schematic Diagram – MAIN Board – • See page 13 for IC Block Diagrams. • See page 11 for Waveforms.



6-5. Printed Wiring Board – MAIN Board –

•  : Uses unleaded solder.



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D701	B-9	IC301	D-6	Q301	D-6	Q604	D-2
D702	E-2	IC601	D-12	Q302	D-8	Q604	D-1
D710	B-5	IC701	D-4	Q303	D-9	Q701	C-3
D711	C-5	IC702	E-3	Q304	C-5	Q702	C-2
D712	B-5	IC703	C-4	Q306	B-8		
		IC704	E-11	Q603	C-2		

6-6. IC Pin Function

• IC701 ML63512-1746 (System Control)(MAIN Board)

Pin No.	Pin Name	I/O	Description
1	FF/REW CTL	O	Motor speed control signal output “H”: FF/REW
2	FWD SW	I	Direction switch (S701) input terminal “L”: FWD
3	CENTER SW	I	Direction switch (S701) input terminal “L”: CENTER
4	REV SW	I	Direction 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 TA2123AF (IC301) “L”: REVIVE “H”: OFF/MEGA BASS/GROOVE
8	MEGA BASS CTL	O	Tone selection signal output to TA2123AF (IC301) “L”: MEGA BASS “H”: OFF/REVIVE/GROOVE
9	F/R CTL	O	FWD/REV head selection signal output to TA2123AF (IC301) “L”: FWD “H”: REV
10	BOOST CTL	O	Bass boost control signal output to TA2123AF (IC301) “L”: OFF “H”: ON
11	AMP CTL	O	Power supply ON/OFF control signal output to TA2123AF (IC301) “L”: power supply OFF “H”: power supply ON
12	HOLD	I	HOLD switch (S707) detection signal input “L”: HOLD ON
13	SET STOP 1	I	Battery voltage detection input terminal when the machine is stopped. (A/D input)
14	SET STOP 2	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	MUTE CTL	O	Audio mute control signal output to TA2123AF (IC301) “L”: mute ON “H”: mute OFF
20	SPCON C	O	Motor speed control cancel signal output “high impedance”: cancel, “L”: normal
21	VDD1	–	Power supply terminal for external interface (+2.5 V)
22	VSS	–	Ground terminal
23	VDD	–	Power supply terminal (+1.1 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	I	Terminal to which main system clock is connected (32.768 kHz)
29	XT1	O	Terminal to which main system clock is connected (32.768 kHz)
30	TST1B	I	Test input terminal Normally, fixed to “H”.
31	TST2B	I	Test input terminal Normally, fixed to “H”.
32	OSCM	–	Terminal to which external capacitor for oscillation is connected Not used in this machine (open terminal)
33	OSC0	I	Terminal to which resistance for high-speed CR oscillation (800 kHz) is connected Not used in this machine (open terminal)
34	OSC1	O	Terminal to which resistance for high-speed CR oscillation (800 kHz) is connected Not used in this machine (open terminal)
35	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 TA2123AF (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 TA2123AF (IC301) “H”: No music
40	KO1 (OUT 1)	O	Key matrix signal output
41	KO2 (OUT 2)	O	Key matrix signal output
42	K1 (IN 1)	I	Key matrix signal input
43	K2 (IN 2)	I	Key matrix signal input
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	AUDIO ATT	O	Audio attenuation ON/OFF control signal output to TA2123AF (IC301) “L” : OFF “H” : ON (CUE/REVIEW)
48	RESTART MOTOR	O	Signal output for motor start-up status control to capstan/reel motor drive IC (IC601) “H”: during FF/REW motor rotating

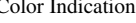
SECTION 7

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)

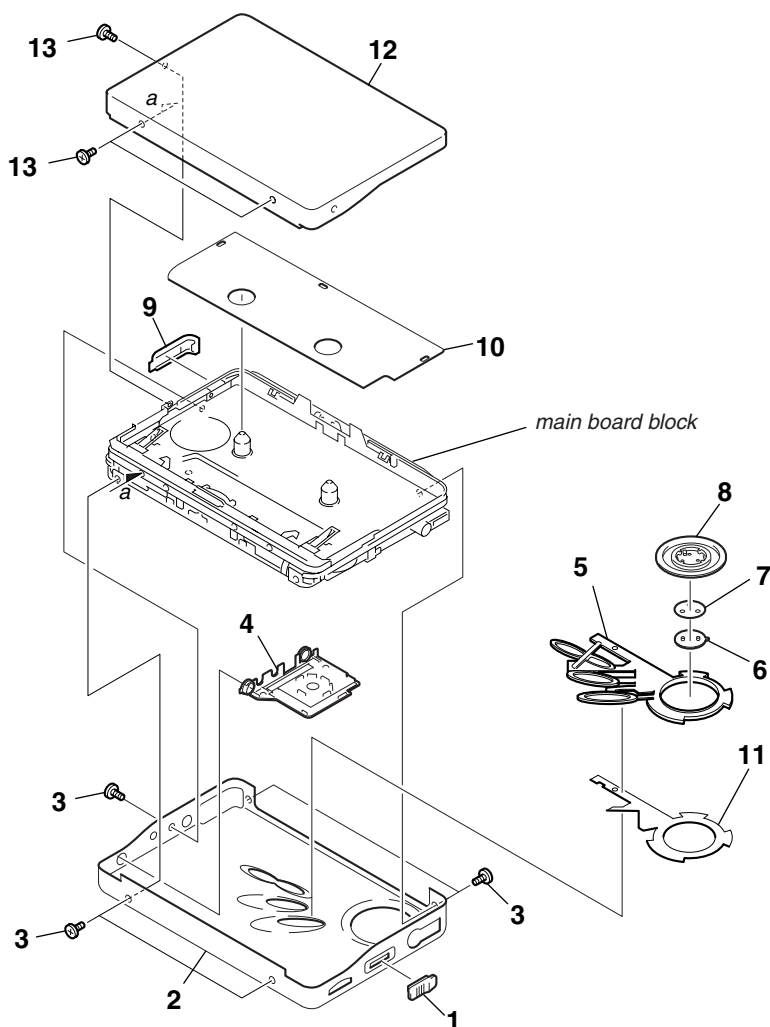


Parts of Color Cabinet's Color
- The mechanical parts with no reference number in the exploded views are not supplied.

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

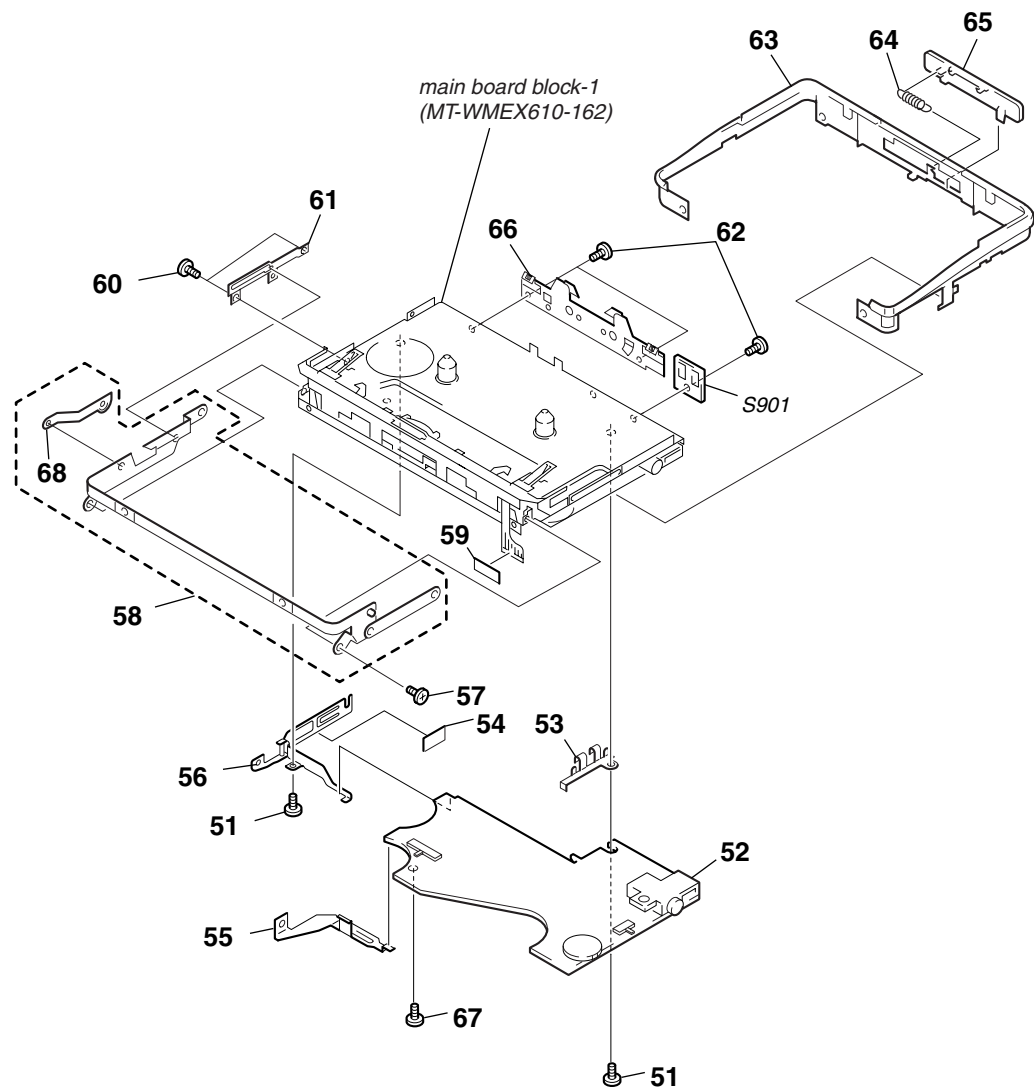
- Abbreviation
CH : Chinese model
HK : Hong Kong model
JE : Tourist model
KR : Korea model

7-1. Cabinet Block



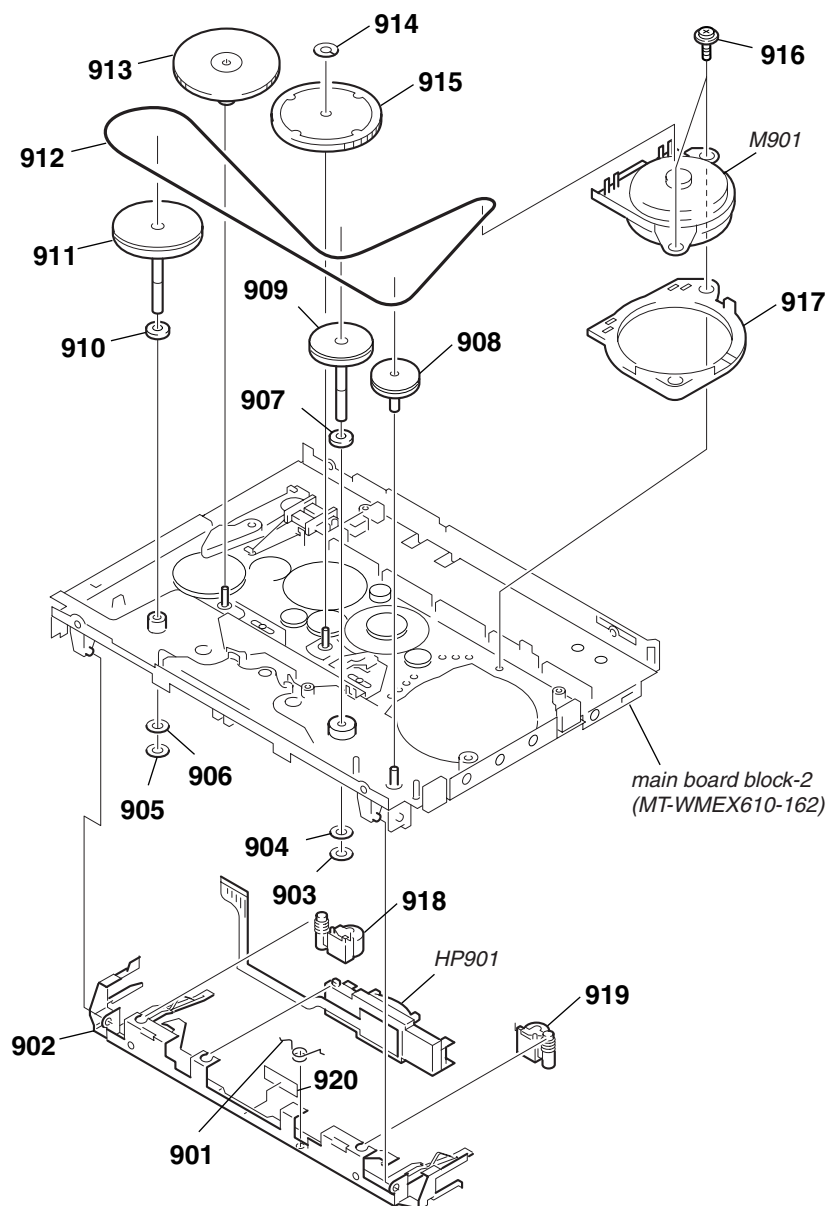
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
1	3-029-230-01	KNOB (HOLD)		10	3-234-140-11	COVER, MD (AEP,UK)	
2	3-244-839-01	CASE (SILVER)		10	3-234-140-21	COVER, MD (CH,HK,KR)	
2	3-244-839-11	CASE (BLUE)		10	3-246-486-01	MD COVER (JE)	
2	3-244-839-21	CASE (PINK)		11	3-244-956-01	ADHESIVE SHEET.BUTTON	
3	3-225-996-11	SCREW (M1.4)(EG),PRECISION PAN		12	X-3382-478-1	LID ASSY (SILVER), CASSETTE (AEP,UK)	
4	3-245-169-01	PLATE (TERMINAL), ORNAMENT		12	X-3382-479-1	LID ASSY (BLUE), CASSETTE (AEP,UK)	
5	3-244-955-01	BUTTON (CONTROL)		12	X-3382-480-1	LID ASSY (PINK), CASSETTE (AEP,UK)	
6	3-245-393-01	ORNAMENT		12	X-3382-490-1	LID ASSY (SILVER), CASSETTE (CH,JE,HK,KR)	
7	3-245-585-01	ADHENSIVE SHEET, ORNAMENT		12	X-3382-491-1	LID ASSY (BLUE), CASSETTE (CH,JE,HK,KR)	
8	3-244-957-01	KNOB (SPEED CONTROL) (SILVER)		12	X-3382-492-1	LID ASSY (PINK), CASSETTE (CH,JE,HK,KR)	
8	3-244-957-11	KNOB (SPEED CONTROL) (BLUE)		13	3-704-197-11	SCREW (M1.4X2.0), LOCKING	
8	3-244-957-21	KNOB (SPEED CONTROL) (PINK)					
9	3-233-980-01	LID, BATTERY CASE (SILVER)					
9	3-233-980-11	LID, BATTERY CASE (BLUE)					
9	3-233-980-21	LID, BATTERY CASE (PINK)					

7-2. Main Board Block



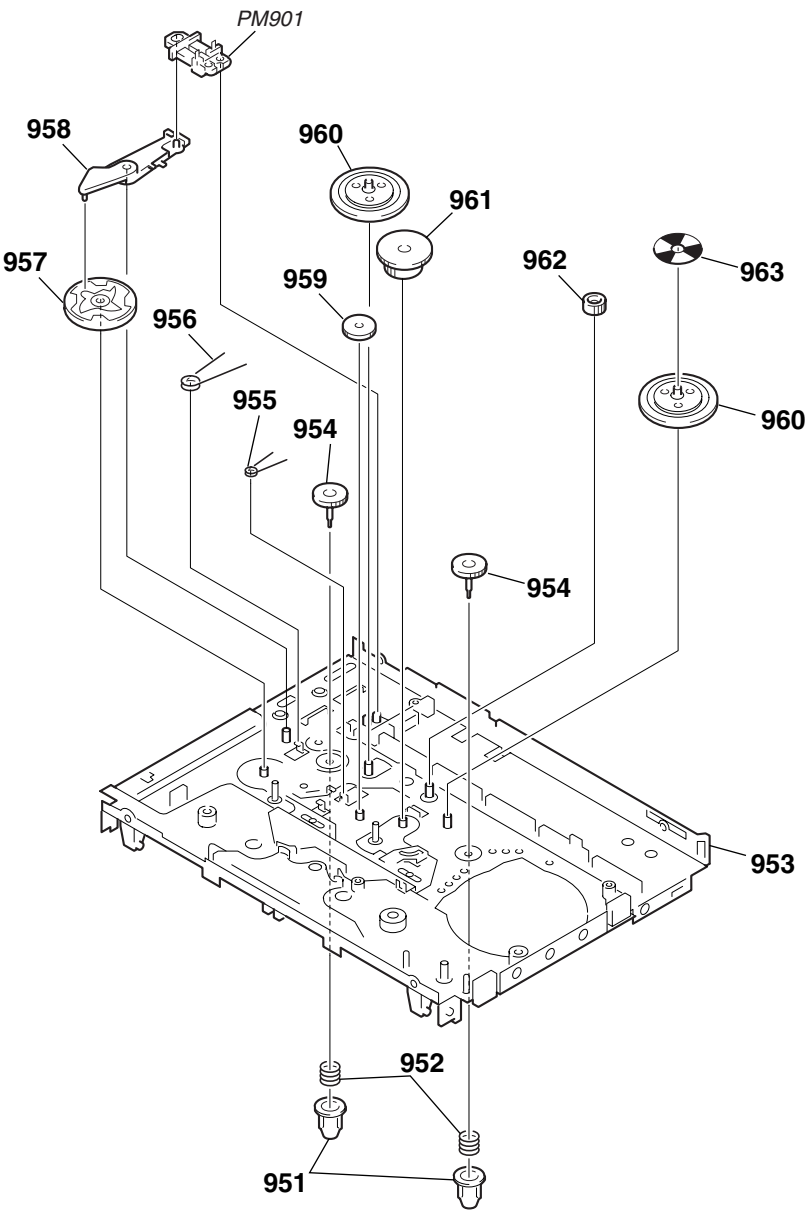
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	3-375-114-41	SCREW		62	3-389-523-02	SCREW (IB LOCK)	
* 52	A-3178-849-A	MAIN BOARD, COMPLETE (UK,CH,JE,HK,KR)		63	3-223-827-31	ORNAMENT, REEL (SILVER)	
* 52	A-3178-864-A	MAIN BOARD, COMPLETE (AEP)		63	3-223-827-41	ORNAMENT, REEL (BLUE)	
53	3-038-056-01	TERMINAL BOARD (MINUS) (/M)		63	3-223-827-51	ORNAMENT, REEL (PINK)	
54	3-031-460-01	SHEET (BT)		64	3-029-220-01	SPRING, TENSION	
55	3-029-213-01	TERMINAL BOARD, BATTERY		65	3-222-732-21	KNOB (OPEN) (SILVER)	
56	X-3377-726-1	TERMINAL BOARD ASSY (/M)		65	3-222-732-31	KNOB (OPEN) (BLUE)	
57	3-365-630-41	SCREW (M1.4)		65	3-222-732-41	KNOB (OPEN) (PINK)	
58	X-3377-719-1	BRACKET (CASSETTE) ASSY (/M)		66	X-3377-717-2	BRACKET ASSY (/M)	
59	3-224-837-01	SHEET (ATS)		67	3-345-648-71	SCREW (M1.4), TOOTHED LOCK	
60	3-939-590-05	SCREW (IB LOCK)		68	X-3377-718-1	LEVER (A) ASSY (/M), LOCK	
61	3-038-054-01	LEVER (B) (/M), LOCK		S901	1-762-553-11	SWITCH, LEAF (TAPE DETECT/ATS)	

7-3. Mechanism Block –1 (MT-WMEX610-162)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
901	3-046-789-01	SPRING (HDA)		912	3-220-035-01	BELT (F4)	
902	X-3378-354-1	HOLDER (FS) ASSY		913	3-029-282-01	GEAR (Y)	
903	3-029-275-01	WASHER (STOPPER N)		914	3-932-724-21	WASHER	
904	3-029-278-01	WASHER		915	X-3376-813-1	CLUTCH ASSY (FM)	
905	3-029-276-02	WASHER (STOPPER R)		916	3-029-765-01	SCREW (M1.4), TOOTHED LOCK	
906	3-029-289-01	WASHER		917	3-029-274-01	RETAINER (F2), MOTOR	
907	3-007-428-01	WASHER (R)		918	X-3377-362-1	LEVER (N) ASSY, PINCH	
908	3-029-288-01	PULLEY, REVERSE		919	X-3377-363-1	LEVER (R) ASSY, PINCH	
909	3-029-268-11	FLYWHEEL (R), INSERT		920	3-033-757-01	SHEET (H)	
910	3-386-694-01	WASHER		M901	1-763-166-11	MOTOR (CAPSTAN/REEL)	
911	3-029-306-11	FLYWHEEL (N), INSERT		HP901	1-500-639-21	HEAD, MAGNETIC (PLAYBACK)	

7-4. Mechanism Block –2 (MT-WMEX610-162)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
951	3-010-274-02	TABLE, REEL		958	3-029-284-01	LEVER, TRIGGER	
952	3-010-954-01	SPRING (BT), COMPRESSION		959	3-029-281-01	GEAR, IDLER (B)	
953	X-3377-584-1	CHASSIS ASSY (F) (/M)		960	3-029-283-01	GEAR, IDLER (A)	
954	3-010-273-02	GEAR (REEL)		961	3-029-286-01	GEAR (NR)	
955	3-029-272-01	SPRING (FR), TORSION		962	3-029-273-01	GEAR (FR)	
956	3-040-897-01	SPRING (TGA), TORSION		963	3-007-433-01	SHEET (N), REFLECTION	
957	3-029-285-12	GEAR, CAM		PM901	1-454-674-31	SOLENOID, PLUNGER	

SECTION 8 ELECTRICAL PARTS LIST

MAIN

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: μ F

- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA..., μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...
- Accessories are given in the last of this parts list.

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

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

- Abbreviation
CH : Chinese model
HK : Hong Kong model
JE : Tourist model
KR : Korea model

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
*	A-3178-849-A	MAIN BOARD, COMPLETE (UK,CH,JE,HK,KR) *****		C314	1-135-187-21	TANTAL. CHIP 2.2uF	20% 4V
*	A-3178-864-A	MAIN BOARD, COMPLETE (AEP) *****		C316	1-135-834-91	CERAMIC CHIP 2.2uF	6.3V (AEP)
	3-032-323-01	PAPER (A), SHIELD		C316	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V (UK,CH,JE,HK,KR)
		< CAPACITOR >		C319	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C101	1-131-862-91	TANTAL. CHIP 47uF	20% 4V	C320	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V
C102	1-115-156-11	CERAMIC CHIP 1uF	10V	C321	1-115-416-11	CERAMIC CHIP 0.001uF	5% 25V
C103	1-115-156-11	CERAMIC CHIP 1uF	10V	C325	1-164-230-11	CERAMIC CHIP 220PF	5% 50V
C107	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V (AEP)	C326	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C107	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V (UK,CH,JE,HK,KR)	C601	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
C108	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C602	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
C109	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V	C603	1-115-467-11	CERAMIC CHIP 0.22uF	10% 10V
C111	1-115-416-11	CERAMIC CHIP 0.001uF	5% 25V	C604	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C201	1-131-862-91	TANTAL. CHIP 47uF	20% 4V	C605	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
C202	1-115-156-11	CERAMIC CHIP 1uF	10V	C606	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C203	1-115-156-11	CERAMIC CHIP 1uF	10V	C607	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C207	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V (AEP)	C608	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C207	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V (UK,CH,JE,HK,KR)	C609	1-135-151-21	TANTALUM CHIP 4.7uF	20% 4V
C208	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C701	1-119-750-11	TANTAL. CHIP 22uF	20% 6.3V
C209	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V	C702	1-104-851-11	TANTAL. CHIP 10uF	20% 10V
C211	1-115-416-11	CERAMIC CHIP 0.001uF	5% 25V	C703	1-162-915-11	CERAMIC CHIP 10PF	0.5PF 50V
C301	1-119-663-11	TANTAL. CHIP 47uF	20% 2.5V	C704	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
C302	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C705	1-115-156-11	CERAMIC CHIP 1uF	10V
C303	1-125-926-95	TANTAL. CHIP 4.7uF	20% 2.5V	C706	1-115-156-11	CERAMIC CHIP 1uF	10V
C304	1-115-156-11	CERAMIC CHIP 1uF	10V	C707	1-115-156-11	CERAMIC CHIP 1uF	10V
C305	1-126-236-11	ELECT 330uF	20% 2V	C708	1-115-156-11	CERAMIC CHIP 1uF	10V
C306	1-109-935-11	TANTAL. CHIP 4.7uF	20% 4V	C709	1-115-156-11	CERAMIC CHIP 1uF	10V
C307	1-115-467-11	CERAMIC CHIP 0.22uF	10% 10V	C710	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C308	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C711	1-115-156-11	CERAMIC CHIP 1uF	10V
C309	1-115-467-11	CERAMIC CHIP 0.22uF	10% 10V	C712	1-115-156-11	CERAMIC CHIP 1uF	10V
C310	1-127-760-11	CERAMIC CHIP 4.7uF	10% 6.3V (AEP)	CB301	1-127-575-21	CAP, CHIP CERAMIC 470PF SL	
C310	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V (UK,CH,JE,HK,KR)	CB303	1-127-576-21	CAP, CHIP CERAMIC 22000PF B	
C311	1-164-156-11	CERAMIC CHIP 0.1uF	25V			< DIODE >	
C312	1-115-156-11	CERAMIC CHIP 1uF	10V	D701	8-719-404-50	DIODE MA111-TX	
C313	1-109-935-11	TANTAL. CHIP 4.7uF	20% 4V	D702	8-719-049-09	DIODE 1SS367-T3SONY	
C315	1-135-834-91	CERAMIC CHIP 2.2uF	6.3V (UK,CH,JE,HK,KR)	D710	8-719-422-58	DIODE MA8062-TX	
				D711	8-719-422-58	DIODE MA8062-TX	
				D712	8-719-422-58	DIODE MA8062-TX	
						< FERRITE BEAD >	
				FB101	1-469-125-21	FERRITE 0UH (UK,CH,JE,HK,KR)	
				FB201	1-469-125-21	FERRITE 0UH (UK,CH,JE,HK,KR)	

MAIN

Ref. No.	Part No.	Description	Remarks
< IC >			
IC301	8-759-579-12	IC TA2123AF(EL)	
IC601	8-759-356-46	IC MM1279XVBE	
IC701	6-802-139-01	IC ML63512-1746	
IC702	8-759-566-77	IC XC6371C251PL	
IC703	8-759-430-08	IC PST9008NL	
IC704	8-759-280-84	IC S-81211SG-QA-T1	
< JACK >			
J301	1-779-867-81	JACK (㉔)	
< COIL >			
L701	1-412-032-11	INDUCTOR CHIP 100uH	
< PHOTO INTERRUPTER >			
PH701	8-749-014-43	PHOTO REFLECTOR PR-20-T	
< TRANSISTOR >			
Q301	8-729-800-71	TRANSISTOR 2SB1295-UL6-TB	
Q302	8-729-423-75	TRANSISTOR XN1116-TX	
Q303	8-729-423-75	TRANSISTOR XN1116-TX	
Q304	8-729-421-23	TRANSISTOR XN1216-TX	
Q306	8-729-421-23	TRANSISTOR XN1216-TX	
Q603	8-729-420-50	TRANSISTOR UN5215-(TX)	
Q604	8-729-420-50	TRANSISTOR UN5215-(TX)	
Q605	8-729-420-50	TRANSISTOR UN5215-(TX)	
Q701	8-729-230-72	TRANSISTOR 2SA1362-YG-ER	
Q702	8-729-420-50	TRANSISTOR UN5215-(TX)	
< RESISTOR >			
R101	1-216-849-11	METAL CHIP 220K 5% 1/10W	
R102	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R103	1-216-809-11	METAL CHIP 100 5% 1/10W	
R104	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R105	1-216-821-11	METAL CHIP 1K 5% 1/10W	(AEP)
R105	1-216-817-11	METAL CHIP 470 5% 1/10W	(UK,CH,JE,HK,KR)
R106	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R107	1-216-837-11	METAL CHIP 22K 5% 1/10W	
R108	1-216-789-11	METAL CHIP 2.2 5% 1/10W	
R109	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R111	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R112	1-216-821-11	METAL CHIP 1K 5% 1/10W	(AEP)
R112	1-216-817-11	METAL CHIP 470 5% 1/10W	(UK,CH,JE,HK,KR)
R113	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R114	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R115	1-216-817-11	METAL CHIP 470 5% 1/10W	(AEP)
R115	1-216-813-11	METAL CHIP 220 5% 1/10W	(UK,CH,JE,HK,KR)
R120	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R150	1-216-809-11	METAL CHIP 100 5% 1/10W	(AEP)
R201	1-216-849-11	METAL CHIP 220K 5% 1/10W	
R202	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R203	1-216-809-11	METAL CHIP 100 5% 1/10W	

Ref. No.	Part No.	Description	Remarks
R204	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R205	1-216-821-11	METAL CHIP 1K 5% 1/10W	(AEP)
R205	1-216-817-11	METAL CHIP 470 5% 1/10W	(UK,CH,JE,HK,KR)
R206	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R207	1-216-837-11	METAL CHIP 22K 5% 1/10W	
R208	1-216-789-11	METAL CHIP 2.2 5% 1/10W	
R209	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R211	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R212	1-216-821-11	METAL CHIP 1K 5% 1/10W	(AEP)
R212	1-216-817-11	METAL CHIP 470 5% 1/10W	(UK,CH,JE,HK,KR)
R213	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R214	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R215	1-216-817-11	METAL CHIP 470 5% 1/10W	(AEP)
R215	1-216-813-11	METAL CHIP 220 5% 1/10W	(UK,CH,JE,HK,KR)
R220	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R250	1-216-809-11	METAL CHIP 100 5% 1/10W	(AEP)
R302	1-216-849-11	METAL CHIP 220K 5% 1/10W	
R303	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R304	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R305	1-216-837-11	METAL CHIP 22K 5% 1/10W	(AEP)
R305	1-216-833-11	METAL CHIP 10K 5% 1/10W	(UK,CH,JE,HK,KR)
R306	1-216-793-11	METAL CHIP 4.7 5% 1/10W	
R307	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R309	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R601	1-216-837-11	METAL CHIP 22K 5% 1/10W	
R602	1-216-809-11	METAL CHIP 100 5% 1/10W	
R603	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R604	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R605	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R608	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R609	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R610	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R701	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R702	1-216-861-11	METAL CHIP 2.2M 5% 1/10W	
R703	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R704	1-218-911-11	METAL CHIP 470K 0.5% 1/10W	
R705	1-218-911-11	METAL CHIP 470K 0.5% 1/10W	
R706	1-218-911-11	METAL CHIP 470K 0.5% 1/10W	
R707	1-218-911-11	METAL CHIP 470K 0.5% 1/10W	
R708	1-218-903-11	METAL CHIP 220K 0.5% 1/10W	
R709	1-218-895-11	METAL CHIP 100K 0.5% 1/10W	
R710	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R711	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R712	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R713	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R714	1-216-801-11	METAL CHIP 22 5% 1/10W	
R715	1-218-903-11	METAL CHIP 220K 0.5% 1/10W	
R717	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R720	1-218-871-11	METAL CHIP 10K 0.5% 1/10W	
R721	1-218-839-11	METAL CHIP 470 0.5% 1/10W	
R726	1-216-821-11	METAL CHIP 1K 5% 1/10W	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R727	1-216-833-11	METAL CHIP 10K 5%	1/10W			ACCESSORIES *****	
R728	1-216-833-11	METAL CHIP 10K 5%	1/10W	△	1-477-496-21	ADAPTOR, AC (AC-ES455K) (JE)	
R729	1-216-833-11	METAL CHIP 10K 5%	1/10W	△	1-477-497-21	ADAPTOR, AC (AC-ES455K) (KR)	
R730	1-216-833-11	METAL CHIP 10K 5%	1/10W	△	1-477-499-21	ADAPTOR, AC (AC-ES455K) (CH)	
R731	1-216-833-11	METAL CHIP 10K 5%	1/10W	△	1-477-500-21	ADAPTOR, AC (AC-ES455K) (AEP)	
R732	1-218-911-11	METAL CHIP 470K 0.5%	1/10W	△	1-477-501-21	ADAPTOR, AC (AC-ES455K) (UK,HK)	
R733	1-218-895-11	METAL CHIP 100K 0.5%	1/10W		1-477-606-11	STAND CHARGER (BCA-WM10H)	
R734	1-218-855-11	METAL CHIP 2.2K 0.5%	1/10W	△	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
R735	1-218-863-11	METAL CHIP 4.7K 0.5%	1/10W	△	1-756-306-11	BATTERY, NICKEL HYDRIGEN	
R738	1-218-895-11	METAL CHIP 100K 0.5%	1/10W		1-759-700-22	CASE, BATTERY	
R739	1-218-911-11	METAL CHIP 470K 0.5%	1/10W		3-008-521-01	CASE, BATTERY CHARGE	
R741	1-216-833-11	METAL CHIP 10K 5%	1/10W (AEP)		3-008-521-01	CASE, CHARGE	
R741	1-216-845-11	METAL CHIP 100K 5%	1/10W (UK,CH,JE,HK,KR)		3-220-749-01	CASE, CARRYING	
R746	1-216-857-11	METAL CHIP 1M 5%	1/10W		3-245-117-01	MANUAL, INSTRUCTION (JAPANESE) (JE)	
R747	1-216-833-11	METAL CHIP 10K 5%	1/10W		3-245-117-11	MANUAL, INSTRUCTION (ENGLISH,CHINESE,KOREAN) (CH,JE,KR)	
R748	1-216-821-11	METAL CHIP 1K 5%	1/10W		3-245-117-21	MANUAL, INSTRUCTION (SPANISH,PORTUGUESE,FRENCH,GERMAN) (AEP)	
R801	1-216-825-11	METAL CHIP 2.2K 5%	1/10W		3-245-117-31	MANUAL, INSTRUCTION (DUTCH,SWEDISH,ITALIAN,FINNISH) (AEP)	
R802	1-216-857-11	METAL CHIP 1M 5%	1/10W		3-245-117-41	MANUAL, INSTRUCTION (ENGLISH,RUSSIAN,HUNGARIAN,CZECH) (AEP,UK)	
R832	1-218-903-11	METAL CHIP 220K 0.5%	1/10W		3-245-117-51	MANUAL, INSTRUCTION (ENGLISH,CHINESE) (HK)	
< COMPOSITION CIRCUIT BLOCK >					8-954-008-90	RECEIVER, EAR MDR-E808SP/C SET	
RB601	1-234-243-21	RES, NETWORK 220K	(3216)		A-3052-265-A	REMOTE CONTROL ASSY (RM-WME23)	
< VARIABLE RESISTOR >							
RV301	1-225-684-21	RES, VAR, CARBON 30K/30K (▲VOL)					
RV601	1-225-255-21	RES, ADJ, CARBON 4.7K (TAPE SPEED) (AEP)					
RV601	1-225-255-11	RES, ADJ, CARBON 4.7K (TAPE SPEED) (UK,CH,JE,HK,KR)					
RV602	1-227-501-11	RES, VAR 4.7K (SPEED CONTROL)					
< SWITCH >							
S701	1-771-475-21	SWITCH, SLIDE (DIRECTION)					
S703	1-771-851-21	SWITCH, TACTILE (SMD) (■)					
S704	1-771-851-21	SWITCH, TACTILE (SMD) (◀▶ REPEAT)					
S705	1-771-851-21	SWITCH, TACTILE (SMD) (FF/CUE)					
S706	1-771-851-21	SWITCH, TACTILE (SMD) (REW/REVIEW)					
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	1-500-639-21	HEAD, MAGNETIC (PLAYBACK)					
M901	1-763-166-11	MOTOR (CAPSTAN/REEL)					
PM901	1-454-674-31	SOLENOID, PLUNGER					
S901	1-762-553-11	SWITCH, LEAF (TAPE DETECT/ATS)					

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

REVISION HISTORY

Clicking the version allows you to jump to the revised page.

Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

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