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REALISTIC[®]

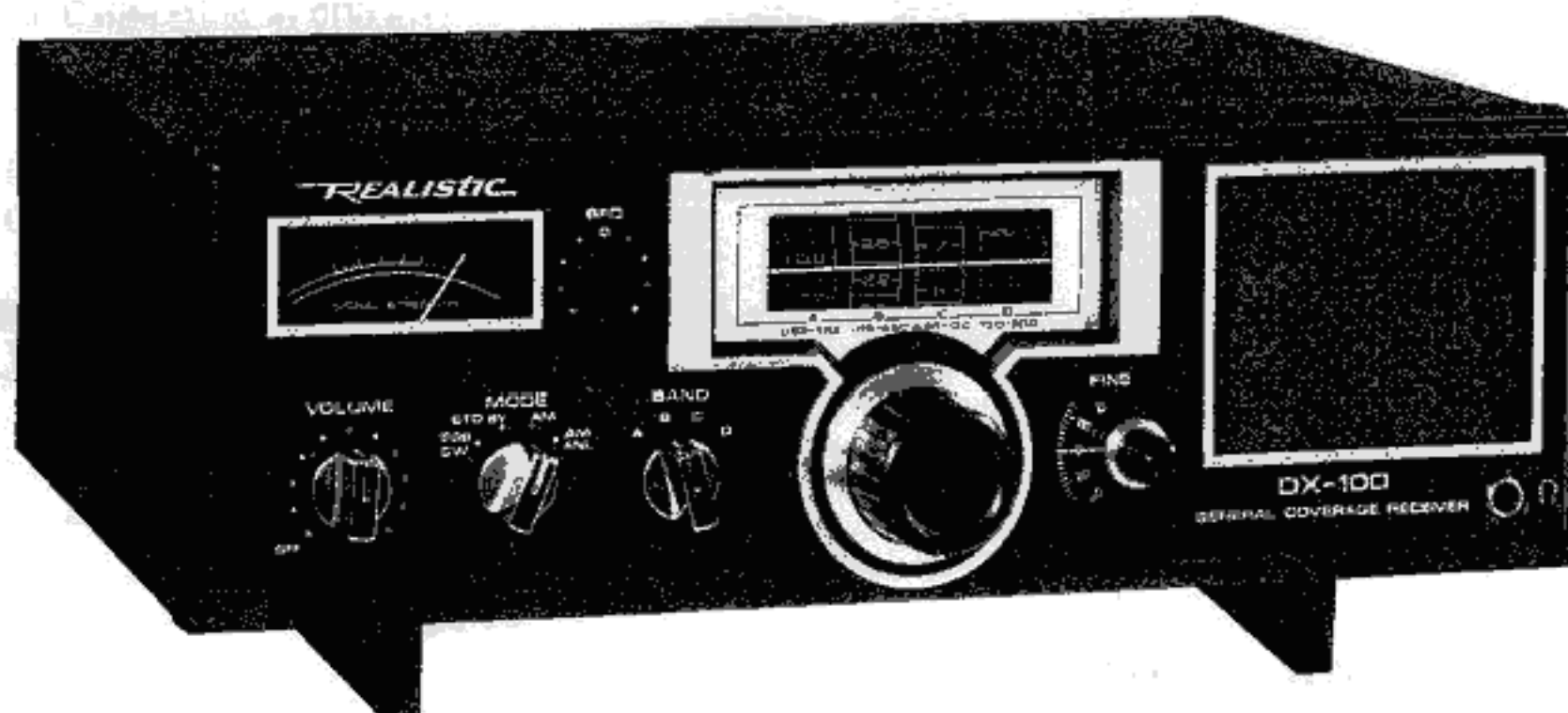
Service Manual

20-206

DX-100

**General Coverage Communications
Receiver**

Catalog Number: 20-206



CUSTOM MANUFACTURED FOR RADIO SHACK **TC** A DIVISION OF TANDY CORPORATION

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SPECIFICATIONS

The supply voltage is 120 V $\pm$ 3 V, 60 Hz (240 V AC, 50 Hz for Australian models).
 The power source must be isolated from other equipment connected to antenna or output.
 The room temperature is 25 degrees C (77 degrees F).

A BAND

Speaker impedance: 8 ohms
 Output readings are taken across a non-reactive load.
 Output reference level is 50 mW total power.
 The generator output shall terminate in an IRE loop with loop pointing toward rear of receiver.
 Modulation: 1000 Hz, 30%

	UNIT	NOMINAL	LIMIT
Frequency Coverage	kHz	510–1650	520–1620
IF	kHz	455	$\pm$ 5
Antenna Sensitivity for S/N 10 dB at 600 kHz	μ V/m	100	250
at 1000 kHz	μ V/m	100	250
at 1400 kHz	μ V/m	100	250
S/N at 1 mV/m at 1000 kHz	dB	31	25
ACA at reference level at 1000 kHz	dB	50	40
AGC figure of merit	dB	55	45
IF rejection at 600 kHz	dB	34	28
Image rejection at 1400 kHz	dB	38	30
Band-width at 6 dB down	kHz	6	3–6
Output, at 10% THD at 1000 kHz 5 mV/m, 1000 Hz, 30% Mod.	mW	750	550
Distortion at reference output at 1000 Hz, 30% Mod. at 5 mV/m	%	1.5	5
DC Current drain, no signal	mA	15	25
Whistle modulation of 2nd & 3rd harmonic at 1–10 mV/m	%	3	15
Dial Calibration at 600 kHz	kHz	—	$\pm$ 25
at 1000 kHz	kHz	—	$\pm$ 50
at 1600 kHz	kHz	—	$\pm$ 75

The oscillator must operate at 600 kHz, with all supply voltages of 105 V AC; an over-voltage of 10% shall not be harmful.

B 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	1.5–4.8	1.55–4.5
IF	kHz	455	$\pm$ 5
Sensitivity for reference output power, S/N 10 dB at 1.8 MHz	μ V/m	15	30
at 3 MHz	μ V/m	10	25
at 4 MHz	μ V/m	7	15
Image rejection at 4 MHz	dB	25	20
Dial Calibration at 1.8 MHz	kHz	—	$\pm$ 50
at 4 MHz	kHz	—	$\pm$ 150

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	30
	at 7 MHz	8	20
	at 12 MHz	4	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.

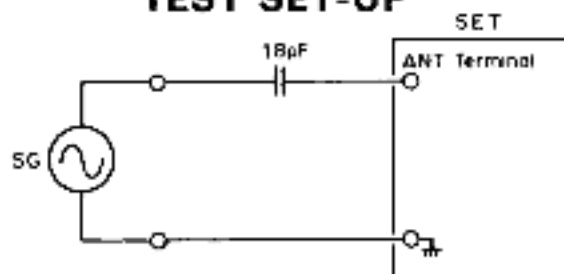
Modulation: 1000 Hz, 30%

	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	25
	at 21 MHz	5	12
	at 28 MHz	3	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.

TEST SET-UP



BLOCK DIAGRAM

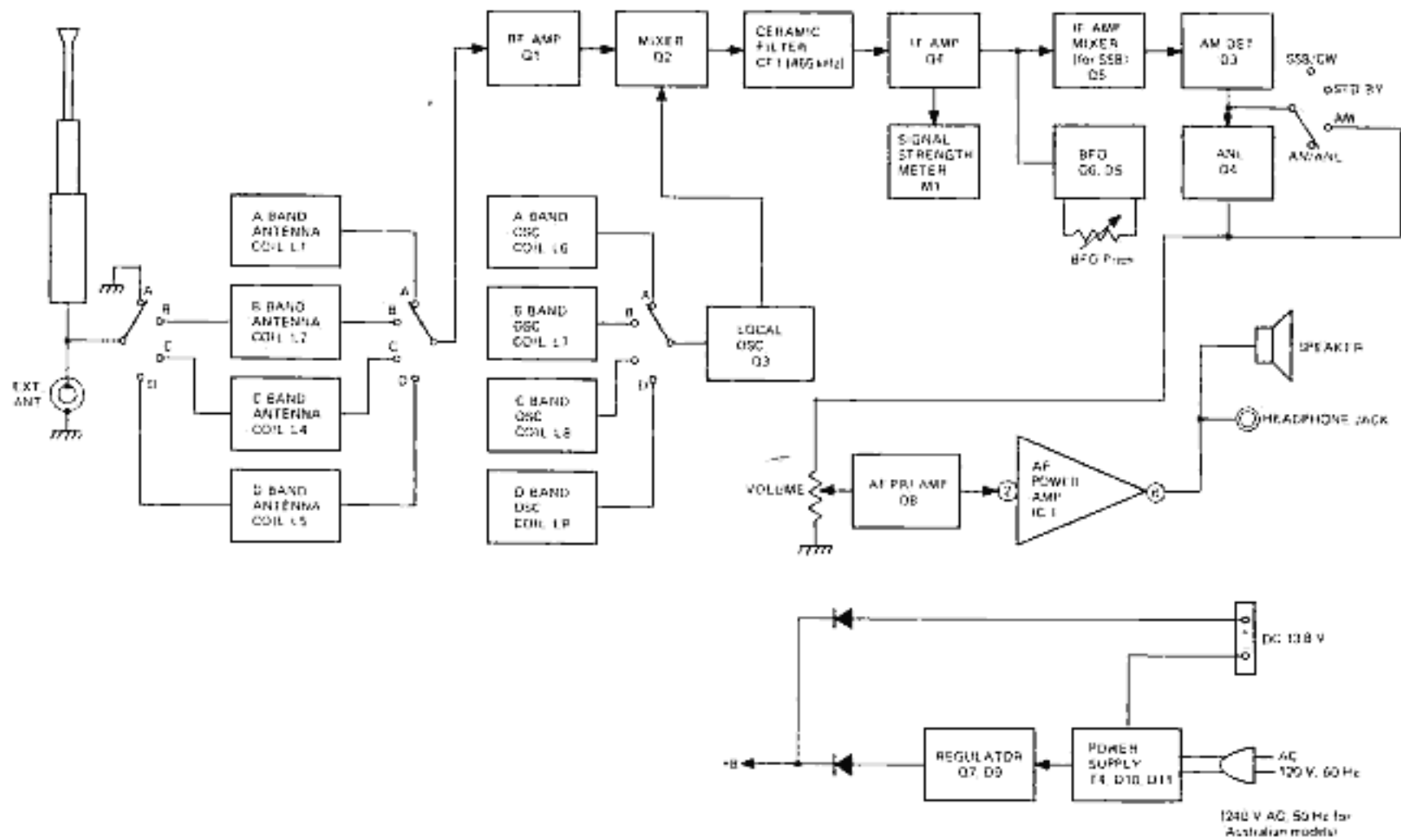


Figure 1

DIAL STRINGING DIAGRAM

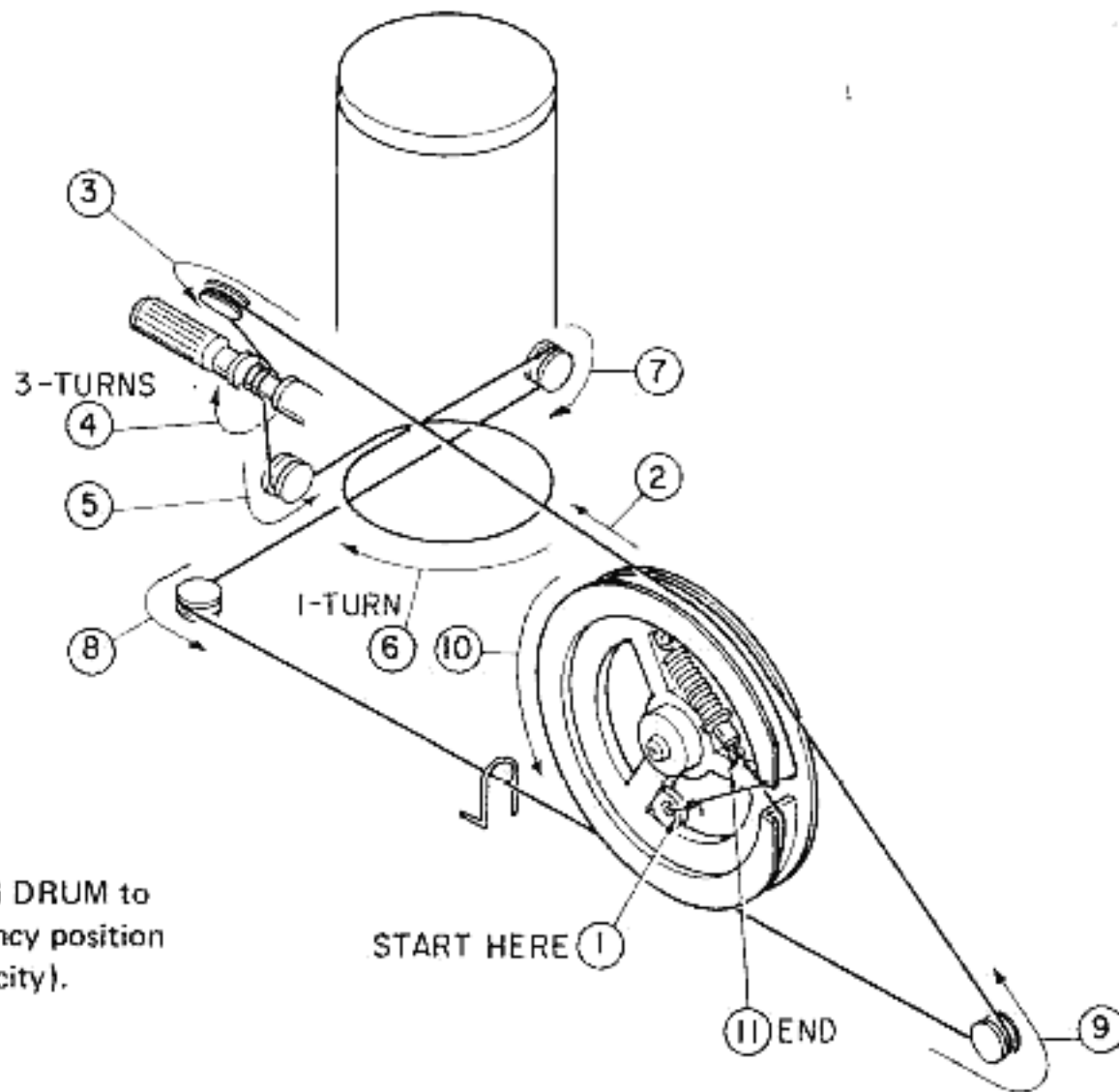


Figure 2

ALIGNMENT INSTRUCTIONS

ALIGNMENT POINTS LOCATION

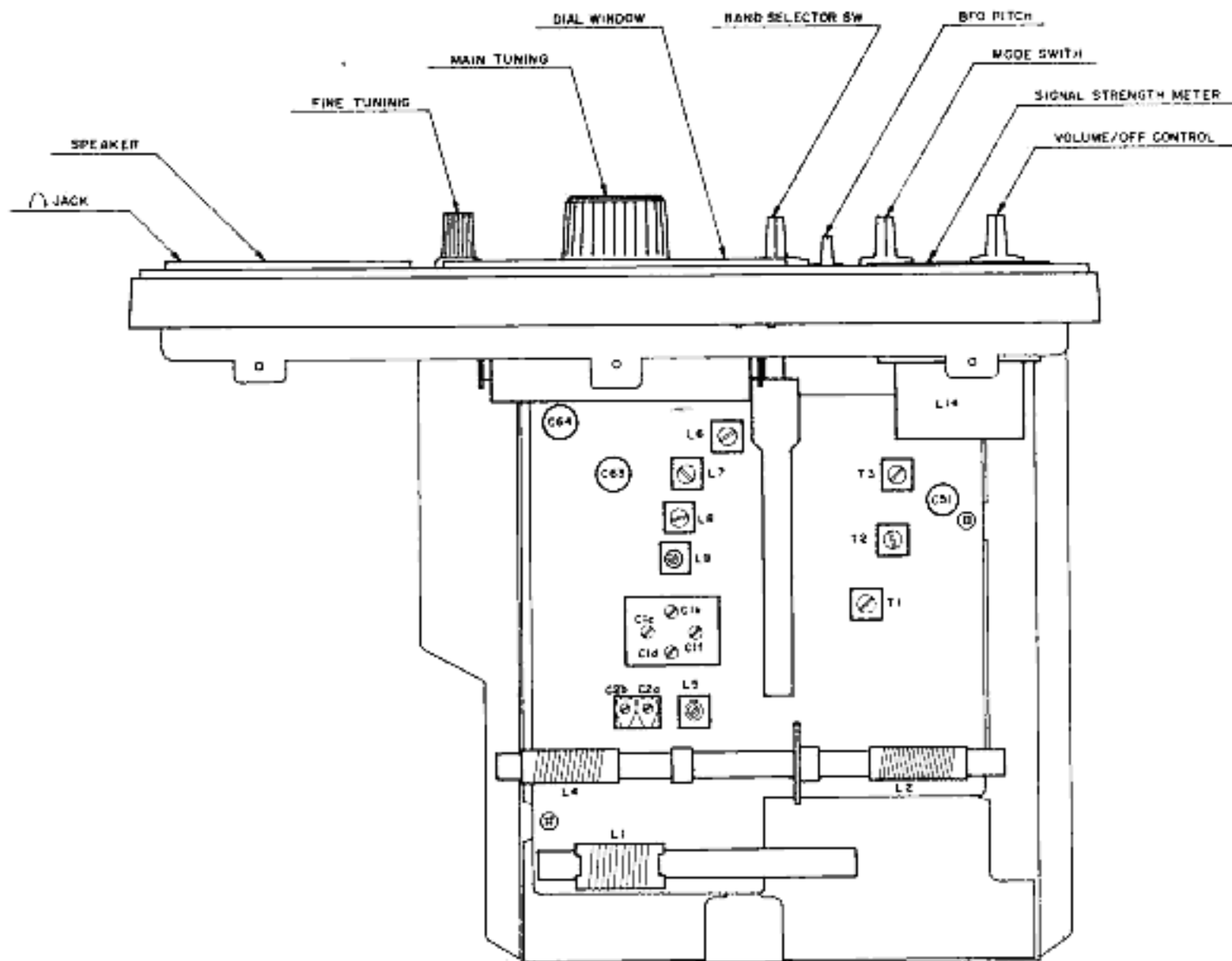


Figure 3

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

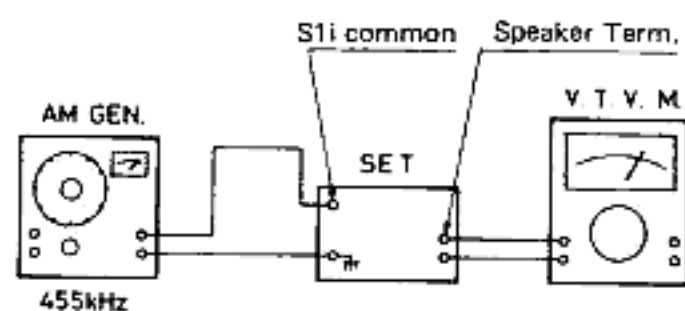


Figure 4

A BAND/TRACKING

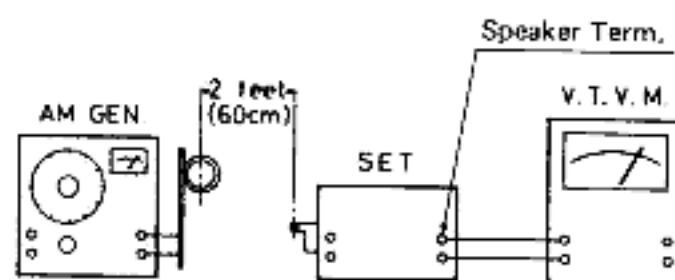


Figure 5

B BAND/TRACKING

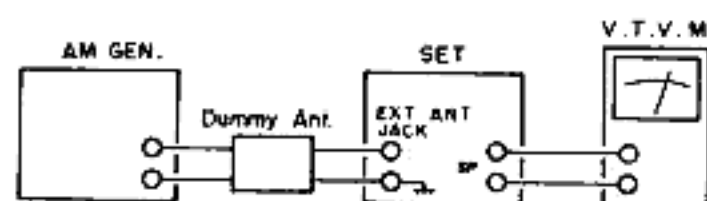


Figure 6

C BAND/TRACKING

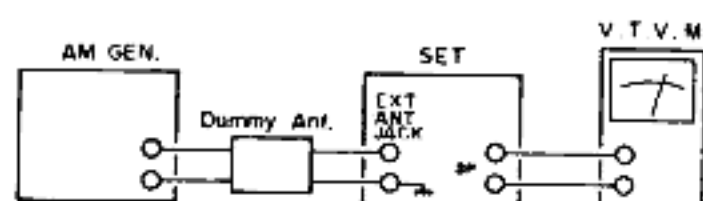


Figure 7

D BAND/TRACKING

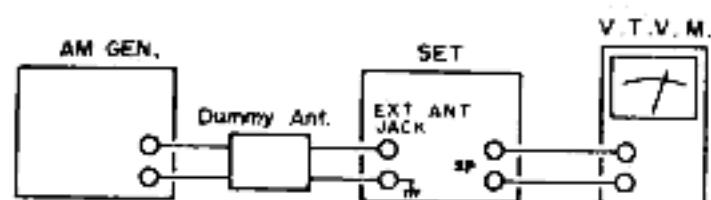


Figure 8

BFO ALIGNMENT

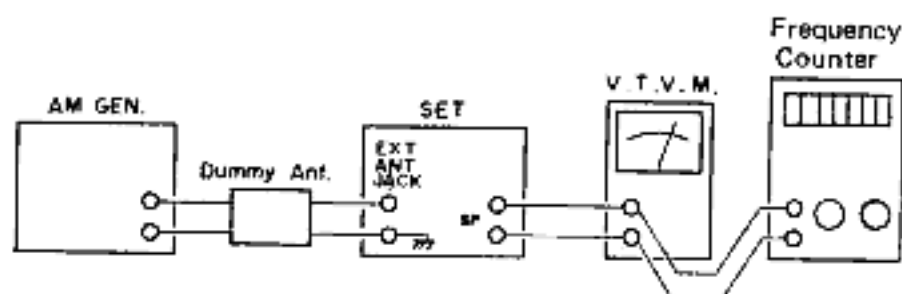


Figure 9

SCHEMATIC OF DUMMY ANTENNA

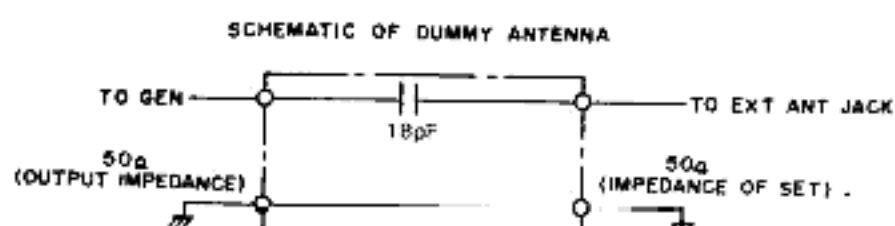


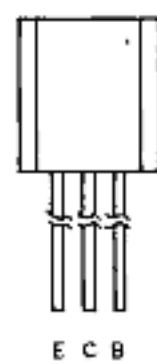
Figure 10

TROUBLESHOOTING CHART

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

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).

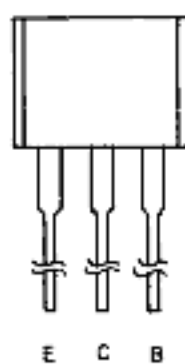
IC & TRANSISTOR LEAD IDENTIFICATION



E C B



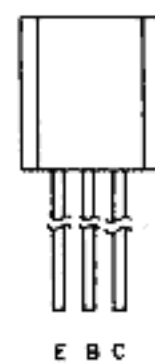
2SC1674
2SC1730



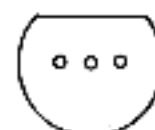
E C B



2SC668



E B C



JE9011
JE9014

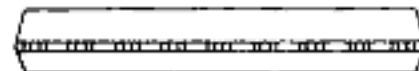
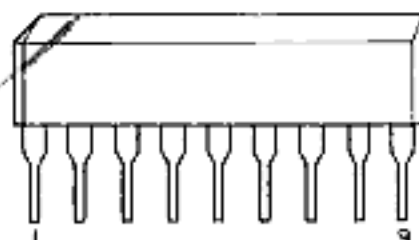


E C B



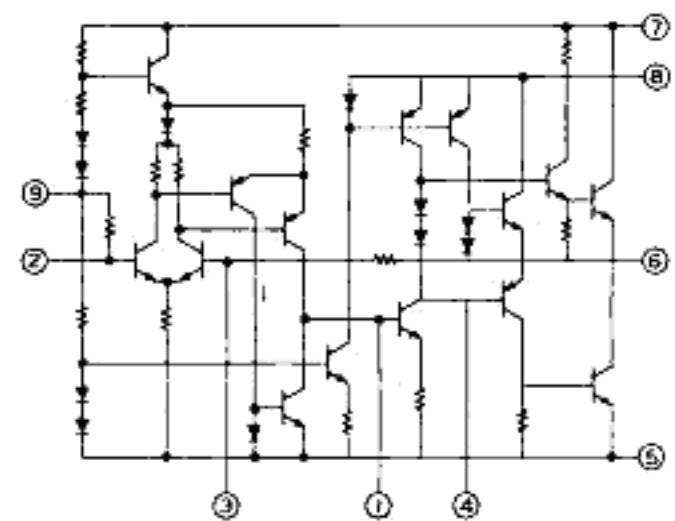
MJE9400

IC-1 TA7313P/HA12013



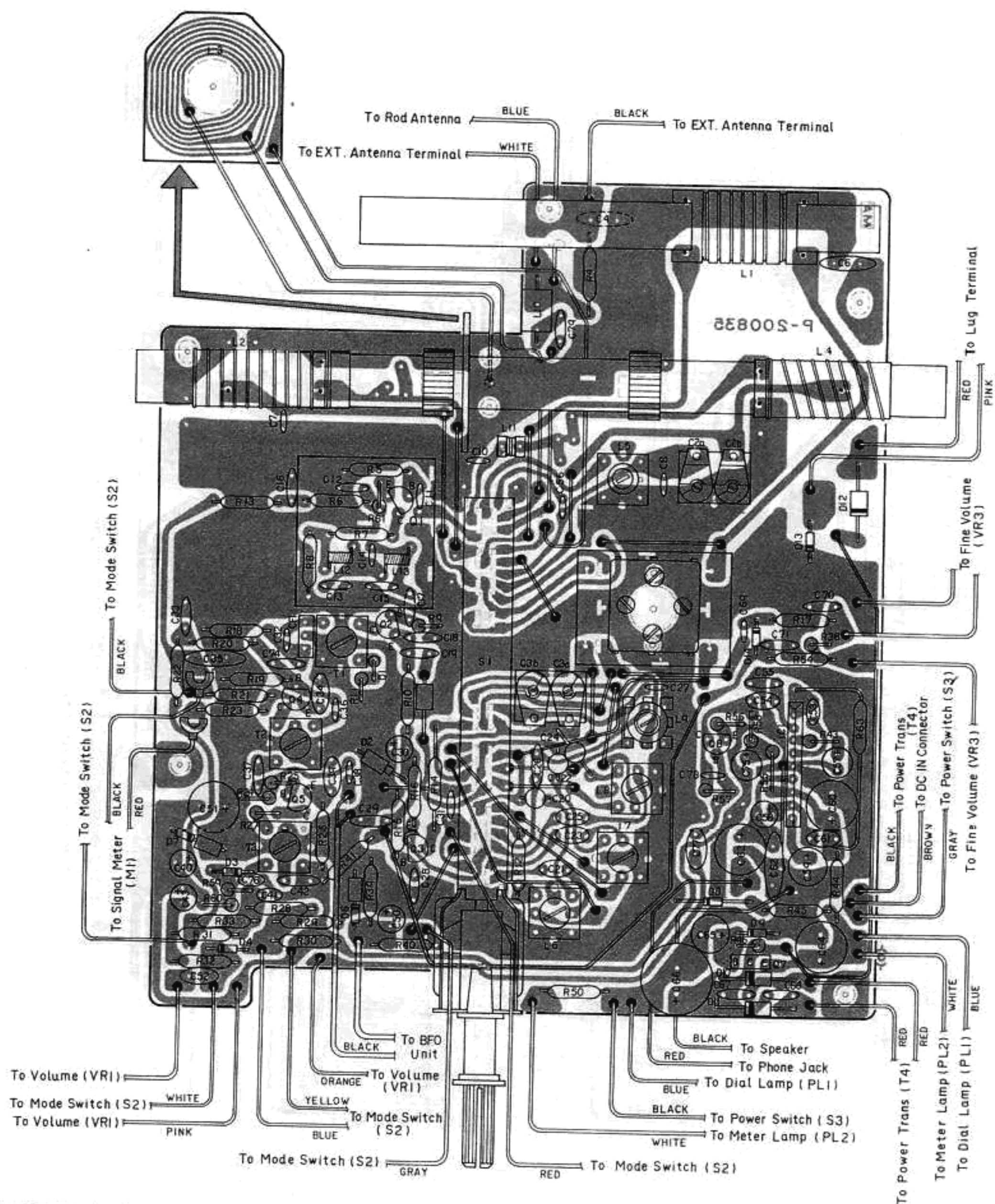
TA7313P

IC, INTERNAL CONNECTION

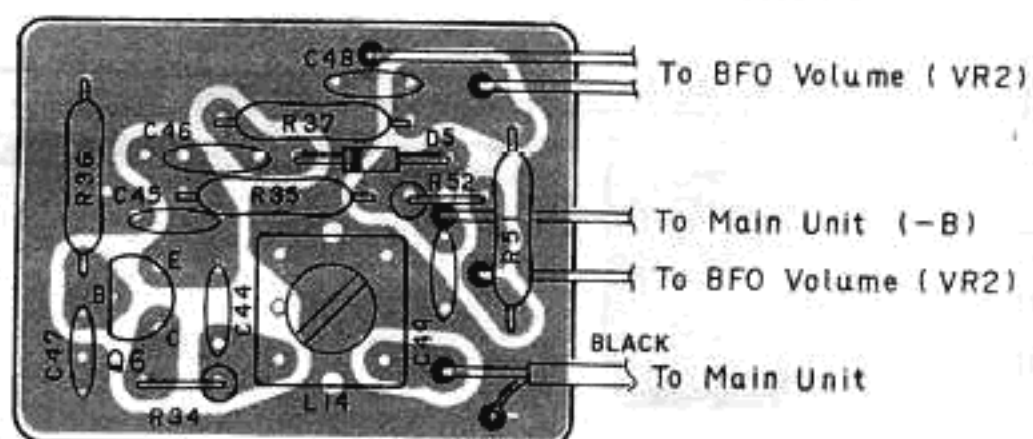


TA7313P

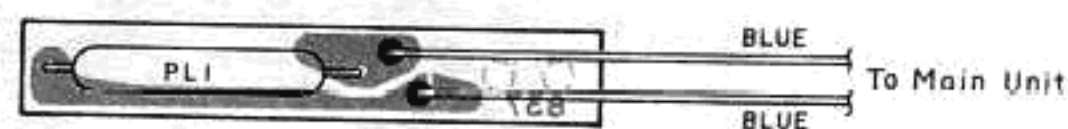
PRINTED CIRCUIT BOARD (TOP VIEW)



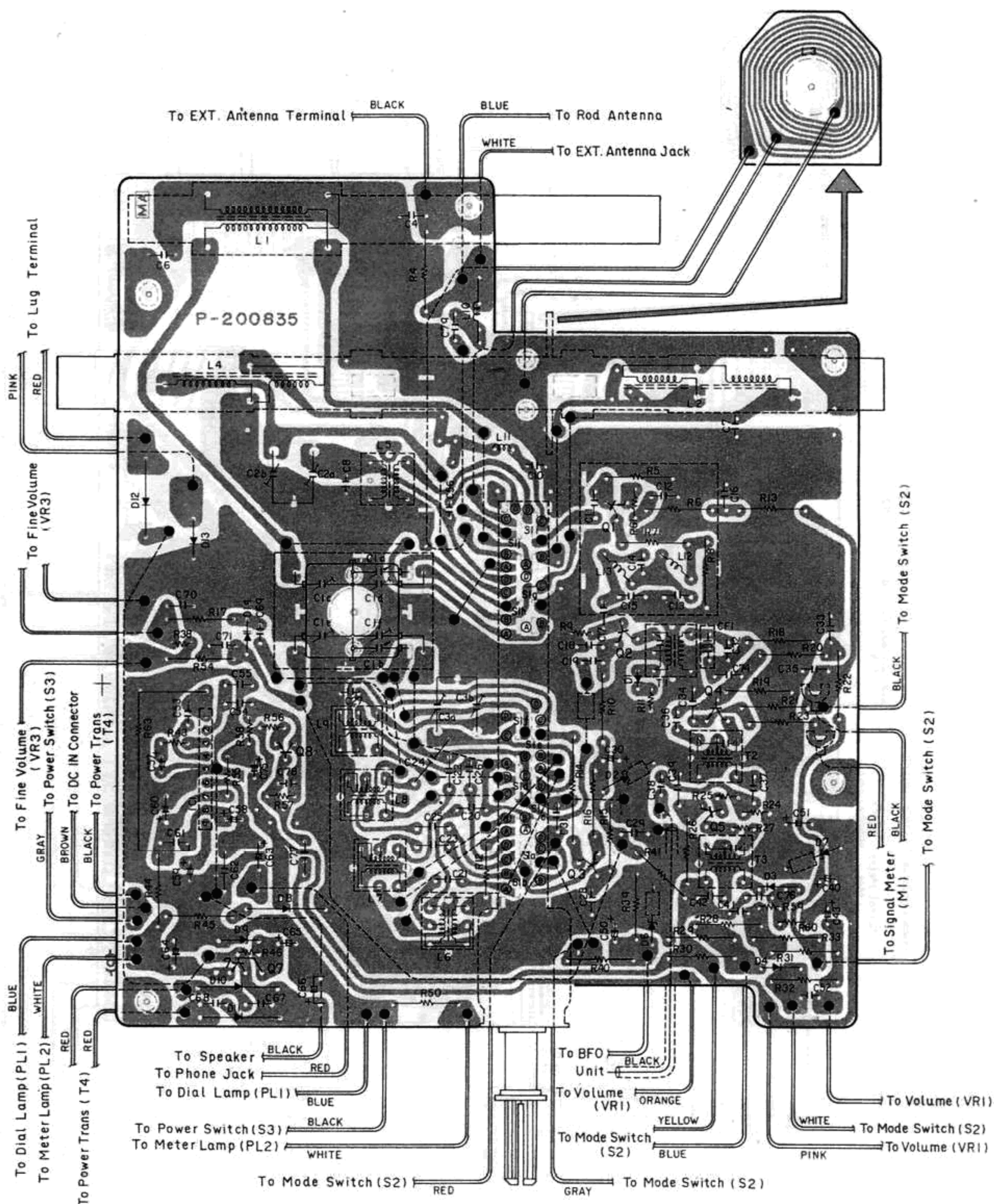
BFO P.C.B.



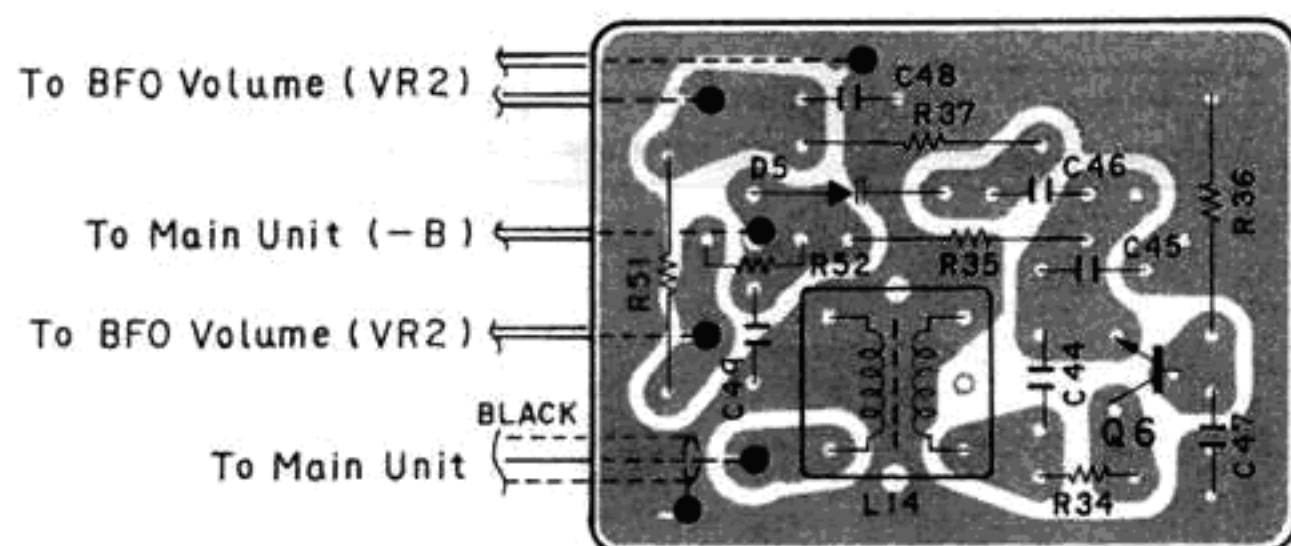
LAMP P.C.B.



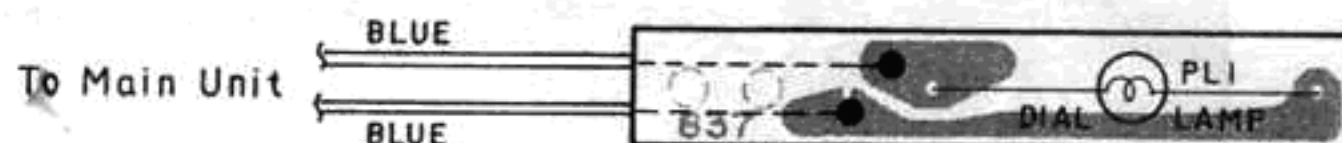
PRINTED CIRCUIT BOARD (BOTTOM VIEW)



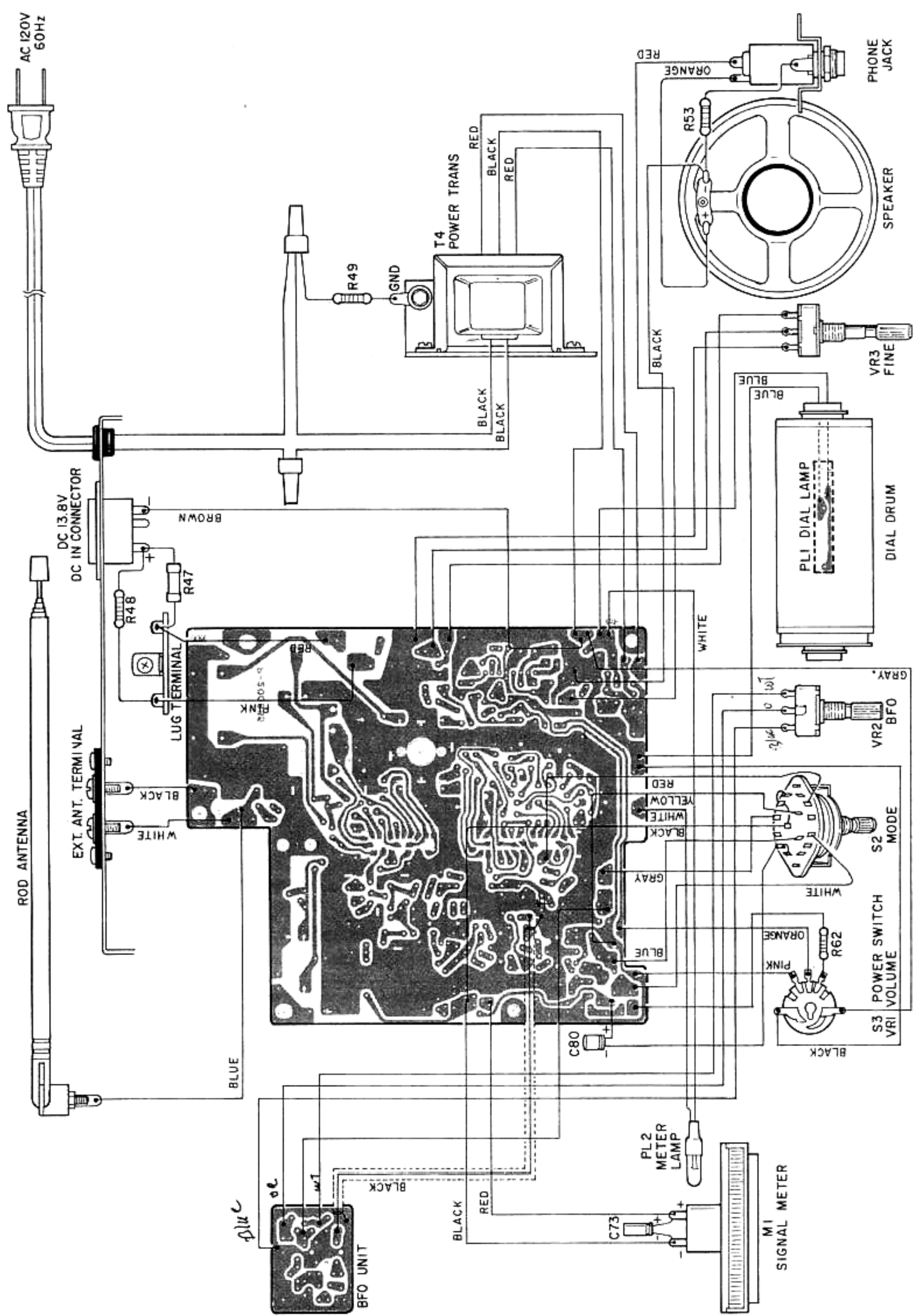
BFO P.C.B.



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.)
CAPACITORS (): Variance Value SL : 350-100 ppm/°C					
C1a-f	Poly Variable Capacitor 226 pF x 2	C-4723 (P-150047)	C44	Polystyrene 680 pF ± 5% 50 WV	
C2a, b	Trimmer Capacitor AT2-52W or 2T16M or 2T-P15	C-1119 (P-160015) or (P-160022) or (P-160012)	C45	Ceramic 240 pF ± 5% 50WV(N470)	CF-2163
C3a, b	Trimmer Capacitor AT2-52W or 2T16M or 2T-P15	C-0858 (P-160015) or (P-160022) or (P-160012)	C46	Ceramic 100 pF ± 10% 50WV(NPO)	CF-1424
C4	Ceramic 0.04 μF 25 WV		C47	Ceramic 330 pF ± 10% 50WV(SL)	CF-2026
C5	Not used		C48	Ceramic 0.01 μF 50 WV	
C6	Ceramic 0.04 μF 25 WV		C49	Ceramic 0.04 μF 25 WV	
C7	Ceramic 5 pF ± 0.5 pF 50WV(SL)	CF-1105	C50	Electrolytic 10 μF/10 V or 16 V	
C8	Ceramic 15(0-22)pF ± 10% 50WV(SL)	CF-1195	C51	Electrolytic 470 μF/10 V	
C9	Not used		C52	Polyester 0.0047 μF ± 20% 50 WV	
C10	Ceramic 24 pF ± 10% 50WV(SL)	CF-1262	C53	Polyester 0.0022 μF ± 20% 50 WV	
C11	Ceramic 0.022 μF 25 WV		C54	Polyester 0.022 μF ± 20% 50 WV	
C12	Ceramic 0.04 μF 25 WV		C55	Ceramic 0.01 μF 50 WV	
C13	Ceramic 100 pF ± 10% 50WV(SL)	CF-1425	C56	Ceramic 7 pF ± 0.5 pF 50WV(SL)	CF-1120
C14	Ceramic 47 pF ± 10% 50WV(SL)	CF-1366	C57	Electrolytic 33 μF/10 V	
C15	Ceramic 100 pF ± 10% 50WV(SL)	CF-1425	C58	Electrolytic 47 μF/10 V	
C16	Ceramic 0.022 μF 25 WV		C59	Electrolytic 100 μF/10 V	
C17	Ceramic 0.022 μF 25 WV		C60	Electrolytic 220 μF/10 V	
C18	Ceramic 68 pF ± 10% 50WV(SL)	CF-1959	C61	Ceramic 0.022 μF 25 WV	
C19	Polyester 0.01 μF ± 20% 50 WV		C62	Ceramic 0.1 μF 25 WV	
C20	Polystyrene 240 pF ± 5% 50 WV		C63	Electrolytic 220 μF/10 V	
C21	Polyester 0.0047 μF ± 20% 50 WV		C64	Electrolytic 220 μF/10 V	
C22	Polystyrene 680 pF ± 5% 50 WV		C65	Electrolytic 100 μF/10 V	
C23	Polyester 0.0022 μF ± 20% 50 WV		C66	Electrolytic 470 μF/16 V	
C24	Polystyrene 2200 pF ± 5% 50 WV		C67	Ceramic 0.022 μF 25 WV	
C25	Polyester 0.001 μF ± 20% 50 WV		C68	Ceramic 0.022 μF 25 WV	
C26	Ceramic 470 pF ± 10% 50WV(SL)	CF-1519	C69	Ceramic 15 pF ± 10% 50WV(NPO)	CF-1190
C27	Ceramic 24(0-27)pF ± 10% 50WV(NPO)	CF-1261	C70	Ceramic 0.01 μF 50 WV	
*C27	Ceramic 18(0-27)pF ± 10% 50WV		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	CERAMIC FILTER		
C39	Polyester 0.039 μF ± 20% 50 WV		CF1	Ceramic Filter CFM2-455Z	C-1118 (P-130090)
C40	Electrolytic 1 μF/50 V		DIODES		
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	TA7313P or LA4140 or HA12013		MX-3426
Ref. No.	Description	Mfr's Part No.	RS Part No.

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	OSC 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 μ H	CA-5482	P-360095
L11	Feri Inductor	0.63 μ 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	OC-099		P-120099

Ref. No.	Description	RS Part No. (Mfr's Part No.)
----------	-------------	---------------------------------

LAMPS

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

TRANSISTORS

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

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)
*T4	Power Transformer 120 V, 60 Hz	(P-100754)
*T4	Power Transformer 240 V, 50 Hz	(P-100788) or (P-100799)
*T4	Power Transformer 100 V, 50/60 Hz	(P-100820)

RESISTORS () : Variance Value

R1	VOLUME	5 k Ω D	(P-171435)
R2	BFO Volume	100 k Ω B	P-6645 (P-171302)
R3	FINE Volume	100 k Ω B	P-6494 (P-171303)
R4	Carbon PZ	1.2 M Ω	$\frac{1}{2}$ WV
*R4	Not used		
*R4	Not used		
R5	Carbon PZ	820 k Ω	$\frac{1}{2}$ WV
R6	Carbon PZ	820 Ω	$\frac{1}{2}$ WV
R7	Carbon PZ	47 Ω	$\frac{1}{2}$ WV
R8	Carbon PZ	100 Ω	$\frac{1}{2}$ WV
R9	Carbon UZ	820 k Ω	$\frac{1}{2}$ WV
R10	Carbon PZ	3.3 k Ω	$\frac{1}{2}$ WV
R11	Carbon UZ	22 k Ω	$\frac{1}{2}$ WV
R12	Carbon PZ	47 Ω	$\frac{1}{2}$ WV
R13	Carbon PZ	47 Ω	$\frac{1}{2}$ WV
R14	Carbon PZ	880 Ω	$\frac{1}{2}$ WV
R15	Carbon PZ	470 k Ω	$\frac{1}{2}$ WV
R16	Carbon PZ	6.8 k Ω	$\frac{1}{2}$ WV
R17	Carbon PZ	100 k Ω	$\frac{1}{2}$ WV
R18	Carbon PZ	3.3 k Ω	$\frac{1}{2}$ WV
R19	Carbon PZ	220 k Ω	$\frac{1}{2}$ WV
R20	Carbon PZ	8.2 k Ω	$\frac{1}{2}$ WV
R21	Carbon PZ	470 Ω	$\frac{1}{2}$ WV
R22	Carbon PZ	1 k Ω	$\frac{1}{2}$ WV
R23	Carbon PZ	1 k Ω	$\frac{1}{2}$ WV
R24	Carbon UZ	330 k Ω	$\frac{1}{2}$ WV
R25	Carbon UZ	47 Ω	$\frac{1}{2}$ WV
R26	Carbon PZ	680 Ω	$\frac{1}{2}$ WV
R27	Carbon UZ	680 Ω	$\frac{1}{2}$ 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 Ω $\frac{1}{4}$ WV	
R29	Carbon PZ 300 k Ω $\frac{1}{4}$ WV	
R30	Carbon PZ 68 k Ω $\frac{1}{4}$ WV	
R31	Carbon PZ 68 k Ω $\frac{1}{4}$ WV	
R32	Carbon PZ 68 k Ω $\frac{1}{4}$ WV	
R33	Carbon PZ 33 k Ω $\frac{1}{4}$ WV	
R34	Carbon UZ 150 Ω $\frac{1}{4}$ WV	
R35	Carbon PZ 150 k Ω $\frac{1}{4}$ WV	
R36	Carbon PZ 470 k Ω $\frac{1}{4}$ WV	
R37	Carbon PZ 100 k Ω $\frac{1}{4}$ WV	
R38	Carbon UZ 18 k Ω $\frac{1}{4}$ WV	
R39	Carbon PZ 10 k Ω $\frac{1}{4}$ WV	
R40	Carbon PZ 150 Ω $\frac{1}{4}$ WV	
R41	Carbon PZ 150 Ω $\frac{1}{4}$ WV	
R42	Not used	
R43	Carbon UZ 18 Ω $\frac{1}{4}$ WV	
R44	Carbon PZ 4.7(4.7-8.2) Ω $\frac{1}{4}$ WV	
R45	Carbon PZ 27 Ω $\frac{1}{4}$ WV	
R46	Carbon UZ 270 Ω $\frac{1}{4}$ WV	
R47	Metal Oxide 15 Ω 2 WV	
R48	Carbon PZ 330 Ω $\frac{1}{4}$ WV	
R49	Carbon PZ 2.2 M Ω $\frac{1}{4}$ WV	
*R49	Not used	
*R49	Not used	
R50	Carbon PZ 56 Ω $\frac{1}{4}$ WV	

*For Australian Models Only

*For Japanese Models Only

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

*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-100788or
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	*54	AC Line Cord		P-310106
10	Headphone Jack (J1)	J-0894	P-190139	55	DC 12 V Jack (J2)	J-4684	P-190321
11	Speaker	S-4924	P-270093	56	Terminal Plate	HB-7354	P-320221
12	SCALE (FINE Tuning Controller)	D-5434	P-610748	57-			
13	Coil Spring	RB-6969	P-440102	59	Cabinet Ass'y	Z-5729	M-00084
14	Pulley	D-0269	P-430007	57	Cabinet		P-600122A
15	Tuning Shaft Ass'y		P-420367	58	Shield Sheet		P-480358
16	Shaft Holder	HB-1344	P-610094	59	Rubber Foot	F-0237	P-680168
17	Cushion		P-680283	60	Net		P-660234
18	Meter	M-0469	P-230101	61	Net		P-660225
19	Cushion		P-680254	*62	Back Board	Z-5730	P-630137
20	Front Chassis		P-400293	*62	Back Board		P-630141
21	Lamp Holder A (for PL2)		P-412219	*62	Back Board		P-630144
22	Shield Case C (for BFO P.C.B.: P-200836)	X-8600	P-412214	*62	Back Board		P-630147
23	NET		P-660233	63	Antenna Stopper	A-4463	P-610753
24	Cushion		P-680282	64	Rod Antenna	A-0376	P-330028
25	Dial Drum	D-0458	P-610751	*64	Rod Antenna		P-330032
26	Drum Guide	D-0459	P-610754				
27	Sheet		P-680270				
28	Drum Holder	D-0457	P-610752	Ref. No.	Description	RS Part No.	Mfr's Part No.
29	Lamp P.C.B. (with Lamp)		P-200837	F1	Tapping Screw 3φ x 8BT-PLAX		
30	Lamp Holder (for PL1)	HC-0137	P-412218	F2	Tapping Screw 3φ x 8BT-III		
31	Holder	HC-0136	P-412217	F3	Screw 3φ x 12 x 3		
32	BFO Volume (R2)	P-6645	P-171302	F4	Tapping Screw 3φ x 8BT-II		
33	VOLUME (R1)		P-171435	F5	Nylon Rivet 3φ x 4.5		
34	MODE Rotary Switch		P-180465	F6	Tapping Screw 3φ x 10BT-PLAX		
35	Main P.C.B. Unit	X-8599	U-24402	F7	Fiver Washer 3.2φ x 8φ		
36	Shield Cover		P-412216	F8	Screw 2φ x 5P		
37	Shield Case B		P-412213	F9	Screw 3φ x 6P		
38	Shield Case A		P-412212	F10	Triple Screw 3φ x 6P		
39	Core Holder	HB-2897	P-610395	F11	Screw 3φ x 9 x 3		
40	Coil P.C.B.		P-200838	F12	Screw 2.5φ x 6P		
41	Pulley Shaft	D-3270	P-420303	F13	Screw 3φ x 6P		
42	FINE Volume (R3)	P-6494	P-171303	F14	Screw 2φ x 6P		
44	Dial Spring A	D-0359	P-430031	F15	Screw 2φ x 12P		
45	P.C.B. Holder	RB-5620	P-440075	F16	Nut 2N		
46	Spacer		P-412338	F17	Flange Nut 3N		
47	Pulley Shaft	D-3203	P-480348	F18	Egg Lug 3		
48	Chassis		P-420234	F19	Screw (Black) 3φ x 6P		
*48	Chassis		P-400292	F20	Screw 3φ x 10B		
49	LUG Terminal		P-320078	F21	Tapping Screw 3φ x 12BT-PLAX		
50	Transformer Holder		P-412323	F22	Screw 3φ x 8B		
*51	Power Transformer	TA-0841	P-100753	F23	Nut 3N		
*51	Power Transformer		P-100754	F24	Lug Terminal t = 0.5		(P-320075)
				F25	Spring Washer 3SW		
				*F26	Screw 3φ x 16		
				*F27	Square Nut		(P-410111)

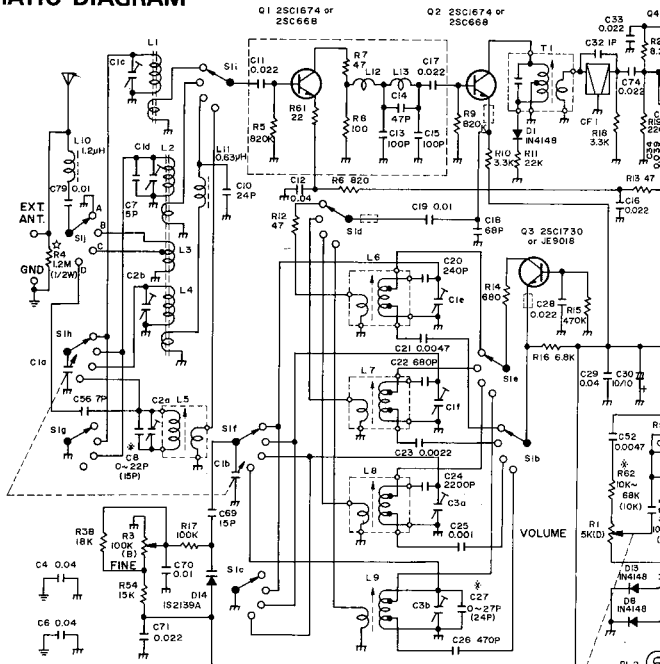
*For USA Models Only

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SCHEMATIC DIAGRAM



TRANSISTOR AND IC VOLTAGE CHART

IC-1 VOLTAGE CHART

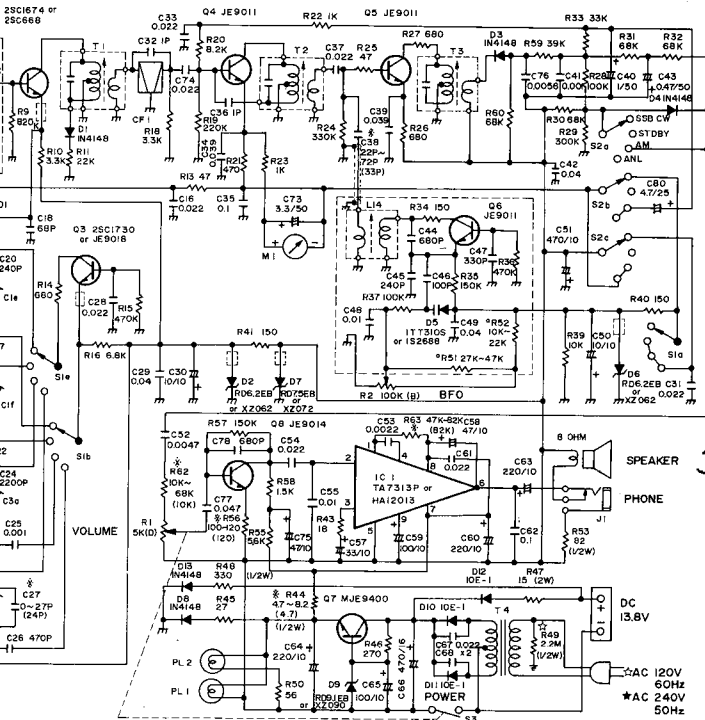
PIN No.	1	2	3	4	5	6	7	8	9
PIN VOLTAGE	0.7	4.1	4.2	4.2	0	4.2	8.4	8.2	4.2

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



W-342

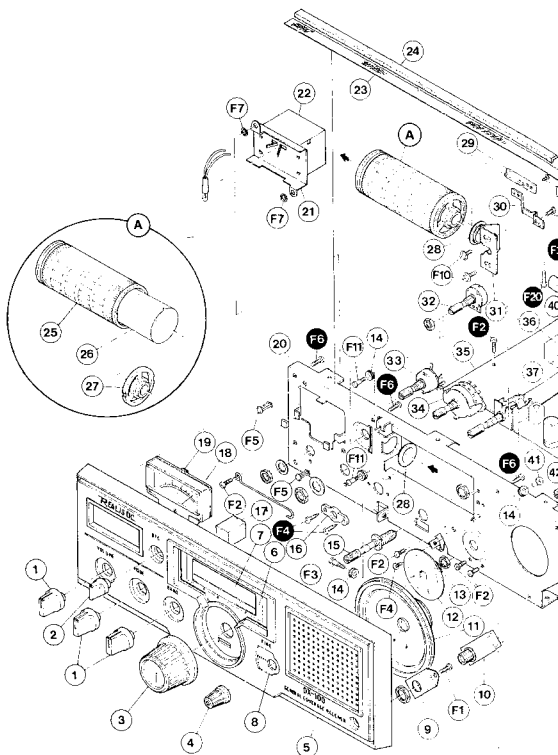
Q6	Q7
E C B	E C B
1.8	7.3
6.5	8.4
11.5	9.1

AM position, BFO and signal measured with

NOTE:

- (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10³ OHM, M = 10⁶ OHM).
- (2) ALL CAPACITANCE VALUES ARE INDICATED IN "μF" (P = 10⁻⁶ μF).
- (3) * MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
- (4) ○ WHEN D5 IS USED AS 1T7310S, THE VALUE OF R51 MUST BE 47 K OHM AND R52 MUST BE 22 K OHM.
- WHEN D5 IS USED AS 1S2688, THE VALUE OF R51 MUST BE 27 K OHM AND R52 MUST BE 10 K OHM.
- (5) ○ FOR USA AND CANADIAN MODELS ONLY.
- * FOR AUSTRALIAN MODELS ONLY.

EXPLODED VIEW



Removal of Cabinet

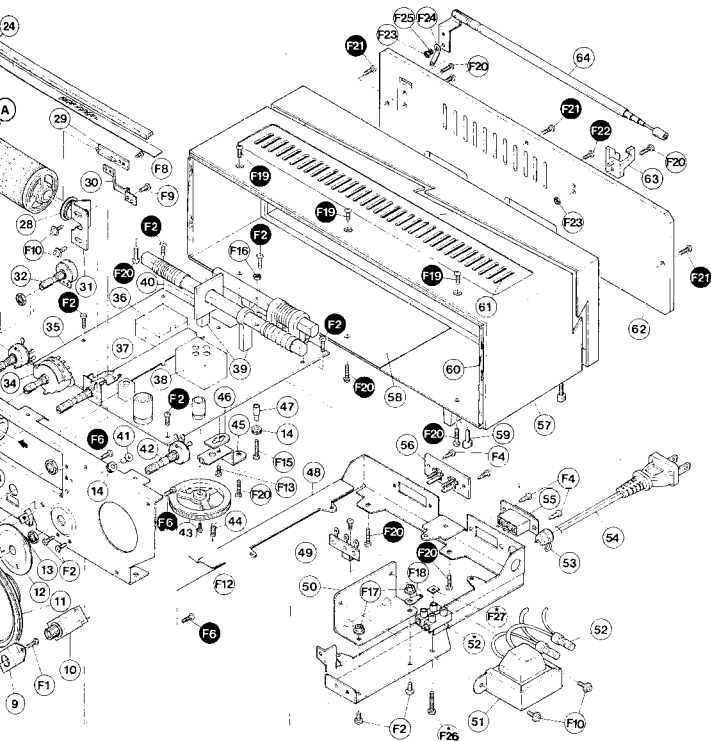
Remove 12 screws from the cabinet (57) [3 screws (F19) from the top of cabinet, 5 screws (F20) on the bottom of cabinet and 3 screws (F21), 1 screw (F22) on the back board].

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

TANDY CORPORATION

AUSTRALIA

280-316 VICTORIA ROAD
RYDALMERE, N.S.W. 2116

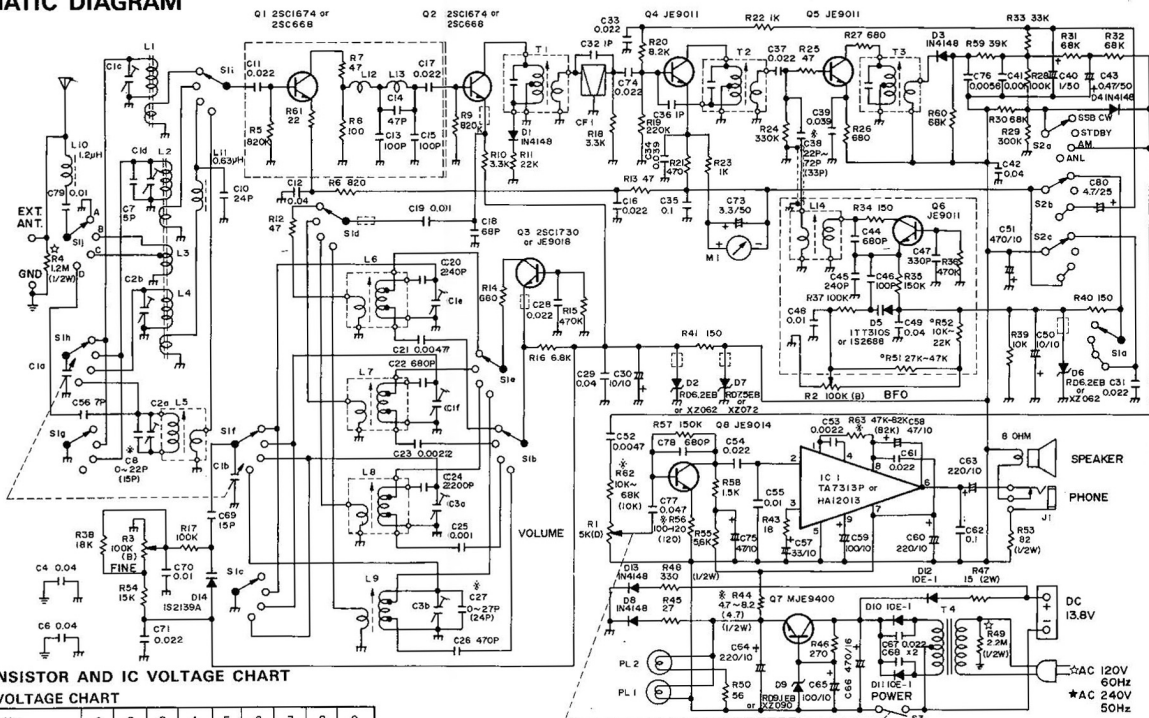
BELGIUM

PARC INDUSTRIEL DE NANINNE
5240 NANINNE

U.K.

81LSTON ROAD, WEDNESBURY
WEST MIDLANDS WS10 2JN

SCHEMATIC DIAGRAM



TRANSISTOR AND IC 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

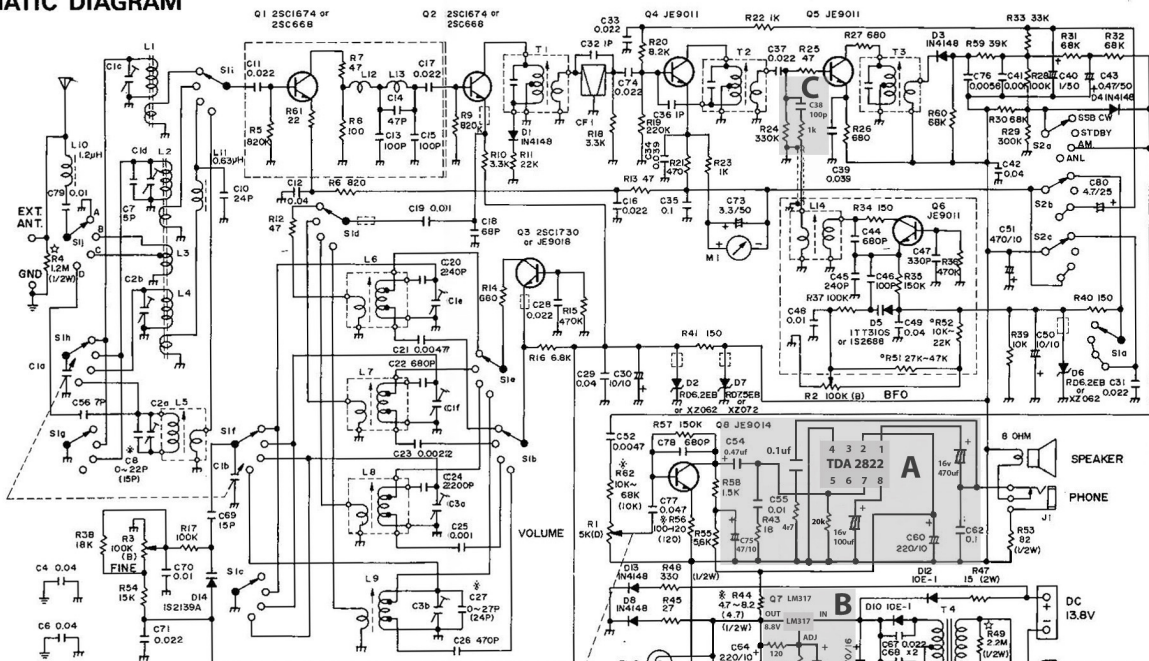
	Q1			Q2			Q3			Q4			Q5			Q6			Q7		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Transistor Voltage [V]	0.7	7.2	1.4	2.3	7.3	2.9	4.1	7.0	4.6	0.5	7.3	1.2	1.3	6.0	2.0	5.8	7.3	6.5	8.4	11.5	9.1

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.

NOTE:

- (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10^3 OHM, M = 10^6 OHM).
- (2) ALL CAPACITANCE VALUES ARE INDICATED IN "μF" (P = 10^{-6} μF).
- (3) * MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
- (4) ○ WHEN D5 IS USED AS 1T7310S, THE VALUE OF R51 MUST BE 47 K OHM AND R52 MUST BE 22 K OHM.
- (5) ○ WHEN D5 IS USED AS 1S2688, THE VALUE OF R51 MUST BE 27 K OHM AND R52 MUST BE 10 K OHM.
- (6) ○ FOR USA AND CANADIAN MODELS ONLY.
- (7) * 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

	Q1		Q2		Q3		Q4		Q5		Q6		Q7	
	E	C	B	E	C	B	E	C	B	E	C	B	E	C
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.

Modified Circuits

A/B/C

NOTE:

- (1) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10^3 OHM, M = 10^6 OHM).
- (2) ALL CAPACITANCE VALUES ARE INDICATED IN "uF" (P = 10^{-6} uF).
- (3) * MAY VARY FROM UNIT TO UNIT FOR BEST PERFORMANCE.
- (4) ○ WHEN D5 IS USED AS 1T7310S, THE VALUE OF R51 MUST BE 47 K OHM AND R52 MUST BE 22 K OHM.
- (5) ○ WHEN D5 IS USED AS 1S2688, 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.