REALISTIC®

Service Manual

21-139/141

TRC-9A/11

3-CHANNEL/6-CHANNEL C.B. MOBILE TRANSCEIVER

Catalog Number: **21-139/141**

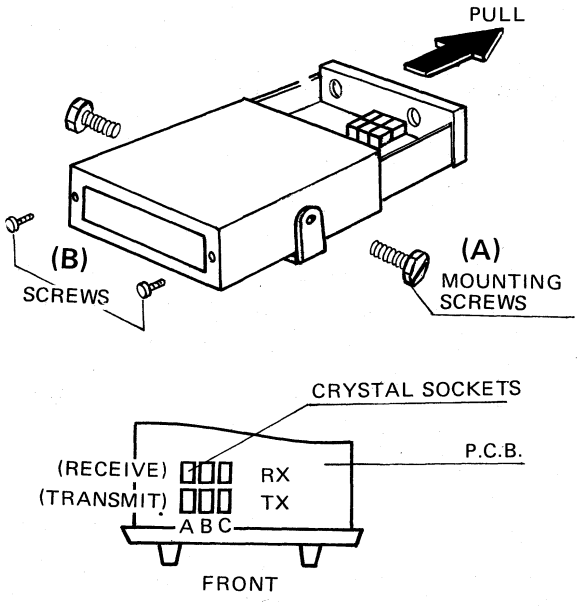
CUSTOM MANUFACTURED FOR RADIO SHACK TC A TANDY CORPORATION COMPANY

CONTENTS

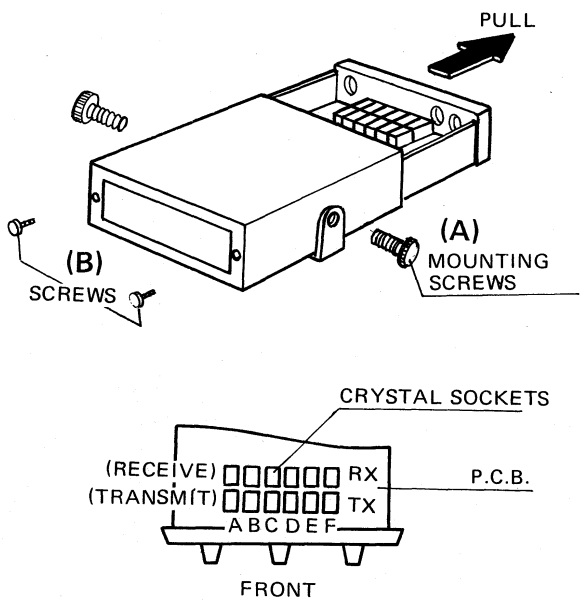
SPECIFICATIONS

Description	Nominal spec.	Limit spec.
Frequency range	26.965–27.255 MHz	
Channels	3 channels TRC-9A (21–139) 6 channels TRC-11 (21–141)	
Frequency tolerance	Less than ±0.005%	
Operating voltage	13.8VDC ±10%	
Sensitivity	0.7μV at 10 dB	1.5μV at 10 dB
Selectivity	–33 dB at ±10 kHz	–30 dB at 10 KHz
Intermediate frequency	455 kHz with ceramic filter	
Signal to noise ratio	More than 40 dB at 1mV input	
Squelch sensitivity	Threshold less than 1μV Tight 500μV	Tight 50μV–3mV
Audio output	1.2 watts, Max. power 10% distortion 1 watt	More than 0.8 watt More than 0.65 watt
RF output	3 watts	2.5 watts
Power input	5 watts max.	
Modulation	Below 100%	
Antenna impedance	50 ohms (unbalanced)	
Speaker impedance	8 ohms, 2-1/4" Dynamic type	
Dimensions	4-1/4"(W) x 6-1/2" (D) x 1-3/4" (H)	

CRYSTAL LOCATIONS



TRC-9A



TRC-11

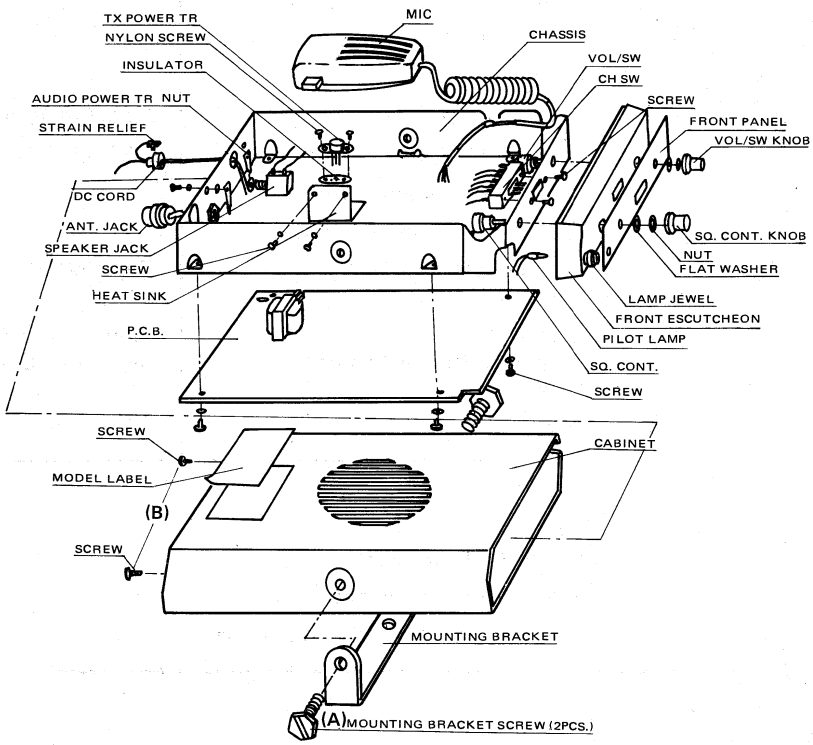
CHASSIS DISASSEMBLY

Removal of the cavinet:

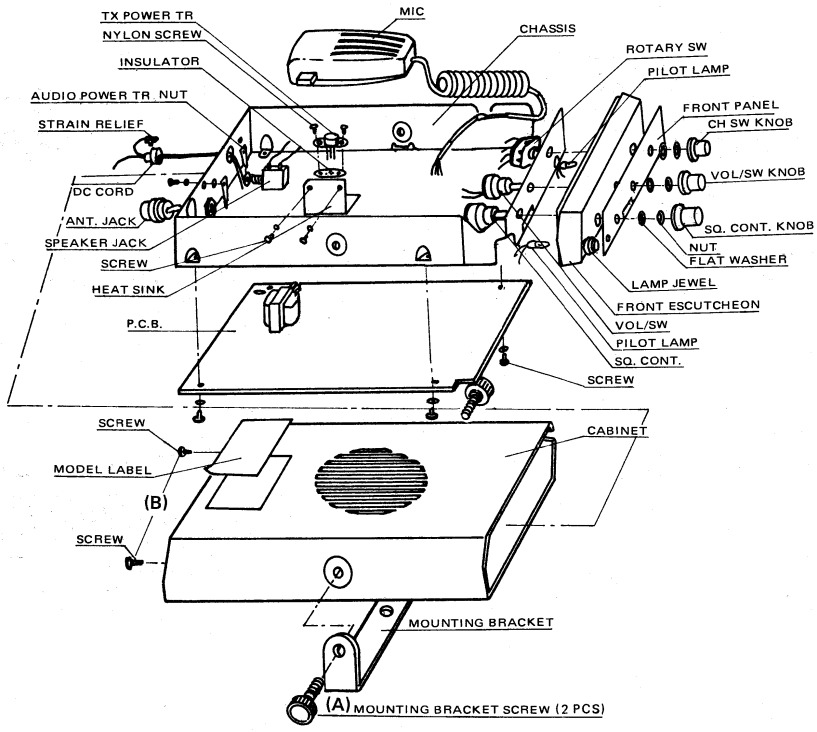
Step 1: Remove 2 mounting bracket screws(A) as shown and remove the mounting bracket.

Step 2: Remove 2 screws(B) as shown from the rear.

Step 3: Pull out the chassis from the front.



TRC-9A



TRC-11

GENERAL ALIGNMENT INSTRUCTIONS

Test equipment required

1 RF standard signal generator (S.S.G.)
2 AF signal generator
3 V.T.V.M.
4 RF power meter
5 Oscilloscope
6 Monitor receiver
7 Frequency counter
8 1A DC ammeter
9 8 ohm dummy load

Note: Keep the input signal from S.S.G. as low as possible during all alignment.

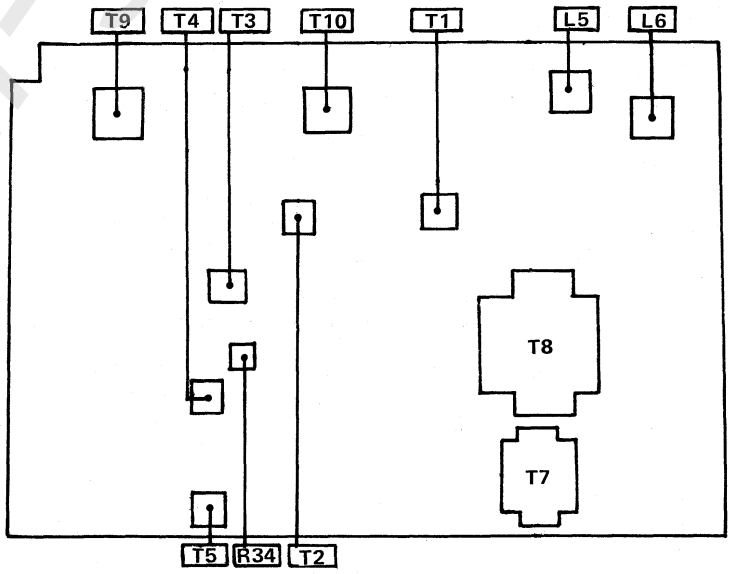
RECEIVING SECTION ALIGNMENT CHART

STEP	CONTROL SETTING	TEST EQUIPMENT CONNECTION	SIGNAL GENERATOR SETTING	ADJUST	REMARKS
1	Volume control: Fully clockwise SQ control: Max. counter-clockwise CH: A position 27.065 MHz (TRC-9A) 27.085 MHz (TRC-11)	V.T.V.M.: Parallel with 8 ohm dummy load connected to J2 Signal generator: through 100 pF to the base of Q2 2SC371	Freq: 455 kHz Mod.: 1 kHz 30%	T3 (YEL) T4 (WHT) T5 (BLK)	Max. output on voltmeter
2	"	V.T.V.M.: Parallel with 8 ohm dummy load connected to J2 Signal generator: to J1	Freq.: 27.065MHz (TRC-9A) 27.085MHz (TRC-11) Mod.: 1 kHz	T1, 2	Max. output on voltmeter
3	Volume control: Adjust for desired audio level SQ. Control: Fully clockwise	V.T.V.M.: Parallel with 8 ohm dummy load or across speaker to J2 Signal generator to J1	Freq.: 27.065MHz (TRC-9A) 27.085MHz (TRC-11) Mod.: 1kHz 30% Output: 500μV	R34	Adjust so squelch just opens

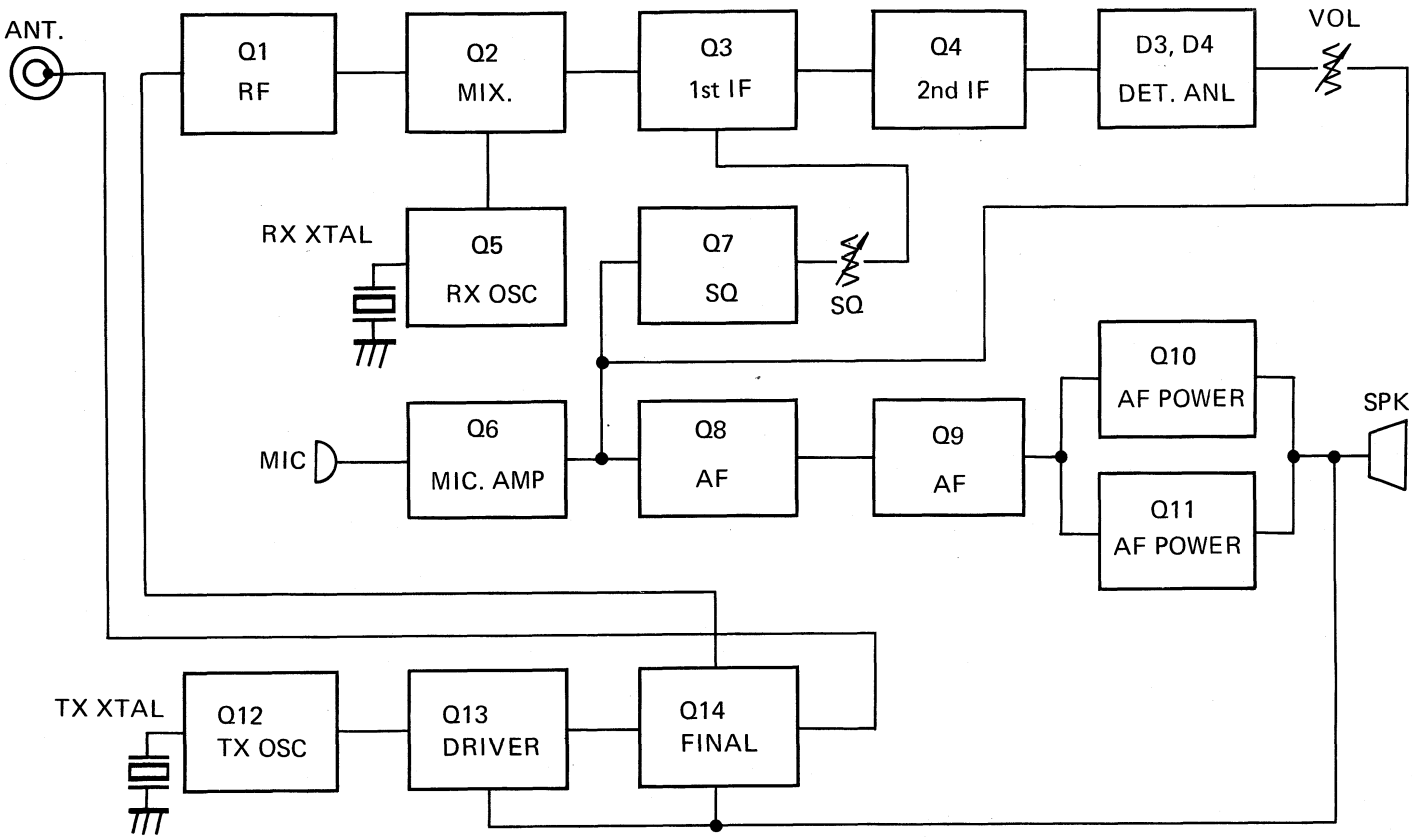
TRANSMITTING SECTION ALIGNMENT CHART

STEP	CONTROL SETTING	TEST EQUIPMENT CONNECTION	TEST EQUIPMENT SETTING	ADJUST	REMARKS
1	CH: A position 27.065MHz (TRC-9A) 27.085MHz (TRC-11)	Power meter (50 ohms): to J1 1A ammeter: in series with lead between modulation winding of T8 and collector of Q14 Oscilloscope: in parallel with power meter	Supply voltage: 13.8 volts		
2	Press the P.T.T. SW.	"	"	T9, 10	Max. power output
3	"	"	"	L5, 6	Peak on the Power meter and dip on the ammeter to get 3 watts output at J1 (or max output)
4	"	Power meter (50 ohms): to J1 1A ammeter: in series with lead between modulation winding of T8 and collector of Q14.	Vary supply voltage from 15 to 12 volts.	T9	If no output, adjust T-9 to assure output at both voltage extremes.
5	"	Audio frequency generator: to C23 (or talk into Microphone).	Reset the supply voltage to 13.8 volts.		Check modulation
6	Repeat steps 2 to 4.				

ALIGNMENT POSITION

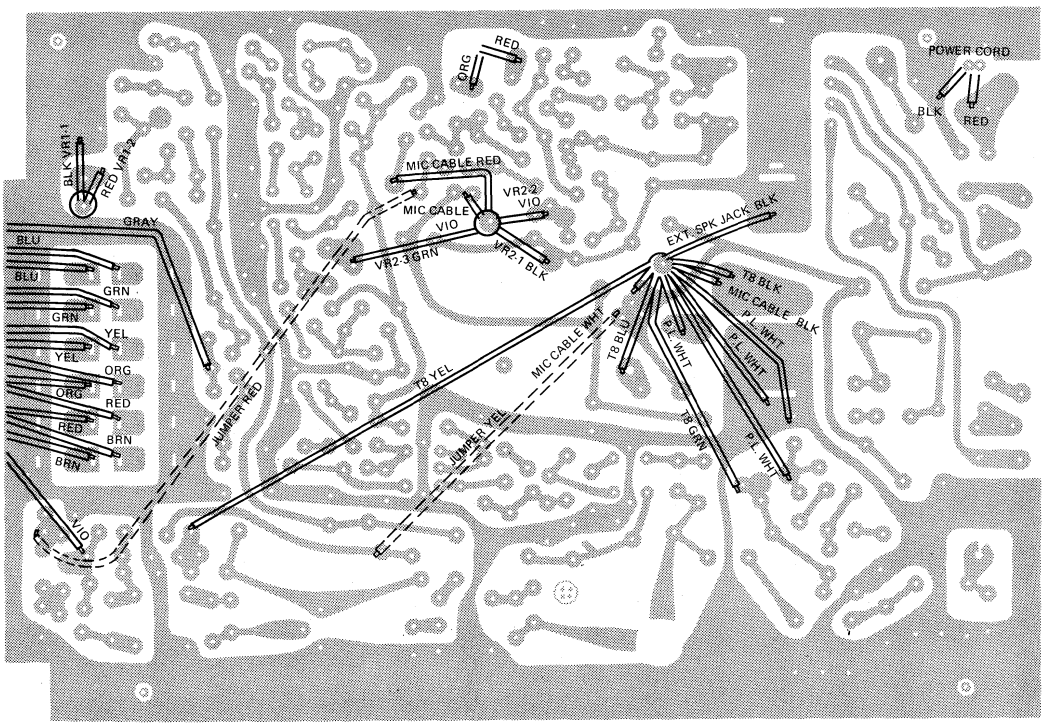


BLOCK DIAGRAM



TRC-9A and TRC-11

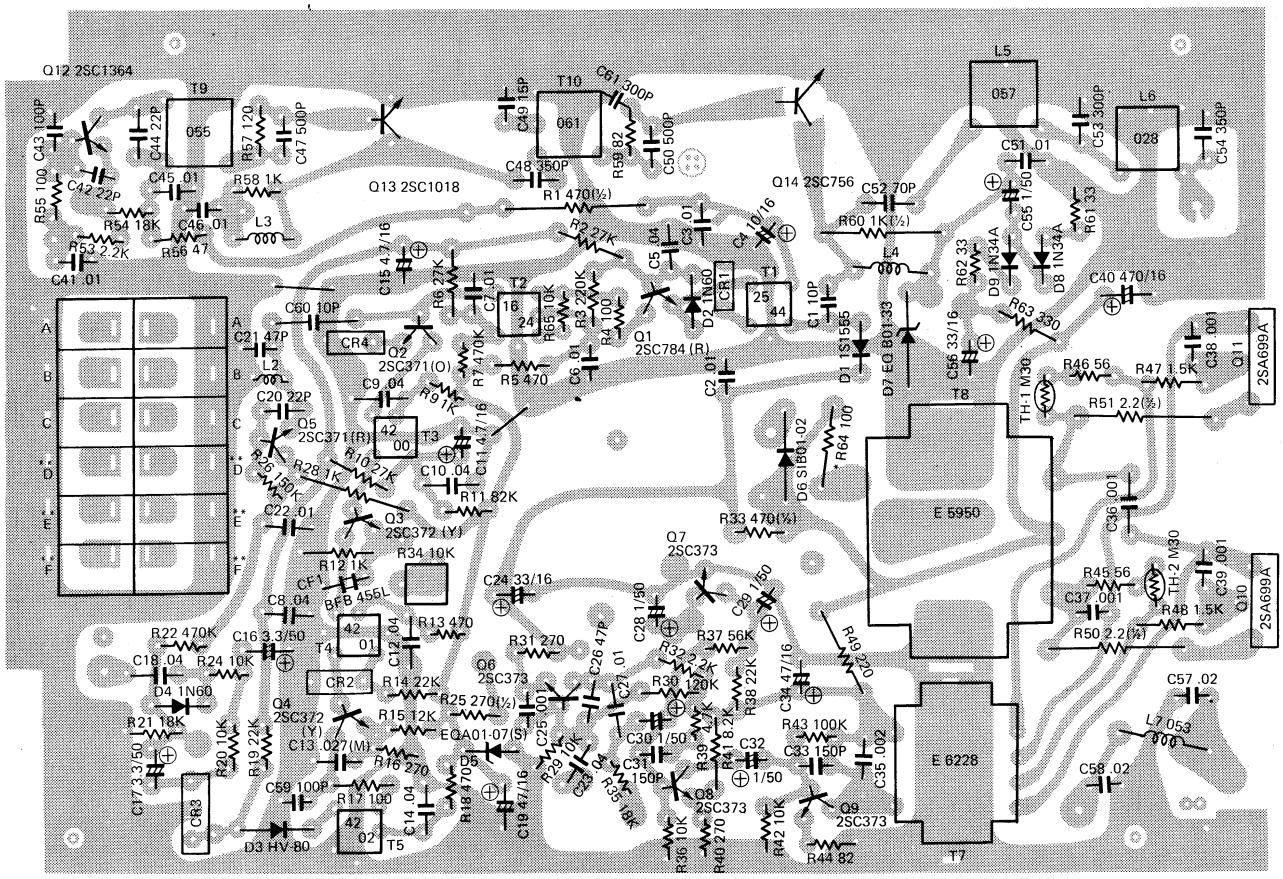
WIRING DIAGRAM



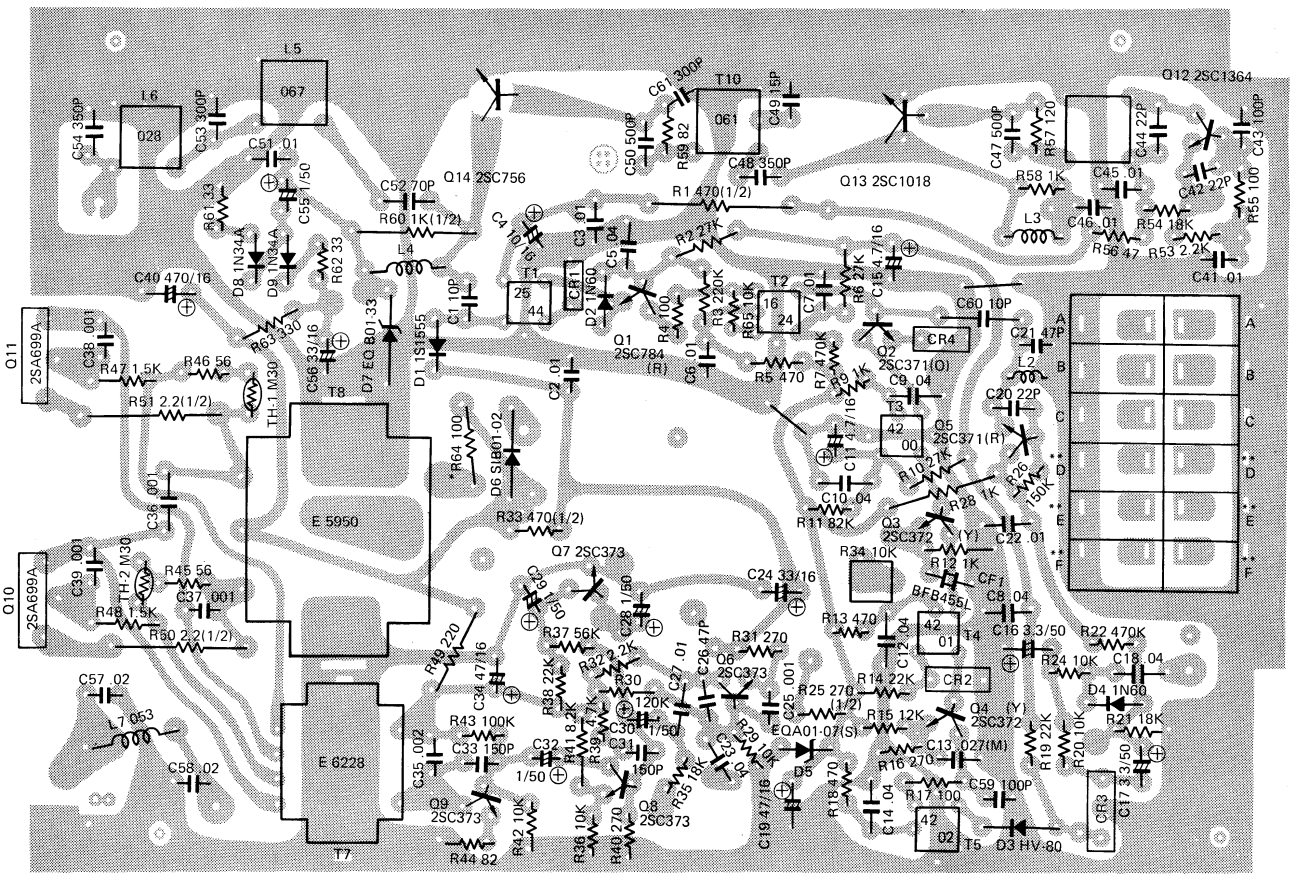
Note: 6 crystal sockets with lead wires (wires color BRN,RED and ORG.) are TRC-9A.

P.C. BOARD (TOP VIEW)

*1 R64 is used for TRC-11 only.
**2 Crystal socket D, E and F used for TRC-11 only.



P.C. BOARD (BOTTOM VIEW)



TROUBLE SHOOTING

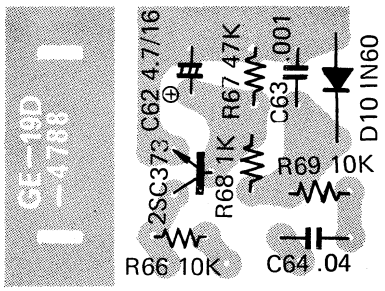
Symptom	Possible cause
1) Pilot lamp and channel indicator (TRC-11 only) lamps do not light and set does not operate when power is on.	A) Faulty power cord. B) Defective power switch SW2. C) 2A fuse blown.
2) Fuse blows when power switch is on.	A) Defective Electrolytic capacitor. B) Defective audio power amplifier transistor Q10 or Q11. C) Defective TX final Transistor Q14 or Q13. D) Defective zener diode D7.
3) Pilot lamp or channel indicator lamp (TRC-11 only) does not light.	A) Defective pilot lamp or resistor R63. B) (TRC-11 only) Defective channel indicator lamp or resistor R64. C) Short circuit in the B+ Circuit.
4) Pilot lamp comes on but no sound on any channel.	A) Faulty EXT. Speaker jack J2. B) Poor crystal socket contact or crystal loose in socket. C) Defective zener diode D5. D) Weak crystal.
5) Transmitter does not operate or no modulation.	A) Faulty P.T.T. switch. B) Defective microphone cartridge. C) Faulty transistor Q12, 13, or Q14. D) Faulty microphone cord. E) Defective T8 Transformer modulation winding. F) Defective resistor R57 or R59. G) Faulty transistor Q6 or Q7.
6) Squelch control does not operate.	A) Defective transistor Q7. B) Faulty VR2 or R34.

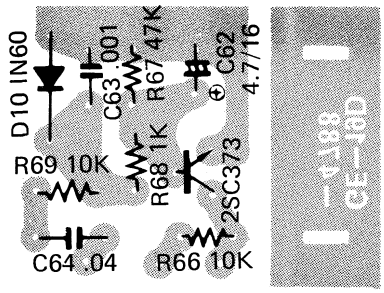
Ref. No.	Description	RS Parts Number	MFR's Parts Number
	Channel switch Knob (TRC-11 only)	K-1074	GE-18D-4433
Lamp 1	Pilot Lamp 7V 50mA L=190mm	L-0263	
Lamp 2	Channel indicator lamp (TRC-11 only) 7V 50mA L=190mm	L-0263	
	Lamp Jewel	HB-0706	GE-17D-3438
	Lamp Holder (TRC-11 only)		LH-141
	Fuse 2A		
	P.C. Board	X-4269	GE-18C-4305
J1	Antenna jack connector	J-6244	SO-239 273
J2	Speaker Jack	J-0592	JA-C-011
SPK	Speaker	S-4335	P0642AA
	Line cord strain relief	HB-0705	SR-3P-4
	Rubber bushing		GE-15D-2699
	Rubber bushing (New type)		GE-19D-4607

FOR CANADIAN/D.O.C. MODELS ONLY

SUB P.C. BOARD

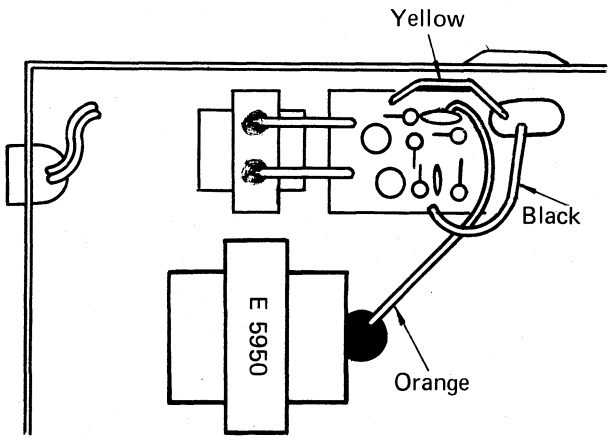
NOTE: Modulation limiting stage for Canadian model TRC-9A and TRC-11



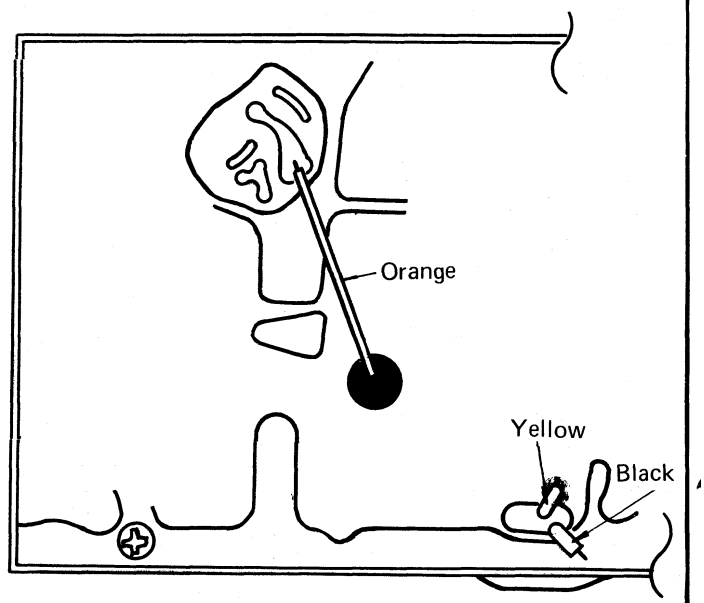


SUB P.C. BOARD WIRING DIAGRAM

(TOP VIEW)



(BOTTOM VIEW)



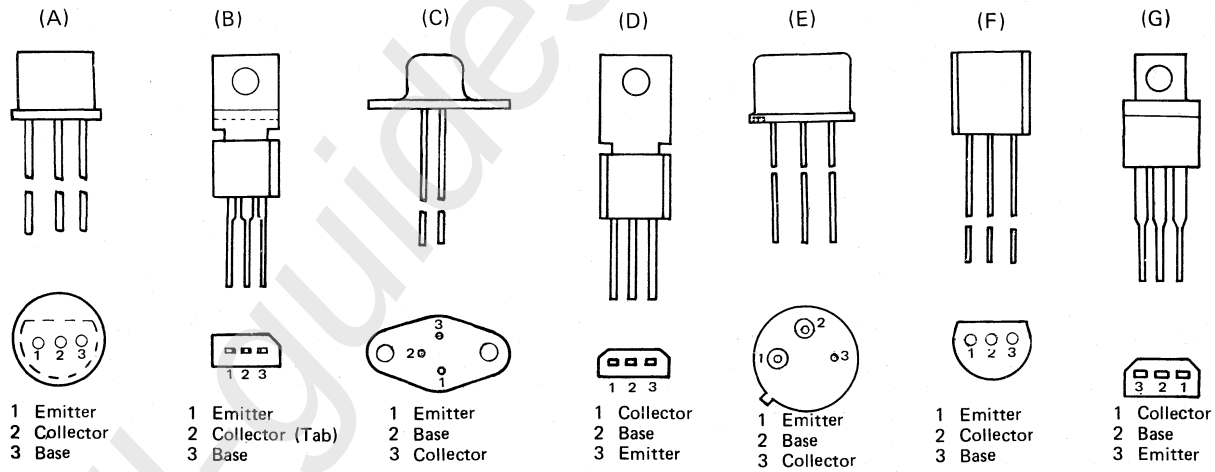
SUB P.C. BOARD PARTS LIST

(Modulation limiting stage for Canadian model TRC-9A and TRC-11)

Ref. No.	Description	RS Parts Number	MFR's Parts Number
	CAPACITORS		
C62	Electrolytic 4.7μF/16WV		CE04W IC470B
C63	Ceramic 0.001μF		MC-60
C64	Ceramic 0.04μF		MC-100
	RESISTORS		
R66, 69	Carbon film 10KΩ 1/4W ±5%		ELR 1/4 103J
R67	Carbon film 47KΩ 1/4W ±5%		ELR 1/4 473J
R68	Carbon film 1KΩ 1/4W ±5%		ELR 1/4 102J
	SEMICONDUCTORS		
Q15	Transistor, Silicon, Toshiba		2SC373
D10	Diode, Silicon		1N60
	MISCELLANEOUS		
	P.C. Board		GE-19D-4788

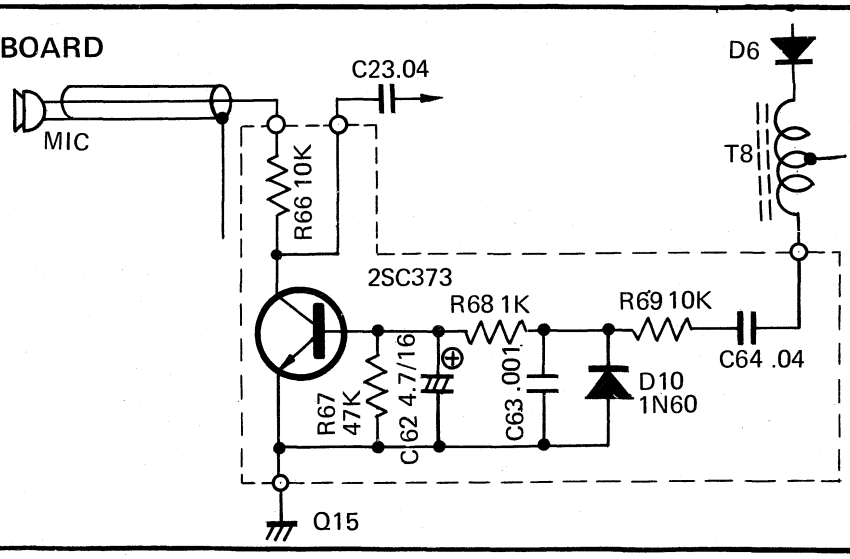
SEMICONDUCTOR LEAD IDENTIFICATION

(A) : 2SC371, 372, 373, 735, 784
(B) : 2SA699 (C) : 2SC1239 (D) : 2SC1018
(E) : 2SC756 (F) : 2SC1364 (G) : 2SC1728

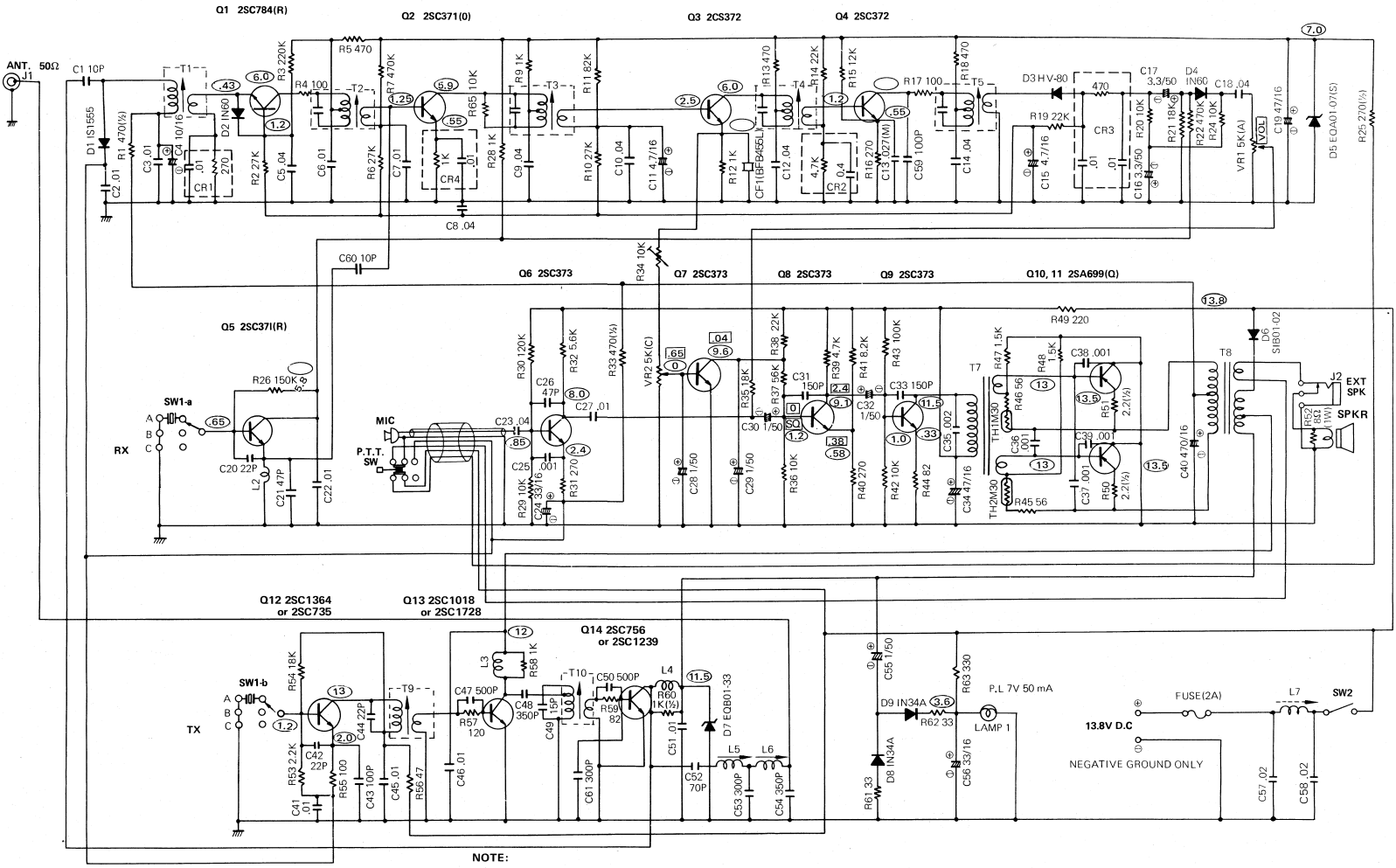


SCHEMATIC DIAGRAM FOR SUB P.C. BOARD

NOTE: Modulation limiting stage for Canadian model TRC-9A and TRC-11.



SCHEMATIC DIAGRAM

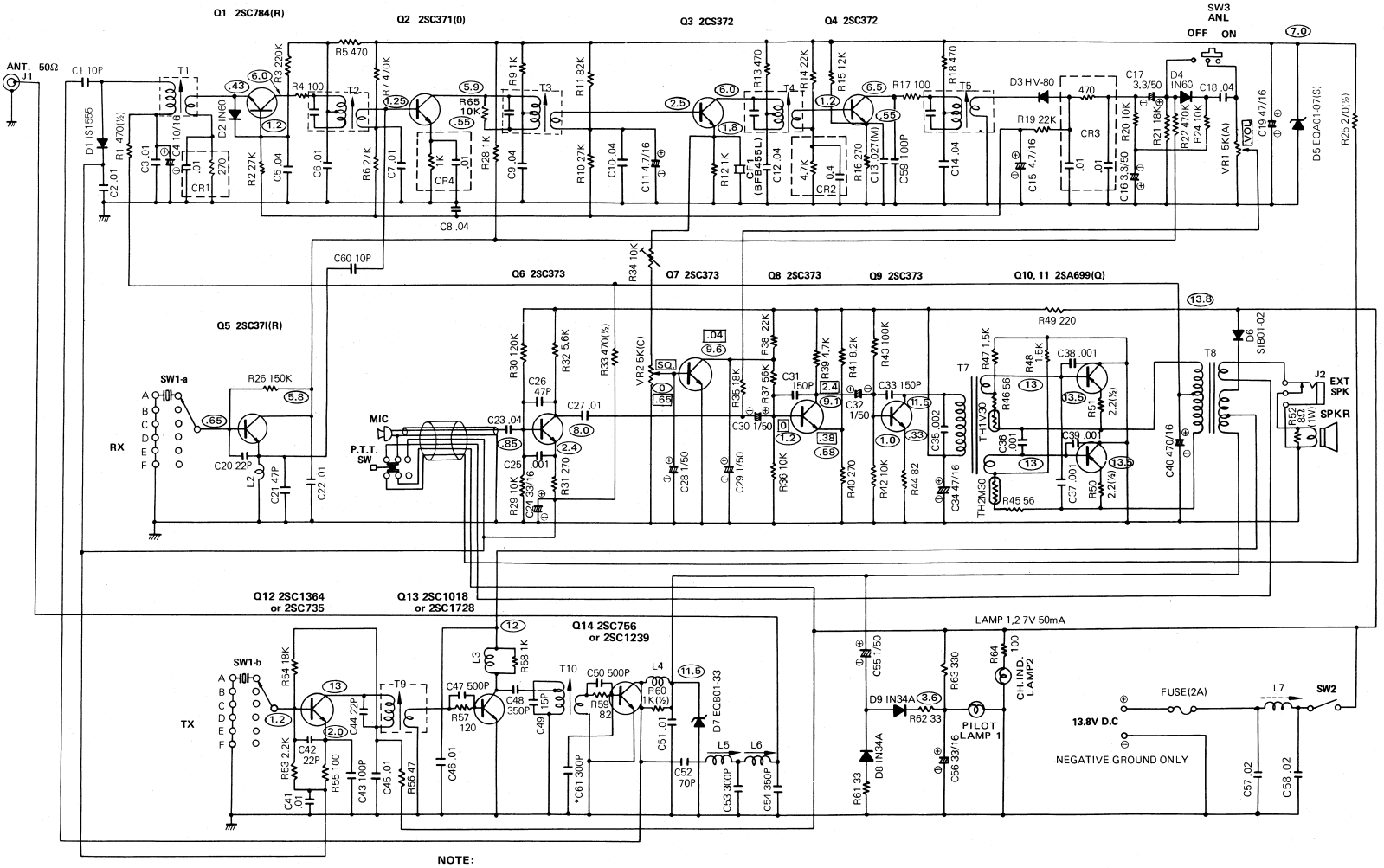


NOTE:

1. SW1a-b: CHANNEL SW.
2. SW2: POWER SW W/VR1
3. RESISTANCE VALUES IN OHMS.
   K=1000
4. CAPACITANCE VALUES IN MF.
   P=MMF
5. VOLTAGES ARE MEASURED WITH V.T.V.M.
   UNDER FOLLOWING CONDITIONS:
   VOLUME MINIMUM
   SQUELCH MAXCLOCKWISE.

TRC-9A
CAT.No. 21-139

SCHEMATIC DIAGRAM



NOTE:

1. SW1a-b: CHANNEL SW.
2. SW2: POWER SW W/VR1 VOL. CONT.
3. RESISTANCE VALUES IN OHMS unless otherwise indicated (K=1000).
4. CAPACITANCE VALUES IN MF unless otherwise indicated (P=MMF).
5. VOLTAGES ARE MEASURED WITH V.T.V.M. UNDER FOLLOWING CONDITIONS:
   VOLUME MINIMUM
   SQUELCH MAX. CLOCKWISE.

TRC-11
CAT.No. 24-141

RADIO SHACK A TANDY CORPORATION COMPANY

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6A4-4000

Printed in Japan