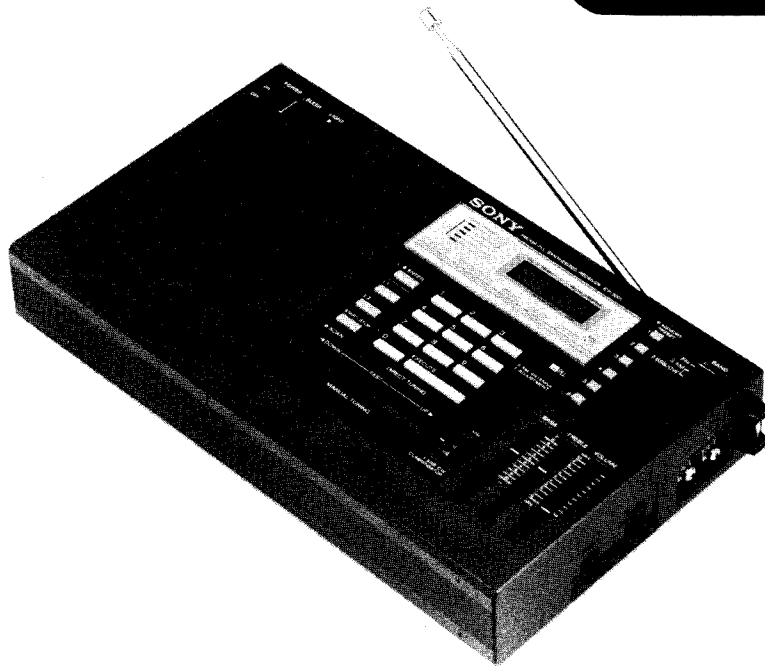


# ICF-2001



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

## FM/AM PLL SYNTHESIZED RECEIVER

### SPECIFICATIONS

<b>Circuit System:</b>	FM: Superheterodyne AM: Dual conversion superheterodyne	<b>AEP, UK, E model:</b> Radio: 4.5 V dc, three IEC designation R20 batteries (D size) 110, 127, 220 or 240 V ac 50 Hz (AEP model) 50/60 Hz (UK, E model) with optional Sony AC-122 AC Power Adaptor 12 V car battery with optional Sony DCC-127A Car Battery Cord Computer: 3V dc, two IEC designation R6 batteries (AA size)
<b>Frequency Range:</b>	US, Canadian, UK, E model: FM 76 to 108 MHz AM 150 to 29,999 kHz (2,000 to 10 m) AEP model: FM 87.5 to 108 MHz AM 150 to 26,100 kHz (2,000 to 11 m)	<b>Power Consumption:</b> US, Canadian model: 7 W ac with Sony AC-120 W AC Power Adaptor AEP model: 16 W ac at 50 Hz with Sony AC-122 AC Power Adaptor UK model: 9.5 W ac at 50 Hz with Sony AC-122 AC Power Adaptor E model: 16 W ac at 50 Hz, 15 W ac at 60 Hz with Sony AC-122 AC Power Adaptor
<b>Antennas:</b>	Telescopic antenna (AM/FM) Built-in ferrite bar antenna (AM 360 to 2,143 kHz) External antenna terminals (AM/FM)	
<b>Speaker:</b>	Approx. 10 cm (4 inches) diameter	
<b>Power Output:</b>	1,200 mW (at 10 % harmonic distortion), 1,600 mW (max.)	
<b>Input:</b>	Timer input jack (minijack)	
<b>Outputs:</b>	Recording output jack (minijack) output level 0.8 mV (-60 dB) output impedance 1 k $\Omega$ Earphone jack (minijack) for 8 $\Omega$ earphone	
<b>Power Requirements:</b>	US, Canadian model: Radio: 4.5 V dc, three D size batteries (IEC designation R20) 120 V ac, 60 Hz with supplied Sony AC-120 W AC Power Adaptor 12 V car battery with optional Sony DCC-127A Car Battery Cord Computer: 3 V dc, two AA size batteries (IEC designation R6)	

— Continued on page 2 —

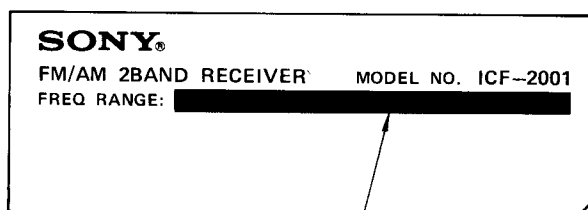
**SONY**  
**SERVICE MANUAL**

- Battery Life:** US, Canadian model:  
Radio: with Eveready Batteries No. 1050:  
    Approx. 9 hours, if tuned to AM  
    Approx. 10 hours, if tuned to FM  
Computer: with Eveready Batteries  
    No. 1015, approx. 1 year of continuous  
    operation  
AEP, UK, E model:  
Radio: with Sony SUM-1S Super Batteries:  
    Approx. 9 hours, if tuned to AM  
    Approx. 10 hours, if tuned to FM  
Computer: with Sony SUM-3S Super Batteries,  
    approx. 1 year of continuous operation
- Dimensions:** Approx. 310(w) x 171(h) x 56(d) mm  
    12¼(w) x 6¾(h) x 2¼(d) inches  
    including projecting parts and controls
- Weight:** Approx. 1,800 g, 4 lb  
    including batteries

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## MODEL IDENTIFICATION

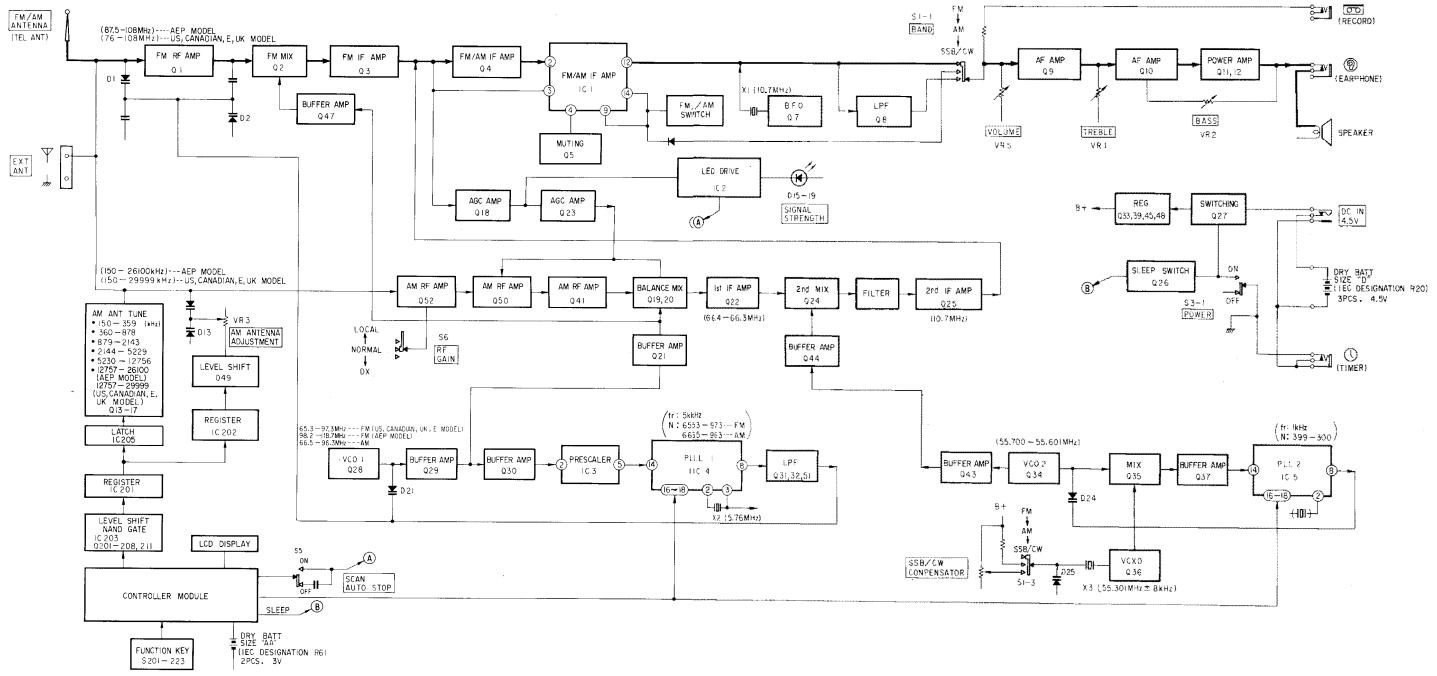
– Specification Label –



US, Canadian, UK, E model: FM 76 – 108 MHz AM 150 – 29999 kHz  
    AEP model: FM 87.5 – 108 MHz AM 150 – 26100 kHz  
    (UK, E model: marked on the stand)

SECTION 1  
BLOCK DIAGRAM

ICF-2001 ICF-2001



SECTION 3  
ADJUSTMENTS

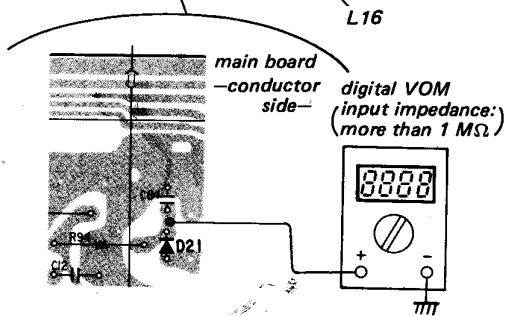
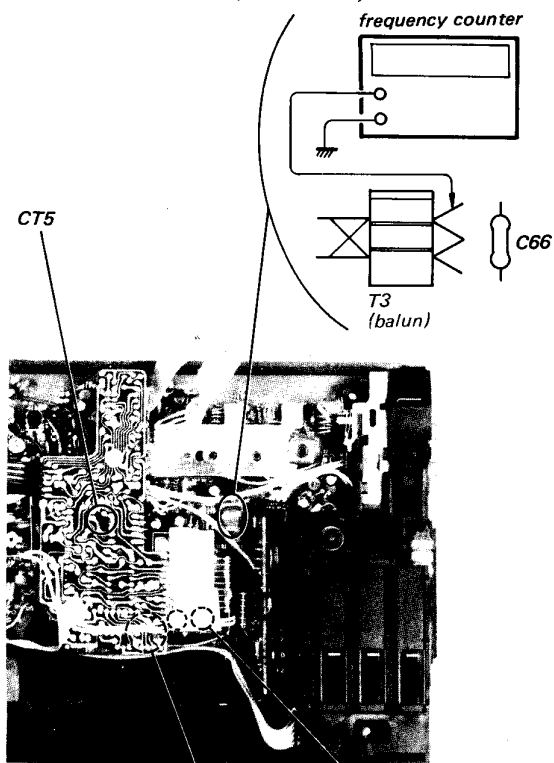
PLL1 Adjustment

Setting:

BAND Switch: FM

Procedure:

1. Press the Counter Keys for 108 MHz reading on the Frequency Display.
2. Adjust L16 for  $8.5 \pm 0.05$  V dc (US, Canadian, UK, E model),  $7.5 \pm 0.05$  V dc (AEP model) reading on the digital VOM.
3. Adjust CT5 for 97,300 MHz (118.70 MHz: AEP model) reading on the frequency counter.
4. Obtain 76 MHz (US, Canadian, UK, E model), 87.5 MHz (AEP model) reading on the Frequency Display again and confirm that the frequency counter reading is 65.3 MHz (US, Canadian, UK, E model), 98.2 MHz (AEP model).



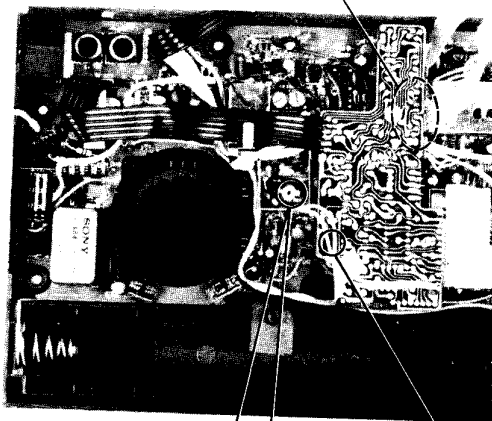
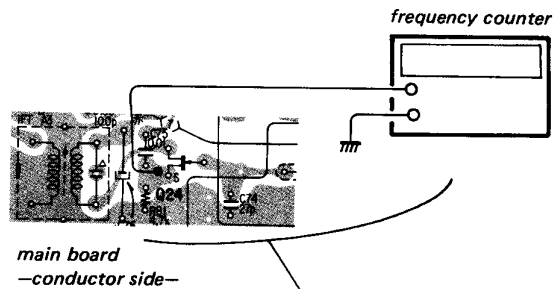
PLL2 Adjustment

Setting:

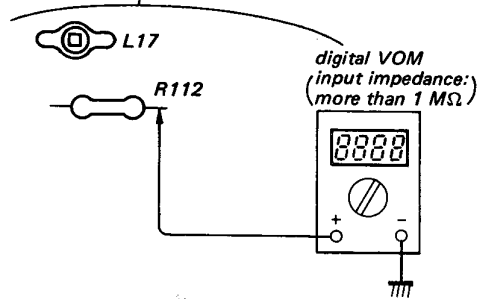
BAND Switch: AM

Procedure:

1. Press the Counter Keys for 1000 kHz reading on the Frequency Display.
2. Adjust L17 for  $2.7 \pm 0.05$  V dc reading on the digital VOM and adjust L21 for 55.700 MHz reading on the frequency counter.
3. Press the Counter Keys for 999 kHz on the Frequency Display and confirm that the frequency counter reading is 55.601 MHz.



L17 (2.7 V  $\pm$  0.05 V)      L21 (55.700 MHz)

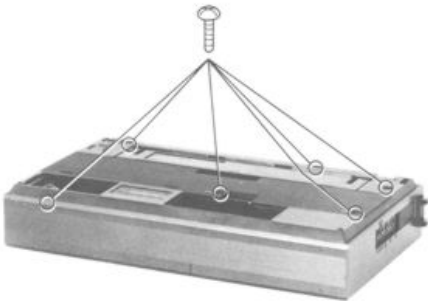


ICF-2001 ICF-2001

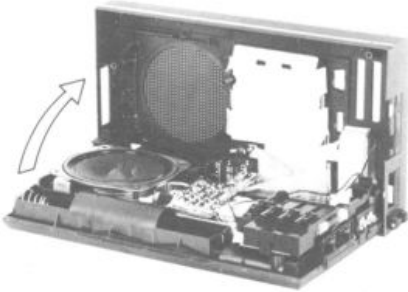
SECTION 2  
DISASSEMBLY

FRONT PANEL

PTP3 x 20 (6 pieces)



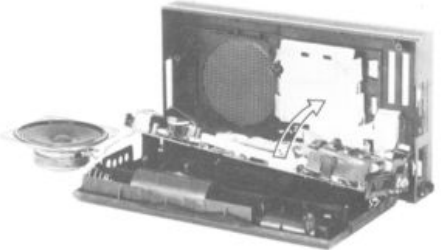
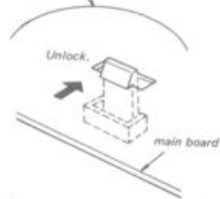
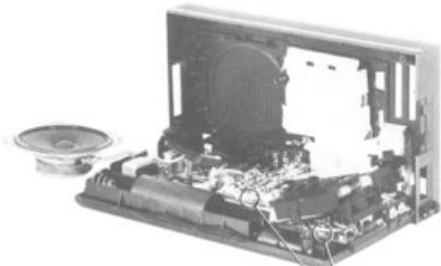
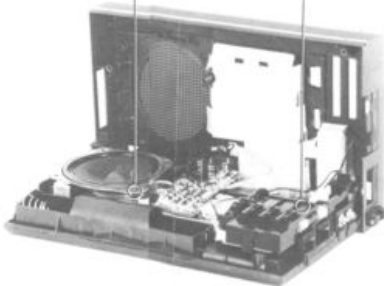
Turn the set  
upside down.



MAIN BOARD

BTP3 x 8

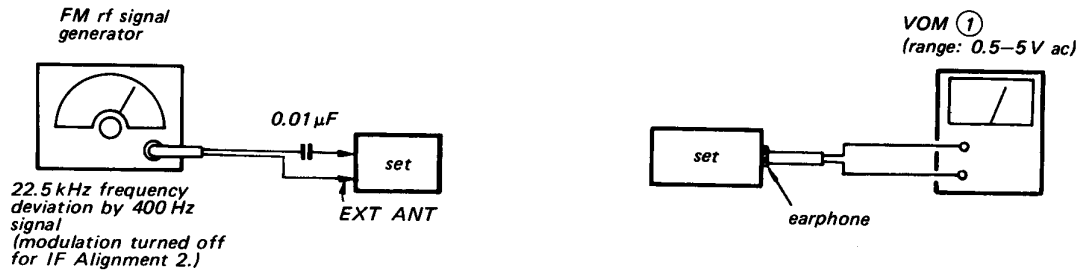
BTP3 x 10



**FM IF Alignment/FM Tracking Adjustment**

Setting:

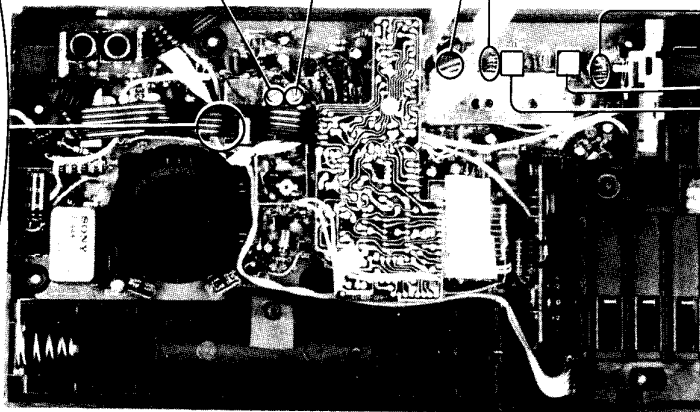
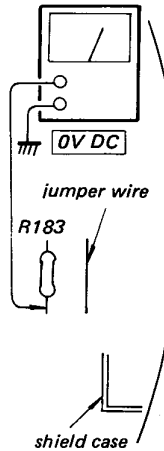
BAND Switch: FM



<b>FM IF ALIGNMENT 2</b> (10.7 MHz with no modulation) Adjust for 0V reading on VOM ②.
IFT-F3

<b>FM IF ALIGNMENT 1</b> (10.7 MHz with modulation) Adjust for a maximum reading on VOM ①.	
IFT-F2	IFT-F1

VOM ② (range: 0.5 – 2.5 V dc)



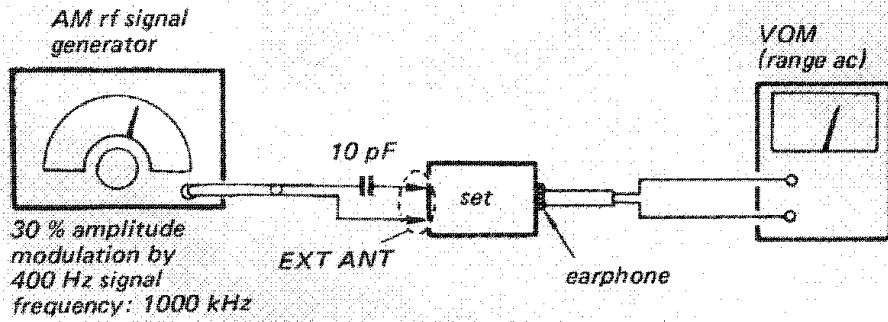
TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ①.	
L2	76 MHz
L1	(87.5 MHz)
CT1	108 MHz
CT2	

( ): AEP model

# AM IF Alignment

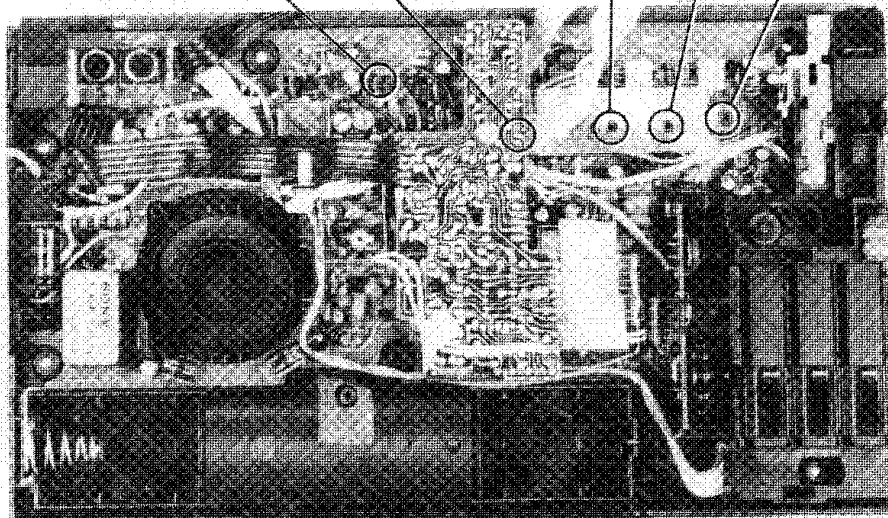
Setting:

BAND Switch: AM



2ND IF ALIGNMENT	
Adjust for a maximum reading on VOM .	
IFT-A1	IFT-A3

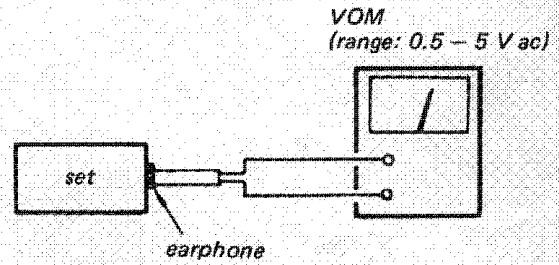
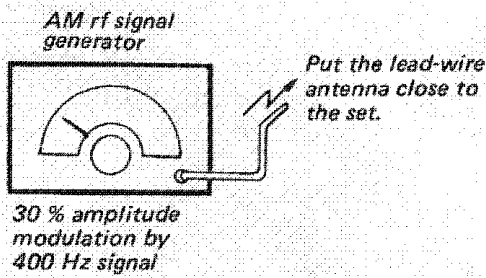
1ST IF ALIGNMENT		
Adjust for a maximum reading on VOM .		
L14	L13	IFT-A2



# AM Antenna Tracking Adjustment

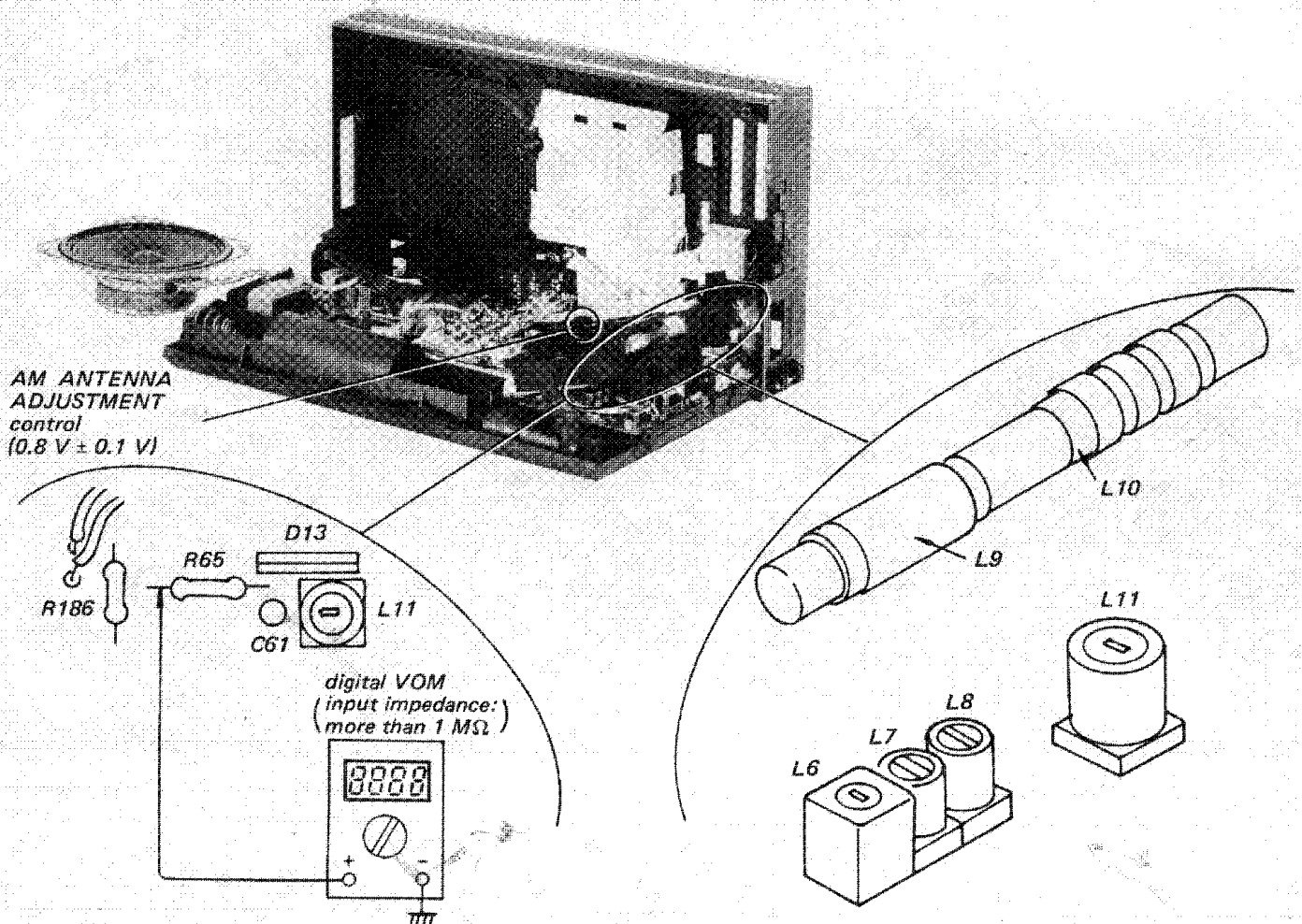
Setting:

BAND Switch: AM



1. Press the Counter Keys for 150 kHz reading on the Frequency Display.
2. Adjust the AM ANTENNA ADJUSTMENT control for  $0.8 \pm 0.1$  V dc reading on the digital VOM.
3. Adjust each coil for the maximum reading on the VOM.

Frequency Display Reading (kHz)	Adjustment Part
881	L9
361	L10
150	L11
2149	L8
5242	L7
12786	L6

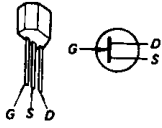




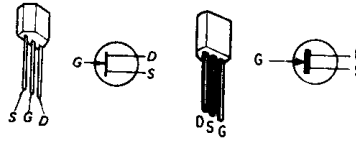
# Replacement Semiconductors

For replacement, use semiconductors except in ( ).

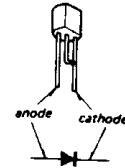
Q1, 22: 2SK42-2 (2SK42)  
 Q21, 25 } : 2SK161  
 Q29, 43 }



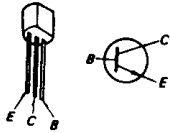
Q41, 52: 2SK23A-834 (2SK107)



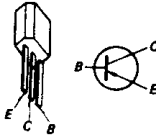
D1, 2, 21, 25: SVC201



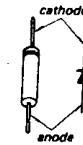
Q2, 3, 4, 7  
 Q34, 35, 37 } : 2SC930  
 Q44, 47, 50 }  
 Q5, 46, 48  
 Q49, 51, 53 } : 2SC1364 (2SC536)  
 Q201~208, 211  
 Q11, 12: 2SC1474



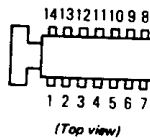
Q209: 2SA1027R (2SA1026)



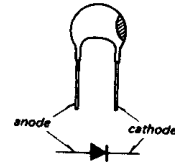
D3~5: 1T261  
 D8: 1T26  
 D24: 1S2139C (SD115)  
 D27: RD3.6E-BZ8  
 D28, 33~35, 201: 1S1555  
 D29: RD16E (RD16E-B1)  
 D36: RD6.2E



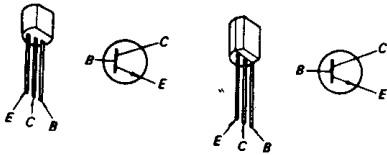
IC1: CX162



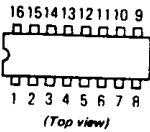
D7, 20: VD1120



Q6, 8~10  
 Q13~18, 23 } : 2SC1364 (2SC1633)  
 Q33, 38, 39 }  
 Q45: 2SC1364 (2SC945)



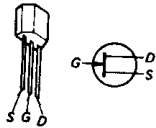
IC2: LB1405  
 IC201, 202: TC4015BP (MSM4015)  
 IC205: TC40174BP



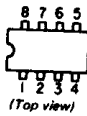
D9~12: 1S2222



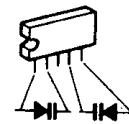
Q19, 20: 2SK184  
 Q24: 2SK23A-834 (2SK23A)  
 Q31: 2SK23A-812 (2SK23A)



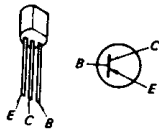
IC3: μPB552C



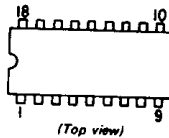
D13: KV1211



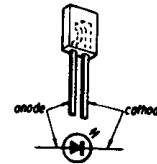
Q27: 2SA772-14 (2SA772)



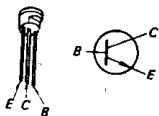
IC4, 5: μPD2819C



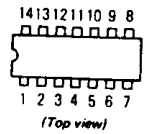
D15~19: SLP155B



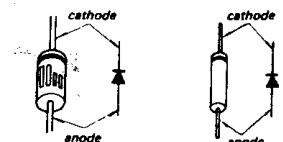
Q28, 30, 36: 2SC668



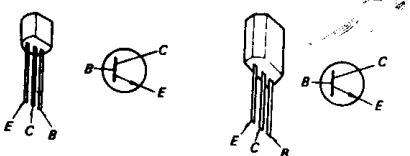
IC203: TC4011BP (MSM4011)



D23: EQB01-12Z (RD12E-B2)



Q32: 2SC1364 (2SC634A)



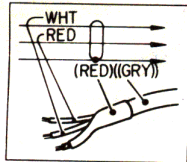
SECTION 4  
DIAGRAMS

4-1. MOUNTING DIAGRAM

Refer to page 14 for replacement semiconductors.

Note:

- Color code of sleeving over the end of the jacket.



- ○ : parts extracted from the component side.
- ■ : part mounted on the conductor side.
- [ ] : indicates side identified with part number.
- DC resistance measurements are with coils and transformers connected on the circuit board, and are approximate.
- [Pattern] : B + pattern
- [Arrow] : signal path (FM)
- Readings are taken under no-signal (detuned) conditions with a VOM (20 kΩ/V).  
 no mark: FM FREQUENCY DISPLAY: 98.1 MHz  
 ( ) : AM FREQUENCY DISPLAY: 1023 kHz  
 ( ) : SSB/CW

A

B

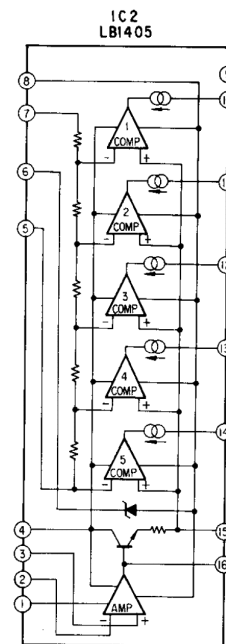
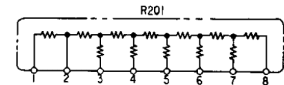
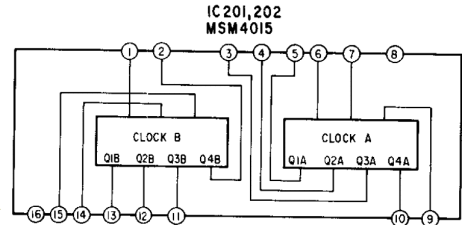
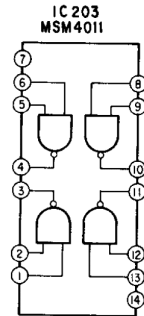
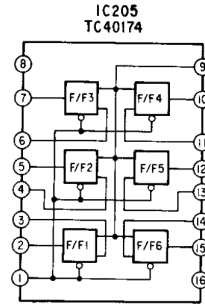
1

2

3

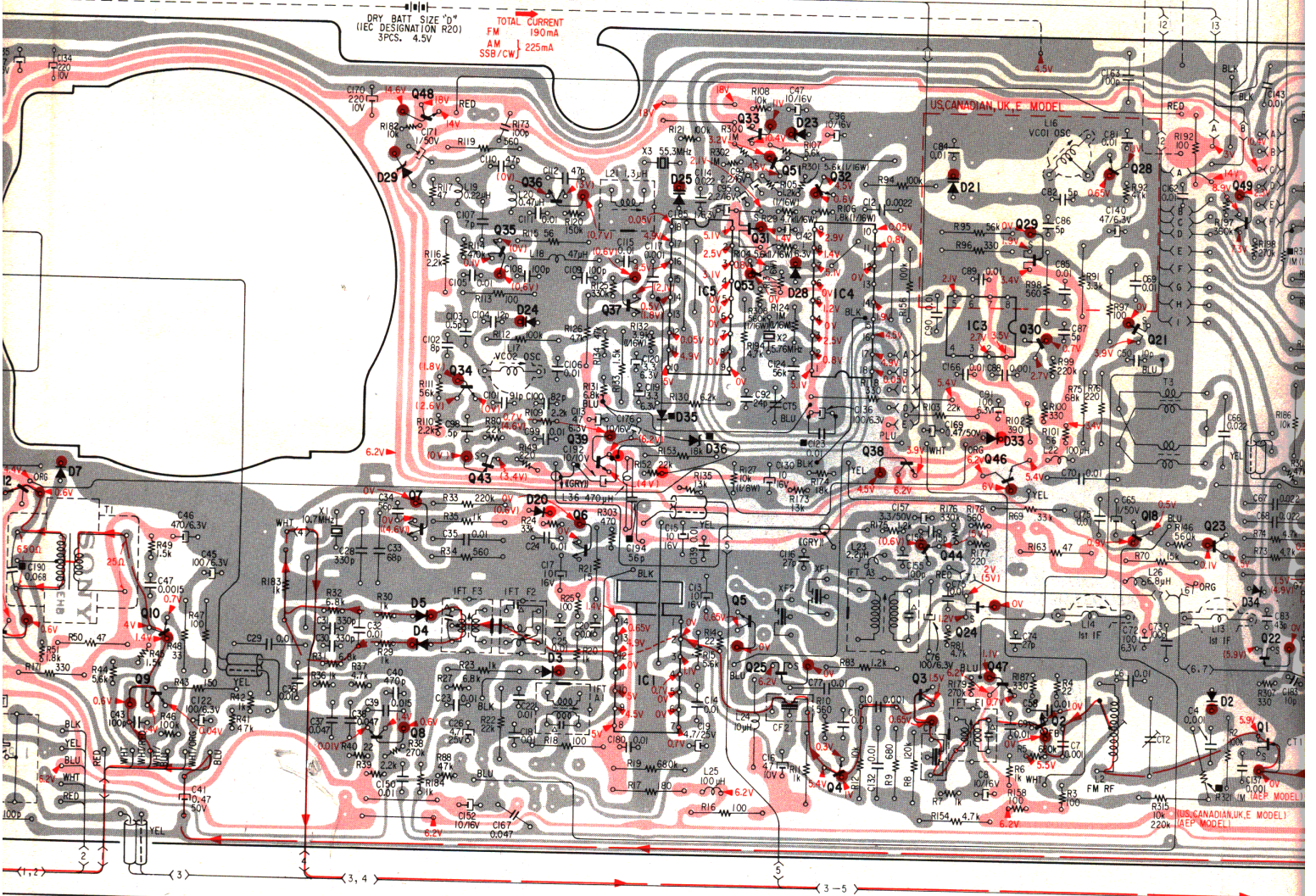
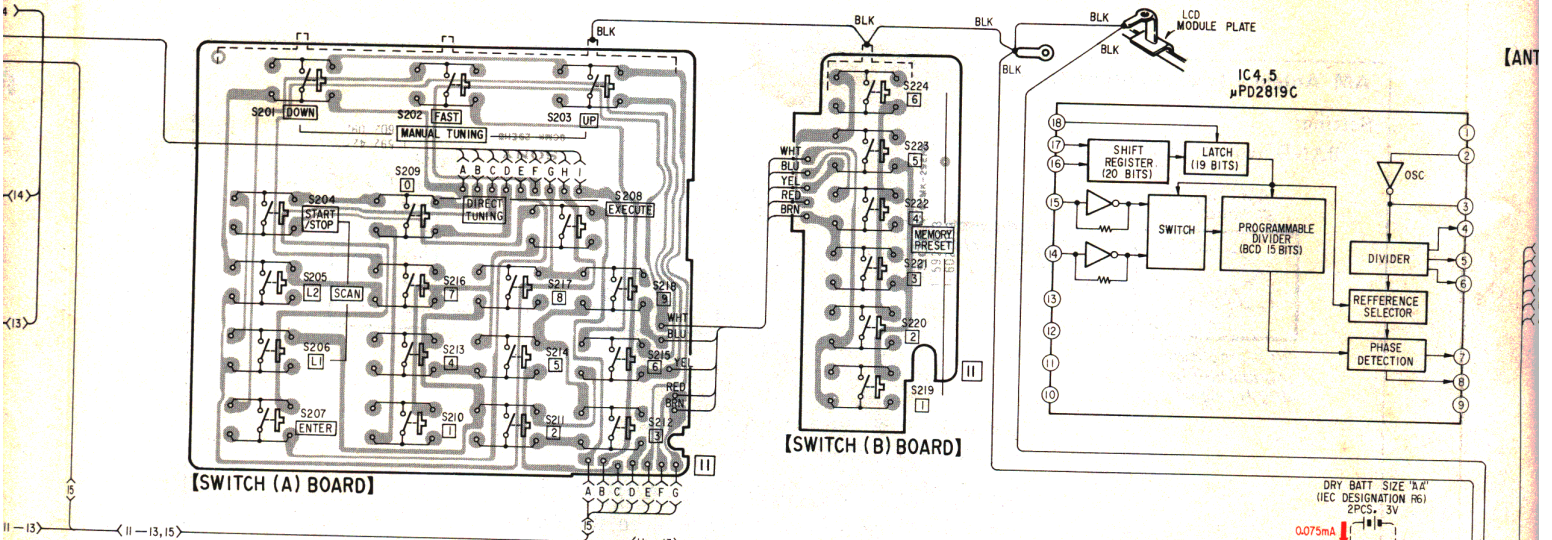
4

5



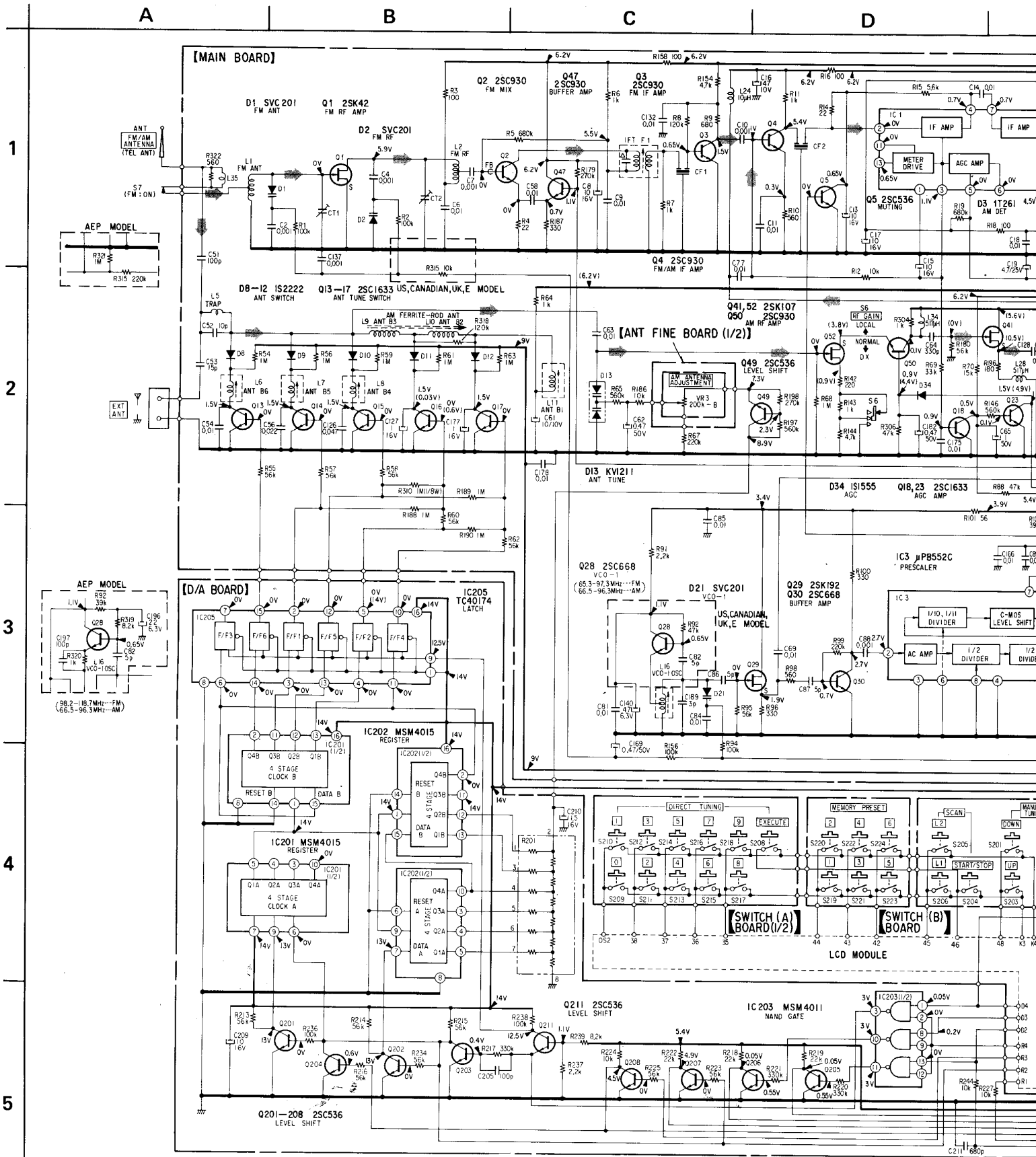


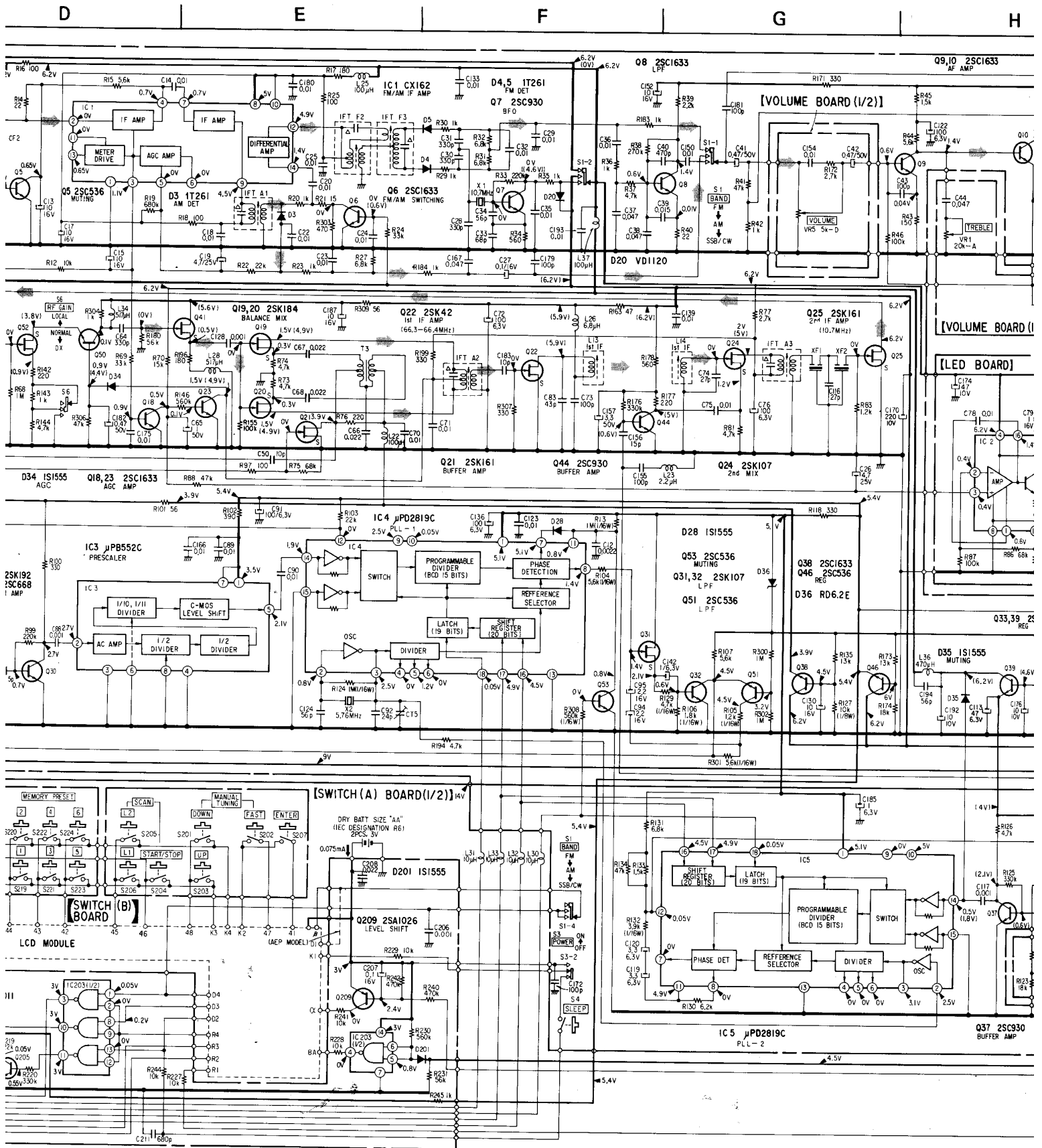
F G H I J





SCHEMATIC DIAGRAM









**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF :  $\mu\mu\text{F}$   
50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  
k $\Omega$  : 1000  $\Omega$ , M $\Omega$  : 1000 k $\Omega$
- $\triangle$  : internal component.
- $\text{---}$  : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (20 k $\Omega$ /V).  
no mark: FM FREQUENCY DISPLAY: 98.1 MHz  
( ) : AM FREQUENCY DISPLAY: 1023 kHz  
( ( ) ) : SSB/CW
- $\text{---}\rightarrow$  : signal path.
- Voltage variations may be noted due to normal production tolerances.
- Switches

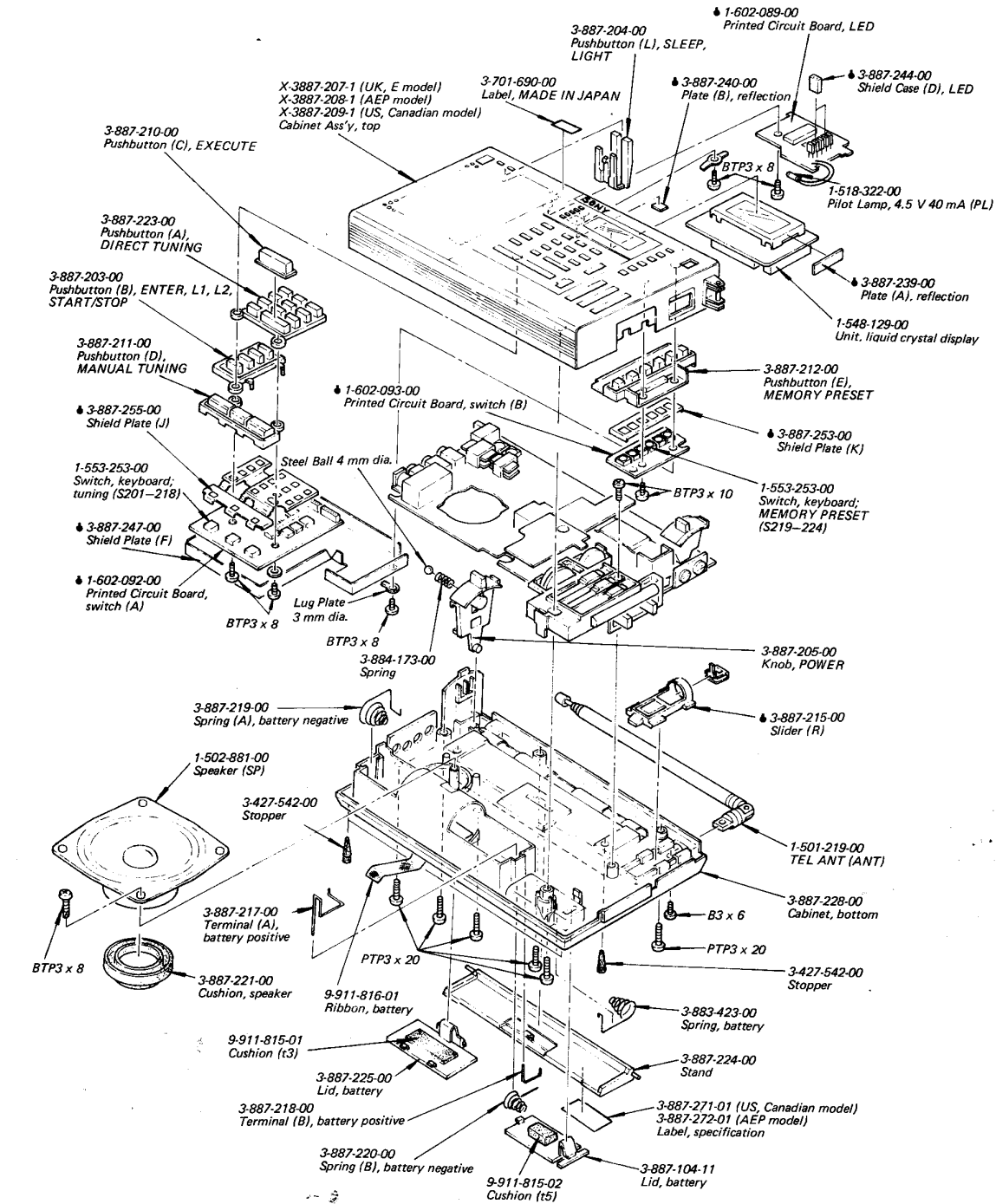
Ref. No.	Switch	Position
S1	BAND	FM
S2	LIGHT	OFF
S3	POWER	OFF
S4	SLEEP	OFF
S5	SCAN AUTO STOP	OFF
S6	RF GAIN	NORMAL
S7	ANT SELECTOR	ON
S201	DOWN	OFF
S202	FAST	OFF
S203	UP	OFF
S204	START STOP	OFF
S205	L2	OFF
S206	L1	OFF
S207	ENTER	OFF
S208	EXECUTE	OFF
S209	0	OFF
S210	1	OFF
S211	2	OFF
S212	3	OFF
S213	4	OFF
S214	5	OFF
S215	6	OFF
S216	7	OFF
S217	8	OFF
S218	9	OFF
S219	MEMORY 1	OFF
S220	MEMORY 2	OFF
S221	MEMORY 3	OFF
S222	MEMORY 4	OFF
S223	MEMORY 5	OFF
S224	MEMORY 6	OFF

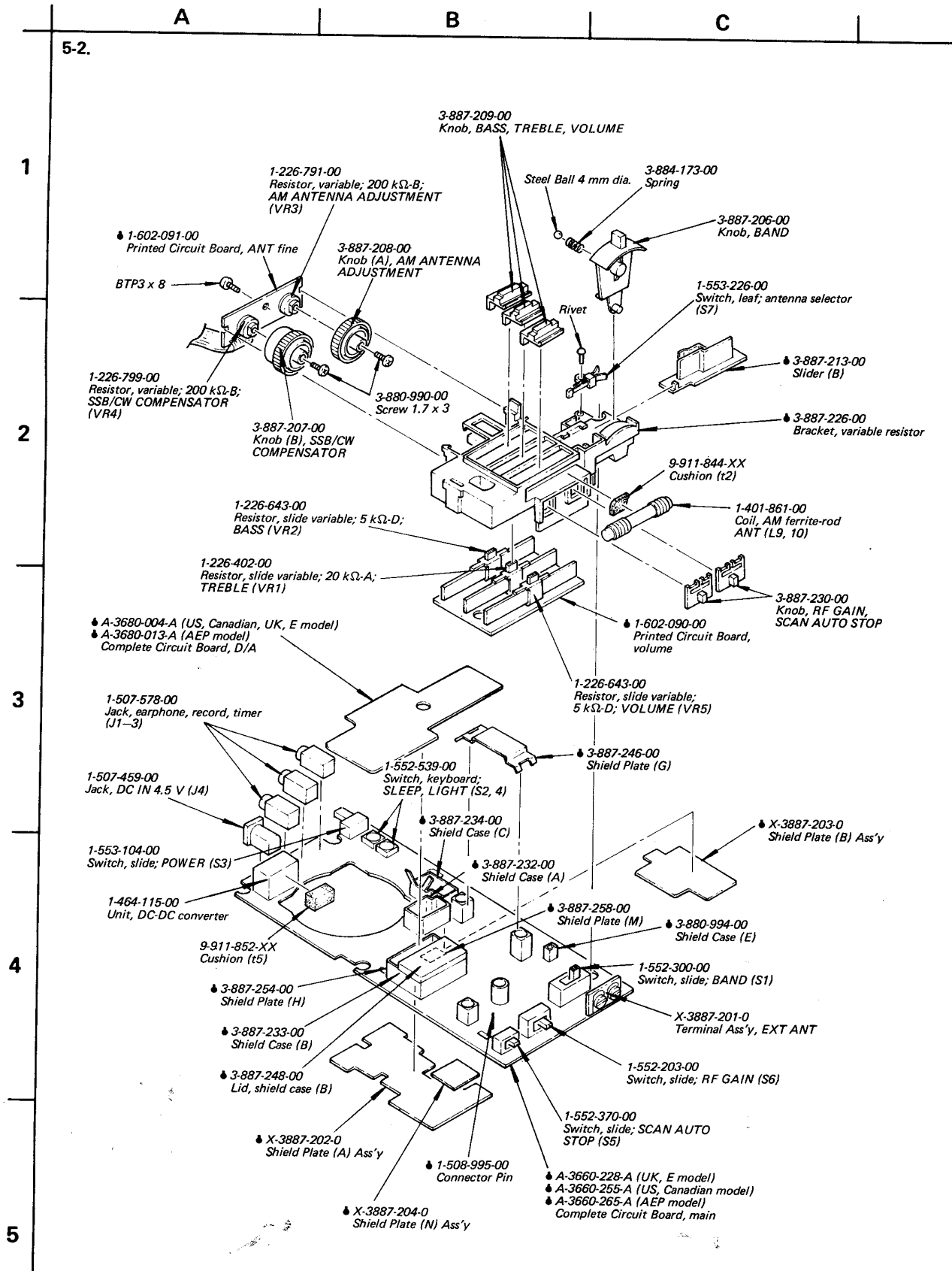
# SECTION 5 EXPLODED VIEWS

**Note:**

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head

5-1.





## SECTION 6 ELECTRICAL PARTS LIST

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

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
<b>SEMICONDUCTORS</b>		
<b>Transistors</b>		
Q1	8-727-312-00	2SK42-2
Q2-4	8-729-803-04	2SC930
Q5, 6	8-729-663-47	2SC1364
Q7	8-729-803-04	2SC930
Q8-10	8-729-663-47	2SC1364
Q11, 12	8-760-335-10	2SC1474
Q13-18	8-729-663-47	2SC1364
Q19, 20	8-729-218-42	2SK184
Q21	8-729-216-13	2SK161
Q22	8-727-312-00	2SK42-2
Q23	8-729-663-47	2SC1364
Q24	8-722-383-40	2SK23A-834
Q25	8-729-216-13	2SK161
Q26	8-729-663-47	2SC1364
Q27	8-760-514-10	2SA772-14
Q28	8-729-806-84	2SC668
Q29	8-729-216-13	2SK161
Q30	8-729-806-84	2SC668
Q31	8-722-381-20	2SK23A-812
Q32, 33	8-729-663-47	2SC1364
Q34, 35	8-729-803-04	2SC930
Q36	8-729-806-84	2SC668
Q37	8-729-803-04	2SC930
Q38, 39	8-729-663-47	2SC1364
Q41	8-722-383-40	2SK23A-834
Q43	8-729-216-13	2SK161
Q44	8-729-803-04	2SC930
Q45, 46	8-729-663-47	2SC1364
Q47	8-729-803-04	2SC930
Q48, 49	8-729-663-47	2SC1364
Q50	8-729-803-04	2SC930
Q51	8-729-663-47	2SC1364
Q52	8-722-383-40	2SK23A-834
Q53		
Q201-208)	8-729-663-47	2SC1364

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
Q209	8-729-612-77	2SA1027R
Q211	8-729-663-47	2SC1364
<b>ICs</b>		
IC1	8-751-620-00	CX162
IC2	8-759-814-05	LB1405
IC3	8-759-155-21	μPB552C
IC4, 5	8-759-128-19	μPD2819C
IC201, 202	8-759-240-15	TC4015BP
IC203	8-759-240-11	TC4011BP
IC205	8-759-241-74	TC40174BP
<b>Diodes</b>		
D1, 2	8-719-912-01	SVC201
D3-5	8-719-026-11	1T261
D7	8-719-112-01	VD1120
D8	8-712-600-00	1T26
D9-12	8-719-100-02	1S2222
D13	8-719-912-11	KV1211
D15-19	8-719-921-55	SLP155B
D20	8-719-112-01	VD1120
D21	8-719-912-01	SVC201
D23	8-719-930-12	EQB01-12Z
D24	8-719-713-93	1S2139C
D25	8-719-912-01	SVC201
D27	8-719-136-17	RD3.6E-BZ8
D28	8-719-815-55	1S1555
D29	8-719-116-07	RD16E
D33-35	8-719-815-55	1S1555
D36	8-719-162-07	RD6.2E
D201	8-719-815-55	1S1555
<b>CAPACITORS</b>		
Common capacitors are omitted. Refer to the lists on pages 28 and 29 for their part numbers. pF: μμF.		
C28	1-161-317-00	330 pF 50 V ceramic
C74	1-102-602-00	27 pF 50 V ceramic
C83	1-102-607-00	43 pF 50 V ceramic

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C100	1-102-653-00	82 pF 50 V ceramic
C101	1-102-654-00	91 pF 50 V ceramic
CT1, 2	1-141-179-12	Trimmer
CTS	1-141-232-00	11 pF, trimmer

**RESISTORS**

All resistors are in ohms. Common 1/4 W carbon resistors are omitted. Refer to the list on the last page for their part numbers. k: 1000 Ω, M: 1000 kΩ.

R13	1-247-053-00	1 M 1/8 W carbon
R104	1-209-775-00	5.6 k 1/16 W micro
R105	1-209-765-00	1.2 k 1/16 W micro
R106	1-209-878-00	1.8 k 1/16 W micro
R124	1-247-053-00	1 M 1/8 W carbon
R127	1-246-795-00	10 k 1/8 W carbon
R129	1-209-773-00	4.7 k 1/16 W micro
R132	1-209-771-00	3.9 k 1/16 W micro
R160	1-246-514-00	51 k 1/4 W carbon (1 %)
R161	1-246-506-00	24 k 1/4 W carbon (1 %)
R201	1-231-615-00	Encapsulated Component
R243	1-246-795-00	10 k 1/8 W carbon
R301	1-209-775-00	5.6 k 1/16 W micro
R308	1-211-695-00	560 k 1/16 W micro
R310	1-247-053-00	1 M 1/8 W carbon
VR1	1-226-402-00	20 k-A, slide variable; TREBLE
VR2	1-226-643-00	5 k-D, slide variable; BASS
VR3	1-226-791-00	200 k-B, variable; AM ANTENNA ADJUSTMENT
VR4	1-226-799-00	200 k-B, variable; SSB/CW COMPENSATOR
VR5	1-226-643-00	5 k-D, slide variable; VOLUME

**MISCELLANEOUS**

ANT	1-501-219-00	TEL ANT
CF1, 2	1-527-184-XX	Filter, ceramic; 10.7 MHz
FB	1-543-152-00	Ferrite Bead
IFT-A1	1-404-235-00	Transformer, AM IF
IFT-A2	1-404-233-00	Transformer, AM IF
IFT-A3	1-404-234-00	Transformer, AM IF

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
IFT-F1	1-403-872-00	Transformer, FM IF
IFT-F2	1-403-959-00	Transformer, FM discriminator
IFT-F3	1-403-953-00	Transformer, FM discriminator
J1-3	1-507-578-00	Jack; earphone, record, timer
J4	1-507-459-00	Jack, DC IN 4.5 V
●L1	1-422-008-00	Coil, FM ANT (US, Canadian, UK, E model)
	1-422-026-00	Coil, FM ANT (AEP model)
●L2	1-420-995-00	Coil, FM RF (US, Canadian, UK, E model)
	1-422-026-00	Coil, FM RF (AEP model)
●L5	1-401-456-00	Coil, AM trap
L6	1-401-843-00	Coil, AM ANT
L7	1-401-842-00	Coil, AM ANT
L8	1-401-841-00	Coil, AM ANT
L9, 10	1-401-861-00	Coil, AM ferrite-rod ANT
L11	1-401-838-00	Coil, AM ANT
L13, 14	1-459-287-00	Coil, AM IF
	1-459-289-00	Coil, VCO-1 OSC (US, Canadian, UK, E model)
L16	1-459-337-00	Coil, VCO-1 OSC (AEP model)
L17	1-459-290-00	Coil, VCO-2 OSC
L18	1-408-072-00	Microinductor, 47 μH
L19	1-422-013-00	Coil, 0.22 μH
●L20	1-425-608-00	Coil, 0.47 μH
L21	1-405-895-00	Coil, OSC; 1.3 μH
L22	1-408-080-00	Microinductor, 100 μH
L23	1-407-182-XX	Microinductor, 2.2 μH
L24	1-408-117-00	Microinductor, 10 μH
L25	1-407-169-XX	Microinductor, 100 μH
L26	1-408-188-XX	Microinductor, 6.8 μH
L28	1-408-362-00	Microinductor, 517 μH
L30-33	1-408-284-00	Microinductor, 10 μH
L34	1-408-362-00	Microinductor, 517 μH
●L35	1-425-607-00	Coil, ANT
L36	1-408-096-00	Microinductor, 470 μH
L37	1-408-080-00	Microinductor, 100 μH
PL	1-518-322-00	Pilot Lamp, 4.5 V 40 mA
S1	1-552-300-00	Switch, slide; BAND