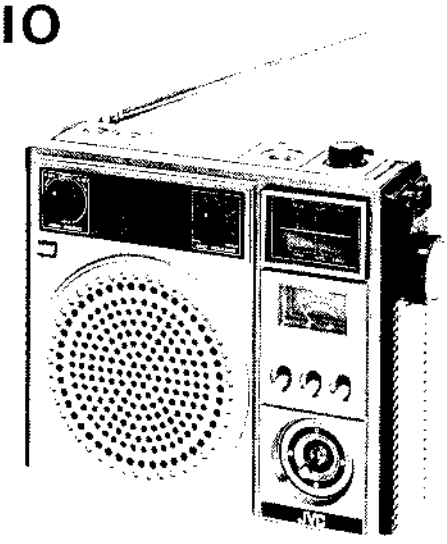
JVC

SERVICE MANUAL

MODEL
8240L

FM-49m band-MW-LW
4-BAND PORTABLE RADIO



No. 1287
March 1975

Contents

Specifications

DIMENSIONS : 7-1/4"(H) x 8-1/4"(W) x 3"(D)
14.8cm x 20.8cm x 7.7cm

WEIGHT : Approx. 3.7lbs. (with batteries)
1.7kg

Semiconductors	:	1 IC, 1 FET and 15 Transistors
Frequency Ranges	:	FM 88~ 108MHz
		SW (49m band) 5.95~ 6.20MHz
		MW 540~1600kHz
		LW 150~ 350kHz
Intermediate Frequencies	:	FM 10.7MHz
		SW/MW/LW 455kHz
Antennas	:	FM/SW rod antenna
		MW/LW ferrite core antenna
Power Output	:	1.8W
Speakers	:	Woofer 5" (12cm)
		Tweeter 2" (5cm)
Power Source	:	DC 6V 4 C-cells or equivalent

TO REMOVE CHASSIS

REMOVE REAR COVER (Refer to Fig. 1)

Remove 6 screws (1) & (2) : SDSB3008R and (3) thru (6) : V43899-1 then the rear cover can be removed.

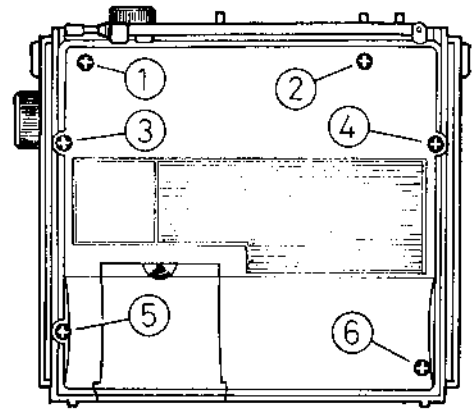


Fig. 1

REMOVE FRONT PANEL (Refer to Fig. 2)

1. Take off the Volume, MIC volume and PSB tuning knobs.
2. Remove 2 screws (7) : SBSB3016Z and (8) : SBSB3010Z.
3. Set all the switches : METER, LOUDNESS, and AFC, to the upper position.
4. Separate the front panel from the lower edge.

REMOVE EACH SECTIONS (Refer to Figs. 2 & 3)

All circuit boards and component parts except main circuit board are inserted to the chassis, when removing them, press the ratches on the chassis with a screw driver.

A. Main Circuit Board (Refer to Fig. 2)
Remove the screw (9) : SBSB3008Z.

B. Triple Indicator (Refer to Fig. 3)
Insert a screw driver into the right lower corner of the indicator section (in accordance with the arrow mark as illustrated in Fig. 3), and gouge out the indicator.

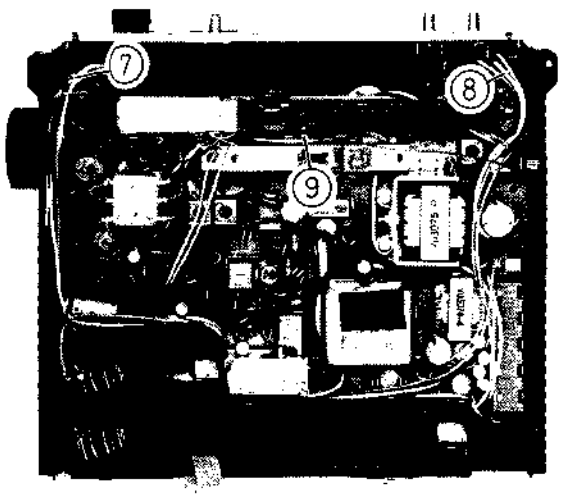


Fig. 2

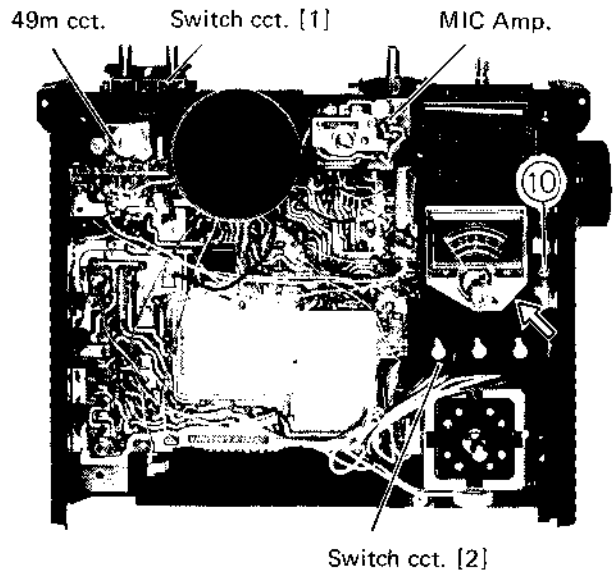


Fig. 3

TO STRING DIAL CORD

STRING DIAL CORD (Refer to Figs. 3, 4 & 5)

1. Remove the screw which is fixing the dial drum to the variable capacitor after removing the triple indicator.
2. Remove the screw **(10)** : SBSB3008Z then the dial scale section can be removed. (Refer to Fig. 3)
3. Take off the gear **(C)** after removing the stopper **(B)** by loosing the screw **(A)**. (Refer to Fig. 4)
4. String the cord in accordance with the arrow marks. (Refer to Fig. 5)
   Cord length : 0.5φ × 499mm (20mil × 19-5/8")
5. Fix the dial scale section to the chassis with centering the dial drum to the shaft of the variable capacitor.

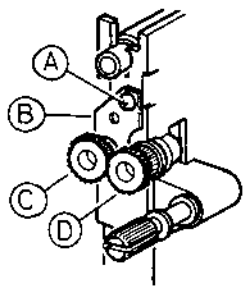


Fig. 4

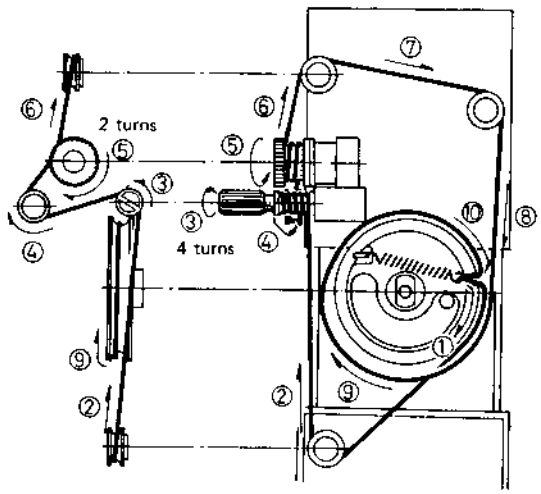


Fig. 5

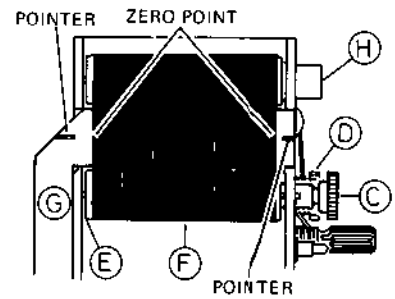


Fig. 6

ADJUST DIAL SCALE (Refer to Figs. 4 & 6)

After fixing the dial scale section to the chassis adjust the scale for the proper position.

1. Set the variable capacitor on maximum capacity by turning the tuning shaft.
2. Insert the GEAR **(C)** which has been removed when stringing the cord into the DRUM **(E)** as deep as it does not engage with the other GEAR **(D)**.
3. Fit the ZERO POINT on the DIAL SCALE FILM **(F)** to the POINTER on the LENS **(G)** by turning the GEAR **(C)**.
4. Insert the GEAR **(C)** and engage it with the GEAR **(D)**.
5. Mount the STOPPER **(B)** not to loosen the GEAR **(C)**.
6. If the dial scale film loosens, adjust the spring strength as follows:
   a. Remove the PIN **(H)** from the frame by pushing it upwards.
   b. Turn the PIN **(H)** clockwise.
   c. Set the PIN **(H)** to the frame.

TO ALIGN THE SET

Power Source : DC 6V
Output Measuring : Speaker terminal (Impedance = 8Ω)
Loudness Control : OFF
AFC/MW Sens : FM AFC OFF
AM DX

AM IF & RF ALIGNMENT

1. Set the Volume, Bass and Trebie controls to the maximum.
2. Input (S.S.G) : Modulation 400Hz 30%.

Step	Band	Input Signal		Place to be aligned	Set V. Capacitor to
		Frequency	Given to		
1	IF	455kHz	Loop Antenna	L13,14	Minimum
2	(MW)	Adjust L13,14 for no further improvement.			
3	LW	145kHz	Loop Antenna	L9	Maximum
4		370kHz		C9	Minimum
5		Repeat the Step 3 & 4.			
6		160kHz	Loop Antenna	L8	160kHz Signal
7		350kHz		C7	350kHz Signal
8		Repeat the Step 6 & 7, and adjust for no further improvement.			
9	MW	520kHz	Loop Antenna	L10	Maximum
10		1650kHz		C10	Minimum
11		Repeat the Step 9 & 10.			
12		600kHz	Loop Antenna	L8	600kHz Signal
13		1400kHz		C8	1400kHz Signal
14		Repeat the Step 12 & 13, and adjust for no further improvement.			

NOTE : Keep the output level always on about 50mW (0.63V/8Ω) when alignment.

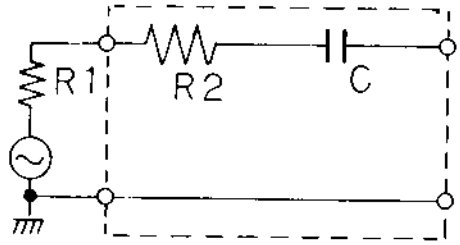
SW(49m band) RF ALIGNMENT

Input(S.S.G) : Modulation 400Hz 30%
Connect Hot to TP1 and Cold (Earth) to EP2 through Dummy antenna. (Refer to Figs. 11 & 12)

Step	Band	Input Signal		Place to be aligned	Set the V. Capacitor to
		Frequency	Given to		
1	SW	5.91MHz	TP1 & EP2	L22	Maximum
2		6.3MHz	(Refer to Fig. 11)	C129	Minimum
3		Repeat the Steps 1 & 2.			
4		5.95MHz	TP1 & EP2	L21	5.95MHz Signal
5		6.2MHz	(Refer to Fig. 11)	C121	6.2MHz Signal
6		Repeat the Steps 4 & 5, and adjust for no further imporvement.			

NOTE : Keep the output level always on about 50mW (0.63V/8Ω) when alignment.

DUMMY ANTENNA



R1 + R2 = 80Ω
C = 10PF
R1 : Output impedance of S.S.G.

Fig. 7

FM IF & DISCRIMINATOR ALIGNMENT (Refer to Figs. 8 thru 11)

1. Reduce the volume to minimum and set the variable capacitor near the minimum capacity where no signal comes in.
2. Connect the sweep generator to the test point TP2. (Refer to Fig. 11)
3. Connect the V.T.V.M. for aligning the zero point of AFC parallel to the V. INPUT of oscilloscope.
4. IF Alignment
   a. Connect the V. INPUT of oscilloscope to the test point TP6. (Refer to Fig. 11)
   b. Align the L11, 12 & 15 so that the maximum sensitivity and symmetrical wave mode will be obtained setting the marker 10.7MHz on the peak. (Refer to Fig. 8)
5. Discriminator Alignment
   a. Connect the oscilloscope to the test point TP4.
   b. Align the L17 & 18 so that the response of the "S" curve will become maximum and symmetric, and the V.T.V.M. will show the zero point. (Refer to Fig. 10)
6. Repeat the alignment of 4 & 5.

Note : As the ceramic filter is adopted in the FM IF circuit, if the center point of IF peak does not coincide with the marker, adjust coils for maximum and symmetrical wave mode.

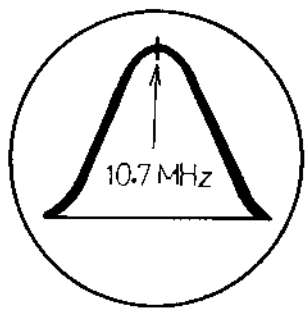


Fig. 8

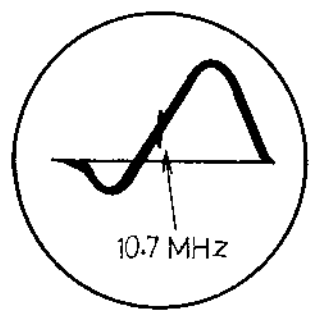


Fig. 9

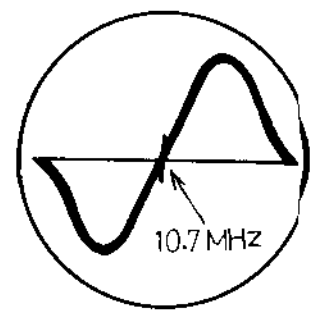


Fig. 10

FM RF ALIGNMENT

Input (S.S.G) : Use 75Ω terminal, modulation 400Hz modulated to 22.5kHz deviation.
Connect Hot to TP1 and Cold (Earth) to EP1. (Refer to Fig. 11)

Step	Band	Input Signal		Place to be aligned	Set the V. Capacitor to
		Frequency	Given to		
1	FM	87.5MHz	TP1 & EP1	L6	Maximum
2		109MHz	(Refer to Fig. 11)	C6	Minimum
3		Repeat the Steps 1 & 2.			
4		88MHz	TP1 & EP1	L4	88MHz Signal
5		106MHz	(Refer to Fig. 11)	C5	106MHz Signal
6		Repeat the Steps 4 & 5, and adjust for no further improvement.			

NOTE : Keep the output level always on about 50mW (0.63V/8Ω) when alignment.

PARTS ARRANGEMENT FOR ALIGNMENT

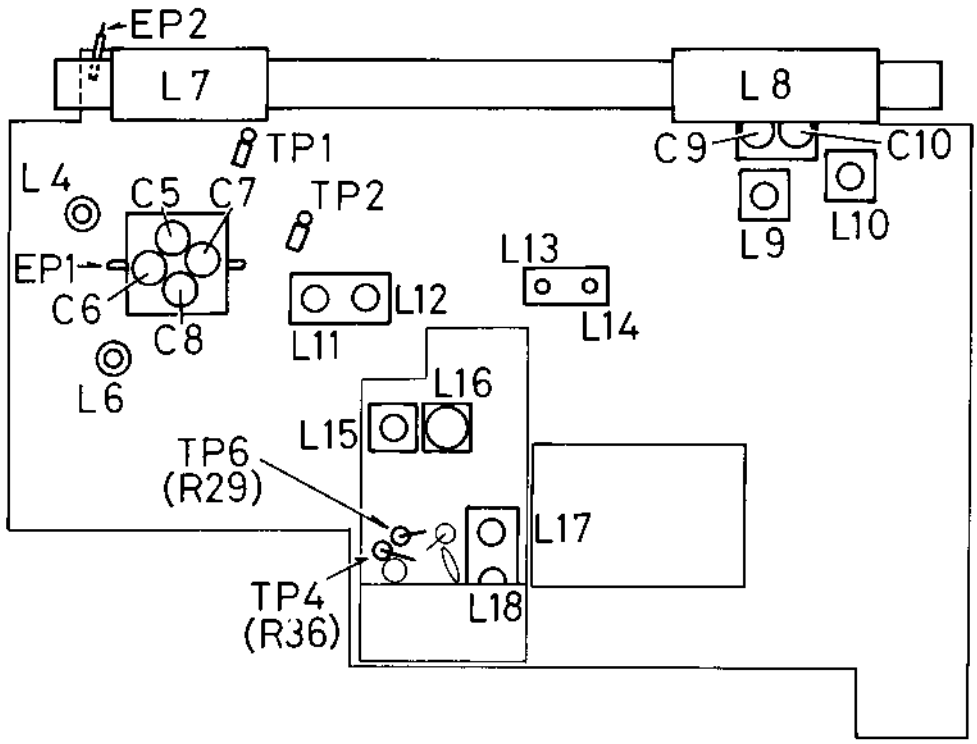


Fig. 11

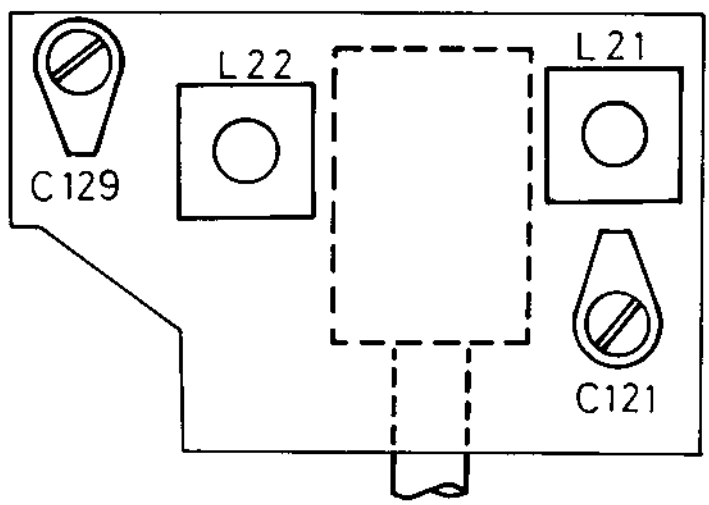


Fig. 12

DISASSEMBLY DIAGRAM OF CABINET

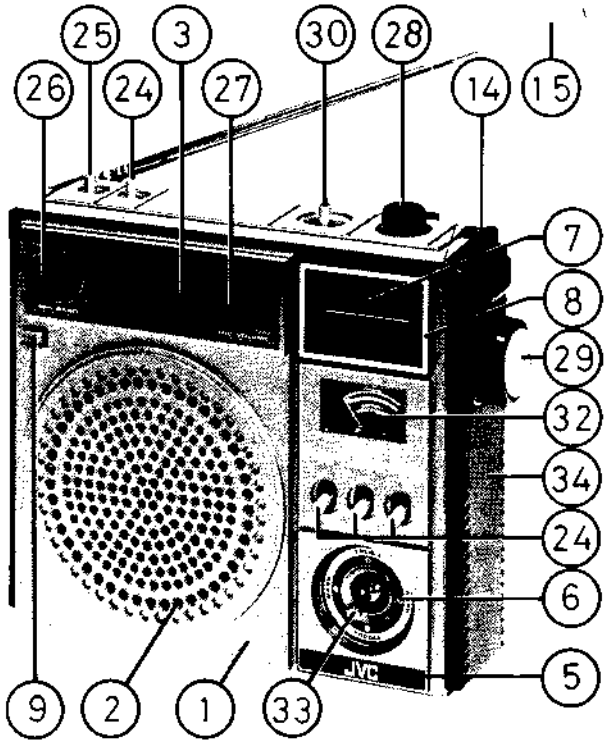


Fig. 13

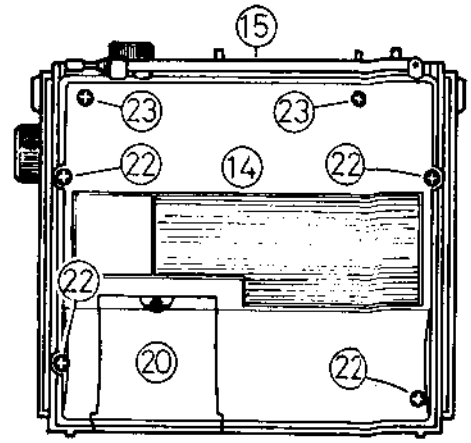


Fig. 14

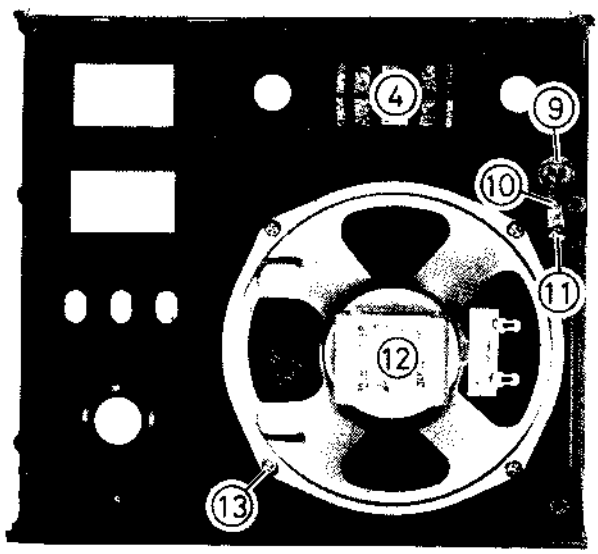


Fig. 15

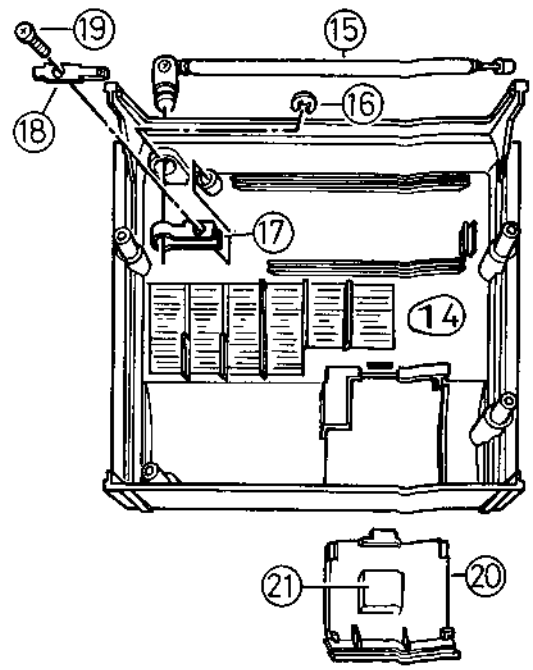


Fig. 16

PARTS LIST OF CABINET (Refer to Figs. 13 thru 16)

Dwg. No.	Parts No.	Parts Name	Remarks	Q'ty
1~8	**ZC8240L-CBF**	**Front Cabinet Ass'y**		1
1	V10219-003	Front Cabinet		1
2	47115-032	Spacer	Glued	1
3	V20607-003	Cellular Frame	Heat-caulked by soldering Iron	1
4	47115-033	Spacer	Glued	1
5	V43992-002	Mark	"	1
6	V43991-001	Control Plate	"	1
7	V43979-003	Dial Lens	"	1
8	V43990-001	Dial Escutcheon	"	1
9	V43984-001	Push Button		1
10	V41299-4	Contact		1
11	SBSB3006Z	Screw		1
12	EAS12P69SC	Speaker	Woofer 5"	1
13	SBSB3006Z	Screw		4
14	**ZC8240L-CBR**	**Rear Cabinet Ass'y**	**with Name Plate**	**1**
15	QZR4147-001U	Rod Antenna		1
16	REE6000	"E" Ring		1
17	V50029-2	Rod Antenna Holder		1
18	V41208-1	Tab		1
19	SPSP2606Z	Screw		1
20~21	**ZC8240-BCA**	**Battery Cover Ass'y**		**1**
20	V30892-001	Battery Cover		1
21	VYSH103-010	Battery Pad	Glued	1
22	V43899-1	Screw		4
23	SDSB3014R	"		2
24	V43970-001	Knob		4
25	V43970-002	"	Power Switch	1
26	V44258-001	"	49m Band Tuning	1
27	V44257-001	"	Mic Volume	1
28	V43981-001	"	Volume	1
29	V43923-00A	"	Tuning	1
30	V30893-00A	Toggle Lever Ass'y		1
31	Blank No.			
32	V03020-039	Level Meter		1
33	QVZ6001-001	Variable Resistor	R64, 79 Bass & Treble	1
34	V30907-00A	Chassis Base Sub Ass'y		1

DISASSEMBLY DIAGRAM OF CHASSIS BASE ASSEMBLY

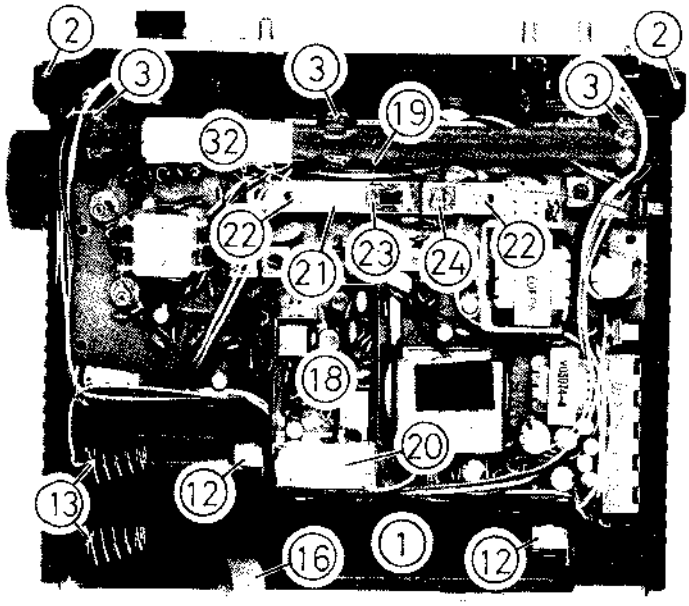


Fig. 17

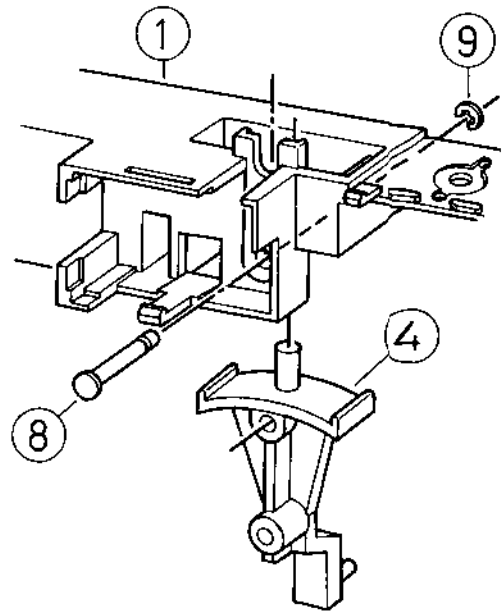


Fig. 18

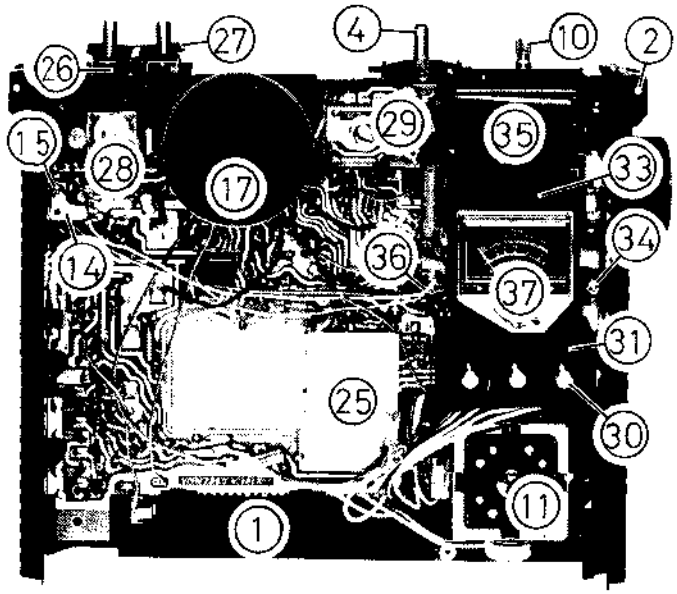


Fig. 19

PARTS LIST OF CHASSIS BASE ASSEMBLY (Refer to Figs. 17, 18 & 19)

Dwg. No.	Parts No.	Parts Name	Remarks	Q'ty
1~2	V30907-00A	Chassis Base Sub Ass'y		1
1	V10221-001	Chassis Base		1
2	V43993-001	Strap Shaft	Force fitted	2
3	V44169-001	Bar Antenna Holder	Glued	3
4	V30893-00A	Toggle Lever Ass'y		1
5	Blank No.			
6	Blank No.			
7	Blank No.			
8	V43202-003	Stud		1
9	REE2000	"E" Ring		1
10	QVF1A6A-553	Variable Resistor	R65 Main Volume	1
11	QVZ6001-001	"	R64, 79 Bass & Treble	1
12	V44056-001	Battery Contact		2
13	54328-1	Spring		2
14	V43499-002	Clamp		1
15	SBSB2606Z	Screw		1
16	54418-A	Ribbon Ass'y		1
17	EAS5PH34SD	Speaker	Tweeter 2"	1
18	———	Circuit Board	Main	1
19	SBSB3008Z	Screw		1
20	V44066-001	Shield Cover	Solderd	1
21	V43983-001	Slider		1
22	V43583-1	Stud		2
23	V43268-1	Adjust Plate		1
24	SBSB2606Z	Screw		1
25	V44065-001	Shield Plate	Solderd	1
26	———	Circuit Board	Switch (1)	1
27	V44127-001	Spacer		1
28	———	Circuit Board	49m Band	1
29	———	"	Mic Amp.	1
30	———	"	Switch (2)	1
31	V44128-001	Spacer		1
32	VQB218B-002	Bar Antenna Ass'y	L7,8	1
33	V20603-001	Sub Chassis		1
34	SBSB3008Z	Screw		1
35	V30902-004	Dial Scale		1
36	QLP3101-303	Pilot Lamp		1
37	V03020-039	Level Meter		1

DISASSEMBLY DIAGRAM OF DIAL SCALE

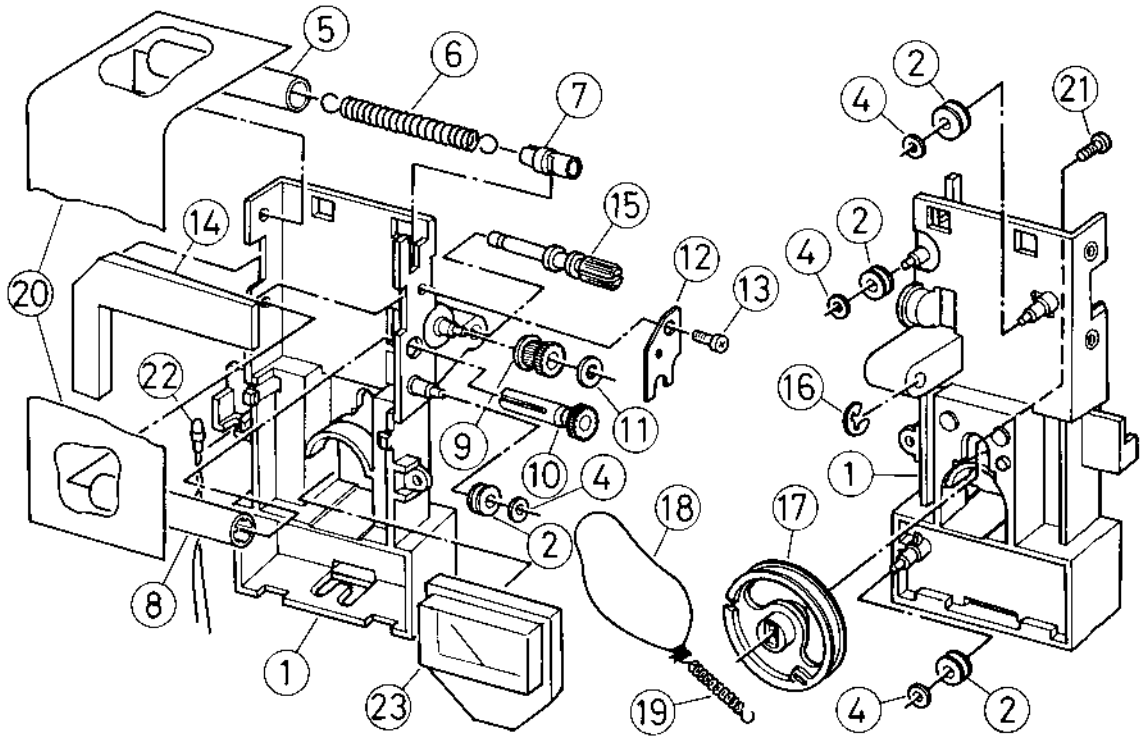


Fig. 20

PARTS LIST OF DIAL SCALE (Refer to Fig. 20)

Dwg. No.	Parts No.	Parts Name	Remarks	Q'ty
1	V20603-001	Sub Chassis		1
2	V40409-3	Roller		4
3	Blank No.			
4	V42562-1	Special Washer		4
5	V44057-001	Drum (A)		1
6	V44058-001	Spring		1
7	V44059-001	Pin		1
8	V44060-001	Drum (B)		1
9	V44061-001	Gear (A)		1
10	V44062-001	Gear (B)		1
11	WNB3000N	Washer		1
12	V44092-001	Stopper		1
13	SBSB2606Z	Screw		1
14	V44069-001	Lens		1
15	V42007-003	Tuning Shaft		1
16	REE3000	"E" Ring		1
17	QZD1147-001	Dial Drum		1
18	VHR2TT9-05A	Dial Cord		1
19	53498-3	Spring		1
20	V30902-004	Dial Scale		1
21	SPSP2606Z	Screw		1
22	QLP3101-303	Pilot Lamp		1
23	V03020-039	Level Meter		1

PACKING ILLUSTRATION

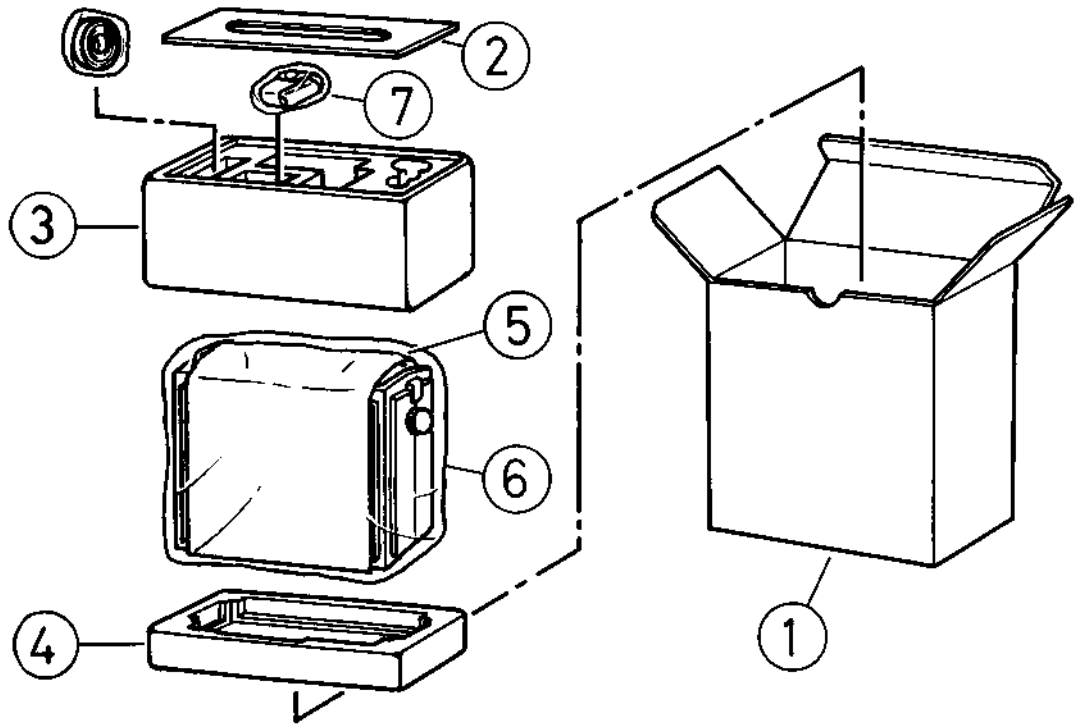


Fig. 21

Dwg. No.	Parts No.	Parts Name	Remarks
1	VP3283-7	Case	
2	VP3283-4	Spacer	
3	VP1388-002	Cushion	
4	VP1389-001	"	
1~4	VP3283-00C	Case Ass'y	
5		Wrapping Paper	
6	06026-52	Cabinet Cover	
7	06023-5	Parts Sack	for earphone case

ACCESSORIES

Parts No.	Parts Name	Remarks
V10222-002	Carrying Case	
31785-20	Earphone Case	
V30493-005	Shoulder Strap	
QME1308-004	Magnetic Earphone	

MAIN CIRCUIT BOARD ASSEMBLY

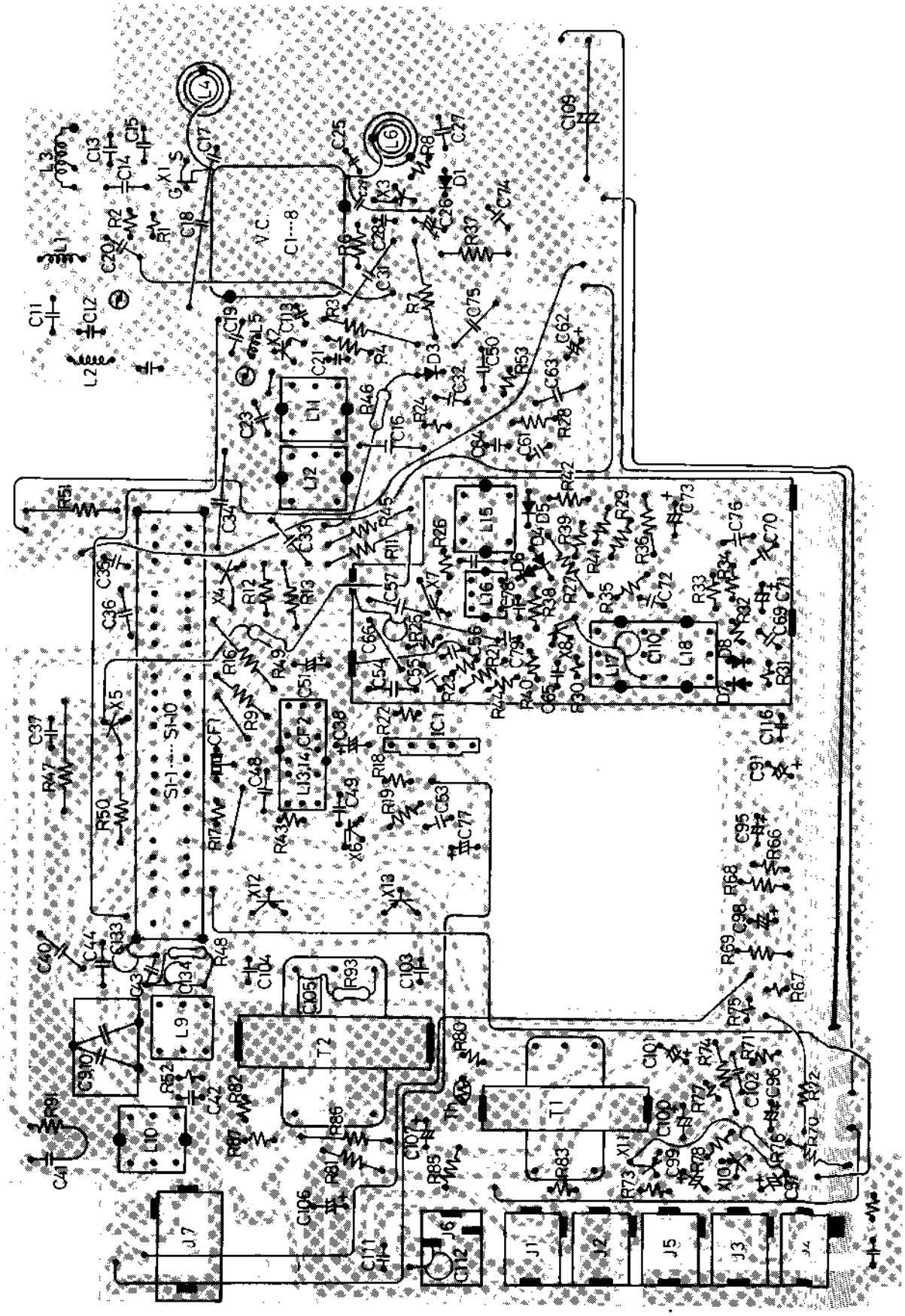


Fig. 22

Transistors

Ref. No.	Parts No.	Description	Pc	ft
X1	2SK56(P,Q)	Silicon FET (MATSUSHITA)		
X2	2SC1359(B)	Silicon (MATSUSHITA)	250mW	250MHz
X3,5,6	2SC829(C)	" (")	150mW	230MHz
X4,8	2SC829(B)	" (")	"	"
X7	2SC829(A)	" (")	"	"
X10	2SB173(A,B,C)	Germanium (MATSUSHITA)	125mW	
X11	2SB175(B)	" (")	"	
X12,13	2SB324(G,H,I)	" (")	550mW	

IC, Diodes & Thermistor

Ref. No.	Parts No.	Parts Name	Description
IC	VC3001B	IC	JVC
D1	1S2790	Variable Capacitance Diode	HITACHI
D3	EYV320D1R2JB	Variatite	MATSUSHITA
D4,5,6	OA90	Germanium Diode	
D7,8	2OA90	"	
Th	ERT-D3FBK450S	Thermistor	

Capacitors

Ref. No.	Parts No.	Parts Name	Description
R3,16,19,36,40, 46,49,51,72,76, 91~93	QRD141K-	Carbon	¼W
R82,87	QRW123K-R47	Wire Wound	0.47Ω ½W
Other Resistors	QRD143K-	Carbon	¼W

Resistors

Ref. No.	Parts No.	Parts Name	Description
C1~8	QAP1224-402	Variable	
C9,10	QAT2002-001	Trimmer	
C15,20,37,50, 61,111,112	QCF11EZ-223	Ceramic	0.02μF 25V
C16,21,32,65, 76,79	QFM41HM-223	Mylar	0.022μF 50V
C17	QCT05CH-180	Ceramic	18pF "
C19,69,70	QCF41HJ-331	Polystyrol	330pFF "
C26	QEW41HA-474	Electrolytic	0.47μF "
C27,33,53,55, 63,64	QCF11EZ-103	Ceramic	0.01μF 25V
C28	QCT05CH-100	"	10pF 50V
C29	" -7R0	"	7pF "
C34,102	QCY41HK-103	"	0.01μF "
C35,40,48,78	QFM41HM-103	Mylar	" "
C36	QCY41HK-332	Ceramic	3300pF "
C38,98,100	QEW41AA-107	Electrolytic	100μF 10V
C41,80	QCY41HK-472	Ceramic	4700pF 50V
C43	QFS41HJ-131	Polystyrol	130pF "
C44,72	QCS11HJ-301	Ceramic	300pF "
C49,54,56,74, 103,104	QFM41HM-333	Mylar	0.033μF "
C51	QEW41AA-227	Electrolytic	220μF 10V
C57	QFS21HJ-152	Polystyrol	1500pF 50V
C62,95,97,107	QEW41EA-475	Electrolytic	4.7μF 25V
C66	QCF11EZ-473	Ceramic	0.04μF 25V
C71	QEW41CA-106	Electrolytic	10μF 16V
C73,77,79	QEW41EA-335	"	3.3μF 25V
C75	QFM41HM-683	Mylar	0.068μF 50V
C91	QES61AM-224	Solid Aluminum	0.22μF 10V
C96	QEW41AA-476	Electrolytic	47μF "
C101	QEW41AA-477D11	"	470μF "
C105	QFM41HM-104	Mylar	0.1μF 50V
C106	QEW41AA-108	Electrolytic	1000μF "
C109	QEN21EM-225	Nonpolarized	2.2μF 25V
C133	QCS11HJ-330	Ceramic	33pF 50V
Other Capacitors	QCS11HK-	"	"

Others

Ref. No.	Parts No.	Parts Name	Description
L1	V03047-22	Coil	FM Antenna
L2	" -11	"	SW Antenna
L3	V03080-013	"	FM Antenna
L4	V03041-53	"	FM RF
L5	03226-1	Inductor	FM IF Trap
L6	V03041-055	Coil	FM OSC
L9	VQL1T03-201	"	LW OSC
L10	46923-43	"	MW OSC
L11	V03046-24	IFT	FM include C22
L12	"	"	" " C24
L13,14	V03067-026	"	AM " C46,47, CF2
L15	V03046-30	"	FM " C58
L16	V03067-25	"	AM " C60
L17,18	V03046-33	"	FM " C67,68
T1	V03074-4	Input Transformer	
T2	V03075-9	Output Transformer	
CF1	V03059-7(A)	Ceramic Filter	
J1~6	V03104-035	Jack Board	
J7	QMS3501-008	Jack	
S1-1~1-10	QSSA301-001	Slide Switch	

SWITCH [1] CIRCUIT BOARD ASSEMBLY

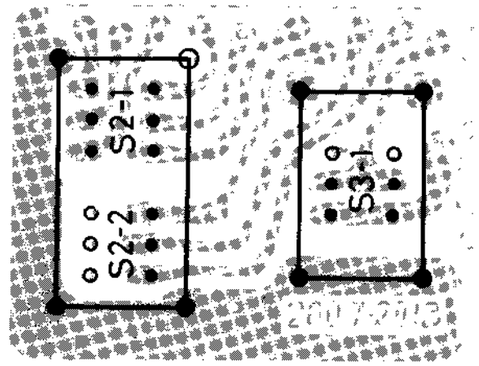


Fig. 23

Switches

Ref. No.	Parts No.	Parts Name	Description
S2-1~2-2	QSL4218-001	Lever	
S3	QSL2218-101	"	

SWITCH [2] CIRCUIT BOARD ASSEMBLY

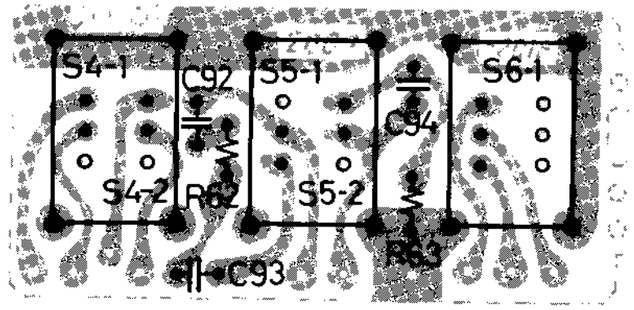


Fig. 24

Switches

Ref. No.	Parts No.	Parts Name	Description
S4,5,6	QSL2218-101	Lever	

Resistors

Ref. No.	Parts No.	Parts Name	Description
R62	QRD143K-472	Carbon	4.7kΩ ¼W
R63	" -221	"	220Ω "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C92	QFM41HM-682	Mylar	6800pF 50V
C93	" -332	"	3300pF "
C94	QES61AM-474	Solid Aluminum	0.47μF 10V

MIC AMPLIFIER CIRCUIT BOARD ASSEMBLY

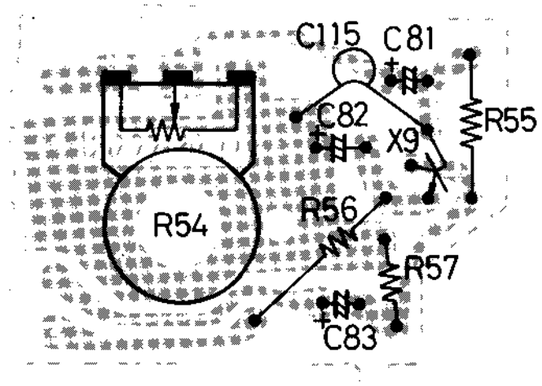


Fig. 25

Transistors

Ref. No.	Parts No.	Description	Pc	ft
X9	2SC828(R,S,T)	Silicon (MATSUSHITA)	250mW	220MHz

Resistors

Ref. No.	Parts No.	Parts Name	Description
R54	QVG2A6A-013	Variable	1kΩ A-curve
R55	QRD141K-474	Carbon	470kΩ ¼W
R56	" -102	"	1kΩ "
R57	" -472	"	4.7kΩ "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C81	QES61AM-224	Solid Aluminum	0.22μF 10V
C82	QEW41AA-107	Electrolytic	100μF "
C83	QEW41HA-474	"	0.47μF 50V
C115	QCS11HK-151	Ceramic	150pF "

WIRING CONNECTION

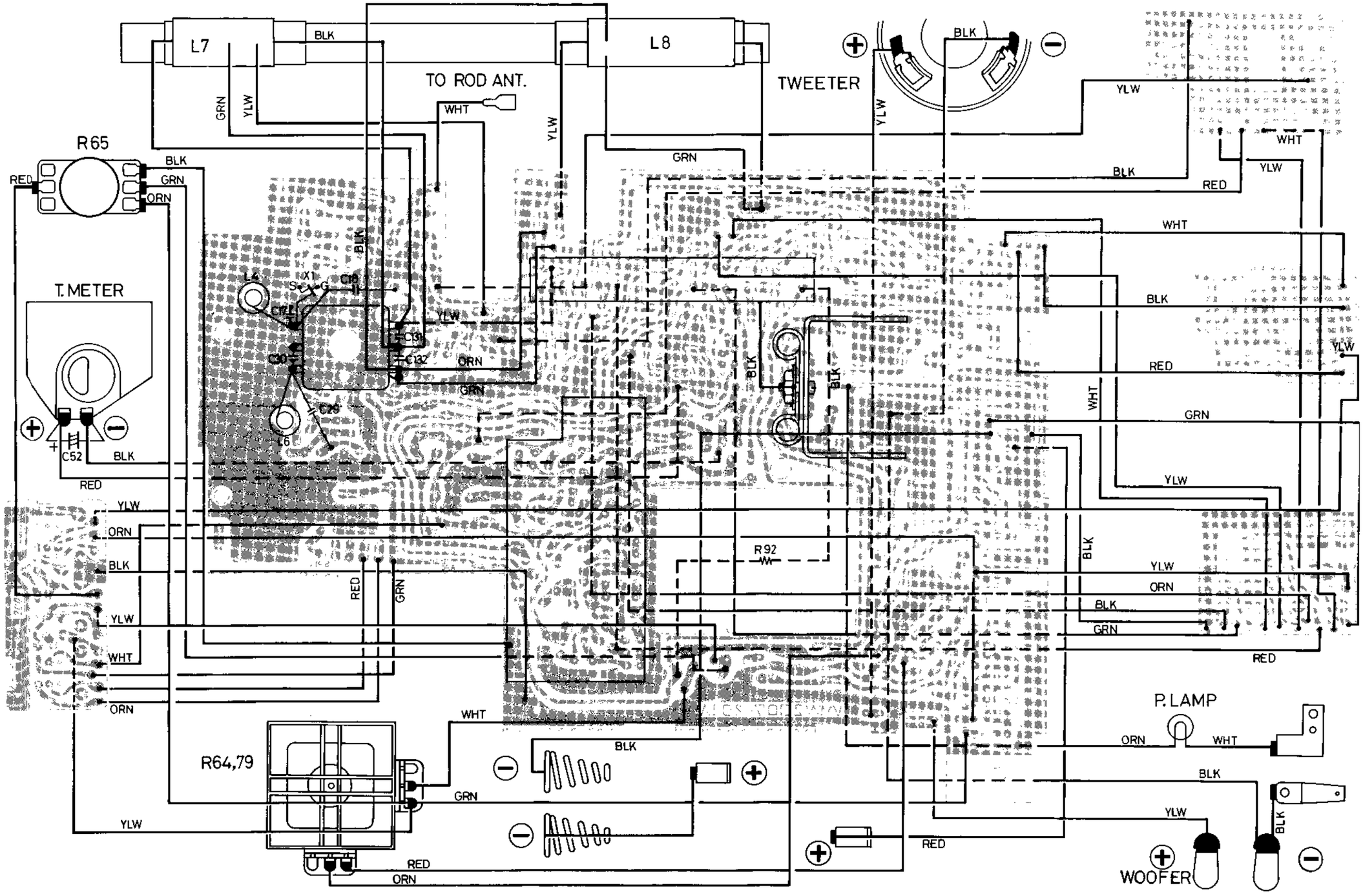
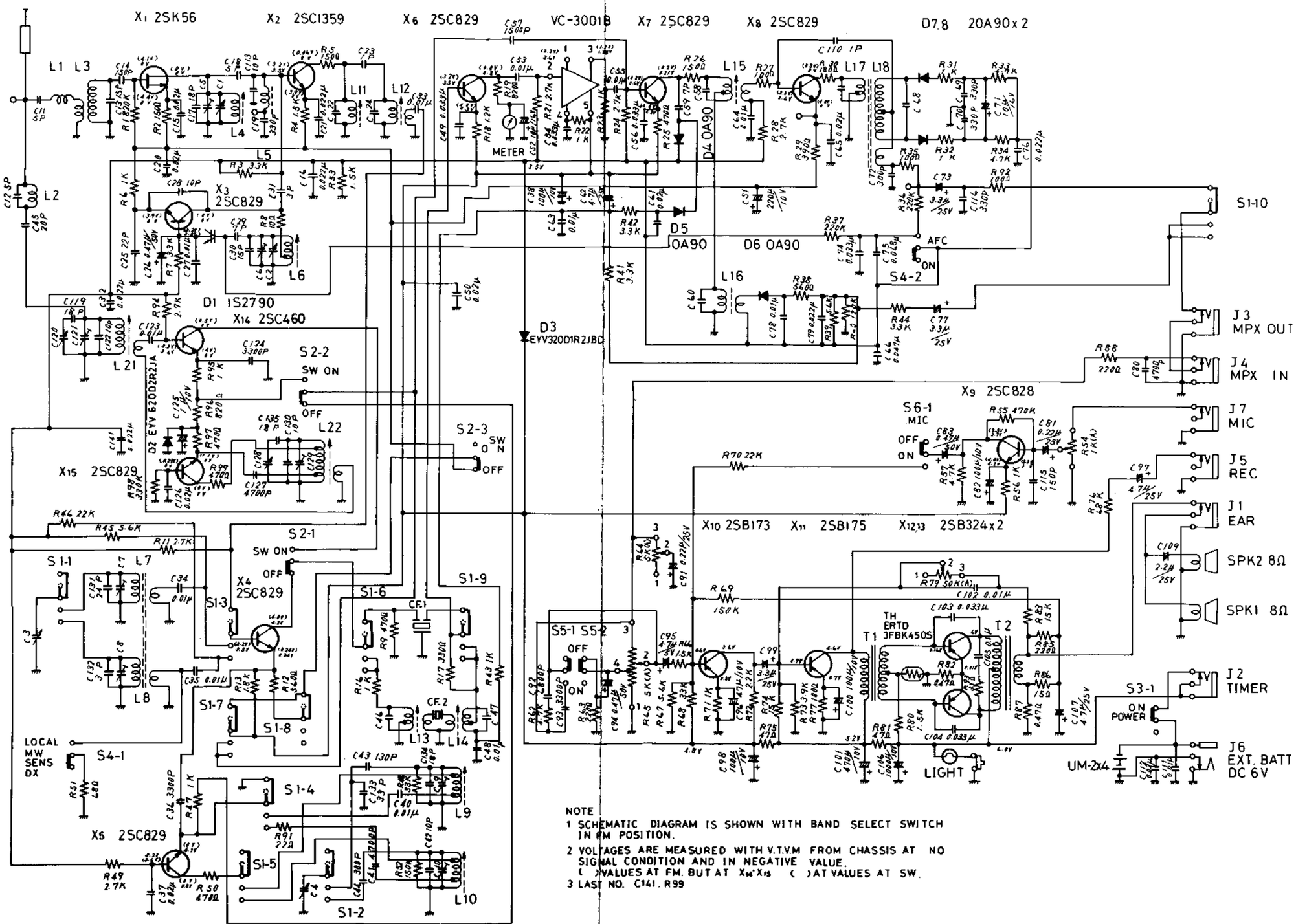


Fig. 26

SCHEMATIC DIAGRAM OF 8240L



NOTE

1 SCHEMATIC DIAGRAM IS SHOWN WITH BAND SELECT SWITCH IN FM POSITION.

2 VOLTAGES ARE MEASURED WITH V.T.V.M FROM CHASSIS AT NO SIGNAL CONDITION AND IN NEGATIVE VALUE.
( )VALUES AT FM. BUT AT X_{14}'X_{15} ( )AT VALUES AT SW.

3 LAST NO. C141. R99

8240L
No. 1287

Fig. 27

49m BAND CIRCUIT BOARD ASSEMBLY

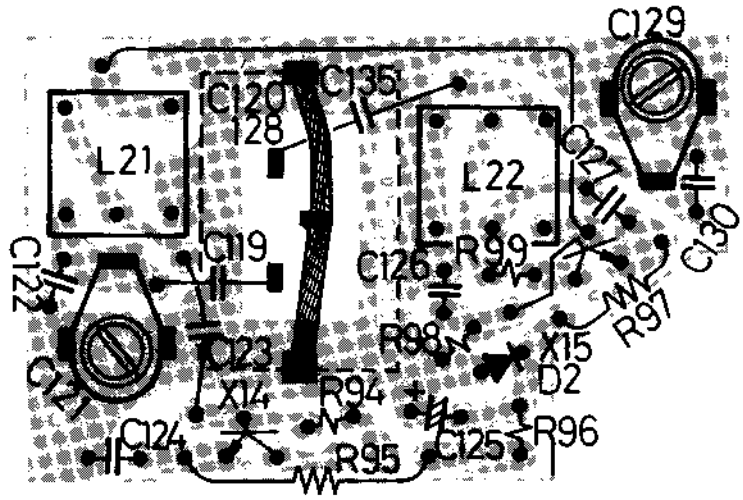


Fig. 28

Transistor

Ref. No.	Parts No.	Description	Pc	ft
X14	2SC460(B)	Silicon (HITACHI)	200mW	230MHz
X15	2SC829(C)	" (MATSUSHITA)	150mW	230MHz

Variatite

Ref. No.	Parts No.	Description
D2	EYV620D2R2JA	MATSUSHITA

Coils

Ref. No.	Parts No.	Parts Name	Description
L21	VQR1001-201	Coil	RF
L22	VQS1T03-202	"	OSC

Resistors

Ref. No.	Parts No.	Parts Name	Description
R94	QRD143K-272	Carbon	2.7kΩ ¼W
R95	QRD141K-102	"	1kΩ "
R96	QRD143K-821	"	820Ω "
R97,99	" -471	"	470Ω "
R98	" -334	"	330kΩ "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C119,130	QCS11HK-180	Ceramic	18pF 50V
C120,128	QAA1020-001	Variable	2-gang
C121,129	QAT3001-005	Trimmer	
C122	QCS11HK-150	Ceramic	15pF 50V
C123	QCF11EZ-103	"	0.01μF 25V
C124	QFM41HM-332	Mylar	3300pF 50V
C125	QEW41HA-105	Electrolytic	1μF "
C126	QCF11EZ-223	Ceramic	0.02μF 25V
C127	QFM41HM-472	Mylar	4700pF 50V
C135	QCS11HK-100	Ceramic	10pF "