

1180

**REALISTIC**<sup>®</sup>

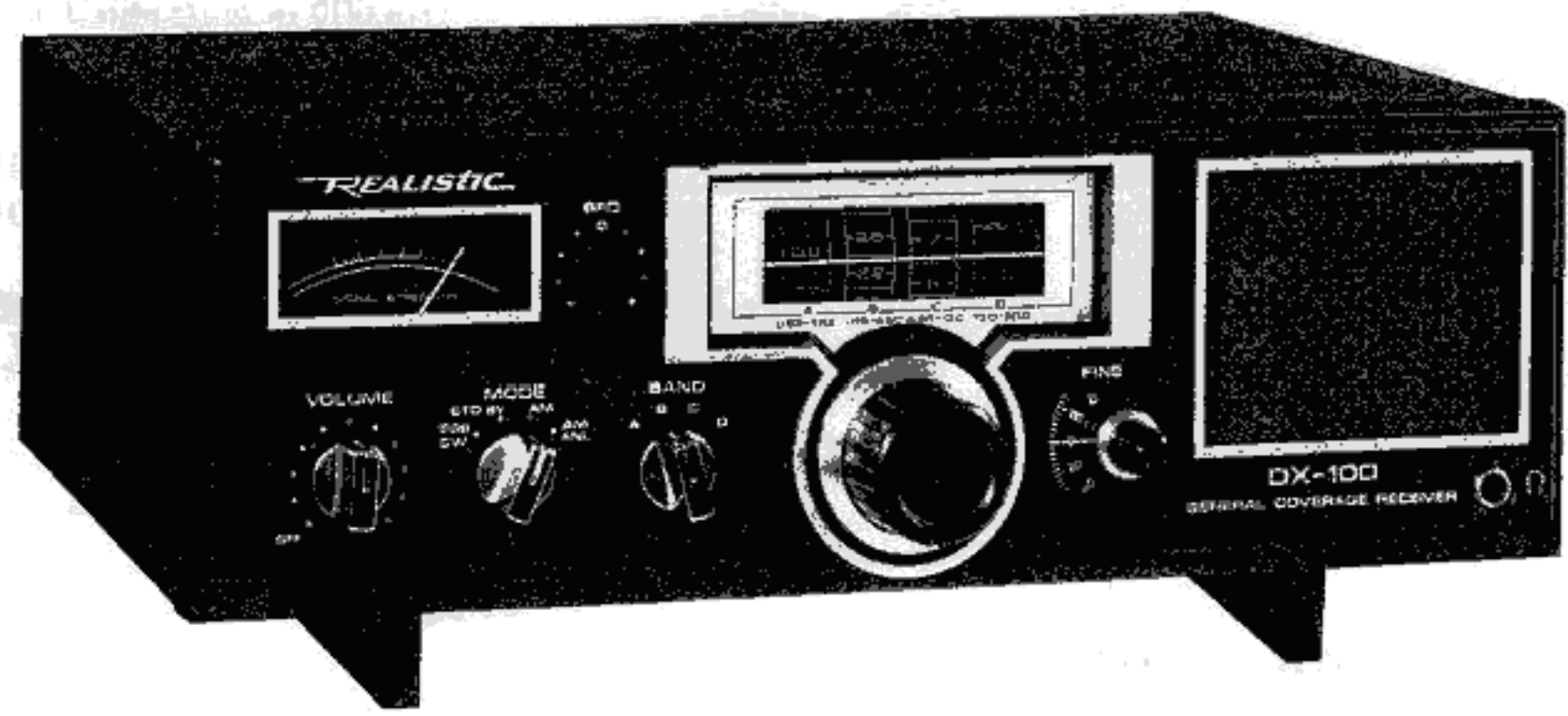
# Service Manual

20-206

## DX-100

### General Coverage Communications Receiver

Catalog Number: 20-206



CUSTOM MANUFACTURED FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

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## C BAND

Speaker impedance: 8 ohms

Use resistive load.

Reference output level: 50 mW

Connect signal generator hot lead through 18 pF capacitor to antenna terminal.

Disconnect telescopic antenna cable.

Modulation: 1000 Hz, 30%

	UNIT	NOMINAL	LIMIT
Frequency Coverage	MHz	4.2–13.5	4.5–13
IF	kHz	455	±5
Sensitivity for reference output power, S/N 10 dB	at 5 MHz	15 $\mu$ V	30
	at 7 MHz	8 $\mu$ V	20
	at 12 MHz	4 $\mu$ V	10
Image rejection at 12 MHz	dB	12	8
Dial Calibration at 5 MHz	kHz	—	±150
at 10 MHz	kHz	—	±300
BFO Pitch range at 7 MHz	kHz	IF ± 5	IF ± 3

## D BAND

Speaker impedance: 8 ohms

Use resistive load.

Reference output level: 50 mW

Connect signal generator hot lead through 18 pF capacitor to antenna terminal.

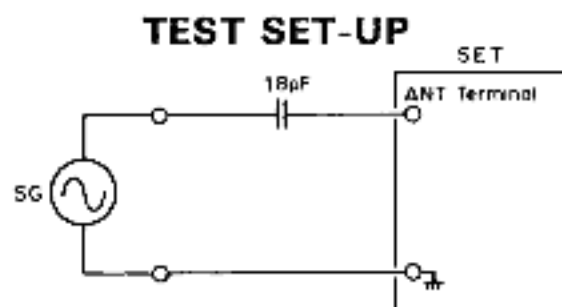
Disconnect telescopic antenna cable.

Modulation: 1000 Hz, 30%

	UNIT	NOMINAL	LIMIT
Frequency Coverage	MHz	12–31	13–30
IF	kHz	455	±5
Sensitivity for reference output power, S/N 10 dB	at 14 MHz	12 $\mu$ V	25
	at 21 MHz	5 $\mu$ V	12
	at 28 MHz	3 $\mu$ V	7
Image rejection at 28 MHz	dB	5	2
Dial Calibration at 13 MHz	kHz	—	±250
at 28 MHz	kHz	—	±400

**NOTE:** Nominal Specs represent the design specs; all units should be able to approximate these — some will exceed and some may drop slightly below these specs.

Limit Specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.



# BLOCK DIAGRAM

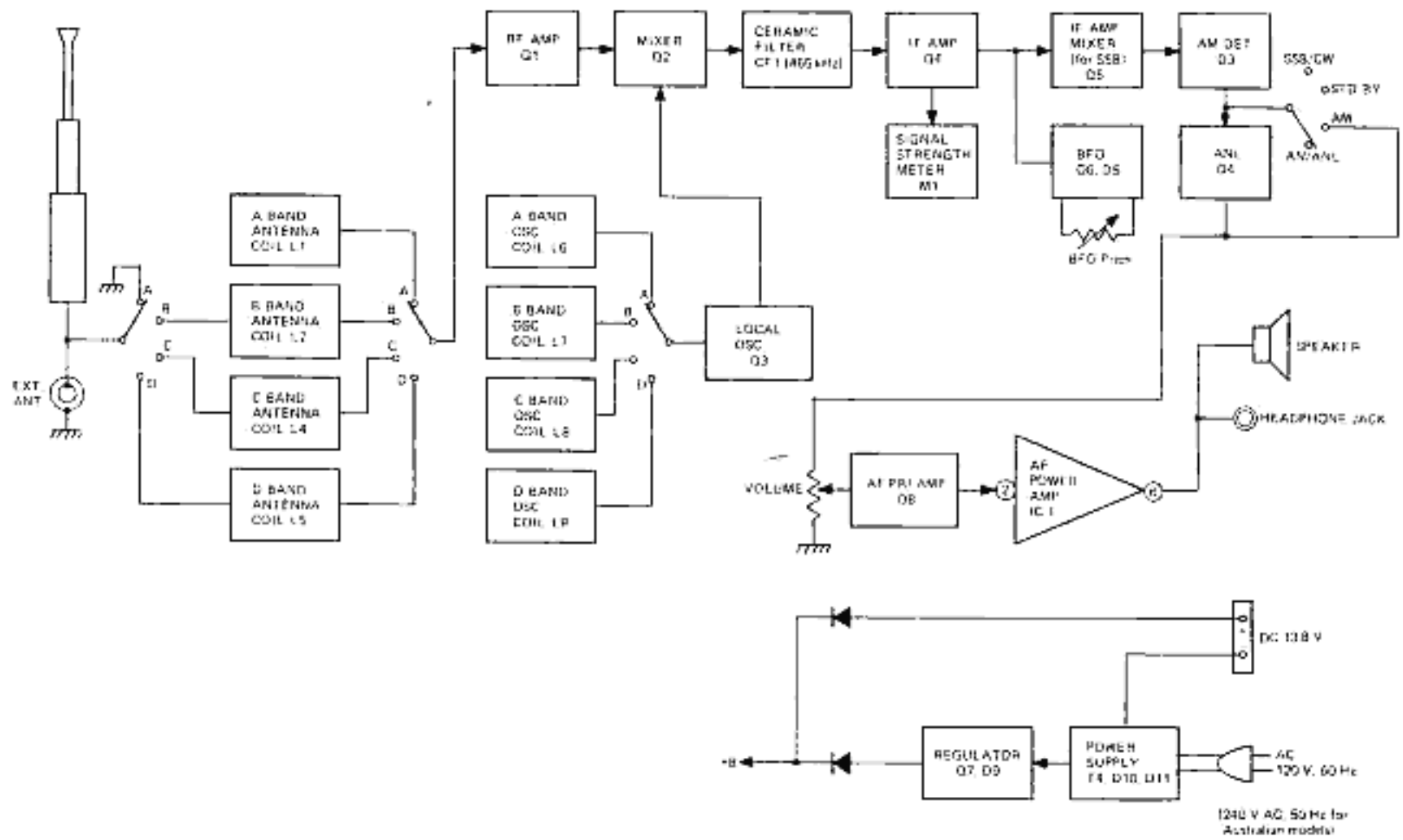


Figure 1

# DIAL STRINGING DIAGRAM

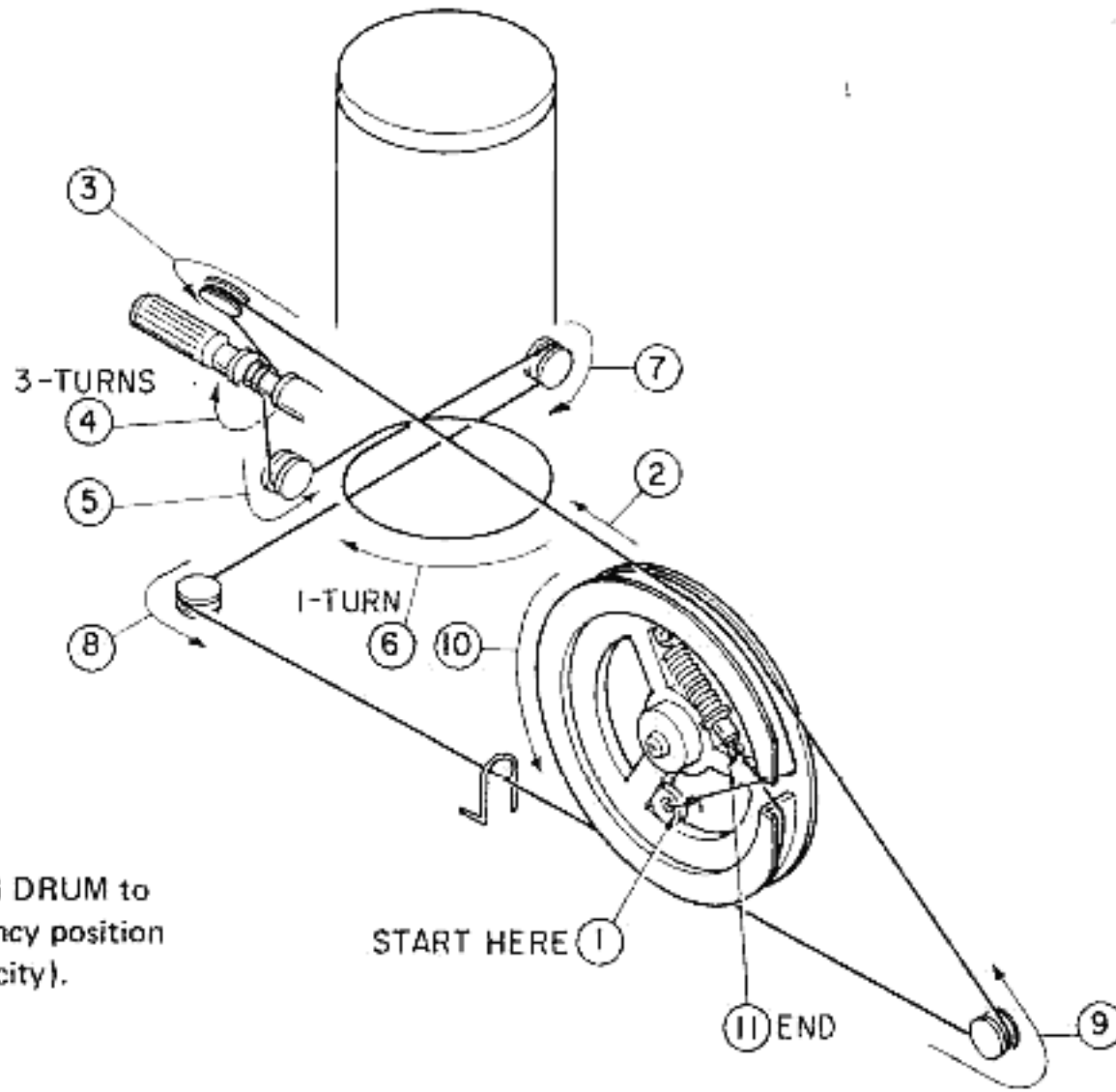


Figure 2

# ALIGNMENT INSTRUCTIONS

## ALIGNMENT POINTS LOCATION

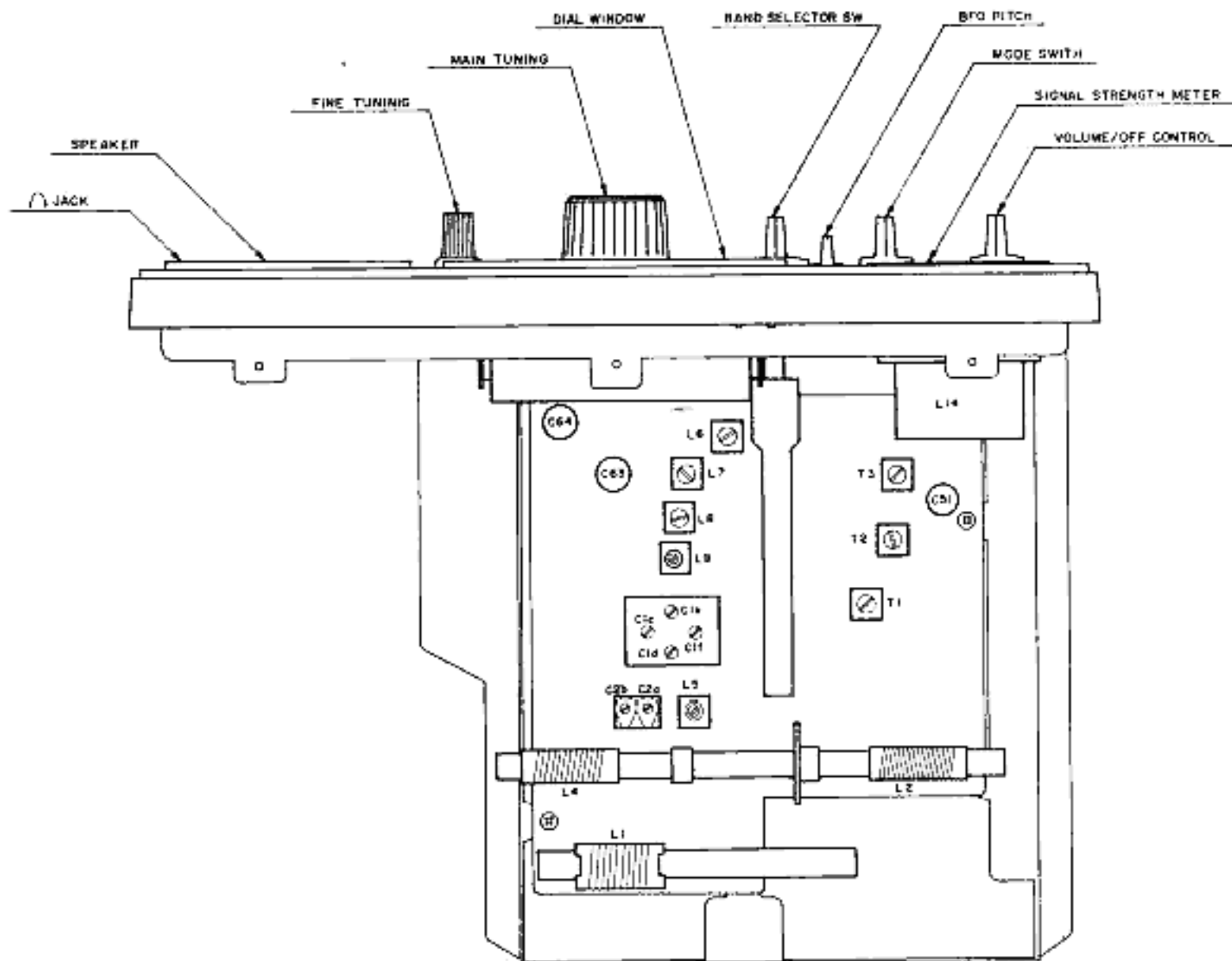


Figure 3

### EQUIPMENT REQUIRED

1. AM Signal Generator
2. Vacuum Tube Voltmeter
3. Frequency Counter

### GENERAL PREPARATIONS

1. Check source voltage for 120 V, 60 Hz (240 V, 50 Hz for Australian models).
2. Set BAND switch to band being aligned.
3. Turn FINE Tuning and BFO Pitch to center position (zero).
4. Set MODE switch to AM.
5. For bands B, C and D telescopic antenna should be disconnected.
6. Signal input should be kept as low as possible to avoid AGC action.
7. Standard modulation is 1000 Hz 30% for all bands.
8. Connection of signal generator should be between chassis ground and EXT. ANT. Jack.

### A, B, C, D BAND IF ALIGNMENT

Alignment	Equipment	Connection	Step	Gen. Freq.	Dial Setting	Adjustment	For
IF	AM Signal Generator, V.T.V.M.	See Figure 4.		455 kHz	Maximum Frequency (A BAND)	T1, T2, T3	Maximum Output

## A BAND ALIGNMENT

Alignment	Equipment	Connection	Step	Gen. Freq.	Dial Setting	Adjustment	For
TUNING COVERAGE	AM Signal Generator, V.T.V.M.	See Figure 5.	1	505 kHz	Maximum Frequency	L6 OSC. Coil	Maximum Output
			2	1650 kHz	Maximum Frequency	C1e	Maximum Output
			3	Repeat steps 1 and 2 until tuning coverage is exactly from 505 kHz to 1650 kHz.			
TRACKING	AM Signal Generator, V.T.V.M.	See Figure 5.	1	600 kHz	Tune to Signal.	L1 Antenna Coil	Maximum Output
			2	1400 kHz	Tune to Signal.	C1c	Maximum Output
			3	Repeat steps 1 and 2 until no further improvement can be made.			

## B BAND ALIGNMENT

Alignment	Equipment	Connection	Step	Gen. Freq.	Dial Setting	Adjustment	For
TUNING RANGE	AM Signal Generator, V.T.V.M.	See Figure 6.	1	1.5 MHz	1.5 MHz	L7 OSC. Coil	Maximum Output
			2	4.8 MHz	4.8 MHz	C1f	Maximum Output
			3	Repeat steps 1 and 2 until tuning range covers exactly from 1.5 MHz to 4.8 MHz.			
TRACKING	AM Signal Generator, V.T.V.M.	See Figure 6.	1	1.8 MHz	Tune to Signal.	L2 Antenna Coil	Maximum Output
			2	4.0 MHz	Tune to Signal.	C1d	Maximum Output
			3	Repeat steps 1 and 2 until no further improvement can be made.			

## C BAND ALIGNMENT

Alignment	Equipment	Connection	Step	Gen. Freq.	Dial Setting	Adjustment	For
TUNING RANGE	AM Signal Generator, V.T.V.M.	See Figure 7.	1	4.2 MHz	4.2 MHz	L8 OSC. Coil	Maximum Output
			2	13.5 MHz	13.5 MHz	C3a	Maximum Output
			3	Repeat steps 1 and 2 until tuning range covers exactly from 4.2 MHz to 13.5 MHz.			
TRACKING	AM Signal Generator, V.T.V.M.	See Figure 7.	1	5 MHz	Tune to Signal	L4 Antenna Coil	Maximum Output
			2	12 MHz	Tune to Signal.	C2b	Maximum Output
			3	Repeat steps 1 and 2 until no further improvement can be made.			

## D BAND ALIGNMENT

Alignment	Equipment	Connection	Step	Gen. Freq.	Dial Setting	Adjustment	For
TUNING RANGE	AM Signal Generator, V.T.V.M.	See Figure 8.	1	12 MHz	12 MHz	L9 OSC. Coil	Maximum Output
			2	31 MHz	31 MHz	C3b	Maximum Output
			3	Repeat steps 1 and 2 until tuning range covers exactly from 12 MHz to 31 MHz.			
TRACKING	AM Signal Generator, V.T.V.M.	See Figure 8.	1	14 MHz	Tune to Signal.	L5 Antenna Coil	Maximum Output
			2	28 MHz	Tune to Signal.	C2a	Maximum Output
			3	Repeat steps 1 and 2 until no further improvement can be made.			

## BFO ALIGNMENT

Alignment	Equipment	Connection	Step	Gen. Freq.	Adjust for	
BFO	AM Signal Generator, Frequency Counter, V.T.V.M.	See Figure 9.	1	Set BAND Switch to C.		
			2	Set MODE Switch to AM.		
			3	Tune BFO Pitch and FINE Tuning to center position (zero).		
			4	7 MHz (AM, 1 kHz, 30%)	Tune the Main Tuning on set to Generator Frequency.	
			5	7 MHz (No Modulation)	Set MODE Switch to SSB/CW. (At this time, Beat Sound comes on.)	
			6	7 MHz (No Modulation)	Adjust L14 for no Beat Sound indication on speaker.	
			7	Make sure that the Beat frequency is above 3.2 kHz on Frequency Counter by turning BFO Pitch Control to Maximum + (or -). If the frequency is below 3.2 kHz, repeat steps 3 through 6 until no further improvement can be made.		



# EQUIPMENT CONNECTIONS

## A, B, C, D BAND IF

## A BAND/TRACKING

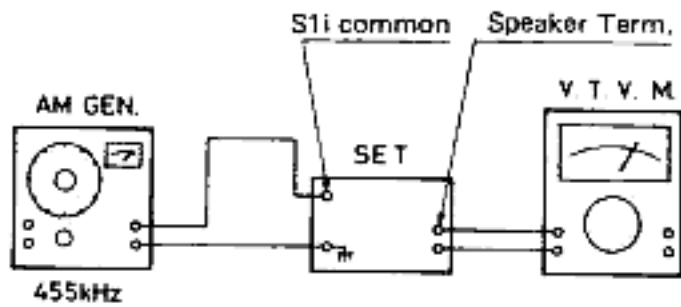


Figure 4

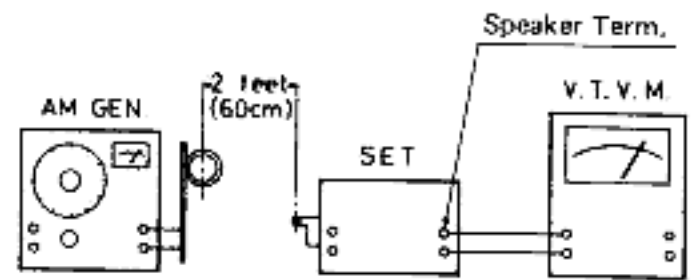


Figure 5

## B BAND/TRACKING

## C BAND/TRACKING

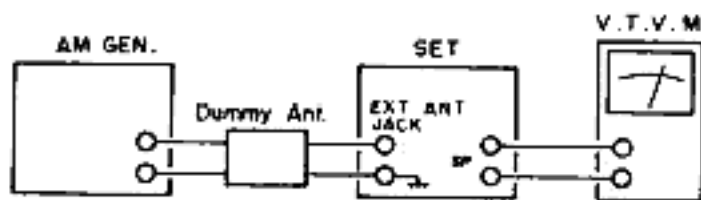


Figure 6

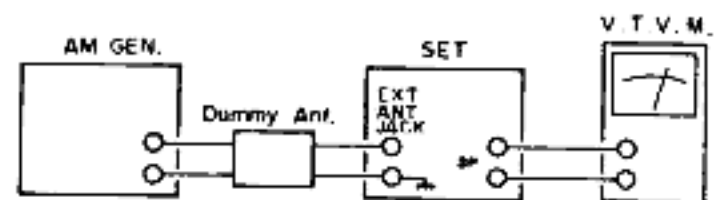


Figure 7

## D BAND/TRACKING

## BFO ALIGNMENT

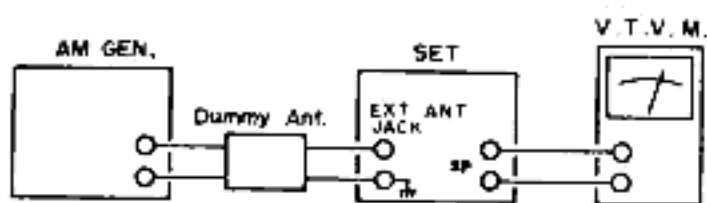


Figure 8

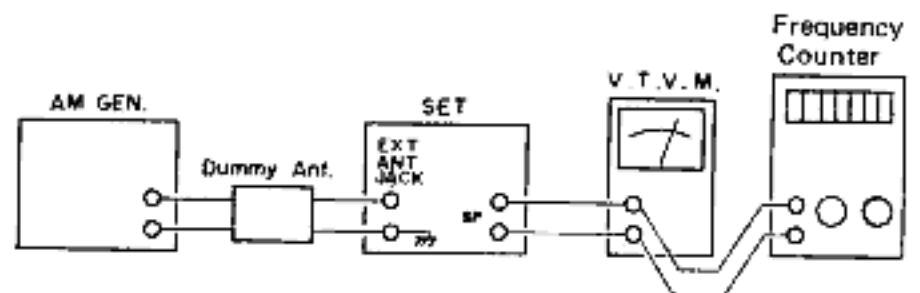


Figure 9

## SCHEMATIC OF DUMMY ANTENNA

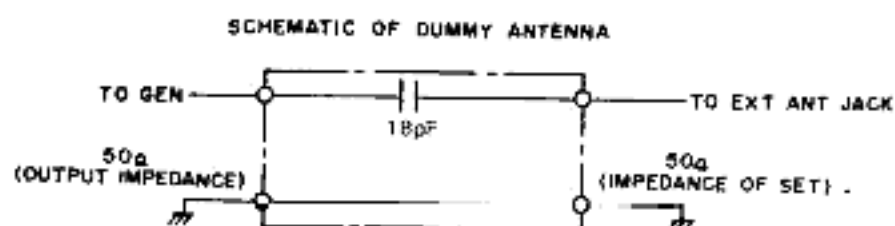


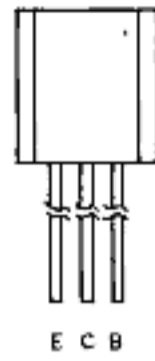
Figure 10

# TROUBLESHOOTING CHART

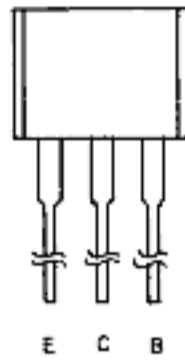
SYMPTOM	CAUSE AND REMEDY
1) No output	<p>A) Faulty AC power cord: Replace the cord.</p> <p>B) Faulty 12 V DC Jack: Repair or replace.</p> <p>C) DC cable polarity is wrong: Correct polarity.</p> <p>D) Blown in-line fuse: Replace.</p> <p>E) Rectifier defective: Replace.</p> <p>F) Defective Q7 or D9 circuitry: Replace defective component.</p> <p>G) HEADPHONE jack is defective: Repair or replace.</p> <p>H) Speaker voice coil is defective: Replace.</p> <p>I) Open power transformer: Replace the transformer.</p> <p>J) Defect in the power switch: Replace the switch.</p> <p>K) Defective IC: Replace defective IC.</p> <p>L) Defect in the power switch S4: Repair or replace it.</p> <p>M) Defect in VOLUME (R1): Replace.</p>
2) A BAND does not work.	<p>A) Poor contact in BAND switch: Repair or replace switch.</p> <p>B) Transistor, diode, IFT, IC, resistor, coil or capacitor in A BAND IF circuit defective: Replace the defective component(s).</p> <p>C) Bar Antenna coil defective: Repair or replace.</p>
3) B BAND does not work.	<p>A) Poor contact in selector switch: Repair or replace switch.</p> <p>B) Transistor, diode, IFT, IC, resistor, coil or capacitor in B BAND IF circuit defective: Replace the defective component(s).</p> <p>C) Defective Antenna coil L3: Replace it.</p>
4) C BAND does not work.	<p>A) Poor contact in selector switch: Repair or replace switch.</p> <p>B) Transistor, diode, IFT, IC, coil, resistor or capacitor in C BAND IF circuit defective: Replace the defective component(s).</p> <p>C) Antenna coil defective: Repair or replace.</p>
5) D BAND does not work.	<p>A) Poor contact in selector switch: Repair or replace switch.</p> <p>B) Transistor, diode, IFT, IC, coil, resistor or capacitor in D BAND IF circuit defective: Replace the defective component(s).</p> <p>C) Defective Antenna coil L5: Replace it.</p>

SYMPTOM	CAUSE AND REMEDY
6) No effect with fully extended rod Antenna on B, C, D BAND	A) Poor contact of band selector switch and rod Antenna: Repair or replace. B) Broken wire between band selector switch and antenna: Repair or replace.
7) No effect when connecting external antenna	A) Poor contact on jack for EXT. ANT. or defective jack: Repair or replace.
8) HEADPHONE jack does not function.	A) Poor contact on HEADPHONE jack or defective jack: Repair or replace.
9) MODE Switch does not work.	A) Poor contact in MODE Switch: Repair or replace. B) Defective D4 circuitry: – Replace defective component(s). C) Defective L14, Q6, D5 or R2 circuitry: Replace defective component(s).
10) BFO does not work.	A) Defective R2: Replace. B) Defective R51, R52, D5 or Q6 circuitry: Replace defective component(s).
11) SIGNAL STRENGTH Meter does not work.	A) Defective SIGNAL STRENGTH Meter: Replace. B) Defective C73: Replace.
12) FINE Tuning does not work.	A) Defective R3: Replace. B) Defective D14, C69 or S1f circuitry: Repair or replace defective component(s).

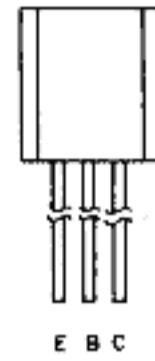
# IC & TRANSISTOR LEAD IDENTIFICATION



E C B



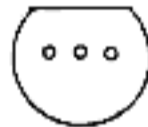
E C B



E B C



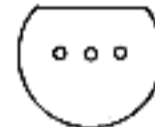
E C B



2SC1674  
2SC1730



2SC668

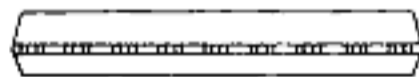
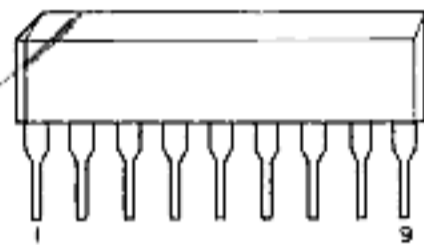


JE9011  
JE9014



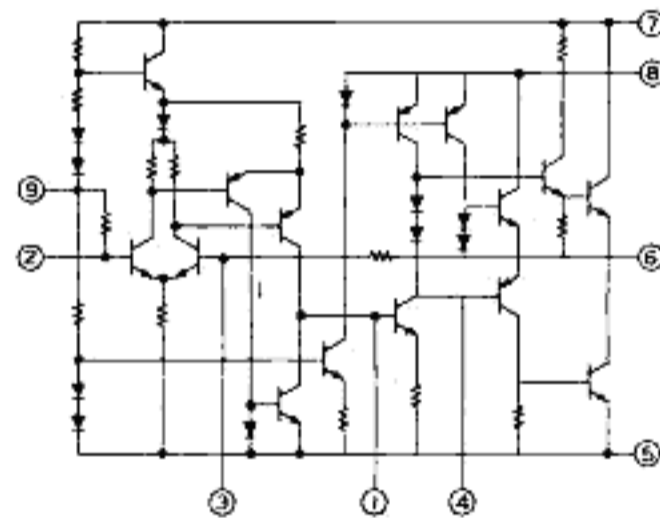
MJE9400

## IC-1 TA7313P/HA12013



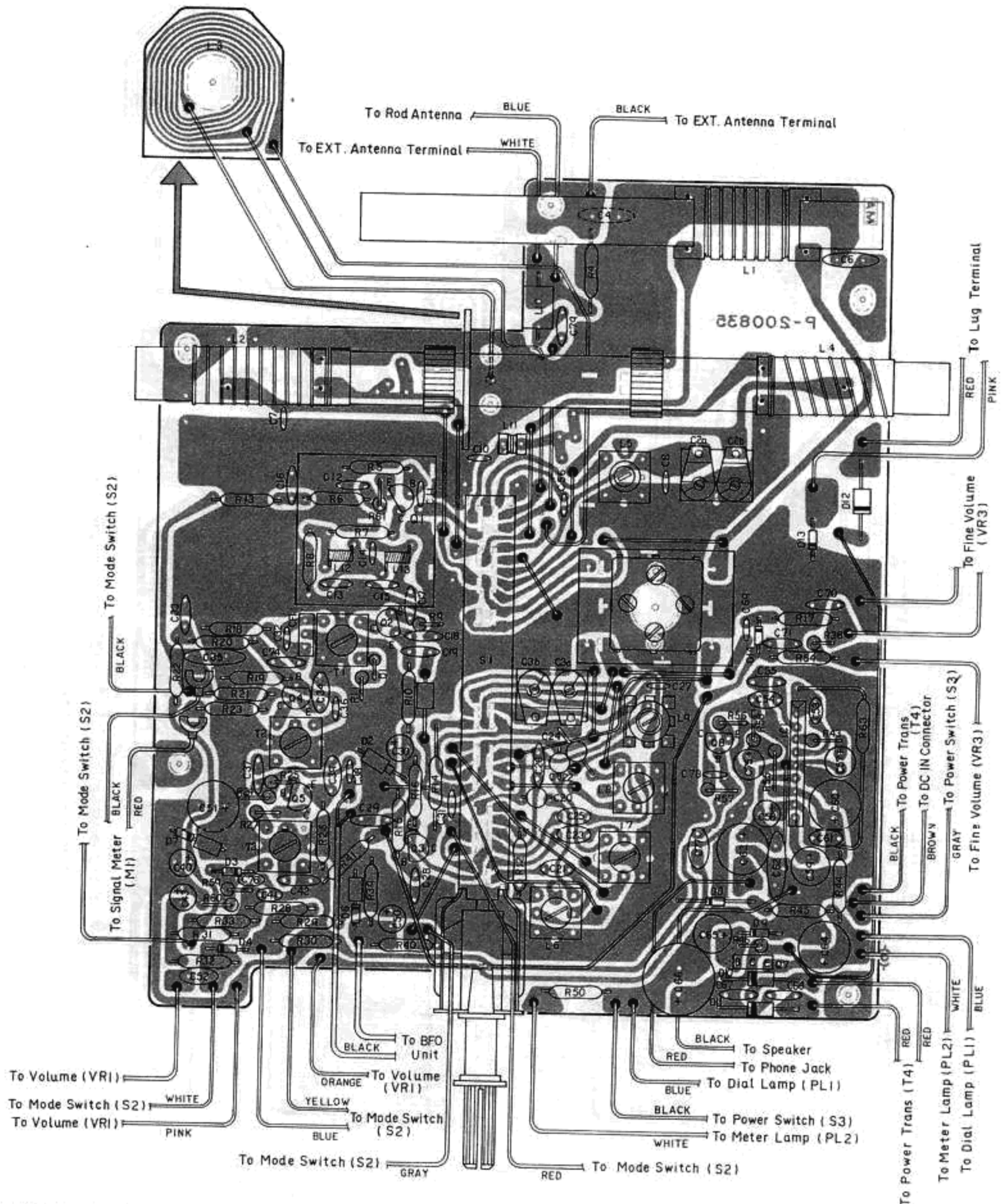
TA7313P

## IC, INTERNAL CONNECTION

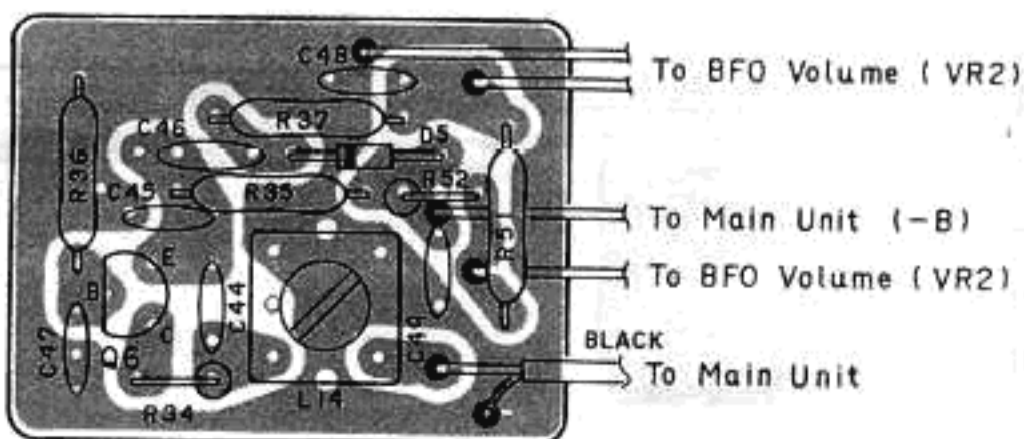


TA7313P

# PRINTED CIRCUIT BOARD (TOP VIEW)



## BFO P.C.B.

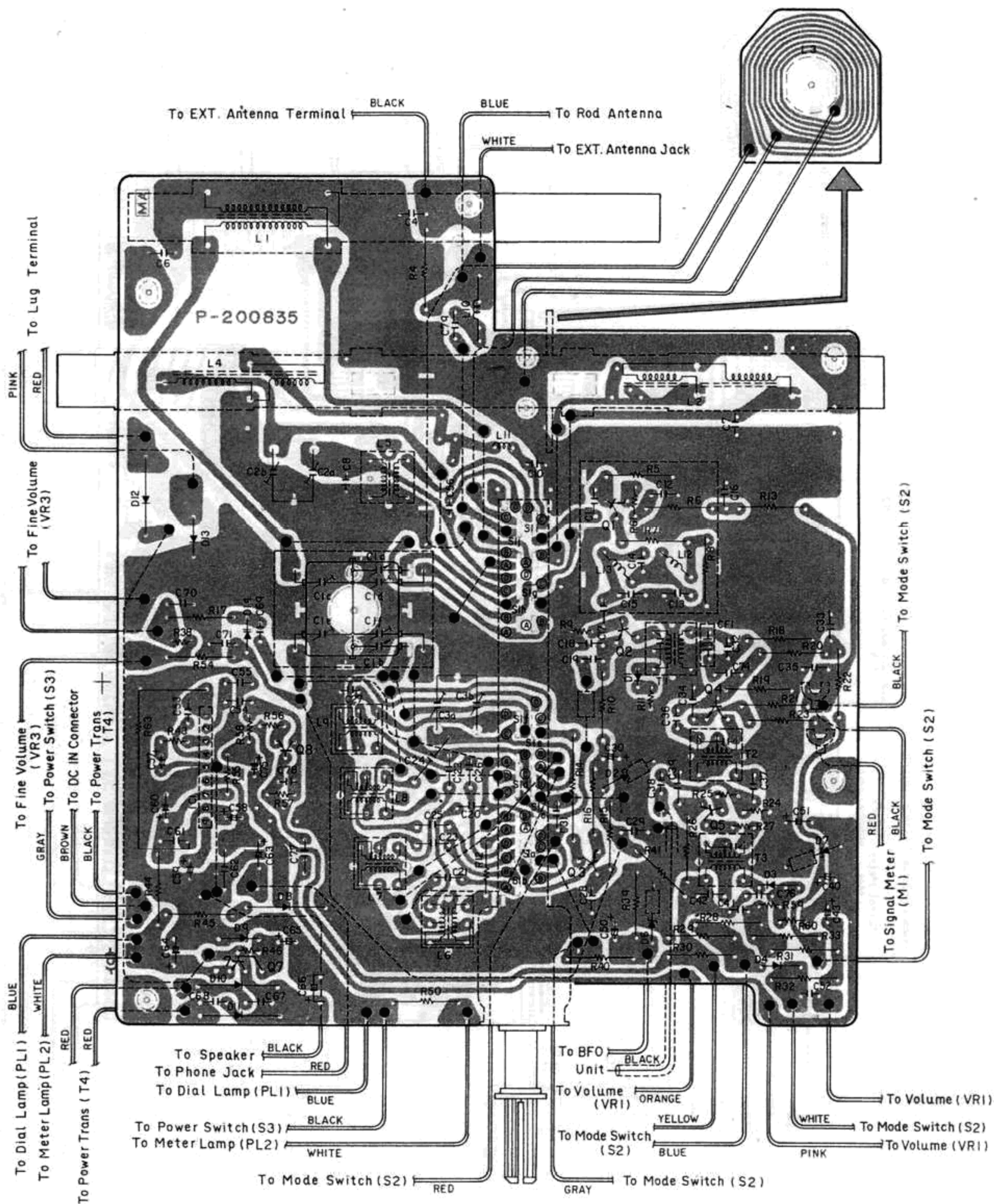


## LAMP P.C.B.

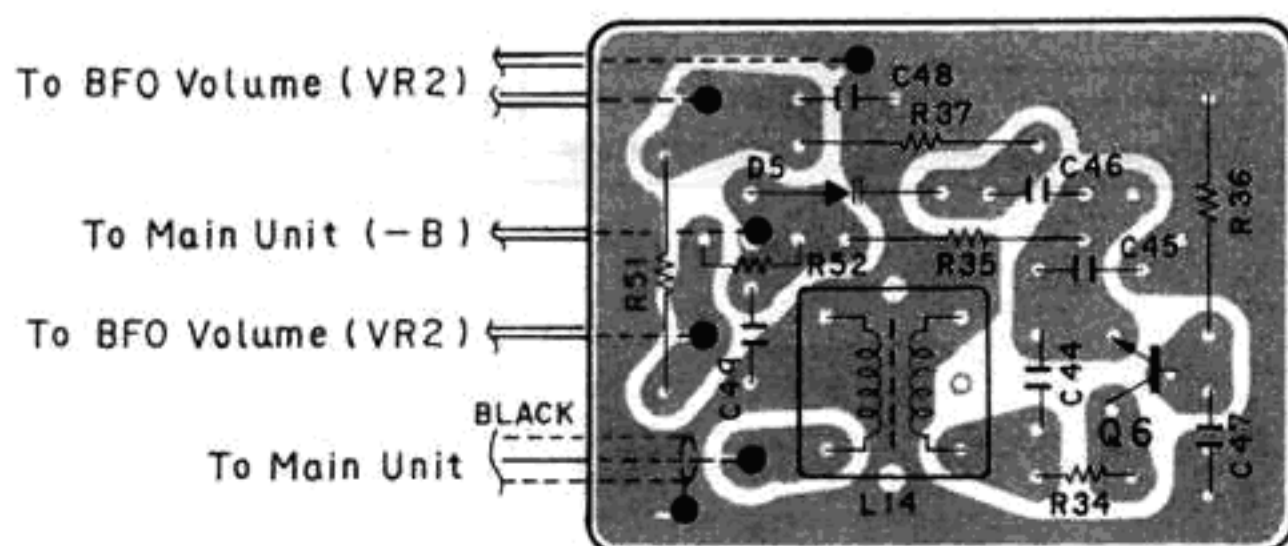




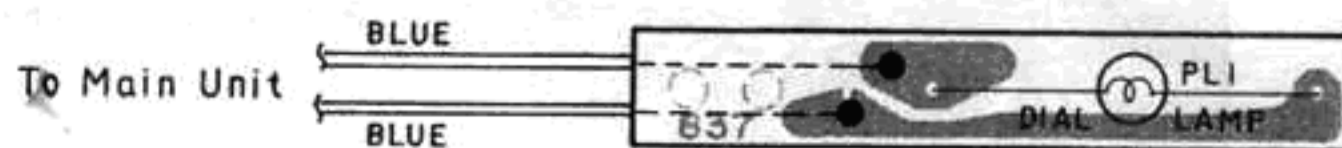
# PRINTED CIRCUIT BOARD (BOTTOM VIEW)



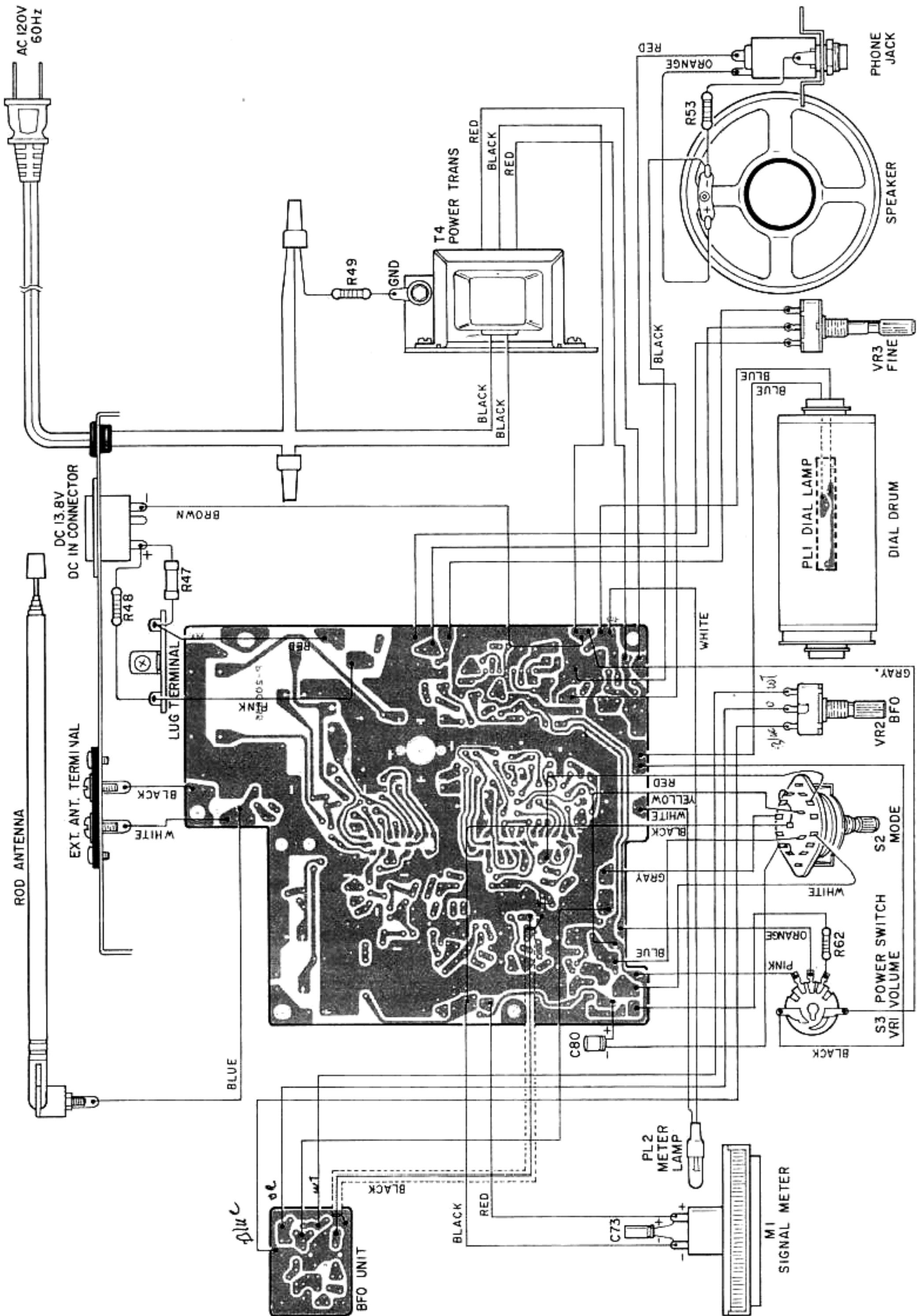
## BFO P.C.B.



## LAMP P.C.B.



# WIRING DIAGRAM





# ELECTRICAL PARTS LIST

Ref. No.	Description	RS Part No. (Mfr's Part No.)	Ref. No.	Description	RS Part No. (Mfr's Part No.)
<b>CAPACITORS</b> ( ): Variance Value SL : 350-100 ppm/°C			C44	Polystyrene 680 pF ± 5% 50 WV	
C1a-f	Poly Variable Capacitor 226 pF x 2	C-4723 (P-150047)	C45	Ceramic 240 pF ± 5% 50WV(N470)	CF-2163
C2a, b	Trimmer Capacitor AT2-52W or 2T16M or 2T-P15	C-1119 (P-160015) or (P-160022) or (P-160012)	C46	Ceramic 100 pF ± 10% 50WV(NPO)	CF-1424
C3a, b	Trimmer Capacitor AT2-52W or 2T16M or 2T-P15	C-0858 (P-160015) or (P-160022) or (P-160012)	C47	Ceramic 330 pF ± 10% 50WV(SL)	CF-2026
C4	Ceramic 0.04 μF 25 WV		C48	Ceramic 0.01 μF 50 WV	
C5	Not used		C49	Ceramic 0.04 μF 25 WV	
C6	Ceramic 0.04 μF 25 WV		C50	Electrolytic 10 μF/10 V or 16 V	
C7	Ceramic 5 pF ± 0.5 pF 50WV(SL)	CF-1105	C51	Electrolytic 470 μF/10 V	
C8	Ceramic 15(0-22)pF ± 10% 50WV(SL)	CF-1195	C52	Polyester 0.0047 μF ± 20% 50 WV	
C9	Not used		C53	Polyester 0.0022 μF ± 20% 50 WV	
C10	Ceramic 24 pF ± 10% 50WV(SL)	CF-1262	C54	Polyester 0.022 μF ± 20% 50 WV	
C11	Ceramic 0.022 μF 25 WV		C55	Ceramic 0.01 μF 50 WV	
C12	Ceramic 0.04 μF 25 WV		C56	Ceramic 7 pF ± 0.5 pF 50WV(SL)	CF-1120
C13	Ceramic 100 pF ± 10% 50WV(SL)	CF-1425	C57	Electrolytic 33 μF/10 V	
C14	Ceramic 47 pF ± 10% 50WV(SL)	CF-1366	C58	Electrolytic 47 μF/10 V	
C15	Ceramic 100 pF ± 10% 50WV(SL)	CF-1425	C59	Electrolytic 100 μF/10 V	
C16	Ceramic 0.022 μF 25 WV		C60	Electrolytic 220 μF/10 V	
C17	Ceramic 0.022 μF 25 WV		C61	Ceramic 0.022 μF 25 WV	
C18	Ceramic 68 pF ± 10% 50WV(SL)	CF-1959	C62	Ceramic 0.1 μF 25 WV	
C19	Polyester 0.01 μF ± 20% 50 WV		C63	Electrolytic 220 μF/10 V	
C20	Polystyrene 240 pF ± 5% 50 WV		C64	Electrolytic 220 μF/10 V	
C21	Polyester 0.0047 μF ± 20% 50 WV		C65	Electrolytic 100 μF/10 V	
C22	Polystyrene 680 pF ± 5% 50 WV		C66	Electrolytic 470 μF/16 V	
C23	Polyester 0.0022 μF ± 20% 50 WV		C67	Ceramic 0.022 μF 25 WV	
C24	Polystyrene 2200 pF ± 5% 50 WV		C68	Ceramic 0.022 μF 25 WV	
C25	Polyester 0.001 μF ± 20% 50 WV		C69	Ceramic 15 pF ± 10% 50WV(NPO)	CF-1190
C26	Ceramic 470 pF ± 10% 50WV(SL)	CF-1519	C70	Ceramic 0.01 μF 50 WV	
C27	Ceramic 24(0-27)pF ± 10% 50WV(NPO)	CF-1261	C71	Ceramic 0.022 μF 25 WV	
C28	Ceramic 0.022 μF 25 WV		C72	Not used	
C29	Ceramic 0.04 μF 25 WV		C73	Electrolytic 3.3 μF/50 V	
C30	Electrolytic 10 μF/10 V or 16 V		C74	Ceramic 0.022 μF 25 WV	
C31	Ceramic 0.022 μF 25 WV		C75	Electrolytic 47 μF/10 V	
C32	Ceramic 1 pF ± 0.25 pF 50WV(SL)	CF-1015	C76	Polyester 0.0056 μF ± 20% 50 WV	
C33	Ceramic 0.022 μF 25 WV		C77	Polyester 0.047 μF ± 20% 50 WV	
C34	Polyester 0.039 μF ± 20% 50 WV		C78	Ceramic 680 μF ± 20% 50 WV	
C35	Ceramic 0.1 μF 25 WV		C79	Ceramic 0.01 μF 50 WV	
C36	Ceramic 1 pF ± 0.25 pF 50WV(SL)	CF-1015	C80	Electrolytic 4.7 μF/25 V	
C37	Ceramic 0.022 μF 25 WV		C81	Not used	
C38	Ceramic 33(22-72)pF ± 10% 50WV(SL)	CF-1315	<b>CERAMIC FILTER</b>		
C39	Polyester 0.039 μF ± 20% 50 WV		CF1	Ceramic Filter CFM2-455Z	C-1118 (P-130090)
C40	Electrolytic 1 μF/50 V		<b>DIODES</b>		
C41	Polyester 0.001 μF ± 20% 50 WV		D1	Silicon Diode 1N4148	DX-0022
C42	Ceramic 0.04 μF 25 WV		D2	Zener Diode XZ062 or RD6.2EB2	DX-1419
C43	Electrolytic 0.47 μF/50 V		D3	Silicon Diode 1N4148	DX-0022
			D4	Silicon Diode 1N4148	DX-0022
			D5	Silicon Diode 1S310S or 1S2688	DX-1240

\*For Japanese Models Only



Ref. No.	Description	RS Part No. (Mfr's Part No.)
D6	Zener Diode XZ062 or RD6.2EB2	DX-1419
D7	Zener Diode XZ072 or RD7.5EB2	DX-1435
D8	Silicon Diode 1N4148	DX-0022
D9	Zener Diode XZ090 or RD9.1EB3	DX-1434
D10	Silicon Diode 10E-1	DX-1039
D11	Silicon Diode 10E-1	DX-1039
D12	Silicon Diode 10E-1	DX-1039
D13	Silicon Diode 1N4148	DX-0022
D14	Silicon Diode 1S2139-A	DX-0291

### INTEGRATED CIRCUITS

IC1	Description	Mfr's Part No.	RS Part No.
IC1	TA7313P or LA4140 or HA12013		MX-3426

### COILS

L1	ANT Coil	AC-128	CA-0702	P-110128
L2	ANT Coil	AC-129	CA-5344	P-110129
L3	Coil P.C.B.		X-8601	P-200838
L4	ANT Coil	AC-129	CA-5344	P-110129
L5	ANT Coil	AC-127	CA-5487	P-110127
L6	OSC Coil	OC-100	CA-5483	P-120100
L7	DSC Coil	OC-101	CA-5484	P-120101
L8	OSC Coil	OC-102	CA-5485	P-120102
L9	OSC Coil	OC-103	CA-5486	P-120103
L10	Inductor	C8-A1 1.2 $\mu$ H	CA-5482	P-360095
L11	Feri Inductor	0.63 $\mu$ H	CA-0675	P-360010
L12	AIR Coil	HR5-8%T1	CA-5480	P-340108
L13	AIR Coil	HL5-9%T1	CA-5481	P-340109
L14	OSC Coil	GC-099		P-120099

Ref. No.	Description	RS Part No. (Mfr's Part No.)
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### LAMPS

PL1	Dial Lamp	3.4 $\phi$ 10 V 40 mA	L-0874 (P-240104)
PL2	Meter Lamp	LEAD TYPE 4.2 $\phi$ 8 V 30 mA	L-1219 (P-240126)

### TRANSISTORS

Q1	Transistor	2SC1674(L) or 2SC668(D)	
Q2	Transistor	2SC1674(M) or 2SC668(C)	
Q3	Transistor	2SC1730(L)	
Q4	Transistor	JE9011(F)	MX-3740

Ref. No.	Description	RS Part No. (Mfr's Part No.)	
Q5	Transistor	JE9011(H)	MX-3742
Q6	Transistor	JE9011(G)	MX-3741
Q7	Transistor	MJE9400-2	MX-4481
Q8	Transistor	JE9014(C)	MX-4417

### TRANSFORMERS

T1	AM IFT	0A-088	CA-8114 (P-130088)
T2	AM IFT	0A-079	CA-8115 (P-130079)
T3	AM IFT	0A-089	CA-8116 (P-130089)
*T4	Power Transformer	120 V, 60 Hz	TA-0841 (P-100753) (P-100754) (P-100788) or (P-100799) (P-100820)
*T4	Power Transformer	120 V, 60 Hz	
*T4	Power Transformer	240 V, 50 Hz	
*T4	Power Transformer	100 V, 50/60 Hz	

### RESISTORS ( ) : Variance Value

R1	VOLUME	5 k $\Omega$ D	(P-171435)
R2	BFO Volume	100 k $\Omega$ B	P-6645 (P-171302) P-6494 (P-171303)
R3	FINE Volume	100 k $\Omega$ B	
R4	Carbon PZ	1.2 M $\Omega$	$\frac{1}{2}$ WV
*R4	Not used		
*R4	Not used		
R5	Carbon PZ	820 k $\Omega$	$\frac{1}{4}$ WV
R6	Carbon PZ	820 $\Omega$	$\frac{1}{4}$ WV
R7	Carbon PZ	47 $\Omega$	$\frac{1}{4}$ WV
R8	Carbon PZ	100 $\Omega$	$\frac{1}{4}$ WV
R9	Carbon PZ	820 k $\Omega$	$\frac{1}{4}$ WV
R10	Carbon PZ	3.3 k $\Omega$	$\frac{1}{4}$ WV
R11	Carbon PZ	22 k $\Omega$	$\frac{1}{4}$ WV
R12	Carbon PZ	47 $\Omega$	$\frac{1}{4}$ WV
R13	Carbon PZ	47 $\Omega$	$\frac{1}{4}$ WV
R14	Carbon PZ	880 $\Omega$	$\frac{1}{4}$ WV
R15	Carbon PZ	470 k $\Omega$	$\frac{1}{4}$ WV
R16	Carbon PZ	6.8 k $\Omega$	$\frac{1}{4}$ WV
R17	Carbon PZ	100 k $\Omega$	$\frac{1}{4}$ WV
R18	Carbon PZ	3.3 k $\Omega$	$\frac{1}{4}$ WV
R19	Carbon PZ	220 k $\Omega$	$\frac{1}{4}$ WV
R20	Carbon PZ	8.2 k $\Omega$	$\frac{1}{4}$ WV
R21	Carbon PZ	470 $\Omega$	$\frac{1}{4}$ WV
R22	Carbon PZ	1 k $\Omega$	$\frac{1}{4}$ WV
R23	Carbon PZ	1 k $\Omega$	$\frac{1}{4}$ WV
R24	Carbon PZ	330 k $\Omega$	$\frac{1}{4}$ WV
R25	Carbon PZ	47 $\Omega$	$\frac{1}{4}$ WV
R26	Carbon PZ	680 $\Omega$	$\frac{1}{4}$ WV
R27	Carbon PZ	680 $\Omega$	$\frac{1}{4}$ WV

\*For USA Models Only \*For Canadian Models Only \*For Australian Models Only \*For Japanese Models Only

Ref. No.	Description	RS Part No. (Mfr's Part No.)
R28	Carbon PZ 100 k $\Omega$ $\frac{1}{4}$ WV	
R29	Carbon PZ 300 k $\Omega$ $\frac{1}{4}$ WV	
R30	Carbon PZ 68 k $\Omega$ $\frac{1}{4}$ WV	
R31	Carbon PZ 68 k $\Omega$ $\frac{1}{4}$ WV	
R32	Carbon PZ 68 k $\Omega$ $\frac{1}{4}$ WV	
R33	Carbon PZ 33 k $\Omega$ $\frac{1}{4}$ WV	
R34	Carbon UZ 150 $\Omega$ $\frac{1}{4}$ WV	
R35	Carbon PZ 150 k $\Omega$ $\frac{1}{4}$ WV	
R36	Carbon PZ 470 k $\Omega$ $\frac{1}{4}$ WV	
R37	Carbon PZ 100 k $\Omega$ $\frac{1}{4}$ WV	
R38	Carbon UZ 18 k $\Omega$ $\frac{1}{4}$ WV	
R39	Carbon PZ 10 k $\Omega$ $\frac{1}{4}$ WV	
R40	Carbon PZ 150 $\Omega$ $\frac{1}{4}$ WV	
R41	Carbon PZ 150 $\Omega$ $\frac{1}{4}$ WV	
R42	Not used	
R43	Carbon UZ 18 $\Omega$ $\frac{1}{4}$ WV	
R44	Carbon PZ 4.7(4.7-8.2) $\Omega$ $\frac{1}{4}$ WV	
R45	Carbon PZ 27 $\Omega$ $\frac{1}{4}$ WV	
R46	Carbon UZ 270 $\Omega$ $\frac{1}{4}$ WV	
R47	Metal Oxide 15 $\Omega$ 2 WV	
R48	Carbon PZ 330 $\Omega$ $\frac{1}{4}$ WV	
R48	Carbon PZ 2.2 M $\Omega$ $\frac{1}{4}$ WV	
*R49	Not used	
*R49	Not used	
R50	Carbon PZ 56 $\Omega$ $\frac{1}{4}$ WV	

Ref. No.	Description	RS Part No. (Mfr's Part No.)
<sup>o</sup> R51	Carbon PZ 27-47 k $\Omega$ $\frac{1}{4}$ WV	
<sup>o</sup> R52	Carbon UZ 10-22 k $\Omega$ $\frac{1}{4}$ WV	
R53	Carbon PZ 82 $\Omega$ $\frac{1}{4}$ WV	
R54	Carbon PZ 15 k $\Omega$ $\frac{1}{4}$ WV	
R55	Carbon UZ 5.6 k $\Omega$ $\frac{1}{4}$ WV	
R56	Carbon UZ 120 $\Omega$ $\frac{1}{4}$ WV	
R57	Carbon UZ 150 k $\Omega$ $\frac{1}{4}$ WV	
R58	Carbon UZ 1.5 k $\Omega$ $\frac{1}{4}$ WV	
R59	Carbon UZ 39 k $\Omega$ $\frac{1}{4}$ WV	
R60	Carbon UZ 68 k $\Omega$ $\frac{1}{4}$ WV	
R61	Carbon UZ 22 $\Omega$ $\frac{1}{4}$ WV	
R62	Carbon PZ 22(10-68) k $\Omega$ $\frac{1}{4}$ WV	
R63	Carbon PZ 82(47-82) k $\Omega$ $\frac{1}{4}$ WV	
<b>SWITCHES</b>		
S1a-]	Slide Rotary Switch BAND	S-1453 (P-180465)
S2	Rotary Switch MODE	S-1454 (P-180466)
<b>FERRITE BEADS CORE</b>		
	Ferrite Beads Core	HB-7169 (P-500009) or (P-500006)

\*For Australian Models Only

\*For Japanese Models Only

<sup>o</sup>Refer to NOTE (4) on page 21.

# EXPLODED VIEW PARTS LIST

Ref. No.	Description	RS Part No.	Mfr's Part No.	Ref. No.	Description	RS Part No.	Mfr's Part No.
1	VOLUME/MODE/BAND Knob	K-3451	P-650349	*51	Power Transformer		P-100789or
2	BFO Knob	K-4083	P-650454				P-100799
3	Main Tuning Knob (with cap: P-710198)	K-4336	P-650461	*51	Power Transformer		P-100820
4	FINE Tuning Knob (with cap: P-710199)	K-4337	P-650462	52	Clamp Connector	H-3305	P-320006
5-8	Front Panel Ass'y	Z-5728	M-00083	*52	Terminal Block		P-320251
5	Front Panel		P-610747	53	Cord Stopper	HB-0705	P-480010
6	Dial Frame		P-710201	*53	Cord Stopper		P-480080
7	Dial Window		P-610749	*54	AC Line Cord	W-1000	P-310115
8	Window		P-610750	*54	AC Line Cord	W-2527	P-310034
9	Phone Jack Holder		P-412220	55	DC 12 V Jack (J2)	J-4684	P-190321
10	Headphone Jack (J1)	J-0994	P-190139	56	Terminal Plate	HB-7354	P-320221
11	Speaker	S-4924	P-270093	57-			
12	SCALE (FINE Tuning Controller)	D-5434	P-610748	59	Cabinet Ass'y	Z-5729	M-00084
13	Coil Spring	RB-6969	P-440102	57	Cabinet		P-600122A
14	Pulley	D-0269	P-430007	58	Shield Sheet		P-480358
15	Tuning Shaft Ass'y		P-420367	59	Rubber Foot	F-0237	P-680168
16	Shaft Holder	HB-1344	P-810094	60	Net		P-660234
17	Cushion		P-680283	61	Net		P-660225
18	Meter	M-0469	P-230101	*62	Back Board	Z-5730	P-630137
19	Cushion		P-680254	*62	Back Board		P-630141
20	Front Chassis		P-400293	*62	Back Board		P-630144
21	Lamp Holder A (for PL2)		P-412219	63	Antenna Stopper	A-4463	P-610753
22	Shield Case C (for BFO P.C.B.: P-200836)	X-8600	P-412214	64	Rod Antenna	A-0376	P-330028
23	NET		P-650233	64	Rod Antenna		P-330032
24	Cushion		P-680282	Ref. No.	Description	RS Part No.	(Mfr's Part No.)
25	Dial Drum	D-0458	P-610751	F1	Tapping Screw 3φ x 8BT-PLAX		
26	Drum Guide	D-0459	P-610754	F2	Tapping Screw 3φ x 8BT-III		
27	Sheet		P-680270	F3	Screw 3φ x 12 x 3		
28	Drum Holder	D-0457	P-610752	F4	Tapping Screw 3φ x 8BT-II		
29	Lamp P.C.B. (with Lamp)		P-200837	F5	Nylon Rivet 3φ x 4.5		
30	Lamp Holder (for PL1)	HC-0137	P-412218	F6	Tapping Screw 3φ x 10BT-PLAX		
31	Holder	HC-0136	P-412217	F7	Fiver Washer 3.2φ x 8φ		
32	BFO Volume (R2)	P-8645	P-171302	F8	Screw 2φ x 5P		
33	VOLUME (R1)		P-171435	F9	Screw 3φ x 6P		
34	MODE Rotary Switch		P-180465	F10	Triple Screw 3φ x 6P		
35	Main P.C.B. Unit	X-8539	U-24402	F11	Screw 3φ x 9 x 3		
36	Shield Cover		P-412216	F12	Screw 2.5φ x 6P		
37	Shield Case B		P-412213	F13	Screw 3φ x 6P		
38	Shield Case A		P-412212	F14	Screw 2φ x 6P		
39	Core Holder	HB-2897	P-610395	F15	Screw 2φ x 12P		
40	Coil P.C.B.		P-200838	F16	Nut 2N		
41	Pulley Shaft	D-3270	P-420303	F17	Flange Nut 3N		
42	FINE Volume (R3)	P-6494	P-171303	F18	Egg Lug 3		
43	Pulley 76	D-0359	P-430031	F19	Screw (Black) 3φ x 6P		
44	Dial Spring A	RB-5620	P-440075	F20	Screw 3φ x 10B		
45	P.C.B. Holder		P-412338	F21	Tapping Screw 3φ x 12BT-PLAX		
46	Spacer		P-480348	F22	Screw 3φ x 8B		
47	Pulley Shaft	D-3203	P-420234	F23	Nut 3N		
48	Chassis		P-400292	F24	Lug Terminal t = 0.5		(P-320075)
49	LUG Terminal		P-320078	F25	Spring Washer 3SW		
50	Transformer Holder		P-412323	*F26	Screw 3φ x 16		
*51	Power Transformer	TA-0841	P-100753	*F27	Square Nut		(P-410111)
*51	Power Transformer		P-100754				

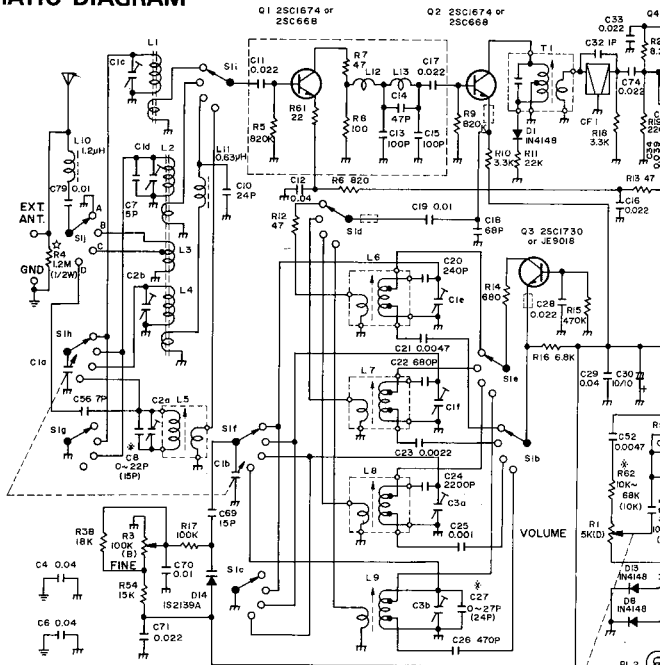
\*For USA Models Only

\*For Canadian Models Only

\*For Australian Models Only

\*For Japanese Models Only

# SCHEMATIC DIAGRAM



## TRANSISTOR AND IC VOLTAGE CHART

### IC-1 VOLTAGE CHART

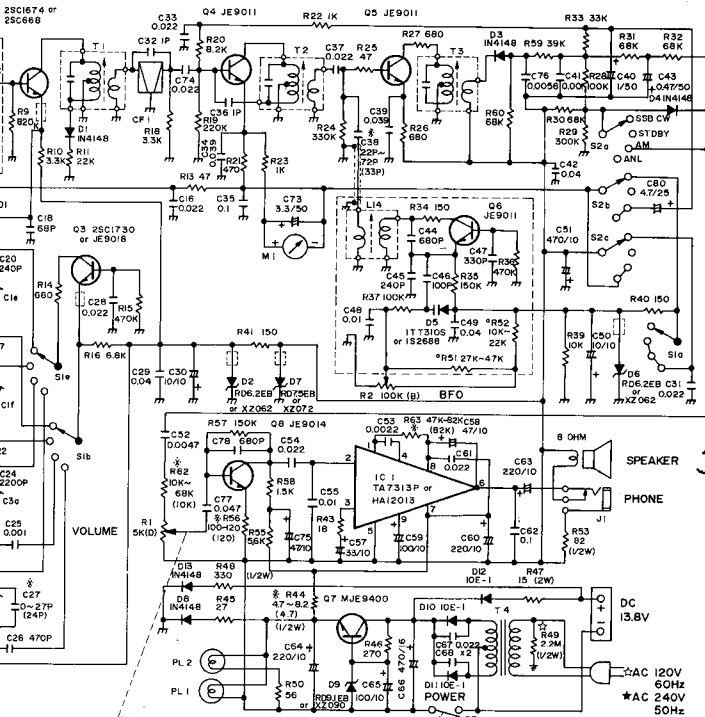
PIN No.	1	2	3	4	5	6	7	8	9
PIN VOLTAGE	0.7	4.1	4.2	4.2	0	4.2	8.4	8.2	4.2

### TRANSISTOR VOLTAGE CHART

	Q1			Q2			Q3			Q4			Q5			Q6			Q7		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Transistor Voltage [V]	0.7	7.2	1.4	2.3	7.3	2.9	4.1	7.0	4.6	0.5	7.3	1.2	1.3	6.0	2.0	5.8	7.3	6.5	8.4	11.5	9.1

All Voltage are same regardless of BAND Switch position. MODE Switch is AM position. BFO and FINE are center position. All voltage value are indicated in volts with no signal measured with V.T.V.M.

# 20-206



*M-342*

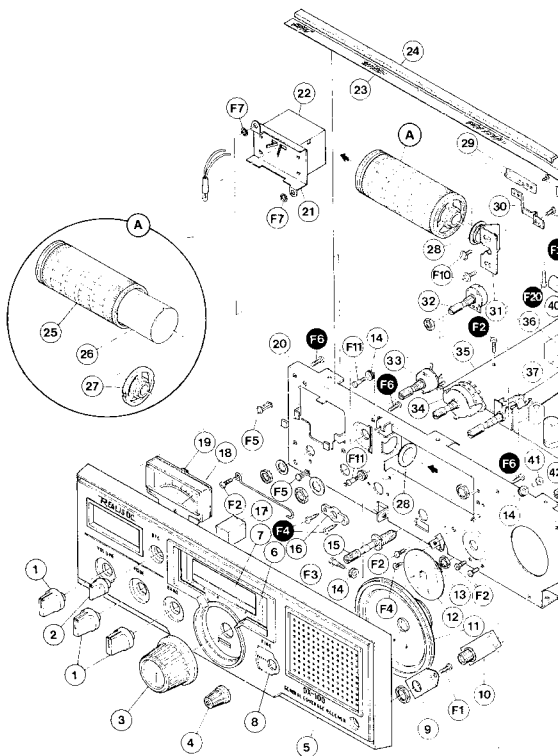
Q6			Q7		
E	C	B	E	C	B
1.8	7.3	6.5	8.4	11.5	9.1

AM position, BFO and signal measured with

**NOTE:**

- (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10<sup>3</sup> OHM, M = 10<sup>6</sup> OHM).
- (2) ALL CAPACITANCE VALUES ARE INDICATED IN "μF" (P = 10<sup>-6</sup> μF).
- (3) \* MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
- (4) ○ WHEN D5 IS USED AS 1T7310S, THE VALUE OF R51 MUST BE 47K OHM AND R52 MUST BE 22K OHM.  
○ WHEN D5 IS USED AS 1S2688, THE VALUE OF R51 MUST BE 27K OHM AND R52 MUST BE 10K OHM.
- (5) \* FOR USA AND CANADIAN MODELS ONLY.  
\* FOR AUSTRALIAN MODELS ONLY.

# EXPLODED VIEW



## Removal of Cabinet

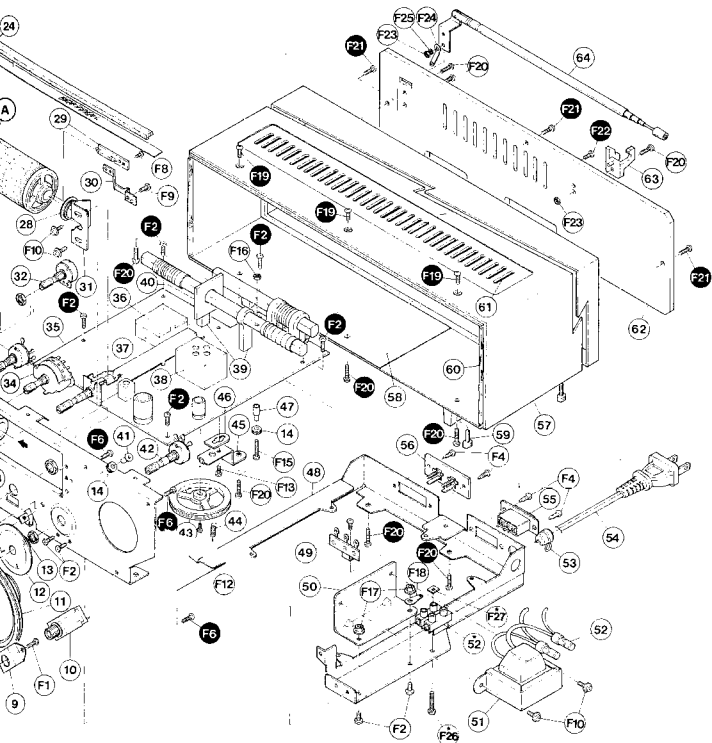
Remove 12 screws from the cabinet (57) [3 screws (F19) from the top of cabinet, 5 screws (F20) on the bottom of cabinet and 3 screws (F21), 1 screw (F22) on the back board].

## Removal of

1. Remove k
2. Remove E
3. Remove t
4. Remove t
5. Remove O
6. Remove F

Caution: So

\* For Austr




### Removal of Main P.C.B.

1. Remove knobs (VOLUME, MODE, BFO, BAND, Tuning, FINE knob).
2. Remove 6 screws **F6** from Front Panel **(5)** [**F6** on the Front Chassis **(20)**].
3. Remove the shaft holder **(16)** by removing 2 screws **F4** on the Front Chassis.
4. Remove the MODE Rotary Switch **(34)**.
5. Remove Dial string from Pulley **76** **(43)**, Pulley **(14)**.
6. Remove P.C.B. **(35)** by removing 5 screws **F2** on the Main P.C.B.

Caution: Some wires are attached to Front Panel.

\* For Australian Models Only.

**RADIO SHACK**  **A DIVISION OF TANDY CORPORATION**  
**U.S.A.: FORT WORTH, TEXAS 76102**  
**CANADA: BARRIE, ONTARIO L4M 4W5**

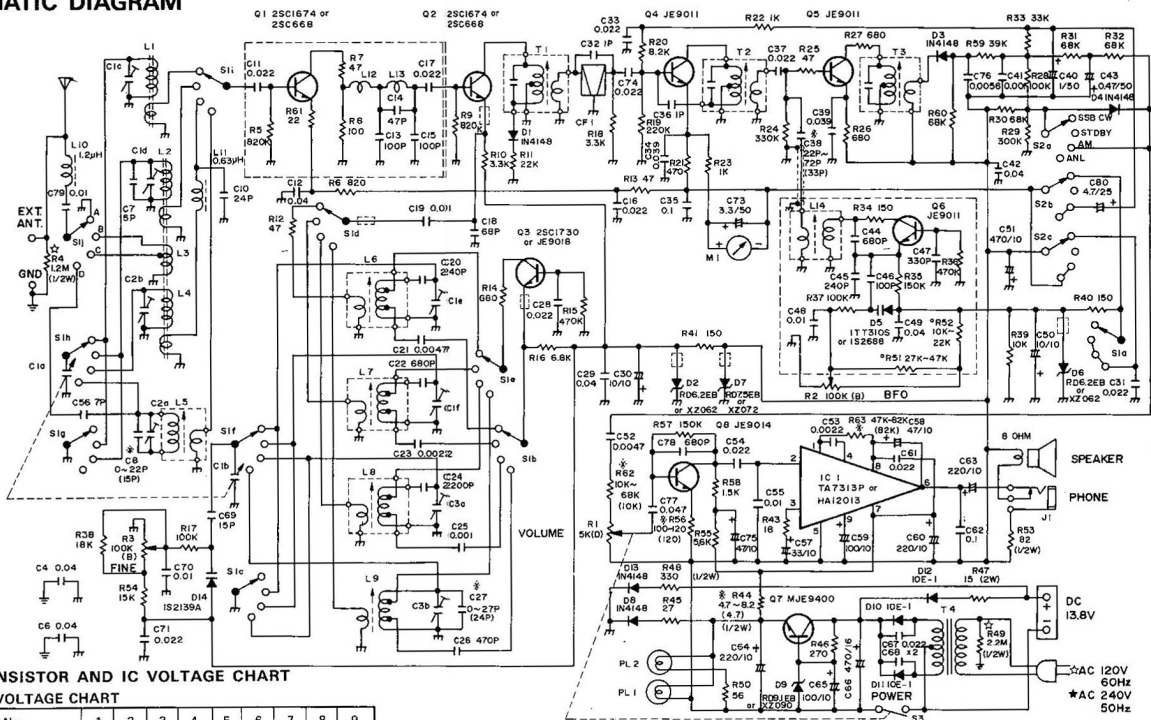
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**TANDY CORPORATION**

<b>AUSTRALIA</b>	<b>BELGIUM</b>	<b>U.K.</b>
280-316 VICTORIA ROAD RYDALMERE, N.S.W. 2116	PARC INDUSTRIEL DE NANINNE 5240 NANINNE	BILSTON ROAD, WEDNESBURY WEST MIDLANDS WS10 2JN



# SCHEMATIC DIAGRAM



## TRANSISTOR AND IC VOLTAGE CHART

### IC-1 VOLTAGE CHART

PIN No.	1	2	3	4	5	6	7	8	9
PIN VOLTAGE	0.7	4.1	4.2	4.2	0	4.2	8.4	8.2	4.2

### TRANSISTOR VOLTAGE CHART

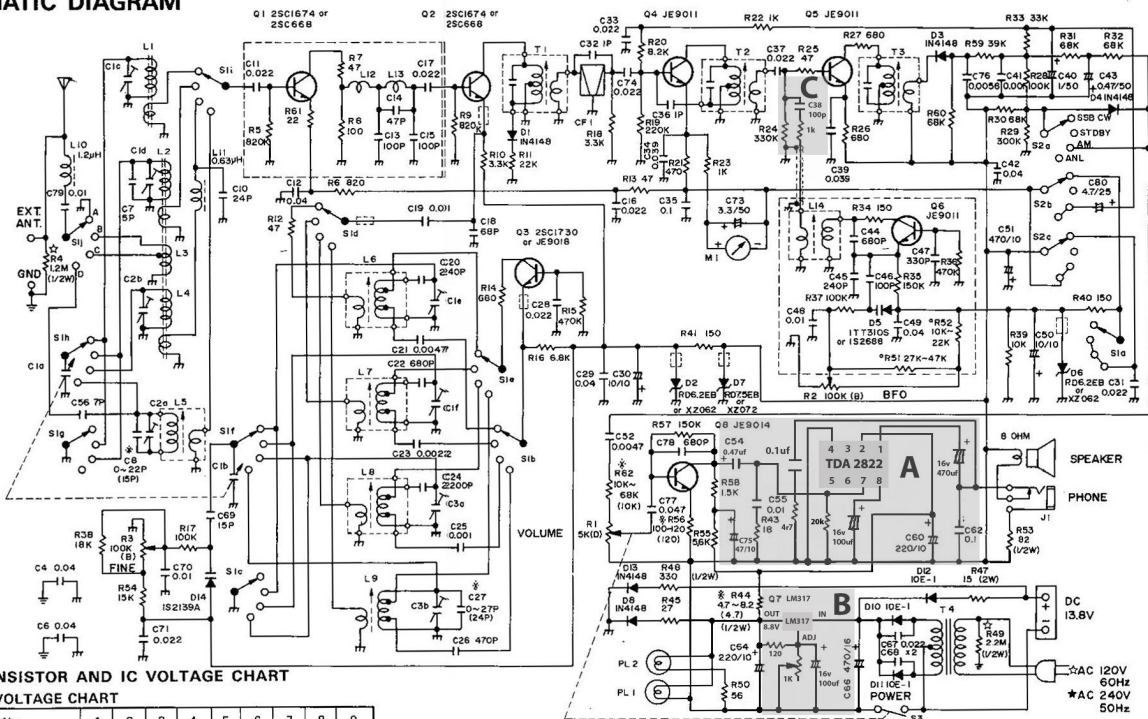
Transistor Voltage [V]	Q1		Q2		Q3		Q4		Q5		Q6		Q7								
	E	C	B	E	C	B	E	C	B	E	C	B	E	C							
	0.7	7.2	1.4	2.3	7.3	2.9	4.1	7.0	4.6	0.5	7.3	1.2	1.3	6.0	2.0	5.8	7.3	6.5	8.4	11.5	9.1

All Voltage are same regardless of BAND Switch position. MODE Switch is AM position. BFO and FINE are center position. All voltage value are indicated in volts with no signal measured with V.T.V.M.

### NOTE:

- (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10<sup>3</sup> OHM, M = 10<sup>6</sup> OHM).
- (2) ALL CAPACITANCE VALUES ARE INDICATED IN "µF" (P = 10<sup>-6</sup> µF).
- (3) \* MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
- (4) ○ WHEN D5 IS USED AS 1T1310S, THE VALUE OF R51 MUST BE 47 K OHM AND R52 MUST BE 22 K OHM.
- (5) ○ WHEN D5 IS USED AS IS2688, THE VALUE OF R51 MUST BE 27 K OHM AND R52 MUST BE 10 K OHM.
- (6) ○ FOR USA AND CANADIAN MODELS ONLY.
- \* FOR AUSTRALIAN MODELS ONLY.

# SCHEMATIC DIAGRAM



## TRANSISTOR AND IC VOLTAGE CHART

### IC-1 VOLTAGE CHART

PIN No.	1	2	3	4	5	6	7	8	9
PIN VOLTAGE	0.7	4.1	4.2	4.2	0	4.2	8.4	8.2	4.2

### TRANSISTOR VOLTAGE CHART

Transistor Voltage [V]	Q1		Q2		Q3		Q4		Q5		Q6		Q7								
	E	C	B	E	C	B	E	C	B	E	C	B	E	C							
	0.7	7.2	1.4	2.3	7.3	2.9	4.1	7.0	4.6	0.5	7.3	1.2	1.3	6.0	2.0	5.8	7.3	6.5	8.4	11.5	9.1

All Voltage are same regardless of BAND Switch position. MODE Switch is AM position. BFO and FINE are center position. All voltage value are indicated in volts with no signal measured with V.T.V.M.

## Modified Circuits A/B/C

### NOTE:

- (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10<sup>3</sup> OHM, M = 10<sup>6</sup> OHM).
- (2) ALL CAPACITANCE VALUES ARE INDICATED IN "µF" (P = 10<sup>-6</sup> µF).
- (3) \* MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
- (4) ○ WHEN D5 IS USED AS 1T3105, THE VALUE OF R51 MUST BE 47 K OHM AND R52 MUST BE 22 K OHM.
- (5) ○ WHEN D5 IS USED AS IS2688, THE VALUE OF R51 MUST BE 27 K OHM AND R52 MUST BE 10 K OHM.
- (6) ○ FOR USA AND CANADIAN MODELS ONLY.
- \* FOR AUSTRALIAN MODELS ONLY.