

# WM-F2015

## SERVICE MANUAL

### REVISED

Discard WM-F2015 Service Manual  
(No. 9-955-731-11) previously issued.  
This Service Manual contains it.

*US Model*  
*Canadian Model*  
*AEP Model*  
*UK Model*  
*E Model*  
*Australian Model*

This set is almost the same as model WM-AF23/BF23  
previously produced.

Therefore, see the service manual for the information which is not  
contained in this service manual.

#### • PARTS LIST (The difference between WM-AF23/BF23 and WM-F2015).

WM-AF23/BF23		WM-F2015	
Page No.	Part No.	Part No.	Description
10	3-346-513-01	3-346-513-01	(EXCEPT UK).....BUTTON (FF)
		3-346-513-11	(UK).....BUTTON (FF)
11	3-346-514-01	3-346-514-01	(EXCEPT UK).....BUTTON (REW)
		3-346-514-11	(UK).....BUTTON (REW)
12	3-346-515-01	3-346-515-01	(EXCEPT UK).....BUTTON (STOP)
		3-346-515-11	(UK).....BUTTON (STOP)
13	3-346-512-01	3-346-512-01	(EXCEPT UK).....BUTTON (PLAY)
		3-346-512-11	(UK).....BUTTON (PLAY)
11	21	3-351-501-01	3-352-733-01 (US, Canadian).....CABINET, FRONT
			3-352-733-11 (EXCEPT US, Canadian).....CABINET, FRONT
	22	3-346-517-01	LID, BATTERY CASE (BLACK)
		3-346-517-71	LID, BATTERY CASE (BLUE)
		3-346-517-61	LID, BATTERY CASE (RED)
		3-357-436-01	LID, BATTERY CASE (RED)
		3-357-436-11	LID, BATTERY CASE (GRAY)
	*A	3-351-503-01	CABINET REAR (CF-C) (BLACK)
		3-351-503-21	CABINET REAR (CF-C) (BLUE)
		3-351-503-51	CABINET REAR (CF-C) (RED)
		3-351-503-11	CABINET REAR (CF-C) (GRAY)

— continued on page 2 —

#### NOTE:

- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- G : Germany model  
IT : Italian model  
AUS : Australian model  
BR : Brazilian model
- \*A : WM-AF23 US model: 31  
EXCEPT WM-AF23 US model: 35

CASSETTE PLAYER  
**SONY**®

WM-AF23/BF23		WM-F2015	
Page No.	Part No.	Part No.	Description
11	*B X-3346-702-1	X-3347-153-1	(US, Canadian).....HOLDER ASSY, CASSETTE (BLACK)
	X-3346-717-1	X-3347-196-1	(Canadian).....HOLDER ASSY, CASSETTE (GRAY)
	X-3346-718-1	X-3347-164-1	(G, IT) .....HOLDER ASSY, CASSETTE (RED)
		X-3347-165-1	(G, IT) .....HOLDER ASSY, CASSETTE (BLUE)
		X-3347-166-1	(G, IT) .....HOLDER ASSY, CASSETTE (GRAY)
		X-3347-167-1	(G, IT) .....HOLDER ASSY, CASSETTE (BLACK)
		X-3347-168-1	(AEP, UK, E, AUS, BR).....HOLDER ASSY, CASSETTE (BLACK)
		X-3347-169-1	(AEP, UK, E, BR).....HOLDER ASSY, CASSETTE (RED)
		X-3347-170-1	(AEP, UK, E, BR).....HOLDER ASSY, CASSETTE (BLUE)
		X-3347-171-1	(AEP, UK, E, BR).....HOLDER ASSY, CASSETTE (GRAY)
14	<u>ACCESSORY &amp; PACKING MATERIAL</u>		
		3-351-508-01	TUBE, PROTECTION
		*3-352-456-01	(EXCEPT US) .....CUSHION (LOWER)
		*3-357-431-01	(EXCEPT US) .....CUSHION (UPPER)
		*3-357-433-01	(US) .....CUSHION (UPPER)
		3-751-403-11	(Canadian, AEP, UK, IT, BR) ....MANUAL, INSTRUCTION
		3-751-403-21	(US) .....MANUAL, INSTRUCTION
		3-751-403-41	(G, BR) .....MANUAL, INSTRUCTION
		3-751-403-71	(E, AUS) .....MANUAL, INSTRUCTION
		*3-357-422-01	(E) .....INDIVIDUAL CARTON
		*3-357-423-01	(EXCEPT US, E) .....INDIVIDUAL CARTON
		8-952-350-90	(E) .....EARPHONE MDR-E454 SET
		8-952-447-90	(EXCEPT E) .....EARPHONE MDR-006L SET

**NOTE:**

- \*B: WM-AF23 US model: 37  
EXCEPT WM-AF23 US model: 36

# WM-AF23/AF29/BF23

## SERVICE MANUAL



*Canadian Model*

WM-AF23

*AEP Model*

*UK Model*

*E Model*

WM-BF23

*US Model*

*Canadian Model*

WM-AF29

Photo: WM-BF23

Model Name Using Similar Mechanism	WM-AF22/BF22
Tape Transport Mechanism Type	MF-WMAF23-04
	MF-WMBF23-04


### SPECIFICATIONS

<b>Radio</b>	FM: 87.6—108 MHz (US, Canada), 87.6—107 MHz (W. Germany), 87.5—106 MHz (Italy), 87.6—107.9 MHz (Others)									
<b>Power requirements</b>	AM: 530—1,710 kHz (US, Canada), 526.5—1,606.5 kHz (Italy), 531—1,602 kHz (Others)									
<b>Battery life</b> (Approximate hours)	3 V DC Batteries R6(AA) x 2 BP-700 rechargeable battery External DC 3 V power sources									
	<table border="1"> <thead> <tr> <th></th> <th>Playback</th> <th>FM</th> </tr> </thead> <tbody> <tr> <td>Sony Alkaline AM3 (N)</td> <td>8 hrs.</td> <td>30 hrs.</td> </tr> <tr> <td>Rechargeable BP-700</td> <td>2 hrs.</td> <td>6 hrs.</td> </tr> </tbody> </table>		Playback	FM	Sony Alkaline AM3 (N)	8 hrs.	30 hrs.	Rechargeable BP-700	2 hrs.	6 hrs.
	Playback	FM								
Sony Alkaline AM3 (N)	8 hrs.	30 hrs.								
Rechargeable BP-700	2 hrs.	6 hrs.								
<b>Accessories supplied</b>	Stereo headphones (open-air type, 1) Beltclip (1) Battery tube (1) Only for WM-AF29: Rechargeable battery (1), Battery charger (1)									
<b>Optional accessories</b>	Rechargeable battery (BP-700)/charger (BC-700) kit BPC-700K* AC power adaptor AC-D2L 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.

#### Note

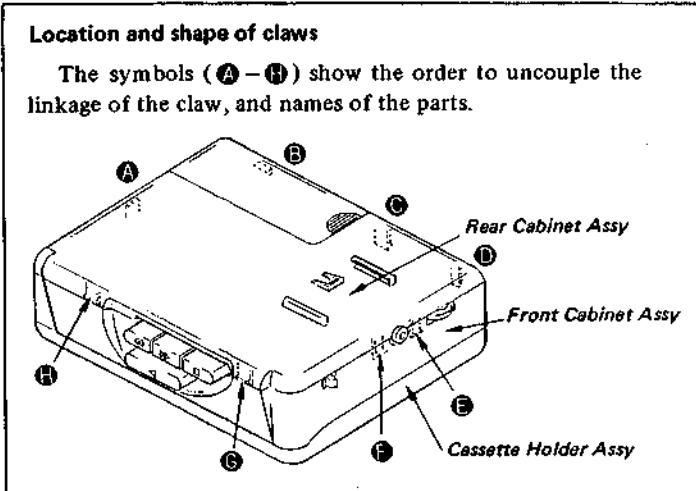
This appliance conforms with EEC Directives 76/689 and 82/499 regarding interference suppression.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.  
"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

RADIO CASSETTE PLAYER  
**SONY**®

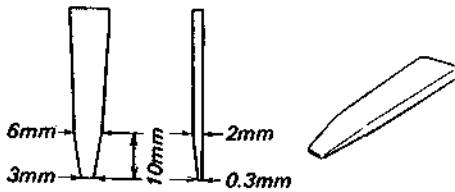


## SECTION 1 DISASSEMBLY

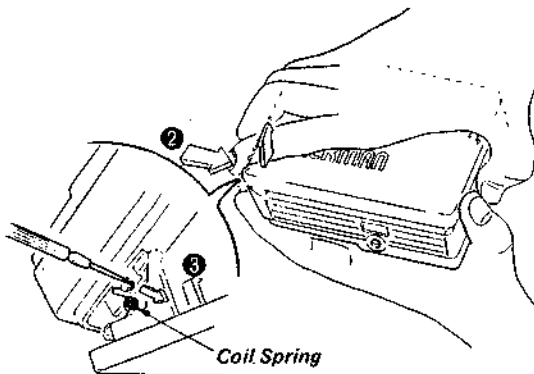


**Note:** Follow the disassembly procedure the numerical order given.  
**Tools:** Precision Screwdrivers (⊖, width 0.8mm, 1.4mm, and 2.0mm)  
 Adhesive tape 1-2cm  
 Wedge (hand made)

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

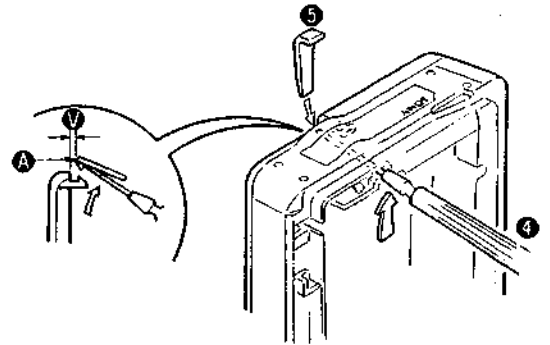


### [1] Cassette Holder Removal

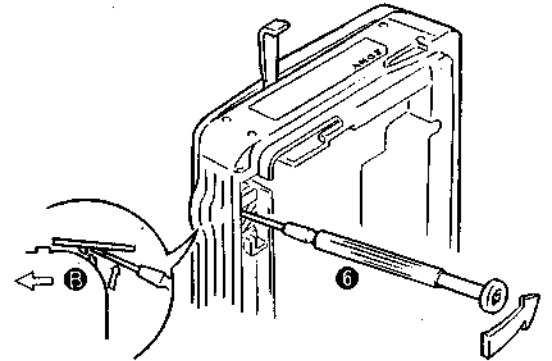


- ① Open the cassette holder.
- ② While pressing the edge of the cassette holder, pull up it in order to take off the cassette holder.
- ③ Take off the end of coil spring with a precision screwdriver (width: 0.8mm).

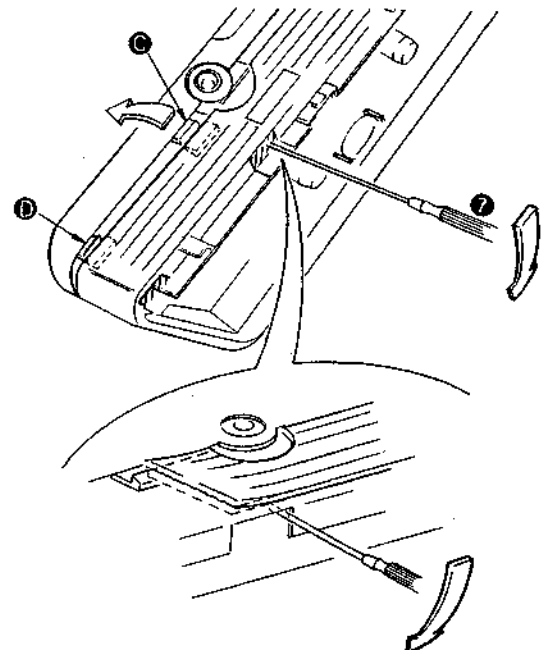
### [2] Rear Cabinet Removal



- 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.



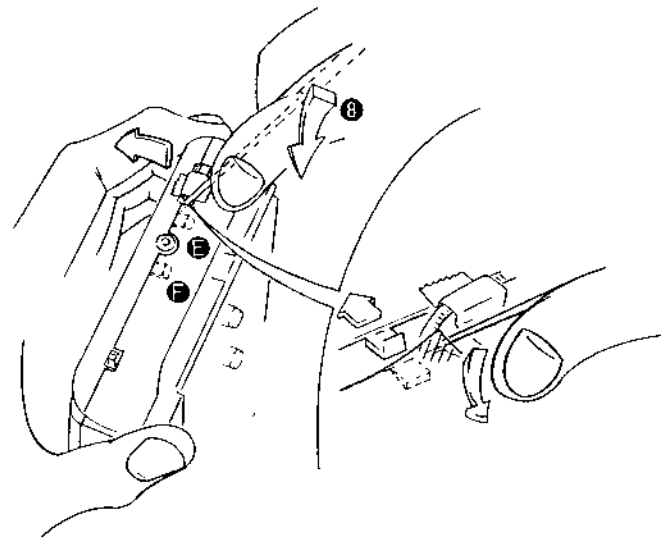
- ⑥ Insert a precision screwdriver (width: 2.0mm), and lift the front cabinet so that the claw B comes off.



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

## SECTION 2 MECHANICAL AND ELECTRICAL ADJUSTMENTS

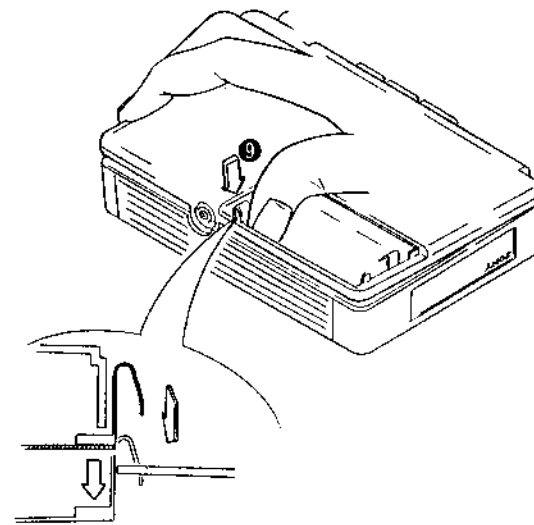
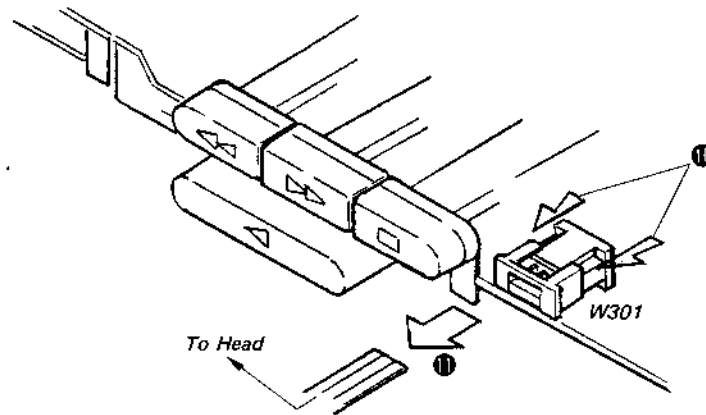
### MECHANICAL ADJUSTMENTS



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 ⑤ and ⑥ come off.

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

#### [3] Head Flexible Board Removal



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

### 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)

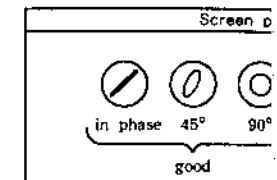
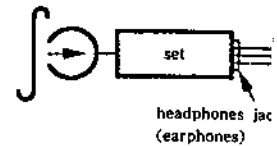
### ELECTRICAL ADJUSTMENTS CASSETTE SECTION

#### Playback Head Phase Check

**Note:** When replacing the head, phases.

**Procedure:**  
Phase Check  
Mode: playback

test tape  
P-4-A063  
(6.3kHz, -10dB)



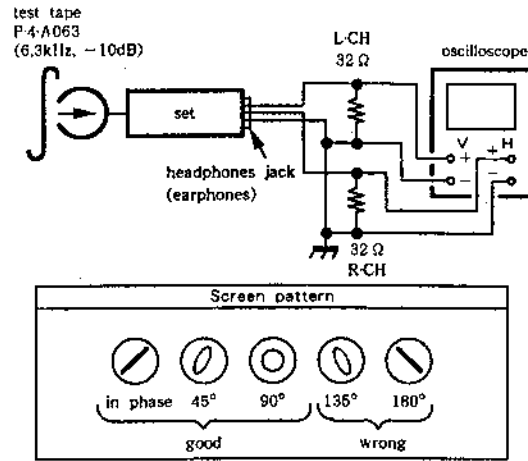
**SECTION 2**  
**D ELECTRICAL ADJUSTMENTS**

**ELECTRICAL ADJUSTMENTS**  
**CASSETTE SECTION**

**Playback Head Phase Check**

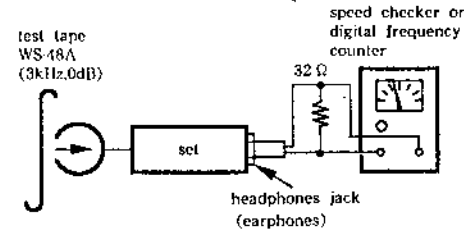
**Note :** When replacing the head, check the both L-ch and R-ch phases.

**Procedure :**  
Phase Check  
Mode : playback



**Tape Speed Adjustment**

**Procedure :**  
Mode : playback

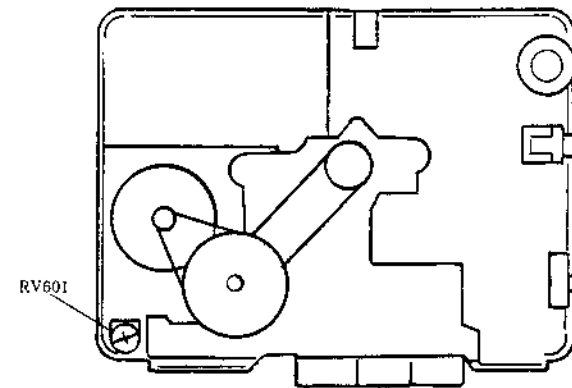


**Specification :**

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

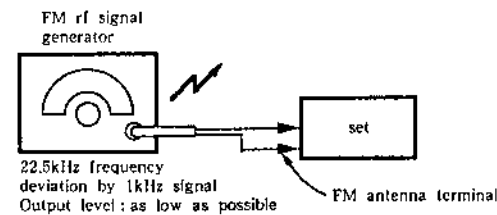
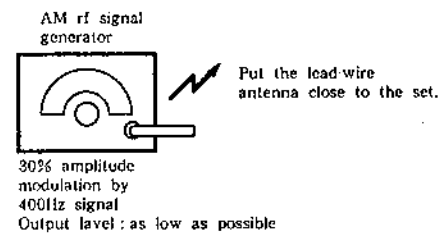
Frequency difference between the beginning and the end of the tape should be within ±1.5% (±45Hz).

**Adjustment Location**

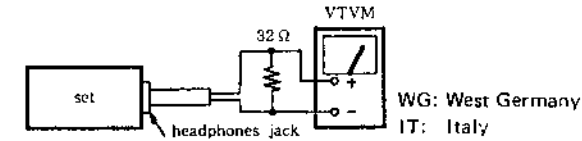


**ELECTRICAL ADJUSTMENTS**

**TUNER SECTION** SUPPLIED VOLTAGE 2.5V



**Note :**  
For adjustment of WM-AF23/AF29 SENS SW at DX.  
For adjustment of WM-BF23 MODE SW at MONO.



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

< > : CANADIAN model  
( ) : WG model  
[ ] : IT model  
( ( ) ) : WG, IT model

**FM Frequency Coverage Adjustment**

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	87.0MHz (87.35MHz) [87.5MHz]	L3	maximum
f maximum	109.0MHz (107.8MHz) [108.0MHz]	CT3	

**FM Tracking Adjustment**

SG and set frequency	Adjustment part	Reading on VTVM
87.0MHz (87.35MHz) [87.5MHz]	L2	maximum
109.0MHz (107.8MHz) [108.0MHz]	CT2	

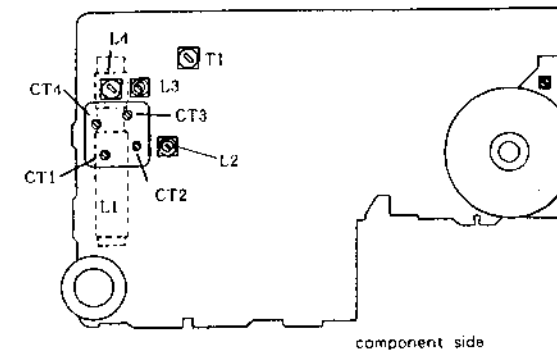
**MW Frequency Coverage Adjustment**

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	520kHz (526.5kHz)	L4	maximum
f maximum	1,650kHz <1,750kHz> (1,606.5kHz)	CT4	

**MW Tracking Adjustment**

SG and set frequency	Adjustment part	Reading on VTVM
520kHz	L1	maximum
1,400kHz	CT1	

**ADJUSTMENT LOCATION**



ed-alcohol-  
ad demagne-  
e adjustments,  
ing compound  
th the rated  
ted.

Torque Meter
CQ-102C
CQ-201B
CQ-201B
CQ-102C

26oz)

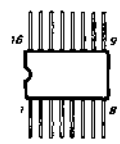
SECTION 3  
DIAGRAMS

Note:

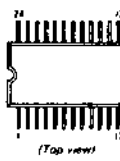
- — : parts extracted from the component side.
- : parts mounted on the conductor side.
- : Through hole.
- ▨ : Pattern on the side which is seen.
- ▧ : Pattern of the rear side.
- : Chip components extracted from the rear side.

● Semiconductor Lead Layouts

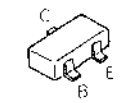
LA4570M



TA8122AF



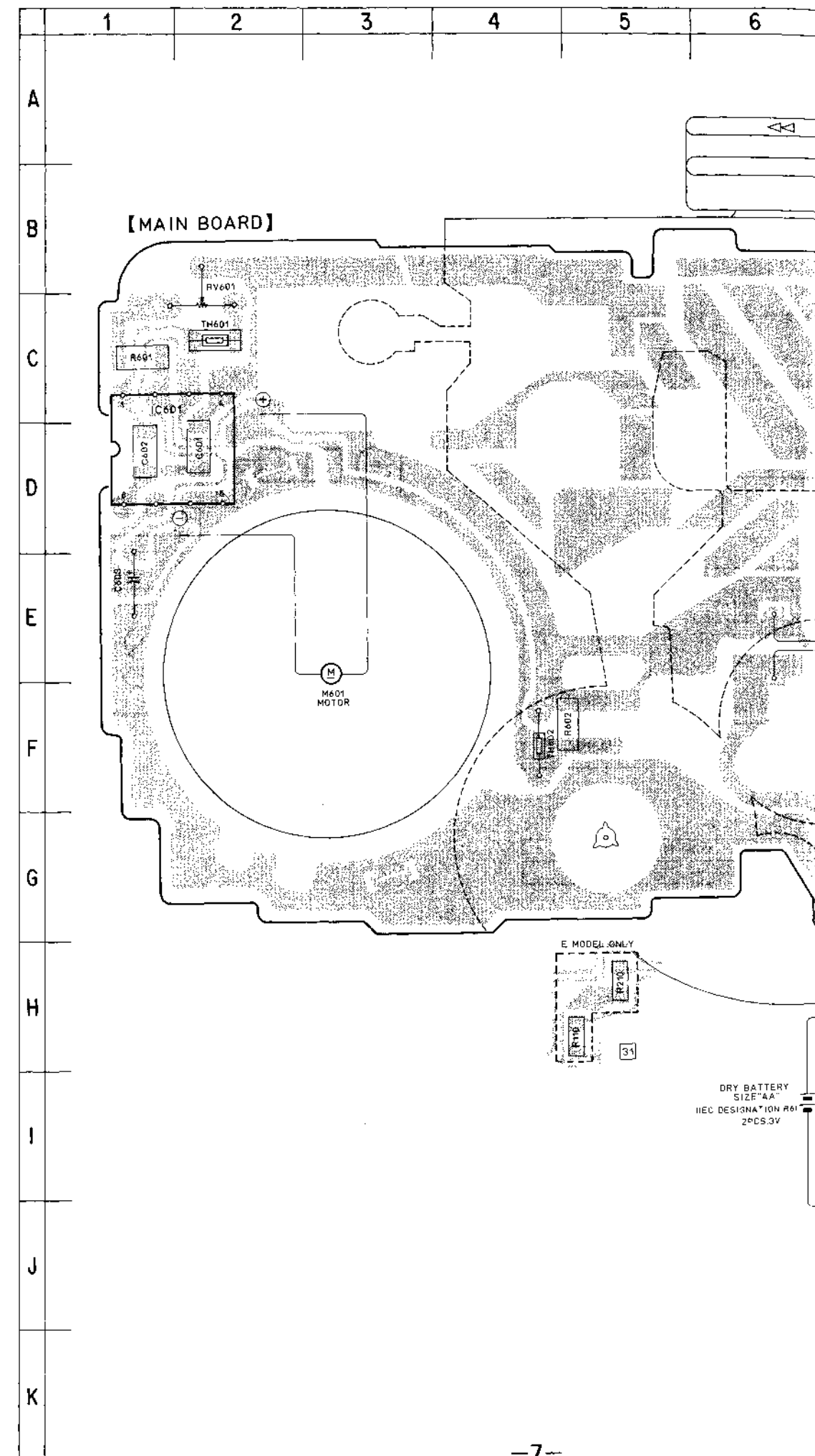
DTA114TK

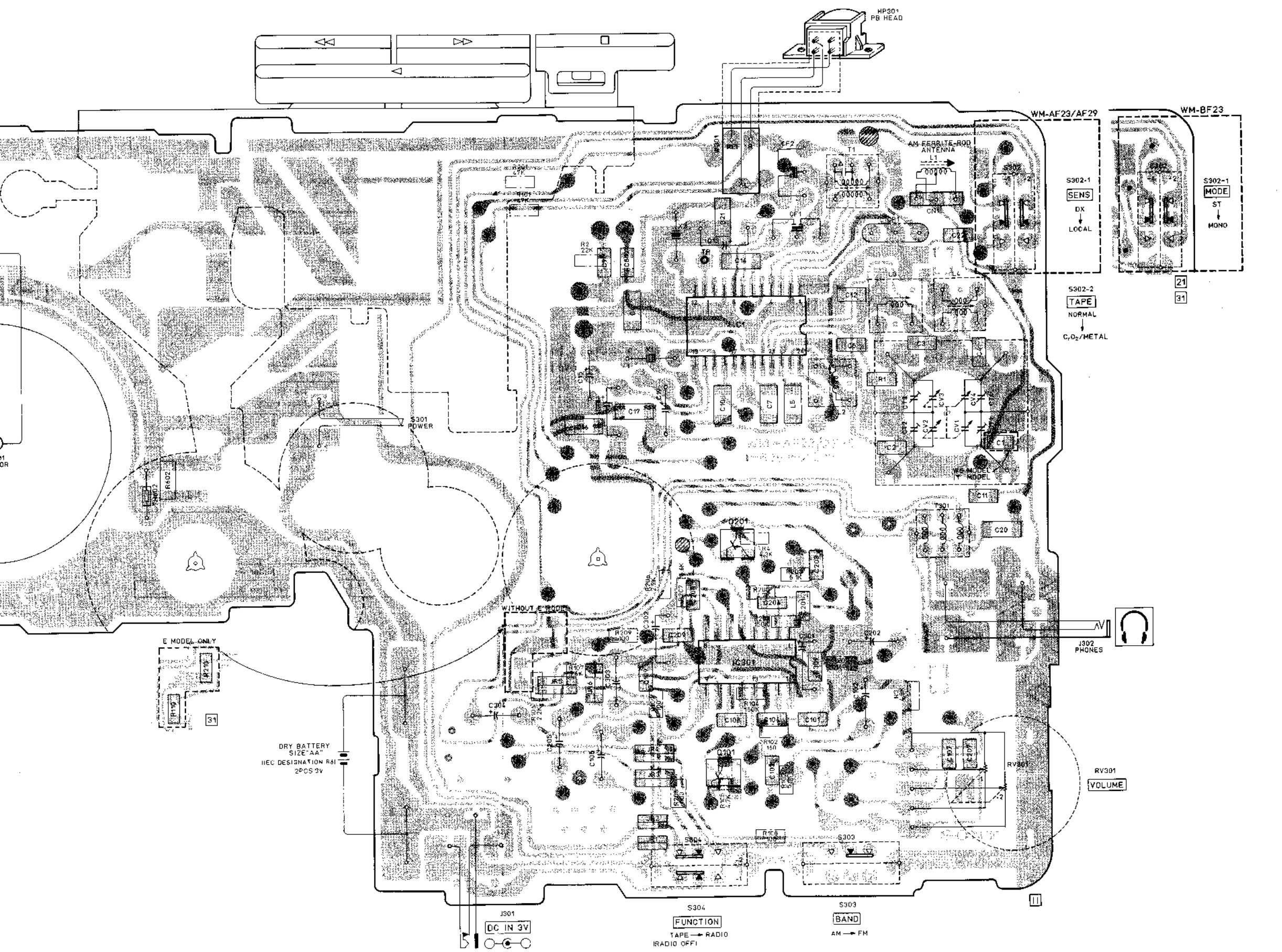


3-1. PRINTED WIRING BOARDS

● Semiconductor Location

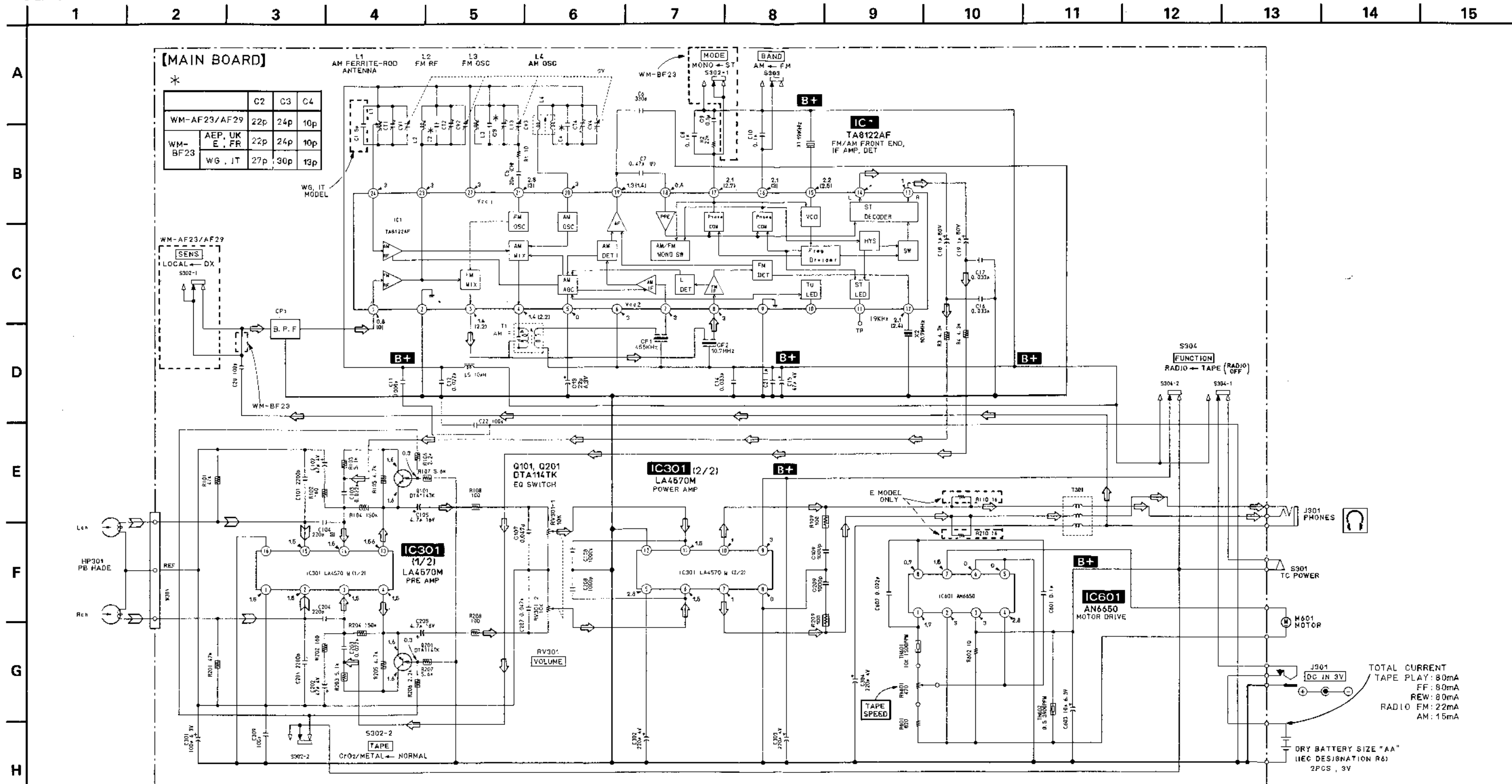
Ref. No.	Location
IC1	D-11
IC301	H-11
IC601	D-1
Q101	I-10
Q201	F-11







3-2. SCHEMATIC DIAGRAM



Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{pF}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{8}\text{W}$  or less unless otherwise specified.
- $\triangle$ : internal component.
- $\square$ : printed resistor.
- $\square$ : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark: FWD, FM  
( ): AM

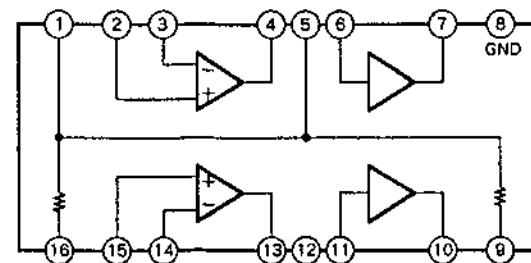
Voltages are taken with a VOM (input impedance 10 M $\Omega$ ). Voltage variations may be noted due to normal production tolerances.

- Signal path.
- $\Rightarrow$ : FM  $\Rightarrow$ : PB (DECK A)
- Switch

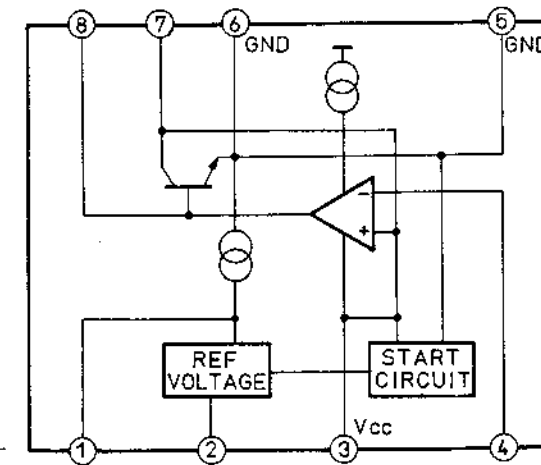
Ref. No.	Switch	Position
S301	POWER	OFF
S302-1	AF23/AF29: SENS	DX
	BF23: MODE	ST
S302-2	TAPE	NORMAL
S303	BAND	FM
S304	FUNCTION	TAPE

IC BLOCK DIAGRAMS

IC301 LA4570M



IC601 AN6650



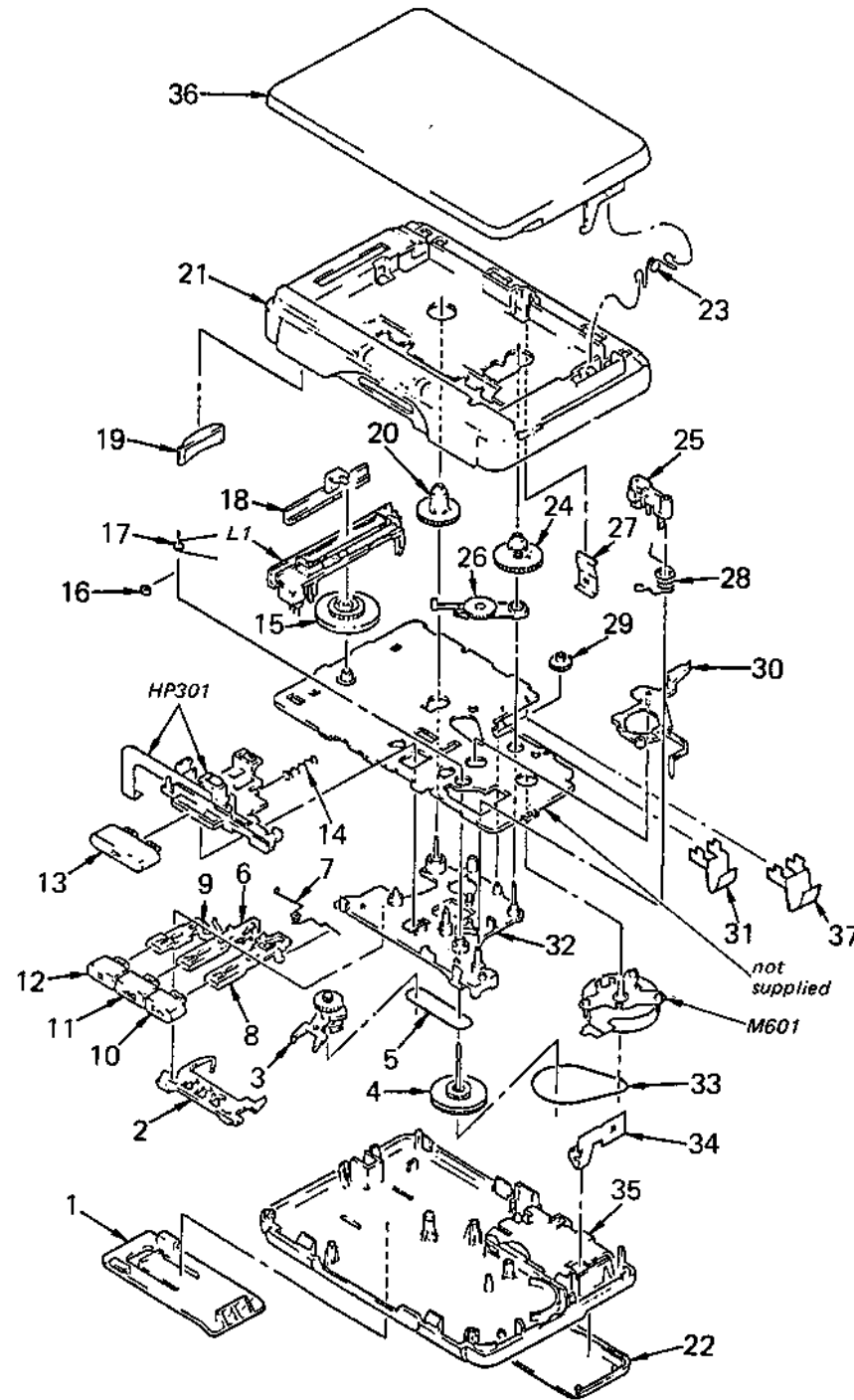
## SECTION 4 EXPLODED VIEWS

**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
- WG: West Germany  
IT: Italy

(1)



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	3-346-518-01	CLIP, BELT		22	3-346-517-01	LID, BATTERY CASE (BLACK)	
2	3-346-522-01	PLATE, LOCK			3-346-517-61	(BF23)...LID, BATTERY CASE (RED)	
3	X-3346-503-1	GEAR ASSY, MIDWAY			3-346-517-71	(BF23)...LID, BATTERY CASE (BLU)	
4	X-3346-505-1	WHEEL ASSY, CAPSTAN		23	3-346-509-01	SPRING	
5	3-335-604-01	BELT, MIDWAY		24	X-3346-502-1	TABLE ASSY, T REEL	
6	3-346-527-01	LEVER (REW)		25	X-3334-005-1	PINCH ROLLER ASSY	
7	3-346-539-01	SPRING (FR)		26	X-3346-504-1	GEAR ASSY, PLAY	
8	3-346-526-01	LEVER (FF)		27	3-346-516-01	SPRING	
9	3-346-528-01	LEVER (STOP)		28	3-335-608-01	SPRING	
10	3-346-513-01	(AF23:Canadian/BF23)...BUTTON (FF)		29	3-334-089-01	GEAR, FF	
	3-346-513-11	(AF29).....BUTTON (FF)		30	3-346-523-01	LEVER (SHUT-OFF)	
11	3-346-514-01	(AF23:Canadian/BF23)...BUTTON (REW)		31	3-347-109-01	TERMINAL BOARD, PLUS	
	3-346-514-11	(AF29).....BUTTON (REW)		32	X-3346-536-1	BASE ASSY (B), GUIDE	
12	3-346-515-01	(AF23:Canadian/BF23)...BUTTON (STOP)		33	3-335-603-11	BELT, CAPSTAN	
	3-346-515-11	(AF29).....BUTTON (STOP)		34	3-334-057-01	TERMINAL BOARD, RELAY	
13	3-346-512-01	(AF23:Canadian/BF23)...BUTTON (PLAY)		35	3-351-503-01	CABINET (REAR) (BLACK)	
	3-346-512-11	(AF29).....BUTTON (PLAY)			3-351-503-11	(BF23)...CABINET (REAR) (RED)	
					3-351-503-21	(BF23)...CABINET (REAR) (BLU)	
14	3-335-605-01	SPRING, COMPRESSION		36	X-3346-702-1	(AF23:Canadian)...HOLDER	
15	3-346-502-01	KNOB (TU)			X-3346-706-1	(AF29).....HOLDER ASSY, CASSETTE	
16	3-343-358-01	RING, RETAINING			X-3346-711-1	(BF23:AEP,E,UK)...HOLDER ASSY, CASSETTE (BLACK)	
17	3-346-538-01	SPRING (GROUND)			X-3346-712-1	(BF23:AEP,E,UK)...HOLDER ASSY, CASSETTE (RED)	
18	3-346-503-01	POINTER			X-3346-713-1	(BF23:AEP,E,UK)...HOLDER ASSY, CASSETTE (BLU)	
19	3-346-504-01	COVER, KNOB			X-3346-716-1	(BF23:WG,IT).....HOLDER ASSY, CASSETTE (BLACK)	
20	3-346-525-01	GEAR (S REEL)			X-3346-717-1	(BF23:WG,IT).....HOLDER ASSY, CASSETTE (RED)	
21	3-351-501-01	(AF23:Canadian/AF29)...CABINET (FRONT)			X-3346-718-1	(BF23:WG,IT).....HOLDER ASSY, CASSETTE (BLU)	
	3-351-501-11	(BF23:AEP,E,IT,UK)....CABINET (FRONT)		37	3-341-794-01	TERMINAL BOARD, MINUS	
	3-351-501-21	(BF23:WG).....CABINET (FRONT)		HP301	A-3108-292-A	PC BOARD ASSY, HEAD	
				M601	I-541-650-21	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:  $\mu$ F, PF:  $\mu$ MF.**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...



WG: West Germany


IT: Italy

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
C1	1-163-088-91	(BF23:WG,IT) ...CERAMIC CHIP 5PF 0.25PF 25V	C205	1-126-094-11	ELECT 4.7MF 20% 16V
C2	1-163-101-00	(WITHOUT WM-BF23:WG,IT) ...CERAMIC CHIP 22PF 5% 50V	C207	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V
C2	1-163-103-91	(WM-BF23:WG,IT) ...CERAMIC CHIP 27PF 5% 50V	C208	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V
C3	1-163-102-00	(WITHOUT WM-BF23:WG,IT) ...CERAMIC CHIP 24PF 5% 50V	C209	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V
C3	1-163-364-91	(WM-BF23:WG,IT) ...CERAMIC CHIP 30PF 5% 50V	C301	1-124-225-00	ELECT 100MF 20% 6.3V
C4	1-163-093-00	(WITHOUT WM-BF23:WG,IT) ...CERAMIC CHIP 10PF 5% 50V	C302	1-124-434-00	ELECT 220MF 20% 4V
C4	1-163-356-91	(WM-BF23:WG,IT) ...CERAMIC CHIP 13PF 5% 50V	C303	1-124-434-00	ELECT 220MF 20% 4V
C5	1-163-100-00	CERAMIC CHIP 20PF 5% 50V	C304	1-124-434-00	ELECT 220MF 20% 4V
C6	1-163-193-00	CERAMIC CHIP 330PF 10% 50V	C309	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C7	1-162-637-11	CERAMIC CHIP 0.47MF 16V	C601	1-163-077-00	CERAMIC CHIP 0.1MF 50V
C8	1-163-038-00	CERAMIC CHIP 0.1MF 25V	C602	1-163-063-00	CERAMIC CHIP 0.022MF 10% 50V
C9	1-163-038-00	CERAMIC CHIP 0.1MF 25V	C603	1-126-157-11	ELECT 10MF 20% 16V
C10	1-163-077-00	CERAMIC CHIP 0.1MF 50V	CF1	1-527-870-00	(WITHOUT WM-BF23:UK)...FILTER(10.7MHz)
C11	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	CF1	1-567-129-11	(WM-BF23:UK)...FILTER CERAMIC
C12	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	CF2	1-577-344-71	FILTER, CERAMIC (455kHz)
C13	1-126-153-11	ELECT 22MF 20% 6.3V	ČNI	*1-565-285-11	HOUSING, CONNECTOR(PC BAORD)3P
C14	1-163-078-11	CERAMIC CHIP 0.033MF 10% 25V	CP1	1-236-022-11	FILTER, BAND PASS
C15	1-124-432-00	ELECT 47MF 20% 4V	CV1	1-151-629-11	CAP, VAR, POLYETHYLENE(WITH CT1-4,CV1-4)
C16	1-163-078-11	CERAMIC CHIP 0.033MF 10% 25V	HP301	A-3108-292-A	PC BOARD ASSY, HEAD
C17	1-163-078-11	CERAMIC CHIP 0.033MF 10% 25V	IC1	8-759-230-39	IC TAB122AF
C18	1-126-160-11	ELECT 1MF 20% 50V	IC301	8-759-820-19	IC LA4570M
C19	1-126-160-11	ELECT 1MF 20% 50V	IC601	8-759-403-83	IC AN6650
C20	1-163-181-00	CERAMIC CHIP 100PF 5% 50V	J301	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)
C21	1-162-611-00	CERAMIC CHIP 1MF 25V	J302	1-565-287-11	JACK (PHONES)
C22	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W
C101	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W
C102	1-124-432-00	ELECT 47MF 20% 4V	JR3	1-216-296-00	METAL GLAZE 0 5% 1/8W
C103	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	JR4	1-216-296-00	METAL GLAZE 0 5% 1/8W
C104	1-163-125-00	CERAMIC CHIP 220PF 10% 50V	JR5	1-216-296-00	METAL GLAZE 0 5% 1/8W
C105	1-126-094-11	ELECT 4.7MF 20% 16V	JR6	1-216-296-00	METAL GLAZE 0 5% 1/8W
C107	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	L1	1-402-412-11	ANTENNA, FERRITE-ROD
C108	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	L2	1-459-955-11	(WITHOUT WM-BF23:WG,IT) ...COIL(WITH CORE)(FM RF)
C109	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	L2	1-459-956-11	(WM-BF23:WG,IT)...COIL(WITH CORE)(FM RF)
C201	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	L3	1-459-953-11	(WITHOUT WM-BF23:WG,IT) ...COIL(WITH CORE)(FM OSC)
C202	1-124-432-00	ELECT 47MF 20% 4V	L3	1-459-954-11	(WM-BF23:WG,IT)...COIL(WITH CORE)(FM OSC)
C203	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	L4	1-406-330-21	COIL (OSC)(AM)
C204	1-163-125-00	CERAMIC CHIP 220PF 10% 50V	L5	1-410-204-31	INDUCTOR CHIP 10UH
			M601	1-541-650-21	MOTOR



# WM-AF23/AF29/BF23

Ref.No.	Part No.	Description				
Q101	8-729-900-51	TRANSISTOR DTA114TK				
Q201	8-729-900-51	TRANSISTOR DTA114TK				
R1	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R2	1-249-433-11	CARBON	22K	5%	1/32W	
R3	1-215-436-00	CARBON	4.3K	5%	1/32W	
R4	1-215-436-00	CARBON	4.3K	5%	1/32W	
R101	1-249-437-11	CARBON	47K	5%	1/32W	
R102	1-000-030-11	CARBON	160	5%	1/32W	
R103	1-215-438-00	CARBON	5.1K	5%	1/32W	
R104	1-215-473-00	CARBON	150K	5%	1/32W	
R105	1-249-425-11	CARBON	4.7K	5%	1/32W	
R106	1-249-421-11	CARBON	2.2K	5%	1/32W	
R107	1-249-426-11	CARBON	5.6K	5%	1/32W	
R108	1-249-405-11	CARBON	100	5%	1/32W	
R109	1-249-405-11	CARBON	100	5%	1/32W	
R110	1-216-006-91	{WM-BF23:E}...METAL GLAZE	16	5%	1/10W	
R201	1-249-437-11	CARBON	47K	5%	1/32W	
R202	1-000-030-11	CARBON	160	5%	1/32W	
R203	1-215-438-00	CARBON	5.1K	5%	1/32W	
R204	1-215-473-00	CARBON	150K	5%	1/32W	
R205	1-249-425-11	CARBON	4.7K	5%	1/32W	
R206	1-249-421-11	CARBON	2.2K	5%	1/32W	
R207	1-249-426-11	CARBON	5.6K	5%	1/32W	
R208	1-249-405-11	CARBON	100	5%	1/32W	
R209	1-249-405-11	CARBON	100	5%	1/32W	
R210	1-216-006-91	{WM-BF23:E}...METAL GLAZE	16	5%	1/10W	
R601	1-216-196-00	METAL GLAZE	820	5%	1/8W	
R602	1-216-150-00	METAL GLAZE	10	5%	1/8W	
RY301	1-238-072-11	RES. VAR. CARBON 10K/10K (VOLUME)				
RY601	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 (SENS/MODE-TAPE)				
S303	1-571-478-11	SWITCH. SLIDE (BAND)				
S304	1-571-478-11	SWITCH. SLIDE (FUNCTION)				
T1	1-404-791-11	{WITHOUT WM-BF23:UK} ...TRANSFORMER. 1F (AM)				
T1	1-404-792-11	{WM-BF23:UK}...TRANSFORMER. 1F (AM)				
T301	1-409-444-11	COIL. TRAP				
TH601	1-808-664-21	THERMISTOR. POSITIVE				
TH602	1-807-489-41	THERMISTOR (POSITIVE)				
W301	*1-565-288-11	HOUSING. CONNECTOR 3P				
X1	1-577-091-11	OSILLATOR. CERAMIC (19kHz)				
X2	1-577-344-71	FILTER. CERAMIC (10.7MHz)				

**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.

## ACCESSORY & PACKING MATERIAL

1-528-239-21	{AF29}...BATTERY. STORAGE. LEAD {BP-700}
 1-528-238-21	{AF29:US}...BATTERY CHARGER
 1-528-263-11	{AF29:Canadian}...BATTERY CHARGER
3-351-508-01	TUBE. PROTECTION
3-786-982-11	{AF23/AF29:Canadian,BF23} ...MANUAL, INSTRUCTION
3-786-982-21	{AF29:US}...MANUAL, INSTRUCTION
8-952-350-90	{WM-BF23:E}...EARPHONE MDR-E454 SET
8-952-447-90	{WITHOUT WM-BF23:E} ...EARPHONE MDR-006L SET