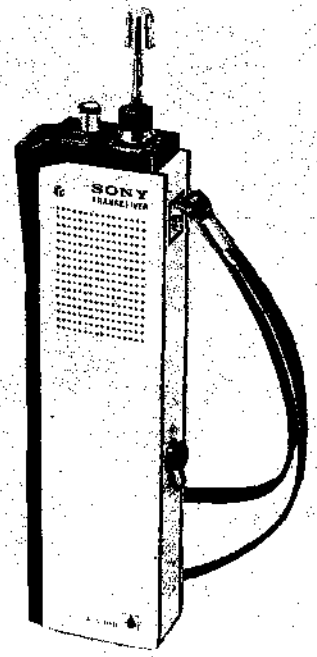
ICB-170

GEP Model
E Model



TRANSCEIVER

SPECIFICATIONS

GENERAL

Frequency:	27.175 MHz (GEP Model) 27.085 MHz (E Model)
Antenna:	Telescopic antenna 108 cm (3 feet 6 7/8 inch)
Communication System:	Push-to-talk system (one way system)
Covering Distance:	500 ~ 1,000 m (In town) 4 ~ 5 km (In the suburbs) 10 ~ 20 km (Flat and open places)
Power Requirement:	DC 9 V (battery 006P or equiv.)
Semiconductors:	1 IC, 9 transistors and 3 diodes
Dimensions:	56 (w) x 203 (h) x 40 (d) mm 2 1/4 (w) x 8 (h) x 1 3/4 (d) inches
Weight:	320 g (11 oz)

TRANSMITTER SECTION

Circuit System:	Crystal controlled oscillator
Frequency Tolerance:	± 0.005 % (0 ~ 40°C)
Output Power:	100 mW
Modulation System:	Simultaneous modulation in osc and final stage collector
Current Drain:	44 mA (at no modulation)

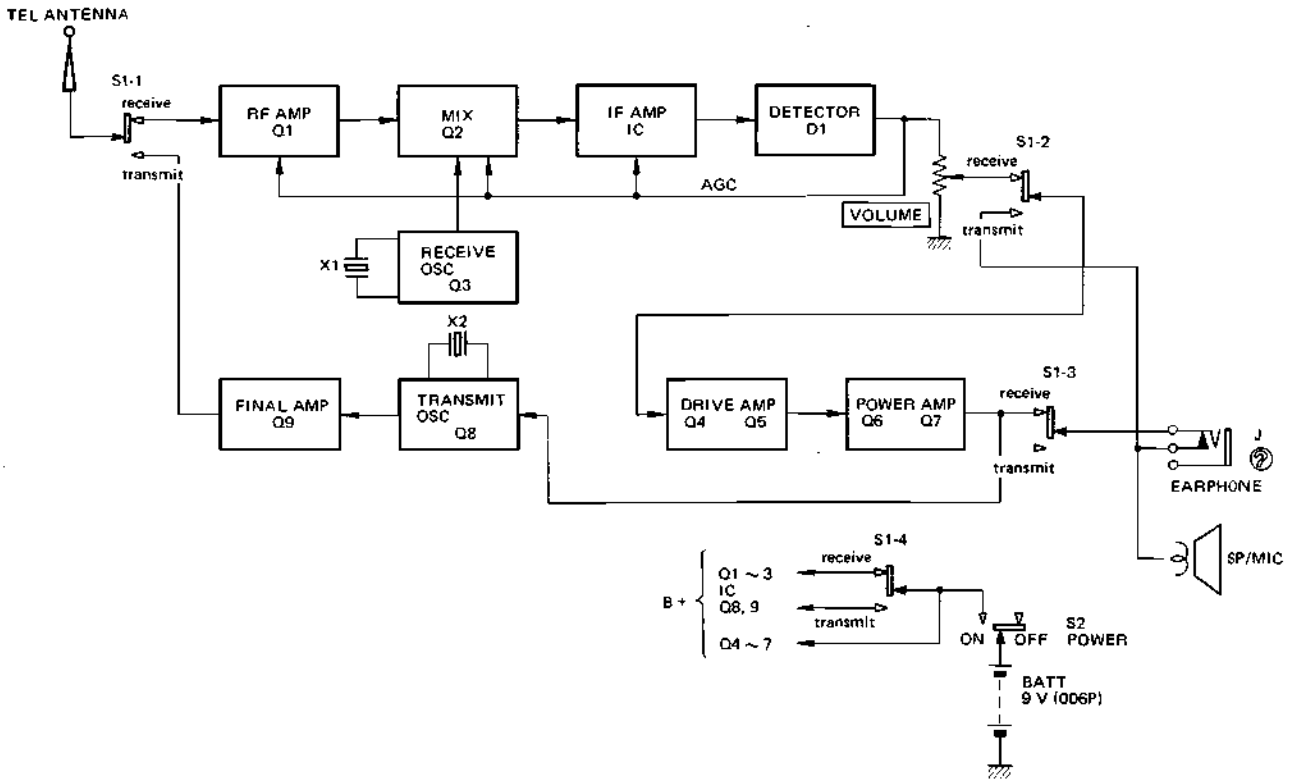
RECEIVER SECTION

Circuit System:	Superheterodyne using crystal controlled local oscillator
Maximum Sensitivity: (at 10 mW output)	−6 dB (0.5 μV)
Speaker/Microphone:	3.8 cm (1 1/2 inch), 8 Ω
Output Power:	240 mW (maximum)
Current Drain:	19 mA (at no signal)

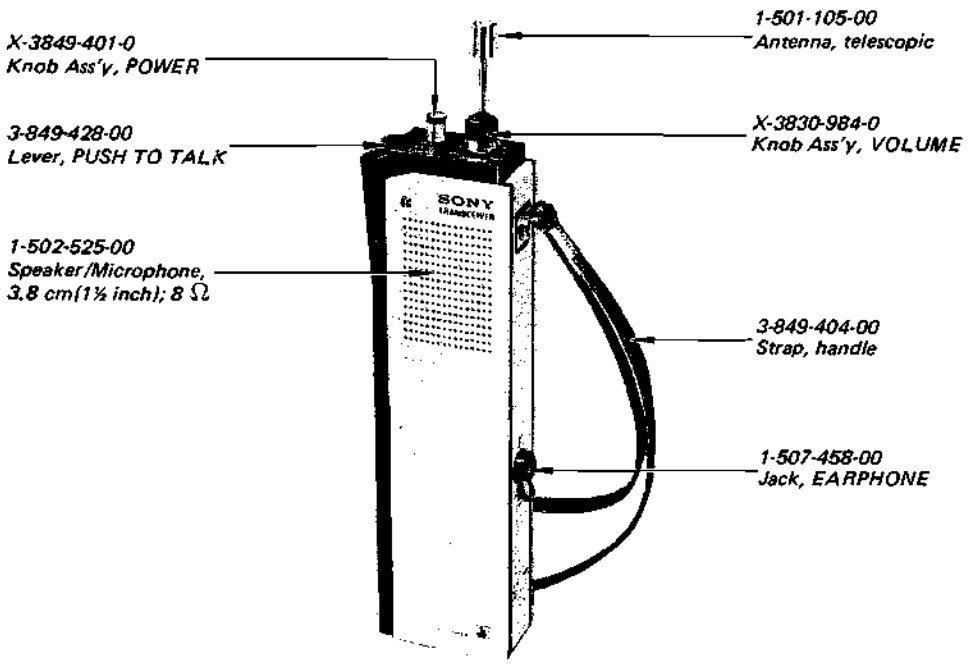
SONY®
SERVICE MANUAL

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



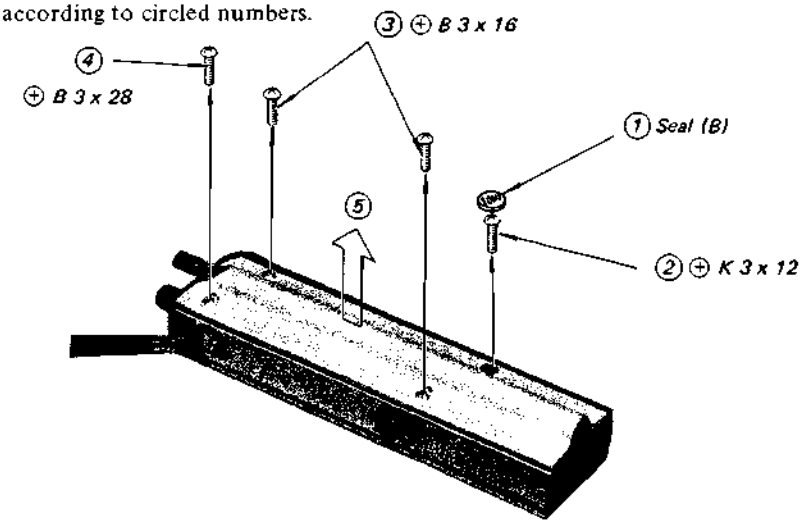
1-2. EXTERNAL VIEW



SECTION 2
DISASSEMBLY

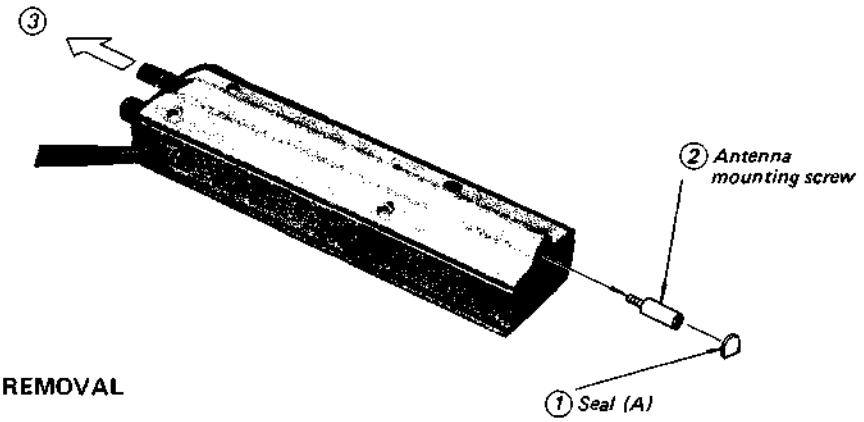
2-1. REAR CASE REMOVAL

Remove the cabinet according to circled numbers.



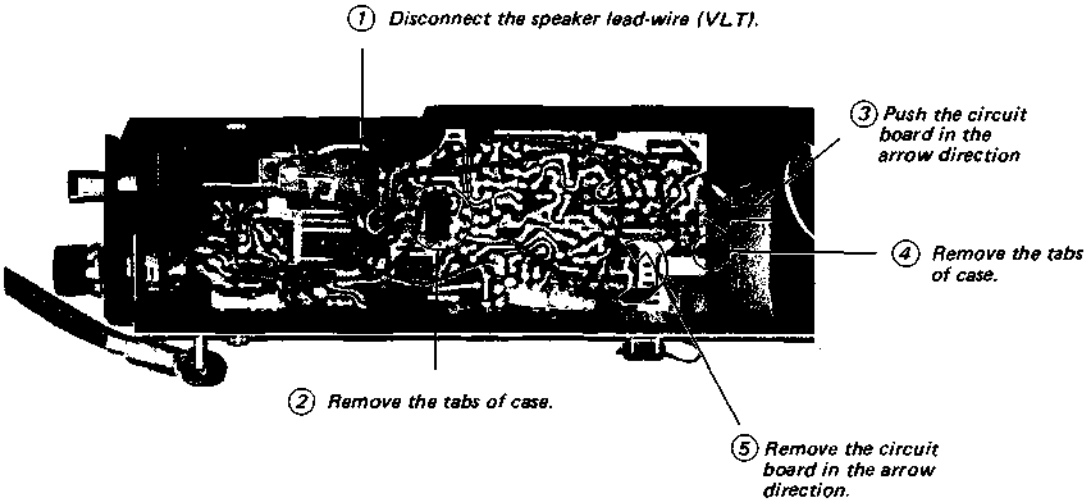
2-2. TELESCOPIC ANTENNA REMOVAL

Remove the antenna according to circled numbers.



2-3. MAIN CIRCUIT BOARD REMOVAL

Remove the circuit board according to circled numbers.



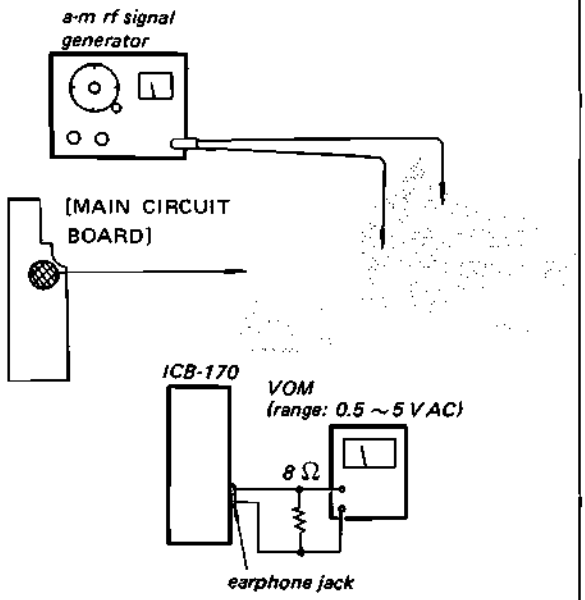
SECTION 3
ADJUSTMENTS

1. IF ALIGNMENT

Settings:

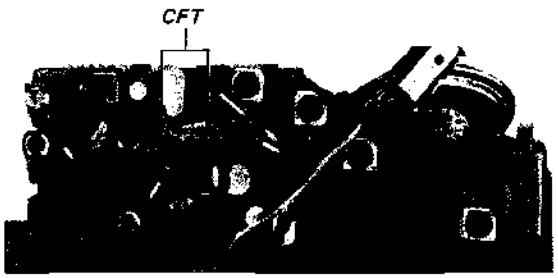
POWER switch . . . . . ON
VOLUME control . . . . . MAX
Input Signal . . . . . a-m rf signal generator
- 455 kHz, 400 Hz mod.
- output level – as low as possible

Procedure:

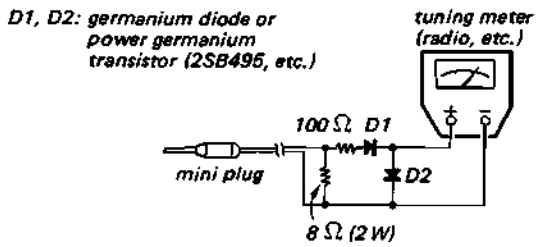


Alternately adjust the CFT for maximum reading on the VOM.

Adjustment Location:



Note: Instead of VOM (range 0.5 ~ 5 V AC) a simple test equipment shown below can be used.



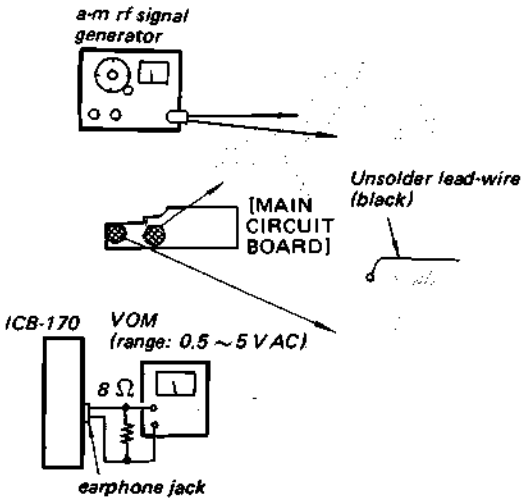
2. SENSITIVITY ADJUSTMENT

Settings:

POWER switch . . . . . ON
VOLUME control . . . . . MAX
Input Signal . . . . . a-m rf signal generator
- 27.175 MHz (GEP Model) / 27.085 MHz (E Model)
- output level – as low as possible

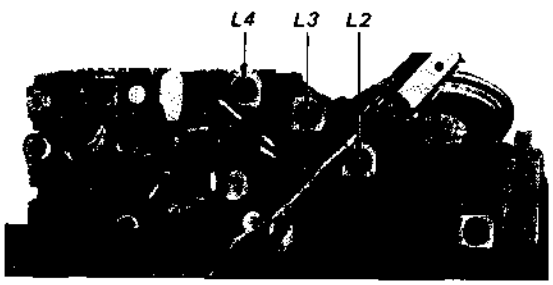
Procedure:

1. Setup



2. Turn the L4 fully clockwise, and turn the L4 counterclockwise 4 turns.
3. Alternately adjust the L2 and L3 for maximum reading on the VOM.
4. After completing adjustment, fix the L2 and L3 with wax.

Adjustment Location:



3. TRANSMITTER OUTPUT POWER ADJUSTMENT

≪VTVM Method≫

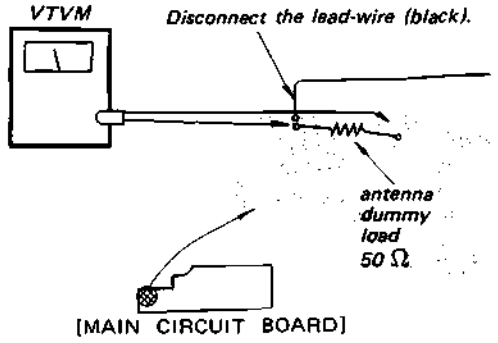
Settings:

POWER switch . . . . . ON
Power Source . . . . . 8.4 V DC
transmit/receive switch. . transmit

Procedure:

1. Setup

   Note: Before adjustment, disconnect the lead-wire (black), and solder the antenna dummy load as shown.



2. Adjust the L7 for maximum reading on the VTVM.
3. Adjust the L6 for 2.3 V reading on the VTVM.
4. If necessary, adjust the L7 again.
5. After completing the adjustment,
   a). Disconnect the antenna dummy load, and solder the lead-wire (black).
   b). Fix the L6 and L7 with wax.

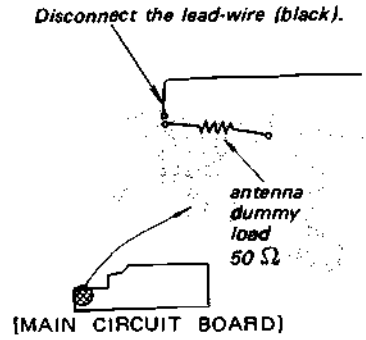
≪Output Level Meter Method≫

Settings:

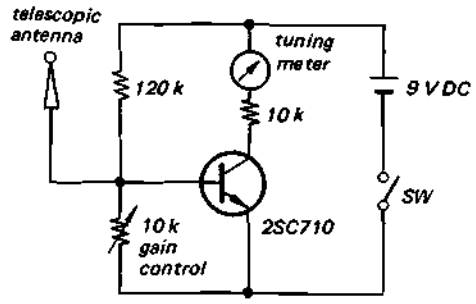
POWER switch . . . . . ON
Power Source . . . . . 8.4 V DC
transmit/receive switch. . transmit

Procedure:

1. Disconnect the lead-wire (black), and solder the antenna dummy load as shown.

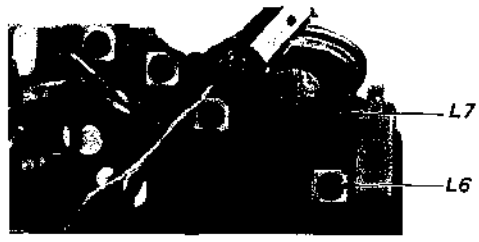


2. Prepare output level meter as shown.



3. Bring the output level meter close to the antenna dummy load (50 Ω) so that output level meter pointer deflects.
4. Alternately adjust the L6 and L7 for maximum reading on the output level meter.
5. After completing the adjustment,
   a). Disconnect the antenna dummy load (50 Ω), and solder the lead-wire (black).
   b). Fix the L6 and L7 with wax.

Adjustment Location:



4. LOADING COIL ADJUSTMENT

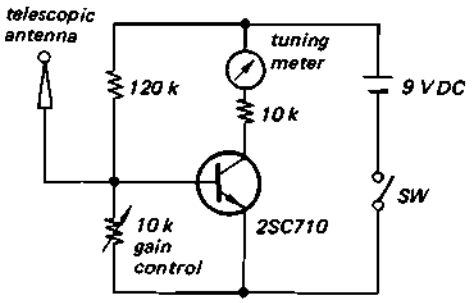
Adjustment Location:

Settings:

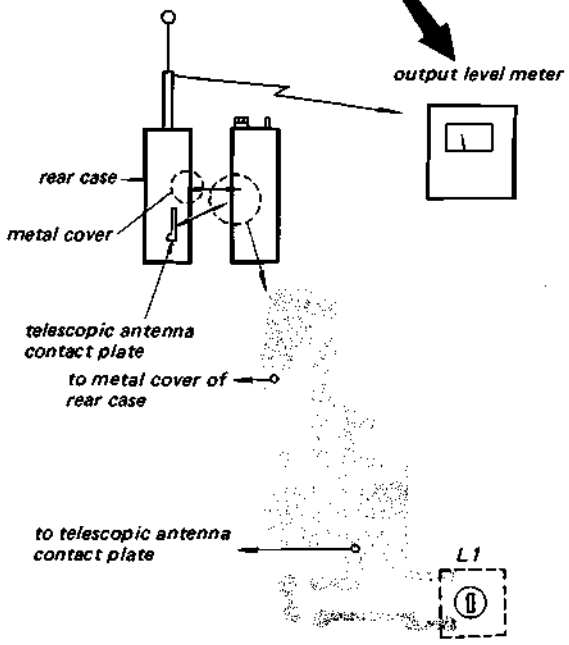
- POWER switch . . . . . ON
- Fully extend telescopic antenna
- transmit/receive switch. . transmit

Procedure:

1. Prepare output level meter as shown.



2. Setup

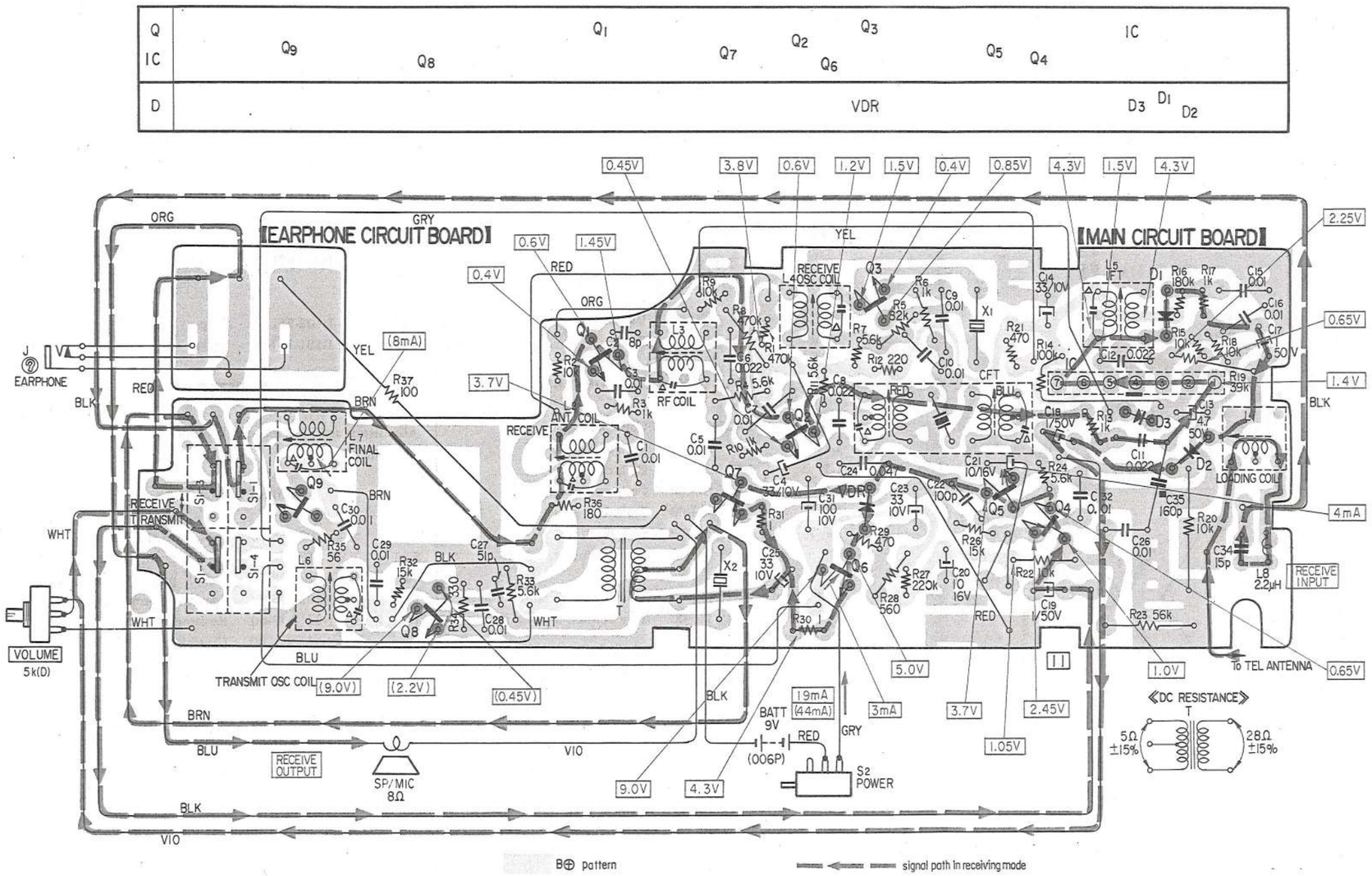


3. Adjust the L1 for maximum reading on the meter, and turn the L1 counterclockwise ¼ turn.
4. After completing adjustment, fix the L1 with wax.

SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAMS
– Conductor Side –

Q IC	Q9 Q8 Q1 Q7 Q2 Q6 Q3 Q5 Q4 IC
D	VDR D3 D1 D2

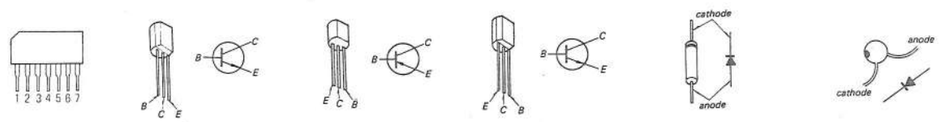


Note:

- *IC Installation*

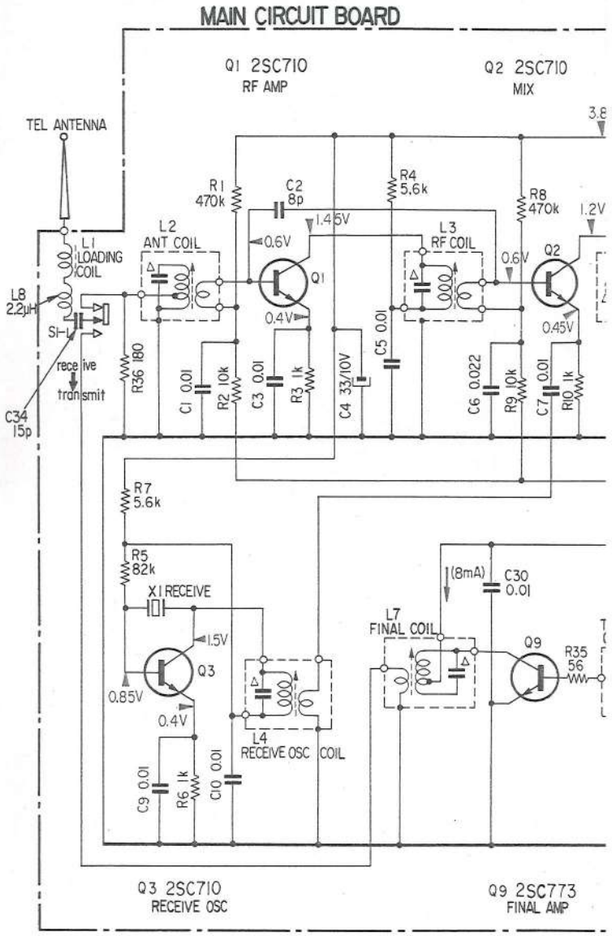
  Shows the location of stencilled letter. Refer to this mark when replacing the IC.

- Parts indicated by ■ are mounted on the conductor side.



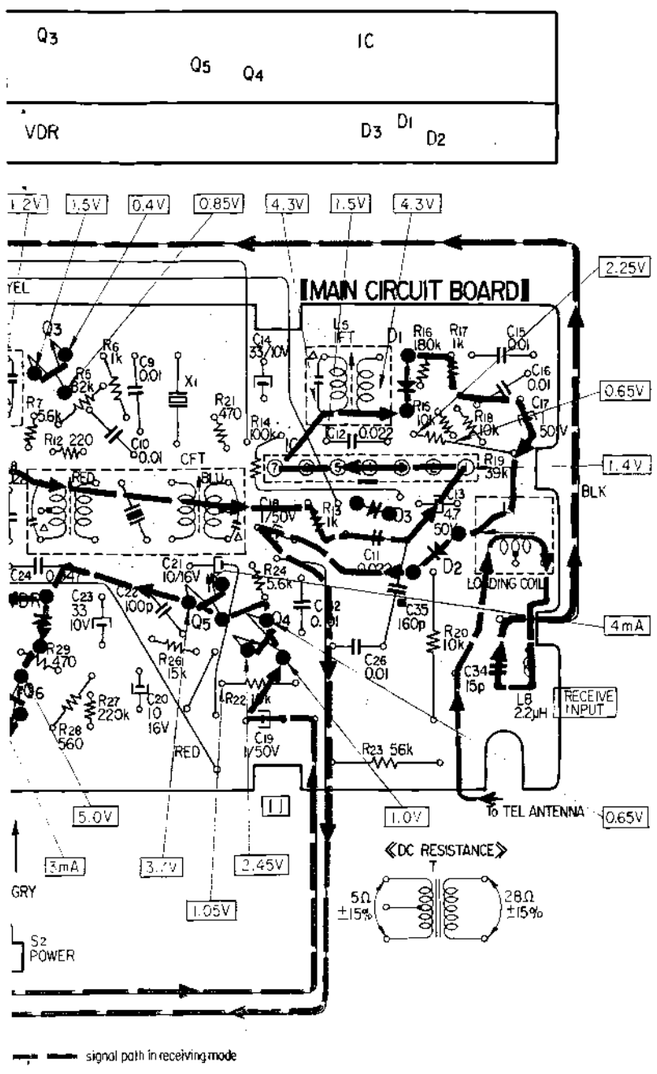
IC : CX-075A *Q1 ~ 3, 8 : 2SC710* *Q9 : 2SC773* *Q4, 7 : 2SA733* *Q5, 6 : 2SC945* *D1 ~ 3 : 1S1555* *VDR : VD-1220*

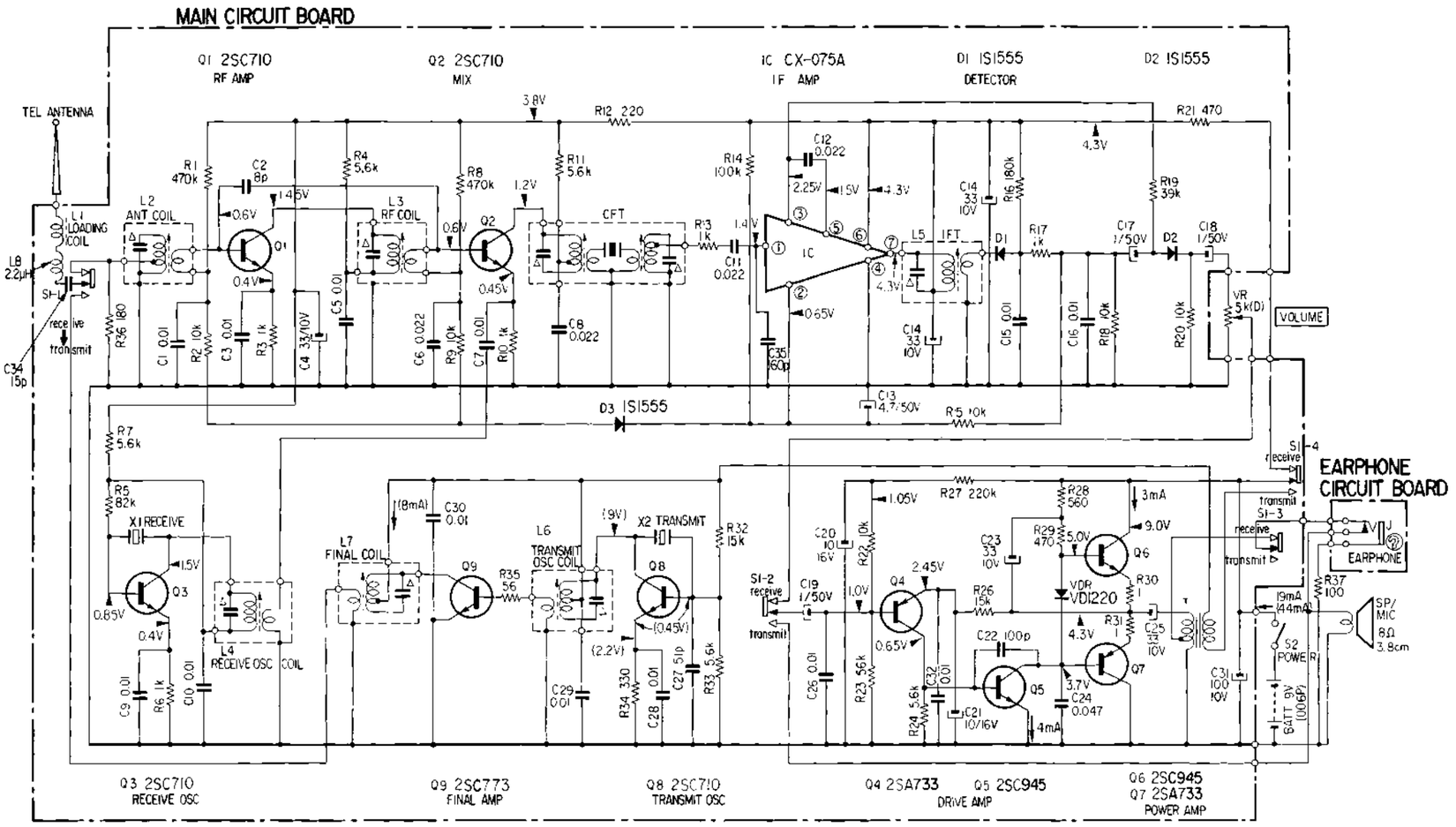
4-2. SCHEMATIC DIAGRAM

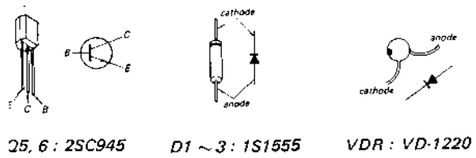


ICB-170

4-2. SCHEMATIC DIAGRAM







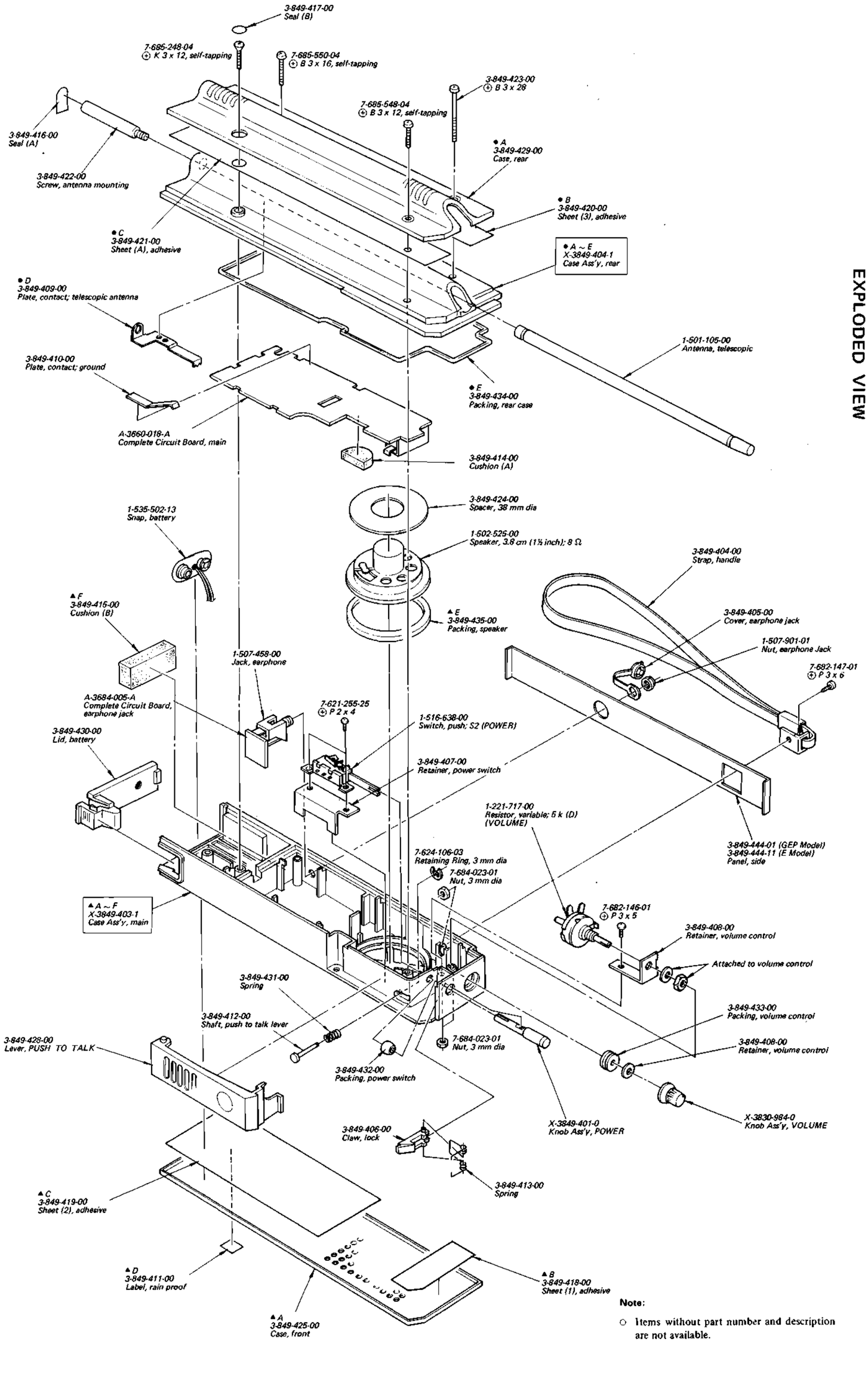
Q5, 6 : 2SC945 D1 ~ 3 : 1S1555 VDR : VD-1220

Note:

- All capacitance values in μF and all resistance values in Ω unless otherwise noted.
- All voltages measured to ground circuit with a dc voltmeter (20 kΩ/V) with no signal received.
  No mark : receiving mode
  ( ) : transmitting mode
- Capacitor marked with △ is built in i-f transformer.
- Swith mode :

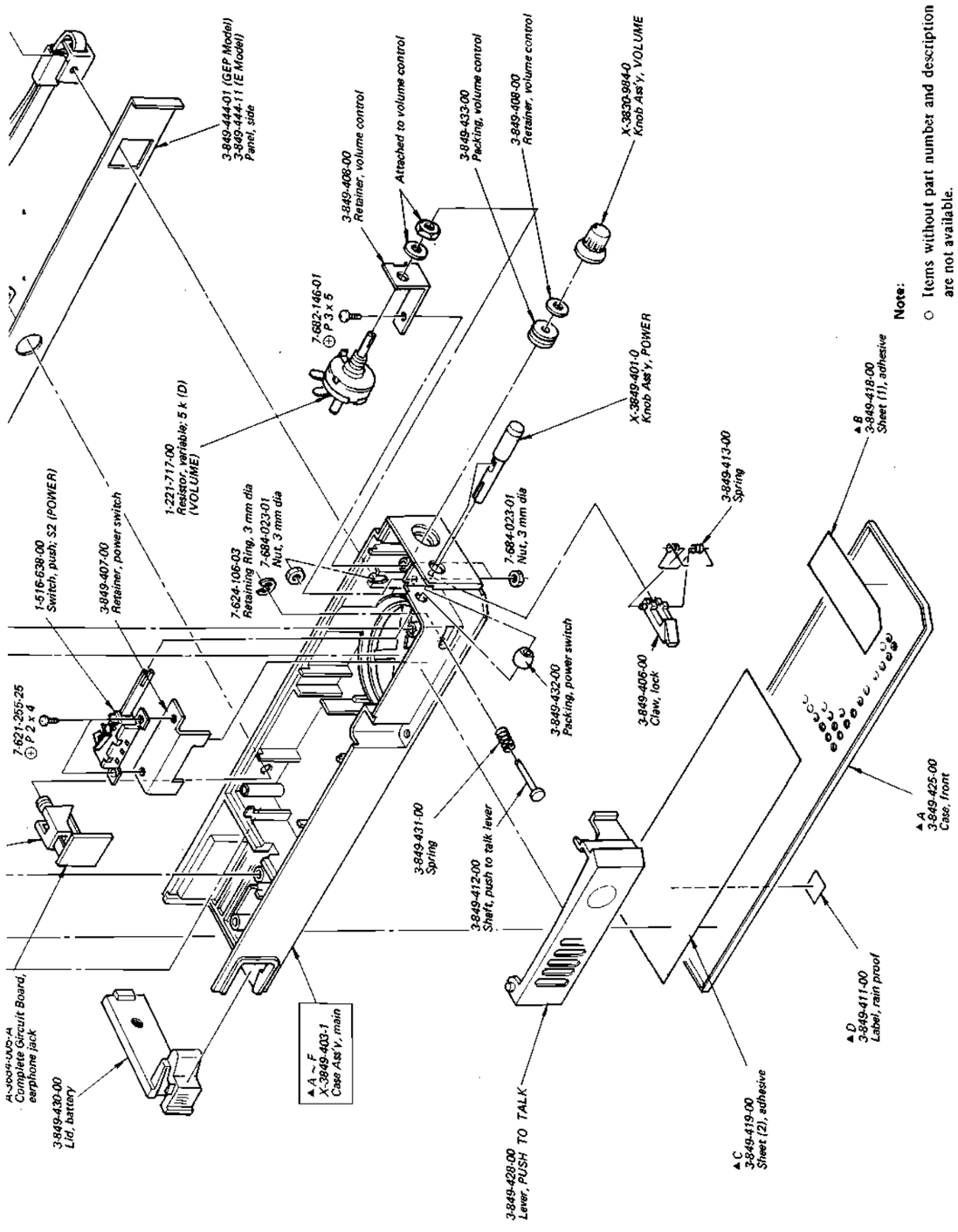
Ref. No.	Switch	Mode
S1-1~ S1-4	receive/ transmit	receive
S2	POWER	OFF

SECTION 5
EXPLODED VIEW



Note:

○ Items without part number and description are not available.



Note:
○ Items without part number and description are not available.

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	
	COMPLETE CIRCUIT BOARDS		
	A-3660-018-A	Main	
	A-3684-005-A	Earphone Jack	
	SEMICONDUCTORS		
Q1 ~ 3		Transistor	2SC710
Q4		Transistor	2SA733
Q5		Transistor	2SC945
Q6		Transistor	2SC945
Q7		Transistor	2SA733
Q8		Transistor	2SC710
Q9		Transistor	2SC773
IC		Integrated Circuit, CX-075A	
D1 ~ 3		Diode	1S1555
VDR		Diode	VD-1220
	COILS AND TRANSFORMERS		
L1	1-425-627-00	Coil, loading	
L2	1-401-316-00	Coil, antenna	
L3	1-425-374-00	Coil, rf	
L4	1-405-163-00	Coil, osc (receive)	
L5	1-403-963-00	Transformer, if	
L6, 7	1-425-744-00	Coil, final	
L8	1-407-182-00	Micro Inductor, 2.2 μH	
CFT	1-403-165-00	Transformer/Ceramic Filter, if	
T	1-425-860-00	Transformer, modulation	

CAPACITORS

All capacitors are in μF unless otherwise indicated.
(pF = μμF, elect = electrolytic)

Ref. No.	Part No.			
C1	1-101-004-11	0.01	50 V	ceramic
C2	1-102-810-11	8 p	50 V	ceramic
C3	1-101-004-11	0.01	50 V	ceramic
C4	1-121-402-11	33	10 V	elect
C5	1-101-004-11	0.01	50 V	ceramic
C6	1-101-005-11	0.022	50 V	ceramic
C7	1-101-004-11	0.01	50 V	ceramic
C8	1-101-005-11	0.022	50 V	ceramic
C9, 10	1-101-004-11	0.01	50 V	ceramic
C11, 12	1-101-005-11	0.022	50 V	ceramic
C13	1-121-396-11	4.7	50 V	elect
C14	1-121-402-11	33	10 V	elect
C15, 16	1-101-004-11	0.01	50 V	ceramic
C17 ~ 19	1-121-391-11	1	50 V	elect
C20, 21	1-121-651-11	10	16 V	elect
C22	1-102-973-11	100 p	50 V	ceramic
C23	1-121-402-11	33	10 V	elect
C24	1-101-006-11	0.047	50 V	ceramic
C25	1-121-402-11	33	10 V	elect
C26	1-101-004-11	0.01	50 V	ceramic
C27	1-101-882-11	51 p	50 V	ceramic
C28 ~ 30	1-101-004-11	0.01	50 V	ceramic
C31	1-121-414-11	100	10 V	elect
C32	1-101-044-11	0.01	50 V	ceramic
C33		----------		
C34	1-102-951-11	15 p	50 V	ceramic
C35	1-101-367-11	160 p	50 V	ceramic

RESISTORS

All resistors are ¼ W carbon or composition type, and omitted from the list.

MISCELLANEOUS

J	1-507-458-00	Jack, EARPHONE
S1-1 ~ 4	1-516-650-00	Switch, push; transmit/receive
S2	1-516-638-00	Switch, push; POWER
SP	1-502-525-00	Speaker/Microphone
VR	1-221-717-00	Resistor, variable; 5 kΩ (D) (VOLUME)
X1	1-527-216-00	Crystal, receive (26.720 MHz) (GEP Model)
	1-527-075-00	Crystal, receive (26.630 MHz) (E Model)
X2	1-527-211-00	Crystal, transmit (27.175 MHz) (GEP Model)
	1-527-055-00	Crystal, transmit (27.085 MHz) (E Model)
	1-501-105-00	Antenna, telescopic
	1-507-901-01	Nut, jack
	1-535-502-13	Snap, battery

PACKING MATERIALS

Part No.	Description
3-849-437-11	Carton
3-849-439-00	Spacer, cushion
3-849-441-00	Case, carrying
3-995-701-11	Manual, instruction

4K0526-1

Sony Corporation

Printed in Japan