

WM-A52/B52

SERVICE MANUAL



Photo: WM-A52

US Model
Canadian Model
WM-A52

AEP Model
UK Model
E Model
WM-B52

SPECIFICATIONS

Frequency response 40 – 14,000 Hz (with metal tapes or CrO₂ tapes)
40 – 14,000 Hz (with normal tapes)
Power output 15 mW + 15 mW at DC operation (at 10%
harmonic distortion), Impedance 32 ohms
Power requirements 3 V DC, two size AA (R6) batteries
Battery life

Batteries	Playback
Sony battery SUM-3 (NS)	Approx. 4 hours
Sony alkaline battery AM3 (N)	Approx. 8 hours

For maximum performance, we recommend the use of alkaline batteries.

Dimensions Approx. 99 x 138 x 40 mm (w/h/d)
(4 x 5½ x 1½ inches)
excl. projecting parts and controls
Weight Approx. 320 g (11.3 oz) incl. batteries excl.
other accessories
Accessories supplied Stereo headphones (open-air type 1)

Clock section

Digits 6
Functions 6 (Hour, minute, second, day/month, date, day)
Stopwatch 1/100 second display (up to 40 minutes)
1 second (up to 24 hours)
Calendar Auto calendar (based on February 28)
Timekeeping accuracy ±30 seconds/month (+5°C to +35°C)

Power supply Solar battery/auxiliary battery, automatic
switching type

Battery life Approx. 4 years (when exposed to at least
200 lx for at least 8 hours per day)

Optional accessories

Battery charger BC-700
Rechargeable battery BP-700

Model Name Using Similar Mechanism	WM-AF58/BF58
Tape Transport Mechanism Type	MF-WMAF58



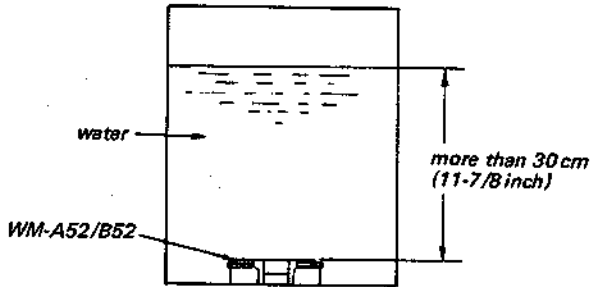
CASSETTE PLAYER
SONY®

NOTE ON REPAIR

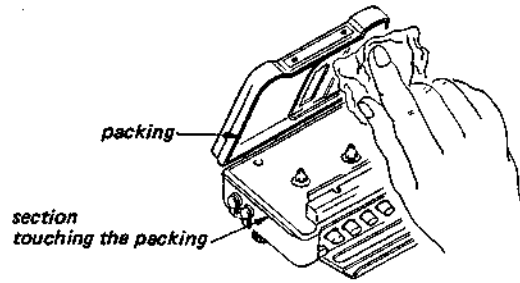
This model is waterproof, so be sure to confirm waterproofing after repair.

WATERPROOF CHECK

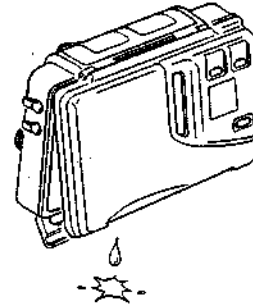
- (1) Insert batteries or a cassette tape in the set.
(So that it will sink.)
- (2) Place in more than 30 cm of water for 30 minutes.
(Close DC jack and packing firmly.)



- (3) Remove from the water after 30 minutes and wipe off all moisture.
- (4) Check all operations. (If water has entered, abnormal operation will occur.)
- (5) Open the cassette case and wipe off all moisture on the packing and case sections touching the packing.



- (6) Shake the set and confirm that no water comes out.



- (7) When waterproofing is confirmed, mount the ornamental sheet and ornamental plate assy (A). (Wipe off the water on the screw to prevent rusting.)

IF LEAKAGE OCCURS DURING WATERPROOF CHECK:

Dry the mechanism section and amp board, jack, etc. with a hairdryer, perform waterproofing procedures again and recheck starting with step (1).

How to Use the Clock

To Set the Time and Date	To Set the Alarm Time	To Use the Stopwatch
<p>Press T-SET</p> <p>Keep pressing for 1-2 seconds. Then press again.</p>	<p>Press A-SET</p> <p>Keep pressing for 1-2 seconds.</p>	<p>Press STW</p> <p>Press once.</p>
<p>Select the flickering digits you want to adjust.</p> <p> Press</p> <p>With each press, they move orderly from seconds to date.</p>	<p>Select the flickering digits you want to adjust.</p> <p> Press</p> <p>With each press, minutes and hours are selected alternately.</p>	<p>To start</p> <p> Press</p>
<p>Adjust the digits.</p> <p> Press</p> <p>Example To adjust the seconds → </p> <p>To adjust the month → </p> <p>When adjusting the digits except seconds, they change by one with each press. To advance the digits rapidly, keep ALARM/RESET button pressed.</p> <p>After adjusting the clock time or the alarm time, press MODE button to return to normal display.</p>	<p>Adjust the digits.</p> <p> Press</p> <p>To advance the digits rapidly, keep ALARM/RESET button pressed.</p>	<p>To stop, press again.</p> <p>To see the lap time while stopwatch is running. To reset to zero after stopping the stopwatch.</p> <p> Press</p> <p>To return to the stopwatch, press again. (Stopwatch continues to run while lap time is shown.)</p> <p>To return to normal display from the stopwatch, press MODE button.</p>

To turn the alarm and the chime on and off

1 Keep pressing 2 Press

With each press of DATE button, display changes as follows:

1 Chime only → 2 Chime and alarm → 3 Alarm only → 4 No chime No alarm

Chime rings on the every hour. Alarm sounds at the time already set for thirty seconds.

To turn off the alarm when it beeps, press ALARM/RESET button.
To confirm the date, press DATE button while normal display.
To confirm the alarm time, press ALARM/RESET button while normal display.

To Switch Time Display Cycle

1 Keep pressing 2 Press

↔

Display switches between 24-hour cycle and 12-hour cycle.

To Switch Month and Date Location

1 Keep pressing 2 Press

↔

Note: If you press both buttons simultaneously, all the digits are displayed while the buttons are pressed.

Display switches between date/month and month/date.

SECTION 1 ADJUSTMENTS

1-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

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

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

1-1. MECHANICAL ADJUSTMENTS

TORQUE MEASUREMENT

Mode	Torque meter	Meter reading
FWD	CQ-102C	30 – 60 g·cm (0.41 – 0.83 oz·inch)
FWD Back Tension		0.5 – 4.5 g·cm (0.007 – 0.06 oz·inch)
FF, REW	CQ-201B	more than 55 g·cm (0.76 oz·inch)

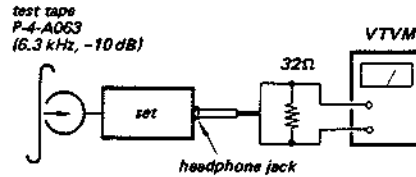
TAPE TENSION MEASUREMENT

Mode	Tension meter	Meter reading
FWD	CQ-403A	more than 90 g (3.17 oz)

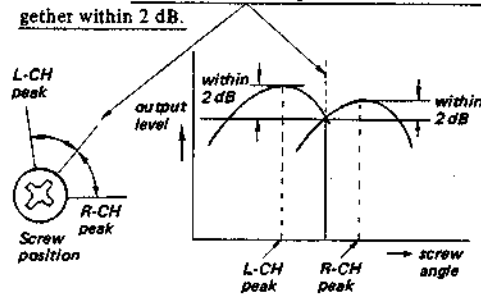
PB Head Azimuth Adjustment

Procedure:

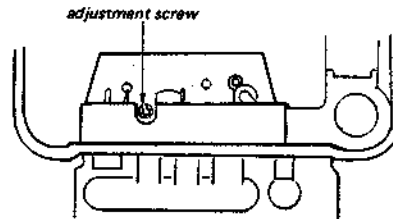
- Mode: playback



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



Adjustment Location:



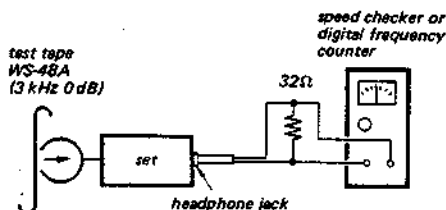
Tape Speed Adjustment

Setting:

VOL control: mechanical mid

Procedure:

Mode: playback

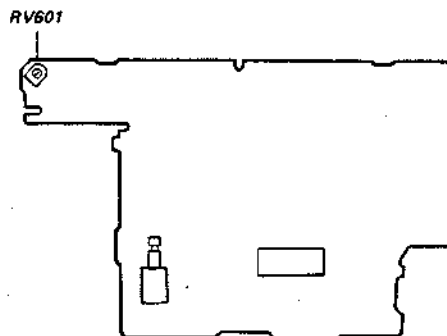


- Play back the end of the tape in FWD mode and adjust RV601 for the specification.
- The specification should be satisfied in any condition of tape top, tape end, high and low voltage, vertical and horizontal stand.

Specification:

Speed checker	Digital frequency counter
±3%	2,910 – 3,090 Hz

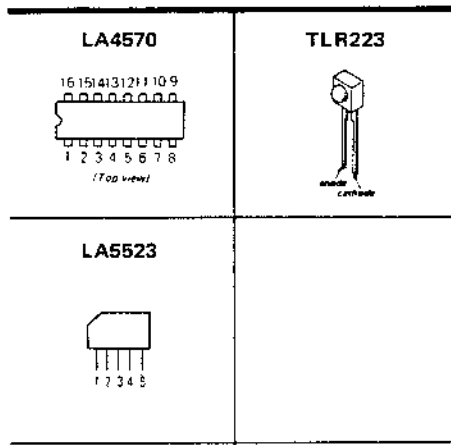
Adjustment Location: main board



SECTION 2
DIAGRAMS

2-1. PRINTED WIRING BOARDS
- AUDIO SECTION -

• Semiconductor Lead Layouts

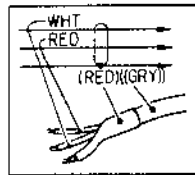


• Semiconductor Location

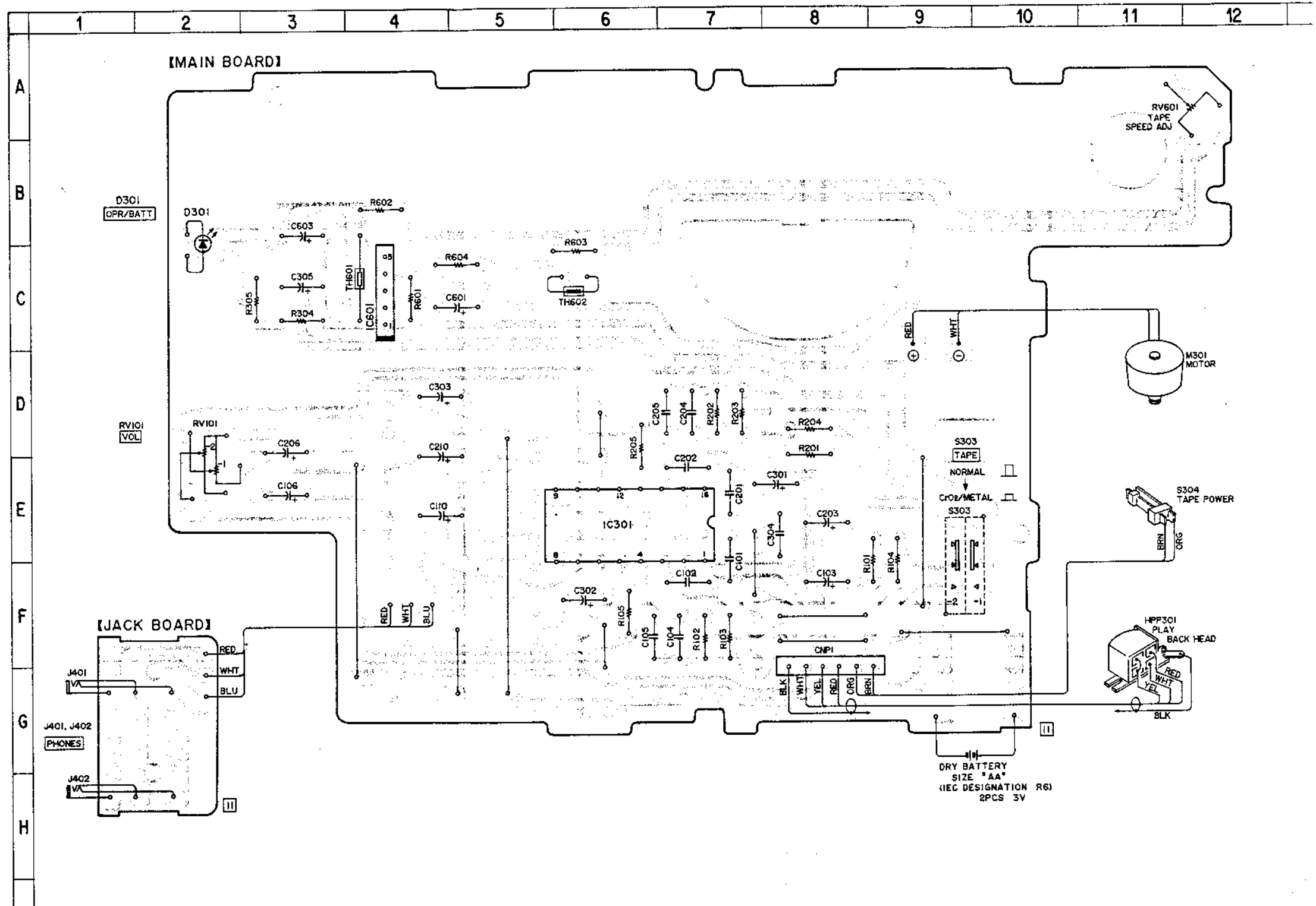
Ref. No.	Location
D301	B-2
IC301	E-6
IC601	C-4

Note:

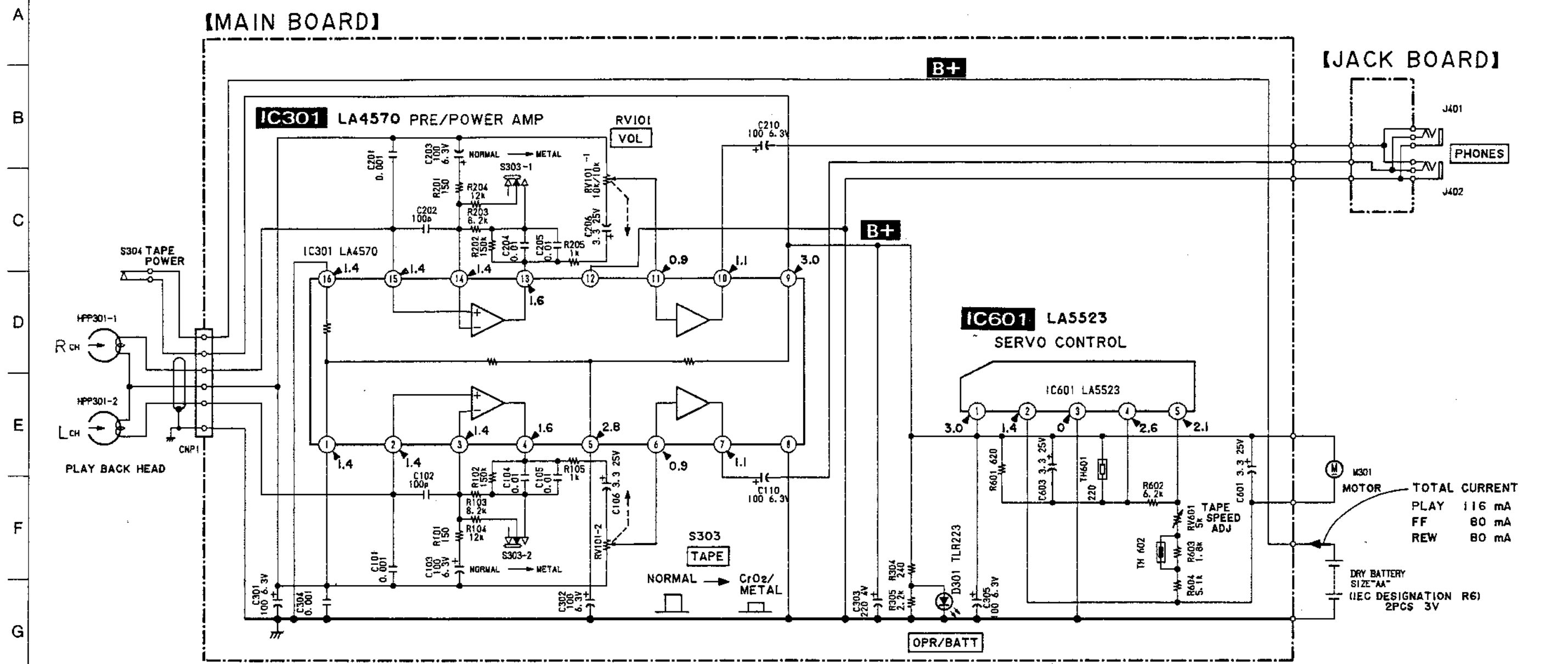
- Color code of sleeving over the end of the jacket.



- —○— : parts extracted from the component side.
- —●— : parts extracted from the conductor side.



2-2. SCHEMATIC DIAGRAM



TOTAL CURRENT
 PLAY 116 mA
 FF 80 mA
 REW 80 mA

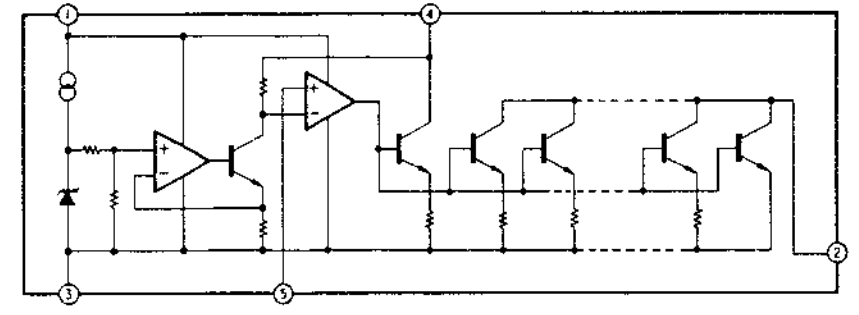
DRY BATTERY
 SIZE "AA"
 (IEC DESIGNATION R6)
 2PCS 3V

- Note:**
- All capacitors are in μF unless otherwise noted. pF: μmF 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.
 - Total current is measured with no cassette installed.
 - Power voltages is dc 3V and fed with regulated dc power supply from battery terminal.
 - Voltage and waveforms are dc with respect to ground in playback mode.
no mark: PLAY BACK

- Voltages are taken with a VOM (50 $\text{k}\Omega/\text{V}$). Voltage variations may be noted due to normal production tolerances.
- Switches

Ref. No.	Switch	Position
S303	TAPE	NORMAL
S304	POWER	OFF

• LA5523



SECTION 3 EXPLODED VIEWS AND PARTS LIST

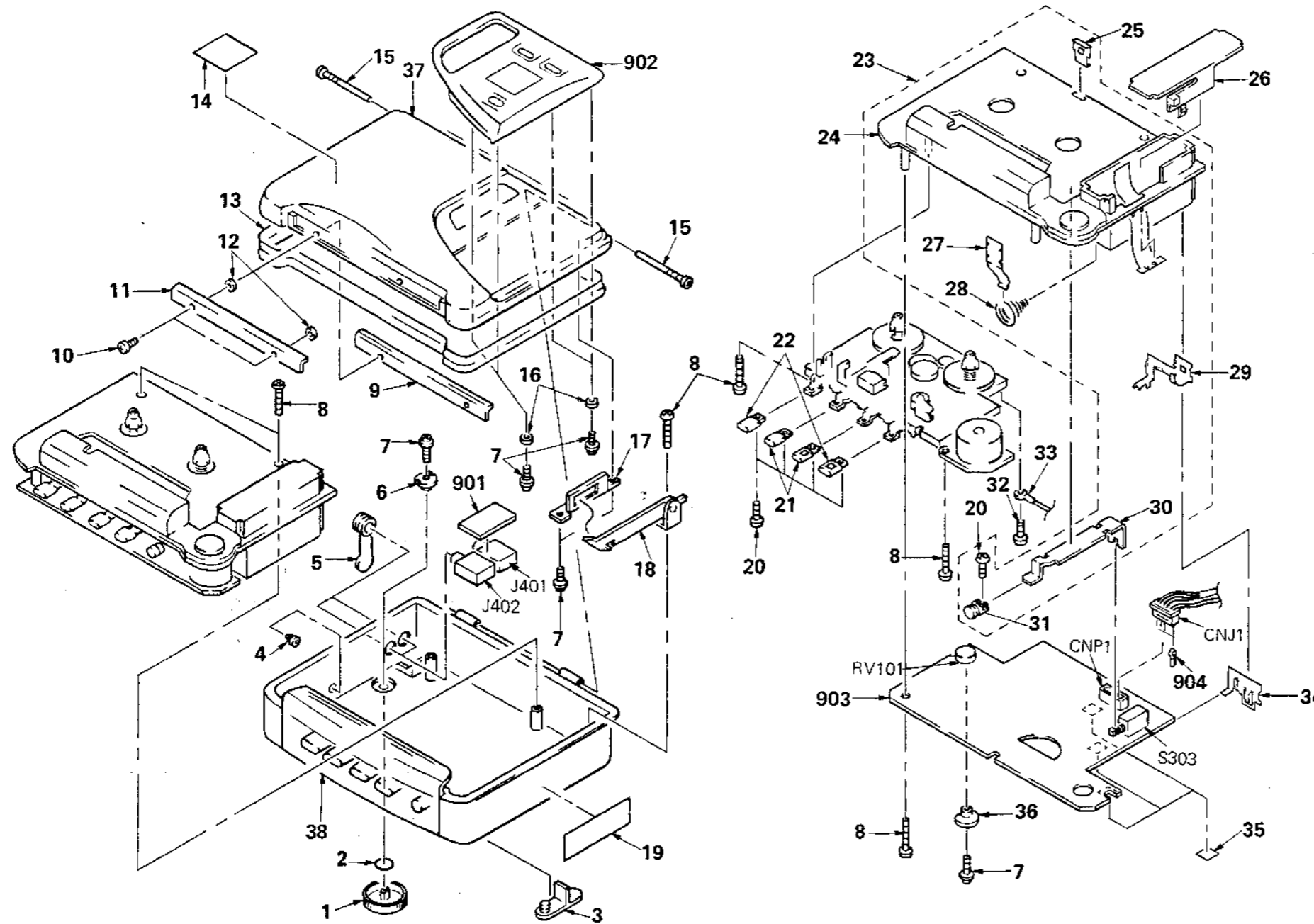
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

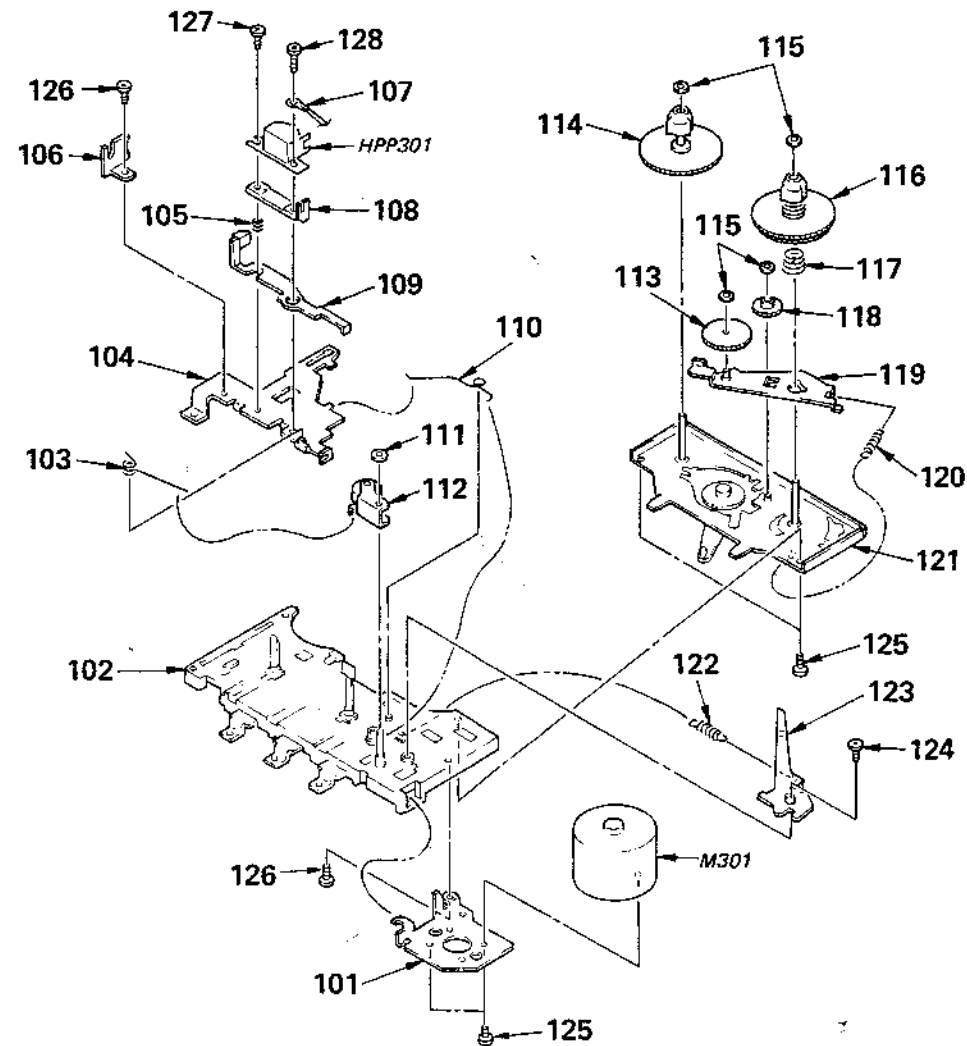
- Color Indication of Appearance Parts
Example:
(RED) ... KNOB, BALANCE (WHITE)
↑ ↑
Cabinet's Color Parts' Color

3-1. GENERAL SECTION

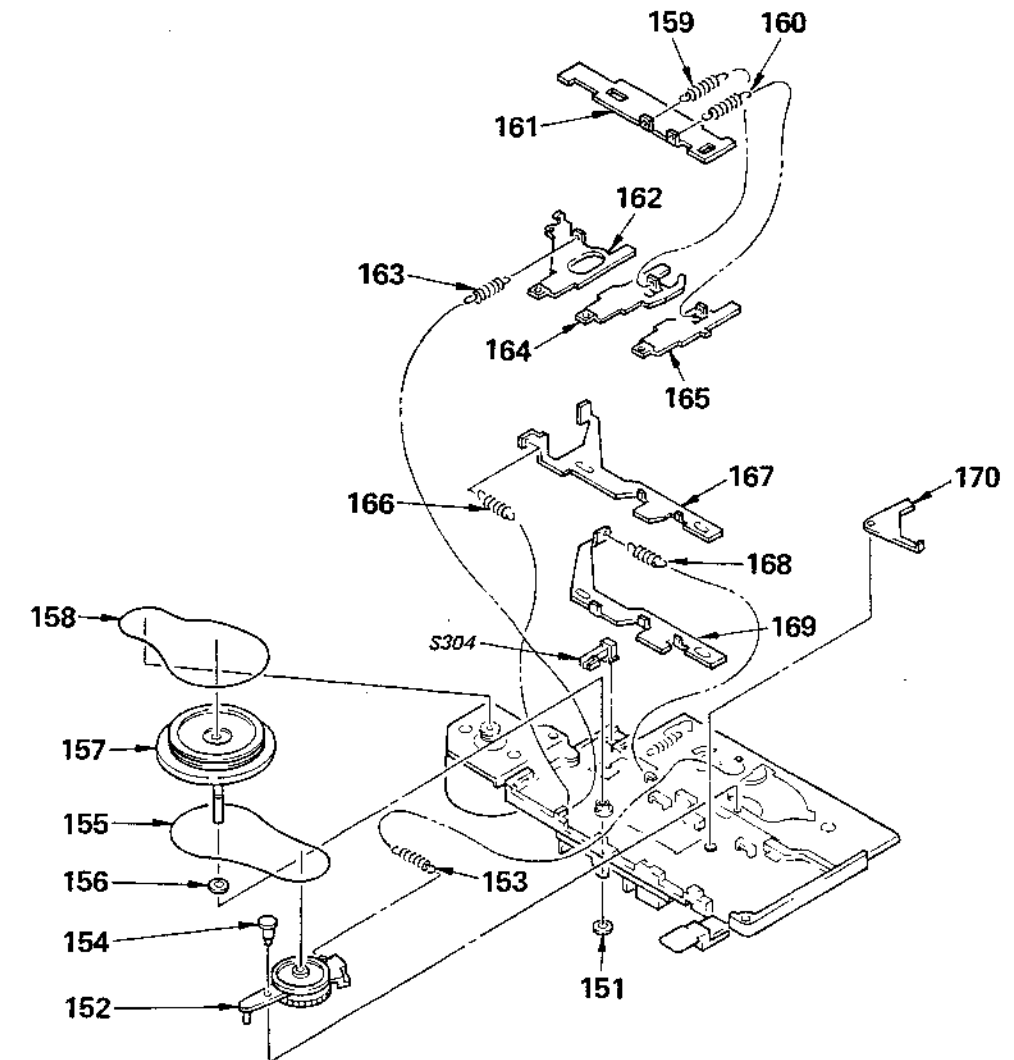


No.	Part No.	Description	Remarks
1	3-342-977-01	KNOB	
2	3-326-573-01	RING (DIA.4.9X DIA.7.1), O	
3	3-312-826-00	PACKING, TAPE SPEED ADJ	
4	*3-326-519-01	WINDOW, LED	
5	3-326-520-01	PACKING, HP JACK	
6	3-334-018-01	JOINTER (A)	
7	3-318-201-21	SCREW (B) (1.4X5), TAPPING	
8	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT	
9	*3-342-996-01	REINFORCEMENT (B)	
10	3-326-145-11	SCREW (M1.7X5.8)	
11	*3-342-984-01	REINFORCEMENT (A)	
12	3-326-149-01	PACKING (B)	
13	3-345-601-01	PACKING, CABINET	
14	3-703-710-01	STICKER, SONY SYMBOL (12)	
15	3-326-536-11	SCREW, TAPPING	
16	3-310-368-00	RING, RETAINING	
17	*3-342-971-01	HOLDER (CLICK ARM)	
18	X-3335-662-1	ARM ASSY, CLICK	
19	3-345-634-01	(B52:E)....LABEL, MODEL NUMBER	
20	3-318-204-01	SCREW (M1.7X2.5), TAPPING	
21	3-342-982-01	BUTTON (B)	
22	3-342-980-01	BUTTON (A)	
23	*A-3035-239-A	CHASSIS ASSY	
24	*3-345-637-01	CHASSIS	

No.	Part No.	Description	Remarks
25	3-326-112-01	SPRING	
26	3-342-987-01	LID, BATTERY CASE	
27	3-342-999-01	TERMINAL BOARD (C), BATTERY	
28	3-345-647-01	SPRING (D)	
29	3-342-997-01	TERMINAL BOARD (A), BATTERY	
30	*3-342-981-01	LEVER (TAPE SELECT)	
31	*3-342-985-01	BUTTON (TAPE SELECTION)	
32	7-627-553-27	SCREW, PRECISION +P 2X2.5	
33	7-623-505-01	LUG, 2	
34	3-342-998-01	TERMINAL BOARD (B), BATTERY	
35	3-831-441-XX	SPACER, KNOB	
36	3-334-019-01	JOINTER (B)	
37	X-3335-666-1	(A52).....CABINET (FRONT) ASSY	
38	X-3335-668-1	(B52:AEP)....CABINET (FRONT) ASSY	
	X-3335-670-1	(B52:E,UK)....CABINET (FRONT) ASSY	
38	X-3335-665-1	(A52).....CABINET (REAR) ASSY	
	X-3335-667-1	(B52:AEP)....CABINET (REAR) ASSY	
	X-3335-669-1	(B52:E,UK)....CABINET (REAR) ASSY	
901	*1-625-859-11	PC BOARD, JACK	
902	1-548-153-11	CLOCK (LCD)	
903	*A-3070-231-A	MOUNTED PCB, MAIN	
904	1-565-294-11	TERMINAL, SOLDERLESS	
CNJ1	1-563-474-11	HOUSING, CONNECTOR 6P	
J401	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)	
J402	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)	
RV101	1-230-593-11	RES, VAR, CARBON 10K/10K (VOL)	
S303	1-571-406-11	SWITCH, PUSH (TAPE SELECT)	

3-2. TAPE MECHANISM SECTION-1
(MF-WMAF58)

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
101	*3-345-606-01	BRACKET, MOTOR		115	3-596-937-01	WASHER (1.2X3X0.25)	
102	3-596-953-01	CHASSIS ASSY		116	3-596-934-01	REEL ASSY, TAKE-UP	
103	3-596-957-01	SP, PINCH ROLLER		117	3-596-936-01	SPRING	
104	*3-596-954-01	PANEL, HEAD		118	3-596-941-01	GEAR, FF	
105	3-596-907-01	SPRING		119	3-596-938-01	RIVETING, TG PLATE	
106	3-596-904-01	GUIDE, TAPE		120	3-596-939-01	SPRING	
107	7-623-505-01	LUG, 2		121	3-596-933-01	RIVETING, REEL PC BOARD	
108	3-596-965-01	BASE, H		122	3-596-914-01	SPRING	
109	*3-596-955-01	PLATE ASSY, DETECTION		123	*3-596-951-01	LEVER, AUTO	
110	3-596-903-01	SPRING		124	3-596-952-01	SCREW, AL	
111	3-596-962-01	WASHER (P.W 1.6X3.8X0.3)		125	7-627-554-07	SCREW, PRECISION +P 2X2.2	
112	3-596-913-01	ARM ASSY, PINCH ROLLER		126	7-627-554-18	+P 2X3.5	
113	3-596-940-01	GEAR, T ROLLER		127	3-596-967-01	SCREW (2X4.3), AZIMUTH	
114	3-596-935-01	REEL ASSY, SUPPLY		128	3-596-967-01	SCREW (PLUS MINUS P 2X4.3)	
				HPP301	1-543-515-11	HEAD, PLAYBACK	
				M301	X-3335-864-1	PULLEY ASSY, MOTOR	

3-3. TAPE MECHANISM SECTION-2
(MF-WMAF58)

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
151	3-596-932-01	WASHER (1.55X3.8X0.5)		161	3-596-926-01	RETAINER	
152	3-596-943-01	PULLEY ASSY, RF		162	*3-596-963-01	LEVER, STOP BUTTON	
153	3-596-944-01	SPRING		163	3-596-920-01	SPRING	
154	3-596-945-01	SCREW, ARM COLLAR		164	3-596-922-01	LEVER, FF BUTTON	
155	3-596-931-01	BELT, RF		165	3-596-924-01	LEVER, RWD BUTTON	
156	3-701-437-11	WASHER		166	3-596-927-01	SPRING	
157	3-596-959-01	FLYWHEEL ASSY		167	3-596-918-01	PLATE, FUNCTION, SW	
158	3-345-640-01	BELT, MAIN		168	3-596-917-01	SPRING	
159	3-596-923-01	SPRING		169	3-596-916-01	PLATE, FUNCTION	
160	3-596-925-01	SPRING		170	3-596-915-01	LEVER, RWD	
				S304	3-596-958-01	LEAF, SW	

SECTION 4 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μ F, PF: μ PF.

RESISTORS
• All resistors are in ohms.
• F: nonflammable

COILS
• MMH: mH, UH: μ H

SEMICONDUCTORS
In each case, U: μ , for example:
UA...: μ A..., UPA...: μ PA...,
UPC...: μ PC, UPD...: μ PD...

Ref.No.	Part No.	Description			
901	*1-625-859-11	PC BOARD, JACK			
902	1-548-153-11	CLOCK (LCD)			
903	*A-3070-231-A	MOUNTED PCB, MAIN			
904	1-565-294-11	TERMINAL, SOLDERLESS			
C101	1-162-294-31	CERAMIC	0.001MF	10%	50V
C102	1-162-282-31	CERAMIC	100PF	10%	50V
C103	1-124-225-00	ELECT	100MF	20%	6.3V
C104	1-161-379-00	CERAMIC	0.01MF	20%	16V
C105	1-161-379-00	CERAMIC	0.01MF	20%	16V
C106	1-124-258-00	ELECT	3.3MF	20%	25V
C110	1-124-225-00	ELECT	100MF	20%	6.3V
C201	1-162-294-31	CERAMIC	0.001MF	10%	50V
C202	1-162-282-31	CERAMIC	100PF	10%	50V
C203	1-124-225-00	ELECT	100MF	20%	6.3V
C204	1-161-379-00	CERAMIC	0.01MF	20%	16V
C205	1-161-379-00	CERAMIC	0.01MF	20%	16V
C206	1-124-258-00	ELECT	3.3MF	20%	25V
C210	1-124-225-00	ELECT	100MF	20%	6.3V
C301	1-124-225-00	ELECT	100MF	20%	6.3V
C302	1-124-225-00	ELECT	100MF	20%	6.3V
C303	1-124-434-00	ELECT	220MF	20%	4V
C304	1-162-294-31	CERAMIC	0.001MF	10%	50V
C305	1-124-225-00	ELECT	100MF	20%	6.3V
C601	1-124-258-00	ELECT	3.3MF	20%	25V
C603	1-124-258-00	ELECT	3.3MF	20%	25V
CN31	1-563-474-11	HOUSING, CONNECTOR 6P			
CNP1	*1-506-988-11	PIN, CONNECTOR (PC BOARD) 6P			
D301	8-719-801-26	DIODE TLR223			
IC301	8-759-802-85	IC LA4570			
IC601	8-759-801-12	IC LA5523			
J401	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)			
J402	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)			

Ref.No.	Part No.	Description			
R101	1-249-407-11	CARBON	150	5%	1/4W
R102	1-247-883-00	CARBON	150K	5%	1/4W
R103	1-249-426-11	CARBON	8.2K	5%	1/4W
R104	1-249-430-11	CARBON	12K	5%	1/4W
R105	1-249-417-11	CARBON	1K	5%	1/4W
R201	1-249-407-11	CARBON	150	5%	1/4W
R202	1-247-883-00	CARBON	150K	5%	1/4W
R203	1-249-426-11	CARBON	8.2K	5%	1/4W
R204	1-249-430-11	CARBON	12K	5%	1/4W
R205	1-249-417-11	CARBON	1K	5%	1/4W
R304	1-215-406-00	CARBON	240	5%	1/4W
R305	1-249-421-11	CARBON	2.2K	5%	1/4W
R601	1-247-826-00	CARBON	620	5%	1/4W
R602	1-215-440-00	CARBON	6.2K	5%	1/4W
R603	1-249-420-11	CARBON	1.8K	5%	1/4W
R604	1-215-438-00	CARBON	5.1K	5%	1/4W
RV101	1-230-593-11	RES. VAR, CARBON 10K/10K (VOL)			
RV601	1-238-041-21	RES. ADJ, CARBON 5K			
S303	1-571-406-11	SWITCH, PUSH			
TH601	1-808-289-21	THERMISTOR (POSITIVE)			
TH602	1-808-292-11	THERMISTOR			

ACCESSORY & PACKING MATERIAL

*3-345-612-01	CUSHION (UPPER)
*3-345-613-01	CUSHION (LOWER)
*3-345-624-01	(A52:US).....INDIVIDUAL CARTON
*3-345-626-01	(A52:Canadian)...INDIVIDUAL CARTON
*3-345-628-01	(B52:AEP).....INDIVIDUAL CARTON
*3-345-629-01	(B52:E).....INDIVIDUAL CARTON
*3-345-632-01	(B52:UK).....INDIVIDUAL CARTON
3-701-624-00	BAG, POLYETHYLENE
3-769-807-11	(B52:UK,E).....MANUAL, INSTRUCTION
3-769-807-21	(A52).....MANUAL, INSTRUCTION
3-769-807-31	(A52:Canadian)...MANUAL, INSTRUCTION
3-769-807-41	(B52:AEP).....MANUAL, INSTRUCTION
8-952-261-90	(A52/B52:AEP,UK)...HEADPHONE MDR-W15L/Y SET
8-952-265-90	(B52:E).....HEADPHONE MDR-E215/Y SET
X-3336-630-1	CASE ASSY, CARRYING