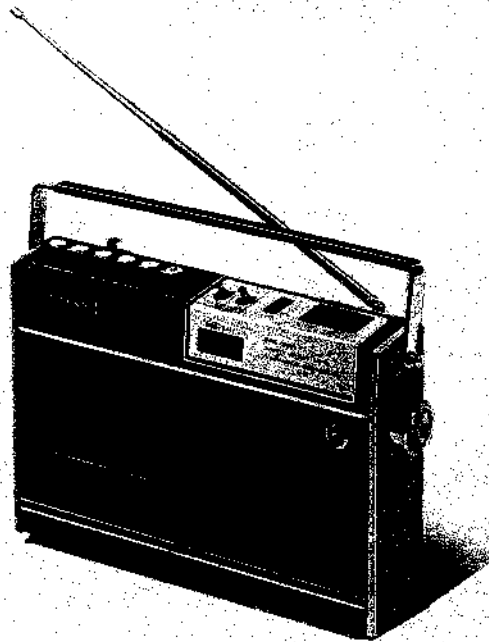


# CF-150

*E Model  
Canada Model  
AEP Model  
UK Model*



## FM-AM RADIO CASSETTE-CORDER

### SPECIFICATIONS

#### RADIO SECTION

<b>Circuit:</b>	Superheterodyne
<b>Frequency Ranges:</b>	FM: 87.5 ~ 108 MHz (3.43 ~ 2.78 m) AM: 530 ~ 1,605 kHz (566 ~ 187 m)
<b>Intermediate Frequency:</b>	FM: 10.7 MHz AM: 455 kHz
<b>Antennas:</b>	FM: built-in telescopic AM: built-in ferrite bar
<b>Sensitivity at 50 mW output:</b>	FM: 3.2 $\mu$ V (11 dB), S/N = 30 dB AM: 110 $\mu$ V/m (41 dB/m), S/N = 6 dB
<b>Selectivity at 10 kHz off-resonance:</b>	21 dB at 1,000 kHz
<b>S/N Ratio:</b>	FM: 52 dB at input level 55 dB, 98 MHz AM: 31 dB at input level 60 dB/m, 1000 kHz
<b>Current Drain at zero input:</b>	FM: 7 mA AM: 3 mA

#### TAPE RECORDER SECTION

<b>Track:</b>	Two-track mono
<b>Frequency Response:</b>	100 ~ 8000 Hz
<b>Wow and Flutter:</b>	0.32 % (RMS) weighted

<b>Tape Speed:</b>	4.8 cm/s (1 $\frac{7}{8}$ ips)
<b>Overall S/N Ratio:</b>	40 dB
<b>Input:</b>	MIC Impedance: low Maximum sensitivity: -72 dB (0.11 mV)
<b>Output:</b>	MONITOR Impedance: 8 $\Omega$ load or more Output level: 2 dB (0.95 V) with 10 k $\Omega$ load

#### GENERAL

<b>Power Requirements:</b>	AC 110 ~ 120, 220 ~ 240 V, 50/60 Hz (E) 240 V 50 Hz (UK) 127, 220, 240 V 50/60 Hz (AEP) 120 V 60 Hz (Canada) DC 6 V (battery size "C" 4 pcs)
<b>Semiconductors:</b>	1 FET (included in electret condenser microphone), 13 transistors and 10 diodes
<b>Power Consumption:</b>	AC 5 W (AEP, UK, Canada) AC 6 W (E)
<b>Power Output:</b>	1.0 W
<b>Speaker:</b>	3 $\frac{1}{2}$ " (9.2 cm)
<b>Dimensions:</b>	272 (w) x 193 (h) x 70 (d) mm 10 $\frac{3}{4}$ (w) x 7 $\frac{5}{8}$ (h) x 2 $\frac{3}{16}$ (d) inches
<b>Weight:</b>	2.5 kg, 5 lb 5 oz

**SONY**<sup>®</sup>  
**SERVICE MANUAL**

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**MODEL IDENTIFICATION**

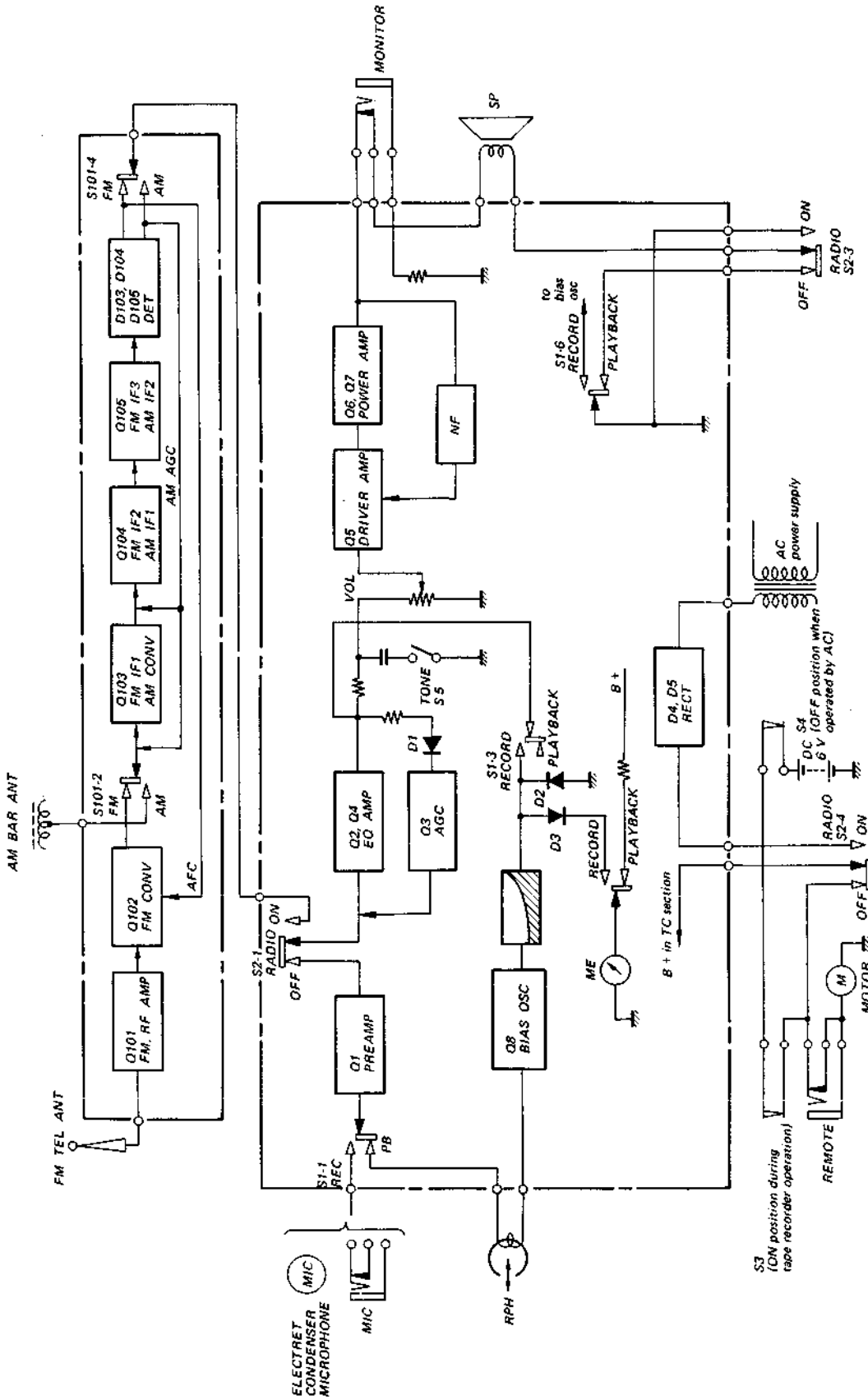
(See specification label.)

Model	Identification on specification label
E	AC: 110 ~ 120 V 220 ~ 240 V 50/60 Hz 6 W
CANADA	AC: 120 V 60 Hz 5 W
AEP	220 V ~ 50/60 Hz 5 W
UK	~AC 240 V 50 Hz 5 W

*When ordering replacement parts, use PART NUMBERS listed in Parts List or shown in EXPLODED VIEW. Parts List reference numbers should not be used.*

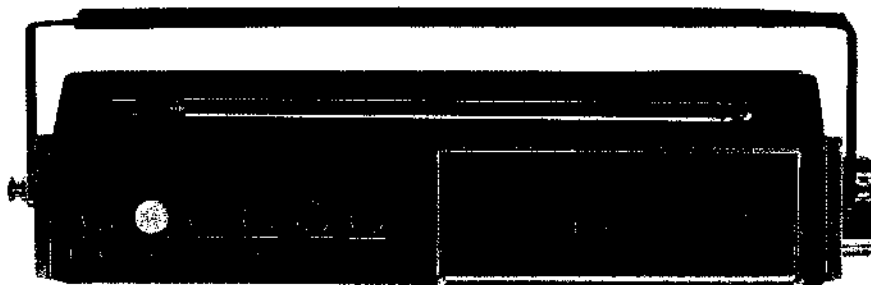
**SECTION 1  
OUTLINE**

**1-1. BLOCK DIAGRAM**

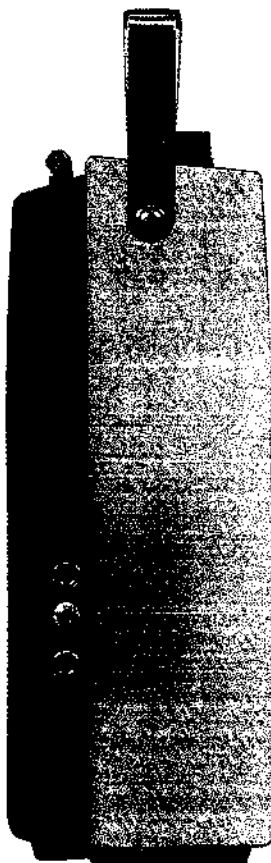


- S101: BAND SELECT switch (FM position)
- S1: record/playback switch (playback position)
- S2: RADIO switch (OFF position)
- S5: TONE switch (HIGH position)

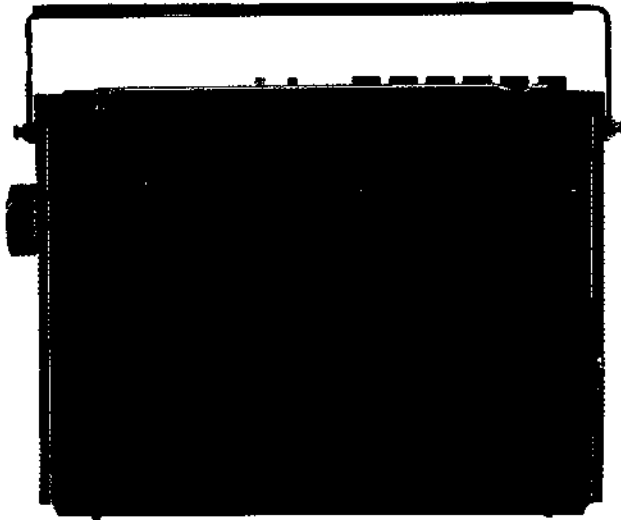
1-2. EXTERNAL VIEW - 1 -



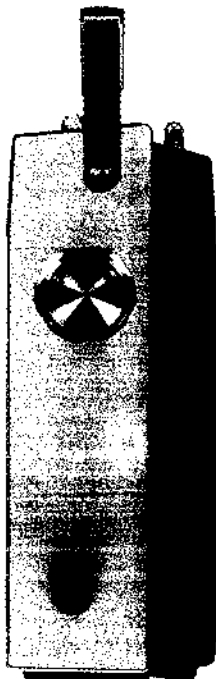
1-3. EXTERNAL VIEW - 2 -



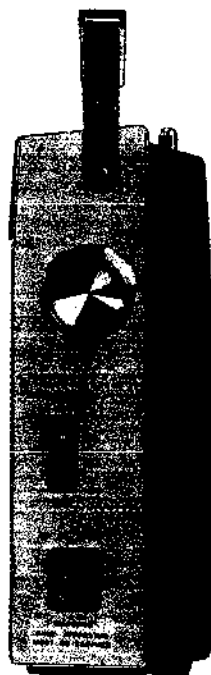
**1-4. EXTERNAL VIEW - 3 -**



**1-5. EXTERNAL VIEW - 4 -**



**AEP Model**

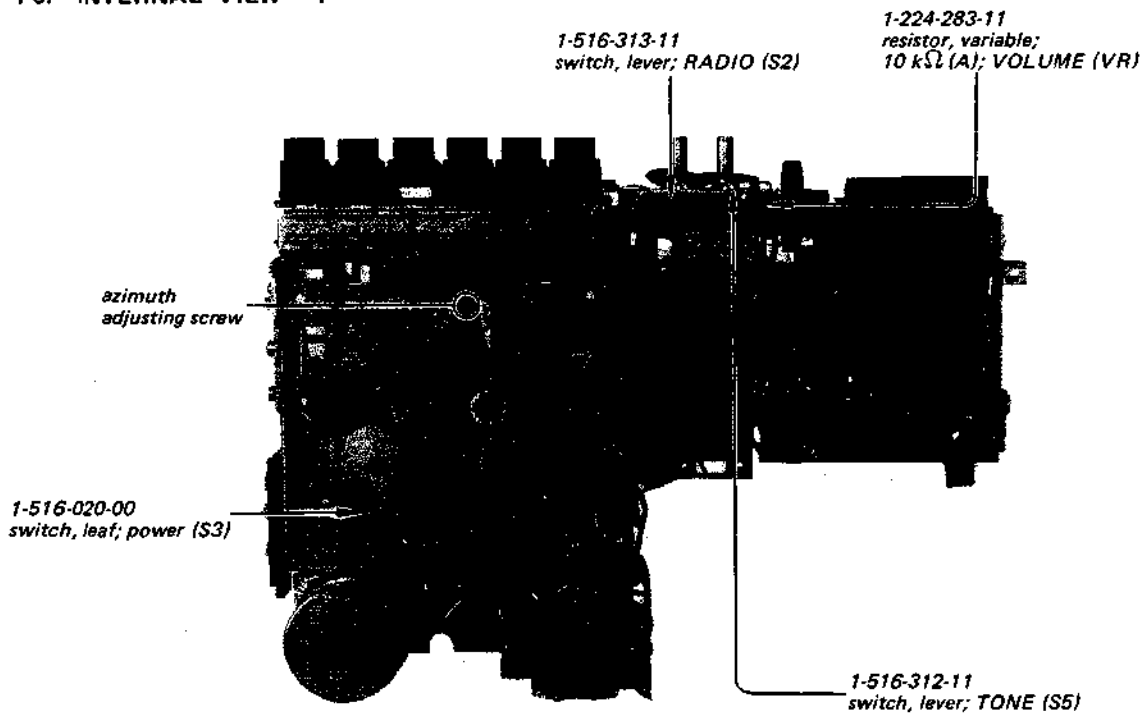


**UK Model**

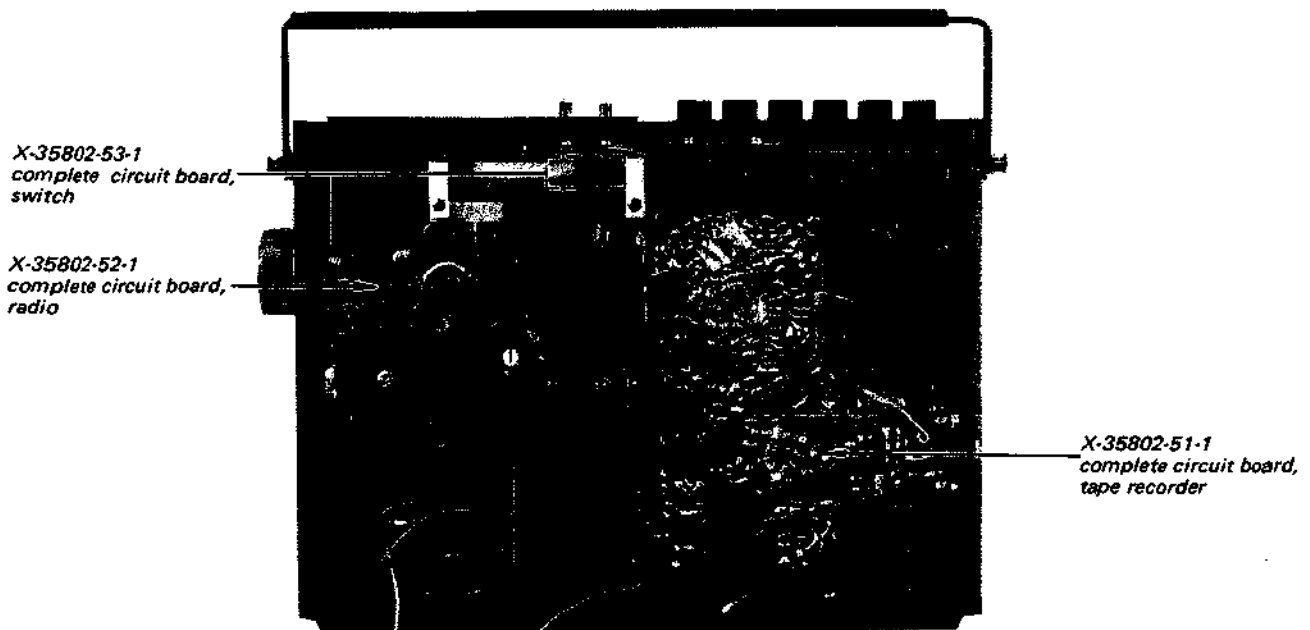


**E and Canada Model**

**1-6. INTERNAL VIEW - 1 -**

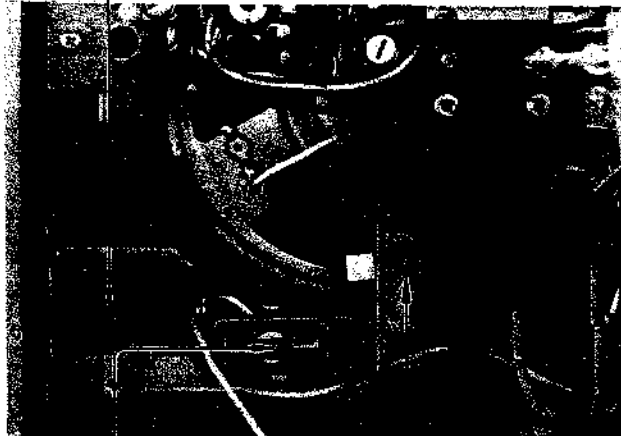


**1-7. INTERNAL VIEW - 2 -**



**1-8. INTERNAL VIEW - 3 -**

1-509-017-00  
connector, AC INPUT

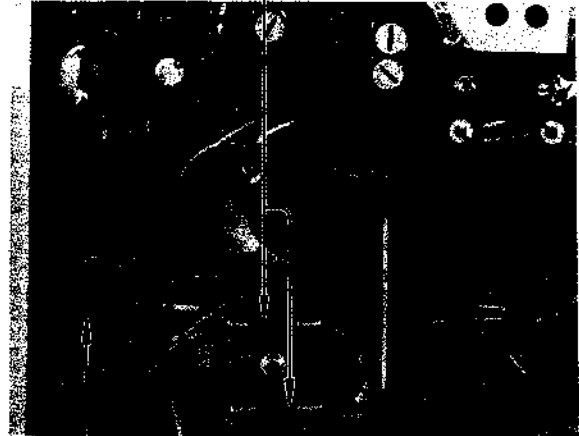


1-532-129-11  
fuse, 0.2A

1-516-236-00  
switch, slide; voltage selector (S7)

**E Model**

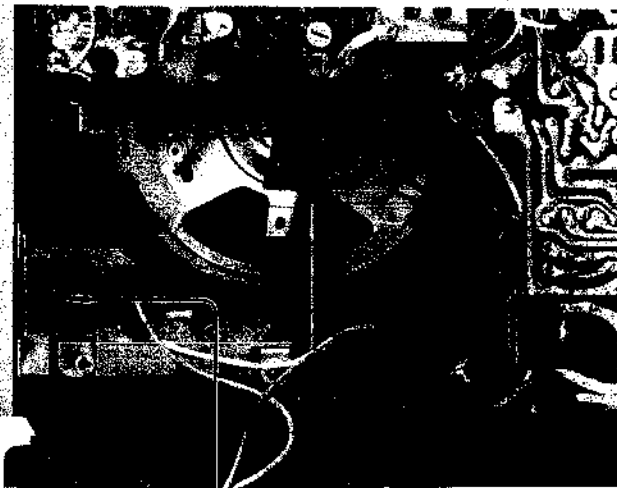
1-532-284-11  
fuse, 630 mA



1-509-509-00  
connector, AC INPUT

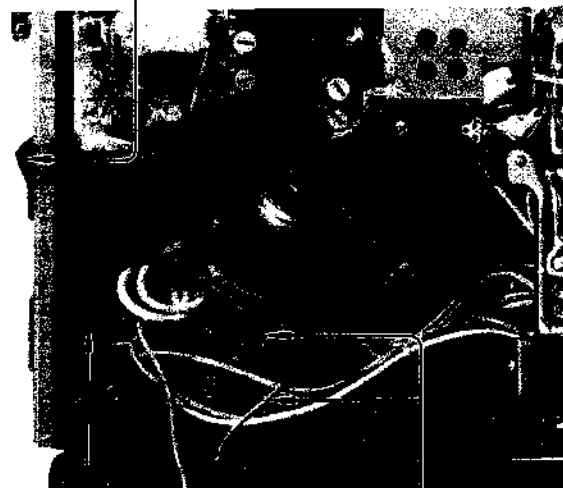
**AEP Model**

1-516-356-11  
switch, seesaw; POWER (S6)



1-509-017-00  
connector, AC INPUT

**Canada Model**



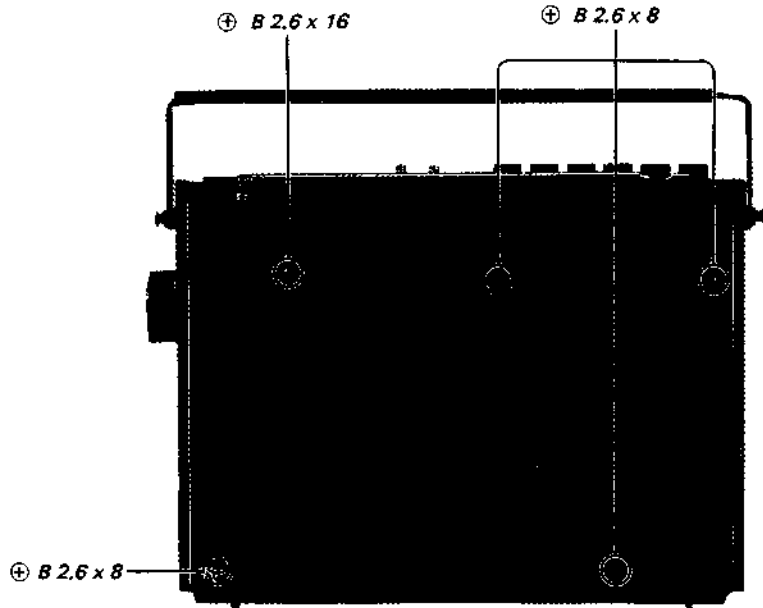
1-509-553-11  
connector, AC INPUT

1-532-284-11  
fuse, 630 mA

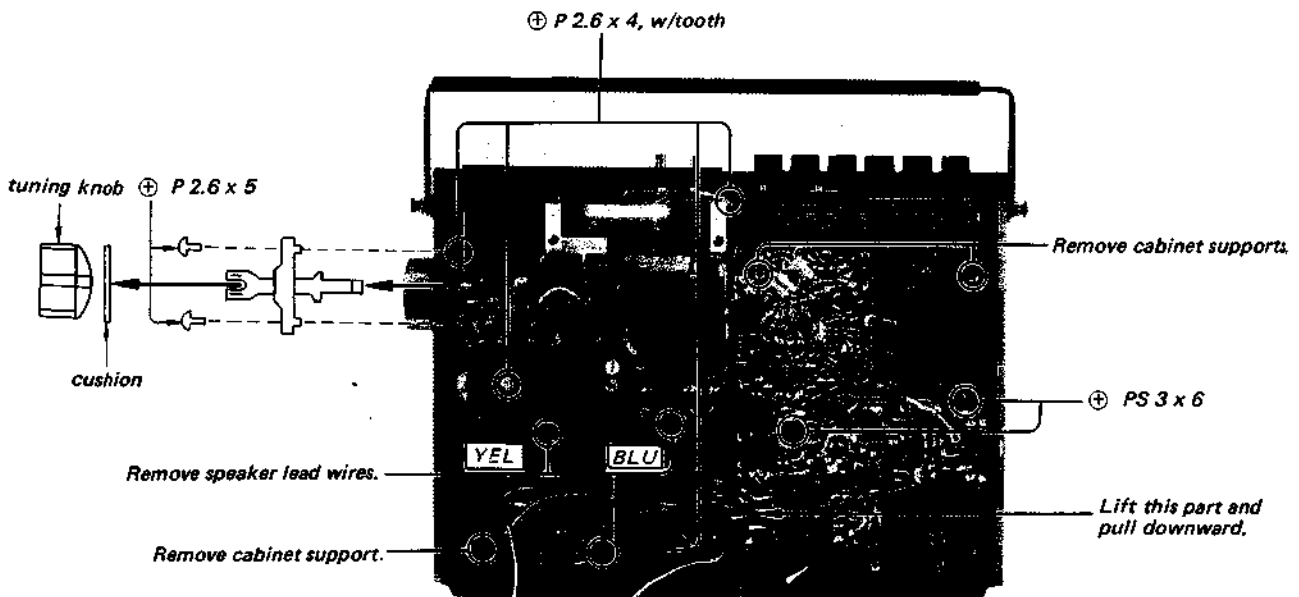
**UK Model**

## SECTION 2 DISASSEMBLY

### 2-1. REAR CABINET REMOVAL

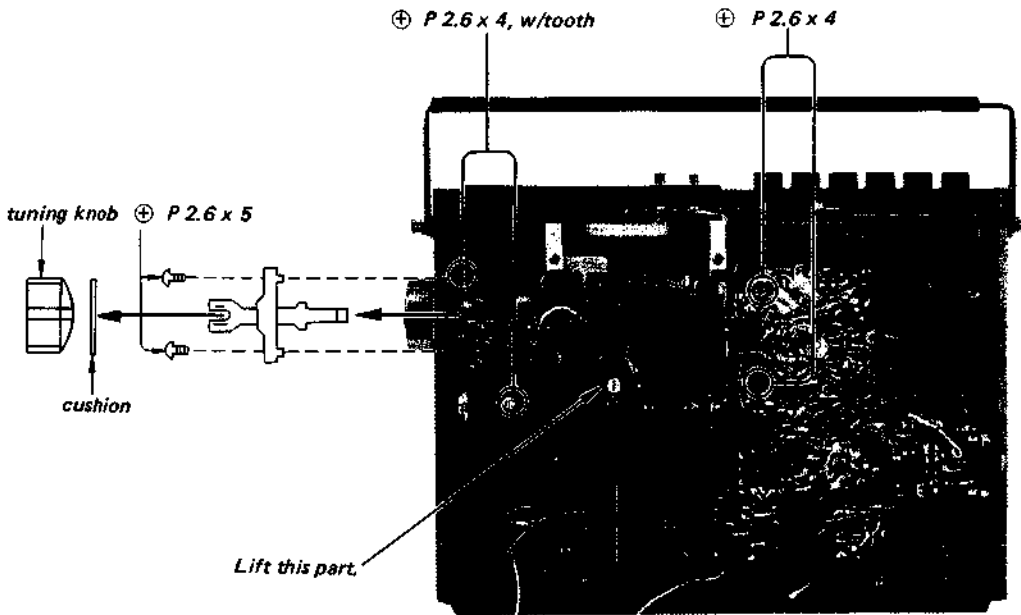


### 2-2. FRONT CABINET REMOVAL

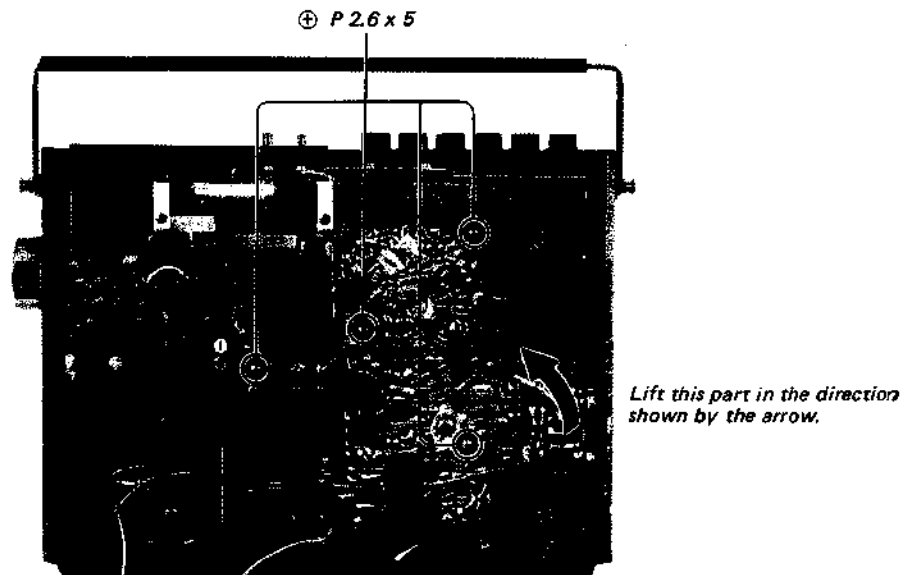




**2-3. RADIO SECTION REMOVAL**



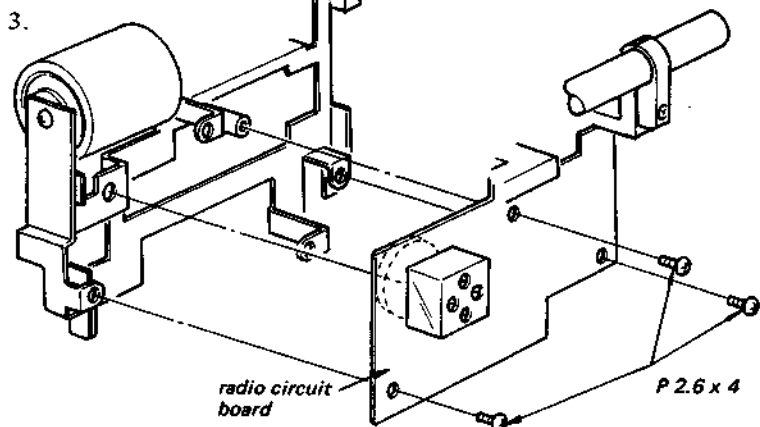
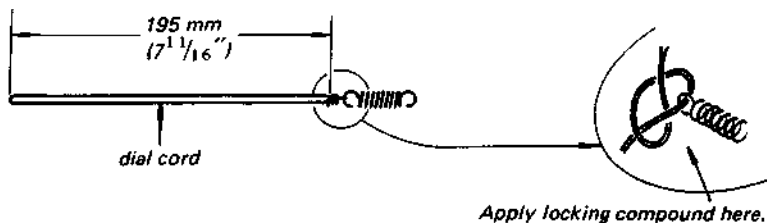
**2-4. TAPE RECORDER CIRCUIT BOARD REMOVAL**



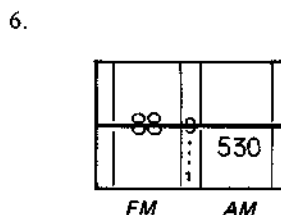
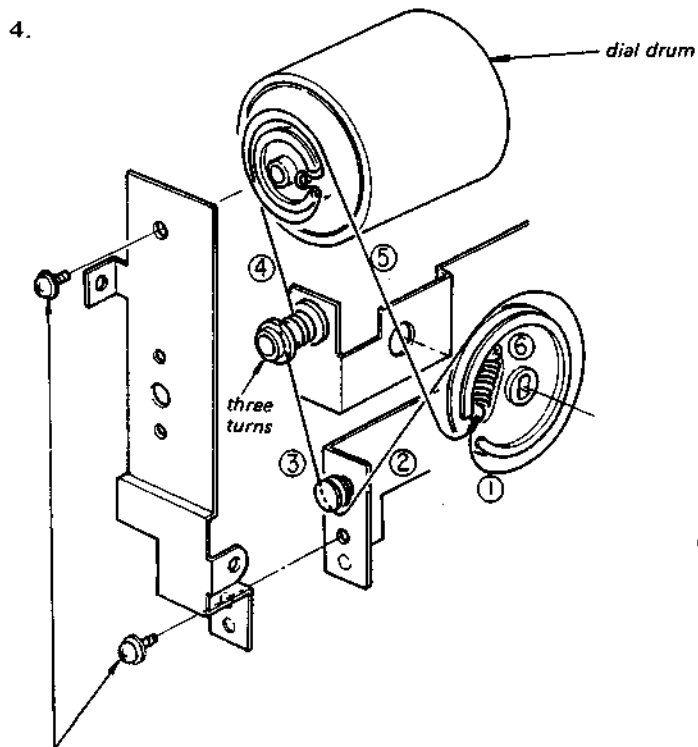
**2-5. DIAL CORD STRINGING**

Proceed in numerical order.

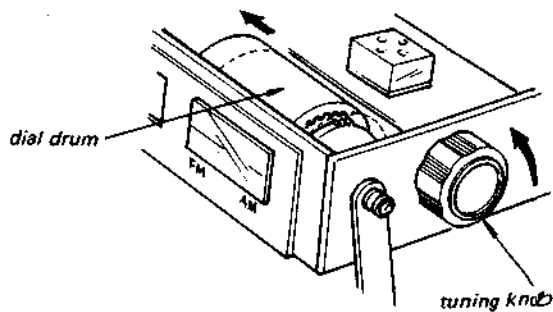
1. Remove the radio section according to the 2-3, RADIO SECTION REMOVAL on page 9.
2. Prepare a dial cord loop as shown.



5. When reassembling the radio circuit board, turn the tuning shaft of tuning capacitor fully counterclockwise.



Turn the tuning knob fully counter-clockwise, then pull the dial drum in the direction shown by the arrow and adjust 0 on the dial drum to the dial line as shown above.



SECTION 3  
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

**Leaf Switch (S3) Position Adjustment**  
— in stop mode —

Loosen the two screws and adjust the leaf switch to contact gap tolerances shown.

leaf switch (S3)  
0.5 ~ 1.5 mm  
(1/64 ~ 1/16")  
brake lever should touch

Note: After the adjustment, make sure that the leaf switch closes in playback, fast forward, and rewind modes.

**Flywheel Retainer Play Adjustment**  
— in stop mode —

Adjust this screw. flywheel retainer approx. 0.4 mm (1/64")

flywheel  
chassis

**Capstan Pulley Height Adjustment**  
— in stop mode —

Loosen these set screws and adjust the pulley height.

capstan  
capstan pulley  
take-up idler  
2 mm (5/64")  
chassis  
capstan shaft

**Motor Pulley Height Adjustment**  
— in stop mode —

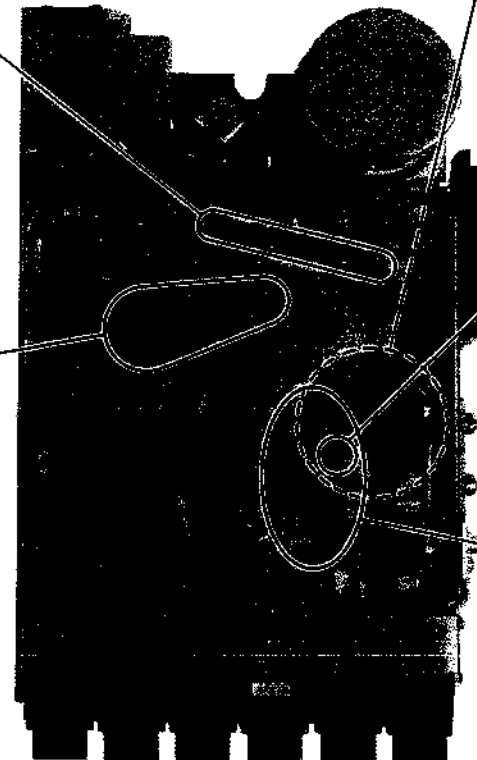
2.8 mm ~ 3.2 mm  
(1/64 ~ 1/8")  
motor shaft  
belt  
motor pulley

Loosen these set-screws and adjust the motor pulley height.

**Brake Adjustment**  
— in playback mode —

brake lever  
brake  
supply reel spindle  
take-up reel spindle  
0.5 mm (1/64")  
Adjust by bending.

- Place the unit in stop mode from playback mode. At this time the tape should slacken a little. To allow tape to slacken, bend the brake in the direction shown by arrow ④ if necessary.
- Place the unit in stop mode from rewind mode. At this time the tape should slacken a little. To allow tape to slacken, bend the brake in the direction shown by arrow ① if necessary.
- After the adjustments, make sure that the brake does not contact the reel spindle drums in playback, fast forward and rewind modes.



**Pinch Roller Position Adjustment**  
— in playback mode —

idler stopper  
take-up reel spindle  
take-up idler  
capstan  
pinch roller  
pinch roller lever  
0.5 ~ 1 mm (1/64 ~ 3/64")

Adjust by bending here.

Note: After the adjustment, depress the forward button. At this time the take-up reel spindle should begin to rotate just before or at the moment that the pinch roller contacts the capstan. If necessary, adjust by bending the idler stopper.

**Pinch Roller Pressure Measurement**  
— in playback mode —

capstan  
pinch roller  
spring scale  
270 ~ 370g (9.5 ~ 13 oz)

Note: With the unit in the playback mode, pull pinch roller away from the capstan using a spring scale, as shown in the figure. Allow pinch roller to return slowly. The pressure (spring scale tension) should be measured at the point where the pinch roller just contacts the capstan.

**Torque Measurements**  
Appropriate values are as follows:

Playback torque	40 ~ 70 g.cm (0.56 ~ 0.98 oz.inch)
Fast forward torque	55 ~ 150 g.cm (0.77 ~ 2.0 oz.inch)
Rewind torque	55 ~ 150 g.cm (0.77 ~ 2.0 oz.inch)

3-2. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

PRECAUTION

- Clean the following parts with alcohol moistened swab:
  - Record/Playback head
  - Erase head
  - Capstan
  - Pinch roller
  - Rubber belts
  - Idlers
- Demagnetize record/playback head with a head demagnetizer. (Do not bring head demagnetizer close to erase head, and do not use magnetized screwdriver for adjustments).
- After the adjustments, apply locking compound to adjusted parts.
- Adjustments should be performed in the order listed in this service manual.
- Adjustments and measurements should be performed with rated power supply voltage unless otherwise specified.

TAPE RECORDER SECTION

Test Equipment/Tools Required

- audio oscillator (af osc)
- VTVM
- digital frequency counter or speed checker (SONY LFM-30)
- 1 kHz bandpass filter
- 10 kΩ resistor, 8Ω resistor
- attenuator
- SONY test tapes
  - P-4-A81 (6.3 kHz, -10 dB)
  - P-4-L81 (333 Hz, 0 dB)
  - SPC-4 (1 kHz, 0 dB)
  - WS-48 (3 kHz, 0 dB)
- blank tape cassette (completely erased)
- wow meter

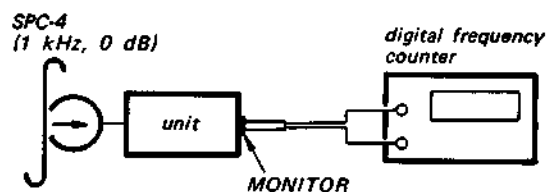
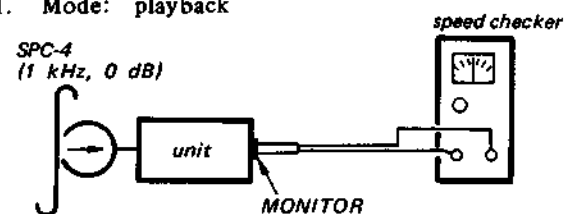
Tape Speed Adjustment

Control/Switch Setting:

RADIO switch: OFF  
 TONE switch: HIGH  
 VOLUME control: at any position so that frequency counter or speed checker can work.  
 Power source: 6 V DC

Procedure:

- Mode: playback

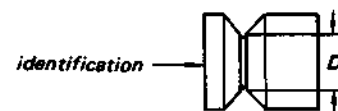


Specification: -2.5~+3% (975~1,030 Hz)  
 Frequency difference between beginning and end is within 10 Hz.

- If necessary, replace motor pulley.

MOTOR PULLEY

Identification			
Part No.	3-580-038-01	3-580-037-01	3-580-039-01
D	4.67 mm	4.72 mm	4.78 mm
Tape Speed	slower ← → faster		



Note: After replacing motor pulley, perform Motor Pulley Height Adjustment on page 12.

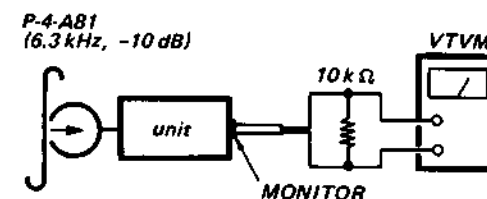
Head Azimuth Adjustment

Control/Switch Setting:

RADIO switch: OFF  
 TONE switch: HIGH  
 VOLUME control: mechanical mid

Procedure:

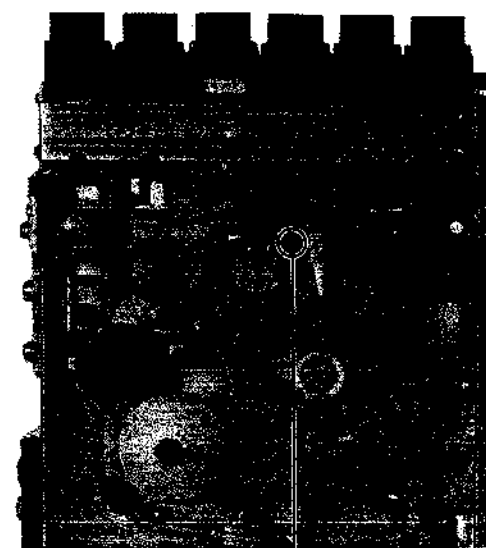
- Mode: playback



- Turn adjusting screw for the highest VTVM reading.

Note: Several peaks may appear, take the highest.

Adjustment Location:



adjusting screw

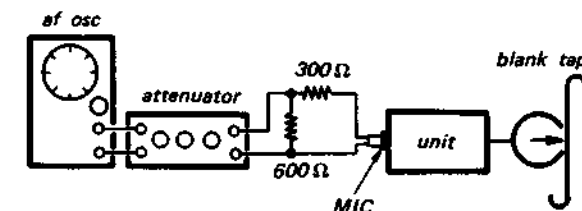
Overall Frequency Response Measurement

Control/Switch Setting:

RADIO switch: OFF  
 TONE switch: HIGH

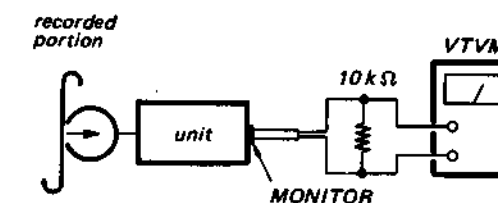
Procedure:

- Mode: record



- 1 kHz, -80 dB (77.5 μV)
- 200 Hz, -80 dB (77.5 μV)
- 6 kHz, -80 dB (77.5 μV)

- Mode: playback



Recorded signal	VTVM reading
1 kHz	Adjust VOLUME control for -10 dB (0.25V)
200 Hz	-17 ± 3 dB (77.5~155 mV)
6 kHz	-14 dB (155 mV) or greater

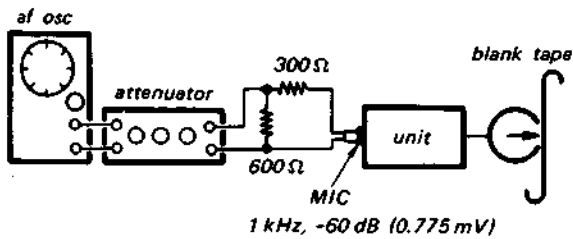
**Overall Signal-to-Noise Ratio Measurement**

**Control/Switch Setting:**

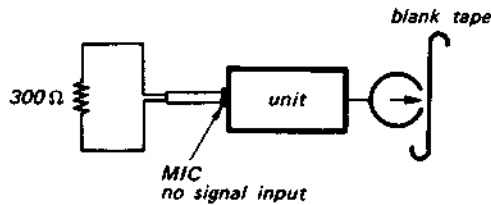
RADIO switch: OFF  
TONE switch: HIGH

**Procedure:**

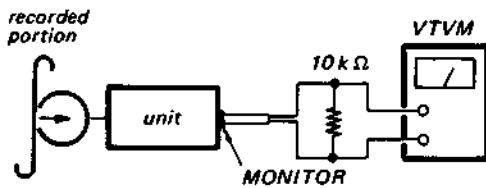
1. Mode: record



2. Mode: record



3. Mode: playback



Recorded signal	VTVM reading
1 kHz	Adjust VOLUME control for 0 dB (0.775 V)
no signal	less than -35 dB (13.8 mV) for dc power source less than -30 dB (24.5 mV) for ac power source

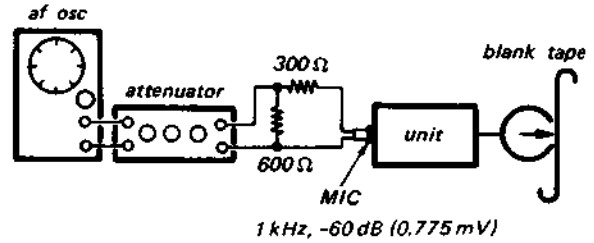
**Erase Ratio Measurement**

**Control/Switch Setting:**

RADIO switch: OFF  
TONE switch: HIGH

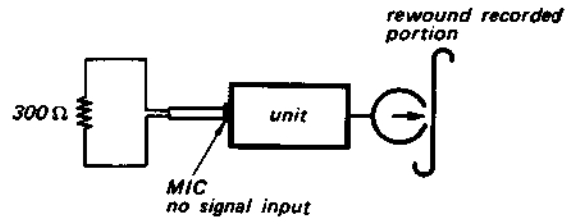
**Procedure:**

1. Mode: record

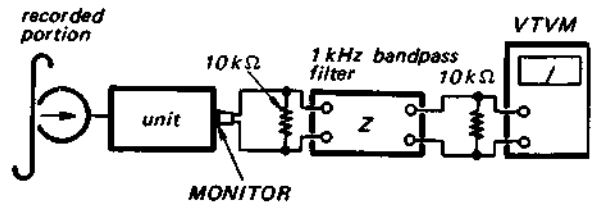


2. Rewind half of the recorded portion.

3. Mode: record



4. Mode: playback



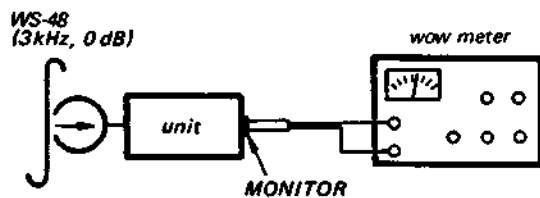
Recorded signal	VTVM reading
1 kHz	Adjust VOLUME control for 0 dB (0.775 V)
no signal	-55 dB (1.4 mV) or less

**Wow and Flutter Measurement****Control/Switch Setting:**

RADIO switch: OFF  
TONE switch: HIGH  
VOLUME control: mechanical mid

**Procedure:**

1. Mode: playback

**Specification:**

0.4% (RMS) or less

**Note:** Measure wow and flutter for beginning, midway and end portion of WS-48.

**RADIO SECTION**

**Test Equipment/Tools Required:**

- AM rf signal generator
- FM rf signal generator
- FM i-f sweep/marker generator
- oscilloscope
- VOM
- 10 kΩ resistor (1/4 W)

**Note: 1. Modulation**

- AM: 30% amplitude modulation by 400 Hz signal.
- FM: ±22.5 kHz frequency modulation by 400 Hz signal.

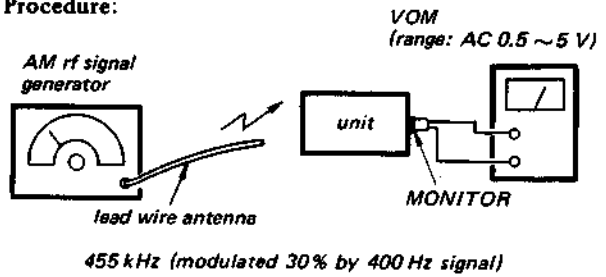
- 2. AM, FM rf signal generator output level should be as low as possible for following adjustments.

**AM I-f Alignment**

**Control/Switch Setting:**

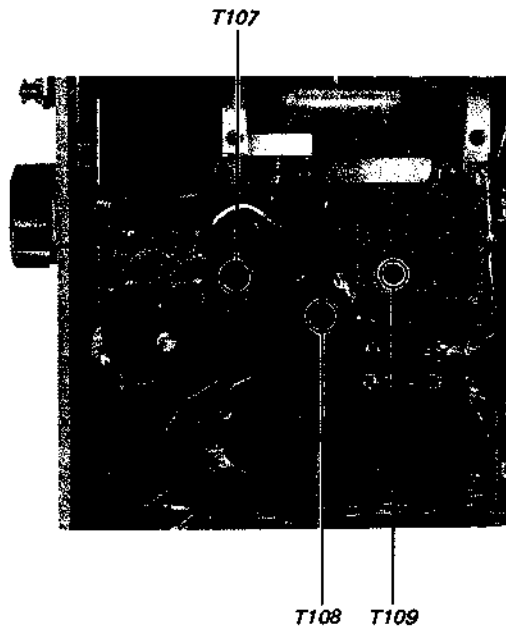
- RADIO switch: AM
- VOLUME control: mechanical mid
- TONE switch: HIGH

**Procedure:**



Adjust	VOM reading
T107, T108, T109	maximum

**Adjustment Location:**

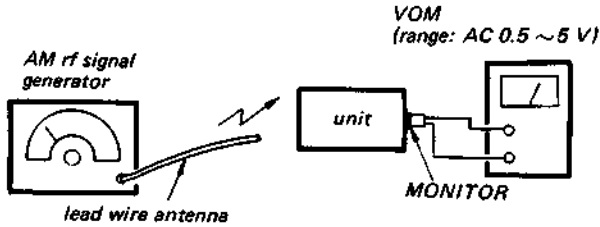


**AM Frequency Coverage and Tracking Adjustments**

**Control/Switch Setting:**

RADIO switch: AM  
 VOLUME control: mechanical mid  
 TONE switch: HIGH

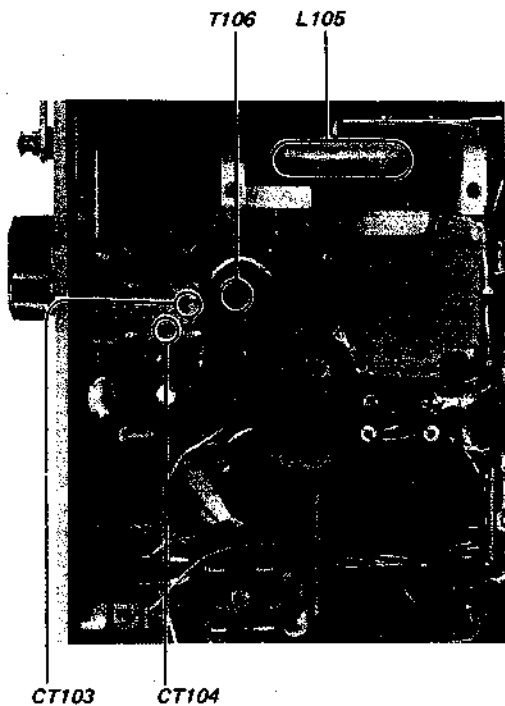
**Procedure:**



Adjustment	step	signal frequency	tuning knob	adjust	VOM reading
Frequency Coverage	1	520 kHz	fully counterclockwise	T106	maximum
	2	1,650 kHz	fully clockwise	CT104	maximum
Tracking	1	600 kHz	tune to 600 kHz	L105	maximum
	2	1,400 kHz	tune to 1,400 kHz	CT103	maximum

**Note:** Repeat above steps two or three times until desired result is obtained.

**Adjustment Location:**

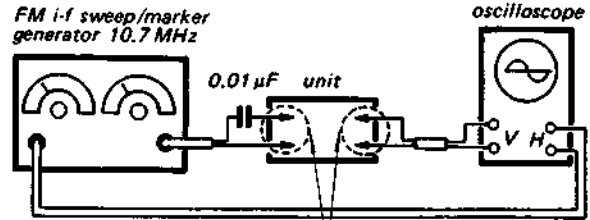


**FM i-f Alignment and Discriminator Adjustment**

**Control/Switch Setting:**

RADIO switch: FM  
 VOLUME control: minimum (fully leftward)

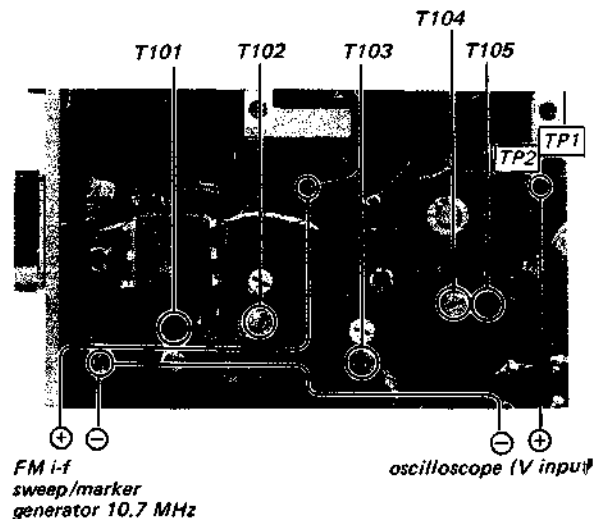
**Procedure:**



See Adjustment Location.

Step	Adjust	Oscilloscope
1	Turn T105 fully counterclockwise.	
2	T101 T102 T103 T104	<p>10.7 MHz marker maximum amplitude</p>
3	T105	<p>10.7 MHz marker symmetry</p>

**Adjustment Location:**





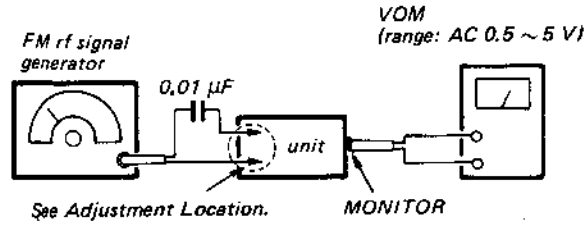
SECTION 4  
DIAGRAMS

FM Frequency Coverage and Tracking Adjustments

Control/Switch Setting:

RADIO switch: FM  
TONE switch: HIGH  
VOLUME control: mechanical mid

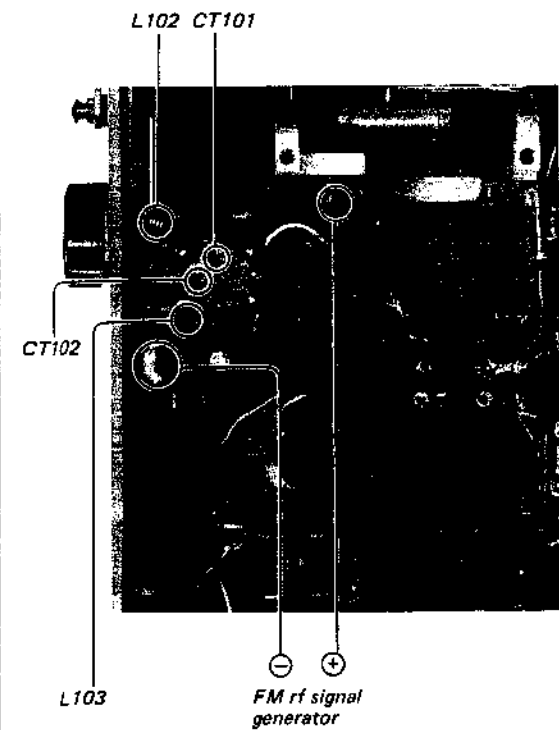
Procedure:



Adjustment	step	signal frequency	tuning knob	adjust	VOM reading
Frequency Coverage	1	87.5 MHz	fully counterclockwise	L103	maximum
	2	109 MHz	fully clockwise	CT102	maximum
Tracking	1	90 MHz	tune to 90 MHz	L102	maximum
	2	106 MHz	tune to 106 MHz	CT101	maximum

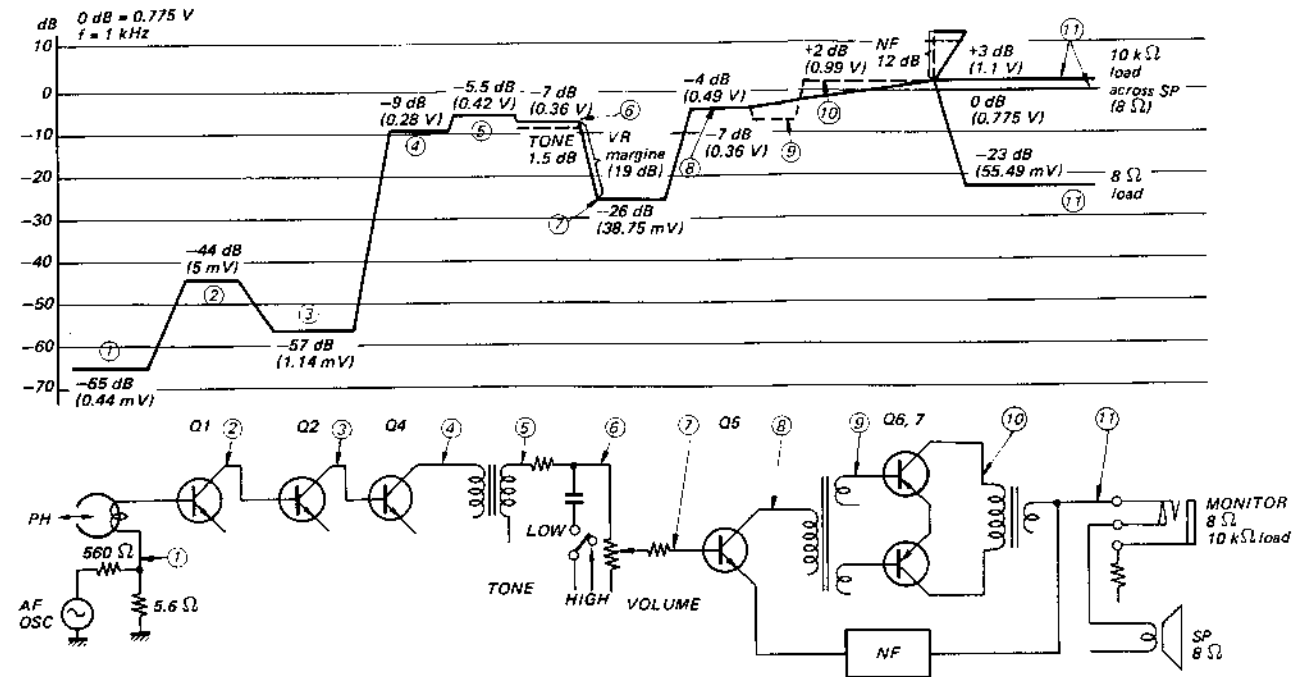
Note: Repeat above steps two or three times until desired result is obtained.

Adjustment Location:

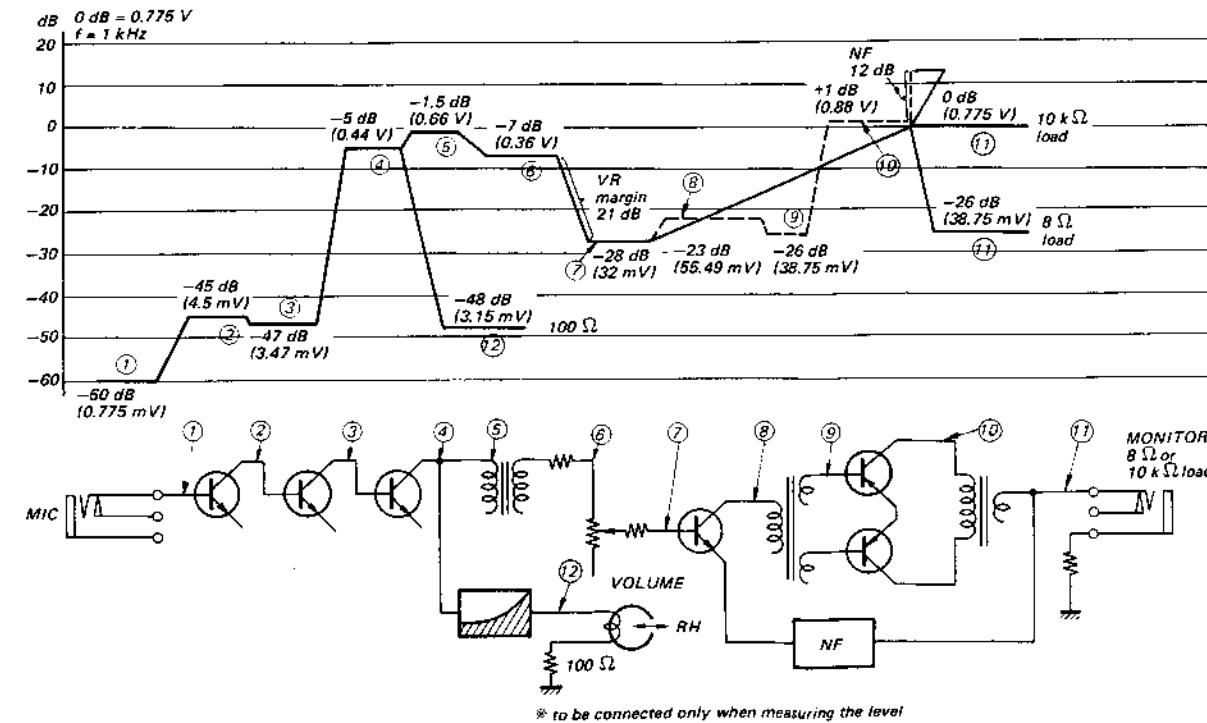


4-1. LEVEL DIAGRAMS

Playback Mode

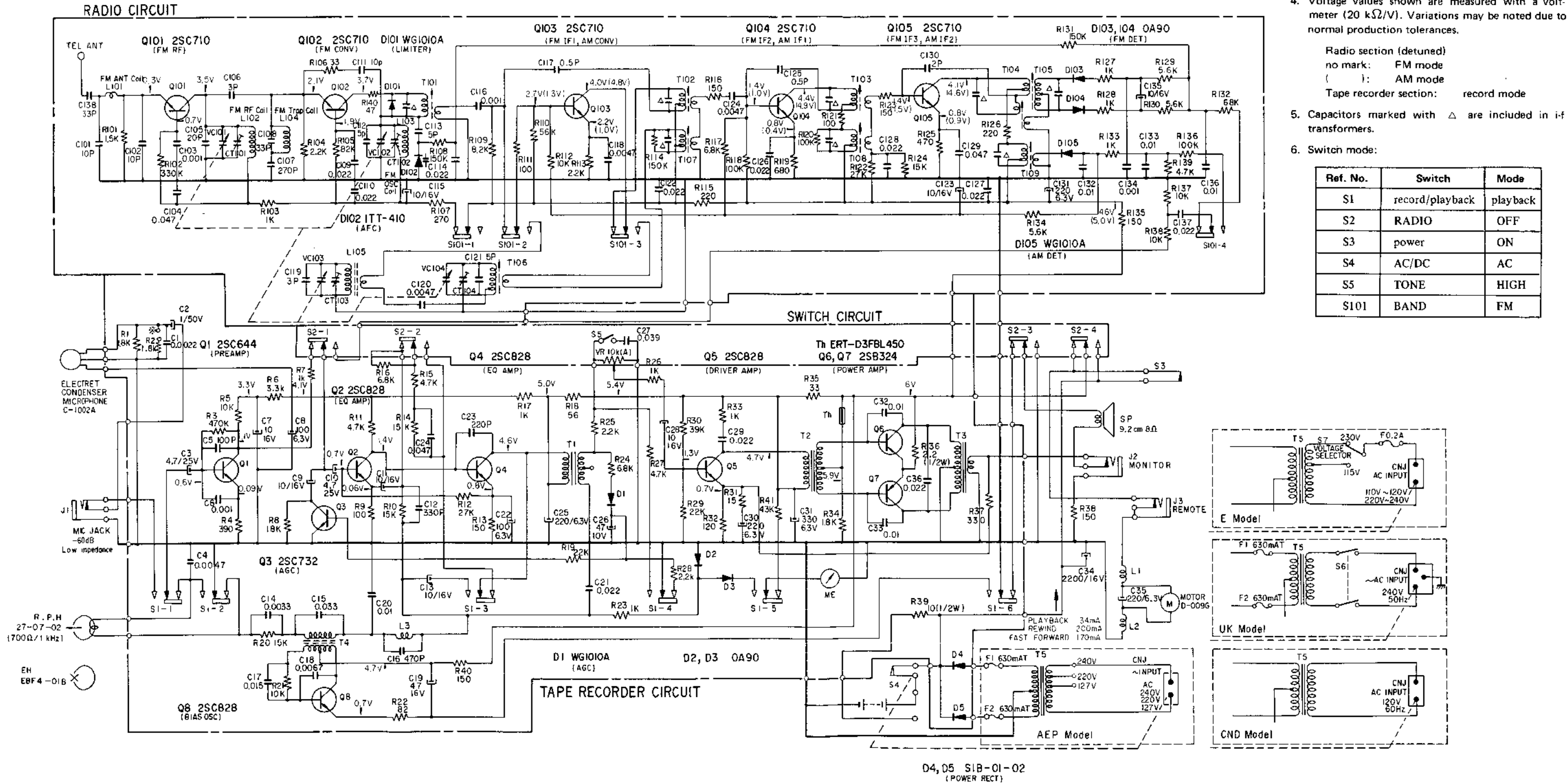


Record Mode



# CF-150 CF-150

## 4-2. SCHEMATIC DIAGRAM

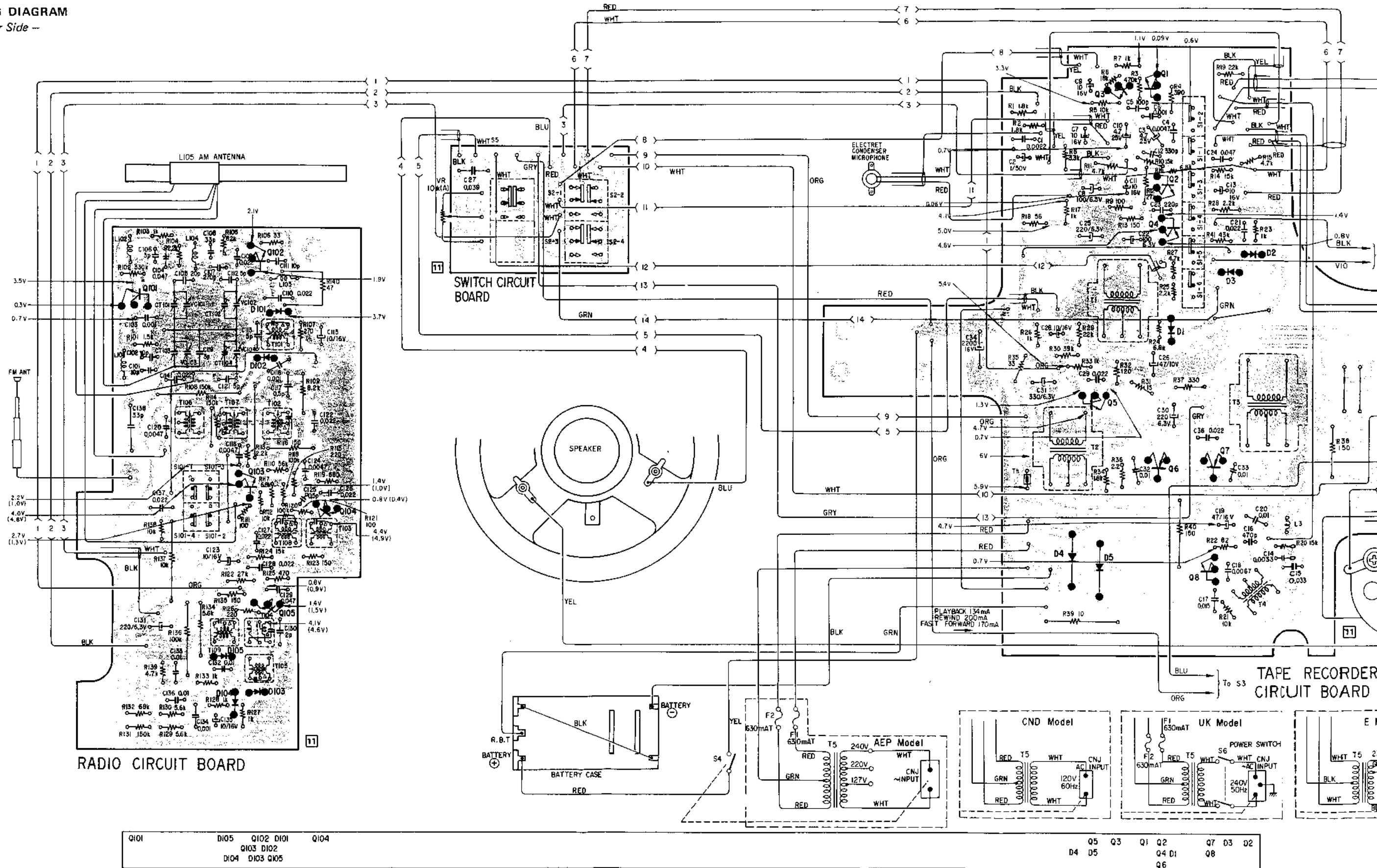


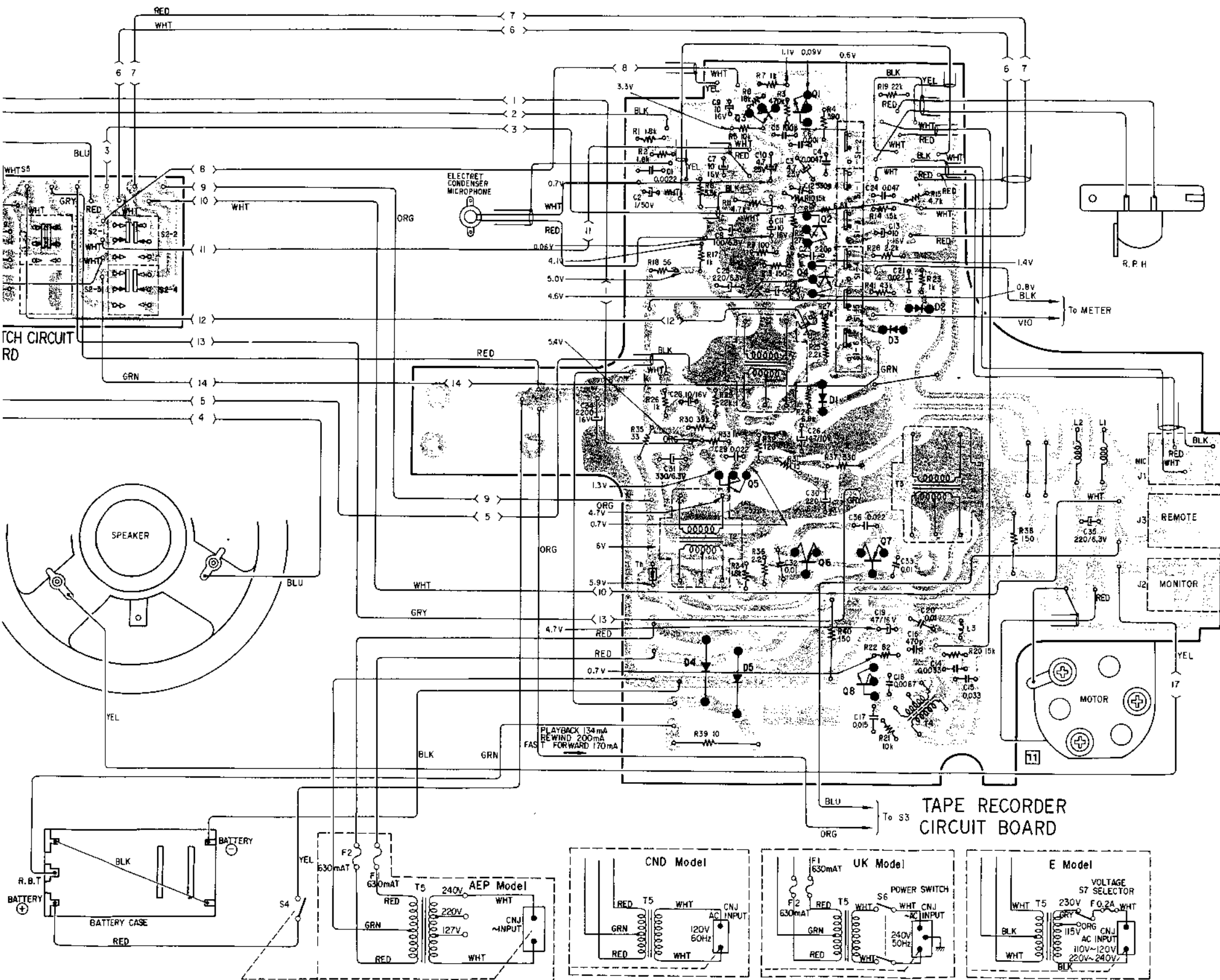
- Note:**
1. Resistors and capacitors are in  $\Omega$  and  $\mu F$ , unless otherwise specified.
  2. The letter (A) suffixed to variable resistor value indicates the characteristics.
  3. The portion marked with \* should be connected when red marked microphone is used.
  4. Voltage values shown are measured with a voltmeter (20  $k\Omega/V$ ). Variations may be noted due to normal production tolerances.

- Radio section (detuned)  
 no mark: FM mode  
 ( ): AM mode  
 Tape recorder section: record mode
5. Capacitors marked with  $\Delta$  are included in i-f transformers.
  6. Switch mode:

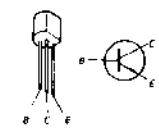
Ref. No.	Switch	Mode
S1	record/playback	playback
S2	RADIO	OFF
S3	power	ON
S4	AC/DC	AC
S5	TONE	HIGH
S101	BAND	FM

4-3. MOUNTING DIAGRAM  
— Conductor Side —

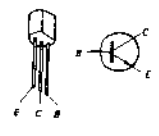




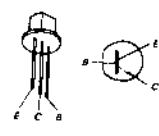
Q1: 2SC644  
Q101, 102, 103,  
104, 105: 2SC710



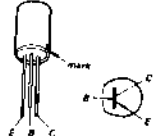
Q2, 4, 5, 8: 2SC828



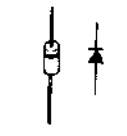
Q3: 2SC732



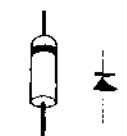
Q6, 7: 2SB324



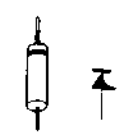
D1, 101, 105: WG1010A  
D102: 1TT-410



D2, 3, 103, 104: 0A90



D4, 5: SIB71-02



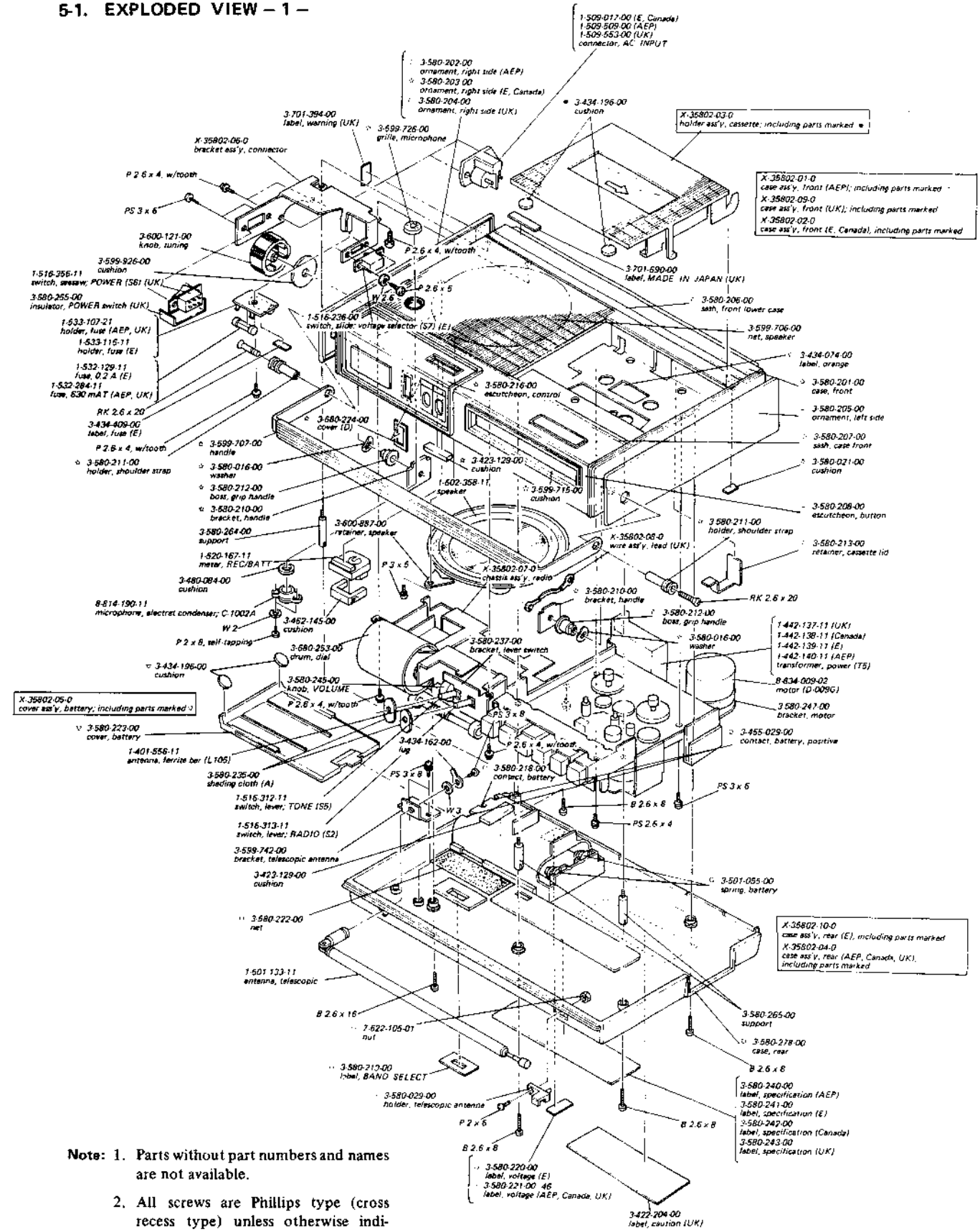
Q5	Q3	Q1	Q2	Q7	D3	D2
D4	D5	Q4	D1	Q8		
		Q6				

SECTION 5  
EXPLODED VIEWS AND PACKING

MEMO

5-2. EX

5-1. EXPLODED VIEW - 1 -



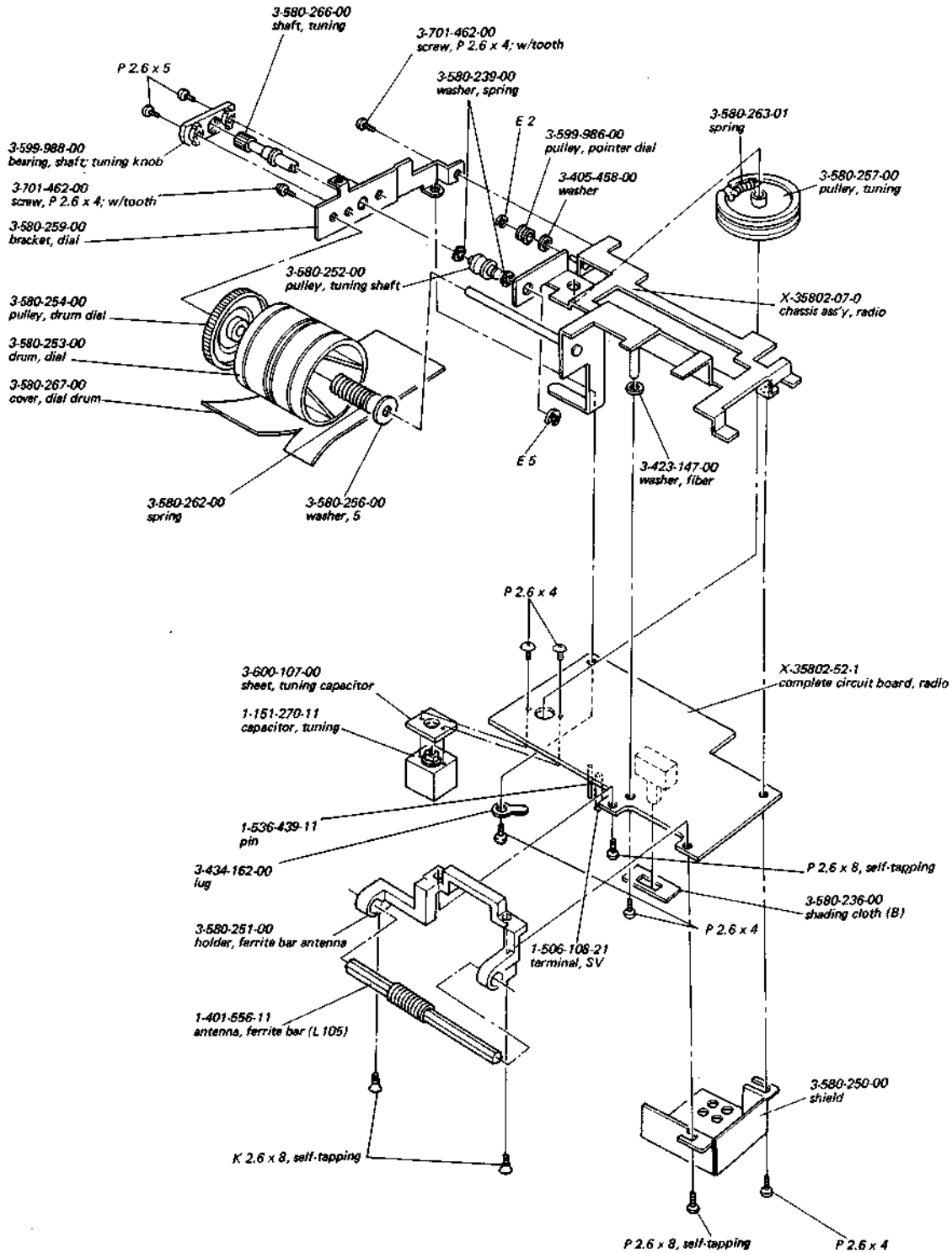
Note: 1. Parts without part numbers and names are not available.

2. All screws are Phillips type (cross recess type) unless otherwise indicated.

(-): slotted head

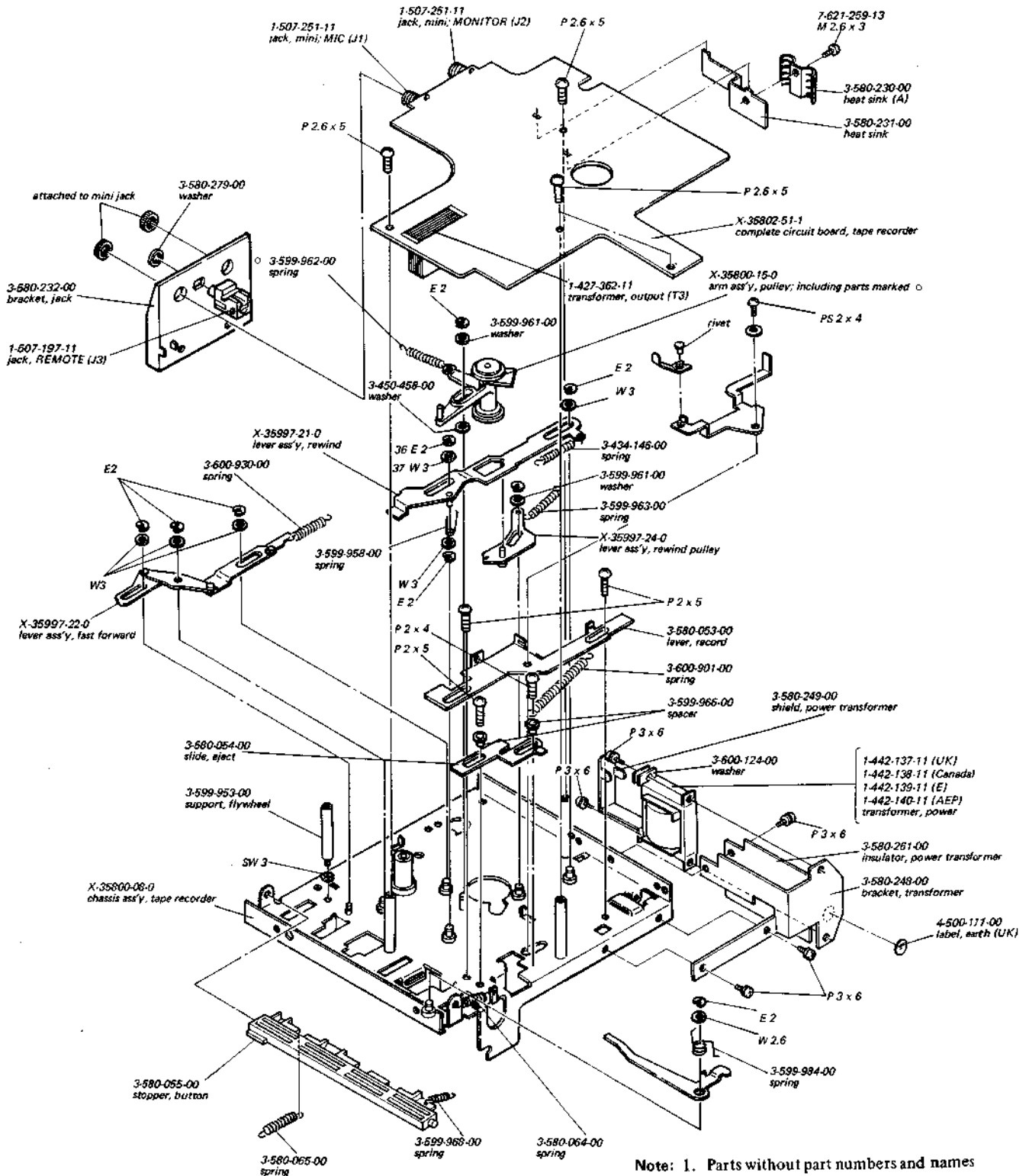


**5-3. EXPLODED VIEW - 3 -**



- Note:**
1. Parts without part numbers and names are not available.
  2. All screws are Phillips type (cross recess type) unless otherwise indicated.  
(-): slotted head

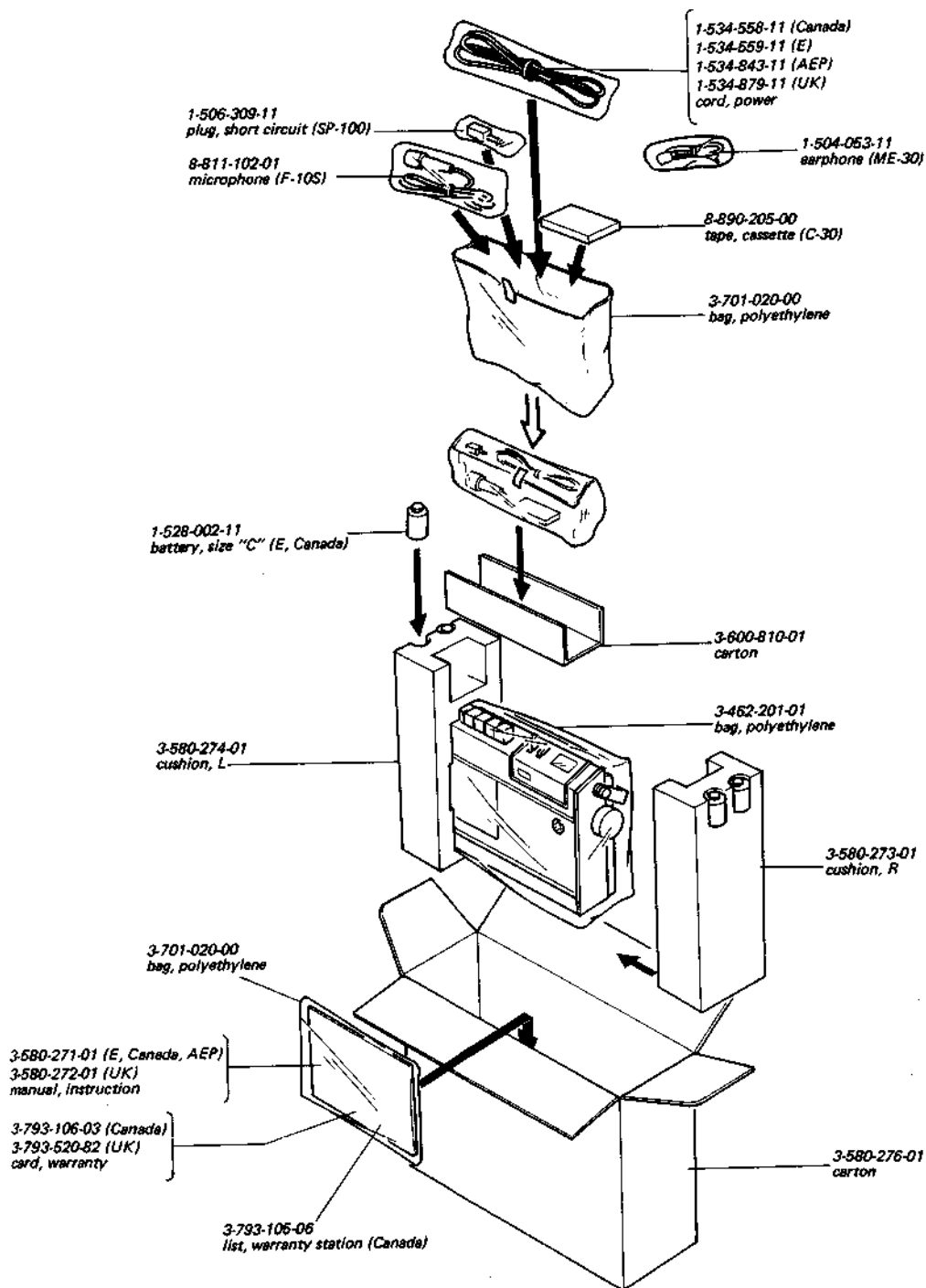
5-4. EXPLODED VIEW - 4 -



- Note: 1. Parts without part numbers and names are not available.
2. All screws are Phillips type (cross recess type) unless otherwise indicated.
- (-): slotted head



**5.5. PACKING**



**Note:** Parts without part numbers and names are not available.

## SECTION 6

### ELECTRICAL PARTS LIST

Ref. No.    Part No.    Description

#### COMPLETE CIRCUIT BOARDS

X-35802-51-1    tape recorder  
X-35802-52-1    radio  
X-35802-53-1    switch

#### SEMICONDUCTORS

Q1		transistor	2SC644
Q2		transistor	2SC828
Q3		transistor	2SC732
Q4		transistor	2SC828
Q5		transistor	2SC828
Q6		transistor	2SB324
Q7		transistor	2SB324
Q8		transistor	2SC828
Q101		transistor	2SC710
Q102		transistor	2SC710
Q103		transistor	2SC710
Q104		transistor	2SC710
Q105		transistor	2SC710
D1		diode	WG1010A
D2		diode	0A90
D3		diode	0A90
D4		diode	S1B-01-02
D5		diode	S1B-01-02
D101		diode	WG1010A
D102		diode	1TT-410
D103		diode	0A90
D104		diode	0A90
D105		diode	WG1010A
Th		thermistor	ERT-D3FBL450

#### COILS

L1	1-420-808-31	choke, 1.65 $\mu$ H
L2	1-420-808-31	choke, 1.65 $\mu$ H
L3	1-407-763-11	microinductor, 33 mH
L101	1-420-808-21	FM ant
L102	1-405-614-11	FM rf
L103	1-405-614-11	FM osc
L104	1-409-261-11	FM trap
L105	1-401-556-11	antenna, ferrite bar

#### TRANSFORMERS

T1	1-423-197-11	driver
T2	1-423-197-11	driver
T3	1-427-362-11	output
T4	1-433-155-11	bias osc

Ref. No.    Part No.    Description

T5	{	1-442-137-11	power (UK)
		1-442-138-11	power (Canada)
		1-442-139-11	power (E)
		1-442-140-11	power (AEP)

T101	1-403-920-11	FM if
T102	1-403-917-11	FM if
T103	1-403-917-11	FM if
T104	1-403-918-11	FM discriminator
T105	1-403-919-11	FM discriminator
T106	1-405-613-11	AM osc
T107	1-403-923-11	AM if
T108	1-403-922-11	AM if
T109	1-403-921-11	AM if

#### CAPACITORS

All capacitors are  $\mu$ F unless otherwise indicated. (p =  $\mu$  $\mu$ ,  
elect = electrolytic)

V C	1-151-270-11	tuning	
C1	1-105-505-12	0.0022	50 V mylar
C2	1-121-391-11	1	50 V elect
C3	1-121-464-11	4.7	25 V elect
C4	1-105-509-12	0.0047	50 V mylar
C5	1-101-896-11	100 p	50 V ceramic
C6	1-101-918-11	0.001	25 V ceramic
C7	1-121-398-11	10	16 V elect
C8	1-121-491-11	100	6.3 V elect
C9	1-121-398-11	10	16 V elect
C10	1-121-464-11	4.7	25 V elect
C11	1-121-398-11	10	16 V elect
C12	1-102-820-11	330 p	50 V ceramic
C13	1-121-398-11	10	16 V elect
C14	1-105-507-12	0.0033	50 V mylar
C15	1-105-519-12	0.033	50 V mylar
C16	1-103-617-11	470 p	125 V styrol
C17	1-105-515-12	0.015	50 V mylar
C18	1-105-511-12	0.0068	50 V mylar
C19	1-121-352-11	47	16 V elect
C20	1-101-923-11	0.01	25 V ceramic
C21	1-101-924-11	0.022	25 V ceramic
C22	1-121-491-11	100	6.3 V elect
C23	1-102-817-11	220 p	50 V ceramic
C24	1-105-521-12	0.047	50 V mylar
C25	1-121-420-11	220	6.3 V elect
C26	1-121-487-11	47	6.3 V elect
C27	1-105-520-12	0.039	35 V mylar
C28	1-121-398-11	10	16 V elect
C29	1-101-924-11	0.022	25 V ceramic
C30	1-121-420-11	220	6.3 V elect
C31	1-121-751-11	330	6.3 V elect

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
C32	1-105-513-12	0.01	50 V mylar	R4	1-242-663-11	390	
C33	1-101-923-11	0.01	25 V ceramic	R5	1-242-697-11	10 k	
C34	1-121-659-11	2200	16 V elect	R6	1-242-685-11	3.3 k	
C35	1-121-420-11	220	6.3 V elect	R7	1-242-673-11	1 k	
C36	1-101-924-11	0.022	25 V ceramic	R8	1-242-703-11	18 k	
C101	1-101-959-11	10 p	50 V ceramic	R9	1-242-649-11	100	
C102	1-101-959-11	10 p	± 0.5 p 50 V ceramic	R10	1-242-701-11	15 k	
C103	1-101-918-11	0.001	25 V ceramic	R11	1-242-689-11	4.7 k	
C104	1-101-925-11	0.047	25 V ceramic	R12	1-242-707-11	27 k	
C105	1-102-896-11	20 p	50 V ceramic	R13	1-242-653-11	150	
C106	1-101-187-11	3 p	± 0.5 p 50 V ceramic	R14	1-242-701-11	15 k	
C107	1-102-819-11	270 p	50 V ceramic	R15	1-242-689-11	4.7 k	
C108	1-101-872-11	33 p	50 V ceramic	R16	1-242-693-11	6.8 k	
C109	1-101-924-11	0.022	25 V ceramic	R17	1-242-673-11	1 k	
C110	1-101-924-11	0.022	25 V ceramic	R18	1-242-643-11	56	
C111	1-101-959-11	10 p	± 0.5 p 50 V ceramic	R19	1-242-705-11	22 k	
C112	1-101-955-11	5 p	± 0.5 p 50 V ceramic	R20	1-242-701-11	15 k	
C113	1-101-955-11	5 p	± 0.5 p 50 V ceramic	R21	1-242-697-11	10 k	
C114	1-101-924-11	0.022	25 V ceramic	R22	1-242-647-11	82	
C115	1-121-192-11	10	16 V elect	R23	1-242-673-11	1 k	
C116	1-101-918-11	0.001	25 V ceramic	R24	1-242-693-11	6.8 k	
C117	1-101-837-11	0.5 p	± 0.25 p 50 V ceramic	R25	1-242-681-11	2.2 k	
C118	1-105-509-12	0.0047	50 V mylar	R26	1-242-678-11	1 k	
C119	1-101-187-11	3 p	± 0.5 p 50 V ceramic	R27	1-242-689-11	4.7 k	
C120	1-105-509-12	0.0047	50 V mylar	R28	1-242-681-11	2.2 k	
C121	1-101-955-11	5 p	± 0.5 p 50 V ceramic	R29	1-242-705-11	22 k	
C122	1-101-924-11	0.022	25 V ceramic	R30	1-242-711-11	39 k	
C123	1-121-192-11	10	16 V elect	R31	1-242-829-11	15	
C124	1-101-922-11	0.0047	25 V ceramic	R32	1-242-651-11	120	
C125	1-101-837-11	0.5 p	± 0.25 p 50 V ceramic	R33	1-242-673-11	1 k	
C126	1-101-924-11	0.022	25 V ceramic	R34	1-242-679-11	1.8 k	
C127	1-101-924-11	0.022	25 V ceramic	R35	1-242-637-11	33	
C128	1-101-924-11	0.022	25 V ceramic	R36	1-202-509-31	2.2	1/2 W composition
C129	1-101-925-11	0.047	25 V ceramic	R37	1-242-661-11	330	
C130	1-101-177-11	2 p	± 0.25 p 50 V ceramic	R38	1-242-653-11	150	
C131	1-121-419-11	220	6.3 V elect	R39	1-202-525-31	10	1/2 W composition
C132	1-105-513-12	0.01	50 V mylar	R40	1-244-653-11	150	
C133	1-105-513-12	0.01	50 V mylar	R41	1-242-713-11	43 k	
C134	1-105-501-12	0.001	50 V mylar	R101	1-242-677-11	1.5 k	
C135	1-121-192-11	10	16 V elect	R102	1-242-733-11	330 k	
C136	1-105-513-12	0.01	50 V mylar	R103	1-242-673-11	1 k	
C137	1-101-924-11	0.022	25 V ceramic	R104	1-242-681-11	2.2 k	
C138	1-101-872-11	33 p	50 V ceramic	R105	1-242-719-11	82 k	
				R106	1-242-637-11	33	
				R107	1-242-659-11	270	
				R108	1-242-725-11	150 k	
				R109	1-242-623-11	8.2 k	
				R110	1-242-715-11	56 k	
				R111	1-242-649-11	100	
				R112	1-242-697-11	10 k	
				R113	1-242-681-11	2.2 k	

## RESISTORS

All resistors are 1/4 W, carbon type and in  $\Omega$  unless otherwise indicated. (k = 1,000)

R1	1-242-679-11	1.8 k
R2	1-242-679-11	1.8 k
R3	1-242-737-11	470 k

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R114	1-244-725-11	150 k
R115	1-242-657-11	220
R116	1-242-653-11	150
R117	1-242-693-11	6.8 k
R118	1-242-721-11	100 k
R119	1-242-669-11	680
R120	1-242-721-11	100 k
R121	1-242-649-11	100
R122	1-242-707-11	27 k
R123	1-242-653-11	150
R124	1-242-701-11	15 k
R125	1-242-665-11	470
R126	1-242-657-11	220
R127	1-242-673-11	1 k
R128	1-242-673-11	1 k
R129	1-242-691-11	5.6 k
R130	1-242-691-11	5.6 k
R131	1-242-725-11	150 k
R132	1-242-717-11	68 k
R133	1-242-673-11	1 k
R134	1-242-691-11	5.6 k
R135	1-242-653-11	150
R136	1-244-722-11	100 k
R137	1-244-697-11	10 k
R138	1-242-697-11	10 k
R139	1-242-689-11	4.7 k
R140	1-242-641-11	47
VR	1-224-283-11	variable, 10 k (A); VOLUME
<b>SWITCHES</b>		
S1	1-514-978-11	slide, record/playback
S2	1-516-313-11	lever, RADIO
S3	1-516-020-00	leaf, power
S4		included in AC INPUT connector

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
S5	1-516-312-11	lever, TONE
S6	1-516-356-11	seesaw, POWER (UK)
S7	1-516-236-00	slide, voltage selector (E)
S101	1-516-314-11	slide, BAND SELECT
<b>JACKS</b>		
J1	1-507-251-11	mini, MIC
J2	1-507-251-11	mini, MONITOR
J3	1-507-197-11	REMOTE
<b>MISCELLANEOUS</b>		
R.P.H	1-459-082-00	head, record/playback; 27-07-02
E.H	8-827-504-02	head, erase; EBF4-01B
TEL ANT	1-501-133-11	antenna, telescopic
SP	1-502-358-11	speaker 9.2 cm 8 ohms
	1-506-108-21	terminal, SV
CNJ	1-509-017-00	connector, AC INPUT (E, Canada)
	1-509-509-00	connector, AC INPUT (AEP)
	1-509-553-11	connector, AC INPUT (UK)
ME	1-520-167-11	meter, REC/BATT
F	1-532-129-11	fuse, 0.2 A (E)
F1, F2	1-532-284-11	fuse, 630 mA (AEP, UK)
	1-533-107-21	holder, fuse (AEP, UK)
	1-533-115-11	holder, fuse (E)
	8-814-190-11	microphone, electret condenser, C-1002A
M	8-834-009-02	motor; D-009G
	1-534-558-11	(Canada)
	1-534-559-11	(E)
	1-534-843-11	(AEP)
	1-534-879-11	(UK)
	1-536-439-11	pin

**SECTION 7  
HARDWARE**

<u>Part No.</u>	<u>Description</u>
<b>SCREWS</b>	
7-621-255-23	P 2 x 4
7-621-255-35	P 2 x 5
7-621-255-42	P 2 x 6
7-621-259-13	P 2.6 x 3
7-621-259-22	P 2.6 x 4, w/tooth
7-621-259-23	P 2.6 x 4
7-621-259-32	P 2.6 x 5
7-621-259-63	P 2.6 x 10
7-621-305-52	F 2 x 8
7-621-660-29	RK 2.6 x 20
7-621-770-99	B 2.6 x 8
7-621-774	B 2.6 x 16
7-628-254-15	PS 2.6 x 6
7-628-254-25	PS 2.6 x 8
7-682-145-03	P 3 x 4
7-682-146-03	P 3 x 5
7-682-249-03	K 3 x 10
7-682-647-03	PS 3 x 6
7-682-648-03	PS 3 x 8
7-685-105-01	P 2 x 8, self-tapping
7-685-136-01	P 2.6 x 12, self-tapping
7-685-234-01	K 2.6 x 8, self-tapping

<u>Part No.</u>	<u>Description</u>
<b>WASHERS</b>	
7-623-105-06	2
7-623-105-11	2
7-623-107-25	2.6
7-623-108-09	3
7-623-108-11	3
7-623-110-07	4

<b>RETAINING RINGS</b>	
7-624-102-01	E 1.5
7-624-104-01	E 2
7-624-106-01	E 3
7-624-108-01	E 4
7-624-109-01	E 5
7-624-118-01	E 2.5

<b>SPRING WASHERS</b>	
7-623-205-26	2
7-623-207-21	2.6
7-623-208-21	3

<b>NUT</b>	
7-622-105-01	

— Hardware Nomenclature —

<p><b>P</b> - Pan Head Screw </p> <p><b>PS</b> - Pan Head Screw with Spring Washer </p> <p><b>K</b> - Flat Countersunk Head Screw </p> <p><b>B</b> - Binding Head Screw </p> <p><b>RK</b> - Oval Countersunk Head Screw </p> <p><b>T</b> - Truss Head Screw </p> <p><b>R</b> - Round Head Screw </p> <p><b>F</b> - Flat Fillister Head Screw </p>	<p><b>SC</b> - Set Screw </p> <p><b>E</b> - Retaining Ring (E Washer) </p> <p style="text-align: center;">W - Washer SW - Spring Washer LW - Lock Washer N - Nut</p> <p><b>- Example -</b></p> <p> </p>
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