

# WM-AF22/AF28/BF22/BF28

## SERVICE MANUAL



Photo : WM-AF22  
(See page 13)

*US Model  
Canadian Model  
WM-AF22*

*AEP Model  
UK Model  
E Model  
WM-BF22*

*US Model  
WM-AF28*

*AEP Model  
UK Model  
WM-BF28*

Model Name Using Similar Mechanism	WM-31/41
Tape Transport Mechanism Type	MF-WMAF22-04 MF-WMBF22-04

### SPECIFICATIONS

Frequency range	FM: 87.5 - 108 MHz (Italian model) 87.6 - 107 MHz (West German model) 87.6 - 108 MHz (Other model)
AM	526.5 - 1,606.5 kHz (Italian model) 531-1,602 kHz (West German model) 530 - 1,605 kHz (Other model)
Frequency response	40 - 15,000 Hz
Power output	For E model 5 mW + 5 mW at DC operation (at 10% harmonic distortion) load impedance 16 ohms For other countries: 10 mW + 10 mW at DC operation (at 10% harmonic distortion) load impedance 32 ohms
Power requirements	3 V DC Two R6 (size AA) batteries Sony rechargeable battery BP-700 DC IN 3 V jack accepts Optional Sony AC-D2L AC power adaptor available in United Kingdom for use on 240V AC, 50 Hz. available in Canada for use on 120V AC, 60 Hz available in other countries for use on 120V AC, 60 Hz or 220V AC, 50 Hz
Battery life	Approx. 8 hours on tape playback and approx. 30 hours on FM reception, using Sony alkaline batteries AM3 (N).
Dimensions	WM-AF22/BF22: Approx. 88 x 134 x 31.5 mm (w/h/d) Other models: Approx. 88 x 134 x 32.5 mm (w/h/d) not incl. projecting parts and controls
Weight	WM-AF22/BF22: Approx. 225 g Other models: Approx. 230 g incl. batteries, not incl. other accessories
Accessories supplied	For Canada and the United Kingdom: Stereo Headphones (Open-air type, 1) For other countries: Stereo earphones (Open-air type, 1) Ear adaptor (2) For only WM-AF28/BF28: Rechargeable battery (1) Battery charger (1)

This instruction manual covers WM-AF22/BF22 and WM-AF28/BF28.

Their differences are shown in the table below.

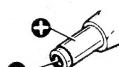
	Headphones Earphones	Rechargeable battery (BP-700)	Battery charger (BC-700)	FM sensitivity selector
WM-AF22	Stereo headphones			DX/LOCAL
WM-BF22	For United Kingdom: Stereo headphones For other countries: Stereo earphones Ear adaptors	Optional	Optional	FM ST/MONO
WM-BF28				
WM-AF28	Stereo headphones	Supplied	Supplied	DX/LOCAL

### Optional Accessories

AC power adaptor AC-D2L  
Car battery cord DCC-70  
Battery case EBP-500B  
Rechargeable battery BP-700  
Battery charger BC-700  
Stereo active speaker system  
SRS-30, SRS-50

### Note

If an AC power adaptor or a car battery cord  
not manufactured by Sony is used, a fuse  
must be installed in the AC power adaptor or  
the car battery cord and the polarity of the  
plug must be as illustrated.



**RADIO CASSETTE PLAYER**  
**SONY®**

**Flexible Circuit Board Repairing**

- Keep the temperature of the 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.

**Notes on chip component replacement**

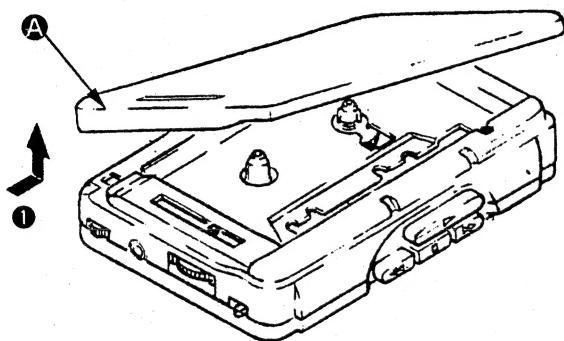
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

## SECTION 1

### DISASSEMBLY AND INSTALLATION

#### 1-1. CASSETTE HOLDER ASSY REMOVAL

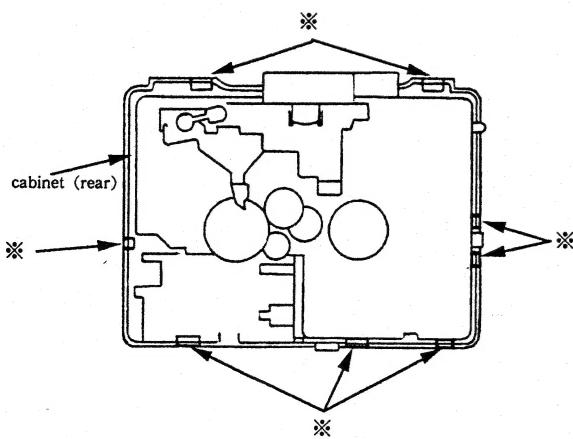
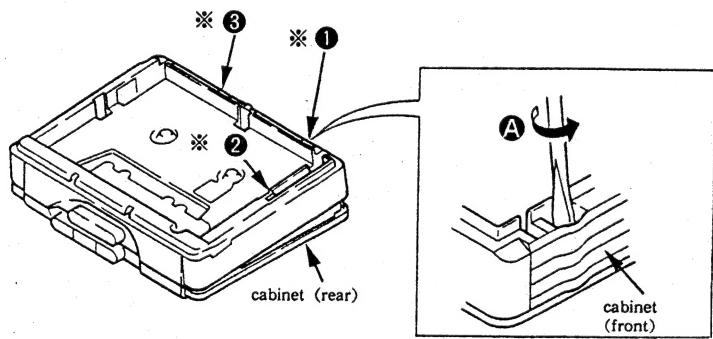
- 1) Open the cassette holder.
- 2) Move the left latch in the direction of the arrow ① to release it.
- 3) Release the right latch.
- 4) Remove the cassette up spring.



#### 1-2. CABINET (REAR) ASSY REMOVAL

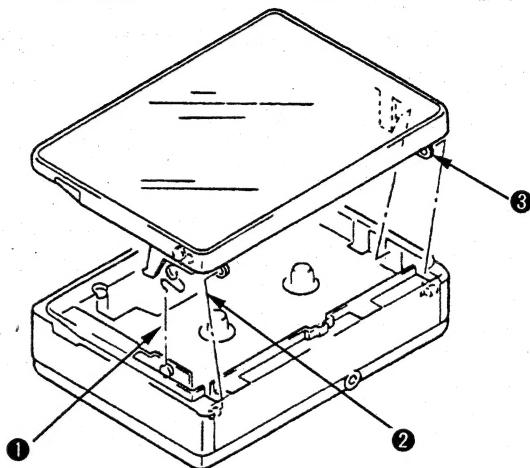
**Note :**Follow the disassembly procedure the numerical order given.

- 1) Insert a driver (-) in to the portion (\*).
- 2) Move the driver in the direction of the arrow (A).
- 3) Release the claw (\*).



#### 1-3. CASSETTE HOLDER ASSY INSTALLATION

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



## 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	idle
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 and Rewind	55-150g · cm (0.77-2.1oz · inch)	CQ-201B
Back Tension	1-2.5g · cm (0.014-0.35oz · inch)	CQ-102C

#### Tape Tension Measurement

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

#### ELECTRICAL ADJUSTMENTS CASSETTE SECTION

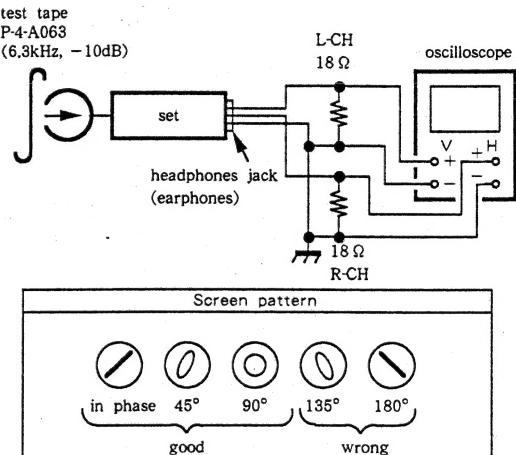
##### Playback Head Phase Check

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

##### Procedure :

Phase Check

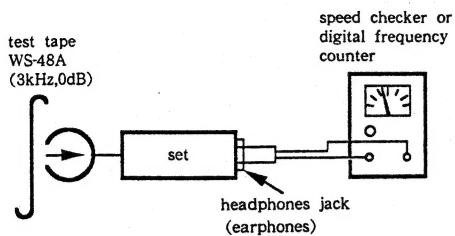
Mode : playback



## Tape Speed Adjustment

### Procedure :

Mode : playback

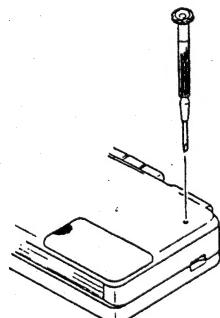


### Specification :

speed checker	digital frequency counter
±1%	2,970–3,030Hz

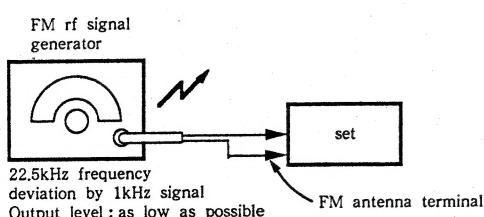
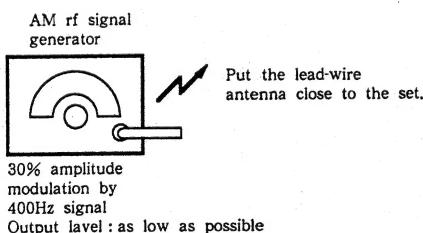
Frequency difference between the beginning and the end of the tape should be within  $\pm 2.5\%$  ( $\pm 75\text{Hz}$ ).

### Adjustment Location



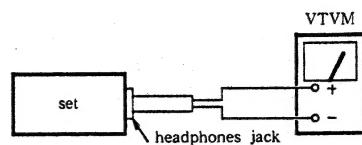
## ELECTRICAL ADJUSTMENTS

### TUNER SECTION



### Note :

For adjustment of WM-BF22/BF28 BAND SW at STEREO.



● Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

( ) : WG model  
[ ] : IT model  
(( )) : WG, IT model

### FM Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	
f minimum	86.0MHz ((87.35MHz))	L3	maximum
f maximum	109.5MHz (107.8MHz) [108.25MHz]	CT3	maximum

### FM Tracking Adjustment

SG and set frequency	Adjustment part	Reading on VTVM
86.0MHz (87.35MHz)	L2	maximum
109.5MHz (107.8MHz) [108.25MHz]	CT2	maximum

### MW Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	505kHz ((516.5kHz))	L4	maximum
f maximum	1,680kHz ((1,631.5kHz))	CT4	

### MW Tracking Adjustment

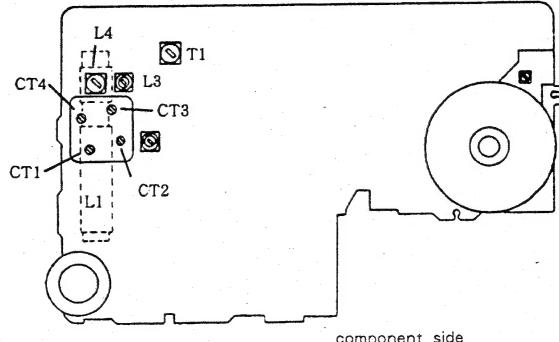
SG and set frequency	Adjustment part	Reading on VTVM
620kHz	L1	maximum
1,400kHz	CT1	

### MW IF Alignment

SG and set frequency	Adjustment part	Reading on VTVM
455kHz (468kHz)	T1	maximum

( ) : UK model

### ADJUSTMENT LOCATION



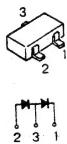
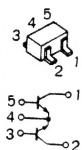
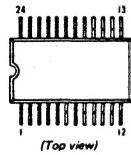
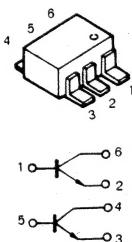
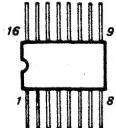
## SECTION 3 DIAGRAMS

**Note:**

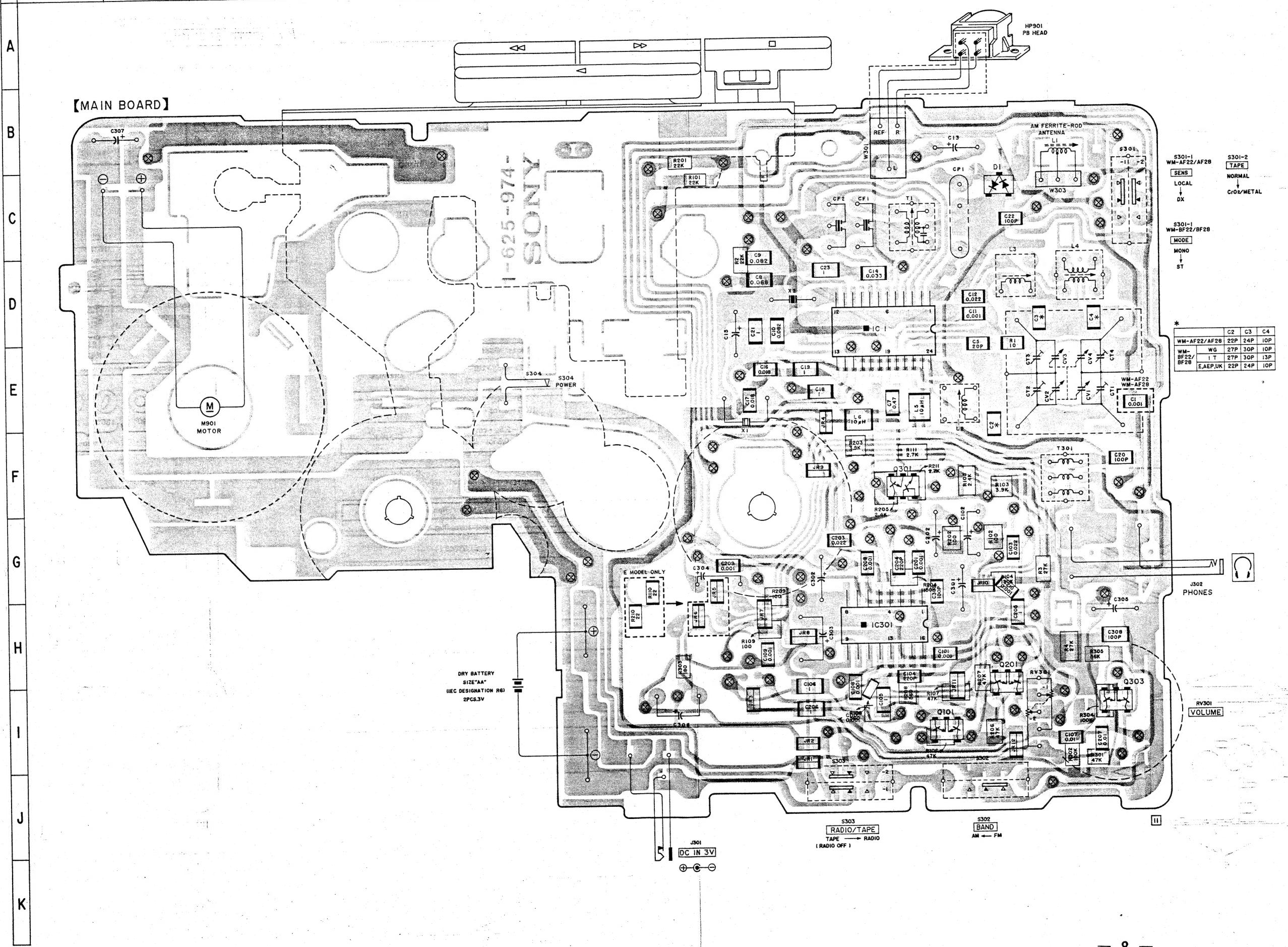
- — : parts extracted from the component side.
- — : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- [ ] : indicates side identified with part number.
- (X) : Through hole.
- [ ] : Pattern of the rear side.
- [ ] : Chip components extracted from the rear side.

**Semiconductor Location**

Ref.No.	Location
IC1	D-11
IC301	H-11
Q101	I-11
Q201	I-12
Q301	F-11
Q303	I-13
D1	C-12

**Semiconductor Lead Layouts****ISS123****XN1501****TA8122AF****XN6501****LA4570**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



1 2 3 4 5 6 7 8 9 10 11 12 13 14

A

A

B

B

C

C

D

D

E

E

F

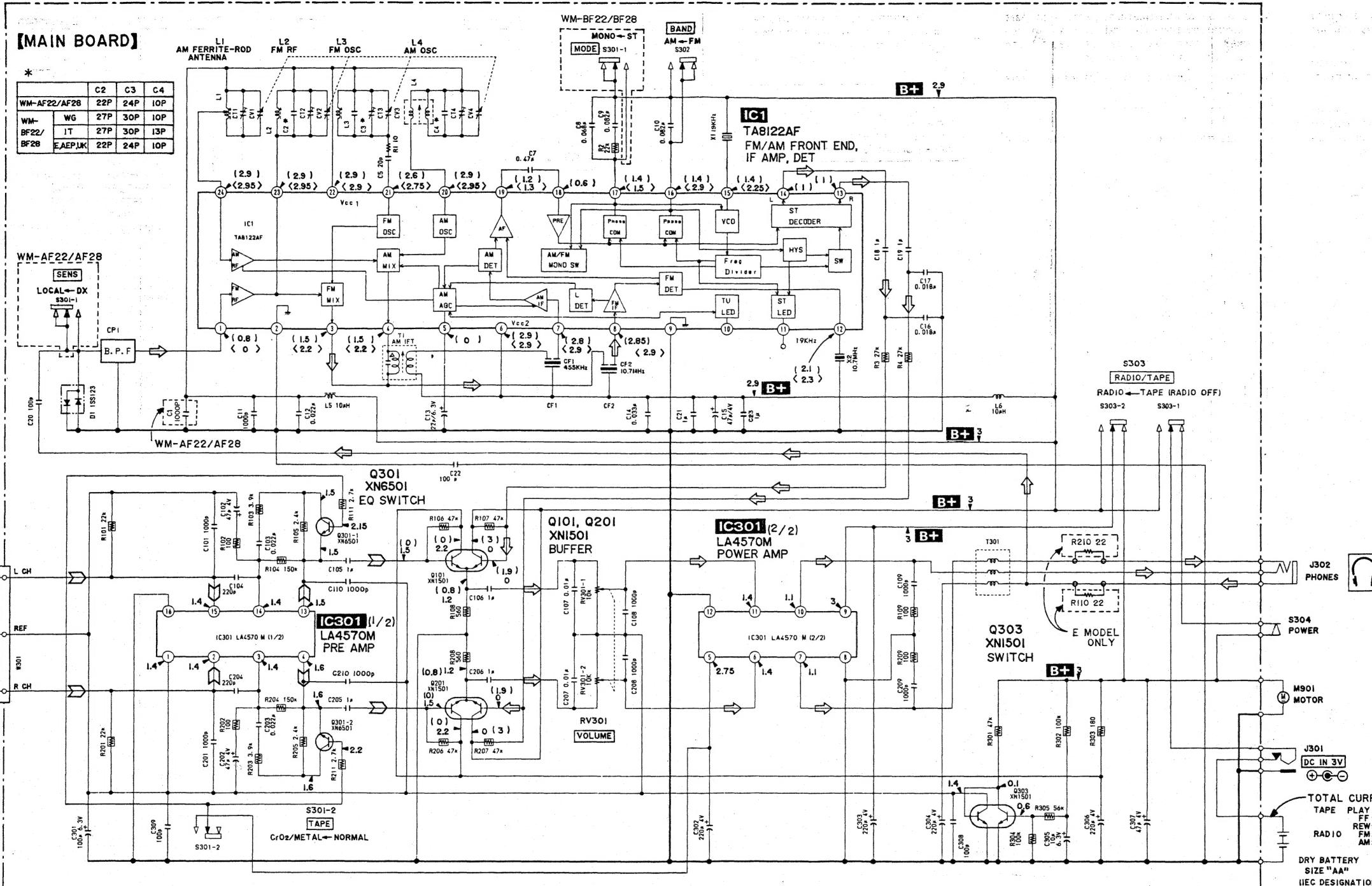
F

G

G

H

H

**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$  50V or less are not indicated except for electrolytics and tantalums.
- $\triangle$ : internal component.
- $\square$ : printed resistor.

**• Switch**

Ref. No.	Switch	Position
S301-1	WM-AF22/AF28 LOCAL / DX WM-BF22/BF28 MONO / ST	DX ST
S301-2	TAPE	NORM
S302	BAND	FM
S303	FUNCTION	TAPE
S304	POWER	OFF

- B+ : B+ Line**

- $\square$  : adjustment for repair.**

- Total current is measured with no cassette installed.

- Power voltage is dc 3V and fed with recharged dc power supply from external power voltage jack.

- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.

no mark: PLAY

( ) : FM

&lt; &gt; : AM

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

- Signal path.

$\Rightarrow$  : FM    $\Sigma$  : PB (DECK A)

## **SECTION 4 EXPLODED VIEW**

**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:

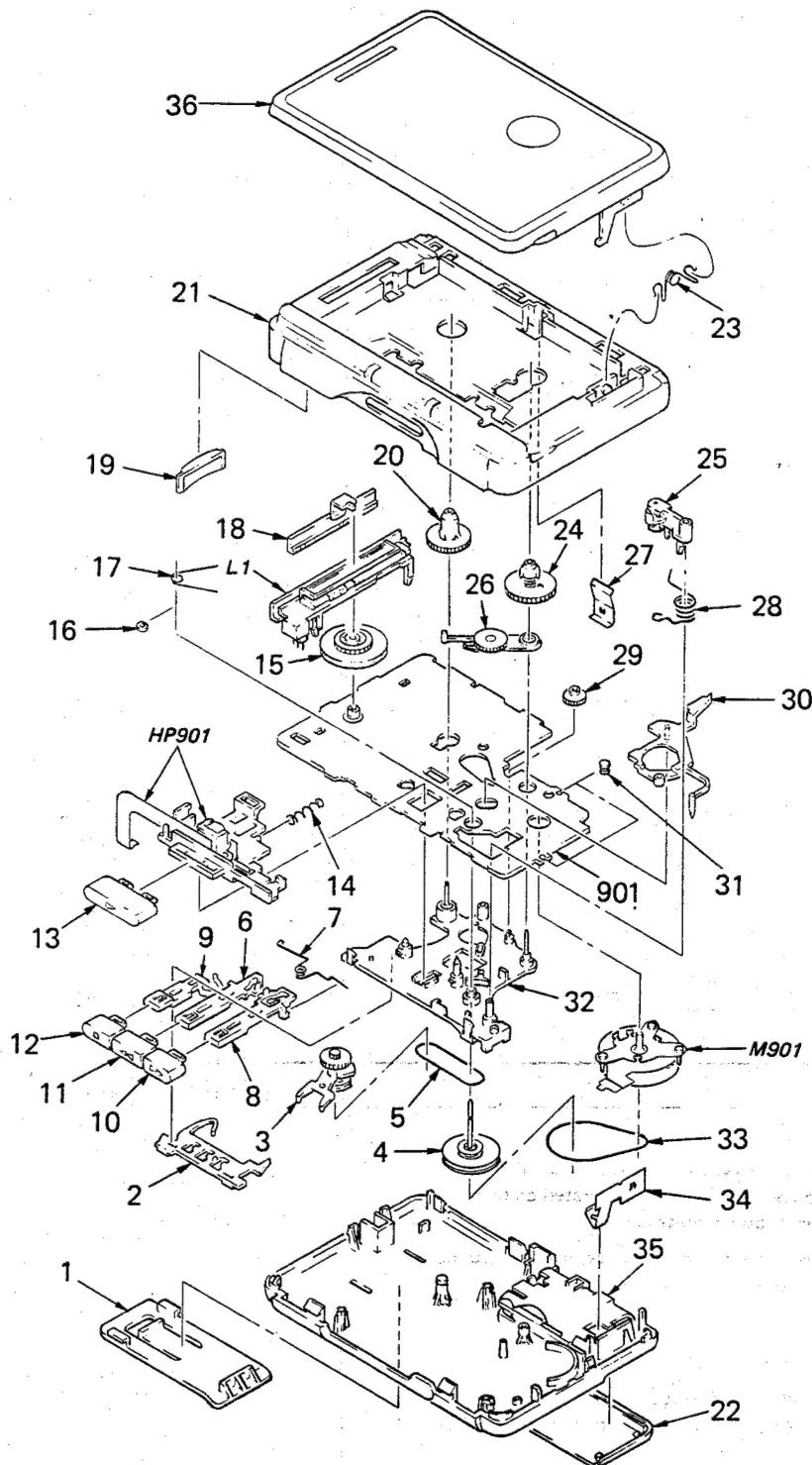
(RED) ... KNOB, BALANCE (WHITE)  
↑   ↑  
Cabinet's Color                          Parts' Color

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

**Les composants identifiés par une  
marque  sont critiques pour la  
sécurité.**

**Ne les remplacer que par une  
pièce portant le numéro spécifié.**

(1)



Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
1	3-346-518-01	CLIP, BELT		21	3-346-721-41	(WM-BF28 : BLK : WG)....CABINET (FRONT)	
2	3-346-522-01	PLATE, LOCK		21	3-346-721-51	(WM-BF28 : GRY : WG)....CABINET (FRONT)	
3	X-3346-503-1	GEAR ASSY, MIDWAY		22	3-346-517-01	LID, BATTERY CASE(BLK)	
4	X-3346-505-1	WHEEL ASSY, CAPSTAN		22	3-346-517-11	LID, BATTERY CASE(WHT)	
5	3-335-604-01	BELT, MIDWAY		22	3-346-517-21	LID, BATTERY CASE(RED)	
6	3-346-527-01	LEVER (REW)		22	3-346-517-31	LID, BATTERY CASE(BLU)	
7	3-346-539-01	SPRING (FR)		23	3-346-509-01	SPRING	
8	3-346-526-01	LEVER (FF)		24	X-3346-502-1	TABLE ASSY, T REEL	
9	3-346-528-01	LEVER (STOP)		25	X-3334-005-1	PINCH ROLLER ASSY	
10	3-346-513-01	(WM-AF22/BF22)....BUTTON (FF)		26	X-3346-504-1	GEAR ASSY, PLAY	
11	3-346-514-01	(WM-AF22/BF22)....BUTTON (REW)		27	3-346-516-01	SPRING	
12	3-346-515-01	(WM-AF22/BF22)....BUTTON (STOP)		28	3-335-608-01	SPRING	
13	3-346-512-01	(WM-AF22/BF22)....BUTTON (PLAY)		29	3-334-089-01	GEAR, FF	
13	3-346-512-11	(WM-AF28/BF28)....BUTTON (PLAY)		30	3-346-523-01	LEVER (SHUT-OFF)	
10	3-346-513-11	(WM-AF28/BF28)....BUTTON (FF)		31	3-335-652-01	CUSHION (C), MOTOR	
11	3-346-514-11	(WM-AF28/BF28)....BUTTON (REW)		32	X-3346-501-1	BASE ASSY, GUIDE	
12	3-346-515-11	(WM-AF28/BF28)....BUTTON (STOP)		33	3-334-412-01	BELT, CAPSTAN	
14	3-335-605-01	SPRING, COMPRESSION		34	3-334-057-01	TERMINAL BOARD, RELAY	
15	3-346-502-01	KNOB (TU)		35	3-346-506-01	CABINET (REAR) (CF-C) (BLK)	
16	3-343-358-01	RING, RETAINING		35	3-346-506-11	(WM-AF22/BF22 : WHT)....CABINET (REAR) (CF-C)	
17	3-346-538-01	SPRING (GROUND)		35	3-346-506-21	(WM-AF22/BF22 : RED)....CABINET (REAR) (CF-C)	
18	3-346-503-01	POINTER		35	3-346-506-31	(WM-AF22/BF22 : BLU)....CABINET (REAR) (CF-C)	
19	3-346-504-01	COVER, KNOB		36	X-3346-541-1	(WM-BF28 : AEP, IT, UK)....(fMAX—108MHz) HOLDER (CF-B) ASSY, CASSETTE	
20	3-346-525-01	GEAR (S REEL)		36	X-3346-542-1	(WM-BF28 : WG)....(fMAX—107MHz) HOLDER (CF-B) ASSY, CASSETTE	
21	3-346-508-01	(WM-AF22 : BLK)....CABINET (FRONT) (CF-A)		36	X-3346-543-1	(WM-AF28)....HOLDER (CF-B) ASSY, CASSETTE	
21	3-346-508-11	(WM-AF22 : GRY)....CABINET (FRONT) (CF-A)		901	A-3060-103-A	(WM-AF22/AF28)....MOUNTED PCB, MAIN	
21	3-346-508-21	(WM-BF22 : BLK)....CABINET (FRONT) (CF-A)		HP901	A-3108-292-A	PC BOARD ASSY, HEAD	
21	3-346-508-31	(WM-BF22 : GRY)....CABINET (FRONT) (CF-A)		L1	1-402-361-11	ANTENNA, FERRITE-ROD (MW)	
21	3-346-721-01	(WM-AF28 : BLK)....CABINET (FRONT)					
21	3-346-721-11	(WM-AF28 : GRY)....CABINET (FRONT)					
21	3-346-721-21	(WM-BF28 : BLK : AEP, IT, UK)....CABINET (FRONT)					
21	3-346-721-31	(WM-BF28 : GRY : AEP, IT, UK)....CABINET (FRONT)					

• CASSETTE HOLDER ASSY (WM-AF22/BF22)

X-3346-570-1 (fmax-108)

X-3346-585-1 (fmax-106) WG, IT model



X-3346-571-1

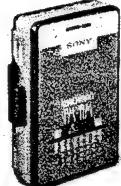
X-3346-575-1 (RED) (fmax-108)

X-3346-587-1 (fmax-106) WG, IT model



X-3346-576-1 (BLU)

X-3346-580-1



X-3346-581-1



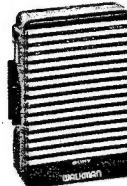
X-3346-572-1 (fmax-108)

X-3346-586-1 (fmax-106) WG, IT model



X-3346-577-1 (fmax-108)

X-3346-588-1 (fmax-106) WG, IT model



X-3346-582-1



X-3346-573-1 (WHT)



X-3346-578-1 (fmax-108)

X-3346-589-1 (fmax-106) WG, IT model



X-3346-574-1 (BLK)



X-3346-579-1



## 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:  $\mu$ F, PF:  $\mu\mu$ F.

**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**

In each case, U:  $\mu$ , for example:  
UA...:  $\mu$ A..., UPA...:  $\mu$ PA...,  
UPC...:  $\mu$ PC, UPD...:  $\mu$ PD...

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

Les composants identifiés par une marque sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark		
901	A-3060-103-A	(WM-AF22/AF28)....MOUNTED PCB, MAIN				C208	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
<b>CAPACITOR</b>											
C1	1-163-141-00	(WM-AF22/AF28) ....CERAMIC CHIP	0.001MF	10%	50V	C209	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C2	1-163-101-00	(WM-AF22/AF28, BF22/BF28 : AEP, E, UK)	22PF	10%	50V	C210	1-163-009-00	CERAMIC CHIP	0.001MF	10%	50V
C2	1-163-103-00	(WM-BF22/BF28 : WG, IT)	27PF	10%	50V	C301	1-124-225-00	ELECT	100MF	20%	6.3V
C3	1-163-475-91	(WM-AF22/AF28, BF22/BF28 : AEP, E, UK)	24PF	5%	50V	C302	1-124-434-00	ELECT	220MF	20%	4V
C3	1-163-477-00	(WM-BF22/BF28 : WG, IT)	30PF	5%	50V	C303	1-124-434-00	ELECT	220MF	20%	4V
C4	1-163-093-00	(WM-AF22/AF28, BF22/ BF28 : AEP, E, UK, WG)	....CERAMIC CHIP	10PF	5%	C304	1-124-434-00	ELECT	220MF	20%	4V
C4	1-163-469-91	(WM-BF22/BF28 : IT)	....CERAMIC CHIP	13PF	5%	C305	1-124-462-00	ELECT	10MF	20%	6.3V
C5	1-163-100-00	CERAMIC CHIP	20PF	5%	50V	C306	1-124-434-00	ELECT	220MF	20%	4V
C7	1-162-637-11	CERAMIC CHIP	0.47MF		16V	C307	1-124-432-00	ELECT	47MF	20%	4V
C8	1-164-157-91	CERAMIC CHIP	0.068MF	10%	25V	C308	1-163-205-00	CERAMIC CHIP	0.001MF	10%	50V
C9	1-164-158-91	CERAMIC CHIP	0.082MF	10%	25V	C309	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C10	1-164-158-91	CERAMIC CHIP	0.082MF	10%	25V	CF1	1-527-870-00	FILTER (455KHz)			
C11	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	CF2	1-577-090-71	FILTER, CERAMIC (10.7MHz)			
C12	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	CP1	1-236-022-11	FILTER, BAND PASS			
C13	1-124-222-00	ELECT	22MF	20%	6.3V	D1	8-719-101-23	DIODE 1SS123			
C14	1-163-078-11	CERAMIC CHIP	0.033MF	10%	25V	HP901	A-3108-292-A	PC BOARD ASSY, HEAD			
C15	1-124-432-00	ELECT	47MF	20%	4V	IC1	8-759-230-39	IC TA8122AF			
C16	1-163-024-00	CERAMIC CHIP	0.018MF	10%	50V	IC301	8-759-820-19	IC LA4570M			
C17	1-163-024-00	CERAMIC CHIP	0.018MF	10%	50V	J301	1-565-286-11	JACK, OUTER POWER			
C18	1-162-611-00	CERAMIC CHIP	1MF		25V	J302	1-565-287-11	JACK (PHONES)			
C19	1-162-611-00	CERAMIC CHIP	1MF		25V	JR1	1-216-295-00	METAL GLAZE	0	5%	1/10W
C20	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	JR2	1-216-295-00	METAL GLAZE	0	5%	1/10W
C21	1-162-611-00	CERAMIC CHIP	1MF		25V	JR3	1-216-295-00	METAL GLAZE	0	5%	1/10W
C22	1-163-117-00	CERAMIC CHIP	100PF	10%	50V	JR4	1-216-295-00	METAL GLAZE	0	5%	1/10W
C23	1-162-611-00	CERAMIC CHIP	1MF		25V	JR5	1-216-295-00	METAL GLAZE	0	5%	1/10W
C101	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	JR6	1-216-295-00	METAL GLAZE	0	5%	1/10W
C102	1-124-432-00	ELECT	47MF	20%	4V	JR7	1-216-296-00	METAL GLAZE	0	5%	1/8W
C103	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	JR8	1-216-296-00	METAL GLAZE	0	5%	1/8W
C104	1-163-125-00	CERAMIC CHIP	220PF	10%	50V	JR9	1-216-296-00	METAL GLAZE	0	5%	1/8W
C105	1-162-611-00	CERAMIC CHIP	1MF		25V	JR10	1-216-296-00	METAL GLAZE	0	5%	1/8W
C106	1-162-611-00	CERAMIC CHIP	1MF		25V	JR11	1-216-296-00	METAL GLAZE	0	5%	1/8W
C107	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	JR12	1-216-296-00	METAL GLAZE	0	5%	1/8W
C108	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	L1	1-402-361-11	ANTENNA, FERRITE-ROD (MW)			
C109	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	L2	1-459-843-11	COIL (WITH CORE) (FM RF)			
C110	1-163-009-00	CERAMIC CHIP	0.001MF	10%	50V	L3	1-459-845-11	COIL (WITH CORE) (FM OSC)			
C201	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V	L4	1-406-283-11	COIL (OSC) (MW)			
C202	1-124-432-00	ELECT	47MF	20%	4V	L5	1-410-204-31	INDUCTOR CHIP 10UH			
C203	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	L6	1-410-204-31	INDUCTOR CHIP 10UH			
C204	1-163-125-00	CERAMIC CHIP	220PF	10%	50V	M901	1-541-572-11	MOTOR, DC			
C205	1-162-611-00	CERAMIC CHIP	1MF		25V	PVC1	1-151-599-11	CAP, VAR, POLYETHYLENE			
C206	1-162-611-00	CERAMIC CHIP	1MF		25V	Q101	8-729-402-13	TRANSISTOR XN1501			
C207	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	Q201	8-729-402-13	TRANSISTOR XN1501			
						Q303	8-729-402-13	TRANSISTOR XN1501			

Ref.No	Part No.	Description	Remark
<b>RESISTOR</b>			
R1	1-216-001-00	METAL GLAZE	10 5% 1/10W
R2	1-249-433-11	RES, CARBON	22K 5% 1/32W
R3	1-249-434-11	RES, CARBON	27K 5% 1/32W
R4	1-249-434-11	RES, CARBON	27K 5% 1/32W
R101	1-249-433-11	RES, CARBON	22K 5% 1/32W
R102	1-249-405-11	RES, CARBON	100 5% 1/32W
R103	1-249-424-11	RES, CARBON	3.9K 5% 1/32W
R104	1-215-473-00	RES, CARBON	150K 5% 1/32W
R105	1-215-430-00	RES, CARBON	2.4K 5% 1/32W
R106	1-249-437-11	RES, CARBON	47K 5% 1/32W
R107	1-249-437-11	RES, CARBON	47K 5% 1/32W
R108	1-249-414-11	RES, CARBON	560 5% 1/32W
R109	1-249-405-11	RES, CARBON	100 5% 1/32W
R110	1-216-009-00	(WM-BF22/BF28 : E) ....METAL GLAZE	22 5% 1/10W
R111	1-249-422-11	RES, CARBON	2.7K 5% 1/32W
R201	1-249-433-11	RES, CARBON	22K 5% 1/32W
R202	1-249-405-11	RES, CARBON	100 5% 1/32W
R203	1-249-424-11	RES, CARBON	3.9K 5% 1/32W
R204	1-215-473-00	RES, CARBON	150K 5% 1/32W
R205	1-215-430-00	RES, CARBON	2.4K 5% 1/32W
R206	1-249-437-11	RES, CARBON	47K 5% 1/32W
R207	1-249-437-11	RES, CARBON	47K 5% 1/32W
R208	1-249-414-11	RES, CARBON	560 5% 1/32W
R209	1-249-405-11	RES, CARBON	100 5% 1/32W
R210	1-216-009-00	(WM-BF22/BF28 : E) ....METAL GLAZE	22 5% 1/10W
R211	1-249-422-11	RES, CARBON	2.7K 5% 1/32W
R301	1-249-437-11	RES, CARBON	47K 5% 1/32W
R302	1-249-441-11	RES, CARBON	100K 5% 1/32W
R303	1-249-408-11	RES, CARBON	180 5% 1/32W
R304	1-249-441-11	RES, CARBON	100K 5% 1/32W
R305	1-249-438-11	RES, CARBON	56K 5% 1/32W
RV301	1-238-072-11	RES, VAR, CABON	10K/10K
S301	1-571-478-11	SWITCH, SLIDE (TAPE)	
S302	1-571-478-11	SWITCH, SLIDE (BAND)	
S303	1-571-478-11	SWITCH, SLIDE (SENS/MODE)	
S304	1-570-549-11	SWITCH, LEAF (POWER)	
T1	1-404-791-21	TRANSFORMER, IF	
T1	1-404-792-21	TRANSFORMER, IF(UK)	
W301	1-565-288-11	HOUSING, CONNECTOR 3P	
W303	1-565-285-11	HOUSING, CONNECTOR(PC BAORD)3P	
X1	1-577-091-11	OSCILLATOR, CRYSTAL (19KHz)	
X2	1-577-090-71	FILTER, CERAMIC (10.7MHz)	

**ACCESSORY & PACKING MATERIAL**

Part No.	Description	Remark
△1-528-238-11	(WM-AF28 : US)....BATTERY, CHARGER	
1-528-239-21	(WM-AF28/BF28)....BATTERY, STORAGE,LEAD (BP-700)	
△1-528-263-11	(WM-AF28 : CA)....BATTERY, CHARGER	
△1-528-262-11	(WM-BF28 : AEP, WG, IT)....BATTERY, CHARGER	
△1-528-264-11	(WM-BF28 : UK)....BATTERY, CHARGER	
*3-346-543-01	(WM-AF22/AF28)....CUSHION (UPPER)	
*3-346-549-01	(WM-AF22/BF28)....CUSHION (FRONT)	
*3-346-553-01	(WM-AF22/AF28)....CUSHION (LOWER)	
*3-346-554-01	(WM-AF22)....CARDBOARD	
*3-346-558-01	(WM-AF22/BF28)....CUSHION (REAR)	
3-786-015-11	(WM-AF22/AF28 : CA, BF22/BF28 : E, AEP, UK) ....MANUAL, INSTRUCTION	
3-786-015-21	(WM-AF22/AF28 : US)....MANUAL, INSTRUCTION	
3-786-015-41	(WM-BF22/BF28 : AEP, IT, GW)....MANUAL, INSTRUCTION	
8-952-313-90	(WM-AF22/AF28, BF22/BF28 : AEP, UK, IT, WG) ....HEADPHONE MDR-005L/B SET	
8-952-236-90	(WM-BF22 : E)....HEADPHONE MDR-E212/J (B) SET	

**Note:**

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

**Note:**

Les composants identifiés par une marque **△** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

# WM-AF22/AF28/BF22/BF28

**SONY  
SERVICE MANUAL**

*US Model  
Canadian Model*

*WM-AF22*

*AEP Model  
UK Model  
E Model*

*WM-BF22*

*US Model*

*WM-AF28*

*AEP Model  
UK Model*

*WM-BF28*

## SUPPLEMENT-1

File this supplement with the Service Manual.

**Subject :**

1. Addition of French Model and Brazilian Model.
2. Correction of Main Mounted PCB's Part No.

1. WM-BF22 is newly designed as the models and based on WM-BF22 of AEP model.  
This supplement only contains the different between the models and AEP model.
2. Main Mounted PCB's Part No. was misprinted in the service manual.  
See page 3 of Service manual supplement-1 for detail.

 : Corrected portion

## SECTION 4 EXPLODED VIEW

**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

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

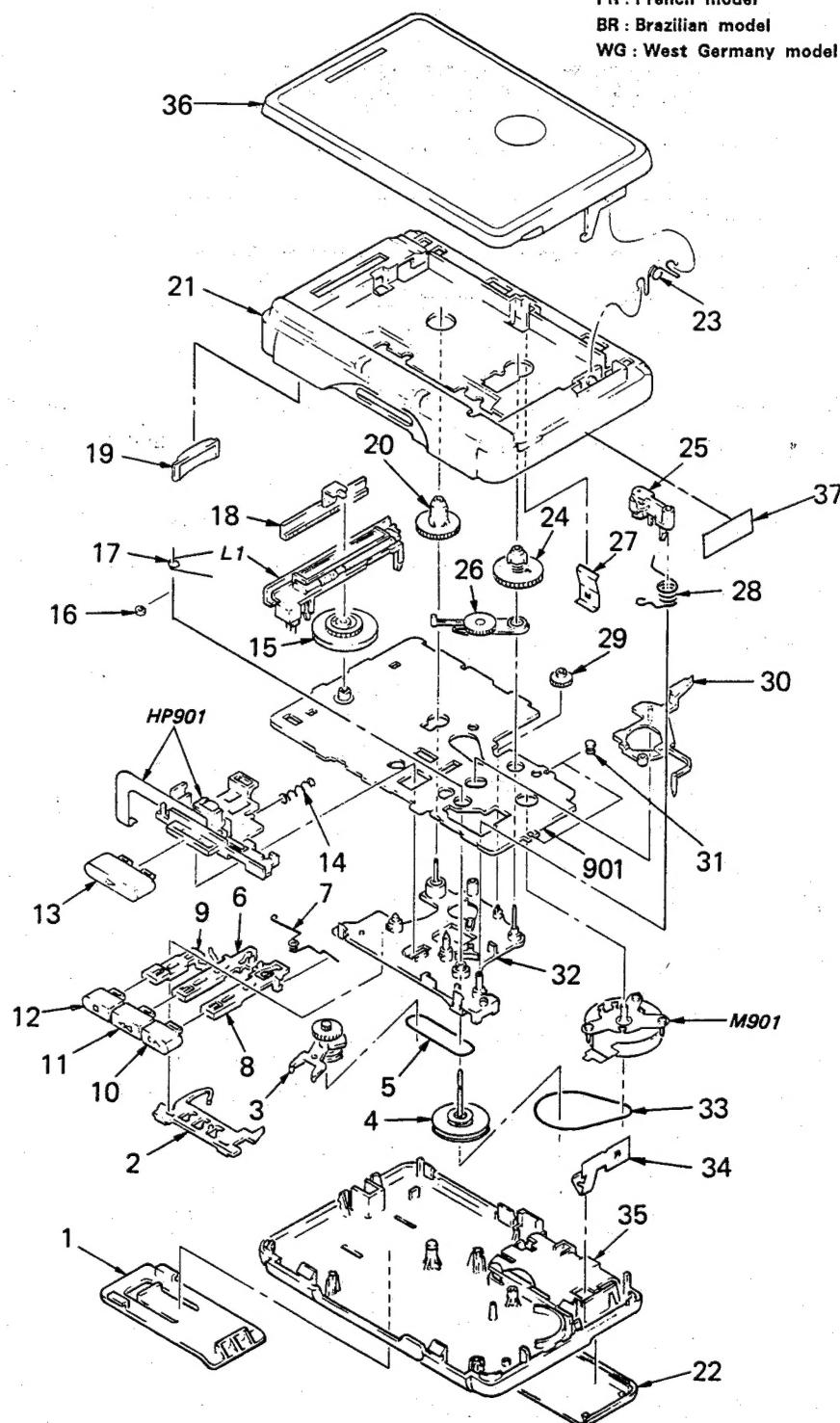
Les composants identifiés par une marque sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

FR : French model

BR : Brazilian model

WG : West Germany model

(1)



# WM-AF22/AF28/BF22/BF28

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
1	3-346-518-01	CLIP, BELT		21	3-346-721-41	(WM-BF28 : BLK : WG)....CABINET (FRONT)	
2	3-346-522-01	PLATE, LOCK		21	3-346-721-51	(WM-BF28 : GRY : WG)....CABINET (FRONT)	
3	X-3346-503-1	GEAR ASSY, MIDWAY		22	3-346-517-01	LID, BATTERY CASE(BLK)	
4	X-3346-505-1	WHEEL ASSY, CAPSTAN		22	3-346-517-11	LID, BATTERY CASE(WHT)	
5	3-335-604-01	BELT, MIDWAY		22	3-346-517-21	LID, BATTERY CASE(RED)	
6	3-346-527-01	LEVER (REW)		22	3-346-517-31	LID, BATTERY CASE(BLU)	
7	3-346-539-01	SPRING (FR)		23	3-346-509-01	SPRING	
8	3-346-526-01	LEVER (FF)		24	X-3346-502-1	TABLE ASSY, T REEL	
9	3-346-528-01	LEVER (STOP)		25	X-3334-005-1	PINCH ROLLER ASSY	
10	3-346-513-01	(WM-AF22/BF22)....BUTTON (FF)		26	X-3346-504-1	GEAR ASSY, PLAY	
11	3-346-514-01	(WM-AF22/BF22)....BUTTON (REW)		27	3-346-516-01	SPRING	
12	3-346-515-01	(WM-AF22/BF22)....BUTTON (STOP)		28	3-335-608-01	SPRING	
13	3-346-512-01	(WM-AF22/BF22)....BUTTON (PLAY)		29	3-334-089-01	GEAR, FF	
13	3-346-512-11	(WM-BF28/BF28)....BUTTON (PLAY)		30	3-346-523-01	LEVER (SHUT-OFF)	
10	3-346-513-11	(WM-BF28/BF28)....BUTTON (FF)		31	3-335-652-01	CUSHION (C), MOTOR	
11	3-346-514-11	(WM-BF28/BF28)....BUTTON (REW)		32	X-3346-501-1	BASE ASSY, GUIDE	
12	3-346-515-11	(WM-BF28/BF28)....BUTTON (STOP)		33	3-334-412-01	BELT, CAPSTAN	
14	3-335-605-01	SPRING, COMPRESSION		34	3-334-057-01	TERMINAL BOARD, RELAY	
15	3-346-502-01	KNOB (TU)		35	3-346-506-01	CABINET (REAR) (CF-C) (BLK)	
16	3-343-358-01	RING, RETAINING		35	3-346-506-11	(WM-AF22/BF22 : WHT)....CABINET (REAR) (CF-C)	
17	3-346-538-01	SPRING (GROUND)		35	3-346-506-21	(WM-AF22/BF22 : RED)....CABINET (REAR) (CF-C)	
18	3-346-503-01	POINTER		35	3-346-506-31	(WM-AF22/BF22 : BLU)....CABINET (REAR) (CF-C)	
19	3-346-504-01	COVER, KNOB		36	X-3346-541-1	(WM-BF28 : AEP, IT, UK)....(fMAX-108MHz) HOLDER (CF-B) ASSY, CASSETTE	
20	3-346-525-01	GEAR (S REEL)		36	X-3346-542-1	(WM-BF28 : WG)....(fMAX-107MHz) HOLDER (CF-B) ASSY, CASSETTE	
21	3-346-508-01	(WM-AF22 : BLK)....CABINET (FRONT) (CF-A)		36	X-3346-543-1	(WM-BF28)....HOLDER (CF-B) ASSY, CASSETTE	
21	3-346-508-11	(WM-AF22 : GRY)....CABINET (FRONT) (CF-A)		37	*3-348-413-01	(WM-BF22 : FR)....LABEL, MODEL NUMBER	
21	3-346-508-21	(WM-BF22 : BLK)....CABINET (FRONT) (CF-A)		901	A-3060-103-A	(WM-AF22/BF28)....MOUNTED PCB, MAIN	
21	3-346-508-31	(WM-BF22 : GRY)....CABINET (FRONT) (CF-A)		901	A-3060-109-A	(WM-BF22/BF28 : IT)....MOUNTED PCB, MAIN	
21	3-346-508-81	(WM-BF22 : FR)....CABINET (FRONT)		901	A-3060-108-A	(WM-BF22/BF28 : E, WM-BF22 : BR)....MOUNTED PCB, MAIN	
21	3-346-721-01	(WM-AF28 : BLK)....CABINET (FRONT)		901	A-3060-107-A	(WM-BF22/BF28 : WG)....MOUNTED PCB, MAIN	
21	3-346-721-11	(WM-AF28 : GRY)....CABINET (FRONT)		901	A-3060-106-A	(WM-BF22/BF28 : AEP, FR)....MOUNTED PCB, MAIN	
21	3-346-721-21	(WM-BF28 : BLK : AEP, IT, UK)....CABINET (FRONT)		901	A-3060-105-A	(WM-BF22/BF28 : UK)....MOUNTED PCB, MAIN	
21	3-346-721-31	(WM-BF28 : GRY : AEP, IT, UK)....CABINET (FRONT)		HP901	A-3108-292-A	PC BOARD ASSY, HEAD	
				L1	1-402-361-11	ANTENNA, FERRITE-ROD (MW)	
						ACCESSORY & PACKING MATERIAL	
						Part No.      Description	
						3-786-015-11	(WM-BF22 : BR)....MANUAL, INSTRUCTION
						3-786-015-51	(WM-BF22 : FR)....MANUAL, INSTRUCTION

# WM-AF22/AF28/BF22/BF28

## SONY SERVICE MANUAL

US Model  
Canadian Model

WM-AF22

AEP Model  
UK Model  
E Model

WM-BF22

US Model

WM-AF28

AEP Model  
UK Model

WM-BF28

## SUPPLEMENT-2

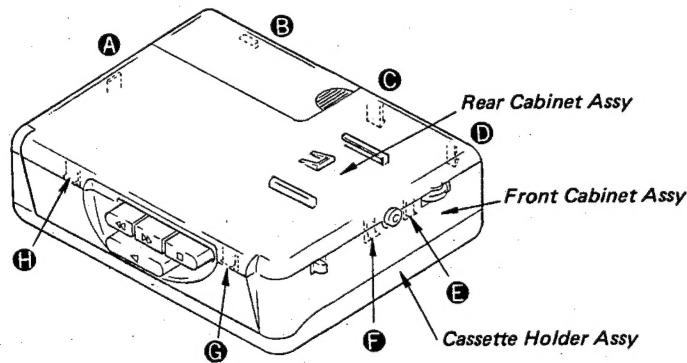
File this supplement with the Service Manual.

Subject: 1] Cassette Holder Removal.  
2] Rear Cabinet Removal.

### 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.

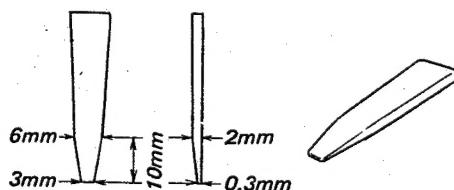
Tools: Precision Screwdrivers (⊖, width 0.8mm, 1.4mm, and 2.0mm)

Adhesive tape 1–2cm

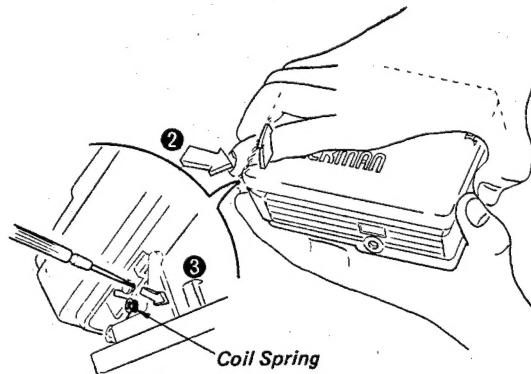
Wedge (hand made)

Material . . . soft plastic (such as PVC) etc.

Sizes are for the reference.



#### [1] Cassette Holder Removal

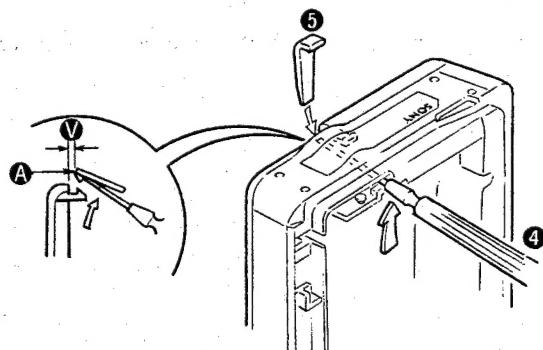


① Open the cassette holder.

② While pressing the edge of the cassette holder, pull up it in order to take off the cassette holder.

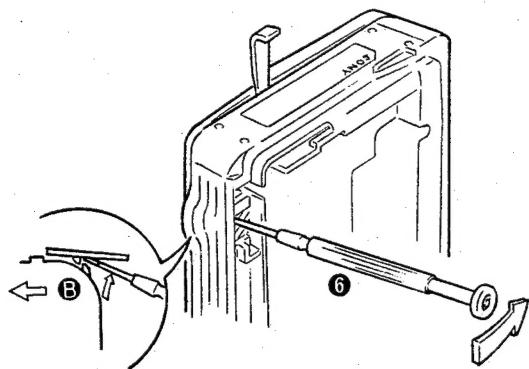
③ Take off the end of coil spring with a precision screwdriver (width: 0.8mm).

#### [2] Rear Cabinet Removal

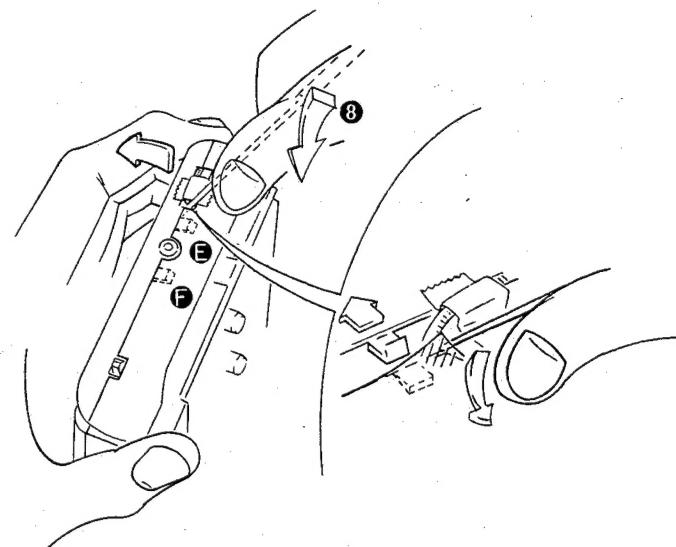


④ Insert a precision screwdriver (width: 2.0mm) into the slit of front cabinet, lift the front cabinet as shown in the figure for making a clearance (V).

⑤ Insert a wedge in the clearance.

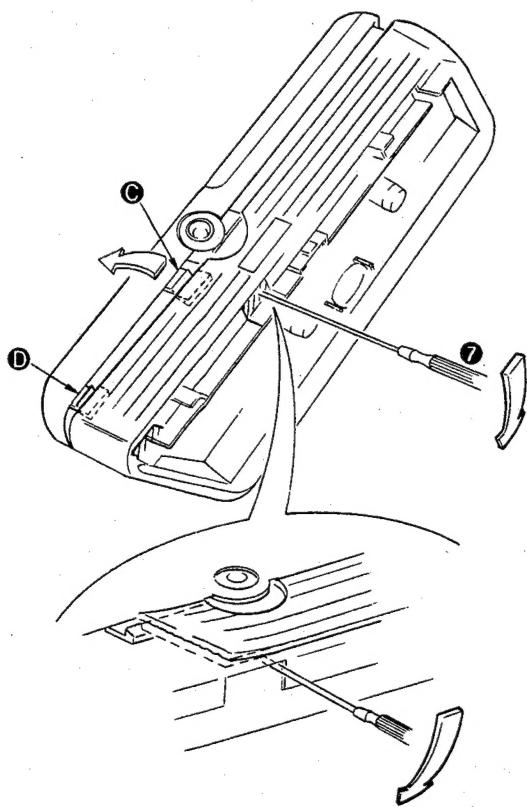


- ⑥ Insert a precision screwdriver (width: 2.0mm), and lift the front cabinet so that the claw B comes off.

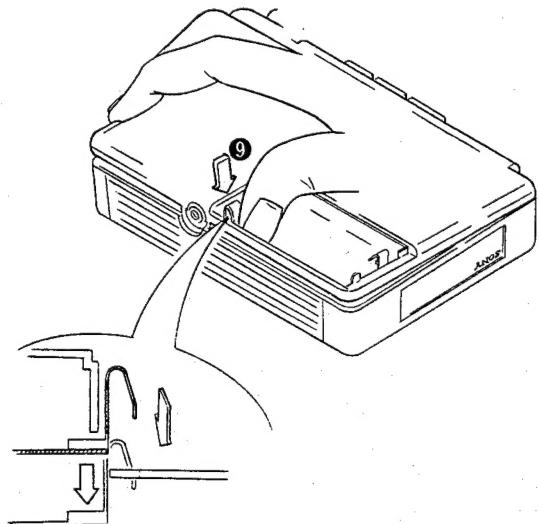


- ⑧ Put a adhesive tape on the volume for protection. Insert a precision screwdriver (width: 1.4 mm) and lift the shaded portion, so that the claw E and F come off.

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



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



- ⑨ Press down the battery terminals in order to leave Mounted PCB in the rear cabinet, and then remove the rear cabinet.