REALISTIC®

Service Manual

12-655

AM PORTABLE RADIO

with FET Tuned RF Stage

Catalog Number: 12-655

CUSTOM MANUFACTURED FOR RADIO SHACK, A TANDY CORPORATION COMPANY

SPECIFICATIONS

ITEM	NOMINAL	LIMIT
Frequency Range	525-1650 kHz	535-1605 kHz
IF	455 kHz	
Usable Sensitivity (S/N 20dB) 600 kHz 1000 kHz 1400 kHz	 100 μV/m 100 μV/m 100 μV/m	 200 μV/m 200 μV/m 200 μV/m
ACA ± 10 kHz	26dB	20dB
T.H.D	3%	5%
AGC Figure of merit	45dB	40dB
Image Rejection	50dB	40dB
IF Rejection	50dB	40dB
Output Power at 10% THD	280 mW	250 mW
DC Current Drain at no Signal input	15 mA	20 mA
DC Current Drain at Max Output	110mA	120mA
Low Voltage (Oscillator drop-out)	3 V	4V

Supply Voltage: AC 120 V 60 Hz
DC 6 V

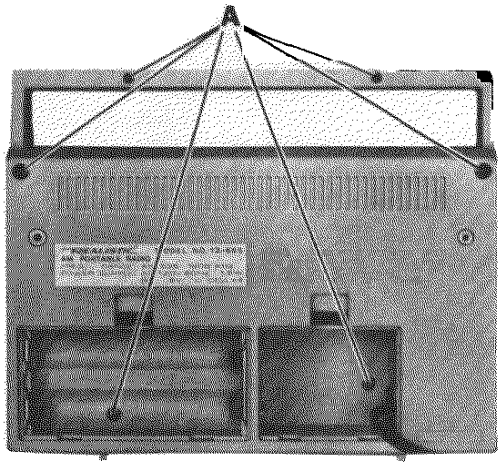
Load Impedance: 8 ohm

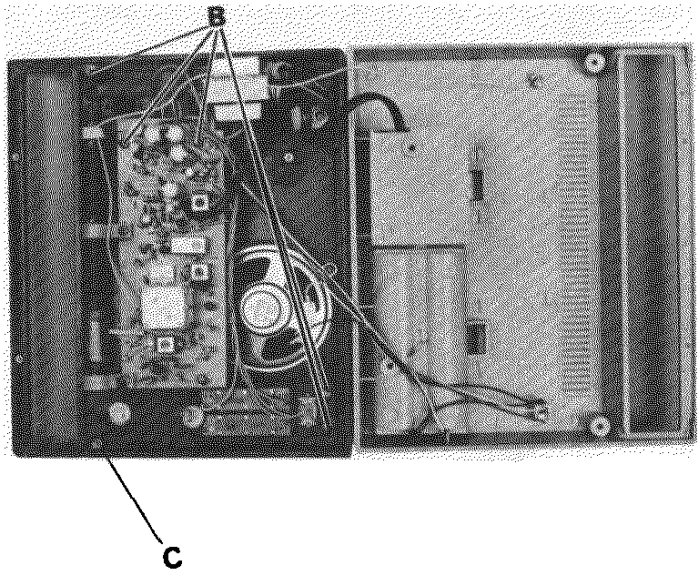
Modulation: 400 Hz, 30% Amplitude.

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.

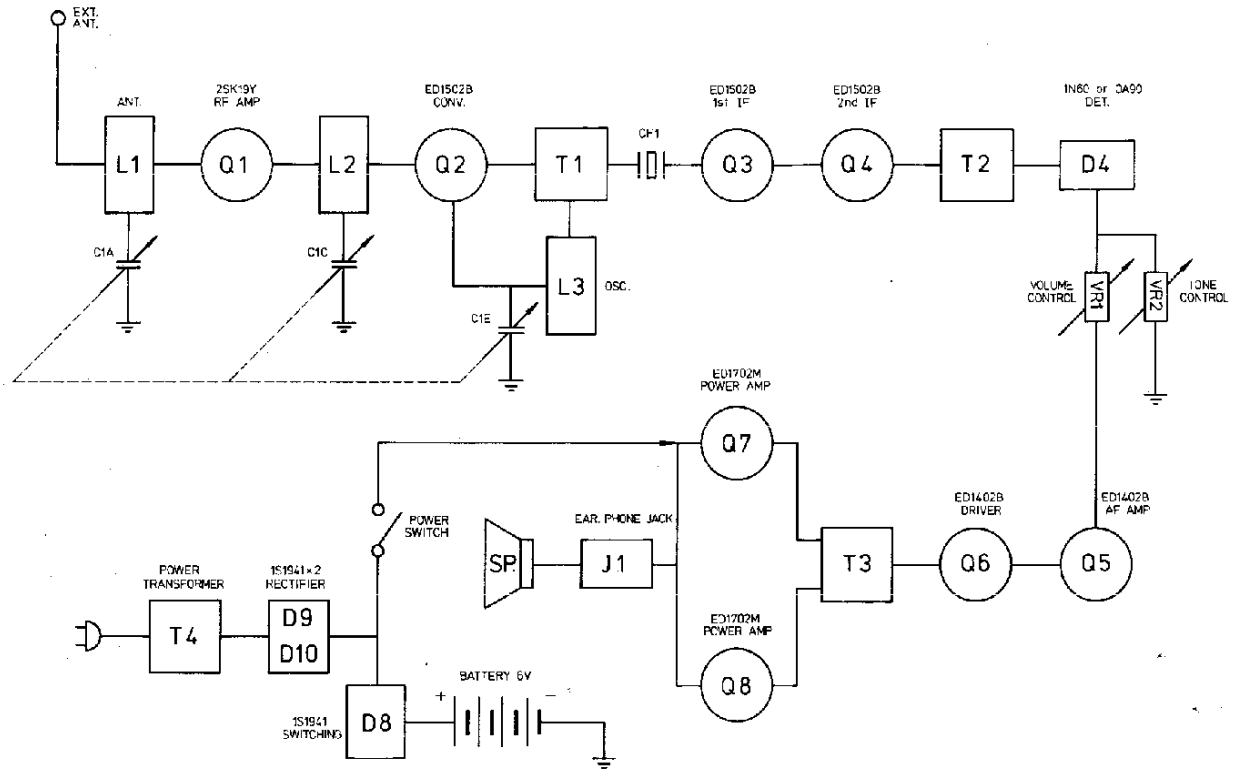
DISASSEMBLY INSTRUCTIONS

1. Remove 6 screws (A) from the back of the cabinet.
2. Remove 3 control knobs from the front.
3. Remove 5 screws (B) and 1 stud (C). Move dial pointer all the way to the right and then carefully remove the PCB and dial stringing assembly.





BLOCK DIAGRAM



ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED

Signal Sources:
1. AM Signal Generator.

Output Indicator:
1. Vacuum Tube Voltmeter.
2. Oscilloscope.

General Preparation
1. Check source voltage.
2. Connect low side of signal source and output indicator to chassis ground unless otherwise specified. Ground connection should be kept close to signal connection.
3. Signal input should be kept as low as possible to avoid AVC action. (Set output indicator to high sensitivity).
4. Standard modulation is 400 Hz at 30% amplitude.

IF ALIGNMENT

STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR TO -	SET SIGNAL TO -	SET RADIO DIAL TO -	ADJUST -	ADJUST FOR -
1	AM signal Generator connected to a std. radiation loop ant.	Oscilloscope connected to top end of volume control.	455 kHz	Maximum Frequency	T1, T2	Maximum
2	Repeat step 1 until no further increase in gain is evident.					

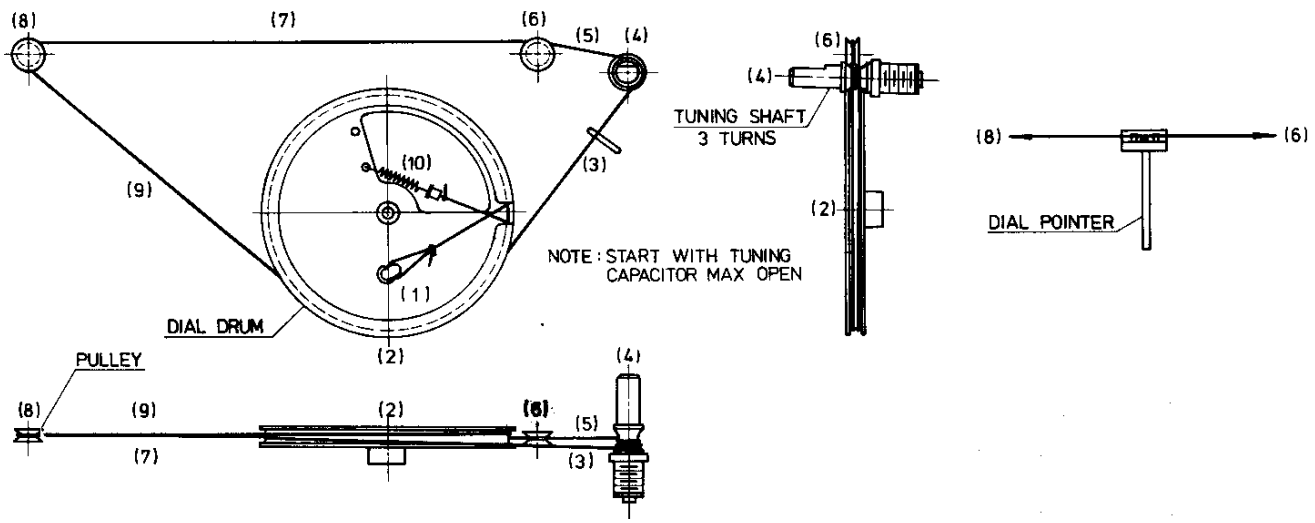
RF ALIGNMENT

STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR TO -	SET SIGNAL TO -	SET RADIO DIAL TO -	ADJUST -	ADJUST FOR -
1	AM Signal Generator connected to a std. radiation loop ant.	VTVM Connected across 8 ohm resistor inserted in place of speaker via earphone jack.	525 kHz (Modulated)	Minimum Frequency	L3	Maximum Output
2			1650 kHz (Modulated)	Maximum Frequency	C1F	
3			Repeat steps 1 & 2 until tuning range covers exactly from 525 kHz to 1650 kHz.			
4			600 kHz (Modulated)	Tune to Signal	L1, L2	Maximum Output
5			1400 kHz (Modulated)	Tune to Signal	C1B, C1D	
6			Repeat steps 4 & 5 until no further improvement is possible.			

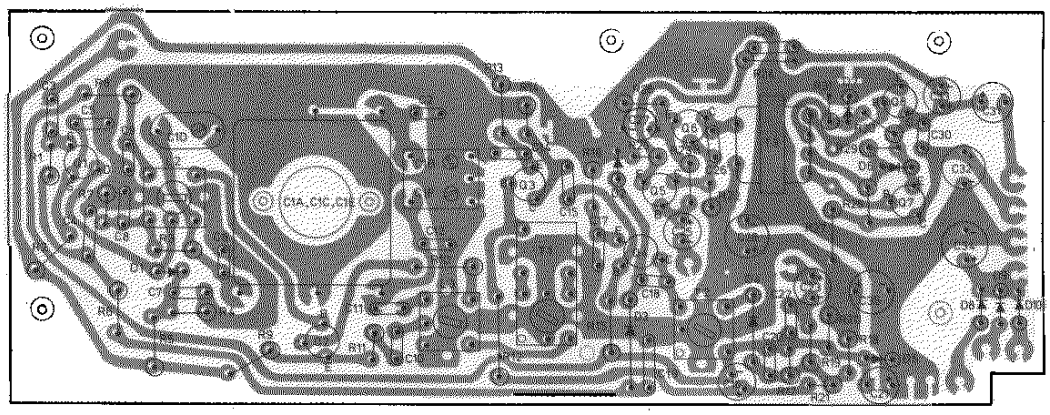
TROUBLE SHOOTING GUIDE

TROUBLE	CAUSE	REMEDY
No Sound (Unit does not work at all)	Defective ON/OFF Switch.	Repair or replace as required.
	Defective Volume Control.	Check Volume Control resistance for continuous operation. Replace if necessary.
	Defective AC Cord or Battery Connector.	Check AC Cord or Battery Connector. Replace if necessary.
	Defective speaker.	Replace speaker.
	Defective earphone jack.	Repair or replace jack.
	Defect in demodulator (D4)	Check voltages and currents for this circuit. Replace the diode.
	Open circuit or IF Transformer, Ant. coil, or Osc. coil.	Check resistance. Replace if necessary
Weak Sound (Low Sensitivity)	IF Tuning faulty.	Readjust (See Alignment Procedure).
	RF Tracking faulty.	Readjust (See Alignment Procedure).
	Defective Transistor.	Check voltages and currents. Replace defective components.
	Poor contact in Antenna circuit.	Check resistance. Repair or replace if necessary.

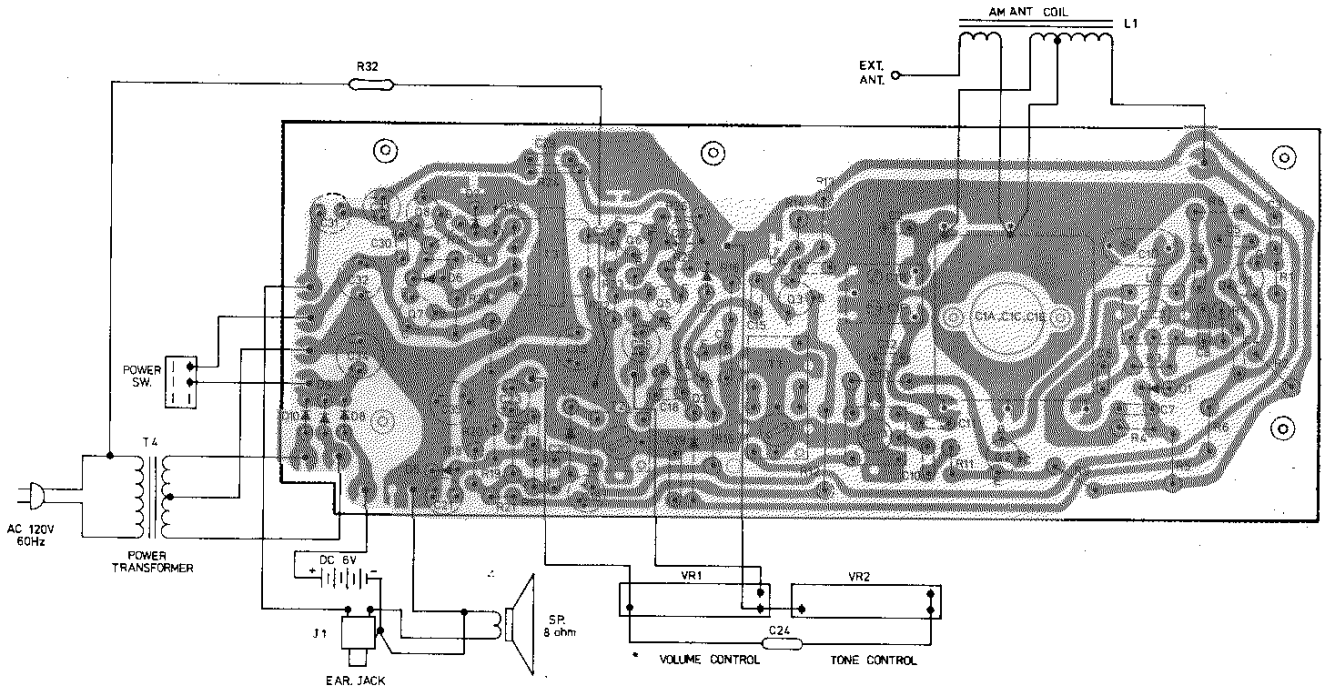
DIAL CORD STRING DIAGRAM



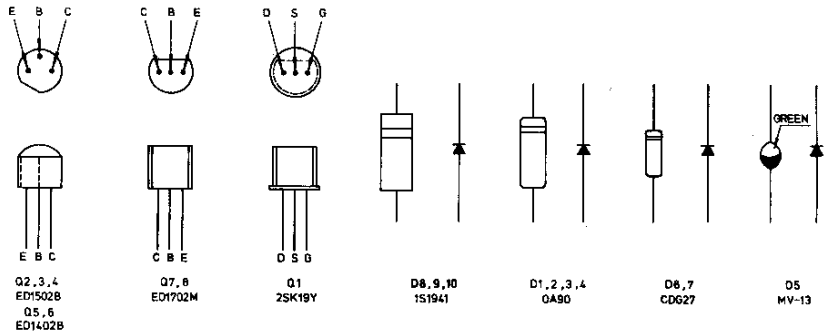
PRINTED CIRCUIT BOARD (TOP VIEW)



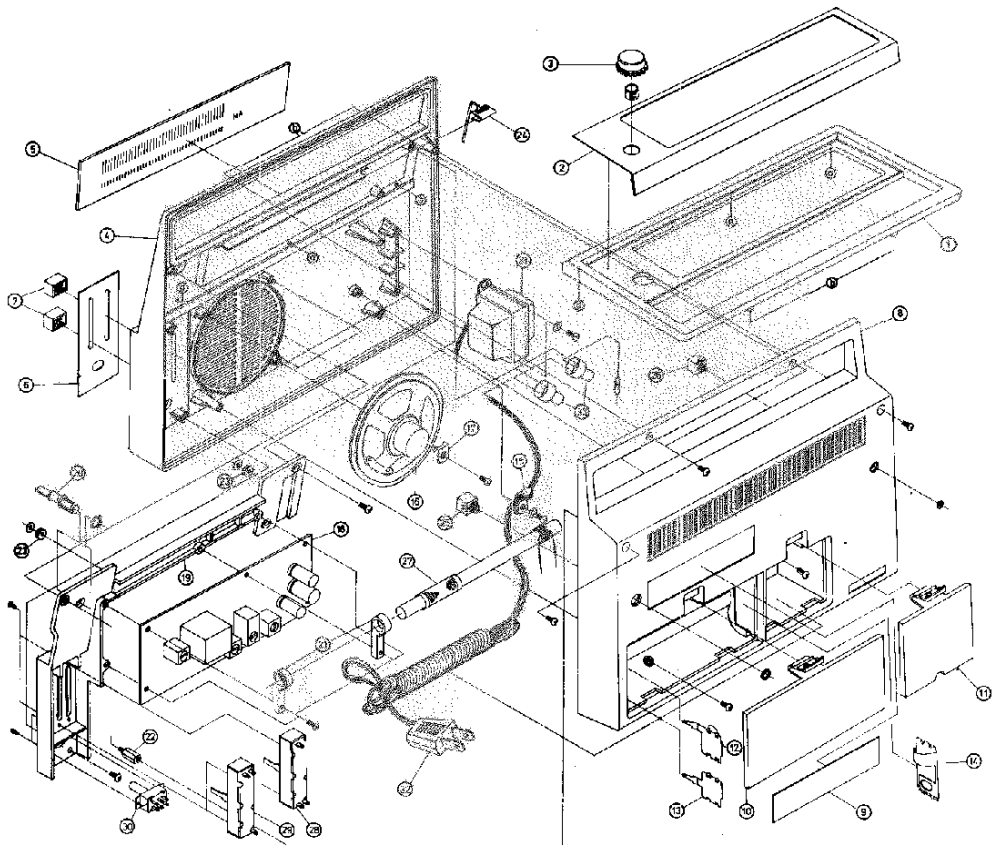
PRINTED CIRCUIT BOARD (BOTTOM VIEW)



SEMICONDUCTOR LEAD IDENTIFICATION



EXPLODED VIEW



REPLACEMENT PARTS LIST

ELECTRICAL PARTS

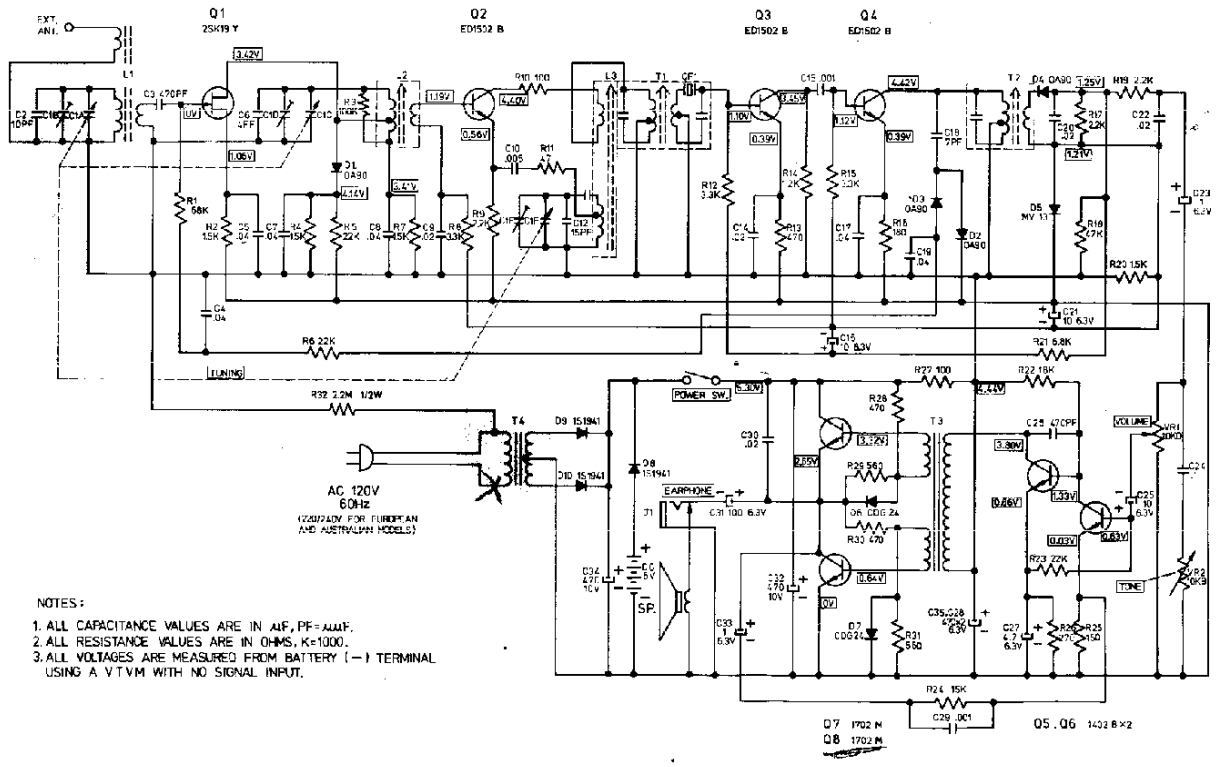
Ref. No.	Description	RS Part Number	Mfr's Part Number
C1A,C,E	Poly Variable Capacitor TUNING	C–4534	210007-0501
C1D	Trimmer 8pf (AT1-53)	C–0246	210008-0501
C1B,F	Trimmer 8pfx2 (AT2-53)	C–0247	210009-0501
C2	Ceramic 10pf ±0.5pf 25V		210003-0100
C3	" 470pf ±10% "		210003-0471
C4	" 0.04uf +80 −20% "		210003-0403
C5	" 0.04uf " "		210003-0403
C6	" 4pf ±0.5pf "		210003-0409
C7	" 0.04uf +80 −20% "		210003-0403
C8	" 0.04uf " "		210003-0403
C9	" 0.02uf " "		210003-0203
C10	Mylar 0.005uf ±20% 50V		210006-3502
C11	Polystyrene 300pf ±5% "		210005-1301
C12	Ceramic 15pf ±10% 25V		210003-0150
C14	" 0.02uf +80 −20% "		210003-0203
C15	" 0.001uf " "		210003-0102
C16	Electrolytic 10uf 6.3V		210004-1100
C17	Ceramic 0.04uf +80 −20% 25V		210003-0403
C18	" 7pf +0.5pf "		210003-0709
C19	" 0.04uf +80 −20% "		210003-0403
C20	" 0.02uf " "		210003-0203
C21	Electrolytic 10uf 6.3V		210004-1100
C22	Ceramic 0.02uf +80 −20% 25V		210003-0203
C23	Electrolytic 1uf 6.3V		210004-1109
C24	Ceramic 0.1uf +80 −20% 25V		210003-0104
C25	Electrolytic 10uf 6.3V		210004-1100
C26	Ceramic 470pf ±10% 25V		210003-0471
C27	Electrolytic 4.7uf 6.3V		210004-1479
C28	" 470uf 6.3V		210004-1471
C29	Ceramic 0.001uf +80 −20% 25V		210003-0102
C30	" 0.02uf " "		210003-0203
C31	Electrolytic 100uf 6.3V		210004-1101
C32	" 470uf 10V		210004-2471
C33	" 1uf 6.3V		210004-1109
C34	" 470uf 10V		210004-2471
C35	Electrolytic 470uf 6.3V		210004-1471
D1	Germanium 0A96		250002-0002
D2	" "		"
D3	Germanium 0A90		250002-0002
D4	" "		"
D5	Silicon MV13		250002-0003
D6	" CDG24		250002-0004
D7	" CDG24		250002-0004
D8	" 1S1941		250001-0002
D9	" 1S1941		"
D10	" 1S1941		"
(25) J1	Earphone Jack Ass'y 3.5φ	J–0647	67-0002-1
(26) J2	Ext. Ant. Jack 2.5φ	J–0698	290003-0001

Ref. No.	Description	RS Part Number	Mfr's Part Number
(27) L1	AM Ant. Coil Ass'y	CA–0245	230016-0501
L2	AM RF Coil	CA–4640	230034-0001
L3	AM OSC Coil	CA–4639	230015-0001
Q1	F.E.T. 2SK19Y		250006-0001
Q2	Silicon ED1502B		250005-0005
Q3	" "		"
Q4	" "		"
Q5	" ED1402B		250005-0004
Q6	" "		"
Q7	" ED1702M		250004-0002
Q8	" "		"
R1	Carbon Film 68 Kohm ±10% ¼W		200001-5683
R2	" 1.5 Kohm " "		200001-5152
R3	" 100 kohm " "		200001-5104
R4	" 1.5 Kohm " "		200001-5152
R5	" 22 Kohm " "		200001-5223
R6	" 22 Kohm " "		200001-5223
R7	" 1.5 Kohm " "		200001-5152
R8	" 3.3 Kohm " "		200001-5332
R9	" 2.2 Kohm " "		200001-5222
R10	" 100 ohm " "		200001-5101
R11	" 47 ohm " "		200001-5470
R12	" 3.3 Kohm " "		200001-5332
R13	" 470 ohm " "		200001-5471
R14	" 1.2 Kohm " "		200001-5122
R15	" 3.3 Kohm " "		200001-5332
R16	" 180 ohm " "		200001-5181
R17	" 2.2 Kohm " "		200001-5222
R18	" 47 Kohm " "		200001-5473
R19	" 2.2 Kohm " "		200001-5222
R20	" 1.5 Kohm " "		200001-5152
R21	" 6.8 Kohm " "		200001-5682
R22	" 18 Kohm " "		200001-5183
R23	" 22 Kohm " "		200001-5223
R24	" 15 Kohm " "		200001-5153
R25	" 150 ohm " "		200001-5151
R26	" 270 ohm " "		200001-5271
R27	" 100 ohm " "		200001-5101
R28	" 470 ohm " "		200001-5471
R29	" 560 ohm " "		200001-5561
R30	" 470 ohm " "		200001-5471
R31	" 560 ohm " "		200001-5561
R32	" 2.2 Mohm " ½W		200001-8225
(28) RV1	Slide VR. 10KD, VOLUME Control	P–1583	200022-0501
(29) RV2	Slide VR. 10KB TONE Control	P–2055	200023-0501
(30) S1	Slide Switch, POWER ON/OFF		260006-0001
T1	AM IFT	CA–7518	230017-0001
T2	AM IFT	CA–7519	230018-0001
T3	AF Driver	TN–0088	220006-0001
(31) T4	Power Transformer (For U.S.A. & Canada)	TA–0501	220012-0502
(31) T4	Power Transformer (For Europe & Australia)		220012-0511

MECHANICAL PARTS

Ref. No.	Description	RS Part Number	Mfr's Part Number
①	Cabinet Panel	Z–2222	21-0071-2
②	Overlay Cabinet Panel	Z–3063	31-0085-3
③	Tuning Knob	K–1976	21-0423-1
④	Cabinet Front	Z–2224	21-0072-1
⑤	Dial Window	G–0211	21-0079-3
⑥	Control Overlay	Z–3064	31-0084-2
⑦	Knob Vol./Tone	K–1814	21-0077-1
⑧	Cabinet Back	Z–3065	21-0421-1
⑨	Rating Plate		31-0531-1
⑩	Battery Door	DB–0114	21-0078-1
⑪	AC Line Cord Door	DA–0135	21-0084-1
⑫	Battery Connector A	HB–2369	31-0064-1
⑬	Battery Connector B	HB–2371	31-0064-2
⑭	Battery Connector C	HB–3072	31-0064-3
⑮	Clamp		21-0027-1
⑯	Speaker 3"Dia 8 ohm	S–4542	66-0004-1
⑰	Bracket Speaker	HB–3075	31-0065-1
⑱	Chassis Ass'y		52-0020-1
⑲	Chassis Support	Z–2221	21-0074-1
⑳	Tuning Shaft Ass'y	D–3142	35-0008-1
㉑	Ferrite Ant Support	HB–2363	21-0422-1
㉒	Stud		31-0079-1
㉓	Guide Pulley	D–0305	21-0080-4
㉔	Pointer	D–1138	31-0078-1
㉜	AC Line Cord		280004-0501
㉜	AC Line Cord (For EUROPE)		280004-0502
㉜	AC Line Cord (For AUSTRALIA)		280004-0503
㉝	Closed End Splice (J.S.T.)		21-0276-2

SCHEMATIC DIAGRAM



NOTES:

1. ALL CAPACITANCE VALUES ARE IN μF, PF=μμF.
2. ALL RESISTANCE VALUES ARE IN OHMS, K=1000.
3. ALL VOLTAGES ARE MEASURED FROM BATTERY (−) TERMINAL USING A V.T.V.M. WITH NO SIGNAL INPUT.