

WM-2011

SERVICE MANUAL

AEP Model
UK Model
E Model

This set is almost the same as model WM-B12 previously produced.
Therefore, see the service manual for the information which is not contained
in this service manual.

• PART LIST (The difference between WM-B12 and WM-2011)

WM-B12		WM-2011	
Page	No. Part No.	Part No.	Description
18	3-351-510-01	3-351-510-61	CABINET (FRONT) (TC-A)
19	X-3346-708-1	X-3349-149-1	(BLACK) ... HOLDER ASSY (B), CASSETTE
	X-3346-709-1	X-3349-150-1	(RED) ... HOLDER ASSY (R), CASSETTE
	X-3346-710-1	X-3349-151-1	(BLUE) ... HOLDER ASSY (L), CASSETTE
11	X-3346-797-2	X-3349-152-1	(GRAY) ... HOLDER ASSY (G), CASSETTE
33	3-351-511-11	3-351-511-61	(RED) ... CABINET (REAR) (TC-B)
	_____	3-351-511-71	(GRAY) ... CABINET (REAR) (TC-B)
34	3-346-517-61	3-357-436-61	(RED) ... LID, BATTERY
	_____	3-357-436-11	(GRAY) ... LID, BATTERY
—	_____	*3-357-426-01	LABEL, MODEL NUMBER
12	*3-348-495-01 } *3-348-497-01 } *3-348-491-01 } 3-786-983-21 } 3-786-983-41 }	*3-357-417-01 *3-357-419-01 3-751-404-11	INDIVIDUAL CARTON CUSHION (UPPER) MANUAL INSTRUCTION

CASSETTE PLAYER SONY®



9-955-730-11

Sony Corporation
Audio Group

English
90B0464-1
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WM-A12/B12

SERVICE MANUAL



Photo: WM-A12

US Model
Canadian Model
WM-A12

West Germany Model
UK Model
E Model
WM-B12

Model Name Using Similar Mechanism	WM-A10/B10
Tape Transport Mechanism Type	MT-WMA12-04

SPECIFICATIONS

Power requirements 3 V DC Batteries R6 (AA) × 2
BP-700 rechargeable battery
External DC 3 V power sources

Battery life (Approximate hours)

Sony Alkaline AM3 (N)	8 hrs.
Rechargeable BP-700	2 hrs.

Accessories supplied Stereo headphones (1) Beltclip (1)
Battery tube (1)

Optional accessories Rechargeable battery (BP-700)/charger (BC-700) kit
BPC-700K*
AC power adaptor AC-02L
Car battery cord DCC-70
Battery case EBP-500B
Stereo active speaker system SRS-30, SRS-50

Design and specifications subject to change without notice.

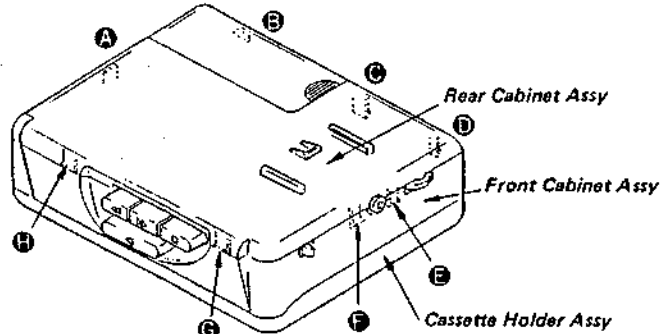


CASSETTE PLAYER
SONY®

SECTION 1 DISASSEMBLY

Location and shape of claws

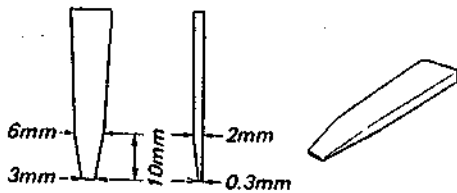
The symbols (A) - (H) show the order to uncouple the linkage of the claw, and names of the parts.



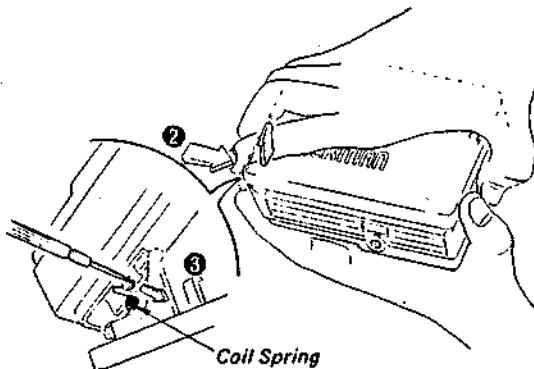
Note: Follow the disassembly procedure the numerical order given.

Tools: Precision Screwdrivers (\ominus , width 0.8mm, 1.4mm, and 2.0mm)
Adhesive tape 1-2cm
Wedge (hand made)

Material . . . soft plastic (such as PVC) etc.
Sizes are for the reference.

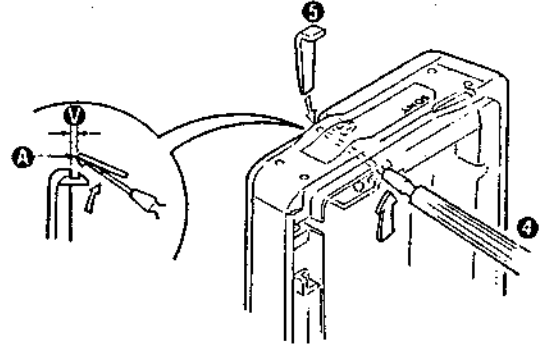


[1] Cassette Holder Removal

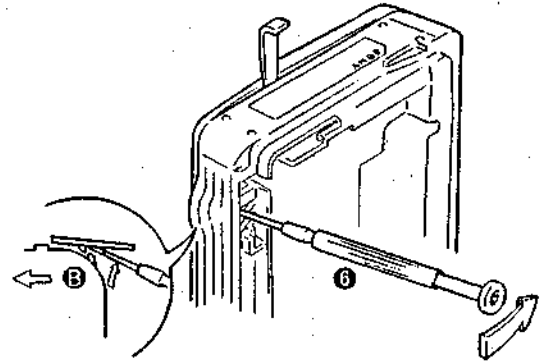


- ① Open the cassette holder.
- ② While pressing the edge of the cassette holder, pull up it in order to take off the cassette holder.
- ③ Take off the end of coil spring with a precision screwdriver (width: 0.8mm).

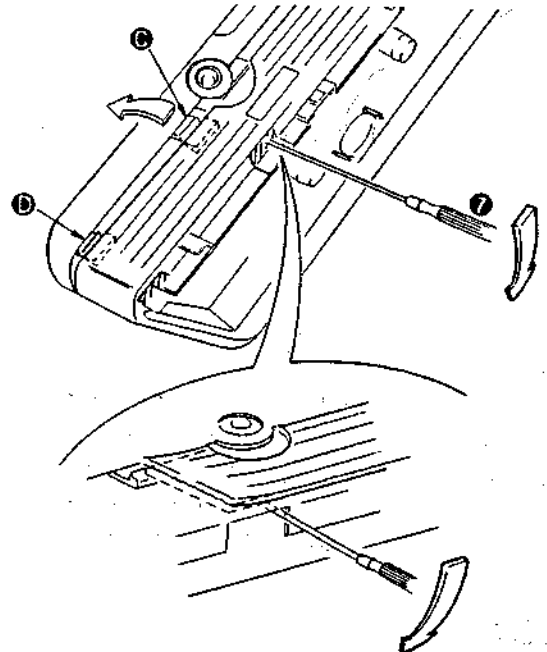
[2] Rear Cabinet Removal



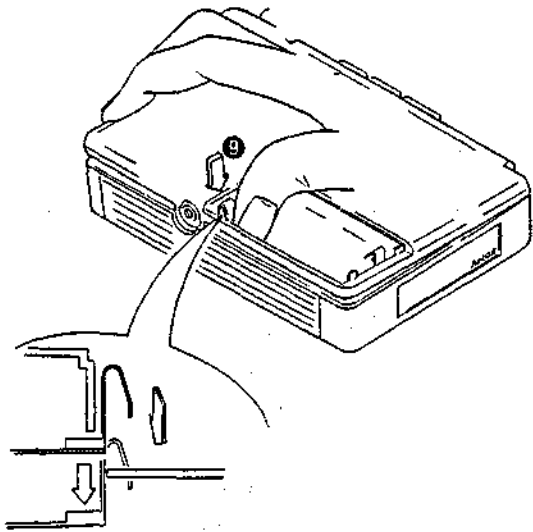
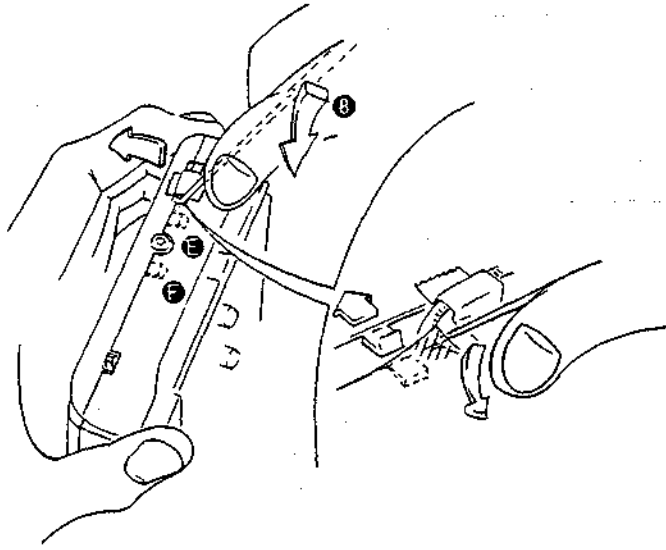
- ④ Insert a precision screwdriver (width: 2.0mm) into the slit of front cabinet, lift the front cabinet as shown in the figure for making a clearance (∇).
- ⑤ Insert a wedge in the clearance.



- ⑥ Insert a precision screwdriver (width: 2.0mm), and lift the front cabinet so that the claw B comes off.



- ⑦ In a similar way as procedure ⑥, uncouple the linkage of the claw C and D.



③ Put a adhesive tape on the volume for protection. Insert a precision screwdriver (width: 1.4 mm) and lift the shaded portion, so that the claw ⑤ and ⑥ come off.

④ Press down the battery terminals in order to leave Mounted PCB in the rear cabinet, and then remove the rear cabinet.

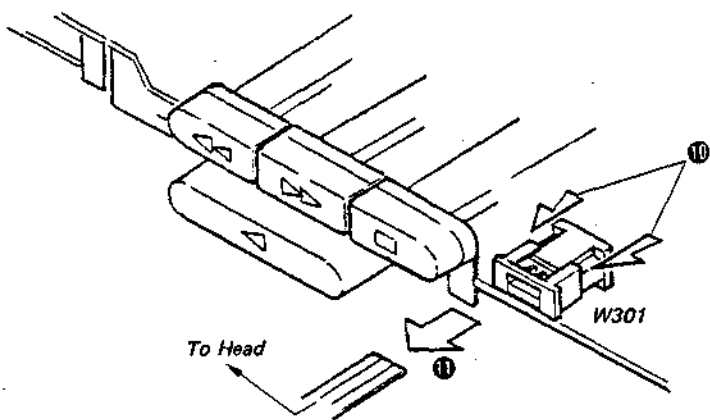
CAUTION: Be sure not to touch the volume knob, when inserting precision screwdriver.

1. Clear mois pi ca ru
2. Dem. tizer
3. Do r
4. Afte to t
5. The pow

Torque

Tape

[3] Head Flexible Board Removal



SECTION 2

MECHANICAL AND ELECTRICAL ADJUSTMENTS

MECHANICAL ADJUSTMENTS

PRECAUTION

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

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

Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	22-45g · cm (0.31-0.63oz · inch)	CQ-102C
Fast Forward	55-130g · cm (0.77-1.82oz · inch)	CQ-201B
Rewind	55-150g · cm (0.77-2.1oz · inch)	CQ-201B
Back Tension	1-2g · cm (0.014-0.028oz · inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	more than 90g (1.26oz)

ELECTRICAL ADJUSTMENTS

CASSETTE SECTION

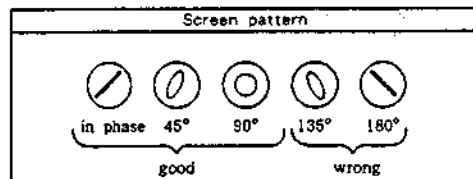
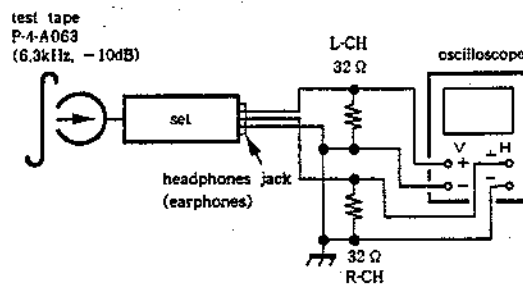
Playback Head Phase Check

Note : When replacing the head, check the both L-ch and R-ch phases.

Procedure :

Phase Check

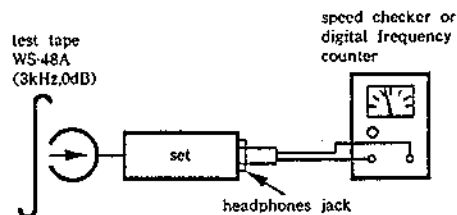
Mode : playback



Tape Speed Adjustment

Procedure :

Mode : playback

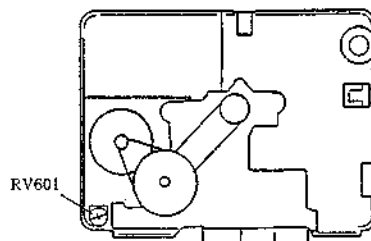


Specification :

speed checker	digital frequency counter (TAPE END)
±0.5%	2,990-3,015Hz

Frequency difference between the beginning and the end of the tape should be within ±1.5% (±45Hz).

Adjustment Location



SECTION 3 DIAGRAMS

Note:

- ● : Through hole.
- [diagonal lines] : Pattern on the side which is seen.
- [cross-hatch] : Pattern of the rear side.
- [square] : Printed resistors extracted from the rear side.

● **Semiconductor Location**

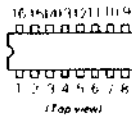
Ref. No.	Location
IC301	D-10
IC601	D-2

● **Semiconductor Lead Layouts**

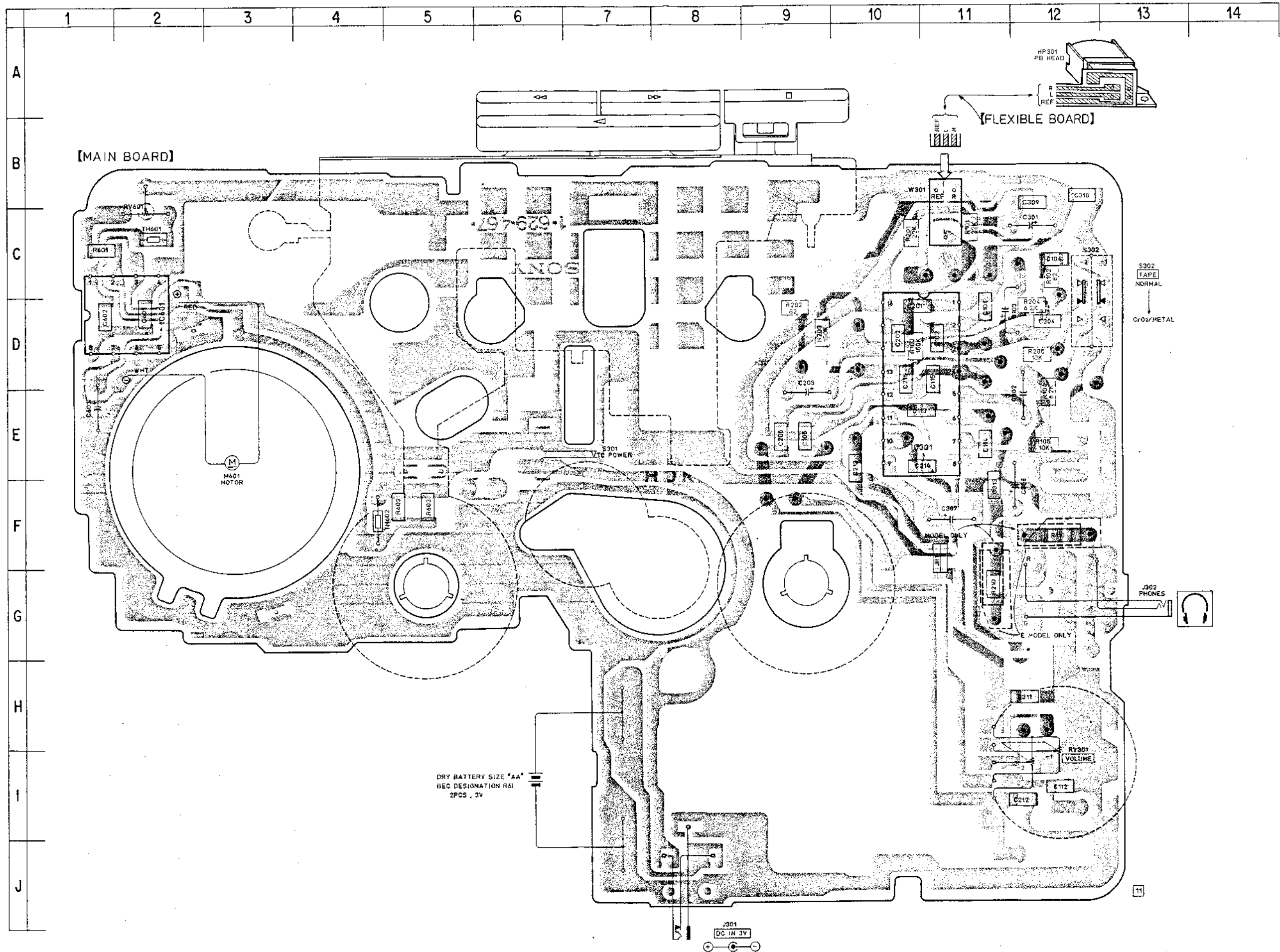
AN6650



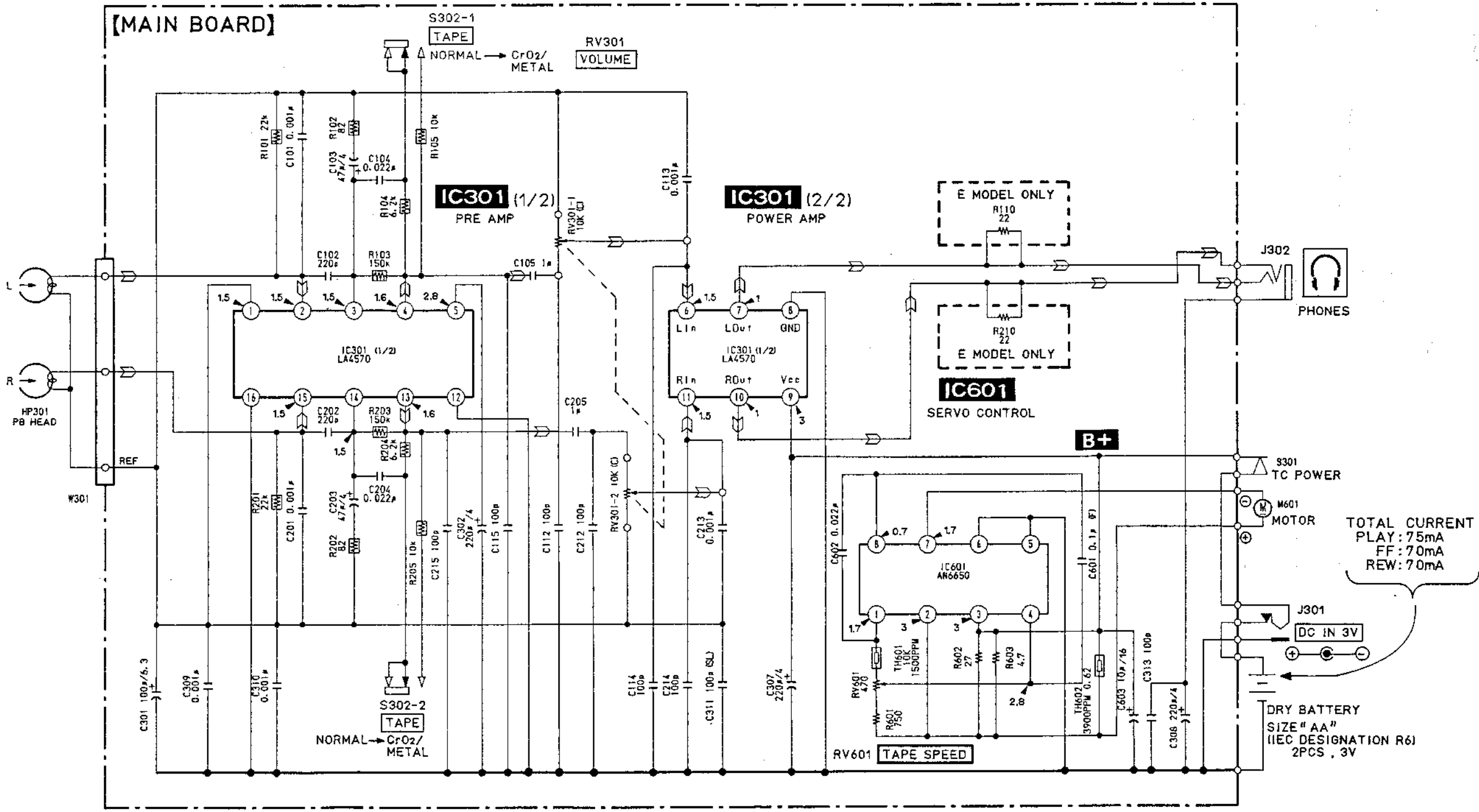
LA4570



3-1. PRINTED WIRING BOARDS



A
B
C
D
E
F
G
H
I
J



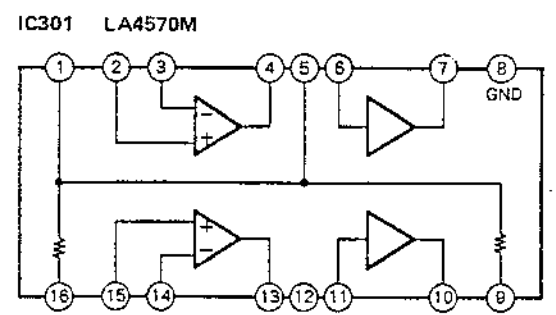
TOTAL CURRENT
PLAY: 75mA
FF: 70mA
REW: 70mA

- Note:**
- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\mu\text{F}$ 50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $\frac{1}{2}W$ or less unless otherwise specified.
 - Δ : internal component.
 - \square : printed resistor.
 - Switch

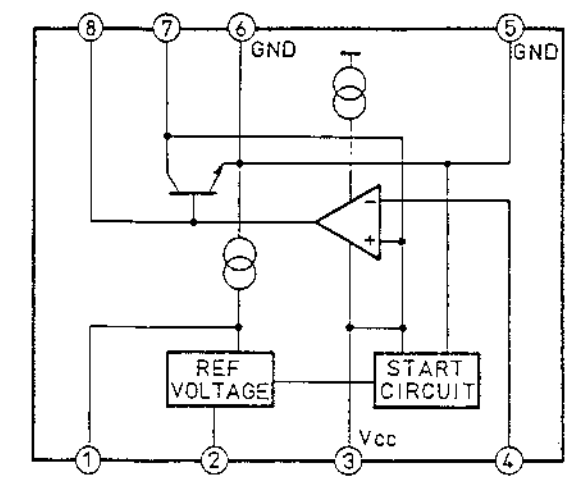
Ref. No.	Switch	Position
S301	TC POWER	OFF
S302	TAPE	NORMAL

- \square : adjustment for repair.
- Total current is measured with no cassette installed.
- Voltage and waveforms are dc with respect to ground in playback mode.
- no mark: PB
- Voltages are taken with a VOM (input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- Σ : PB

• IC Block Diagrams



IC601 AN6650



<u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>	<u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
1	3-346-518-01	CLIP, BELT		20	3-346-509-01	SPRING	
2	3-346-522-01	PLATE, LOCK		21	X-3334-005-1	PINCH ROLLER ASSY	
3	X-3346-503-1	GEAR ASSY, MIDWAY		22	X-3346-502-1	TABLE ASSY, T REEL	
4	X-3346-505-1	WHEEL ASSY, CAPSTAN		23	X-3346-504-1	GEAR ASSY, PLAY	
5	3-335-604-01	BELT, MIDWAY		24	3-346-516-01	SPRING	
6	3-346-527-01	LEVER (REW)		25	3-335-608-01	SPRING	
7	3-346-539-01	SPRING (FR)		26	3-334-089-01	GEAR, FF	
8	3-346-526-01	LEVER (FF)		27	3-346-523-01	LEVER (SHUT-OFF)	
9	3-346-528-01	LEVER (STOP)		28	3-341-794-01	TERMINAL BOARD, MINUS	
10	3-346-513-01	BUTTON (FF)		29	3-347-109-01	TERMINAL BOARD, PLUS	
11	3-346-514-01	BUTTON (REW)		30	X-3346-536-1	BASE ASSY (B), GUIDE	
12	3-346-515-01	BUTTON (STOP)		31	3-351-544-01	BELT (CAPSTAN)	
13	3-346-512-01	BUTTON (PLAY)		32	3-334-057-01	TERMINAL BOARD, RELAY	
14	3-335-605-01	SPRING, COMPRESSION		33	3-351-511-01	CABINET (REAR) (TC-B)(BLACK)	
15	3-343-358-01	RING, RETAINING			3-351-511-11	(B12)...CABINET (REAR)(TC-B)(RED)	
16	3-346-538-01	SPRING (GROUND)			3-351-511-21	(B12)...CABINET (REAR)(TC-B)(BLU)	
17	3-346-525-01	GEAR (S REEL)		34	3-346-517-01	LID, BATTERY CASE (BLACK)	
18	3-351-510-01	CABINET (FRONT) (TC-A)			3-346-517-61	(B12)...LID, BATTERY CASE (RED)	
19	X-3346-704-1	(A12)...HOLDER(TC-A)(1-B) ASSY, CASSETTE			3-346-517-71	(B12)...LID, BATTERY CASE (BLU)	
	X-3346-708-1	(B12)...HOLDER(TC-A)(2-B) ASSY, CASSETTE (BLACK)		35	*3-338-263-01	CUSHION (U)	
	X-3346-709-1	(B12)...HOLDER(TC-A)(2-R) ASSY, CASSETTE (RED)		HP301	A-3108-292-A	PC BOARD ASSY, HEAD	
	X-3346-710-1	(B12)...HOLDER(TC-A)(2-L) ASSY, CASSETTE (BLU)		M601	1-541-649-21	MOTOR	

SECTION 5 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 F

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			
C101	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V	
C102	1-163-125-00	CERAMIC CHIP 220PF	10%	50V	
C103	1-124-432-00	ELECT 47MF	20%	4V	
C104	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V	
C105	1-162-611-00	CERAMIC CHIP 1MF		25V	
C112	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C113	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V	
C114	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C115	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C201	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V	
C202	1-163-125-00	CERAMIC CHIP 220PF	10%	50V	
C203	1-124-432-00	ELECT 47MF	20%	4V	
C204	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V	
C205	1-162-611-00	CERAMIC CHIP 1MF		25V	
C212	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C213	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V	
C214	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C215	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C301	1-124-225-00	ELECT 100MF	20%	6.3V	
C302	1-124-434-00	ELECT 220MF	20%	4V	
C307	1-124-434-00	ELECT 220MF	20%	4V	
C308	1-124-434-00	ELECT 220MF	20%	4V	
C309	1-163-205-00	CERAMIC CHIP 0.001MF	10%	50V	
C310	1-163-205-00	CERAMIC CHIP 0.001MF	10%	50V	
C311	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C313	1-163-117-00	CERAMIC CHIP 100PF	5%	50V	
C601	1-163-077-00	CERAMIC CHIP 0.1MF		50V	
C602	1-163-063-00	CERAMIC CHIP 0.022MF	10%	50V	
C603	1-126-157-11	ELECT 10MF	20%	16V	
HP301	A-3108-292-A	PC BOARD ASSY, HEAD			
IC301	8-759-802-85	IC LA4570			
IC601	8-759-403-83	IC AN6650			
J301	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)			
J302	1-565-287-11	JACK (PHONE)			
JR1	1-216-296-00	METAL GLAZE 0	5%	1/8W	

Ref.No.	Part No.	Description			
M601	1-541-649-21	MOTOR			
R101	1-249-433-11	CARBON	22K 5%	1/32W	
R102	1-249-404-00	CARBON	82 5%	1/32W	
R103	1-215-473-00	CARBON	150K 5%	1/32W	
R104	1-215-440-00	CARBON	6.2K 5%	1/32W	
R105	1-249-429-11	CARBON	10K 5%	1/32W	
R110	1-216-158-00	{B12:E}...METAL CLAZE	22 5%	1/8W	
R201	1-249-433-11	CARBON	22K 5%	1/32W	
R202	1-249-404-00	CARBON	82 5%	1/32W	
R203	1-215-473-00	CARBON	150K 5%	1/32W	
R204	1-215-440-00	CARBON	6.2K 5%	1/32W	
R205	1-249-429-11	CARBON	10K 5%	1/32W	
R210	1-216-158-00	{B12:E}...METAL GLAZE	750 5%	1/8W	
R601	1-216-195-00	METAL GLAZE	750 5%	1/8W	
R602	1-216-160-00	METAL GLAZE	27 5%	1/8W	
R603	1-216-142-00	METAL GLAZE	4.7 5%	1/8W	
RV301	1-238-072-11	RES, VAR, CARBON 10K/10K (VOLUME)			
RV601	1-238-011-11	RES, ADJ, CARBON 470 (TAPE SPEED)			
S301	1-570-549-11	SWITCH, LEAF (POWER)			
S302	1-571-478-11	SWITCH, SLIDE (TAPE)			
TH601	1-808-664-21	THERMISTOR, POSITIVE			
TH602	1-808-680-41	THERMISTOR (POSITIVE)			
W301	*1-565-288-11	HOUSING, CONNECTOR 3P			

ACCESSORY & PACKING MATERIAL

3-786-983-11	{A12:Canadian/B12:E,UK}MANUAL, INSTRUCTION
3-786-983-21	{A12:US/B12:WG}MANUAL, INSTRUCTION
3-786-983-41	{B12:WG}MANUAL, INSTRUCTION
8-952-313-90	{A12:US}HEADPHONE MDR-005L/B SET
8-952-350-90	{B12:E}HEADPHONE MDR-E454 SET
8-952-447-90	{A12:Canadian/B12:WG,UK}HEADPHONE MDR-006L SET