

# Service Manual

Radio  
**RF-H3**  
(Silver)  
(Red)

FM Stereo Headphone Radio



This is the Service Manual for the following areas.

**Z**...For all European areas except United Kingdom & F.R. Germany.

**E**...For United Kingdom.

**X**...For Asia, Latin America, Middle East and Africa areas.

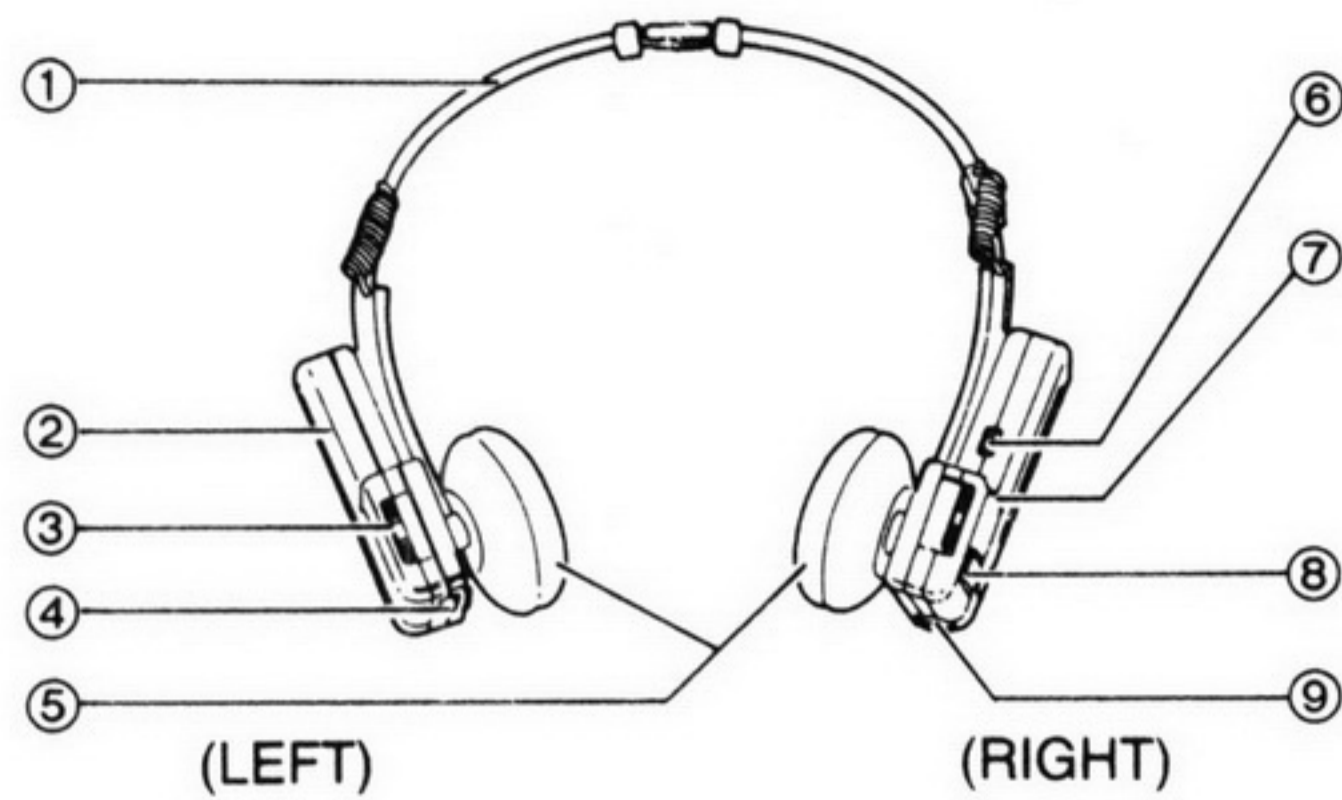
**XC**...For Saudi Arabia.

## ■ SPECIFICATIONS

Frequency Range:	<b>Z</b> , <b>E</b> ...FM; 87.5~108 MHz <b>X</b> , <b>XC</b> ...FM; 88~108 MHz
Intermediate Frequency:	FM; 10.7 MHz
Sensitivity:	FM; 8.9 $\mu$ V/0.5 mW output (-3 dB, Limit Sens)
Power Source:	Battery; 1.5 V (One UM-4 "AAA" size Battery)
Power Output:	20 mW (10 mW $\times$ 2)...(max.)
Speakers:	2.2 cm PM Dynamic Speaker (32 $\Omega$ )
Weight:	63 g without battery

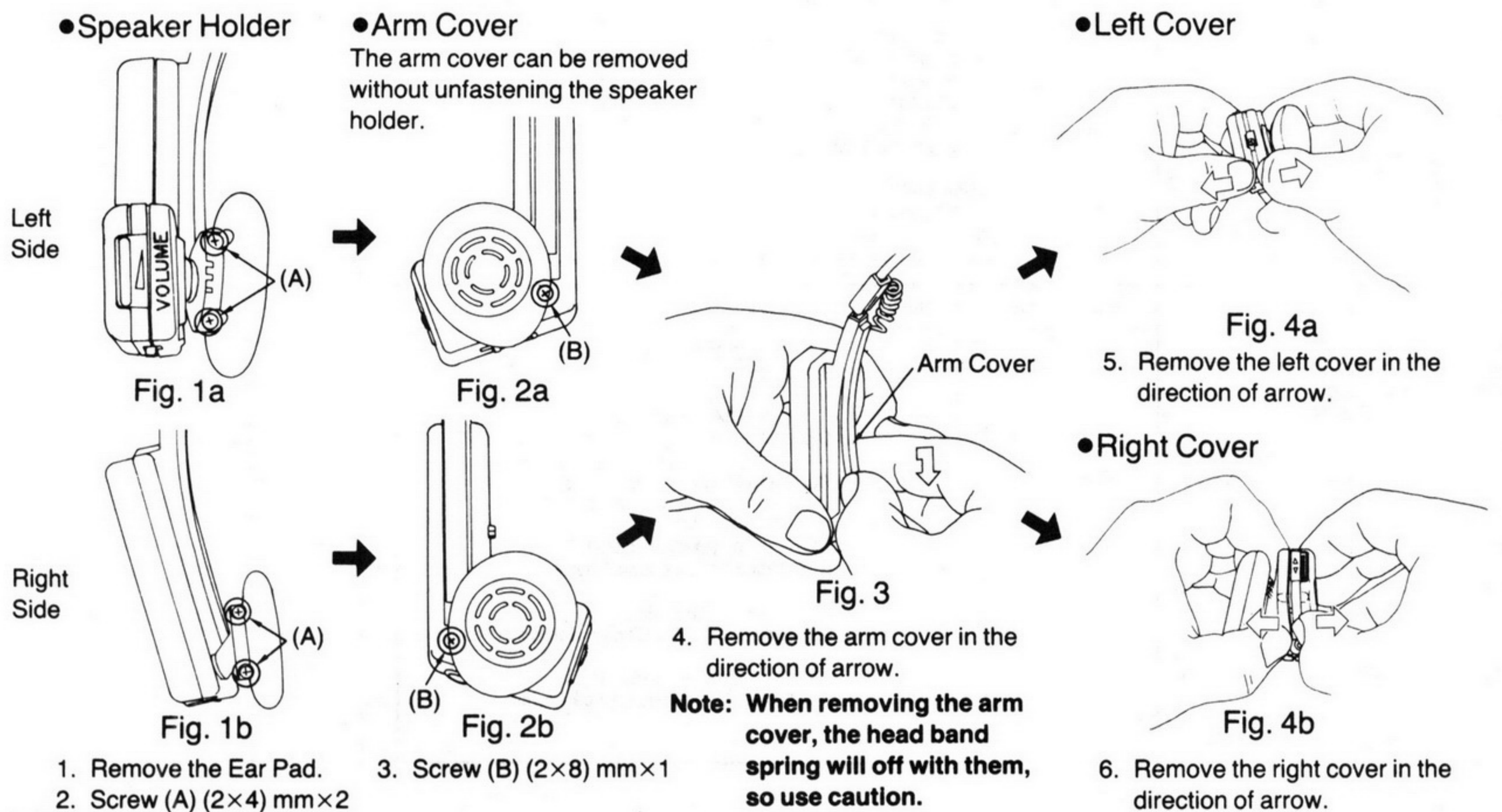
Design and specifications are subject to change without notice.

# LOCATION OF CONTROLS AND COMPONENTS



- ① Headband
- ② Battery Compartment
- ③ Volume Control (VOLUME)
- ④ Power Switch (POWER)
- ⑤ Speaker 2.2 cm 32Ω
- ⑥ Mode Selector (MODE)
- ⑦ Tuning Control (TUNING)
- ⑧ Frequency Display
- ⑨ FM Antenna Jack (FM ANT)

## DISASSEMBLY INSTRUCTIONS



### How to replace the —

#### ●Arm Cover

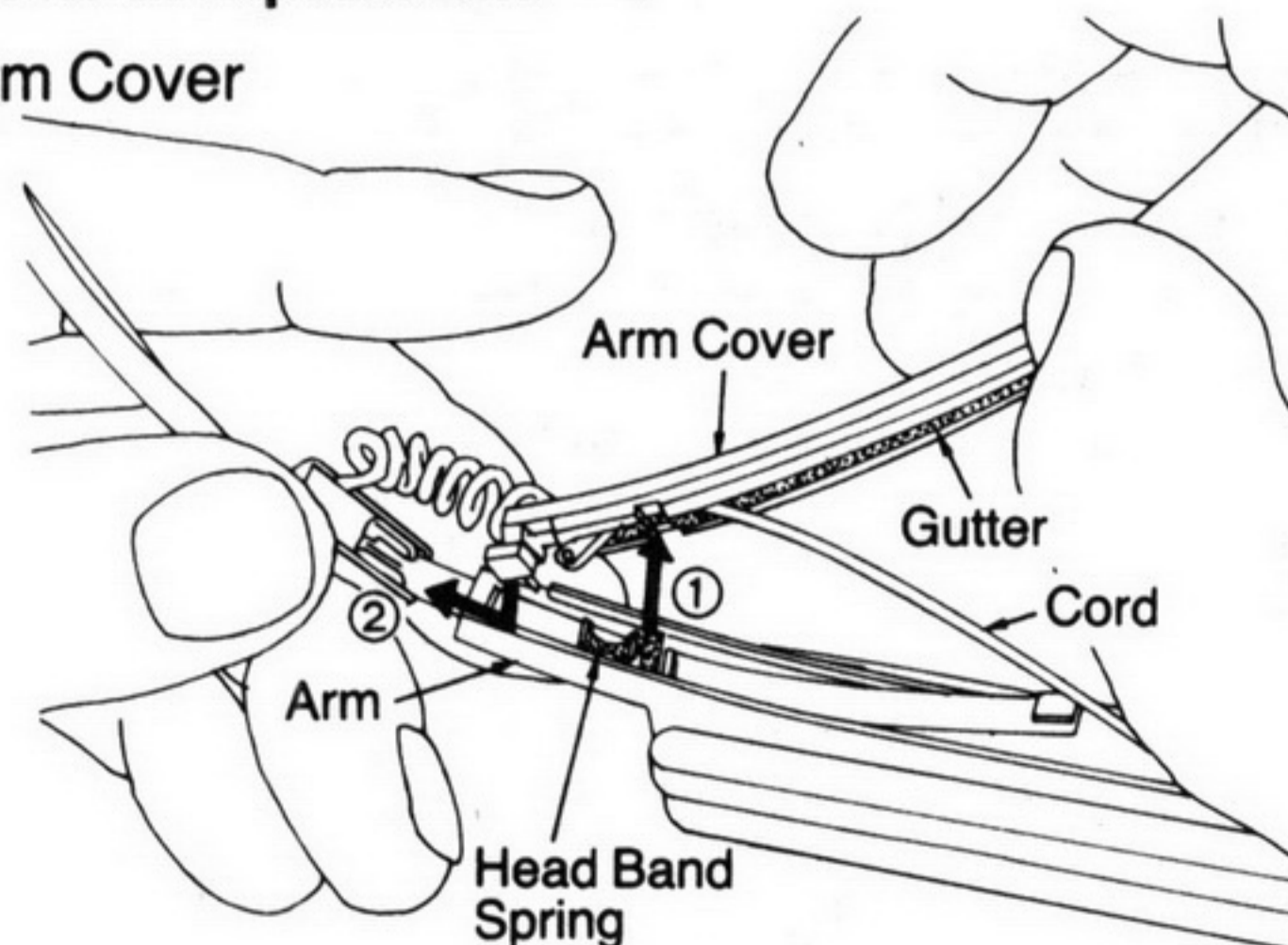


Fig. 5

1. Insert the lead wire into the gutter.
2. Insert the head band spring into the space in the arm cover in the direction of arrow ①.
3. Attach the arm cover by pressing it in the direction of arrow ②.

**Note: Make sure that the lead wire does not get caught between the arm and arm cover.**

#### ●Tuning Knob

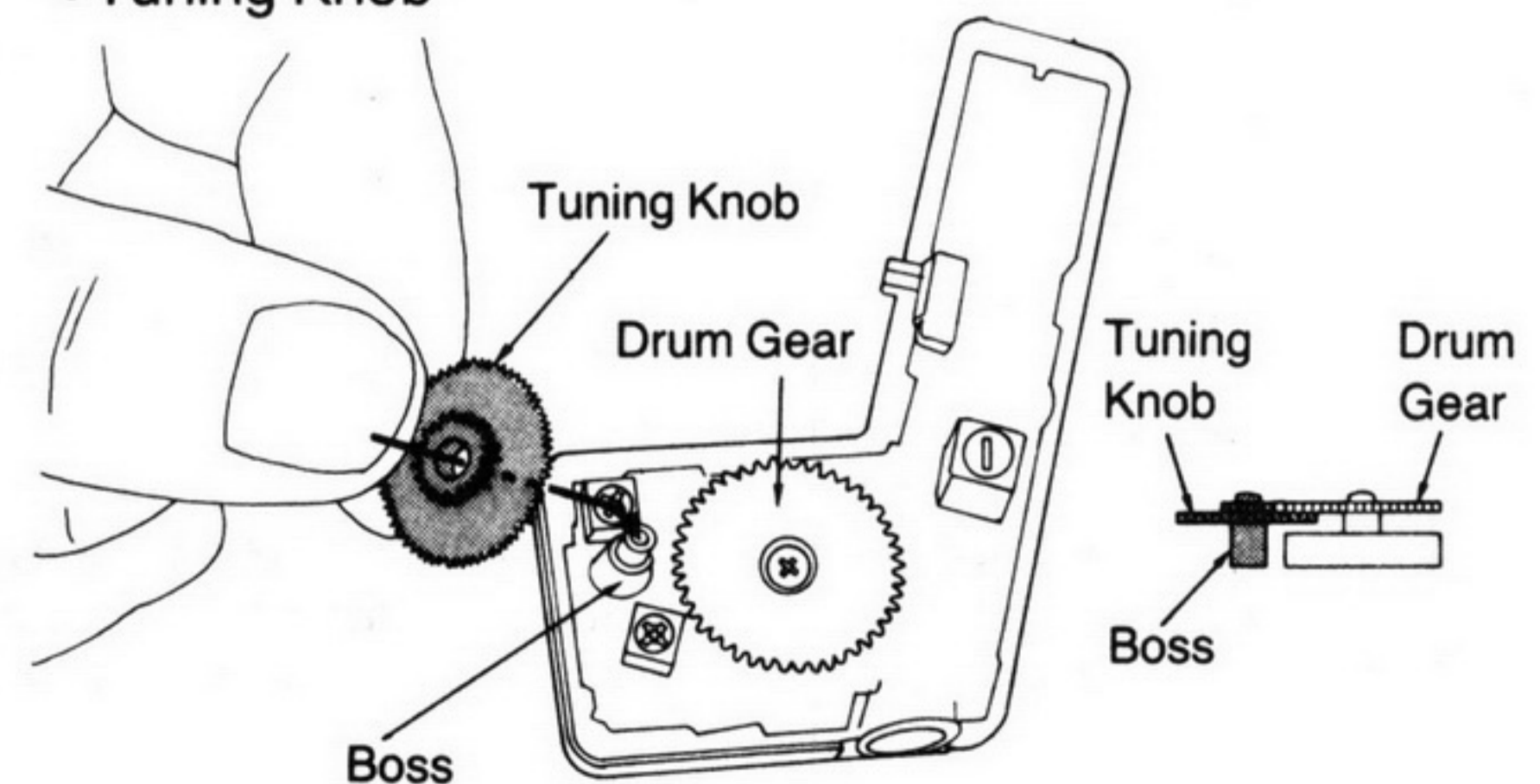


Fig. 6

Fig. 6-1

1. Insert the tuning knob in the boss in the direction of the arrow. Install the turning gear as illustrated in Fig. 6-1.

# ELECTRICAL PARTS LIST

## ELECTRICAL PARTS LIST

### Numbering System of Resistor

Example	ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)	
ERX	2	AN	J	2R2	
Type	Wattage	Shape	Tolerance	Value (2.2Ω)	

### Numbering System of Capacitor

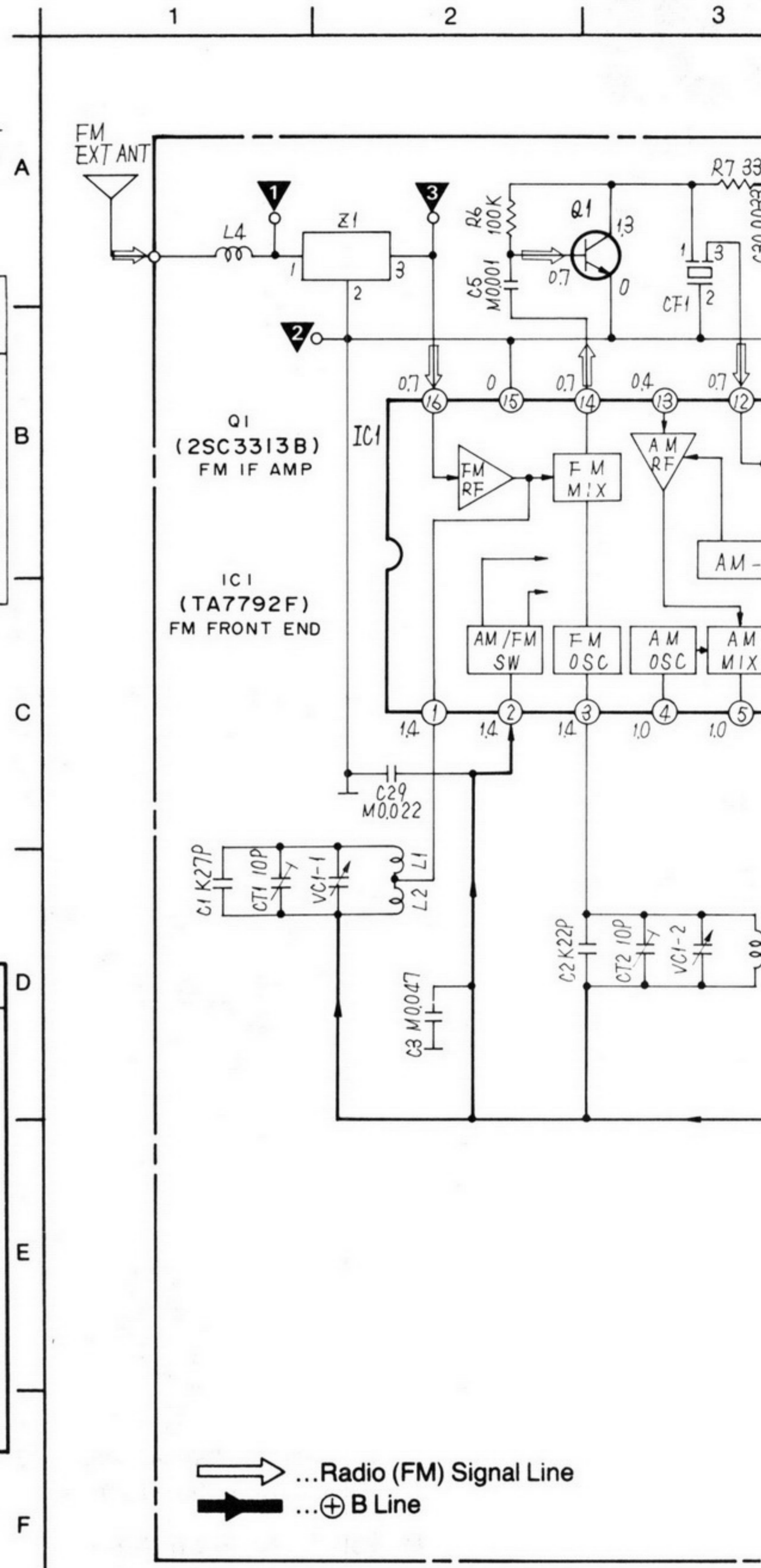
Example	ECKD	1H	102	Z	F
Type	Voltage	Value (1000 pF)	Tolerance	Peculiarity	
ECEA	50	M	R47		
Type	Voltage	Peculiarity	Value (0.47 μF)		

Resistor Type	Wattage	Tolerance
ERD: Carbon	10 : 1/8 W	J : ±5%
ERG: Metal Film	12 : 1/2 W	
ERX: Metal Film	25 : 1/4 W	
ERQ: Fuse Type Metal	1 : 1 W	
RRD: Carbon (Chip Type)	18 : 1/8 W	
	6 :	

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA: Electrolytic	0J : 6.3 V	2H : 500 V DC	C : ±0.25 pF
ECCD: Ceramic	1A : 10 V	1 : 100 V	J : ±5%
ECKD: Ceramic	1C : 16 V	DKC : 400 V AC	K : ±10%
ECQM: Polyester	1E : 25 V		Z : +80%, -20%
	1H : 50 V		P : +100%, -0%
ECQP: Polypropylene	1V : 35 V		
	50 : 50 V		
ECET: Electrolytic			
ECEA□□□N: Non Polar Electrolytic	25 : 25 V		
	16 : 16 V		
OCU□: Ceramic (Chip Type)			
ECUX: Ceramic (Chip Type)			

Ref. No.	Part. No.	Ref. No.	Part. No.	Ref. No.	Part. No.
<b>CAPACITORS</b>					
C1	RCUX1H270KC	C18	ECSF1VE474	R3	ERJ6GCJ102
C2	RCUX1H220KC	C19	ECUX1H561KC	R4	ERJ6GCJ682
C3	ECUX1E473MD	C20,21	ECUX1E224ZF	R5	ERJ6GCJ183
C4,6	RCUX1H222MD	C22,23,25	ECEA0GKS330	R6	ERJ6GCJ104
C5,9	RCUX1H102MD	C24	ECEA1CKK4R7	R7	ERJ6GCJ331
C7,11,29	RCUX1E223MD	C26,28	ECEA0GKS101	R11,12	ERJ6GCJ223
C8,27	ECEA0GKS221	C30	RCUX1E333ZF		
C10,17	ECSF1CE105				
C12,14	RCUX1E153MD				
C13,15,16	ECSF1CD105				
		<b>RESISTORS</b>			<b>CHIP JUMPER</b>
		R1,10	ERJ6GCJ100	RJ1	ERJ6GCJ000
		R2	ERJ6GCJ332		

Ref. No.	Part. No.	Part Name & Description	Ref. No.	Part. No.	Part Name & Description
<b>INTEGRATED CIRCUITS</b>			<b>TRIMMER CONDENSERS</b>		
IC1	TA7792F	IC (FM FRONT END)	CT1,2	ECRLA010A12	Trimmer
IC2	AN7400S	IC (MPX)			
IC3	RXRA14AC	RHC (AF AMP)	<b>VARIABLE RESISTORS</b>		
<b>TRANSISTOR</b>			VR1	EVNA1AA00B14	Variable Resistor (B), 10 kΩ (VCO adjustment volume)
Q1	2SC3313B	Transistor (FM IF AMP)	VR2	EVUBAAT50A54	Variable Resistor 50 kΩ, (A) (Volume Control)
<b>COILS</b>			<b>CERAMIC FILTER</b>		
L1	RL04Y96	Choke Coil	CF1	RVF107WAR	Ceramic Filter
L2	RL04Y97	Antenna Coil, FM			
L3	RL04Y98	Oscillator Coil, FM	<b>FILTER</b>		
L4	ELJFAR22K	Choke Coil	Z1	RXABPMB8	Component Combinations
<b>TRANSFORMER</b>			<b>SWITCHES</b>		
T1	RLI4A4	IFT, FM	S1,2	RSS2A38Z	Switch, Mode/Power
<b>VARIABLE CAPACITOR</b>					
VC1	RCV2C9R10	Variable Capacitor			



### Notes:

- S1: Mode Switch in "STEREO" position. (M...MONO, ST...STEREO)
- S2: Power Switch in "ON" position.
- DC voltage measurement are taken with electronics voltmeter from negative terminal of battery. No mark...STEREO, < >...MONO
- Battery current No signal ..... 18 mA  
Maximum output ..... 60 mA
- VR1: VCO oscillator frequency adjustment VR.  
VR2-1,2-2: Volume control.
- Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type number is used for supply parts number and production parts number which they are identical.  
e.g. Q1

2SC2412NRTB, LNSTB ← Production parts number  
(2SC2412) ← Supply parts number

•The supply parts number is described alone in the replacement parts list.

•This schematic diagram may be modified at any time with the development of new technology.

## MEASUREMENTS AND ADJUSTMENTS

### ALIGNMENT POINTS

•Please refer to Circuit Board and Wiring Connection Diagram which is located test point.

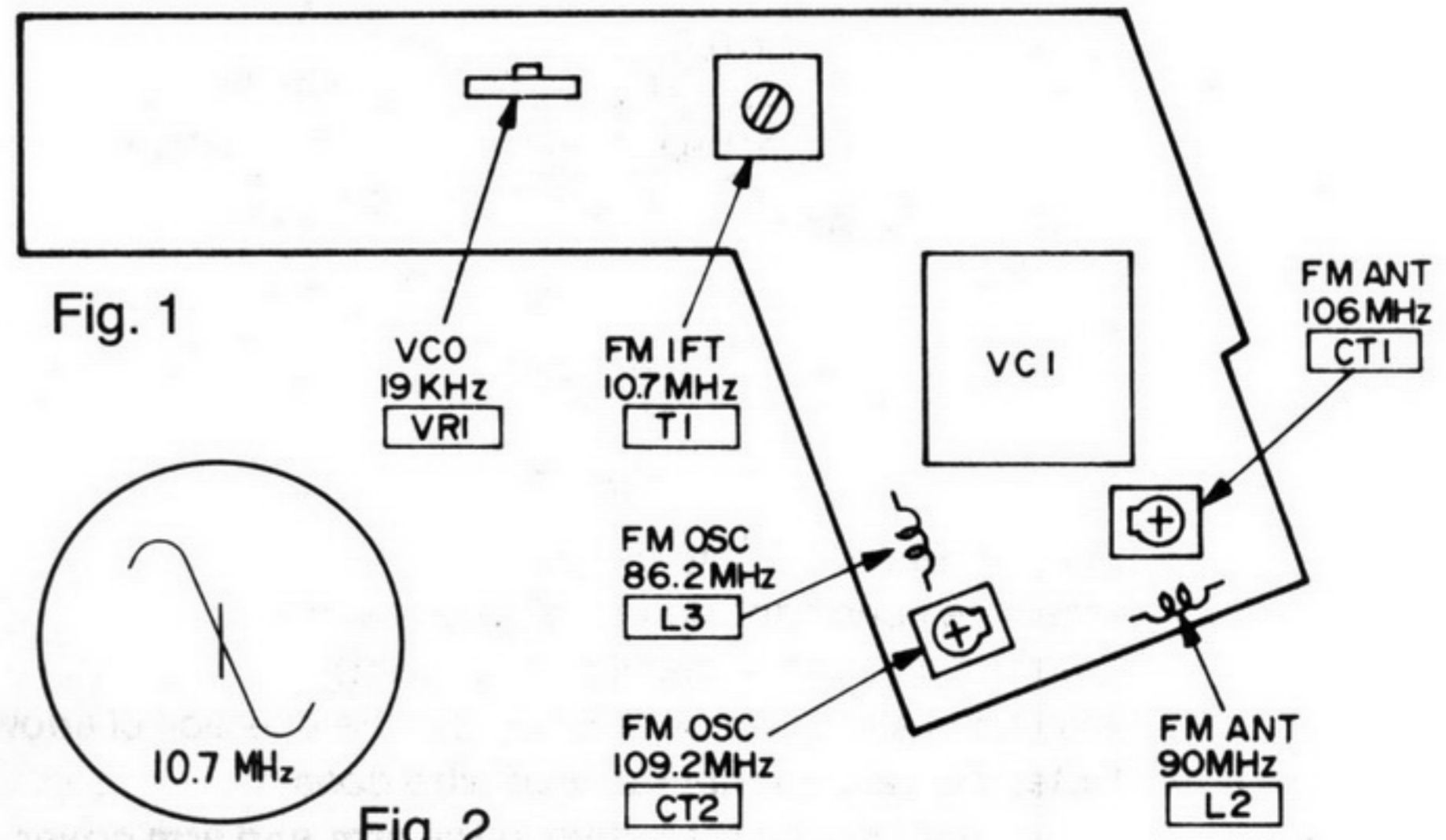


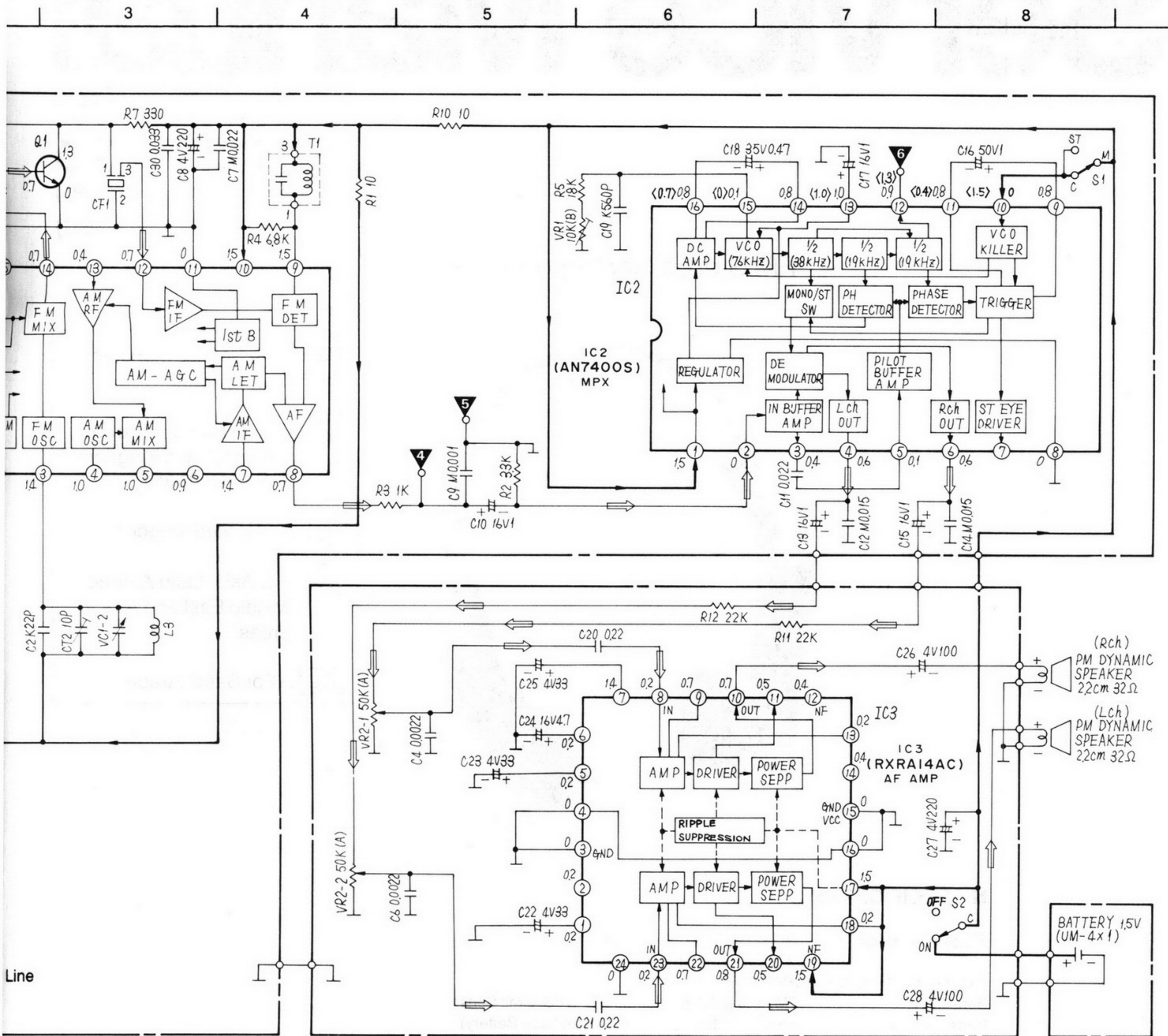
Fig. 1

Fig. 2

### ALIGN

1.	
2.	
3.	
<b>FM A</b>	
	BAN
(1)	FM

# SCHEMATIC DIAGRAM



## MENTS

### ALIGNMENT INSTRUCTION

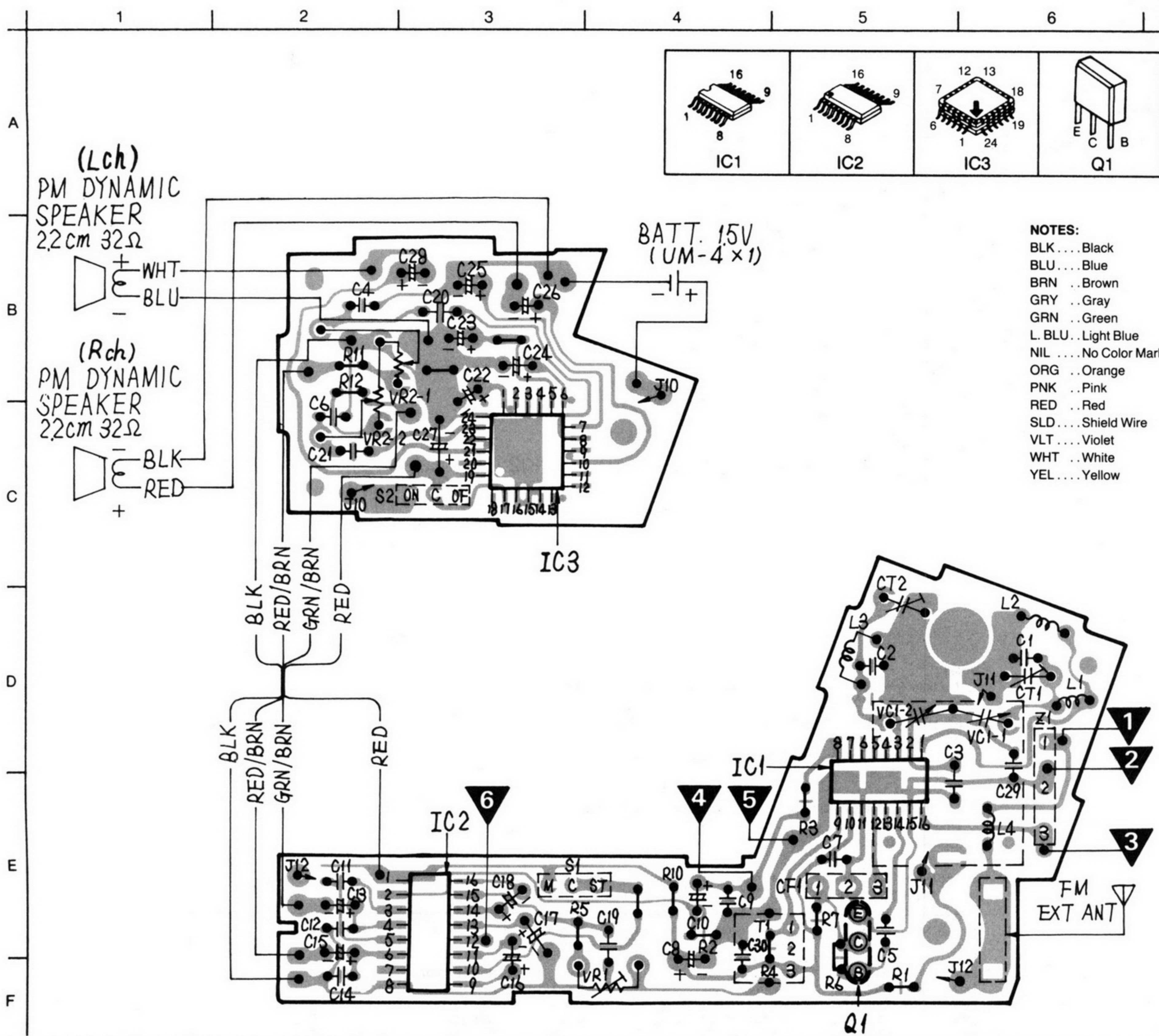
**READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

<ol style="list-style-type: none"> <li>1. Set volume control to maximum.</li> <li>2. Set power switch to ON.</li> <li>3. Set mode switch to MONO or FM ST</li> </ol>	<ol style="list-style-type: none"> <li>4. Set power source voltage to 1.5 V DC.</li> <li>5. Output of signal generator should be no higher than necessary to obtain an output reading.</li> </ol>
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### FM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
<b>FM-IF ALIGNMENT</b>						
(1) FM	High side thru. 0.001 μF to test point ▼, Negative side to test point ▼.	10.7 MHz (SWP.)	Point of non-interference. (on/about 98 MHz)	Connect vert. amp. of scope to test point ▼. Negative side to test point ▼.	T1 (FM IFT)	Adjust for maximum amplitude. (Refer to fig. 2).

# CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



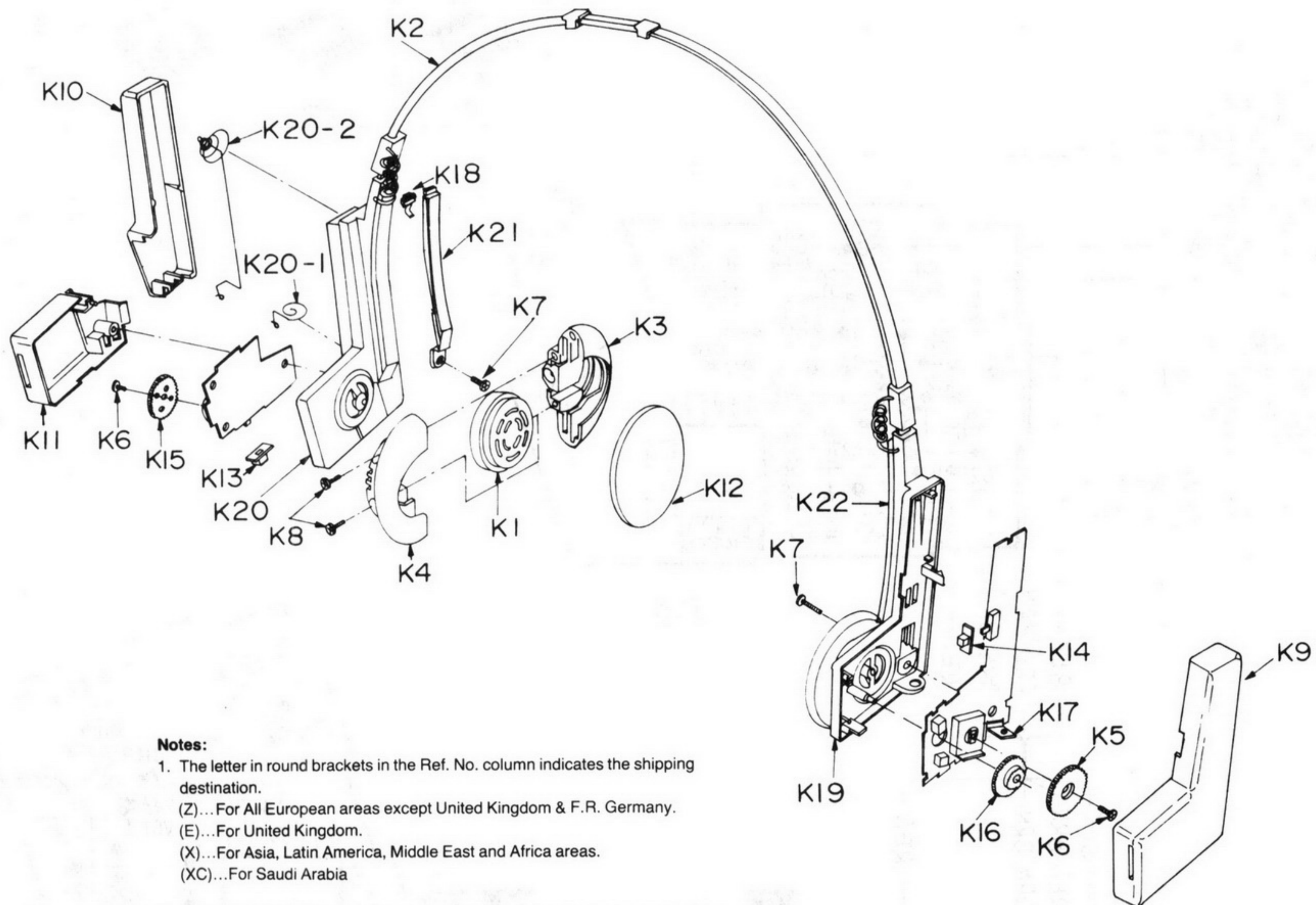
FM-RF ALIGNMENT						
(2)	FM		86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L3 (FM OSC Coil) (* 2) Adjust for maximum output.
(3)	FM	Connect to test point ▼ through FM dummy antenna. Negative side to test point ▼.	109.2 MHz	Variable capacitor fully open.	"	CT2 (FM OSC Trimmer) "
(4)	FM		90 MHz	Tune to signal.	"	L2 (FM ANT Coil) "
(5)	FM		106 MHz	"	"	CT1 (FM ANT Trimmer) (* 2) Adjust for maximum output. Repeat steps (2)~(5).

(\* 2) Three output responses will be present; proper tuning is the center frequency.

## SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	98 MHz, 60 dB (CW) Connect to test point ▼ through FM dummy antenna. Negative side to test point ▼.	▼...(+) ▼...(-)	VR1	19 kHz	Adjust VR1, for 19 kHz (±100 Hz) reading on electronics counter. Mode switch → STEREO

# CABINET PARTS LOCATION



### Notes:

- The letter in round brackets in the Ref. No. column indicates the shipping destination.  
 (Z)...For All European areas except United Kingdom & F.R. Germany.  
 (E)...For United Kingdom.  
 (X)...For Asia, Latin America, Middle East and Africa areas.  
 (XC)...For Saudi Arabia
- The letter in square brackets in the Ref. No. column indicates the color of the product.  
 [S]...Silver Type [R]...Red Type
- The letter in the circle after the part name indicates the color of the part.  
 (K)...Black, (S)...Silver, (R)...Red

Ref. No.	Part. No.	Part Name & Description	Ref. No.	Part. No.	Part Name & Description
<b>CABINET PARTS</b>					
K1	<b>RAS22P01Z</b>	Speaker	K11[R]	<b>RYM2FH3MRD</b>	Left Cover Ass'y (R)
K2	<b>RSE210Z</b>	Head Band (K)	K12	<b>RKB198Z</b>	Ear Pad (K)
K3	<b>RME410Z</b>	Holder, Speaker (A) (K)	K13	<b>RBD257Z2</b>	Knob, Power Switch (K)
K4	<b>RME411Z</b>	Holder, Speaker (B) (K)	K14	<b>RBD257Z1</b>	Knob, Mode Switch (R)
K5	<b>RDG5871Z</b>	Gear, Drum (K)	K15	<b>RBT198Z</b>	Knob, Volume (K)
K6	<b>XSHR17+2FZ</b>	Screw (Drum Gear, Volume Knob M'tg) $\oplus 1.7 \times 2$	K16	<b>RBT278Z</b>	Knob, Tuning (K)
K7	<b>XTB2+8CFZ</b>	Screw $\oplus 2 \times 8$ (Arm Cover M'tg)	K17	<b>RJT1058Z</b>	Terminal, Antenna
K8	<b>XTN2+4JFZ</b>	Screw $\oplus 2 \times 4$ (Speaker Holder M'tg)	K18	<b>RUS562Z</b>	Spring, Head Band
K9 (Z)(E)[S]	<b>RYM1FH3MSL</b>	Right Cover Ass'y (S)	K19	<b>RKF843Z</b>	Right Arm (K)
K9 (Z)(E)[R]	<b>RYM1FH3MRD</b>	Right Cover Ass'y (R)	K20	<b>RYFFH3M</b>	Left Arm Ass'y (K)
K9(X)(XC)[S]	<b>RYM1FH3XSL</b>	Right Cover Ass'y (S)	K20-1	<b>RJC40012Z</b>	Terminal (Battery, +)
K9(X)(XC)[R]	<b>RYM1FH3XRD</b>	Right Cover Ass'y (R)	K20-2	<b>RJC80011Z</b>	Spring (Battery, -)
K10 (Z)(E)	<b>RKM991Z</b>	Cover, Battery	K21 (Z)(E)	<b>RYE2FH3Z</b>	Arm Cover Ass'y (For Left) (K)
K10 (X)(XC)	<b>RKM991Y</b>	Cover, Battery	K21 (X)(XC)	<b>RYE2FH3X</b>	Arm Cover Ass'y (For Left) (K)
K11 [S]	<b>RYM2FH3MSL</b>	Left Cover Ass'y (S)	K22	<b>RKE557Z</b>	Arm Cover (For Right) (K)

## ACCESSORY AND PACKING MATERIALS

Ref. No.	Part. No.	Part Name & Description
<b>ACCESSORIES</b>		
A1	<b>RSA212Z</b>	FM Antenna Lead
A2 (Z)(E)	<b>RQX4836Y</b>	Operating Instructions
A2 (X)(XC)	<b>RQX4786Z</b>	Operating Instructions
<b>PACKINGS</b>		
P1	<b>RPH453Z</b>	Sheet Cover
P2 (Z)(E)	<b>RPK2323Z</b>	Gift Box
P2 (X)(XC)	<b>RPK2283Z</b>	Gift Box
P3	<b>RPE599Y</b>	Pad (A)
P4	<b>RPE615Z</b>	Pad (B)

G.A.D.

**ZEXXC**