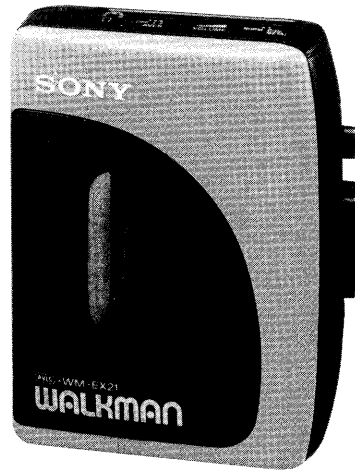


WM-EX21

SERVICE MANUAL

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
Rechargeable battery NC-AA (WM) (Full charge)	2.5 hours

Supplied Accessories

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

Optional Accessories

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

Your dealer may not handle some of the above listed accessories. Please ask the dealer for detailed information. Design and specifications are subject to change without notice.

Note

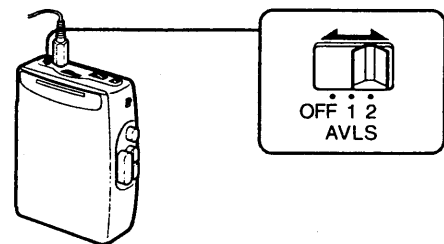
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

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.

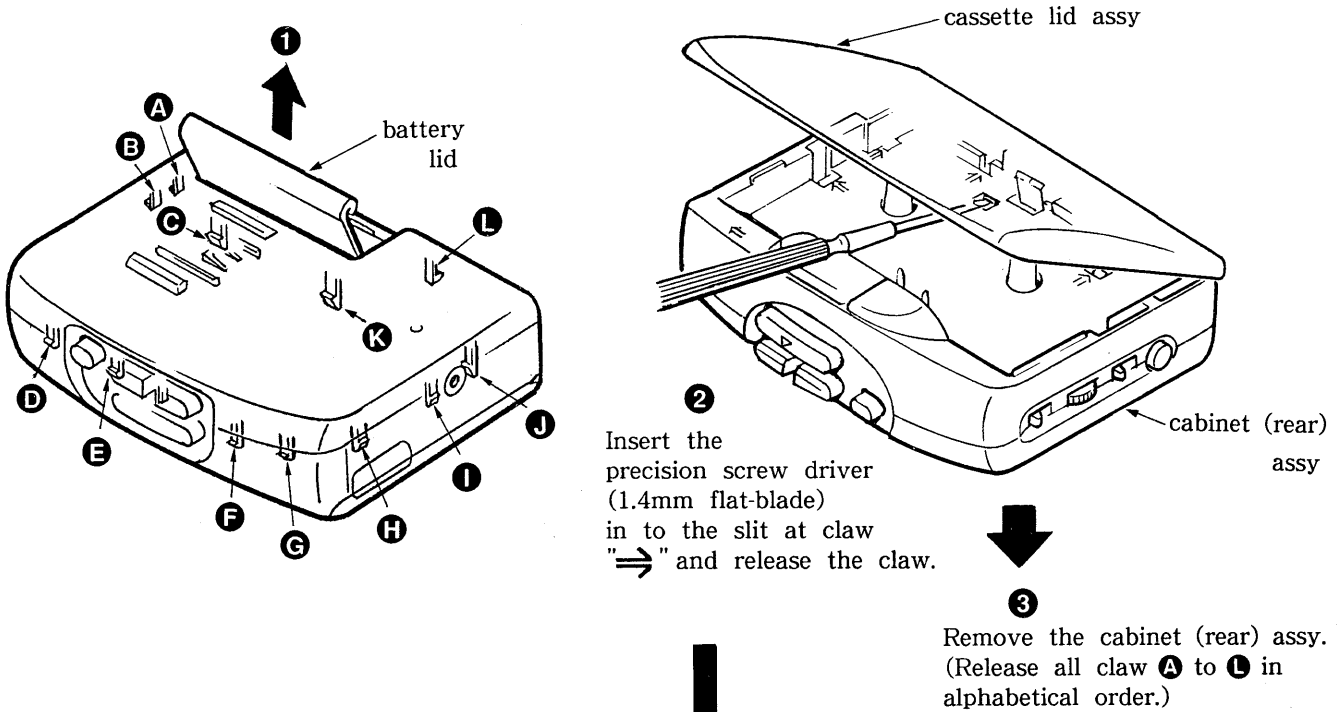


CASSETTE PLAYER
SONY[®]

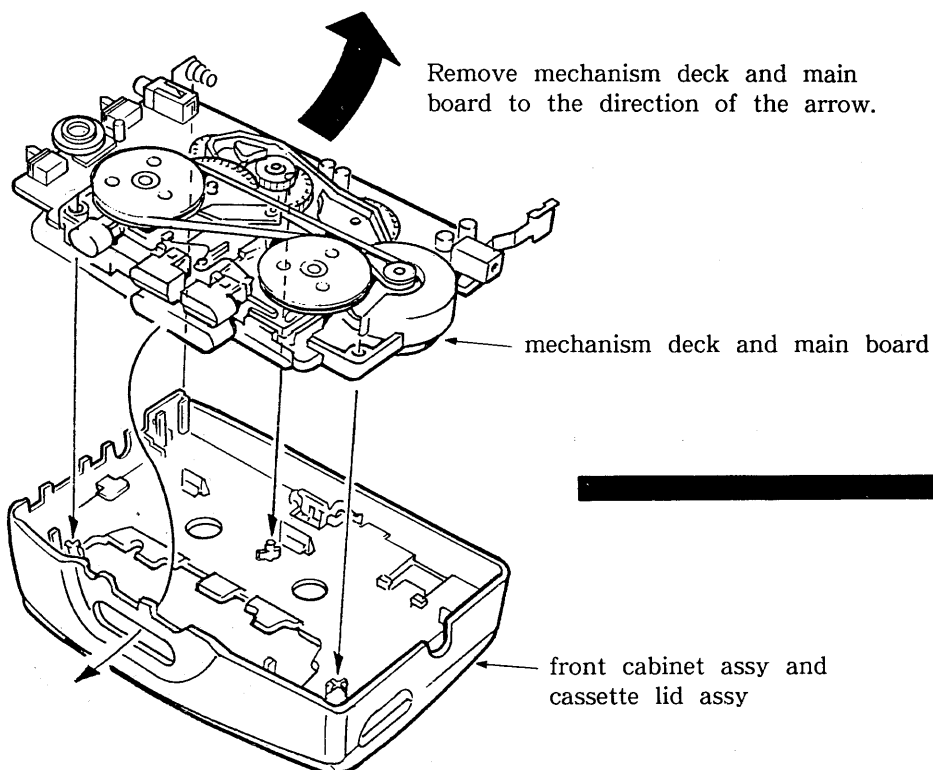
SECTION 1 DISASSEMBLY

• Follow the disassembly procedure in the numerical order given.

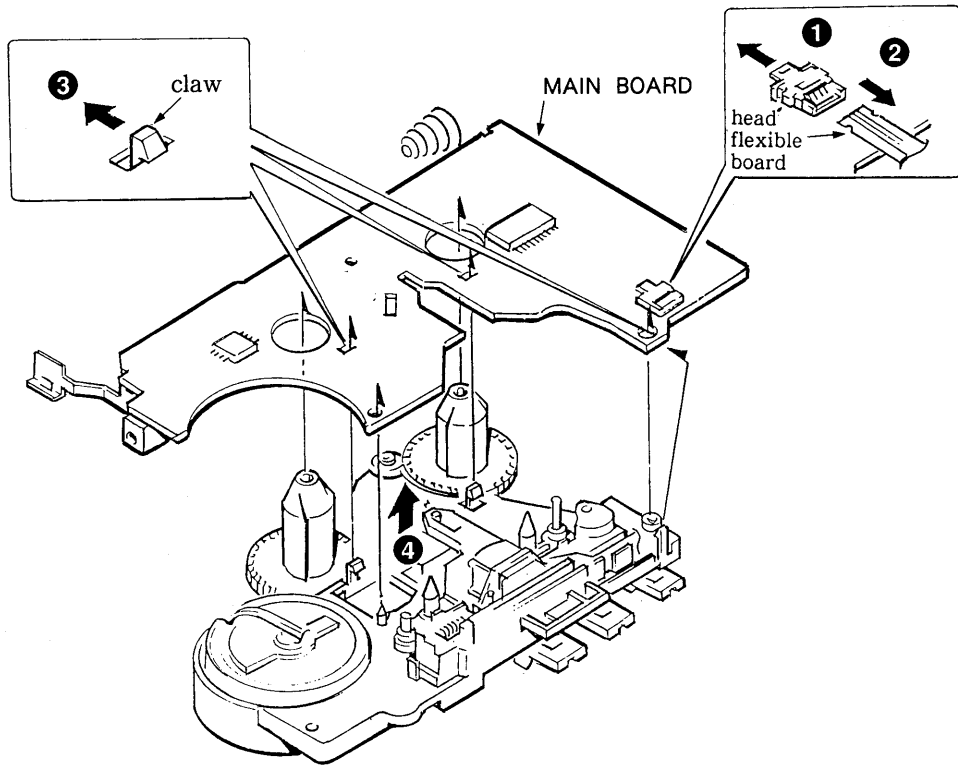
CABINET (REAR) ASSY



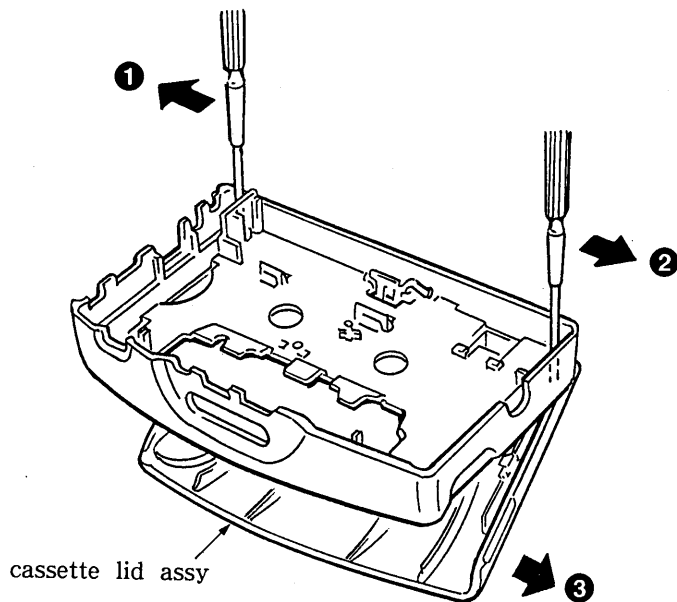
MECHANISM DECK AND MAIN BOARD



MAIN BOARD



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)

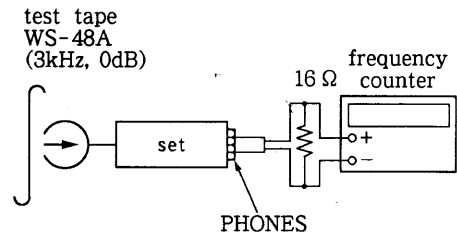
2-2. ELECTRICAL ADJUSTMENTS

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

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

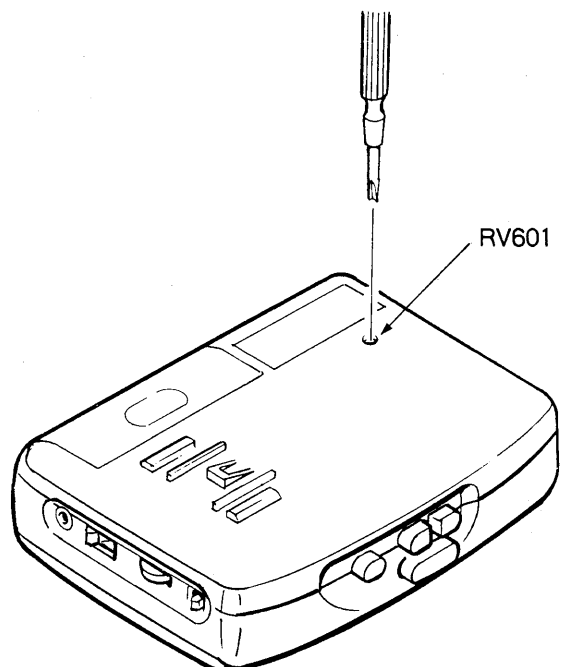
TAPE SPEED ADJUSTMENTS

Procedure :



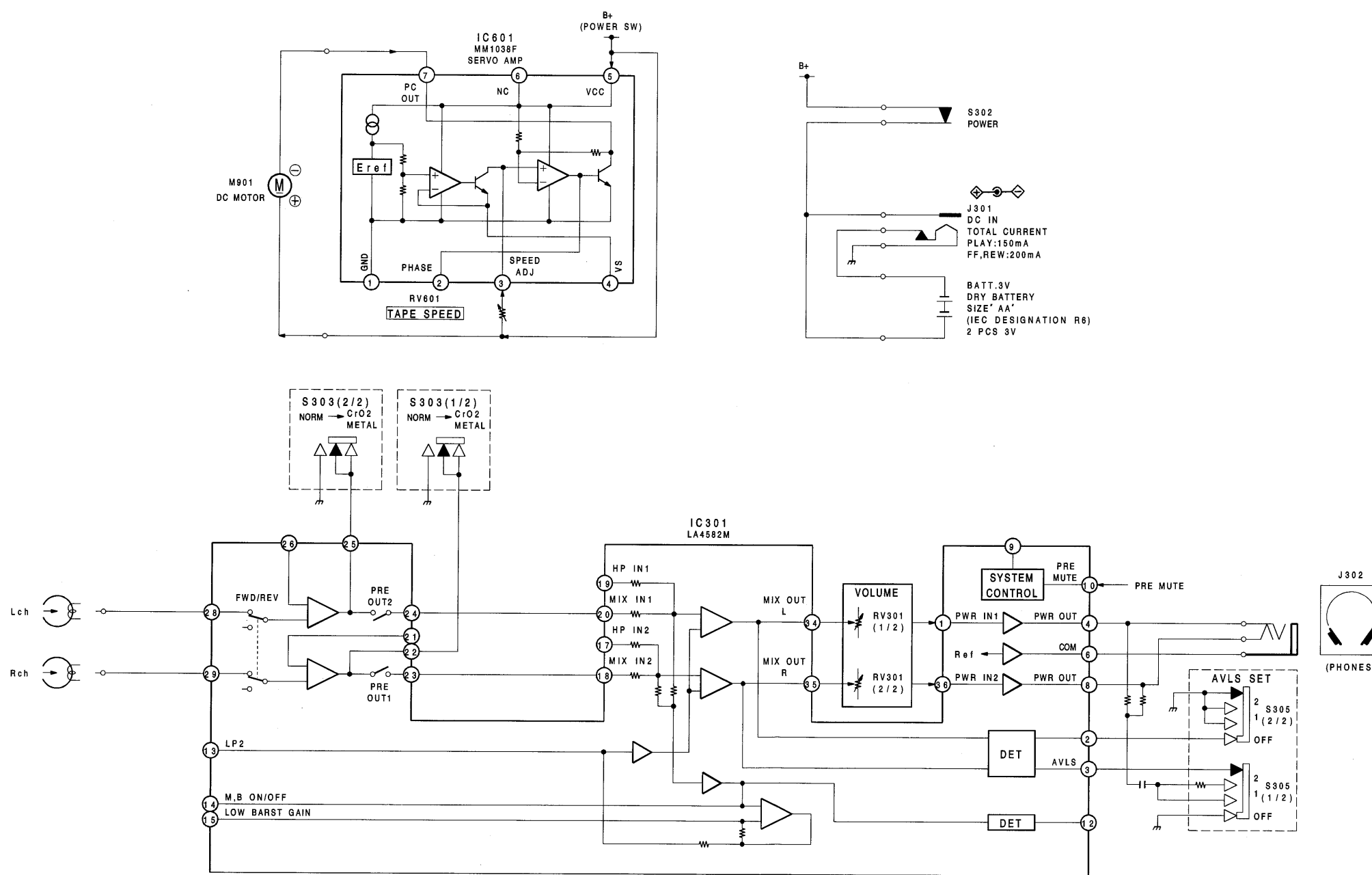
Play back WS-48A (tape center portion) in FWD mode. Adjustment the RV601 so that frequency counter reads $2970 \pm 15\text{Hz}$

Adjustment Location:



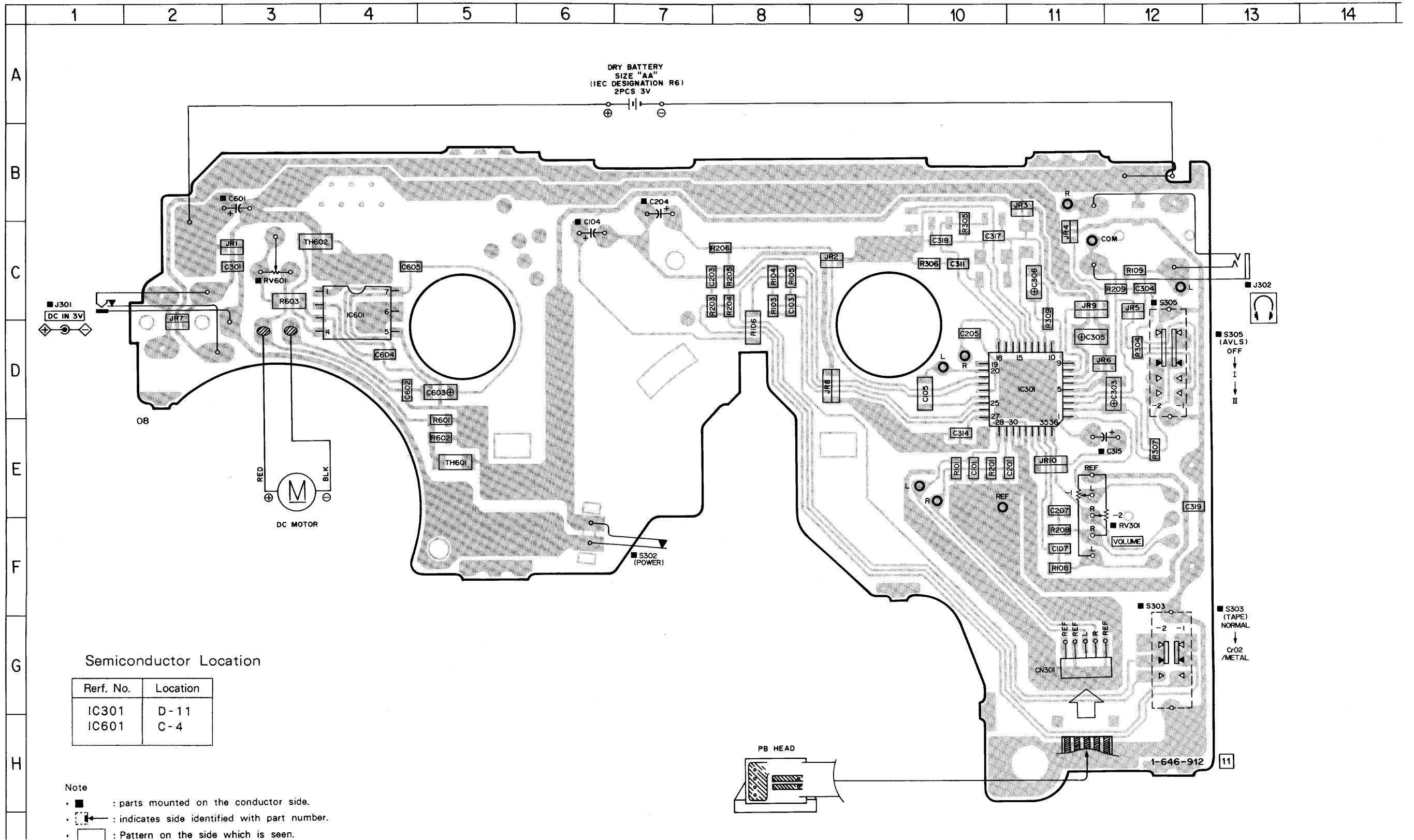
SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM

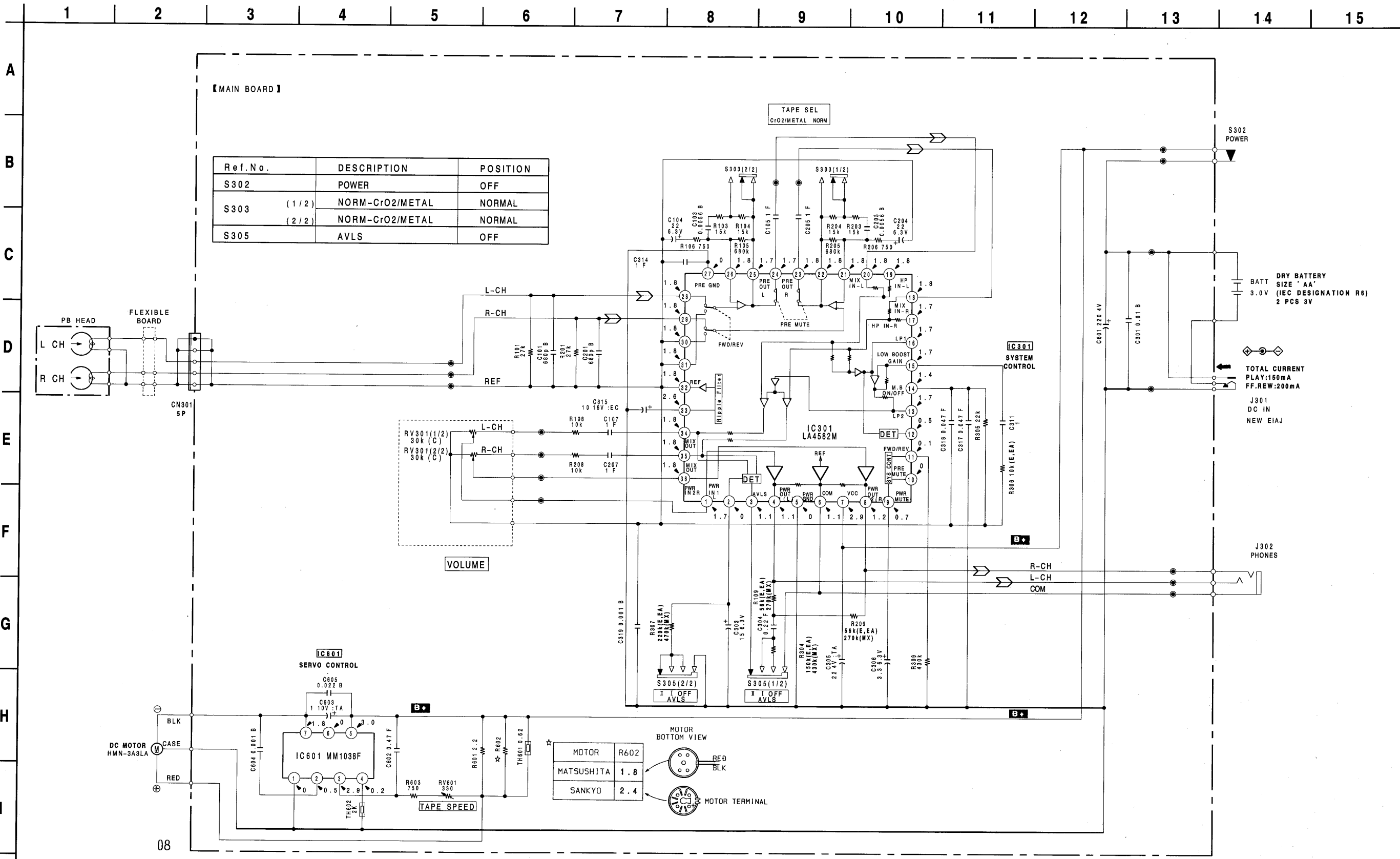


08

3-2. PRINTING WIRING BOARD



3-3. SCHEMATIC DIAGRAM



Note:

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.
- Δ : internal component.
- B+**: 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.
- Voltagcs are DC between measurement points and ground under no-signal (PLAY) conditions.

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

- EA :Saudi Arabia
- MX :Mexican

REVISED

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.

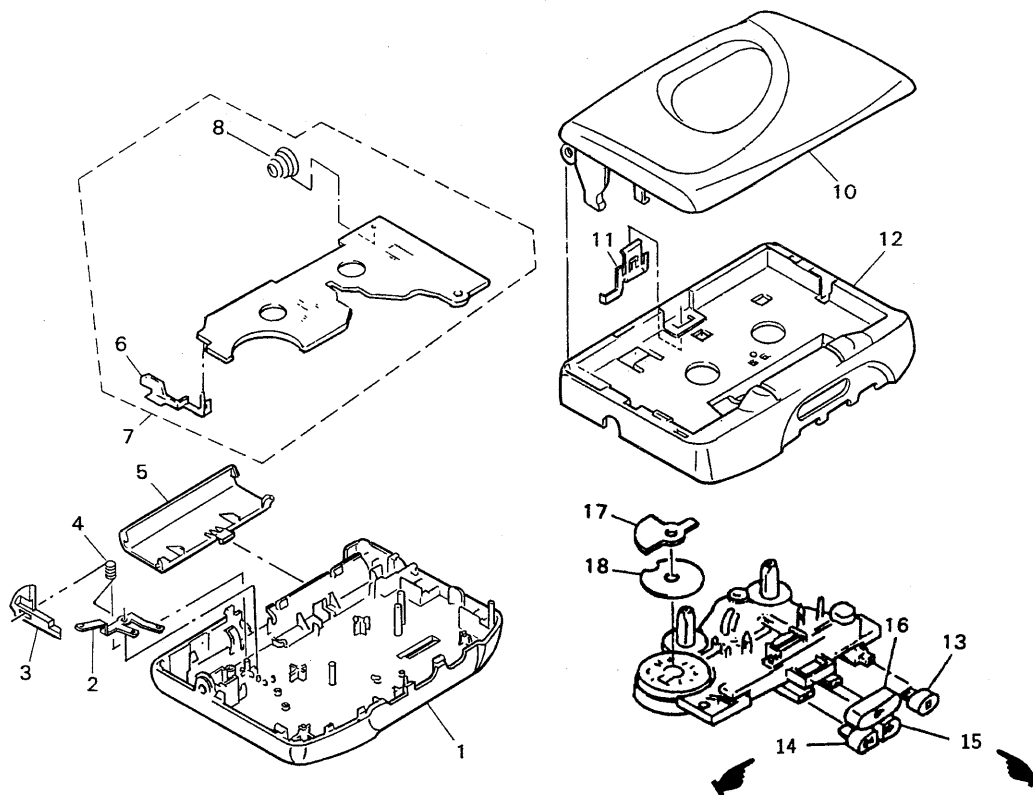
- x x , - x mean standardized parts, so they may have some differences from the original one.

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

↑ ↑
Parts color Cabinet's color

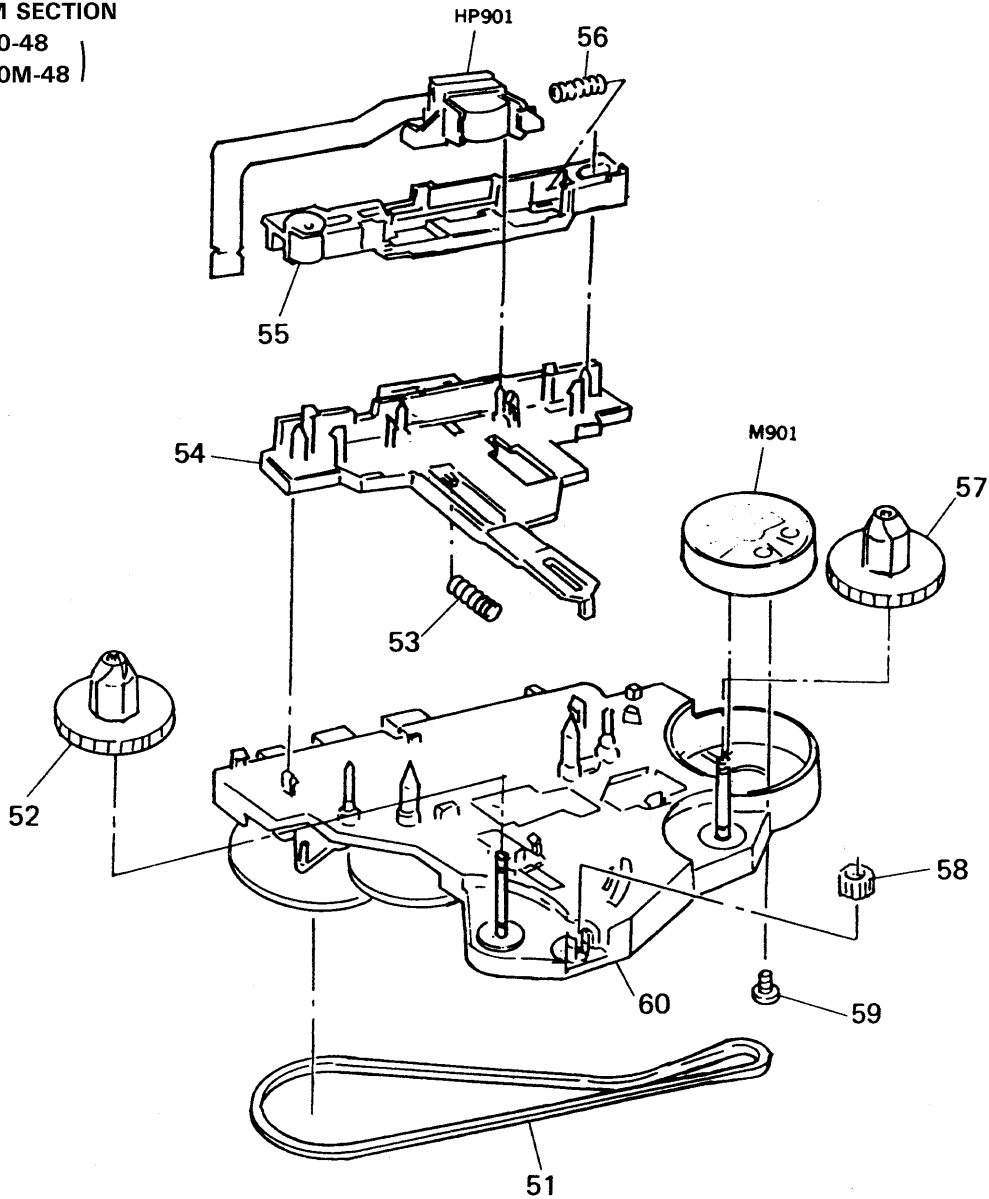
- EA :Saudi Arabia
- MX :Mexican

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		10	X-3366-242-1	HOLDER (TC-B) ASSY, CASSETTE (BLUE)	
2	3-386-088-01	GROUND, MOTOR		10	X-3366-243-1	HOLDER (TC-B) ASSY, CASSETTE (GREEN)	
3	3-386-086-01	LEVER, CLICK		11	3-364-675-01	SPRING (CASSETTE)	
4	3-386-090-01	CLICK, SPRING		12	3-386-310-01	CABINET (FRONT) (TC)	
5	3-386-085-01	LID, BATT		13	3-364-680-01	BUTTON (STOP)	
6	3-386-209-01	TERMINAL (+), BATTERY		14	3-364-679-01	BUTTON (REW)	
7	A-3016-320-A	MAIN BOARD, COMPLETE (E,EA)		15	3-364-678-01	BUTTON (FF)	
7	A-3016-368-A	MAIN BOARD, COMPLETE (MX)		16	3-364-677-01	BUTTON (PLAY)	
8	3-386-089-01	TERMINAL (-), BATTERY		17	3-367-601-01	CUSHION (MOTOR)	
10	X-3366-203-1	HOLDER(TC-B)ASSY,CASSETTE(BLACK) (E,EA,MX)		18	3-389-199-01	PLATE (M), SHIELD (MATSUSHITA) (MX)	
10	X-3366-241-1	HOLDER(TC-B)ASSY,CASSETTE(RED) (EA)		18	3-389-200-01	PLATE (S), SHIELD (SANKYO) (MX)	
10	X-3366-242-1	HOLDER(TC-B)ASSY,CASSETTE(BLUE) (E,EA,MX)					
10	X-3366-243-1	HOLDER(TC-B)ASSY,CASSETTE(GREEN) (E,EA,MX)					
10	X-3367-105-1	HOLDER(TC-B)ASSY,CASSETTE(RED) (E)					
10	X-3366-888-1	HOLDER(TC-B)ASSY,CASSETTE (Panama)					

4-2. MECHANISM SECTION
 (MT-WMEX10-48
 (MT-WMEX10M-48)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	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

MAIN

- 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: μ F

- RESISTORS**
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
 - SEMICONDUCTORS
In each case, u: μ , for example:
uA.....: μ A....., uPA.....: μ PA.....,
uPB.....: μ PB....., uPC.....: μ PC.....,
uPD.....: μ PD.....

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

- EA : Saudi Arabia
- MX : Mexican

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-3016-320-A	MAIN BOARD, COMPLETE (E,EA)				< JACK >	
	A-3016-368-A	MAIN BOARD, COMPLETE (MX)					

	3-386-209-01	TERMINAL (+), BATTERY		J301	1-750-061-11	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 3V)	
	3-386-089-01	TERMINAL (-), BATTERY		J302	1-565-287-11	JACK (PHONES)	
	< CAPACITOR >						
C101	1-163-007-11	CERAMIC CHIP	680PF 10% 50V	JR1	1-216-295-00	METAL CHIP	0 5% 1/10W
C103	1-163-018-00	CERAMIC CHIP	0.0056uF 5% 50V	JR2	1-216-295-00	METAL CHIP	0 5% 1/10W
C104	1-126-153-11	ELECT	22uF 20% 6.3V	JR3	1-216-295-00	METAL CHIP	0 5% 1/10W
C105	1-162-638-11	CERAMIC CHIP	1uF 16V	JR4	1-216-295-00	METAL CHIP	0 5% 1/10W
C107	1-164-346-11	CERAMIC CHIP	1uF 16V	JR5	1-216-295-00	METAL CHIP	0 5% 1/10W
C201	1-163-007-11	CERAMIC CHIP	680PF 10% 50V	JR6	1-216-295-00	METAL CHIP	0 5% 1/10W
C203	1-163-018-00	CERAMIC CHIP	0.0056uF 5% 50V	JR7	1-216-295-00	METAL CHIP	0 5% 1/10W
C204	1-126-153-11	ELECT	22uF 20% 6.3V	JR8	1-216-296-00	METAL CHIP	0 5% 1/8W
C205	1-164-346-11	CERAMIC CHIP	1uF 16V	JR9	1-216-296-00	METAL CHIP	0 5% 1/8W
C207	1-164-346-11	CERAMIC CHIP	1uF 16V	JR10	1-216-296-00	METAL CHIP	0 5% 1/8W
C301	1-164-232-11	CERAMIC CHIP	0.01uF 50V	< RESISTOR >			
C303	1-135-217-21	TANTALUM CHIP	15uF 20% 6.3V	R101	1-216-083-00	METAL CHIP	27K 5% 1/10W
C304	1-164-222-11	CERAMIC CHIP	0.22uF 25V	R103	1-216-077-00	METAL CHIP	15K 5% 1/10W
C305	1-135-202-21	TANTAL CHIP	22uF 20% 4V	R104	1-216-077-00	METAL CHIP	15K 5% 1/10W
C306	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V	R105	1-216-117-00	METAL CHIP	680K 5% 1/10W
C311	1-164-346-11	CERAMIC CHIP	1uF 16V	R106	1-216-195-00	METAL GLAZE	750 5% 1/8W
C314	1-164-346-11	CERAMIC CHIP	1uF 16V	R108	1-216-073-00	METAL CHIP	10K 5% 1/10W
C315	1-126-157-11	ELECT	10uF 20% 16V	R109	1-216-091-00	METAL CHIP	56K 5% 1/10W (E,EA)
C317	1-163-035-00	CERAMIC CHIP	0.047uF 50V	R109	1-216-256-00	METAL GLAZE	270K 5% 1/8W (MX)
C318	1-163-035-00	CERAMIC CHIP	0.047uF 50V	R201	1-216-083-00	METAL CHIP	27K 5% 1/10W
C319	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	R203	1-216-077-00	METAL CHIP	15K 5% 1/10W
C321	1-163-181-00	CERAMIC CHIP	100PF 5% 50V (E,EA)	R204	1-216-077-00	METAL CHIP	15K 5% 1/10W
C324	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V (E,EA)	R205	1-216-117-00	METAL CHIP	680K 5% 1/10W
C601	1-124-434-00	ELECT	220uF 20% 4V	R206	1-216-046-00	METAL CHIP	750 5% 1/10W
C602	1-164-005-11	CERAMIC CHIP	0.47uF 25V	R208	1-216-073-00	METAL CHIP	10K 5% 1/10W
C603	1-135-208-11	TANTAL CHIP	1uF 20% 10V	R209	1-216-091-00	METAL CHIP	56K 5% 1/10W (E,EA)
C604	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	R209	1-216-256-00	METAL GLAZE	270K 5% 1/8W (MX)
C605	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V	R304	1-216-101-00	METAL CHIP	150K 5% 1/10W (E,EA)
	< CONNECTOR >						
CN301	1-569-252-21	HOUSING, CONNECTOR (FPC) 5P		R304	1-216-112-00	METAL GLAZE	430K 5% 1/10W (MX)
	< IC >						
IC301	8-759-161-54	IC LA4582M		R305	1-216-081-00	METAL CHIP	22K 5% 1/10W
IC601	8-759-166-43	IC MM1038BF		R306	1-216-073-00	METAL CHIP	10K 5% 1/10W (E,EA)
				R307	1-216-105-00	METAL CHIP	220K 5% 1/10W (E,EA)
				R307	1-216-113-00	METAL CHIP	470K 5% 1/10W (MX)
				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 CHIP	2.4 5% 1/10W

MAIN

Ref. No.	Part No.	Description	Remarks		
R602	1-217-907-11	METAL GLAZE	1.8	5%	1/10W (FOR MATSUSHITA)
R603	1-216-195-00	METAL GLAZE	750	5%	1/8W
R607	1-216-295-00	METAL CHIP	0	5%	1/10W (E,EA)

< 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 (AVLS SET)

< THERMISTOR >

TH601	1-809-279-11	THERMISTOR, POSITIVE
TH602	1-809-029-11	THERMISTOR, POSITIVE

MISCELLANEOUS

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
*	3-385-494-01	CUSHION (E,EA)
*	3-385-498-01	INDIVIDUAL CARTON (E,EA)
*	3-389-688-01	CUSHION (UPPER) (MX)
*	3-389-695-01	CUSHION (LOWER) (MX)
	3-756-440-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE, DUTCH, SWEDISH, GERMAN, ITALIAN) (E,EA)
	3-756-440-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH, PORTUGUESE) (MX)
	8-952-447-90	HEADPHONE MDR-006L/1 SET (MX)
	8-953-538-90	HEADPHONE MDR-E741//K SET (E,EA)
	X-3329-657-1	ATTACHMENT ASSY (E,EA)