

# WM-EX24

## SERVICE MANUAL

AEP Model  
E Model



Model Name Using Similar Mechanism	WM-FX10
Tape Transport Mechanism Type	MT-WMEX10-48 MT-WMEX10M-48

## Specifications

### Power Requirements

3 V DC Batteries AA (R6) x 2  
External DC 3 V power sources

### Battery Life

(approximate hours when using the batteries specified below)

Battery	Playback
Sony Alkaline AM3 (N)	7 hours
Sony SUM-3 (NS)	3.5 hours

### Supplied Accessories

- Stereo headphones (1)
- Belt clip (1)

### Optional Accessories

- AC power adaptor AC-E30L
- Car battery cord DCC-E130L

Design and specifications are subject to change without notice.

### Note

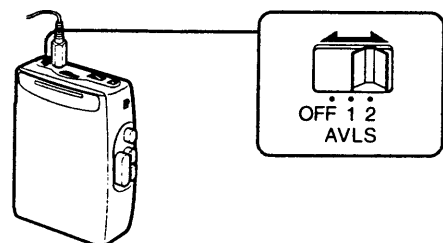
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

## Featuring

### AVLS (Automatic Volume Limiter System)

The AVLS selector allows you to limit the maximum volume of your WALKMAN personal stereo without degrading the sound quality.

- When the AVLS selector is set to either position 1 or 2 (around 95 dB, 85 dB respectively), the volume will be kept at a moderate level without the degradation of the sound quality, even if you attempt to turn the volume up higher.
- When the AVLS selector is set to either position 1 or 2, the playback sound may be distorted or unstable according to the music (especially bass boosted part). If this happens, turn down the volume.
- When the AVLS selector is turned off, you will be able to enjoy the full volume capability of your WALKMAN personal stereo.

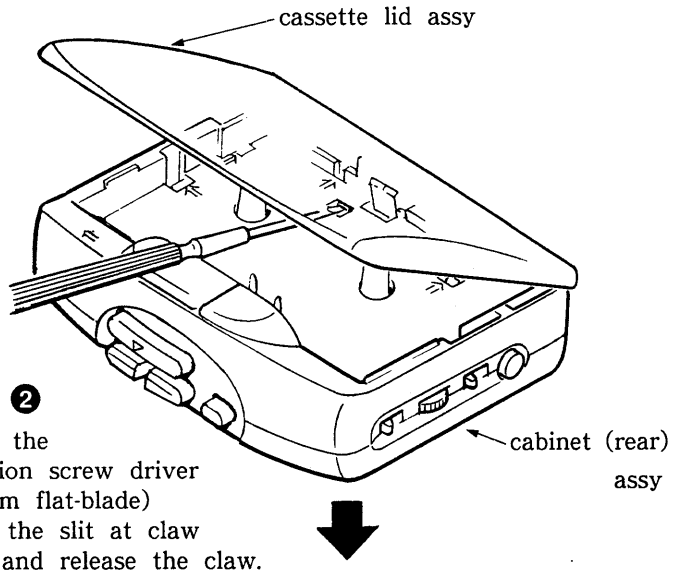
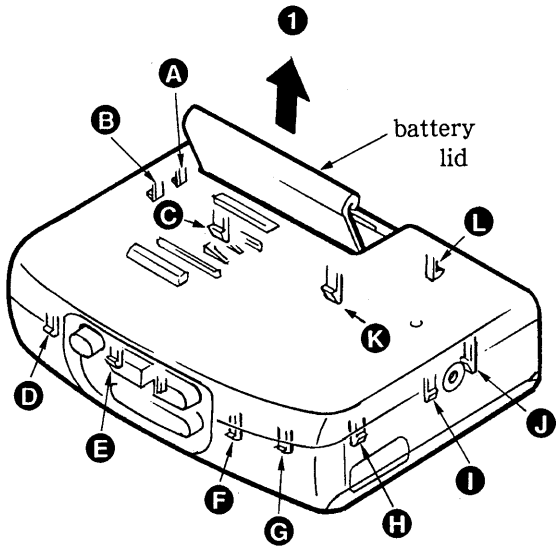


CASSETTE PLAYER  
**SONY**®

# SECTION 1 DISASSEMBLY

• Follow the disassembly procedure in the numerical order given.

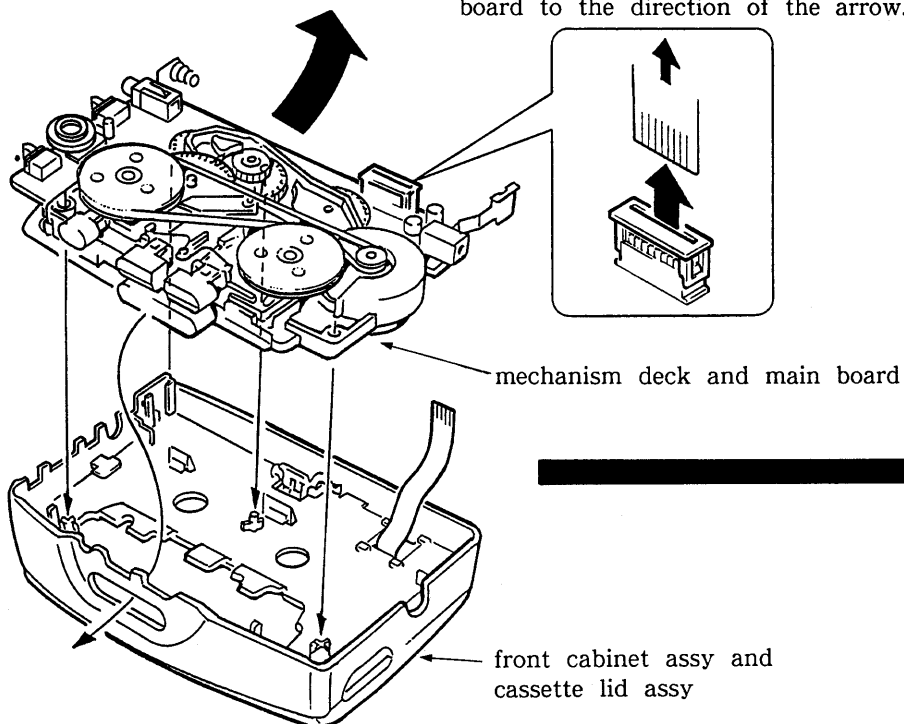
## CABINET (REAR) ASSY



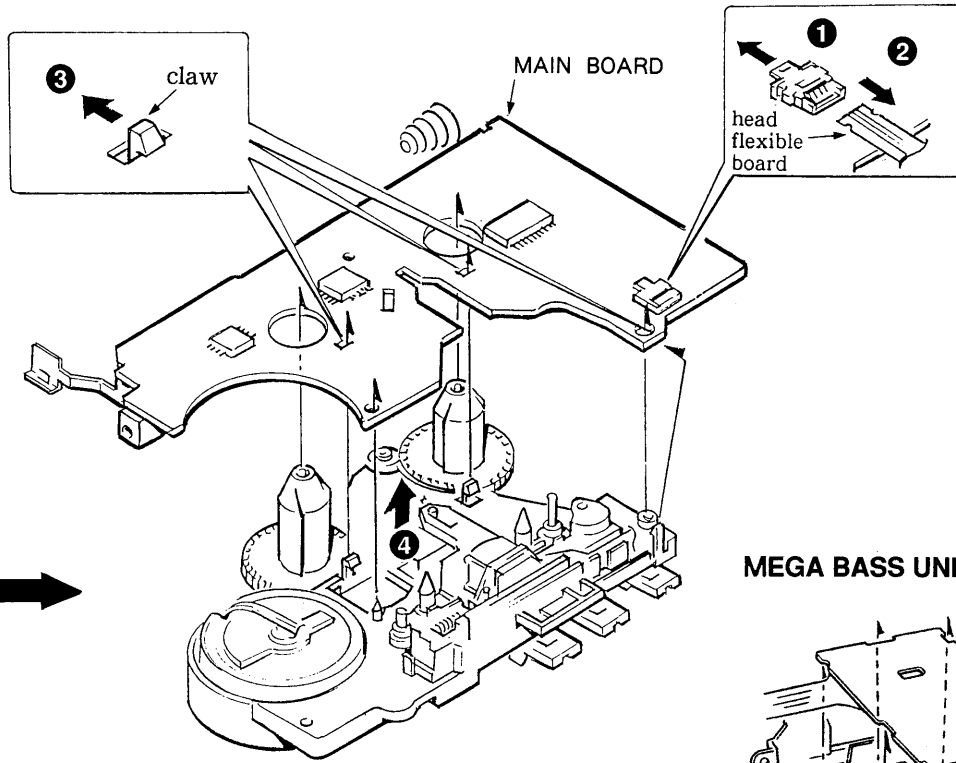
Insert the precision screw driver (1.4mm flat-blade) in to the slit at claw "⇒" and release the claw.

**3**  
Remove the cabinet (rear) assy. (Release all claw **A** to **L** in alphabetical order.)

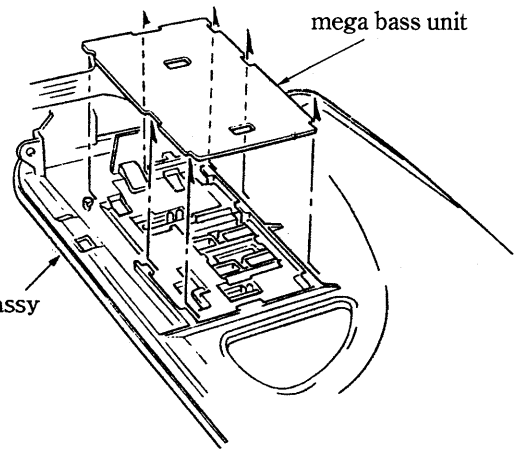
## MECHANISM DECK AND MAIN BOARD



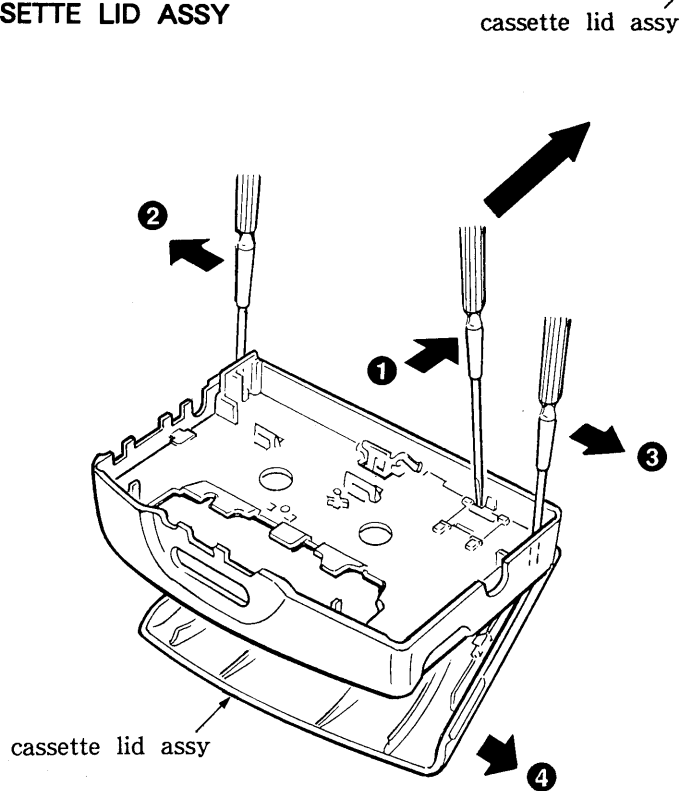
**MAIN BOARD**



**MEGA BASS UNIT**



**CASSETTE LID ASSY**



## SECTION 2 ADJUSTMENTS

### 2-1. MECHANICAL ADJUSTMENTS

#### PRECAUTION

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

playback head	pinch roller
capstan	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 (2.5V) unless otherwise noted.

#### Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	20 - 42 g-cm (0.28 - 0.58 oz-inch)
FWD Back Tension		less than 3 g-cm (less than 0.04 oz-inch)
FF, REW	CQ-201B	More than 60 g-cm (More than 0.83 oz-inch)

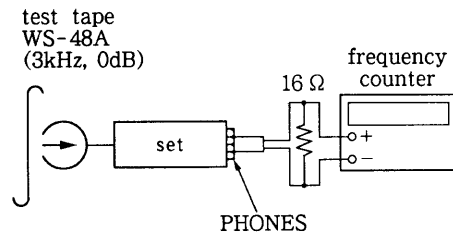
### 2-2. ELECTRICAL ADJUSTMENTS

- Supplied voltage : 2.5V
  - Switch and control position
- AVLS switch : OFF  
 MEGA BASS switch : OFF  
 TAPE POSITION switch : NORMAL  
 VOLUME CONTROL : maximum  
 Test Tape

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

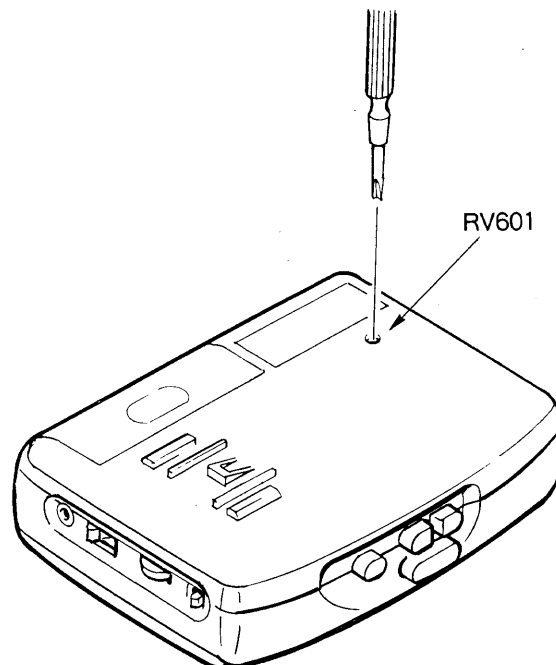
#### TAPE SPEED ADJUSTMENTS

Procedure :



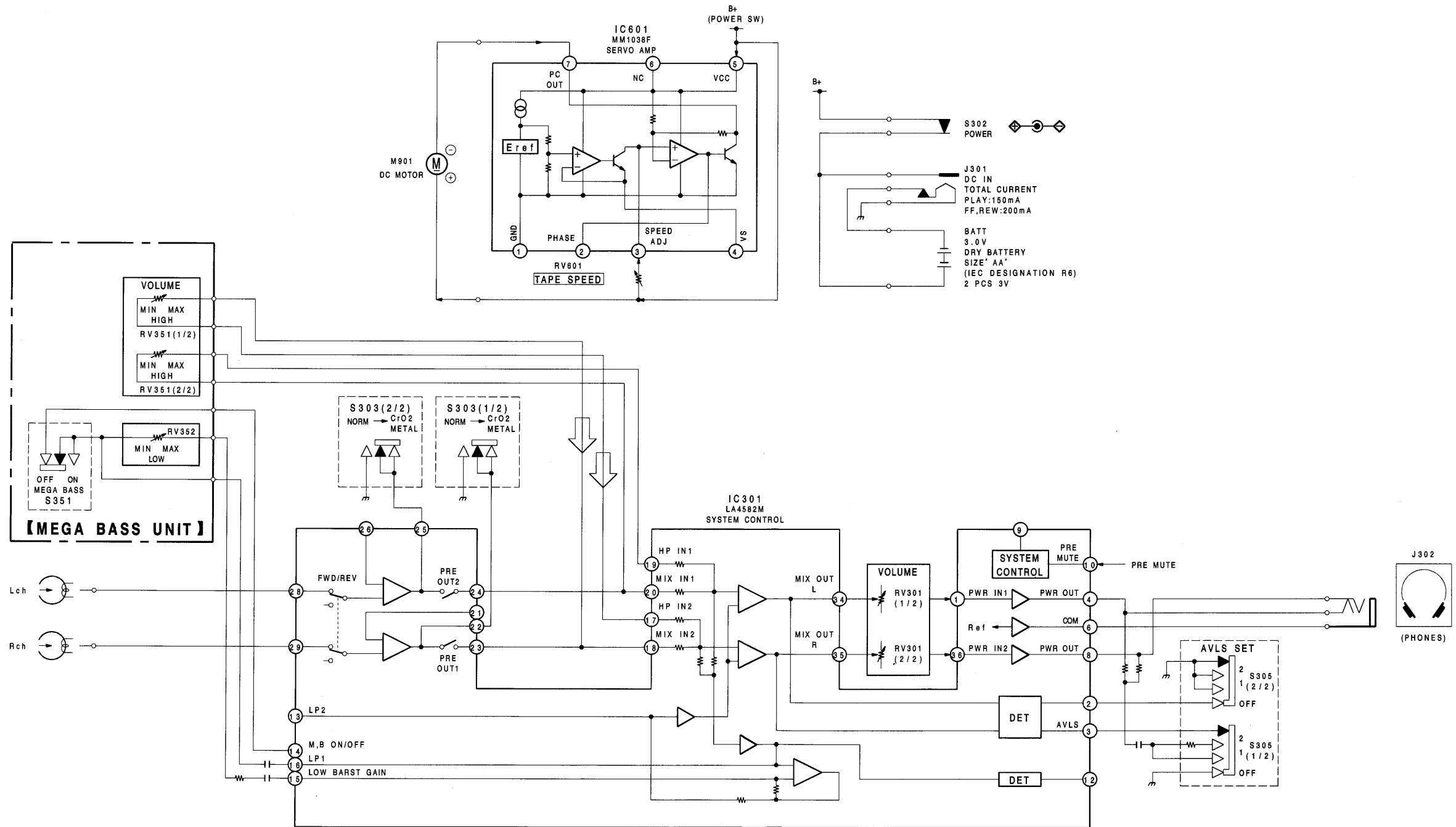
Play back WS-48A (tape center portion) in FWD mode. Adjustment the RV601 so that frequency counter reads  $2970 \pm 15\text{Hz}$

Adjustment Location:

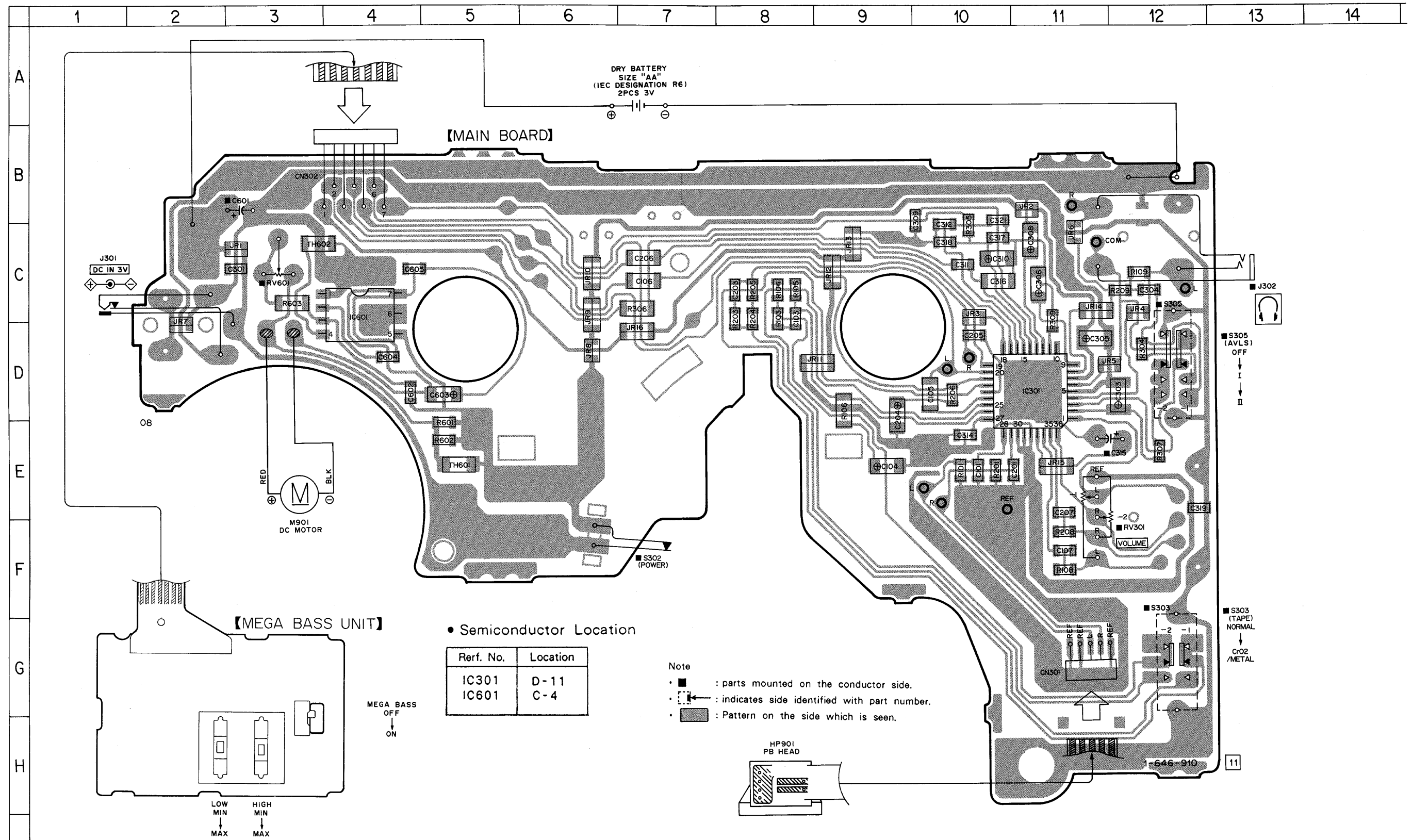


SECTION 3  
DIAGRAMS

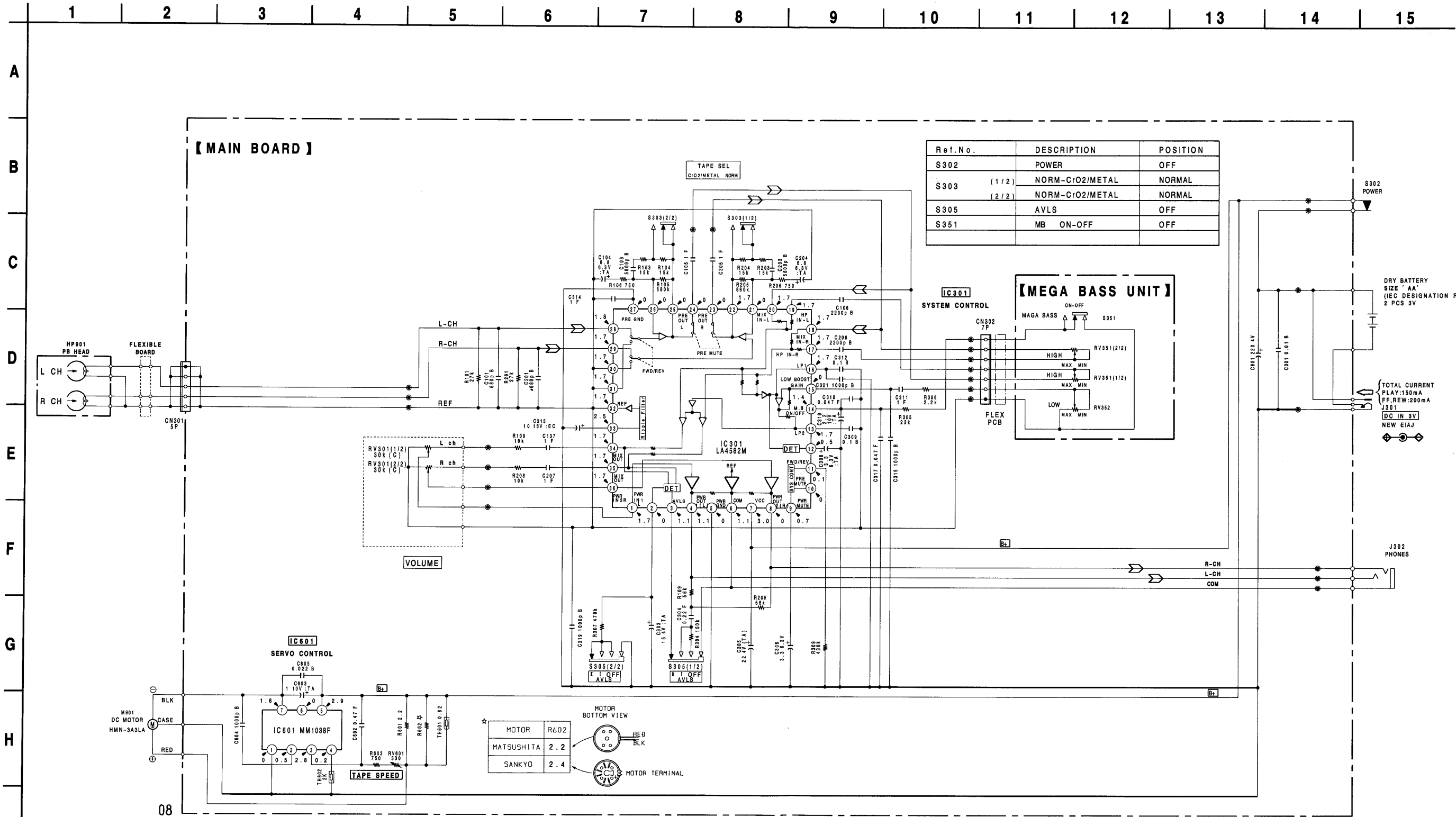
3-1. BLOCK DIAGRAM



3-2. PRINTING WIRING BOARD



3-3. SCHEMATIC DIAGRAM



Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted, pF:  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.
- $\Delta$ : internal component.
- $\square$ : B+ Line.

- $\square$ : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Voltages are DC between measurement points and ground under no-signal (PLAY) conditions.

- Voltages are taken with a VOM (input impedance 10M $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path
- $\square$ : PB

## SECTION 4 EXPLODED VIEWS

**NOTE :**

The mechanical parts with no reference number in the exploded views are not supplied.

Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

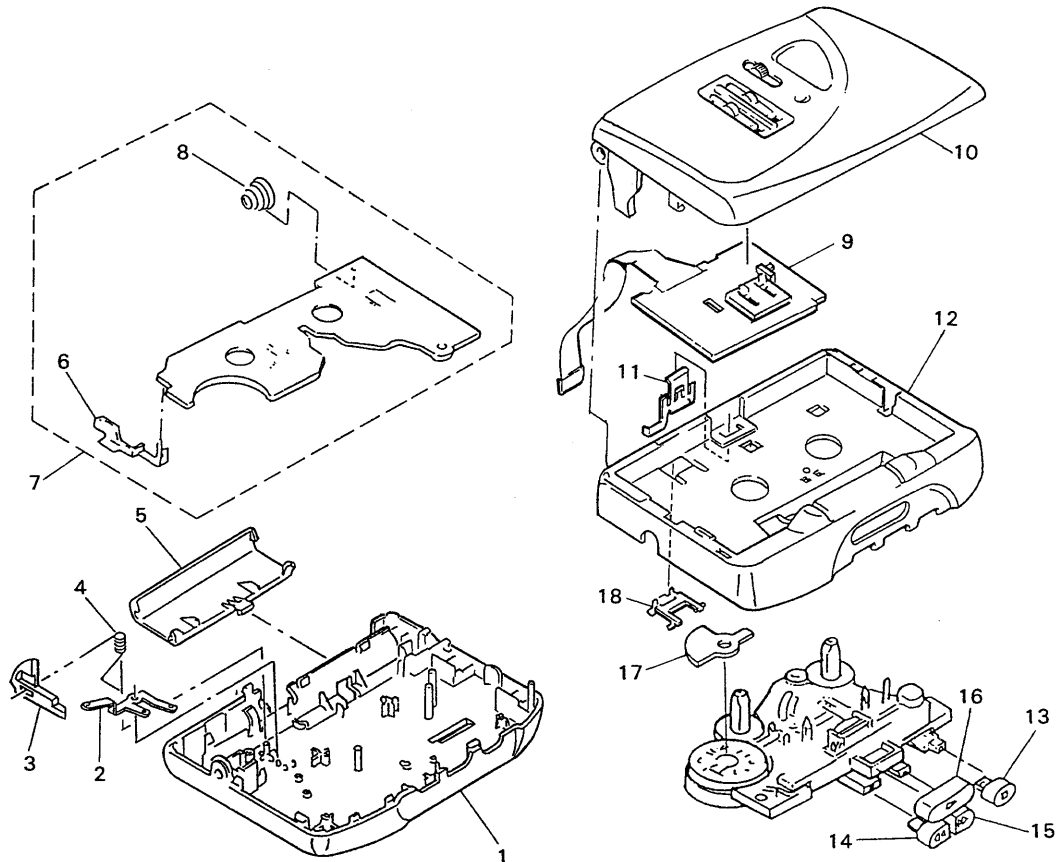
- x x , - x mean standardized parts, so they may have some differences from the original one.

Color Indication of Appearance Parts  
Example:

KNOB, BALANCE(WHITE).....(RED)

↑                   ↑  
Parts color   Cabinet's color

**4-1. MAIN SECTION**

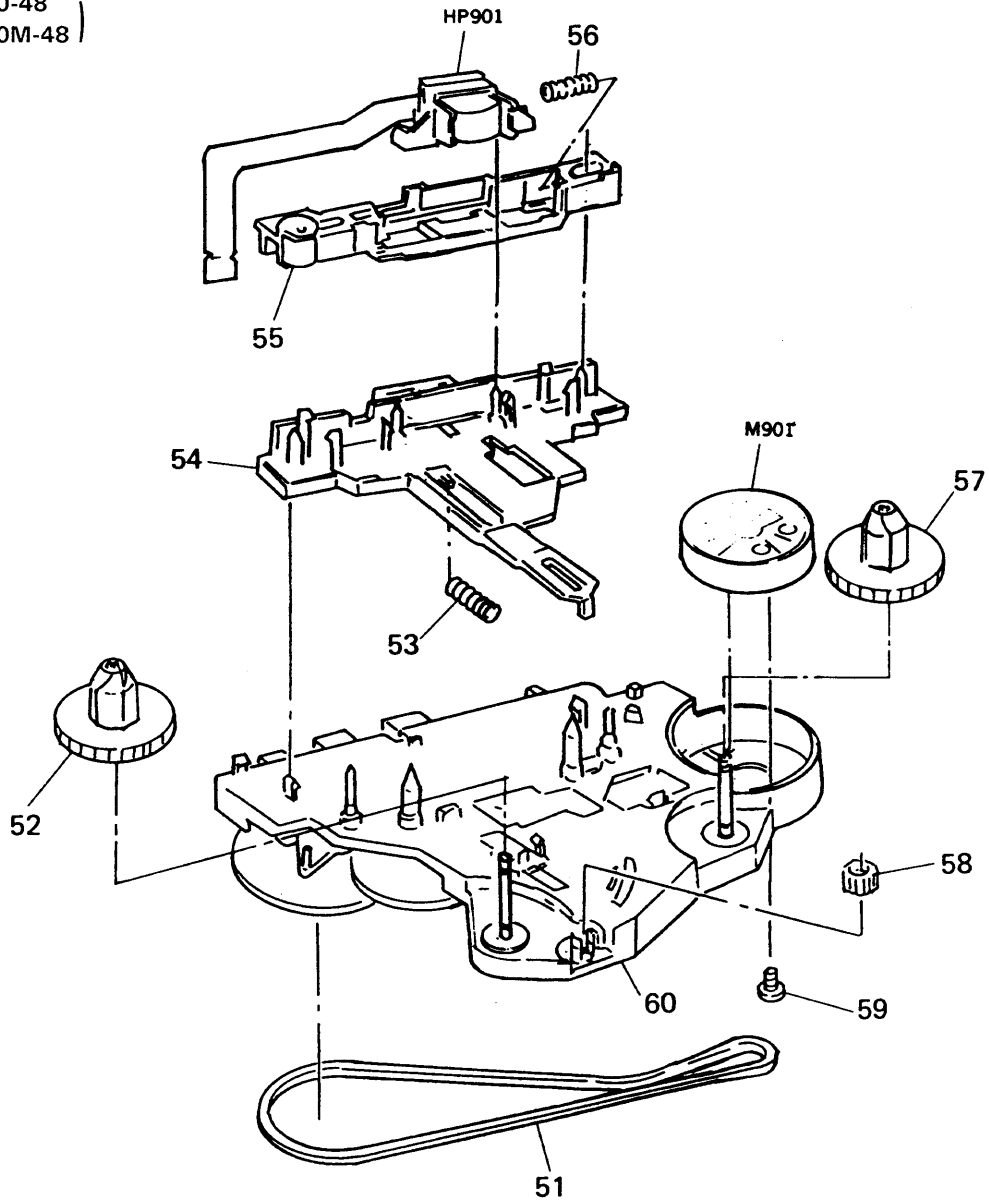


Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
1	X-3366-202-1	CABINET (REAR) (TC) SUB ASSY		11	3-364-675-01	SPRING (CASSETTE)	
2	3-386-088-01	GROUND, MOTOR		12	3-386-310-01	CABINET (FRONT) (TC)	
3	3-386-086-01	LEVER, CLICK		13	3-364-680-01	BUTTON (STOP)	
4	3-386-090-01	CLICK, SPRING		14	3-364-679-01	BUTTON (REW)	
5	3-386-085-01	LID, BATT		15	3-364-678-01	BUTTON (FF)	
6	3-386-209-01	TERMINAL (+), BATTERY		16	3-364-677-01	BUTTON (PLAY)	
7	A-3016-325-A	MAIN BOARD, COMPLETE		17	3-367-601-01	CUSHION (MOTOR)	
8	3-386-089-01	TERMINAL (-), BATTERY		* 18	3-386-302-01	RETAINER (FLEXIBLE)	
9	1-466-949-11	MEGA BASS UNIT					
10	X-3366-200-1	HOLDER (TC-F)SUB ASSY,CASSETTE					



4-2. MECHANISM SECTION

( MT-WMEX10-48  
 ( MT-WMEX10M-48 )



Ref.No.	PartNo.	Description	Remarks	Ref.No.	PartNo.	Description	Remarks
51	3-354-868-11	BELT		58	3-364-326-01	GEAR (REVERSE)	
52	3-364-319-01	GEAR (T REEL)		59	3-352-758-11	SCREW (M1.7X2), TOOTHED LOCK	
53	3-364-328-01	SPRING, COMPRESSION		60	X-3362-404-1	CHASSIS ASSY	
54	3-364-321-01	LEVER, PLAY		HP901	1-543-783-11	HEAD, MAGNETIC (PLAYBACK)	
55	X-3362-319-1	PINCH LEVER ASSY		M901	1-541-841-11	MOTOR (SANKYO)	
56	3-364-329-01	SPRING, COMPRESSION		M901	1-541-842-11	MOTOR (MATSUSHITA)	
57	3-364-320-01	GEAR (S REEL)					

## SECTION 5 ELECTRICAL PARTS LIST

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.

- x x , - x mean standardized parts, so they may have some differences from the original one.

**CAPACITORS**

uF:  $\mu$ F

**RESISTORS**

All resistors are in ohms

METAL: Metal-film resistor

METAL OXIDE: Metal Oxide-film resistor

F: nonflammable

● **COILS**

uH:  $\mu$ H

● **SEMICONDUCTORS**

In each case, u:  $\mu$ , for example:

uA.....:  $\mu$ A....., uPA.....:  $\mu$ PA.....,

uPB.....:  $\mu$ PB....., uPC.....:  $\mu$ PC.....,

uPD.....:  $\mu$ PD.....

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

Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
	A-3016-325-A	MAIN BOARD, COMPLETE *****				< CONNECTOR >	
	3-386-089-01	TERMINAL (-), BATTERY		CN301	1-569-252-21	HOUSING, CONNECTOR (FPC) 5P	
	3-386-209-01	TERMINAL (+), BATTERY		CN302	1-565-289-11	HOUSING, CONNECTOR 7P	
		< CAPACITOR >				< IC >	
C101	1-163-007-11	CERAMIC CHIP	680PF	10%	50V	IC301	8-759-161-54 IC L44582M
C103	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V	IC601	8-759-999-06 IC MM1038F
C104	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V		< JACK >
C105	1-162-638-11	CERAMIC CHIP	1uF		16V	J301	1-750-061-11 JACK,DC(POLARITY UNIFIED TYPE)(DC IN 3V)
C106	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V	J302	1-565-287-11 JACK (PHONES)
C107	1-164-346-11	CERAMIC CHIP	1uF		16V		< JUMPER RESISTOR >
C201	1-163-007-11	CERAMIC CHIP	680PF	10%	50V	JR1	1-216-295-00 METAL CHIP 0 5% 1/10W
C203	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V	JR2	1-216-295-00 METAL CHIP 0 5% 1/10W
C204	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V	JR3	1-216-295-00 METAL CHIP 0 5% 1/10W
C205	1-164-346-11	CERAMIC CHIP	1uF		16V	JR4	1-216-295-00 METAL CHIP 0 5% 1/10W
C206	1-163-213-00	CERAMIC CHIP	0.0022uF	5%	50V	JR5	1-216-295-00 METAL CHIP 0 5% 1/10W
C207	1-164-346-11	CERAMIC CHIP	1uF		16V	JR6	1-216-295-00 METAL CHIP 0 5% 1/10W
C301	1-164-232-11	CERAMIC CHIP	0.01uF		50V	JR7	1-216-295-00 METAL CHIP 0 5% 1/10W
C303	1-135-158-21	TANTALUM CHIP	15uF	20%	4V	JR8	1-216-295-00 METAL CHIP 0 5% 1/10W
C304	1-164-222-11	CERAMIC CHIP	0.22uF		25V	JR9	1-216-296-00 METAL CHIP 0 5% 1/8W
C305	1-135-202-21	TANTAL. CHIP	22uF	20%	4V	JR10	1-216-296-00 METAL CHIP 0 5% 1/8W
C306	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	JR11	1-216-296-00 METAL CHIP 0 5% 1/8W
C308	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	JR12	1-216-296-00 METAL CHIP 0 5% 1/8W
C309	1-163-038-00	CERAMIC CHIP	0.1uF		25V	JR13	1-216-296-00 METAL CHIP 0 5% 1/8W
C310	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	JR14	1-216-296-00 METAL CHIP 0 5% 1/8W
C311	1-164-346-11	CERAMIC CHIP	1uF		16V	JR15	1-216-296-00 METAL CHIP 0 5% 1/8W
C312	1-163-038-00	CERAMIC CHIP	0.1uF		25V	JR16	1-216-296-00 METAL CHIP 0 5% 1/8W
C314	1-164-346-11	CERAMIC CHIP	1uF		16V		< RESISTOR >
C315	1-126-157-11	ELECT	10uF	20%	16V	R101	1-216-083-00 METAL CHIP 27K 5% 1/10W
C316	1-163-205-00	CERAMIC CHIP	0.001uF	5%	50V	R103	1-216-077-00 METAL CHIP 15K 5% 1/10W
C317	1-163-035-00	CERAMIC CHIP	0.047uF		50V	R104	1-216-077-00 METAL CHIP 15K 5% 1/10W
C318	1-163-035-00	CERAMIC CHIP	0.047uF		50V	R105	1-216-117-00 METAL CHIP 680K 5% 1/10W
C319	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	R106	1-216-195-00 METAL GLAZE 750 5% 1/8W
C324	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V		
C601	1-124-434-00	ELECT	220uF	20%	4V		
C602	1-164-005-11	CERAMIC CHIP	0.47uF		25V		
C603	1-135-208-11	TANTAL. CHIP	1uF	20%	10V		
C604	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V		
C605	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V		

**MAIN**

Ref.No.	Part No.	Description	Remarks
R108	1-216-073-00	METAL CHIP	10K 5% 1/10W
R109	1-216-091-00	METAL CHIP	56K 5% 1/10W
R201	1-216-083-00	METAL CHIP	27K 5% 1/10W
R203	1-216-077-00	METAL CHIP	15K 5% 1/10W
R204	1-216-077-00	METAL CHIP	15K 5% 1/10W
R205	1-216-117-00	METAL CHIP	680K 5% 1/10W
R206	1-216-046-00	METAL CHIP	750 5% 1/10W
R208	1-216-073-00	METAL CHIP	10K 5% 1/10W
R209	1-216-091-00	METAL CHIP	56K 5% 1/10W
R304	1-216-101-00	METAL CHIP	150K 5% 1/10W
R305	1-216-081-00	METAL CHIP	22K 5% 1/10W
R306	1-216-206-00	METAL GLAZE	2.2K 5% 1/8W
R307	1-216-113-00	METAL CHIP	470K 5% 1/10W
R309	1-216-112-00	METAL GLAZE	430K 5% 1/10W
R601	1-216-298-00	METAL CHIP	2.2 5% 1/10W
R602	1-216-301-11	METAL GLAZE	2.4 5% 1/10W (FOR SANKYO)
R602	1-216-298-00	METAL CHIP	2.2 5% 1/10W (FOR MATSUSHITA)
R603	1-216-195-00	METAL GLAZE	750 5% 1/8W
< VARIABLE RESISTOR >			
RV301	1-223-303-11	RES, VAR, CARBON 30K/30K (VOL)	
RV601	1-241-028-11	RES, ADJ, CARBON 330 (SPEED)	
< SWITCH >			
S302	1-571-986-11	SWITCH, LEAF (POWER)	
S303	1-692-298-11	SWITCH, SLIDE (TAPE SEL)	
S305	1-692-299-11	SWITCH, SLIDE (FUNCTION)	

Ref.No.	Part No.	Description	Remarks
< THERMISTOR >			
TH601	1-809-279-11	THERMISTOR, POSITIVE	
TH602	1-809-029-11	THERMISTOR, POSITIVE	
*****			
MISCELLANEOUS			
*****			
9	1-466-949-11	MEGA BASS UNIT	
HP901	1-543-783-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-541-841-11	MOTOR (SANKYO)	
M901	1-541-842-11	MOTOR (MATSUSHITA)	
*****			
ACCESSORIES & PACKING MATERIALS			
*****			
	3-346-518-01	CLIP, BELT	
	3-385-478-01	INDIVIDUAL CARTON (E)	
*	3-385-494-01	CUSHION	
	3-388-633-01	INDIVIDUAL CARTON (AEP)	
	3-756-440-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE, GERMAN, DUTCH, SWEDISH, ITALIAN)	
	8-953-538-90	HEADPHONE MDR-E741//K SET	
	X-3329-657-1	ATTACHMENT ASSY	