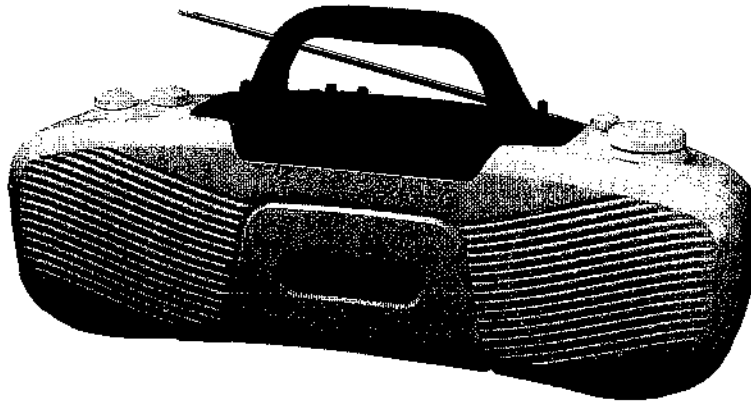


# CFS-903L

## SERVICE MANUAL

*AEP Model  
UK Model*



### SPECIFICATIONS

Tuner frequency range	FM: 87.6–107MHz MW: 531–1,602kHz LW: 153–281kHz SW: 5.95–18MHz
IF	10.7MHz (FM), 455kHz (MW)
Frequency response	80Hz–10,000Hz
Speakers	10cm (4 in.) dia., full range x2
Outputs	Headphones jack (stereo minijack) for 8–300ohm impedance headphones
Maximum power output	4.4W (2.2W + 2.2W)
Power requirements	9V DC, six R14 (size C) batteries DC IN 9V jack accepts: AC power adaptor (supplied) Power requirements (supplied AC power adaptor) UK model: 240V AC, 50Hz AEP model: 220V AC, 50Hz DCC-120 car battery cord (optional) for use with 12V car battery
Battery life	Batteries FM recording Sony SUM-2 (NS) Approx. 7.5 hours Sony AM2 alkaline Approx. 27 hours
Dimensions	Approx. 440x202x128mm (w/h/d) (17 3/8x8x5 1/8 inches) incl. projecting parts and controls
Weight	Approx. 2.65kg (5 lb 13oz) incl. batteries
Accessory supplied	AC power adaptor (1)

Model Name Using Similar Mechanism	CFS-W401L
Tape Transport Mechanism Type	MF-903-78D

#### DO NOT IMMERSE IN WATER

- Before opening or shutting the cassette holder or battery compartment lid, be sure to wipe off water, dust or sand on the outside of the unit.
- Water in the headphones jack may cause rusting. Cover the jack with the attached rubber cap when the headphones are not used.
- If the unit is splashed with salt water wipe clean with a damp cloth, then dry with a soft dry cloth. Do NOT wash under running water; do NOT use soap or detergent; do NOT dry with an electric hair dryer.
- The supplied AC power adaptor is not water resistant. To prevent shock hazard, avoid using the set near water during AC operation.

#### Note:

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

Design and specifications subject to change without notice.



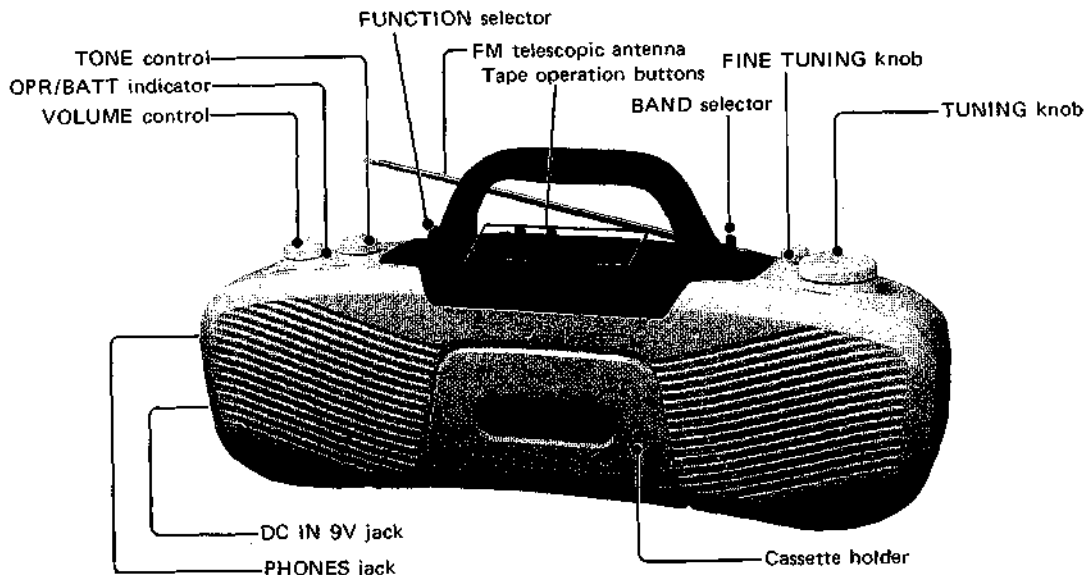
# RADIO CASSETTE-CORDER SONY®

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**SECTION 1  
GENERAL**

[PARTS IDENTIFICATION]



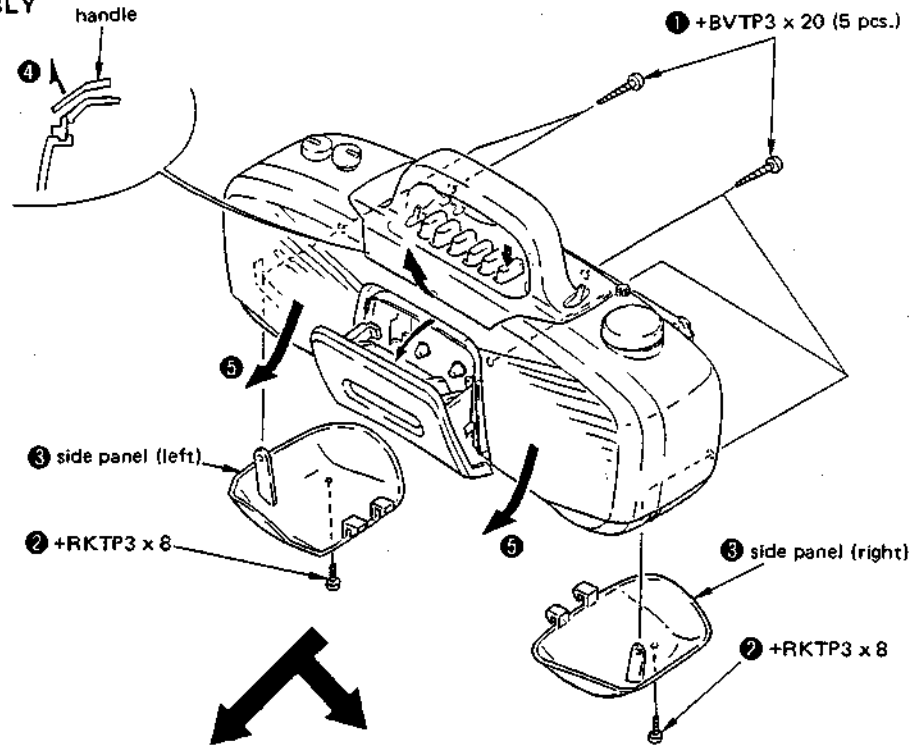
**SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

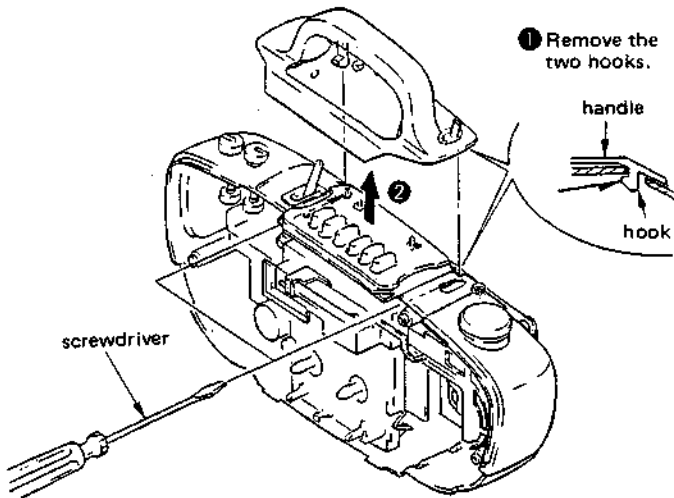
## SECTION 2 DISASSEMBLY

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

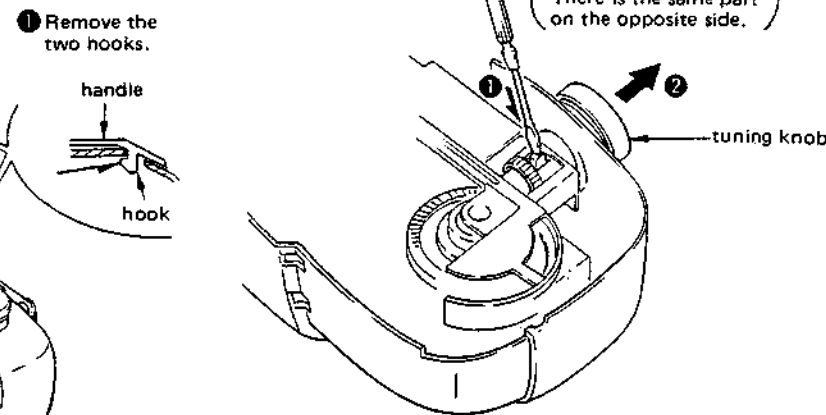
### FRONT CABINET ASSEMBLY



### HANDLE ASSEMBLY

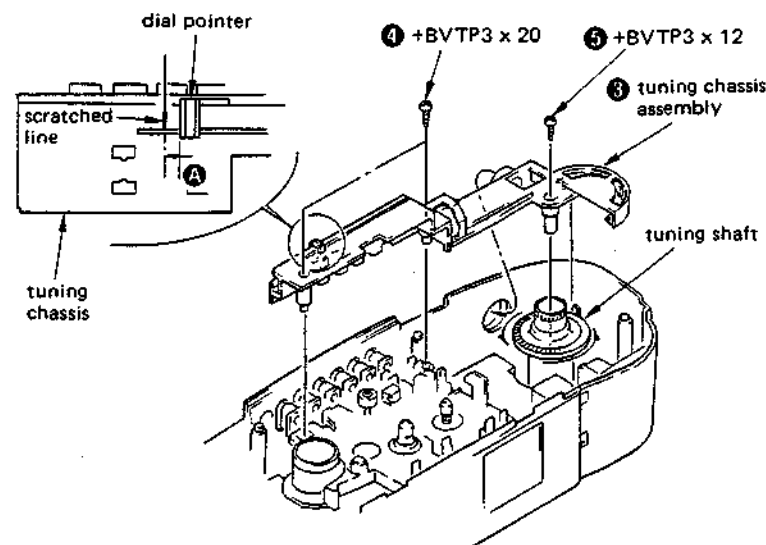


### TUNING KNOB



### DIAL POINTER SETTING

- Turn the tuning shaft fully counterclockwise.
- Set the left side of the dial pointer to the scratched line on the tuning chassis. (Arrow A)



## SECTION 3 MECHANICAL ADJUSTMENTS

### PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab:
  - record/playback head
  - erase head
  - capstan
  - pinch roller
  - rubber belts
  - idlers
- Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.
- Power supply voltage: 9V dc.

### Torque Measurement

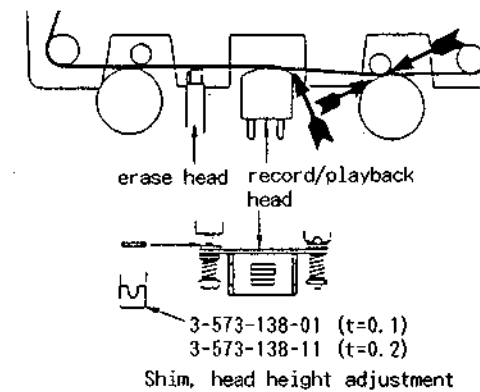
Mode	Torque meter	Meter reading
FWD	CQ-102C	30 - 75 g-cm (0.42 - 1.04 oz-inch)
FWD back tension		2 - 6 g-cm (0.03 - 0.08 oz-inch)
REV	CQ-102RB	30 - 75 g-cm (0.42 - 1.04 oz-inch)
REV back tension		2 - 6 g-cm (0.03 - 0.08 oz-inch)
FF, REW	CQ-201B	60 - 130 g-cm (0.83 - 1.81 oz-inch)

### Tape Tension Measurement

Mode	Tension meter	Meter reading
FWD	CQ-403A	more than 90 g
REV	CQ-403R	(more than 3.18 oz)

### Head Height Adjustment

- Install a mirror cassette. (CQ-009C Part No. 8-909-708-01)
- In record mode and viewing from the front, adjust the head height to eliminate tape curl and tape twist at portions of arrow.
- Perform this adjustment in both FWD and REV modes.



## SECTION 4 ELECTRICAL ADJUSTMENTS

### 3-1. TAPE RECORDER SECTION

#### • Test Tape

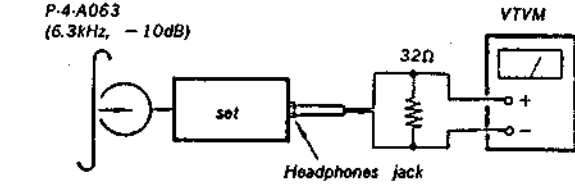
Type	Signal	Used for
WS-48A	3kHz, 0dB	tape speed adjustment
P-4-A063	6.3kHz, -10dB	head azimuth adjustment

#### REC/PB Head Azimuth Adjustment

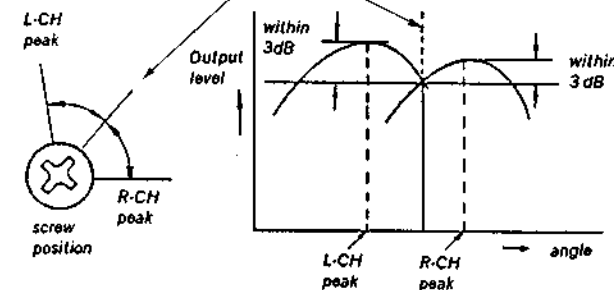
Perform adjustment in both FWD and REV modes. After adjustment, confirm the specification in FWD mode.

#### Procedure:

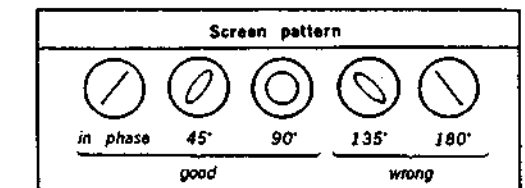
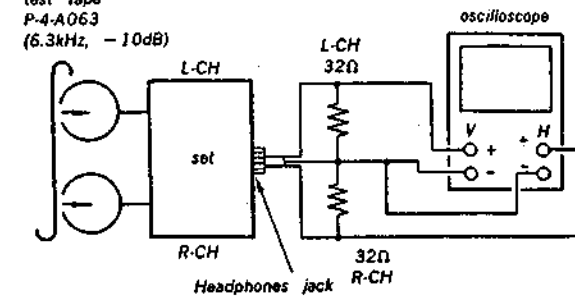
- Mode: playback  
test tape  
P-4-A063  
(6.3kHz, -10dB)



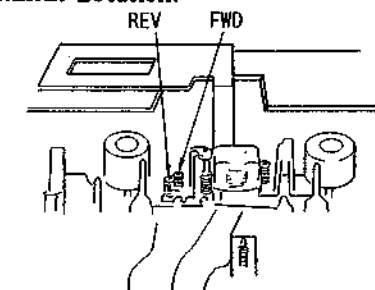
- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 3dB.



- Phase Check  
Mode: playback  
test tape  
P-4-A063  
(6.3kHz, -10dB)

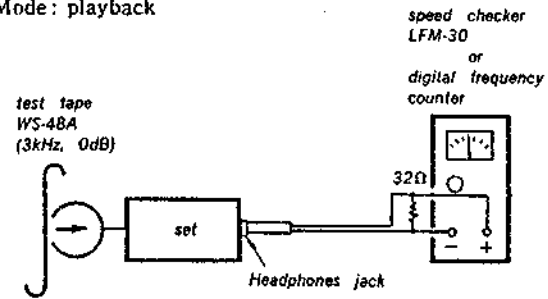


#### Adjustment Location:



### Tape Speed Adjustment

Procedure:  
Mode: playback

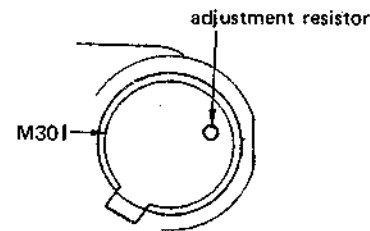


Adjustment Value:

Speed checker	Digital frequency counter
±3%	2,910 to 3,090 Hz

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

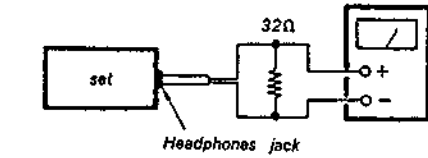
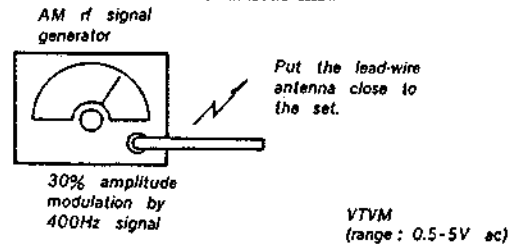
Adjustment Location:



### 3-2. RADIO SECTION

#### AM SECTION

Setting:  
FUNCTION switch: AM (MW/LW/SW)  
FINE TUNING: mechanical mid



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

AM IF ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
T1	455kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	CT4
520kHz	1,680kHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	CT3
620kHz	1,400kHz

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L7	CT7
145kHz	300kHz

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L10	CT10
160kHz	260kHz

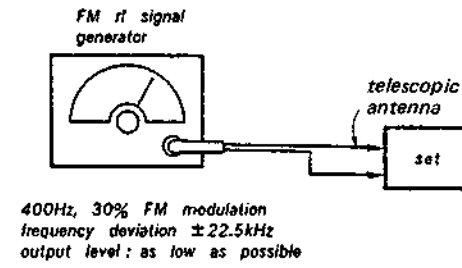
* SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L6	CT6
5.8MHz	18.4MHz

* SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L8	7MHz

\*: Extend telescopic antenna fully.

#### FM SECTION

Setting:  
FUNCTION switch: FM

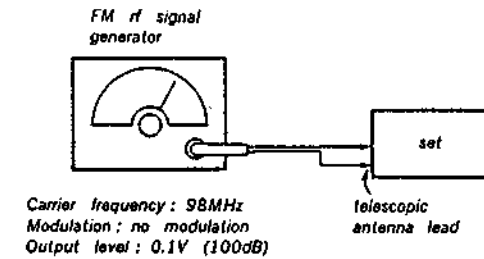


FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L2	CT2
87.0MHz	108.3MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1	CT1
87.0MHz	108.3MHz

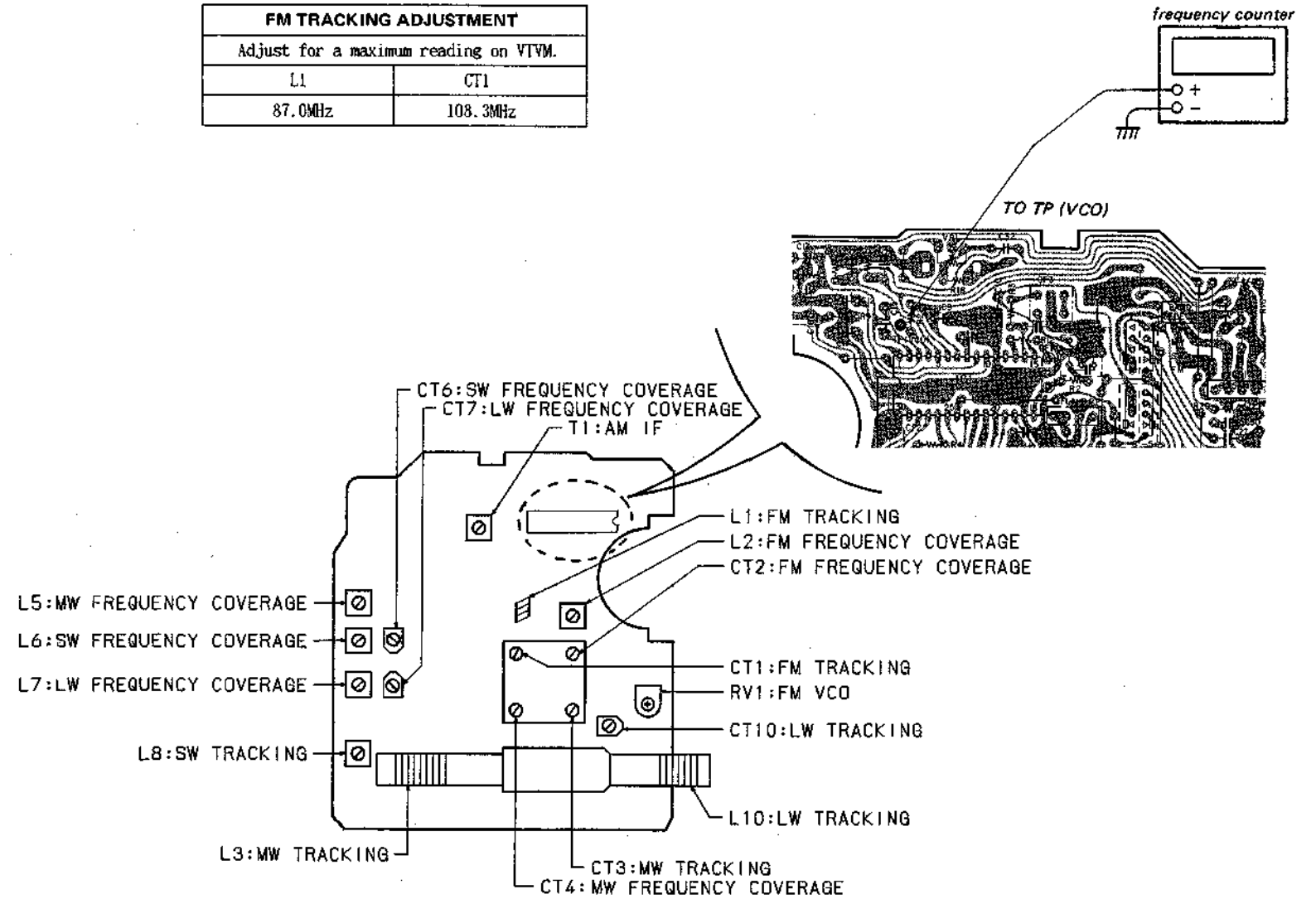
### VCO Adjustment

Procedure:



1. Connect frequency counter to TP (VCO).
2. Tune the set to 98MHz.
3. Adjust RV1 for 76kHz±500Hz reading on the frequency counter.

Adjustment Location: tuner board (component side)



## SECTION 5 DIAGRAMS

### Note on Schematic Diagram:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\mu\text{F}$
- 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}W$  or less unless otherwise specified.
- Total current is measured with no cassette installed.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltages are dc with respect to ground under no-signal (detuned) conditions.

### RADIO SECTION

no mark: FM  
( ): AM

### AUDIO SECTION

no mark: PB  
( ): REC  
( ): AMS

- Voltages are taken with a VOM (10  $M\Omega/V$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.

$\Rightarrow$  : FM  $\Rightarrow$  : PB  
 $\Rightarrow$  : REC

### 5-1. SEMICONDUCTOR LEAD LAYOUTS

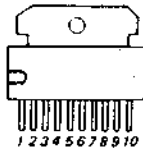
BA338



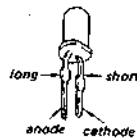
ZSA952



BA5410



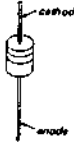
TLR124



DTA114ES  
DTC114ES  
DTC143TS



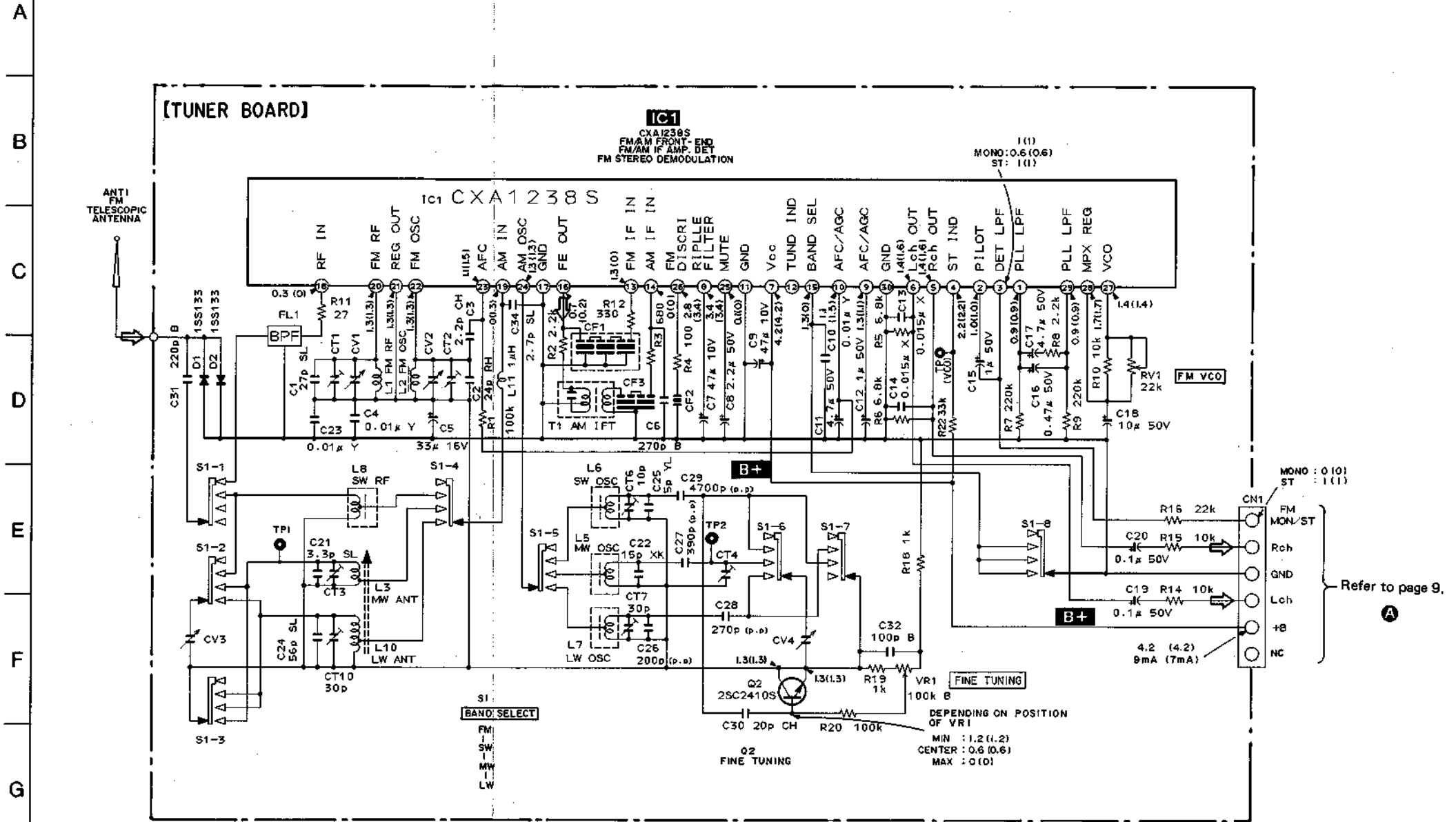
1SS119



2SA733-K  
2SC1815GR  
2SC2001  
2SD1387



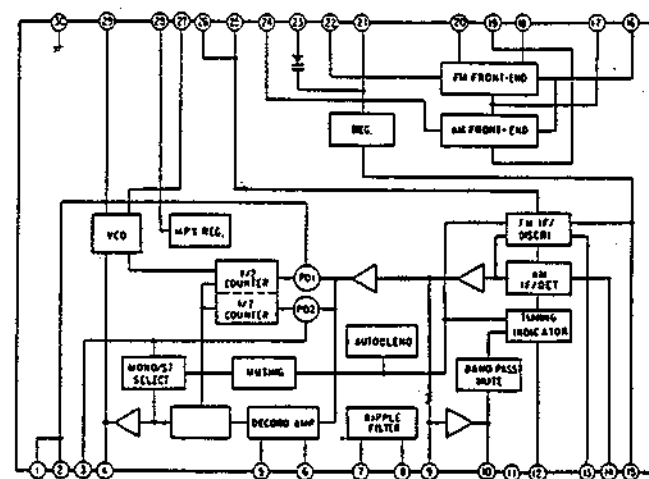
5-2. SCHEMATIC DIAGRAM (Tuner Section)



Refer to page 9.  
A

### IC Block Diagram

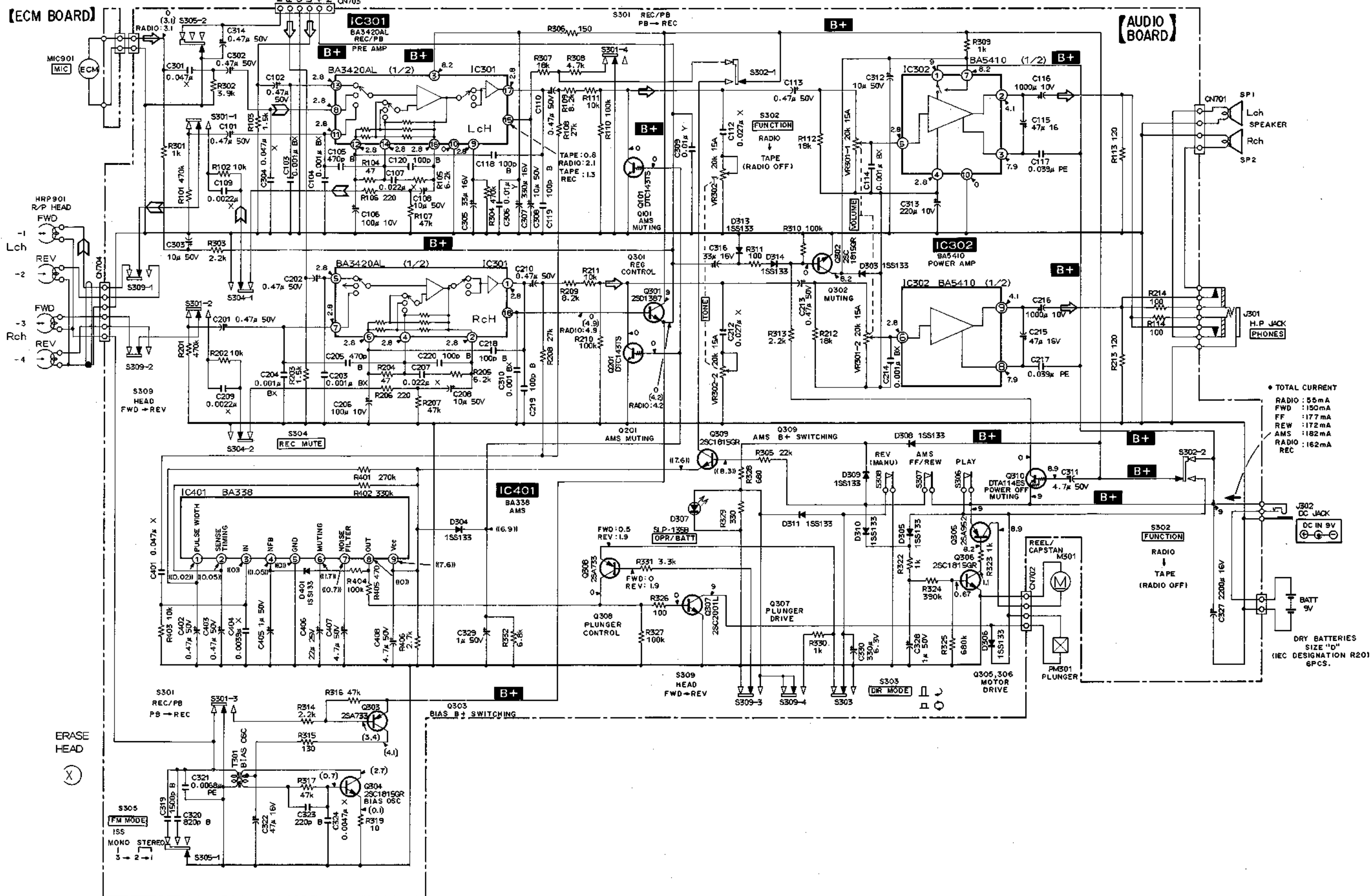
IC1 CXA1238S



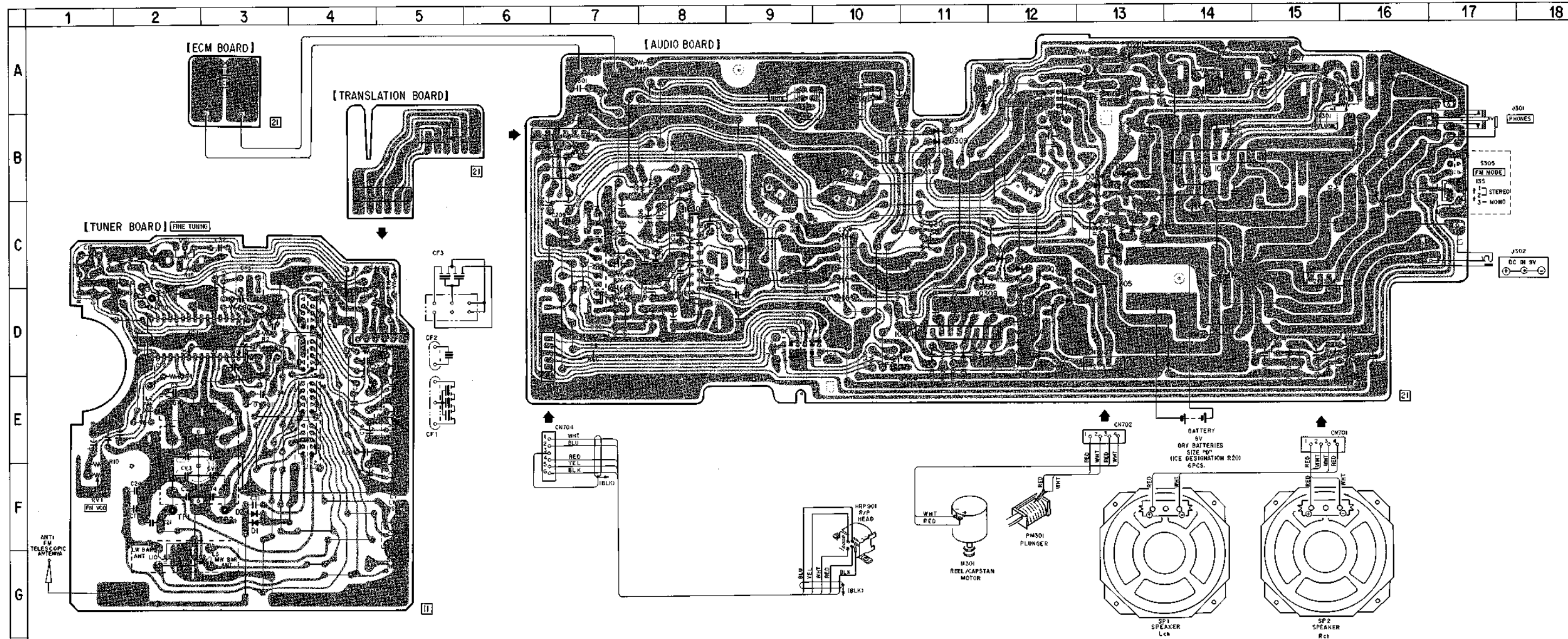
5-3. SCHEMATIC DIAGRAM (AUDIO Section)

• See page 7 for Note on Schematic Diagram.

Refer to page 8.



### 5.4. PRINTED WIRING BOARDS



● Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D1	F-3	D313	C-13	Q301	C-11
D2	F-3	D314	C-13	Q302	C-13
D302	B-12	D401	E-11	Q303	C-13
D303	B-13			Q304	D-15
D304	B-13	IC1	D-2	Q305	D-13
D305	C-12	IC301	C-8	Q306	D-13
D306	D-13	IC302	B-14	Q307	D-12
D307	A-15	IC401	D-11	Q308	E-10
D308	A-11			Q309	D-11
D309	B-11	Q1	D-3	Q310	B-12
D310	C-12	Q101	A-13		
D311	B-11	Q201	A-13		

Note:

● ○ : parts extracted from the component side.



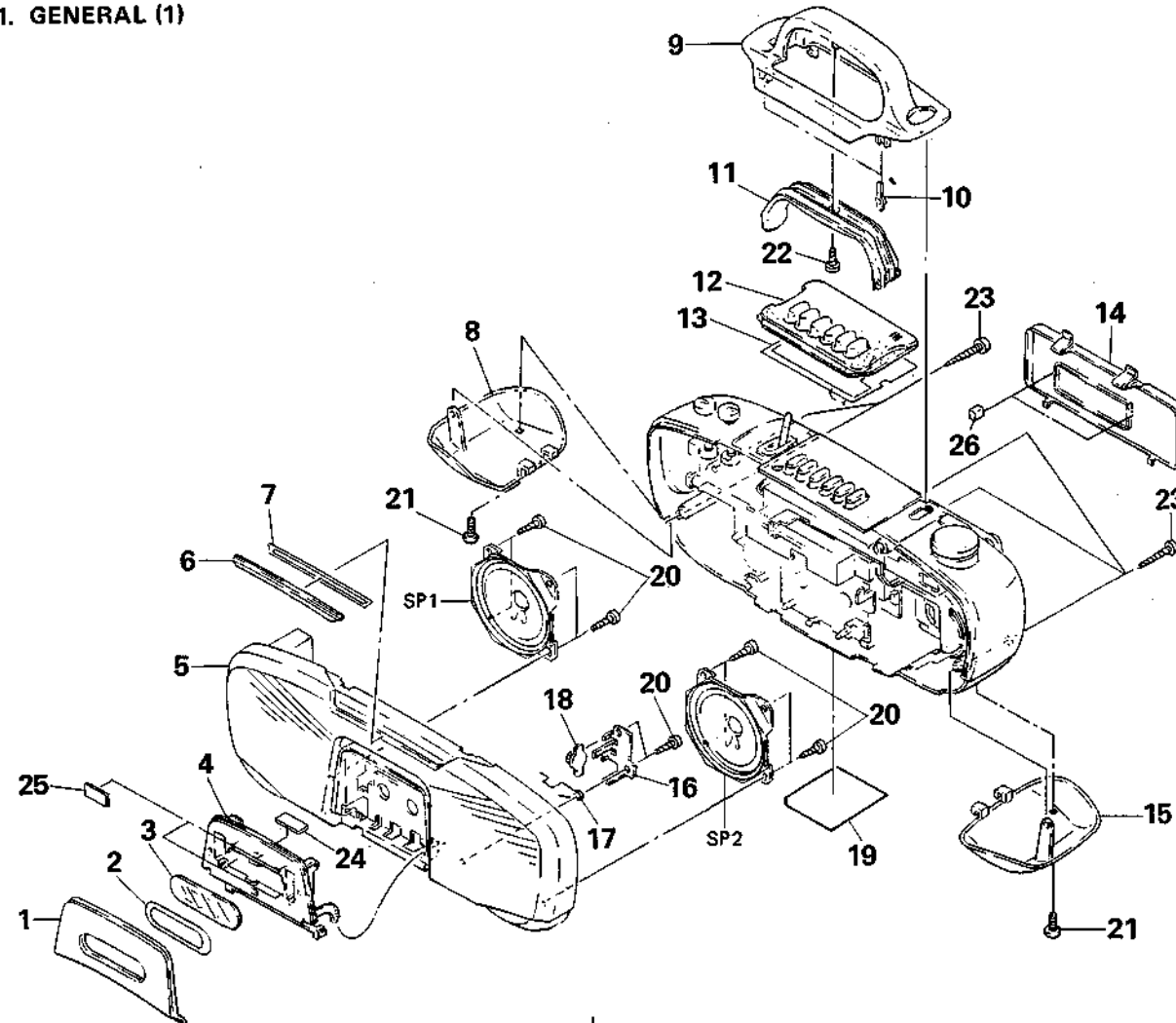
## SECTION 6 EXPLODED VIEWS

### 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.

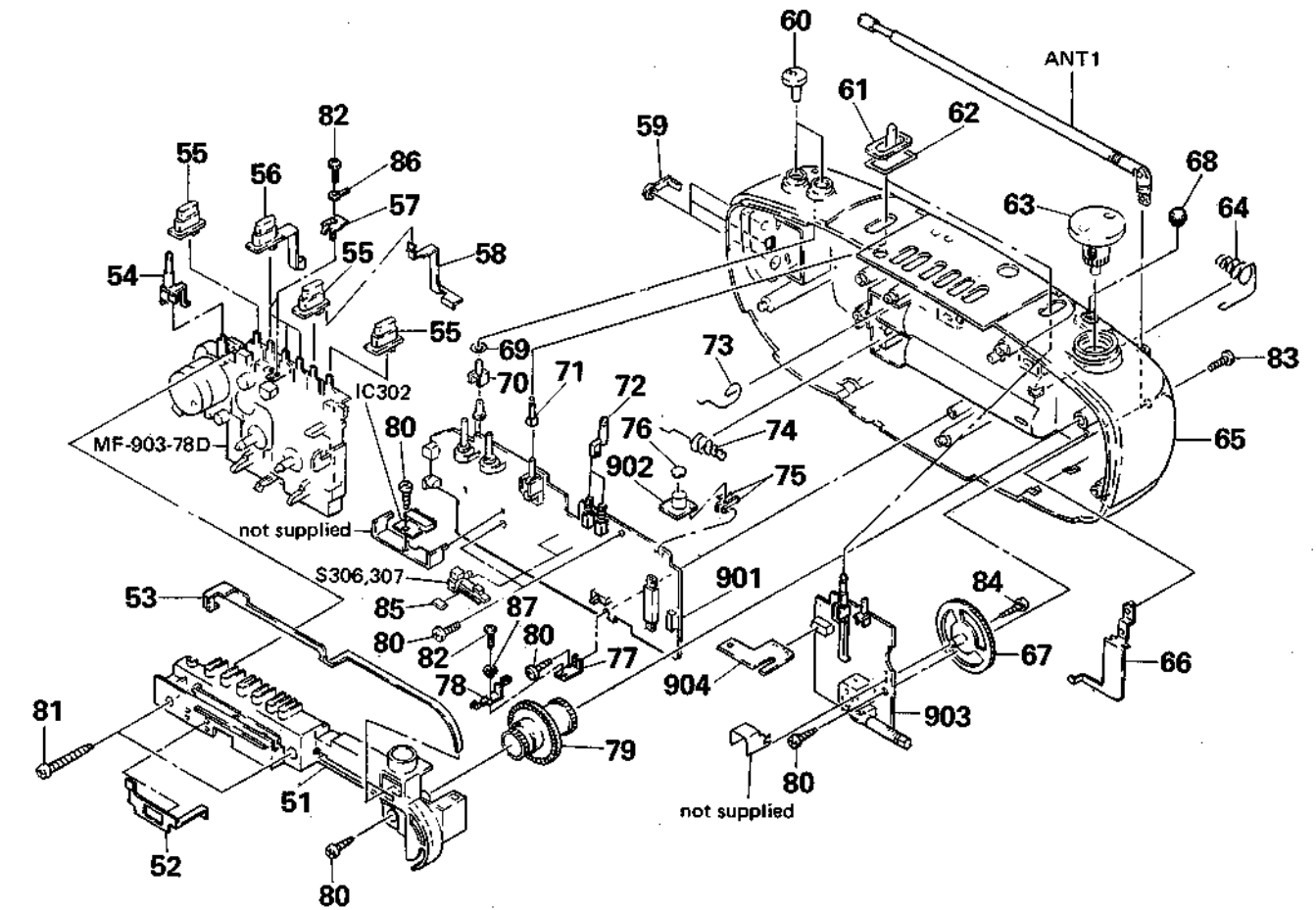
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts  
Example:  
(RED) ... KNOB, BALANCE (WHITE)  
↑ Cabinet's Color      ↑ Parts' Color

### 1. GENERAL (1)



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	3-352-229-01	(YEL)...LID, CASSETTE (YEL)		14	3-352-228-01	(YEL)...LID, BATTERY CASE (YEL)	
	3-352-229-11	(WHT)...LID, CASSETTE (WHT)			3-352-228-11	(WHT)...LID, BATTERY CASE (WHT)	
2	3-352-239-01	SHEET (B), ADHESIVE		15	3-352-225-01	PANEL (RIGHT), SIDE (GRY)	
3	3-352-203-21	WINDOW, CASSETTE		16	*3-352-208-01	BRACKET (A)	
4	3-352-227-01	HOLDER, CASSETTE		17	3-352-209-01	SPRING (CASSETTE)	
5	3-352-268-21	(YEL)...CABINET (FRONT)(YEL)		18	3-319-224-31	DAMPER, SMALL	
	3-352-268-31	(WHT)...CABINET (FRONT)(WHT)		19	*3-352-250-01	(AEP)...LABEL, MODEL NUMBER	
6	3-352-202-01	WINDOW, DIAL			*3-352-251-01	(UK)...LABEL, MODEL NUMBER	
7	3-352-243-01	SHEET (A), ADHESIVE		20	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
8	3-352-226-01	PANEL (LEFT), SIDE (GRY)		21	7-685-246-19	SCREW +RKTP 3X8 TYPE2 N-S	
9	3-352-238-11	HANDLE (GRY)		22	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
10	*3-352-267-01	BRACKET (C)		23	7-685-651-79	SCREW +BVTP 3X20 TYPE2 IT-3	
11	3-352-223-01	PLATE, HANDLE (GRY)		24	*3-880-474-01	CUSHION, 15X5X0.3	
12	3-352-218-01	PACKING (MD BUTTON)		25	3-831-441-XX	CUSHION, STOPPER	
13	3-352-244-01	SHEET (C), ADHESIVE		26	*9-911-843-XX	CUSHION	
				SP1	1-503-823-11	SPEAKER	
				SP2	1-503-823-11	SPEAKER	

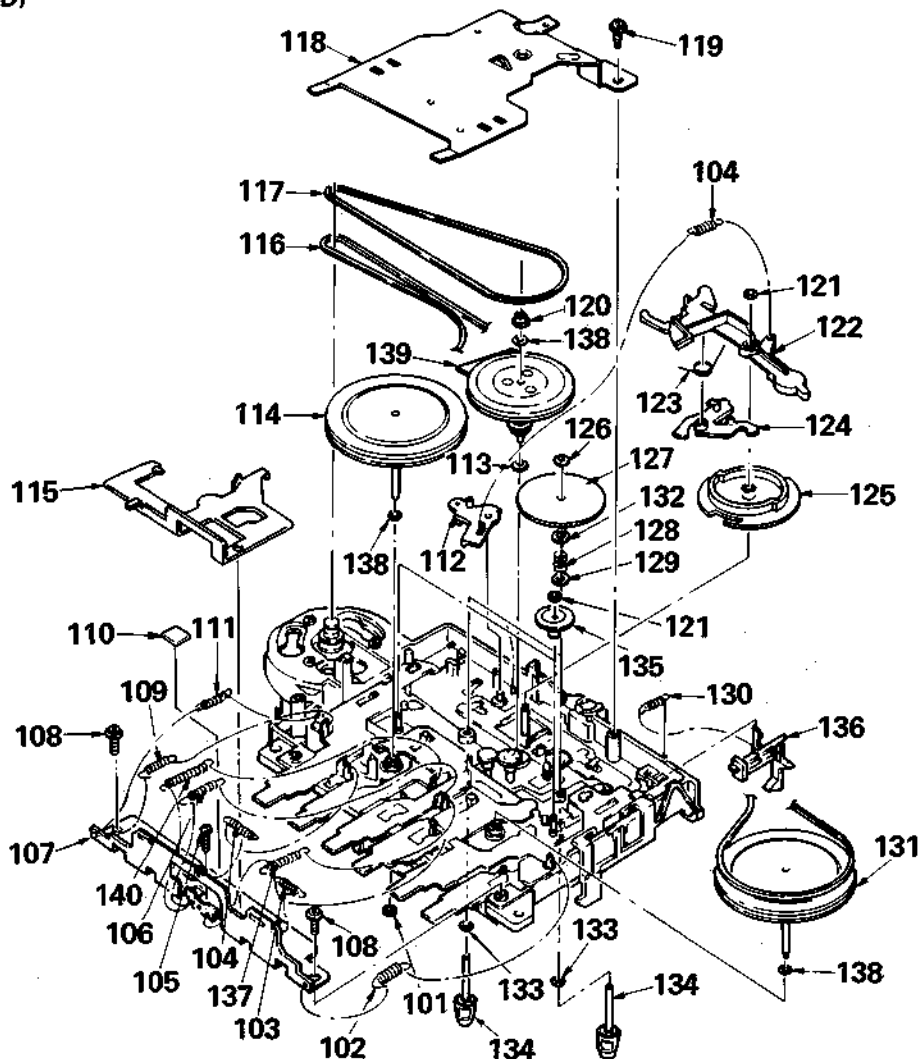
### 2. GENERAL (2)



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	*3-352-230-01	CHASSIS (TUN)		69	3-352-245-01	SHEET (E), ADHESIVE	
52	*3-352-231-01	PLATE, INDICATION		70	3-352-205-01	WINDOW (LED)	
53	*3-352-224-01	POINTER		71	*3-352-216-01	KNOB (FUNC)	
54	*3-352-235-01	BUTTON (DIR)		72	*3-352-233-01	KNOB (MODE)	
55	*3-352-219-01	BUTTON (B)		73	3-352-214-01	TERMINAL (+), BATTERY	
56	*3-352-220-01	BUTTON (A)		74	3-352-213-01	TERMINAL (-), BATTERY	
57	*3-352-271-01	BRACKET (D)		75	3-352-211-01	TERMINAL BOARD (ECM)	
58	*3-352-207-01	LEVER (REC)		76	3-326-355-01	SHEET, MIC	
59	3-352-215-01	PACKING (JACK)		77	*3-352-201-01	BRACKET (B)	
60	3-352-204-01	(YEL)...KNOB (VOL)(YEL)		78	3-352-232-01	SPRING (REVERSE)	
	3-352-204-11	(WHT)...KNOB (VOL)(WHT)		79	*3-352-222-01	SHAFT, TUNING	
61	3-352-217-01	PACKING (FUNC)		80	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
62	3-352-240-01	SHEET (D), ADHESIVE		81	7-685-651-79	SCREW +BVTP 3X20 TYPE2 IT-3	
63	3-352-221-01	(YEL)...KNOB (TUNING)(YEL)		82	7-621-772-10	SCREW +B 2X4	
	3-352-221-11	(WHT)...KNOB (TUNING)(WHT)		83	7-682-549-04	SCREW +B 3X10	
64	3-352-212-01	TERMINAL (+ -), BATTERY		84	7-621-770-87	SCREW +P 2.6X5	
65	3-352-236-81	(YEL)...CABINET (REAR)(YEL)		85	9-911-844-XX	SPACER, LEAF	
	3-352-236-91	(WHT)...CABINET (REAR)(WHT)		86	7-623-505-01	LUG, 2	
66	*3-352-210-01	TERMINAL BOARD, ANTENNA		87	3-352-286-01	SPACER	
67	*3-352-206-01	DRUM, DIAL		901	*A-3270-634-A	PC BOARD ASSY, AUDIO	
68	3-352-234-01	(YEL)...KNOB (FINE)(YEL)		902	*1-630-149-21	PC BOARD, ECM	
	3-352-234-11	(WHT)...KNOB (FINE)(WHT)		903	*A-3270-636-A	PC BOARD ASSY, TUNER	
				904	*1-631-151-21	PC BOARD, TRANSLATION	
				ANT1	1-501-436-11	ANTENNA, TELESCOPIC	

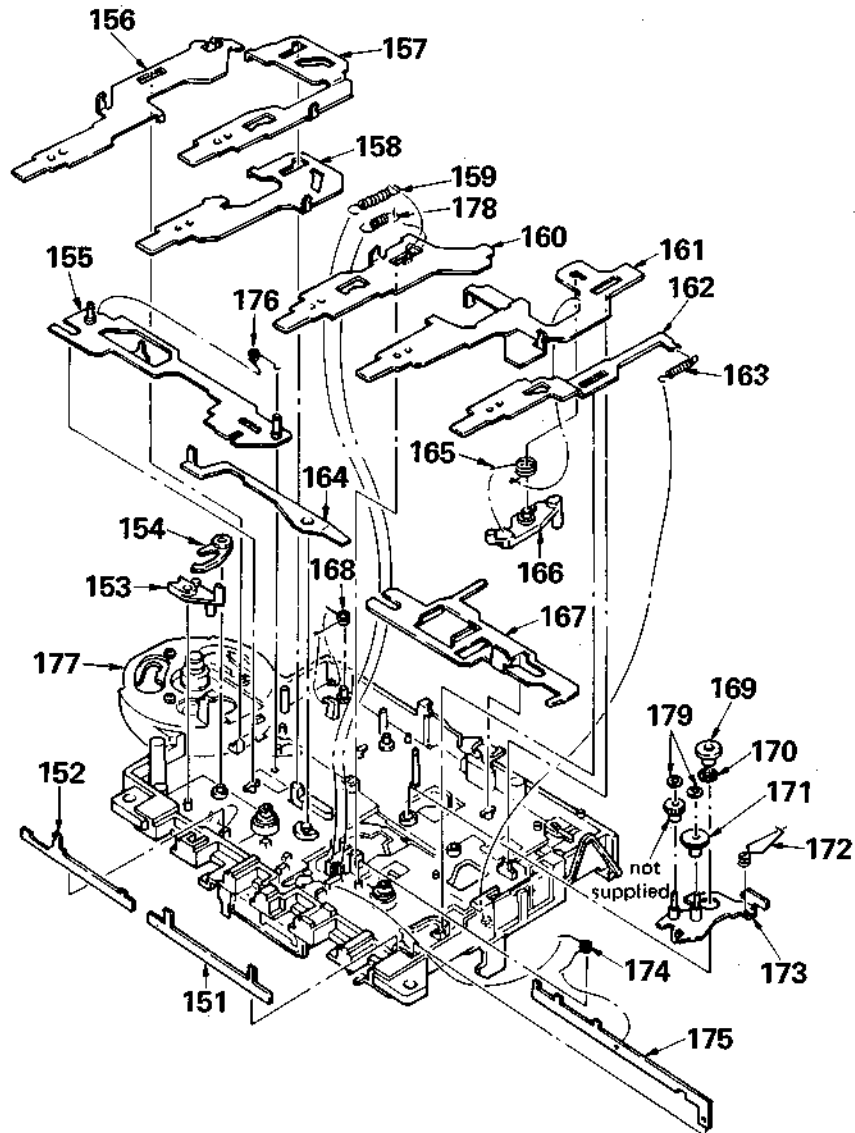


3. MECHANISM (1)  
(MF-903-78D)



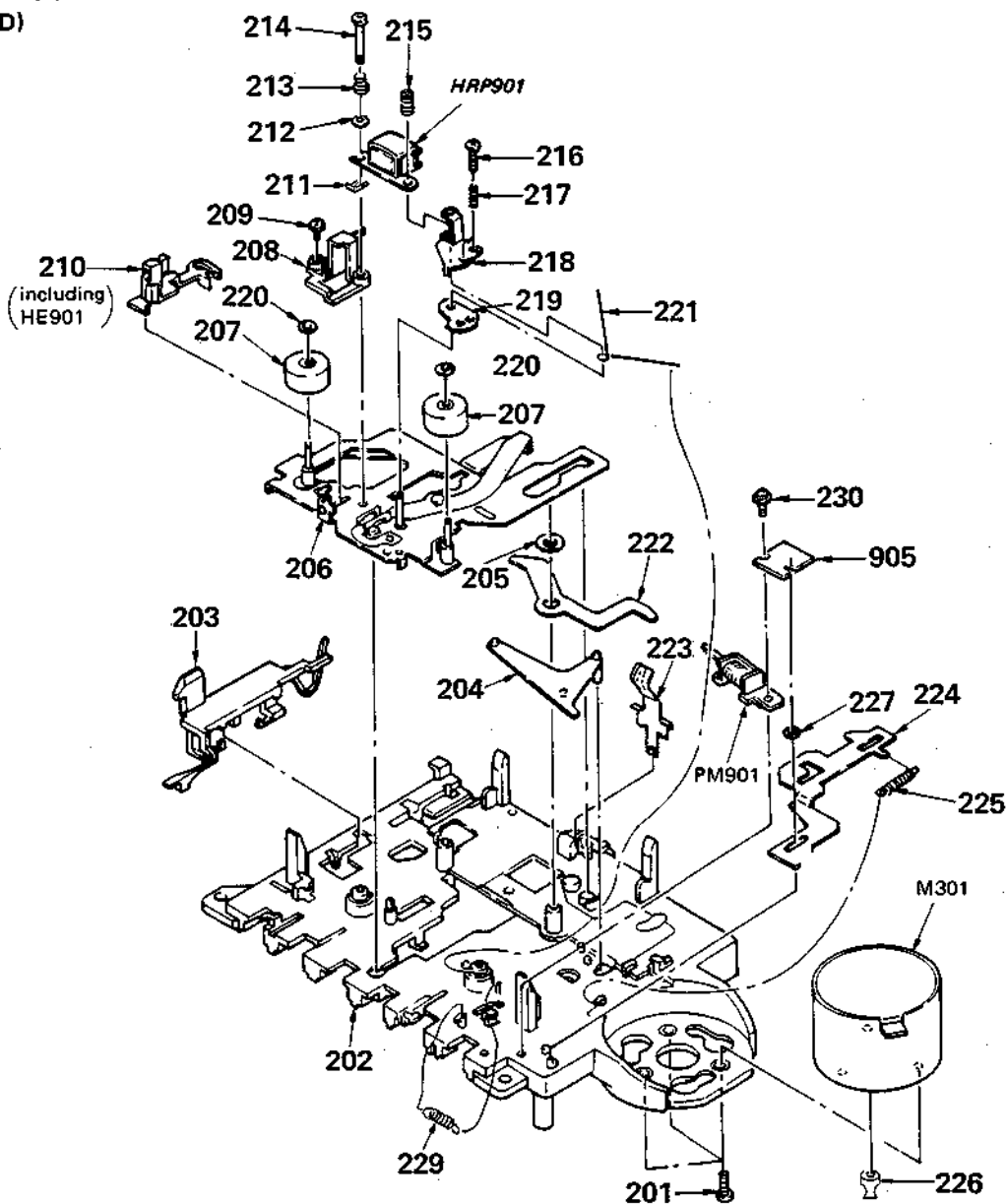
No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
101	3-325-698-01	RING, RETAINING		121	3-307-948-01	WASHER, NYLON	
102	3-322-691-01	SPRING, TENSION (REC)		122	3-330-833-01	LEVER (C), OA	
103	3-330-605-01	SPRING, TENSION		123	3-322-534-01	SPRING	
104	3-322-527-01	SPRING, TENSION		124	3-330-826-01	LEVER (D), OA	
105	7-685-105-19	TPG +P 2X8, TYPE 2, NON-SLIT		125	3-322-553-01	GEAR, CAM	
106	3-322-679-01	SPRING, TENSION (REW)		126	3-578-223-21	WASHER, NYLON	
107	*3-322-518-01	RETAINER, LEVER		127	3-322-508-01	GEAR, REEL	
108	7-687-233-11	SCREW (+ PTPWH) (2.6X6)		128	3-321-541-01	SPRING, COMPRESSION	
109	3-322-679-01	SPRING, TENSION (PAUSE)		129	3-322-659-01	WASHER (A)	
110	3-831-441-11	CUSHION (T)		130	3-313-384-01	SPRING, TENSION	
111	3-530-260-00	SPRING, TENSION		131	*X-3341-302-1	FLYWHEEL (RV) ASSY	
112	3-330-827-01	LEVER (B), GEAR LOCK		132	3-322-660-01	WASHER (B)	
113	3-701-437-01	WASHER (t=0.13)		133	3-545-715-00	WASHER	
114	*X-3341-303-1	FLYWHEEL (FW) ASSY		134	X-3322-502-1	CLAW ASSY, REEL	
115	*3-330-606-01	LEVER, SELECTION, S.OFF		135	3-322-556-01	GEAR, FR	
116	3-322-533-01	BELT		136	3-322-511-01	CLAW, ERASING PROTECTION	
117	3-657-035-XX	BELT, COUNTER		137	3-322-526-01	SPRING, TENSION(POWER TENSION)	
118	*3-322-519-01	RETAINER, THRUST		138	3-701-437-11	WASHER (t=0.25)	
119	7-685-134-19	SCREW (+ PTPWH) (2.6X8)		139	X-3322-540-1	DETECTION BLOCK ASSY	
120	3-322-566-01	BEARING, PULLEY		140	3-328-103-01	SPRING, TENSION (FF)	

4. MECHANISM (2)  
(MF-903-78D)



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
151	*3-330-604-01	PLATE (C), LOCK		166	3-322-554-01	ARM, REC LOCK	
152	*3-322-587-01	PLATE (B), LOCK		167	*3-330-602-01	LEVER (R), DIRECTION	
153	X-3330-610-1	LEVER (R) ASSY, S.OFF		168	3-322-577-01	SPRING	
154	3-322-555-01	LEVER (E), S.OFF		169	3-322-513-01	COLLAR	
155	*X-3322-505-1	LEVER ASSY, FR		170	3-322-689-01	RING	
156	*3-330-829-11	LEVER (C), PAUSE BUTTON		171	3-343-146-01	GEAR (A), FWD	
157	3-322-515-11	LEVER, REW BUTTON		172	3-322-576-01	SPRING	
158	*3-322-585-11	LEVER, FF BUTTON		173	*X-3339-320-1	ARM ASSY (M), FWD GEAR	
159	3-322-693-01	SPRING, TENSION		174	3-322-579-01	SPRING	
160	*3-322-584-11	LEVER, PLAY BUTTON		175	*3-322-589-01	LEVER, SWITCH	
161	*3-322-591-11	LEVER, REC BUTTON		176	3-322-578-01	SPRING	
162	*3-322-583-11	LEVER, STOP BUTTON		177	A-3102-061-A	CHASSIS ASSY	
163	3-328-102-01	SPRING, TENSION (POWER TENSION)		178	3-322-520-01	SPRING, TENSION	
164	*3-322-517-01	LEVER, AMS		179	3-570-615-00	POLY-WASHER (DIA.1.2)	
165	3-322-575-01	SPRING					

5. MECHANISM (3)  
(MF-903-78D)



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
201	7-621-770-87	SCREW +P 2.6X5		216	7-627-851-27	SCREW, PRECISION +P 1.4X5	
202	A-3102-109-A	CHASSIS ASSY, MECHANICAL		217	3-322-531-01	SPRING, COMPRESSION	
203	3-322-512-01	LEVER, EJECT		218	*3-341-161-01	LEVER, AZIMUTH	
204	3-322-514-01	LINK (A)		219	3-326-622-01	RETAINER, AZIMUTH	
205	3-701-443-11	WASHER		220	3-307-948-01	WASHER, NYLON	
206	X-3337-810-1	CHASSIS (R) ASSY, HEAD		221	3-341-164-01	SPRING	
207	3-703-597-41	PINCH ROLLER, STANDARD		222	*3-322-590-02	LEVER, DIRECTION RELEASE	
208	*3-339-701-01	GUIDE, TAPE		223	3-322-595-01	SPRING	
209	7-621-772-20	SCREW +B 2X5		224	*3-322-594-11	LEVER, MANUAL BUTTON	
210	A-3114-042-A	ARM ASSY, EBF		225	3-328-101-01	SPRING, TENSION (POWER TENSION)	
211	3-578-138-01	SHIM (t=0.1)		226	X-3322-524-1	PULLEY ASSY	
	3-578-138-11	SHIM (t=0.2)		227	3-701-437-01	WASHER (t=0.13)	
212	7-688-001-01	W 2, SMALL		229	3-330-633-01	SPRING, TENSION	
213	3-318-106-01	SPRING (H), COMPRESSION		230	7-685-105-19	SCREW (2X8), + PTPWH	
214	3-322-567-11	SCREW, PAN, STEP		905	*1-602-735-00	PC BOARD, PLUNGER SOLENOID	
215	3-341-163-01	SPRING, COMPRESSION		HRP901	1-543-389-11	HEAD, MAGNETIC (REC/PB)	
				M301	1-541-625-11	MOTOR, DC	

## SECTION 7 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  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description					
901	*A-3270-634-A	PC BOARD ASSY, AUDIO	C109	1-161-375-00	CERAMIC	0.0022MF	20%	16V		
902	*1-630-149-21	PC BOARD, ECM	C110	1-124-902-00	ELECT	0.47MF	20%	50V		
903	*A-3270-636-A	PC BOARD ASSY, TUNER	C112	1-162-844-11	CERAMIC	0.027MF	10%	16V		
904	*1-631-151-21	PC BOARD, TRANSLATION	C113	1-124-902-00	ELECT	0.47MF	20%	50V		
905	*1-602-735-00	PC BOARD, PLUNGER SOLENOID	C115	1-124-477-11	ELECT	47MF	20%	16V		
ANT1	1-501-436-11	ANTENNA, TELESCOPIC	C116	1-124-473-11	ELECT	1000MF	20%	10V		
C1	1-162-209-31	CERAMIC 27PF	5%	50V	C117	1-130-490-11	MYLAR	0.039MF	5%	50V
C2	1-102-960-00	CERAMIC 24PF	5%	50V	C118	1-162-282-31	CERAMIC	100PF	10%	50V
C3	1-162-191-31	CERAMIC 2.2PF	10%	50V	C119	1-162-282-31	CERAMIC	100PF	10%	50V
C4	1-161-379-00	CERAMIC 0.01MF	30%	16V	C120	1-162-282-31	CERAMIC	100PF	10%	50V
C5	1-124-963-11	ELECT 33MF	20%	16V	C201	1-124-902-00	ELECT	0.47MF	20%	50V
C6	1-162-287-31	CERAMIC 270PF	10%	50V	C202	1-124-902-00	ELECT	0.47MF	20%	50V
C7	1-124-446-11	ELECT 47MF	20%	10V	C205	1-162-290-31	CERAMIC	470PF	10%	50V
C8	1-124-925-11	ELECT 2.2MF	20%	50V	C206	1-124-443-00	ELECT	100MF	20%	10V
C9	1-124-446-11	ELECT 47MF	20%	10V	C207	1-162-843-11	CERAMIC	0.022MF	10%	16V
C10	1-161-379-00	CERAMIC 0.01MF	30%	16V	C208	1-123-875-11	ELECT	10MF	20%	50V
C11	1-124-927-11	ELECT 4.7MF	20%	50V	C209	1-161-375-00	CERAMIC	0.0022MF	20%	16V
C12	1-124-499-11	ELECT 1MF	20%	50V	C210	1-124-902-00	ELECT	0.47MF	20%	50V
C13	1-161-053-00	CERAMIC 0.015MF	10%	16V	C212	1-162-844-11	CERAMIC	0.027MF	10%	16V
C14	1-161-053-00	CERAMIC 0.015MF	10%	16V	C213	1-124-902-00	ELECT	0.47MF	20%	50V
C15	1-124-499-11	ELECT 1MF	20%	50V	C215	1-124-477-11	ELECT	47MF	20%	16V
C16	1-124-902-00	ELECT 0.47MF	20%	50V	C216	1-124-473-11	ELECT	1000MF	20%	10V
C17	1-124-927-11	ELECT 4.7MF	20%	50V	C217	1-130-490-11	MYLAR	0.039MF	5%	50V
C18	1-123-875-11	ELECT 10MF	20%	50V	C218	1-162-282-31	CERAMIC	100PF	10%	50V
C19	1-124-463-00	ELECT 0.1MF	20%	50V	C219	1-162-282-31	CERAMIC	100PF	10%	50V
C20	1-124-463-00	ELECT 0.1MF	20%	50V	C220	1-162-282-31	CERAMIC	100PF	10%	50V
C21	1-162-193-31	CERAMIC 3.3PF	10%	50V	C301	1-162-847-11	CERAMIC	0.047MF	10%	16V
C22	1-102-291-11	CERAMIC 15PF	5%	50V	C302	1-124-902-00	ELECT	0.47MF	20%	50V
C23	1-161-379-00	CERAMIC 0.01MF	30%	16V	C303	1-123-875-11	ELECT	10MF	20%	50V
C24	1-162-217-31	CERAMIC 56PF	5%	50V	C304	1-162-847-11	CERAMIC	0.047MF	10%	16V
C25	1-102-942-00	CERAMIC 5PF	0.5PF	50V	C305	1-124-963-11	ELECT	33MF	20%	16V
C26	1-136-010-00	FILM 200PF	5%	50V	C306	1-161-379-00	CERAMIC	0.01MF	30%	16V
C27	1-130-013-00	FILM 390PF	5%	50V	C307	1-124-119-00	ELECT	330MF	20%	16V
C28	1-130-011-00	FILM 270PF	5%	50V	C308	1-123-875-11	ELECT	10MF	20%	50V
C29	1-136-287-11	FILM 0.0047MF	5%	50V	C309	1-161-379-00	CERAMIC	0.01MF	30%	16V
C30	1-162-206-31	CERAMIC 20PF	5%	50V	C311	1-124-927-11	ELECT	4.7MF	20%	50V
C31	1-162-286-31	CERAMIC 220PF	10%	50V	C312	1-123-875-11	ELECT	10MF	20%	50V
C32	1-162-282-31	CERAMIC 100PF	10%	50V	C313	1-126-176-11	ELECT	220MF	20%	10V
C34	1-162-192-31	CERAMIC 2.7PF	10%	50V	C314	1-124-902-00	ELECT	0.47MF	20%	50V
C101	1-124-902-00	ELECT 0.47MF	20%	50V	C316	1-124-963-11	ELECT	33MF	20%	16V
C102	1-124-902-00	ELECT 0.47MF	20%	50V	C319	1-102-119-00	CERAMIC	0.0015MF	10%	50V
C105	1-162-290-31	CERAMIC 470PF	10%	50V	C320	1-102-117-00	CERAMIC	820PF	10%	50V
C106	1-124-443-00	ELECT 100MF	20%	10V	C321	1-130-481-00	MYLAR	0.0068MF	5%	50V
C107	1-162-843-11	CERAMIC 0.022MF	10%	16V	C322	1-124-477-11	ELECT	47MF	20%	16V
C108	1-123-875-11	ELECT 10MF	20%	50V	C323	1-162-286-31	CERAMIC	220PF	10%	50V





Ref.No.	Part No.	Description			
R14	1-249-429-11	CARBON	10K	5%	1/4W
R15	1-249-429-11	CARBON	10K	5%	1/4W
R16	1-249-433-11	CARBON	22K	5%	1/4W
R18	1-249-417-11	CARBON	1K	5%	1/4W
R19	1-249-417-11	CARBON	1K	5%	1/4W
R20	1-249-441-11	CARBON	100K	5%	1/4W
R22	1-249-435-11	CARBON	33K	5%	1/4W
R101	1-247-895-00	CARBON	470K	5%	1/4W
R102	1-249-429-11	CARBON	10K	5%	1/4W
R103	1-249-419-11	CARBON	1.5K	5%	1/4W
R104	1-249-401-11	CARBON	47	5%	1/4W
R105	1-247-850-11	CARBON	6.2K	5%	1/4W
R106	1-249-409-11	CARBON	220	5%	1/4W
R107	1-249-437-11	CARBON	47K	5%	1/4W
R108	1-249-434-11	CARBON	27K	5%	1/4W
R109	1-249-428-11	CARBON	8.2K	5%	1/4W
R110	1-249-441-11	CARBON	100K	5%	1/4W
R111	1-249-429-11	CARBON	10K	5%	1/4W
R112	1-249-432-11	CARBON	18K	5%	1/4W
R113	1-249-406-11	CARBON	120	5%	1/4W
R114	1-249-405-11	CARBON	100	5%	1/4W
R201	1-247-895-00	CARBON	470K	5%	1/4W
R202	1-249-429-11	CARBON	10K	5%	1/4W
R203	1-249-419-11	CARBON	1.5K	5%	1/4W
R204	1-249-401-11	CARBON	47	5%	1/4W
R205	1-247-850-11	CARBON	6.2K	5%	1/4W
R206	1-249-409-11	CARBON	220	5%	1/4W
R207	1-249-437-11	CARBON	47K	5%	1/4W
R208	1-249-434-11	CARBON	27K	5%	1/4W
R209	1-249-428-11	CARBON	8.2K	5%	1/4W
R210	1-249-441-11	CARBON	100K	5%	1/4W
R211	1-249-429-11	CARBON	10K	5%	1/4W
R212	1-249-432-11	CARBON	18K	5%	1/4W
R213	1-249-406-11	CARBON	120	5%	1/4W
R214	1-249-405-11	CARBON	100	5%	1/4W
R301	1-249-417-11	CARBON	1K	5%	1/4W
R302	1-249-424-11	CARBON	3.9K	5%	1/4W
R303	1-249-421-11	CARBON	2.2K	5%	1/4W
R305	1-249-433-11	CARBON	22K	5%	1/4W
R306	1-249-407-11	CARBON	150	5%	1/4W
R307	1-249-432-11	CARBON	18K	5%	1/4W
R308	1-249-425-11	CARBON	4.7K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W
R310	1-249-441-11	CARBON	100K	5%	1/4W
R311	1-249-405-11	CARBON	100	5%	1/4W
R313	1-249-421-11	CARBON	2.2K	5%	1/4W
R314	1-249-421-11	CARBON	2.2K	5%	1/4W
R315	1-247-810-11	CARBON	130	5%	1/4W
R316	1-249-437-11	CARBON	47K	5%	1/4W
R317	1-249-437-11	CARBON	47K	5%	1/4W
R319	1-249-393-11	CARBON	10	5%	1/4W
R322	1-249-417-11	CARBON	1K	5%	1/4W
R323	1-249-417-11	CARBON	1K	5%	1/4W
R324	1-247-893-11	CARBON	390K	5%	1/4W
R325	1-247-899-11	CARBON	680K	5%	1/4W

Ref.No.	Part No.	Description			
R326	1-249-405-11	CARBON	100	5%	1/4W
R327	1-249-441-11	CARBON	100K	5%	1/4W
R328	1-249-415-11	CARBON	680	5%	1/4W
R329	1-249-411-11	CARBON	330	5%	1/4W
R330	1-249-417-11	CARBON	1K	5%	1/4W
R331	1-249-423-11	CARBON	3.3K	5%	1/4W
R332	1-249-427-11	CARBON	6.8K	5%	1/4W
R401	1-247-889-00	CARBON	270K	5%	1/4W
R402	1-247-891-00	CARBON	330K	5%	1/4W
R403	1-249-429-11	CARBON	10K	5%	1/4W
R404	1-249-441-11	CARBON	100K	5%	1/4W
R405	1-249-413-11	CARBON	470	5%	1/4W
R406	1-249-422-11	CARBON	2.7K	5%	1/4W
RV1	1-228-995-00	RES, ADJ, CARBON 22K			
S1	1-571-896-11	SWITCH, LEVER SLIDE (BAND SELECT)			
S301	1-571-950-11	SWITCH, SLIDE (REC/PB)			
S302	1-570-347-31	SWITCH, LEVER SLIDE (FUNCTION)			
S303	1-571-474-11	SWITCH, PUSH (DIR MODE)			
S304	1-571-043-11	SWITCH, PUSH (1 KEY)(REC MUTE)			
S305	1-571-307-11	SWITCH, SLIDE (MONO/ST)			
S306	1-570-012-11	SWITCH, LEAF (PLAY)			
S307	1-570-012-11	SWITCH, LEAF (FF/REW)			
S308	1-570-012-11	SWITCH, LEAF (REV)			
S309	1-571-904-11	SWITCH, SLIDE (HEAD REV-FWD)			
SP1	1-503-823-11	SPEAKER			
SP2	1-503-823-11	SPEAKER			
T1	1-404-158-11	COIL, IFT			
T301	1-433-268-00	TRANSFORMER, BIAS OSCILLATOR			
VR1	1-238-629-11	RES, VAR, CARBON 100K (FINE TUNING)			
VR301	1-230-454-11	RES, VAR, CARBON 20K/20K (VOLUME)			
VR302	1-237-567-11	RES, VAR, CARBON 20K/20K (TONE)			

ACCESSORY & PACKING MATERIAL

- △.1-463-700-21 (UK)...ADAPTOR, AC (AC-930A)
- △.1-463-705-21 (AEP)...ADAPTOR, AC (AC-930AEP)
- 3-340-754-01 SHEET, PROTECTION
- \*3-352-253-01 CUSHION (LEFT) (RIGHT)
- \*3-352-263-01 (AEP)...INDIVIDUAL CARTON
- \*3-352-264-01 (UK)...INDIVIDUAL CARTON
- 3-701-626-00 BAG, POLYETHYLENE
- 3-750-186-11 MANUAL, INSTRUCTION
- 3-750-186-41 (AEP)...MANUAL, INSTRUCTION

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