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**Realistic TRC-10 Service Manual**

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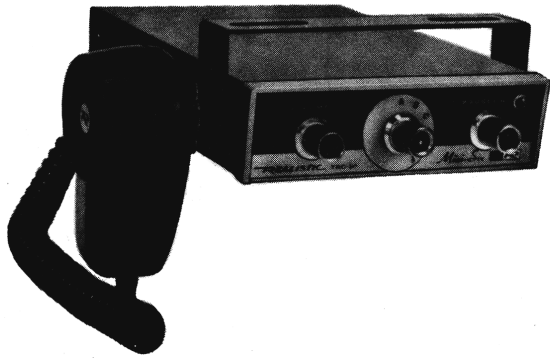
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# REALISTIC



## “MINI-SIX” TRANSCEIVER

MODEL TRC-10

CATALOG NO. 21-126

# SERVICE MANUAL

## SPECIFICATIONS

### RECEIVER

Sensitivity.....Less than 1.0 $\mu$ V @ 10dB S+N/N  
Selectivity.....25dB $\pm$ 10KHz  
Squelch .....Adjustable  
IF Frequency .....455 KHz  
Audio Output .....1.5 Watts

### TRANSMITTER

Power Input.....5 Watts maximum  
Power Output.....2.5 Watts  
Modulation ..... $\left\{ \begin{array}{l} 90\% \text{ minimum} \\ 100\% \text{ maximum} \end{array} \right.$   
RF Frequency Stability...0.005%

### DIODES

D1 1N60.....Overload Protector  
D2 1N60.....Detector  
D3 1N60.....Noise Limiter  
D4 1N34A .....Switching Diode  
D5 1N34A .....Switching Diode  
D6 1S2076 .....Modulation Limiter  
D7 1N34A .....Modulation Limiter  
D8 1N34A .....Switching Diode  
D9 VO6C .....Modulation Limiter  
D10 1S2076 .....Switching Diode  
D11 1S2076 .....Switching Diode  
D12 VO6C.....Polarity Protection Diode

### TRANSISTORS

Q1 2SC460.....RF Amp (Rec)  
Q2 2SC460.....Mixer (Rec)  
Q3 2SC454.....1st IF Amp  
Q4 2SC454.....2nd IF Amp  
Q5 2SC454.....Receiver Oscillator  
Q6 2SC458.....Squelch Amplifier  
Q7 2SC458.....Microphone Amplifier (Trans)  
Q8 2SC458LG .....1st Audio (Rec)  
Q9 2SC458.....Audio Driver (Trans/Rec)  
Q10 2SC830 .....Audio Power Output/Modulator  
Q11 2SC830 .....Audio Power Output/Modulator  
Q12 2SC150/T.....Transmit Oscillator  
Q13 2SC116/T.....Transmit Driver  
Q14 2SC609/T.....Transmit RF Power Output  
POWER SUPPLY .....DC:12V, negative ground only

MICROPHONE.....Dynamic microphone

DIMENSIONS .....1 $\frac{3}{8}$ "(H)  $\times$  4 $\frac{3}{4}$ "(W)  $\times$  7"(D)

WEIGHT .....1 lb, 12 ozs (including mic.)



**DISASSEMBLY**

**1. Removal of metal case**

After removing set from the mounting bracket, remove the eight screws as shown in Fig. 5.

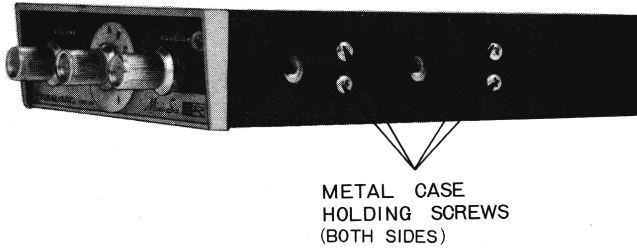


Fig. 5

**2. Removal of circuit board**

Remove six screws holding circuit board as shown in Fig. 6.

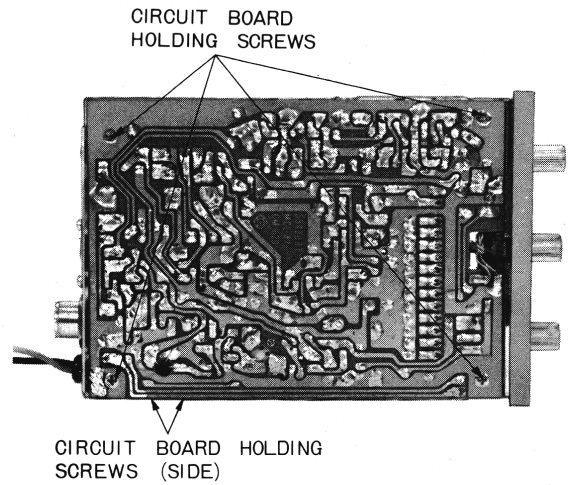


Fig. 6

**ALIGNMENT OF RECEIVER SECTION**

**EQUIPMENT REQUIRED**

- Signal generator 27MHz Band, 1,000Hz, 30% AM modulated,
- Output impedance 50Ω
- AF Output Meter (V.T.V.M)
- DC Power Supply 13.2 Volts, 1.5A
- Oscilloscope
- Dummy Load 8Ω, 5Watts (Resistive)

**PROCEDURE**

- Allow test equipment and set at least 15 minutes to warm up before starting the alignment.
- Output Level: Keep signal generator output low enough to prevent AGC overload (Below 2 Volts on AF output meter)

Step	Signal Generator Connection	Signal Generator Frequency	Set Conditions	Output Meter Connection	Adjustment	Remarks
1.	To Ant. connector J1	27.085MHz	Channel selector at C Squelch: min. Volume: max.	From external SP jack, J3	T1 thru T4	Adjust for max. output
2.	Same as Step 1	Same as Step 1	Same as Step 1	Same as Step 1	R11	Adjust for 2 volts output with signal generator input of 0.25μV at J1.

**ALIGNMENT OF TRANSMITTER SECTION**

**NOTE:**

This transceiver meets all requirements of F.C.C. Rules and Regulations, Part 95. In order to operate the transceiver the user must be licensed. Obtaining an operator's license is a simple procedure. However, only those persons properly licensed by the F.C.C. are permitted to repair or adjust any malfunctioning unit found to be transmitting illegally (refer to F.C.C. Rules and Regulations, Part 95, Subpart C and D).

**EQUIPMENT REQUIRED**

RF Output Meter 50Ω 5 Watts, DC 500/1.000 mA meter,  
DC Power Supply 13.2 Volts, 1.5A, Field strength meter.

**PROCEDURE**

Allow test equipment and set at least 15 minutes to warm up before starting the alignment.

RF Output meter or 50Ω HF dummy load must be connected to antenna connector.

Step	Set Condition	RF Output Meter Connection	Adjustment	Remarks
1.	Transmitting non mod.	To Ant. jack J1	T7 thru T9	Adjust for max. output
2.	Same as Step 1	Remove "current check point" jumper and insert milliammeter. Readjust T8 if necessary to obtain no greater than 5 watts input. (voltage at collector of Q14 × current=power input)		

**TRANSISTOR VOLTAGE CHART**

1. POWER SUPPLY VOLTAGE = 13.2V
2. ALL VOLTAGE READINGS ARE WITH NO SIGNAL APPLIED

		RX		TX		RX		TX
Q1	B	1.3V		-0.4V	Q8	B	2.5V	-0.2V
	E	0.7		0.33		E	1.9	0.66
	C	8.1		9.5		C	5.3	5.6
Q2	B	1.2		0.57	Q9	B	1.56	1.5
	E	0.6		0.1		E	0.94	0.89
	C	8.6		9.8		C	12	11.6
Q3	B	2.5		2.0	Q10	B	0.8	0.8
	E	2.0		1.5		E	0.3	0.2
	C	8.2		9.3		C	12.8	12.4
Q4	B	2.0		2.2	Q11	B	0.8	0.77
	E	1.35		1.55		E	0.29	0.2
	C	6.1		6.4		C	12.8	12.4
Q5	B	5.0		0.2	Q12	B	6.1	3.1
	E	6.4		0		E	8.2	3.5
	C	9.1		10		C	12.9	13.1
Q6	B	0.4		0.2	Q13	B	0	-0.15
	E	0		0		E	0	0.38
	C	3.3		-0.15		C	13.1	12.6
Q7	B	1.65		1.57	Q14	B	0	0.1
	E	8.2		0.94		E	0	0.7
	C	5.3		5.6		C	13.1	12.3

INTERNAL VIEW

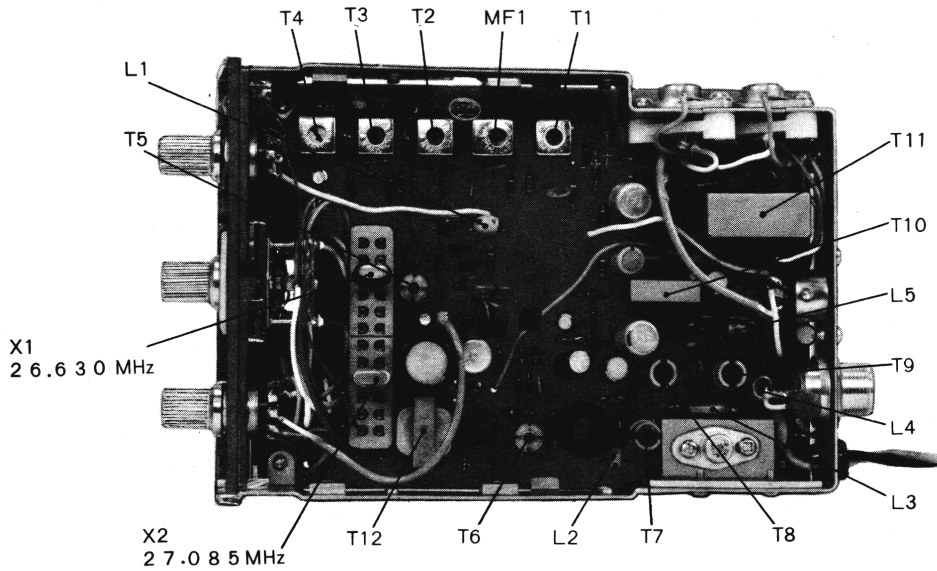


Fig. 7

REPLACEMENT PARTS

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
<b>RESISTORS:</b>					
C 1	0275111	Mylar	C 40	0251080	Same as C30
C 2	0275111	Same as C1	C 41	0275115	Same as C11
C 3	0245018	Ceramic	C 42	0275115	Same as C11
C 5	0245018	Same as C3	C 43	0245018	Same as C3
C 6	0245018	Same as C3	C 44	0252525	Same as C28
C 7	0275113	Mylar	C 45	0248706	Ceramic
C 8	0575113	Same as C7	C 46	0248646	Ceramic
C 9	0275113	Same as C7	C 47	0248724	Ceramic
C 10	0275114	Mylar	C 48	0245018	Same as C3
C 11	0275115	Mylar	C 49	0274111	Same as C33
C 12	0275115	Same as C11	C 50	0274111	Same as C33
C 13	0252223	Electrolytic	C 51	0275115	Same as C11
C 14	0244018	Ceramic	C 52	0248708	Ceramic
C 15	0244018	Same as C14	C 53	0245017	Same as C20
C 16	0275113	Same as C7	C 54	0274111	Same as C33
C 17	0276111	Mylar	C 55	0248724	Same as C47
C 18	0252513	Electrolytic	C 56	0248732	Ceramic
C 19	0248728	Ceramic	C 57	0248732	Same as C56
C 20	0245017	Ceramic	C 58	0248714	Ceramic
C 21	0248716	Ceramic	C 59	0248702	Ceramic
C 22	0248712	Ceramic	C 60	0248714	Same as C58
C 23	0245018	Same as C3	C 61	0248706	Same as C45
C 24	0245017	Same as C20	C 63	0245018	Same as C3
C 25	0252513	Same as C18	C 64	0252535	Electrolytic
C 26	0275115	Same as C11	C 65	0245019	Ceramic
C 27	0252523	Electrolytic	C 66	0248728	Same as C19
C 28	0252525	Electrolytic	C 67	0244018	Same as C14
C 29	0275111	Same as C1	C 68	0244018	Same as C14
C 30	0251080	Electrolytic	<b>RESISTORS:</b>		
C 31	0245018	Same as C3	R 1	0131733	Composition
C 32	0275115	Same as C11	R 2	0131659	Composition
C 33	0274111	Mylar	R 3	0131691	Composition
C 34	0275111	Same as C1	R 5	0131739	Composition
C 35	0252515	Electrolytic	R 6	0131691	Same as R3
C 36	0275111	Same as C1	R 7	0131691	Same as R3
C 37	0251080	Same as C30	R 8	0131739	Same as R5
C 38	0252515	Same as C35	R 9	0131803	Composition
C 39	0252331	Electrolytic	R 10	0131695	Composition
			R 11	0151164	Adjustable

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Symbol No.	Stock No.	Description		Symbol No.	Stock No.	Description		
R 12	0 31691	Same as R3		<b>TRANSFORMERS:</b>				
R 13	0131737	Composition	22k $\Omega$	T 1	5120099	High Frequency coil		
R 14	0131701	Composition	6.8k $\Omega$	T 2	0322146	IF		
R 15	0131657	Composition	470 $\Omega$	T 3	0322146	Same as T2		
R 16	0131691	Same as R3		T 4	5136022	IF		
R 17	0131801	Composition	100k $\Omega$	T 5	5123101	Oscillator coil		
R 18	0131743	Composition	68k $\Omega$	T 6	5123102	Oscillator coil		
R 19	0131743	Same as R18		T 7	0317195	High Frequency coil		
R 20	0131741	Composition	47k $\Omega$	T 8	0317196	Filter coil		
R 21	0131739	Same as R5		T 9	5123007	Filter coil		
R 22	0131803	Same as R9		T 10	5240101	Driver		
R 23	0131697	Composition	3.3k $\Omega$	T 11	5250611	Modulation		
R 24	0131741	Same as R20		T 12	5220001	Choke		
R 25	0151353	Variable	10k $\Omega$ (C)	<b>COILS:</b>				
R 26	0131733	Same as R1		L 1	5152075	Choke	12 $\mu$ H	
R 27	0131737	Same as R13		L 2	5152075	Same as L1		
R 28	0131733	Same as R1		L 3	0318546	Choke	2.2 $\mu$ F	
R 29	0131695	Same as R10		L 4	5150071	Choke	0.33 $\mu$ F	
R 30	0151723	Variable with switch	10k $\Omega$ (X)	L 5	5152075	Same as L1		
R 31	0131733	Same as R1		L 6	0318545	Choke	1 $\mu$ F	
R 32	0131741	Same as R20		<b>for Final assembly</b>				
R 33	0131739	Same as R5		5420131	Microphone			
R 34	0131695	Same as R10		7183331	Mic. Hanger			
R 35	0131737	Same as R13		8741405	Screw-3mm $\phi$ $\times$ 5mm bind (2 req'd)			
R 36	0131697	Same as R23		8832116	Bolt-5mm $\phi$ $\times$ 16mm (2 req'd)			
R 37	0131737	Same as R13		8811117	Washer-5mm $\phi$ (2 req'd)			
R 38	0131701	Same as R14		8813127	Spring washer-5mm $\phi$ (2 req'd)			
R 39	0131649	Composition	100 $\Omega$	8821117	Nut-5mm $\phi$ (2 req'd)			
R 40	0131699	Composition	4.7k $\Omega$	8785720	Screw-5mm $\phi$ $\times$ 20mm tapping (2 req'd)			
R 41	0131609	Composition	33 $\Omega$	6262961	Cover B ass'y			
R 42	0134369	Composition	470 $\Omega$ $\pm$ 10%	5410361	Speaker-7.7cm			
R 43	0134283	Composition	3.3 $\Omega$ $\pm$ 10%	7181461	Speaker holder			
R 44	0134283	Same as R43		8821114	Nut-3mm $\phi$ (3 req'd)			
R 45	0134293	Composition	22 $\Omega$ $\pm$ 10%	6263771	Knob			
R 46	0134293	Same as R45		7183321	Bracket ass'y			
R 47	0131655	Composition	330 $\Omega$	7502423	Fixing screw (2 req'd)			
R 48	0131695	Same as R10		8811118	Washer-6mm $\phi$ (2 req'd)			
R 49	0131699	Same as R40		8786440	Screw-3mm $\phi$ $\times$ 10mm flat (2 req'd)			
R 50	0131653	Composition	220 $\Omega$	8745406	Screw-3mm $\phi$ $\times$ 6mm bind (8req'd)			
R 51	0131657	Same as R15		6212951	Escutcheon ass'y			
R 52	0131611	Composition	4.7 $\Omega$	6605511	Ornament plate ass'y			
R 53	0131599	Composition	4.7 $\Omega$	5610121	Rotary switch			
R 54	0131611	Same as R52		0636390	Rubber plate-8mm $\phi$			
R 56	0131695	Same as R10		5760071	Lamp			
R 58	0131695	Same as R10		5760072	Lamp			
R 59	0131737	Same as R13		6706711	Channel indicator			
R 60	0131655	Same as R47		7777151	Set screw-4mm $\phi$ $\times$ 5mm			
R 61	0131737	Same as R13		<b>for Frame assembly</b>				
R 62	0131737	Same as R13		7114121	Frame			
R 63	0131699	Same as R40		7181451	Radiator plate			
R 64	0134377	Composition	2.2k $\Omega$ $\pm$ 10%	8741405	Screw-3mm $\phi$ $\times$ 5mm bind (6 req'd) for radiator, P.C.B. mounting			
<b>TRANSISTORS: DIODES: CRYSTALS:</b>				6700341	Transistor supporter			
Q 1	0573486	Transistor	2SC460(B)	0544408	Terminal			
Q 2	0573486	Same as Q1		8781438	Screw-3mm $\phi$ $\times$ 8mm tapping (4 req'd)			
Q 3	0573491	Transistor	2SC454(B)	8711410	Screw-3mm $\phi$ $\times$ 10mm pan head(2 req'd)			
Q 4	0573491	Same as Q3		8811114	Washer-3mm $\phi$ (2 req'd)			
Q 5	0573491	Same as Q3		8821114	Nut-3mm $\phi$ (2 req'd)			
Q 6	5320067	Transistor	2SC458(B,C,D)	0543180	Earphone jack			
Q 7	5320066	Transistor	2SC458(B,C)	0923542	Jack guide			
Q 8	5320022	Transistor	2SC458(LG/B)	0930155	Fiber washer-5mm $\phi$			
Q 9	5320066	Same as Q7		0541358	5P Socket			
Q 10	5320003	Transistor	2SC830(B/P)	5670312	Antenna connector			
Q 11	5320003	Same as Q10		0043793	Bushing			
Q 12	0573517	Transistor	2SC150(T)	5741191	Battery cord			
Q 13	0573519	Transistor	2SC116(T)	0591138	Fuse			
Q 14	0573541	Transistor	2SC609(T)	<b>for Printed circuit board assembly</b>				
D 1	0575005	Diode	1N60	5650301	Crystal socket			
D 2	0575005	Same as D1		0681852	Radiation plate			
D 3	0575005	Same as D1		0715106	Screw-2mm $\phi$ $\times$ 6mm pan head (2 req'd).			
D 4	0575001	Diode	1N34A(M)	8812231	Washer-2mm $\phi$ (2 req'd)			
D 5	0575001	Same as D4		5132081	Mechanical filter			
D 6	5330131	Diode	1S 2076					
D 7	0575001	Same as D4						
D 8	0575001	Same as D4						
D 9	5330101	Diode	VO6C					
D 10	5330131	Same as D6						
D 11	5330131	Same as D6						
D 12	5330101	Same as D9						
X 1	0599781	Crystal	26.630MHz				RX	
X 2	5780062	Crystal	27.085MHz				TX	





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