

REALISTIC[®]

Service Manual

21-151

TRC-55 CITIZENS BAND TRANSCEIVER

Catalog Number 21-151



CUSTOM MANUFACTURED FOR RADIO SHACK  A TANDY CORPORATION COMPANY

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SPECIFICATIONS

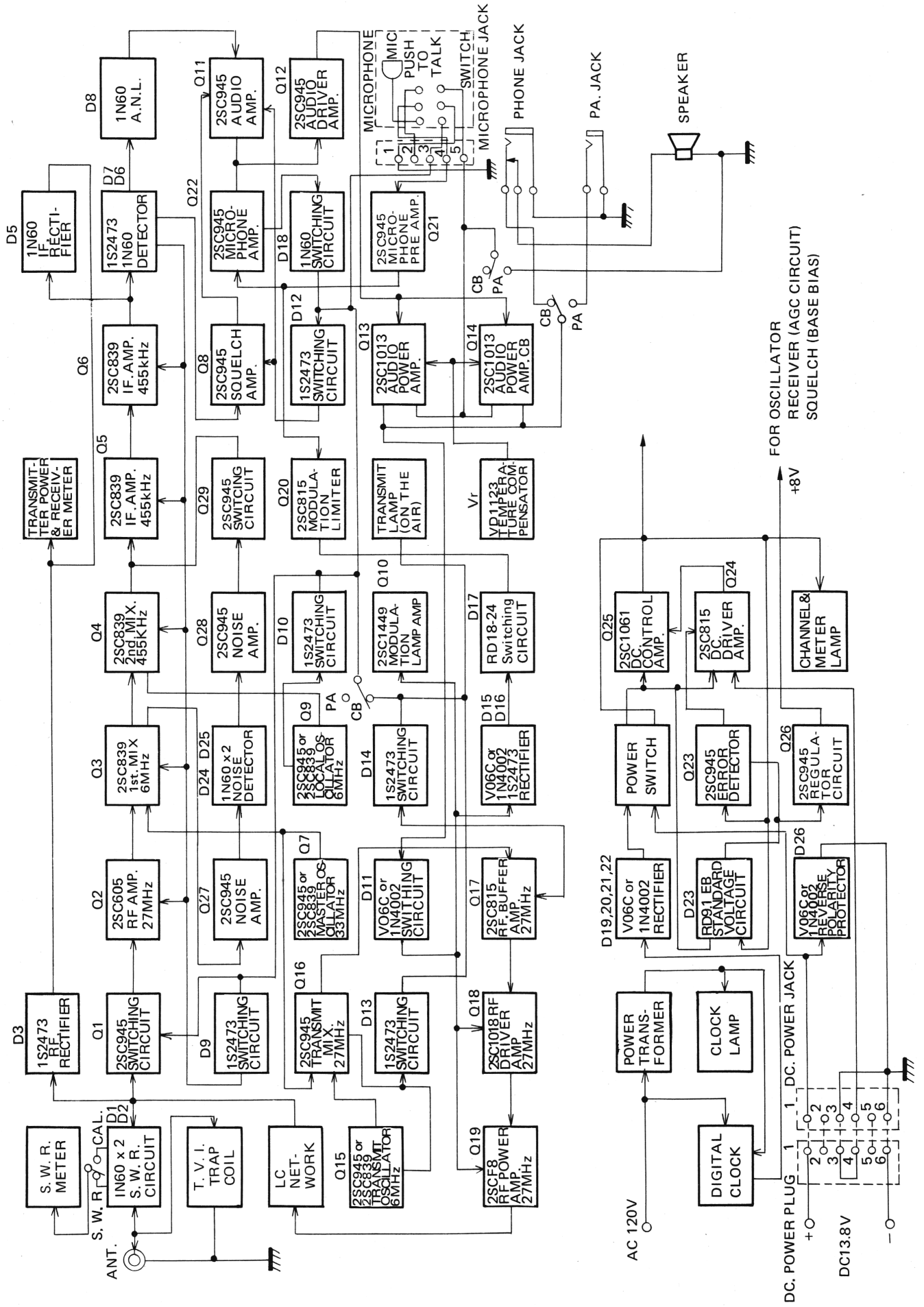
ELECTRICAL SPECIFICATION

RECEIVER SECTION	<u>Nominal</u>	<u>Limit</u>
Sensitivity for 10dB (S + N)/N	0.5 μ V	1 μ V
Squelch Threshold	0.5 μ V	1 μ V
Tight	1mV	0.5 – 2mV
Cross modulation	45dB	40dB
Image rejection	50dB	40dB
IF rejection	60dB	50dB
Spurious response	45dB	35dB
AGC Figure of merit (input 50mV)	90dB	80dB
Selectivity (\pm 10kHz point)	55dB	50dB
Band width (-6dB point)	6kHz	5kHz
AF Output distortion (80% MOD. 1mV input)	8%	10%
AF Output power at 10% distortion	4W	3W
Fine tune range	\pm 1.3kHz	\pm 1kHz
Current drain at DC 13.8V (no signal)	0.2A	–
Current drain at DC 13.8V (full signal)	1.2A	–

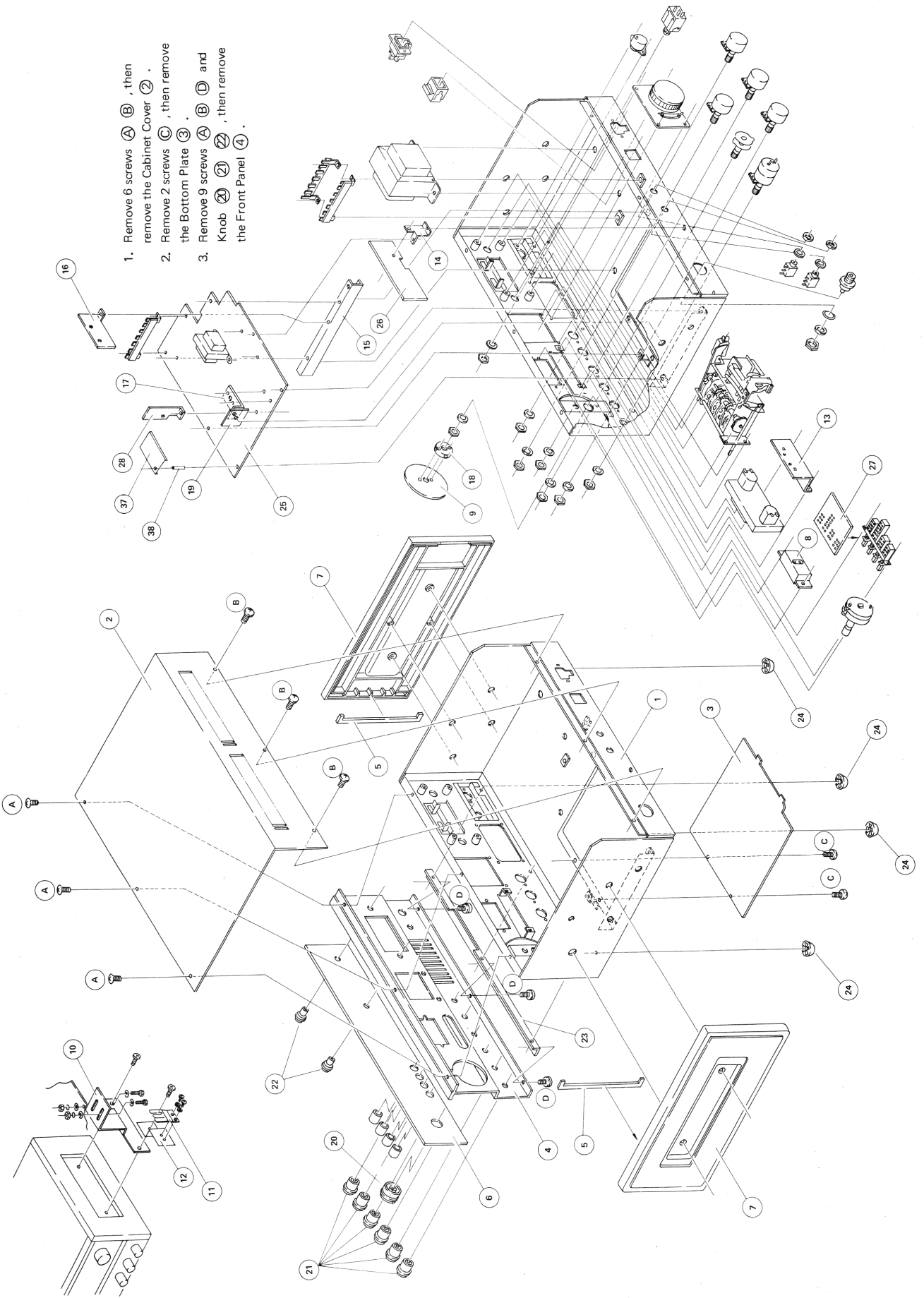
TRANSMITTER SECTION

Frequency tolerance		\pm 0.005%
RF Power output	4W	3W
Modulation	95%	75%
Distortion at 80% MOD.	8%	10%
Spurious attenuation	55dB	50dB
Current drain at DC 13.8V (no modulation)	0.8A	–
Current drain at DC 13.8V (full modulation)	1.3A	–

LOW-DISKARD

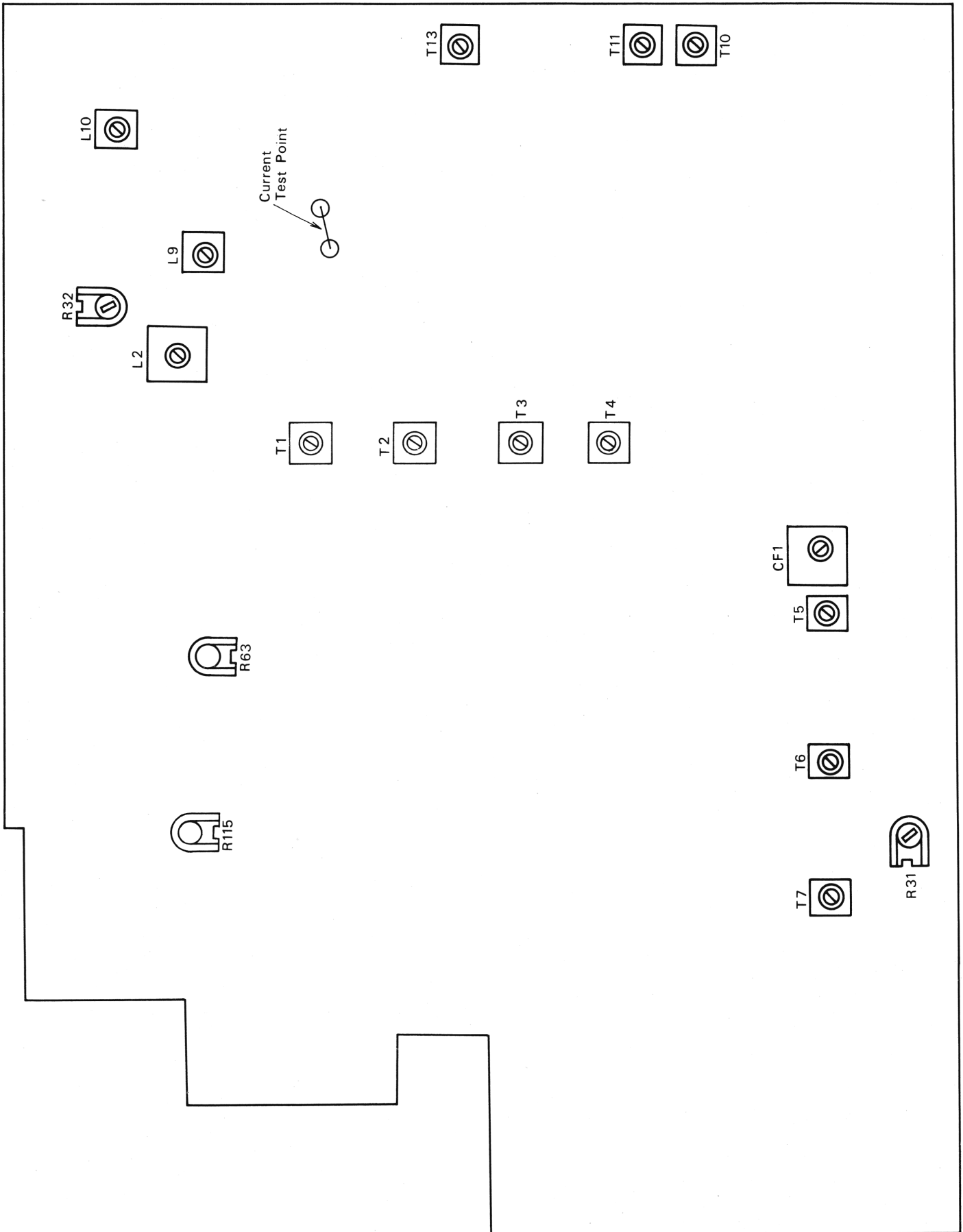


DISASSEMBLY INSTRUCTION & ILLUSTRATION



1. Remove 6 screws (A), then remove the Cabinet Cover (2).
2. Remove 2 screws (C), then remove the Bottom Plate (3).
3. Remove 9 screws (A), (B), (D) and Knob (21), (22), then remove the Front Panel (4).

ALIGNMENT POINTS



ALIGNMENT OF RECEIVER SECTION

EQUIPMENT REQUIRED

Signal generator 455kHz and 27MHz band, 1000Hz,
30% AM. Output Impedance 50 ohms

Audio Meter across 8 ohms 5 Watt load

DC Power Supply ... 13.8 Volts 1.5A

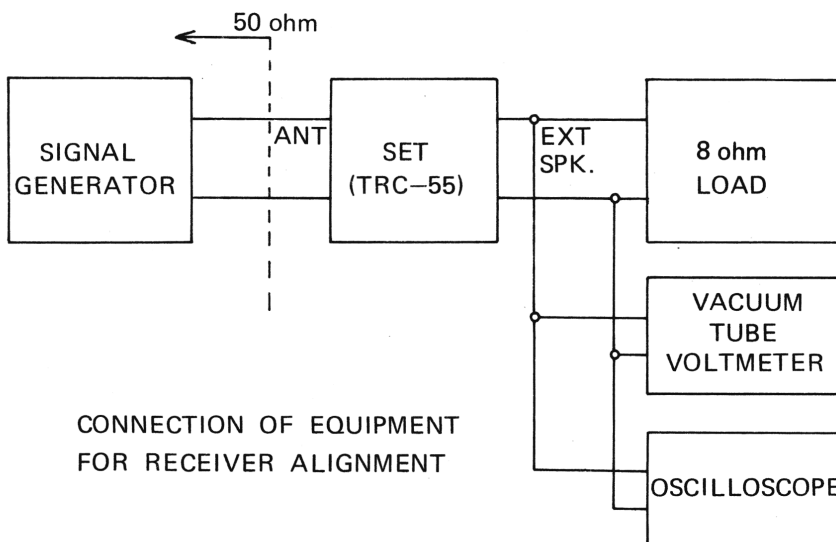
Oscilloscope

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 output meter).

Adjustment circuit



Step	Item	Set condition	Signal Generator	Adjustment	Remarks
1	Power Regulator	ANL: OFF RF GAIN: Fully clockwise	DC Volt Meter Q25 Emitter & Ground	R115	AC 60Hz 120V Adjust for 13.8V Meter Scale
	Sensitivity	VOL: Fully clockwise SQUELCH: Fully counterclockwise NOISE BLANKER Switch: OFF CHANNEL: 13CH Meter: S.RF FINE TUNING (O)	CH.13: 27,115MHz 1,000 Hz 30% Mod	T5,6,7 CF1 T1,2,3,4 L2	Adjust for max. output on VTVM
2	Max. Sensitivity	Same as Step 1	Same as Step 1	Same as Step 1	Adjust so that output is 2V when input from SG (signal generator) is $0.5\mu\text{V}$
3	S. Meter	Same as Step 1	Same as Step 1	R31	Adjust so that S meter (on the set) indicate S.9 when input from SG is $100\mu\text{V}$
4	Squelch	Same as Step 1	Same as Step 1	Volume Control	Adjust so that output is 2V when Signal To Noise RATIO is -10dB
5	Squelch	Same as Step 1 Squelch: Full clockwise	Same as Step 1	R63	Adjust so that output is 2V when input from SG is $1000\mu\text{V}$

ALIGNMENT OF TRANSMITTER SECTION

NOTE

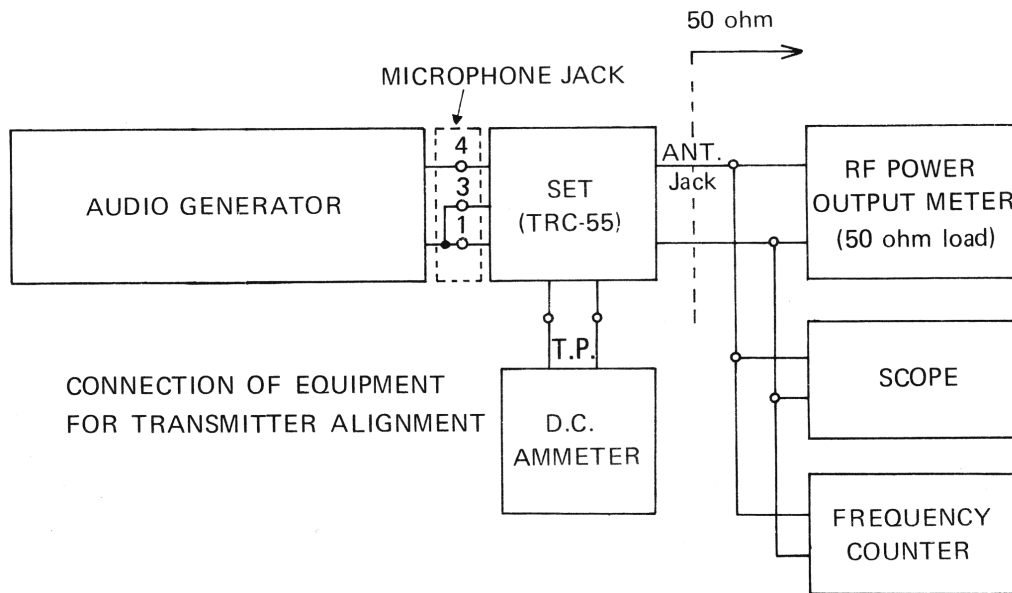
This transceiver meets all requirements of F.C.C. Rules and Regulations, Part 95. In order to operate the transceiver the user must be licensed. Obtaining an operator's license is a simple procedure. However, only those persons properly licensed by the F.C.C. are permitted to repair or adjust any malfunctioning unit found to be transmitting illegally (refer to F.C.C. Rules and Regulations, Part 95. Subpart C Section 95.53 (C).

EQUIPMENT REQUIRED

FR Dummy Load/Power Output Meter 50 ohms, 5 Watts
 Frequency Counter
 DC mA meter 500/1000mA
 DC Power Supply 13.8 Volts, 1.5A
 Scope or Field strength Meter

PROCEDURE

Allow test equipment and set at least 15 minutes to warm up before starting the alignment.
 RF output meter or 50 ohm non-inductive dummy load must be connected to ANT. jack.



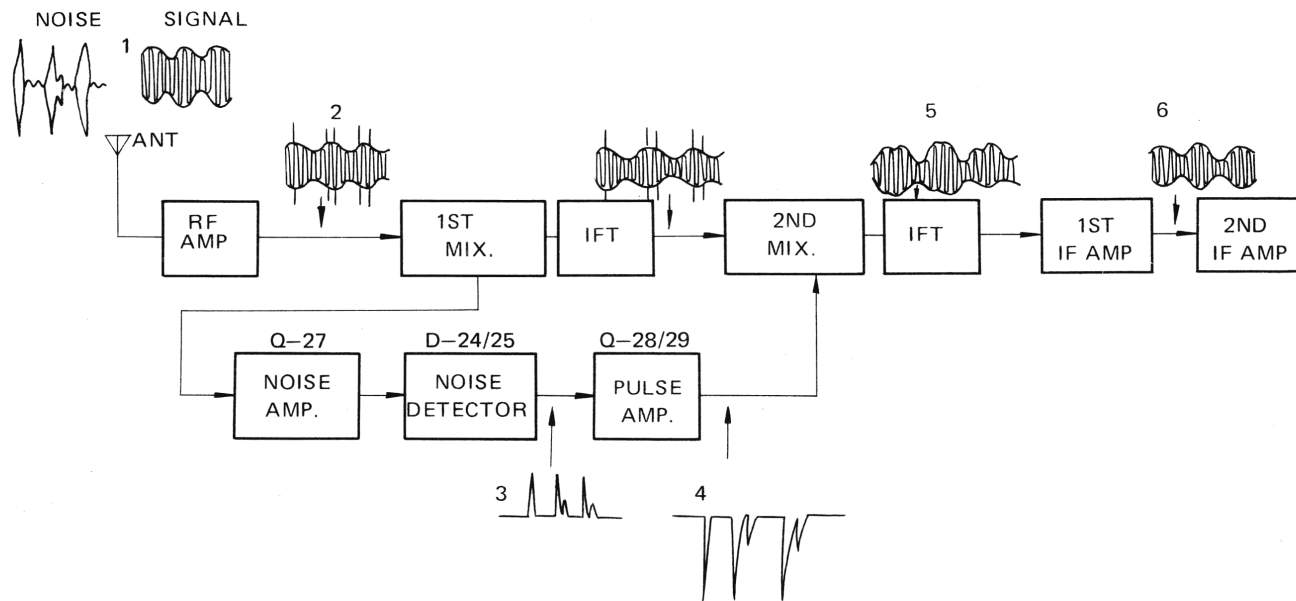
Step	Item	Set condition	Audio Osc.	Adjustment	Remarks
1	Output	CAL Switch: OFF Channel : 13CH Push to Talk Switch: ON	OFF	T10, T11, T13 L10	Adjust for max. output
2	Output	Same as Step 1	OFF	L9	Adjust for Ammeter reading of 400mA
3	RF Meter	Same as Step 1	OFF	R32	Adjust so that the RF meter (on the Set) agrees with W meter reading.
4	Output	Same as Step 1	Check that output is from 3 to 4 watts.		
5		Same as Step 1	Check frequency of each channel (should be within ± 800 Hz).		

PRINCIPLES OF OPERATION AND ADJUSTMENT PROCEDURE OF SPECIAL CIRCUITS

A. NOISE BLANKER

Operation principle:

Pulse type noise, with signal, is amplified by Q27 and the noise is detected by D24 and D25. The detected pulse is amplified through Q28 and Q29, negative pulse output is obtained from Collector of Q29. The negative pulse is applied through C112 to the Collector of Q4 (2nd Mixer) to blank out the noise.



As in the above illustration, the antenna takes in signal and noise as shown in waveforms at 1. The mixed waveform is amplified by the RF amplifier into waveform 2. The Noise Blanking circuit re-inserts the pulse spikes—with opposing polarity—and the resultant waveform will be the signal waveform having recesses in the envelope as shown by waveform 5. This waveform will be smoothed into one like waveform 6 as it passes through the tuned circuits.

Checking procedure:

Using a pulse generator, feed noise into the antenna terminal. The Noise Blanking circuit is operating normally if the noise from the speaker drops off when the Noise Blanking is turned on. For checking the performance of the pulse amplifier Q29, use a scope to check that a positive pulse input supplied to Base of Q29 and is amplified and becomes a negative pulse output at Collector of Q29.

B. FINE TUNE CIRCUIT

Operation principle:

This circuit enables optimum reception even when the transmitting frequency of the received station is deviating from the center frequency. With this circuit, the oscillation frequency of Q9 (receive oscillator) is varied by C45 and C47/L5. The intermediate frequency amplifier circuit has been adjusted for the best reception with the receiving frequency in the center of the channel. When the received station is off-channel in frequency, the intermediate frequency will also be off. Thus it is necessary to vary the 2nd Oscillator injection frequency. This change in 2nd Oscillator injection frequency results in bringing the received signal back into the center of the 2nd IF bandpass. The frequency decreases when L5 (and C47 which is in parallel with L5) is inserted in series with the crystal, and increases when C45 is inserted.

Checking procedure:

Use a high sensitivity Frequency Counter to check at the base of Q4 (2nd converter) that the oscillation frequency of Q9 oscillator changes approximately $\pm 700\text{Hz}$ when Fine Tuning is operated (no signal input).

C. ALC (overmodulation limiter circuit)

Operation principle:

This gain control circuit detects part of T9 (modulation transformer) output by D15, D16 and D17 thru C82 and controls the base bias of Q20 (LEVEL CONTROL) with the detected DC voltage. This in turn controls the gain of Mic AMP Q22).

Checking procedure:

Simply check that the base voltage of Q20 increases with overmodulation (as compared to the "no modulation" voltage).

FREQUENCY AND TOLERANCE OF EACH CHANNEL

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	26.965MHz±0.005%	9	27.065MHz±0.005%	17	27.165MHz±0.005%
2	26.975MHz±0.005%	10	27.075MHz±0.005%	18	27.175MHz±0.005%
3	26.985MHz±0.005%	11	27.085MHz±0.005%	19	27.185MHz±0.005%
4	27.005MHz±0.005%	12	27.105MHz±0.005%	20	27.205MHz±0.005%
5	27.015MHz±0.005%	13	27.115MHz±0.005%	21	27.215MHz±0.005%
6	27.025MHz±0.005%	14	27.125MHz±0.005%	22	27.225MHz±0.005%
7	27.035MHz±0.005%	15	27.135MHz±0.005%	23	27.255MHz±0.005%
8	27.055MHz±0.005%	16	27.155MHz±0.005%		

TROUBLE SHOOTING

RECEIVER SECTION

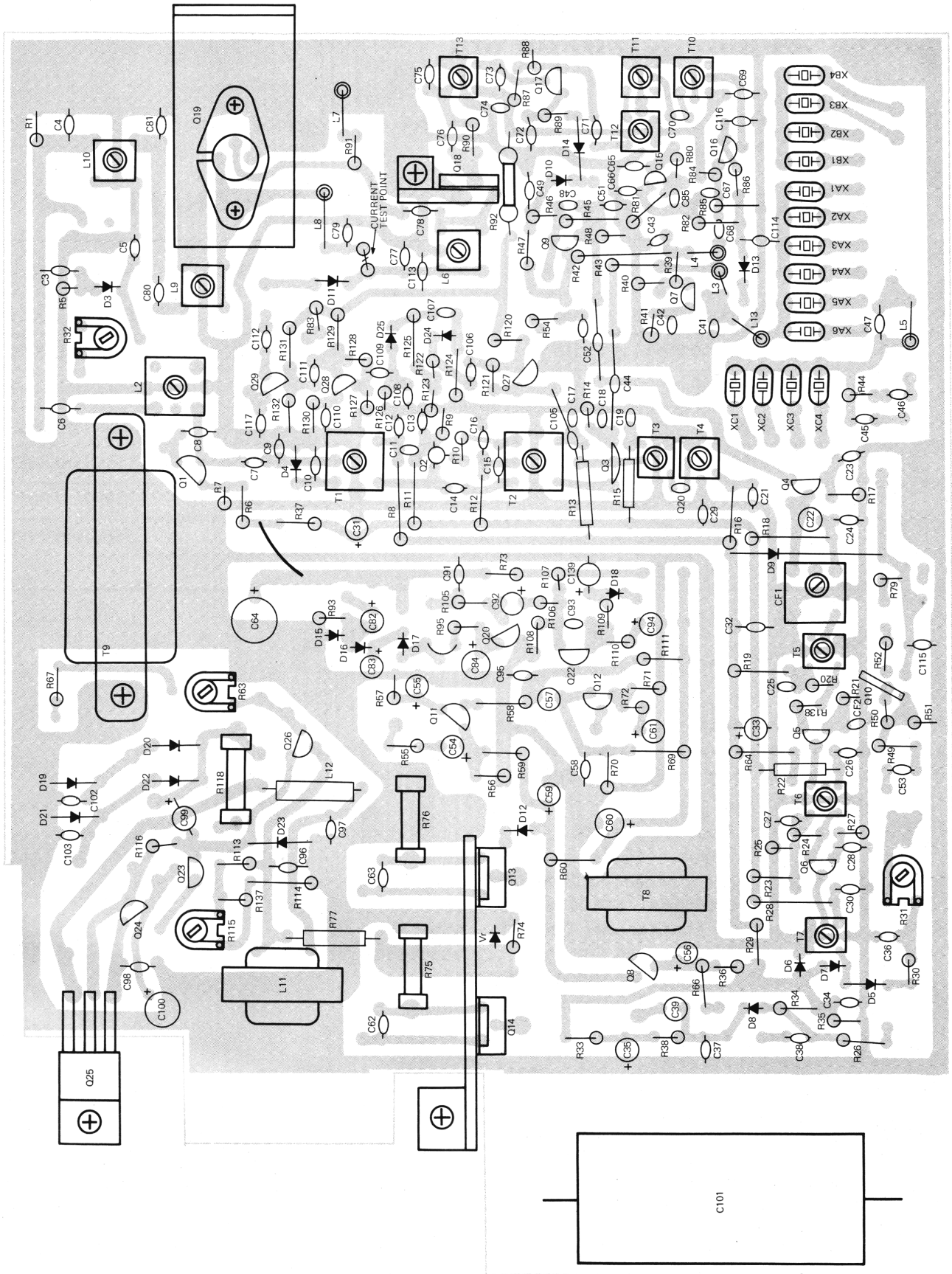
- (1) Pilot lamp does not light when power switch is turned on:
 - a. Check that power supply is connected with correct polarity.
 - b. Check if power supply circuit is shorted or open.
- (2) No sound (noise) from speaker:
 - a. Check if speaker leads are broken.
Also, check other leads.
 - b. Check for presence of 33 and 6 MHz oscillation.
Check that both oscillations are strong enough.
33MHz: Between Q3 Emitter and Ground: more than 80 mv
6MHz: Between Q4 Base and Ground: more than 50 mv
 - c. Check that each transistor is operating normally.
 - d. Check that audio section is normal (signal trace).
- (3) RF meter operation is abnormal:
 - a. Check that switching is ok.
 - b. Check if meter terminals are touching shield, chassis or other parts.

TRANSMITTER SECTION:

- (1) No output:
 - a. Check that microphone plug is inserted correctly.
 - b. Try replacing microphone with a good one.
 - c. Check for presence of 33 and 6MHz oscillation.
If so, are they strong enough?
33MHz: Between Q16 Base and Ground: more than 700mv
6MHZ: Between Q15 Emitter and Ground: more than 1500mv
 - d. Check that each transistor is operating normally.

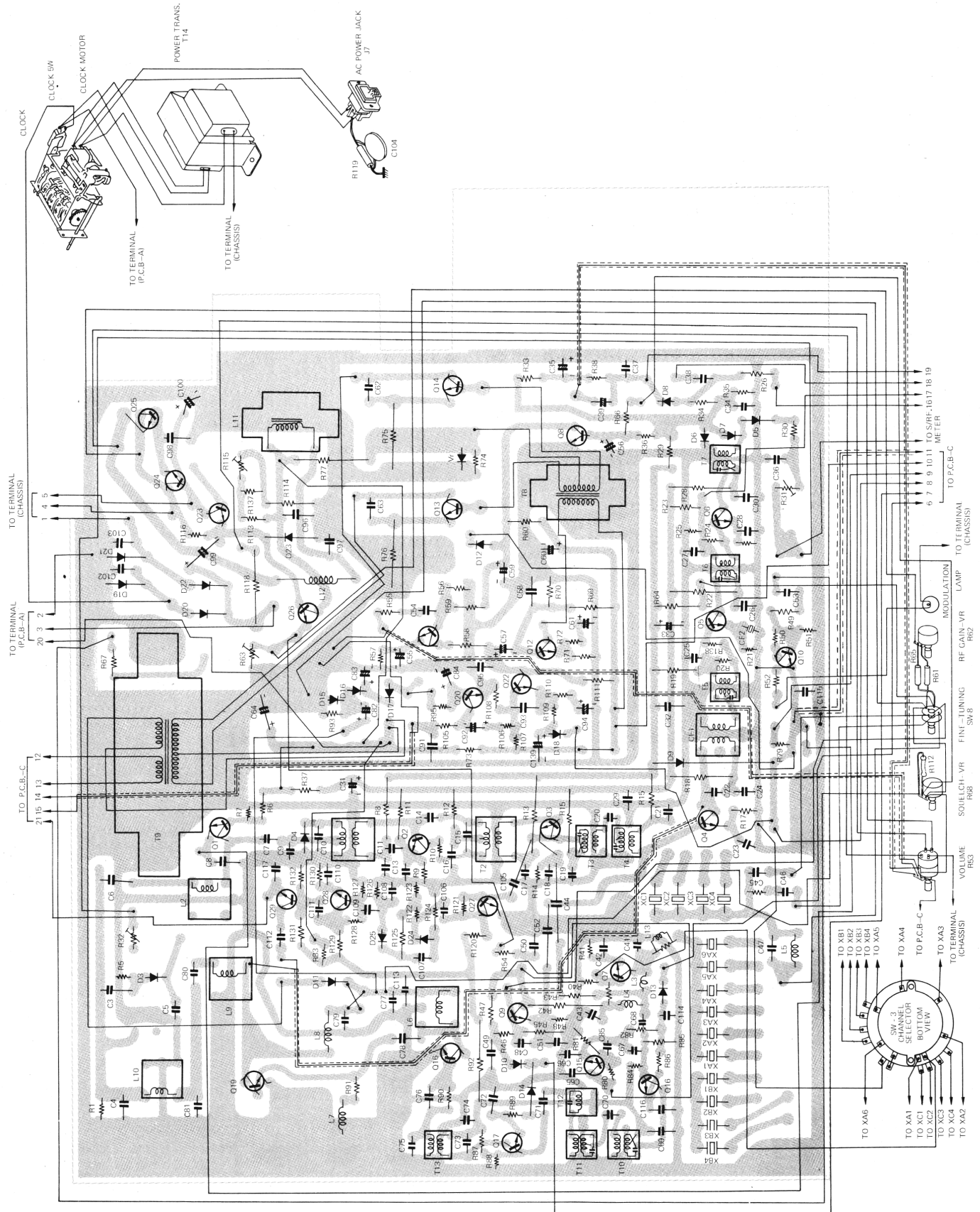
MAIN P.C. BOARD (TOP VIEW)

(P.C.B. - A)

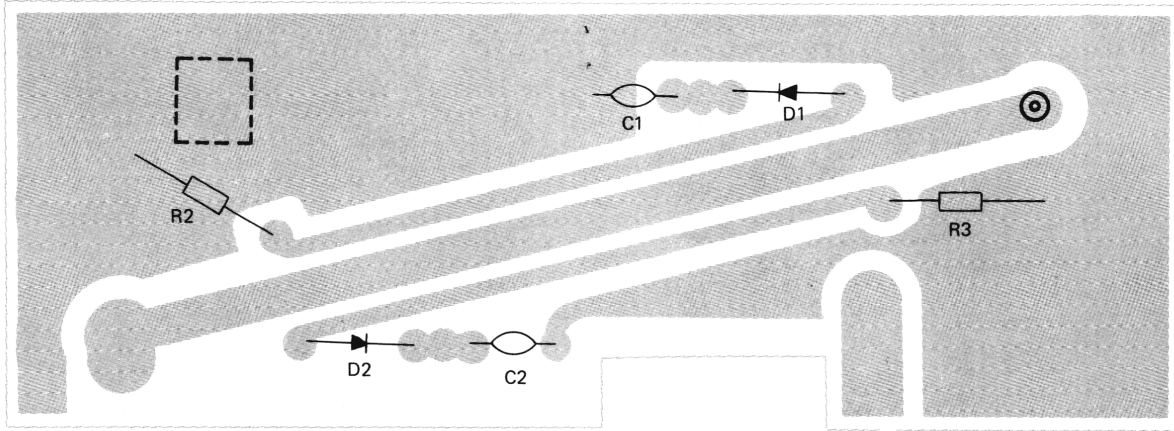


MAIN P.C. BOARD (BOTTOM VIEW)

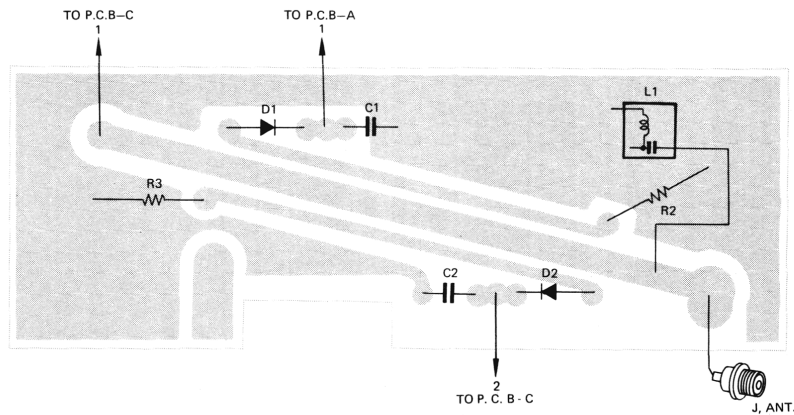
(P. C. B. - A)



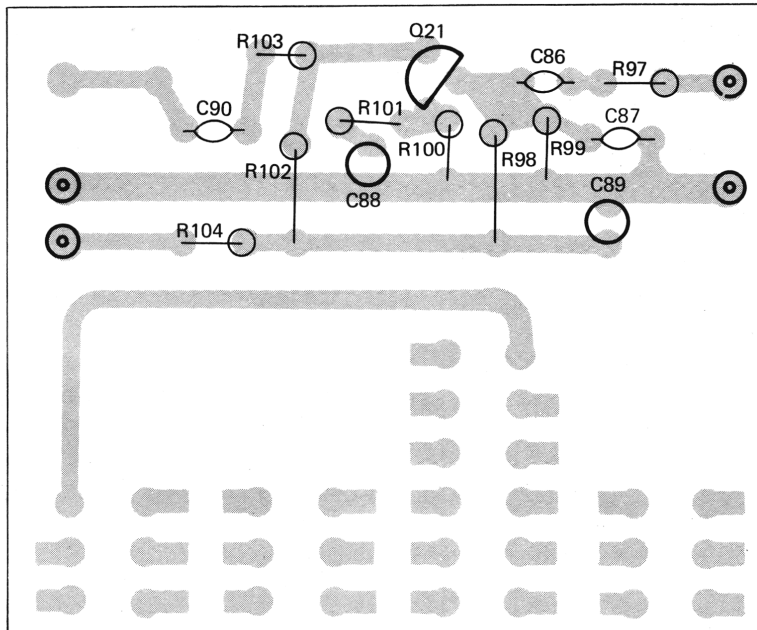
S.W.R. P.C. BOARD (TOP VIEW)
(P. C. B. - B)



S.W.R.P.C. BOARD (BOTTOM VIEW)
(P. C. B. - B)

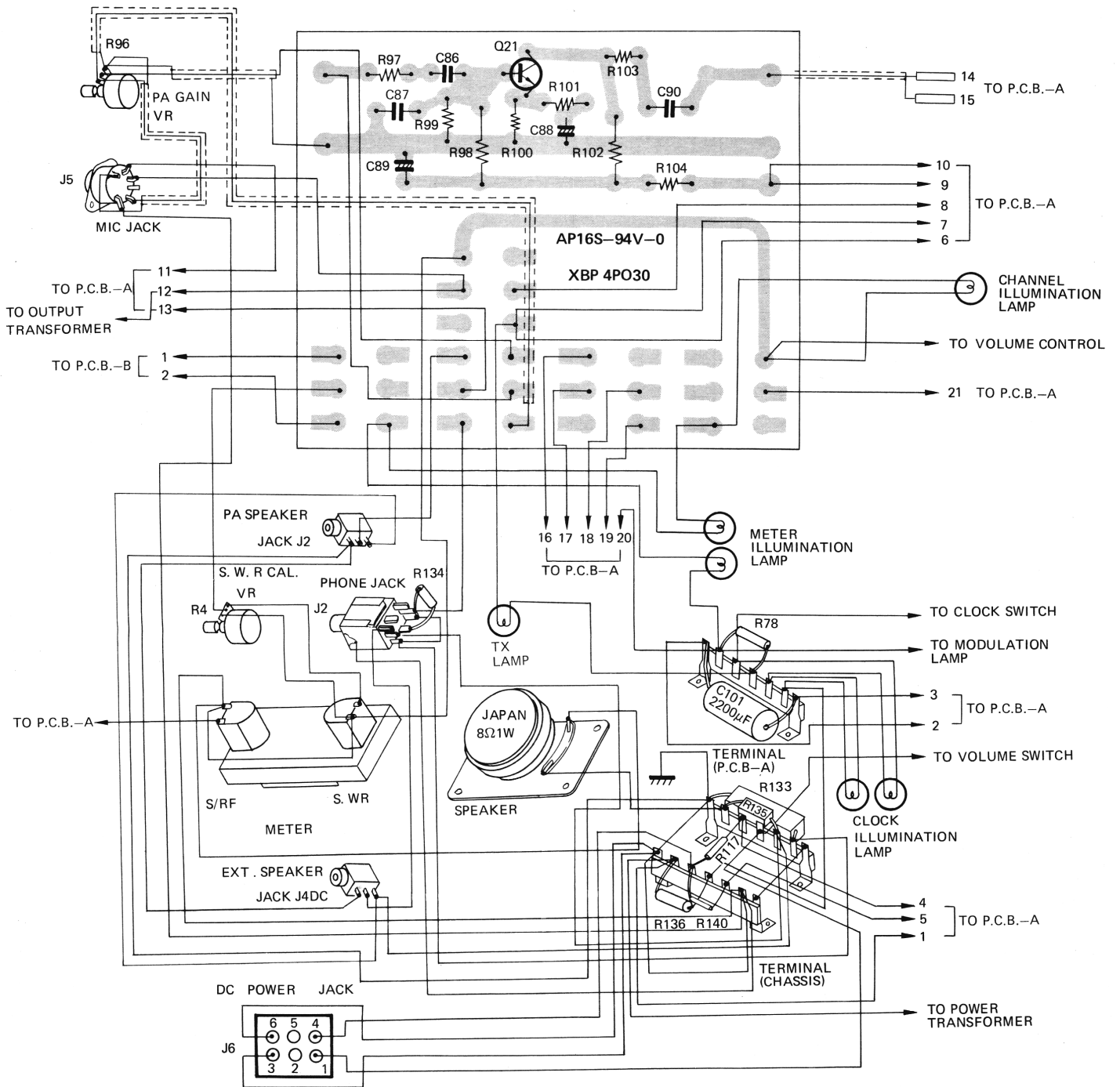


MIC. AMP. P.C. BOARD (TOP VIEW)
(P. C. B. - C)



MIC. AMP. P.C. BOARD & REAR WIRING (BOTTOM VIEW)

(P. C. B. - C)



TRANSISTOR VOLTAGE CHART

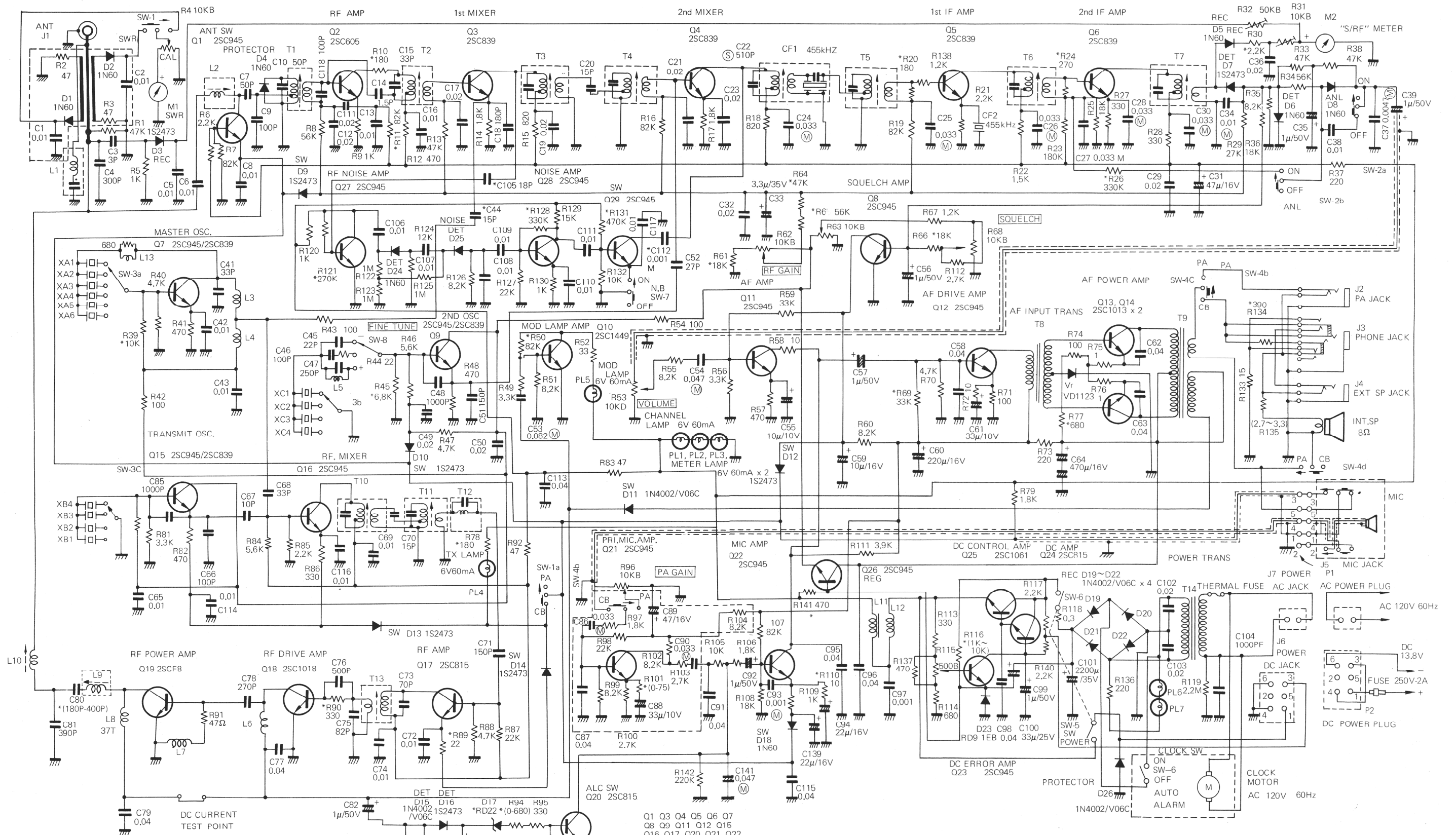
1. POWER SUPPLY VOLTAGE = 13.2V
2. ALL VOLTAGE READINGS ARE WITH NO SIGNAL APPLIED
3. MEASURED BY V. T. V. M.

		RX(V)	TX(V)			RX(V)	TX(V)
Q 1	B	10.9	0.75	Q16	B	—	2.6
	E	13.6	0		E	—	3.3
	C	10.6	0		C	—	11.8
Q 2	B	1.3	—	Q17	B	—	1.5
	E	0.6	—		E	—	1.0
	C	12.9	—		C	—	11.4
Q 3	B	1.3	—	Q18	B	—	-0.05
	E	0.8	—		E	—	0
	C	12.8	—		C	—	12.5
Q 4	B	1.3	—	Q19	B	—	-0.2
	E	0.6	—		E	—	0
	C	12.9	—		C	—	12.5
Q 5	B	1.2	—	Q20	B	—	0
	E	0.6	—		E	—	0
	C	12.9	—		C	—	0
Q 6	B	1.0	—	Q21	B	—	1.8
	E	0.4	—		E	—	1.2
	C	12.9	—		C	—	3.0
Q 7	B	2.1	2.1	Q22	B	—	1.8
	E	2.9	2.9		E	—	1.2
	C	6.8	6.8		C	—	3.0
Q 8	B	0.05	—	Q23	B	—	9.4
	E	0	—		E	—	8.9
	C	9.7	—		C	—	15.1
Q 9	B	2.1	—	Q24	B	—	15.1
	E	2.68	—		E	—	14.5
	C	6.9	—		C	—	19.1
Q10	B	—	0.6	Q25	B	—	14.5
	E	—	0		E	—	13.8
	C	—	13.1		C	—	19.2
Q11	B	0.9	—	Q26	B	8.9	8.9
	E	0.3	—		E	8.3	8.3
	C	9.4	—		C	13.8	13.8
Q12	B	1.4	—	Q27	B	0.6	—
	E	0.8	—		E	0	—
	C	10.3	—		C	6.4	—
Q13	B	0.7	—	Q28	B	0.7	—
	E	0.015	—		E	0.1	—
	C	13.8	—		C	10.9	—
Q14	B	0.7	—	Q29	B	0.3	—
	E	0.015	—		E	—	—
	C	13.8	—		C	—	—
Q15	B	—	2.5				
	E	—	2.9				
	C	—	6.9				

CRYSTAL SYNTHESIS TABLE

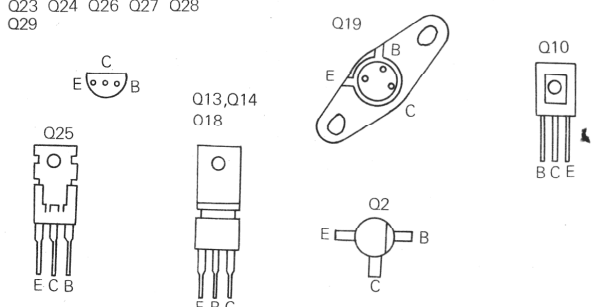
	Transmit				Receive				
	6.035	6.025	6.015	5.995	6.490	6.480	6.470	6.450	
33.000	1	2	3	4	1	2	3	4	
33.050	5	6	7	8	5	6	7	8	
33.100	9	10	11	12	9	10	11	12	
33.150	13	14	15	16	13	14	15	16	
33.200	17	18	19	20	17	18	19	20	
33.250	21	22	—	23	21	22	—	23	
1st IF (6.035–5.995MHZ)				2nd IF 455KHZ					

CIRCUIT DIAGRAM



CRYSTAL SYNTHESIZER

XA1	33,000 MHz	XB4	6.035 MHz
XA2	33,050 MHz	XB3	6.025 MHz
XA3	33,100 MHz	XB2	6.015 MHz
XA4	33,150 MHz	XB1	5.995 MHz
XA5	33,200 MHz		
XA6	33,250 MHz		
XC1	6.490 MHz		
XC2	6.480 MHz		
XC3	6.470 MHz		
XC4	6.450 MHz		



- NOTE:**
- 1) (M) MYLAR CAPACITOR
 - 2) (S) STYROL FILM CAPACITOR
 - 3) ALL RESISTORS VALUES ARE INDICATED IN OHM (K.....10³, M.....10⁶ OHM)
 - 4) ALL CAPACITORS VALUES ARE INDICATED IN μF (P.....10⁻⁶ μF)
 - 5) * THESE VALUES MAY VARY FROM UNIT TO UNIT.

PARTS LIST

Symbol No.	Description	RS Parts No.	Symbol No.	Description	RS Parts No.
RESISTORS			R 44	Carbon Film 22Ω ±10% ¼GF	
R 1	Composition 47kΩ ±10% ½GF		R 45	Carbon Film 6.8kΩ ±10% ¼GF	
R 2	Carbon Film 47Ω ±10% ¼GF		R 46	Carbon Film 5.6kΩ ±10% ¼GF	
R 3	Carbon Film 47Ω ±10% ¼GF		R 47	Carbon Film 4.7kΩ ±10% ¼GF	
R 4	Variable 10kΩ - B	P-1489	R 48	Carbon Film 470Ω ±10% ¼GF	
R 5	Carbon Film 1kΩ ±10% ¼GF		R 49	Carbon Film 3.3kΩ ±10% ¼GF	
R 6	Carbon Film 2.2kΩ ±10% ¼GF		R 50	Carbon Film 82kΩ ±10% ¼GF	
R 7	Carbon Film 8.2kΩ ±10% ¼GF		R 51	Carbon Film 8.2kΩ ±10% ¼GF	
R 8	Carbon Film 56kΩ ±10% ¼GF		R 52	Carbon Film 33Ω ±10% ¼GF	
R 9	Carbon Film 1kΩ ±10% ¼GF		R 53	Variable 10kΩ - D VOLUME	P-1488
R 10	Carbon Film 180Ω ±10% ¼GF		R 54	Carbon Film 100Ω ±10% ¼GF	
R 11	Carbon Film 82kΩ ±10% ¼GF		R 55	Carbon Film 8.2kΩ ±10% ¼GF	
R 12	Carbon Film 470Ω ±10% ¼GF		R 56	Carbon Film 3.3kΩ ±10% ¼GF	
R 13	Composition 47kΩ ±10% ¼GF		R 57	Carbon Film 470Ω ±10% ¼GF	
R 14	Carbon Film 1.8kΩ ±10% ¼GF		R 58	Carbon Film 10Ω ±10% ¼GF	
R 15	Composition 820Ω ±10% ¼GF		R 59	Carbon Film 33kΩ ±10% ¼GF	
R 16	Carbon Film 82kΩ ±10% ¼GF		R 60	Carbon Film 8.2kΩ ±10% ¼GF	
R 17	Carbon Film 1.8kΩ ±10% ¼GF		R 61	Carbon Film 18kΩ ±10% ¼GF	
R 18	Carbon Film 820Ω ±10% ¼GF		R 62	Variable 10kΩ - B	P-1489
R 19	Carbon Film 82kΩ ±10% ¼GF		R 63	Semi Variable 10kΩ - B	P-6243
R 20	Carbon Film 180Ω ±10% ¼GF		R 64	Carbon Film 47kΩ ±10% ¼GF	
R 21	Carbon Film 2.2kΩ ±10% ¼GF		R 65	Carbon Film 56kΩ ±10% ¼GF	
R 22	Composition 1.5kΩ ±10% ¼GF		R 66	Carbon Film 18kΩ ±10% ¼GF	
R 23	Carbon Film 180kΩ ±10% ¼GF		R 67	Carbon Film 1.2kΩ ±10% ¼GF	
R 24	Carbon Film 270Ω ±10% ¼GF		R 68	Variable 10kΩ - B SQUELCH	P-1489
R 25	Carbon Film 18kΩ ±10% ¼GF		R 69	Carbon Film 33kΩ ±10% ¼GF	
R 26	Carbon Film 330kΩ ±10% ¼GF		R 70	Carbon Film 4.7kΩ ±10% ¼GF	
R 27	Carbon Film 330Ω ±10% ¼GF		R 71	Carbon Film 100Ω ±10% ¼GF	
R 28	Carbon Film 330Ω ±10% ¼GF		R 72	Carbon Film 10Ω ±10% ¼GF	
R 29	Carbon Film 27kΩ ±10% ¼GF		R 73	Carbon Film 220Ω ±10% ¼GF	
R 30	Carbon Film 2.2kΩ ±10% ¼GF		R 74	Carbon Film 100Ω ±10% ¼GF	
R 31	Semi Variable 10kΩ - B	P-6243	R 75	Wire Wound 1Ω ±10% 1GF	
R 32	Semi Variable 50kΩ - B	P-6244	R 76	Wire Wound 1Ω ±10% 1GF	
R 33	Carbon Film 47kΩ ±10% ¼GF		R 77	Composition 680Ω ±10% ½GF	
R 34	Carbon Film 56kΩ ±10% ¼GF		R 78	Composition 180Ω ±10% 1GF	
R 35	Carbon Film 8.2kΩ ±10% ¼GF		R 79	Carbon Film 1.8kΩ ±10% ¼GF	
R 36	Carbon Film 18kΩ ±10% ¼GF		R 80	Carbon Film 4.7kΩ ±10% ¼GF	
R 37	Carbon Film 220Ω ±10% ¼GF		R 81	Carbon Film 3.3kΩ ±10% ¼GF	
R 38	Carbon Film 47kΩ ±10% ¼GF		R 82	Carbon Film 470Ω ±10% ¼GF	
R 39	Carbon Film 10kΩ ±10% ¼GF		R 83	Carbon Film 47Ω ±10% ¼GF	
R 40	Carbon Film 4.7kΩ ±10% ¼GF		R 84	Carbon Film 5.6kΩ ±10% ¼GF	
R 41	Carbon Film 470Ω ±10% ¼GF		R 85	Carbon Film 2.2kΩ ±10% ¼GF	
R 42	Carbon Film 100Ω ±10% ¼GF		R 86	Carbon Film 330Ω ±10% ¼GF	
R 43	Carbon Film 100Ω ±10% ¼GF		R 87	Carbon Film 22kΩ ±10% ¼GF	

Symbol No.	Description	RS Parts No.	Symbol No.	Description	RS Parts No.
R 88	Carbon Film 4.7k Ω $\pm 10\%$ $\frac{1}{4}$ GF	P-1489	R134	Composition 390 Ω $\pm 10\%$ $\frac{1}{2}$ GF	
R 89	Carbon Film 22 Ω $\pm 10\%$ $\frac{1}{4}$ GF		R135	Wire Wound 3.3 Ω $\pm 10\%$ 5GF	
R 90	Carbon Film 330 Ω $\pm 10\%$ $\frac{1}{4}$ GF		R136	Composition 220 Ω $\pm 10\%$ 1GF	
R 91	Carbon Film 47 Ω $\pm 10\%$ $\frac{1}{4}$ GF		R137	Carbon Film 470 Ω $\pm 10\%$ $\frac{1}{4}$ GF	
R 92	Carbon Film 47 Ω $\pm 10\%$ $\frac{1}{4}$ GF		R138		
R 93	Carbon Film 10k Ω $\pm 10\%$ $\frac{1}{4}$ GF		R139		
R 94			R140	Composition 2.2k Ω $\pm 10\%$ $\frac{1}{4}$ GF	
R 95	Carbon Film 330 Ω $\pm 10\%$ $\frac{1}{4}$ GF		R141	Composition 470 Ω $\pm 10\%$ $\frac{1}{4}$ GF	
R 96	Variable 10k Ω B PA CAIN		R142	Composition 220k Ω $\pm 10\%$ $\frac{1}{4}$ GF	
R 97	Carbon Film 1.8k Ω $\pm 10\%$ $\frac{1}{4}$ GF		CAPACITORS		
R 98	Carbon Film 22k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 1	Ceramic disc 0.01 μ F +80% -20%	
R 99	Carbon Film 8.2k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 2	Ceramic disc 0.01 μ F +80% -20%	
R100	Carbon Film 2.7k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 3	Ceramic disc 3pF $\pm 10\%$	
R101	Carbon Film 47 Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 4	Ceramic disc 300pF $\pm 10\%$	
R102	Carbon Film 8.2k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 5	Ceramic disc 0.01 μ F +80% -20%	
R103	Carbon Film 2.7k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 6	Ceramic disc 0.01 μ F +80% -20%	
R104	Carbon Film 8.2k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 7	Ceramic disc 50pF $\pm 10\%$	
R105	Carbon Film 10k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 8	Ceramic disc 0.01 μ F +80% -20%	
R106	Carbon Film 1.8k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 9	Ceramic disc 100pF $\pm 10\%$	
R107	Carbon Film 82k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 10	Ceramic disc 50pF $\pm 10\%$	
R108	Carbon Film 18k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 11	Ceramic disc 0.02 μ F +80% -20%	
R109	Carbon Film 1k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 12	Ceramic disc 0.02 μ F +80% -20%	
R110	Carbon Film 10 Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 13	Ceramic disc 0.01 μ F +80% -20%	
R111	Carbon Film 3.9k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 14	Ceramic disc 1.5pF ± 0.5 pF	
R112	Carbon Film 2.7k Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 15	Ceramic disc 33pF $\pm 10\%$	
R113	Carbon Film 330 Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 16	Ceramic disc 0.01 μ F +80% -20%	
R114	Carbon Film 680 Ω $\pm 10\%$ $\frac{1}{4}$ GF		C 17	Ceramic disc 0.02 μ F +80% -20%	
R115	Semi Variable 500 Ω B		C 18	Ceramic disc 180pF $\pm 10\%$	
R116	Carbon Film 1k Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 19	Ceramic disc 0.02 μ F +80% -20%		
R117	Composition 2.2k Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 20	Ceramic disc 15pF $\pm 10\%$		
R118	Wire Wound 0.3 Ω $\pm 10\%$ 1GF	C 21	Ceramic disc 0.02 μ F +80% -20%		
R119	Composition 2.2M Ω $\pm 10\%$ $\frac{1}{2}$ GF	C 22	Plastic 510pF $\pm 10\%$		
R120	Carbon Film 1k Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 23	Ceramic disc 0.02 μ F +80% -20%		
R121	Carbon Film 270k Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 24	Mylar 0.033 μ F $\pm 20\%$		
R122	Carbon Film 1M Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 25	Mylar 0.033 μ F $\pm 20\%$		
R123	Carbon Film 1M Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 26	Mylar 0.033 μ F $\pm 20\%$		
R124	Carbon Film 12k Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 27	Mylar 0.033 μ F $\pm 20\%$		
R125	Carbon Film 1M Ω $\pm 10\%$ $\frac{1}{4}$ GF	C 28	Mylar 0.033 μ F $\pm 20\%$		
R126	Carbon Film 8.2k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R127	Carbon Film 22k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R128	Carbon Film 330k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R129	Carbon Film 15k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R130	Carbon Film 1k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R131	Carbon Film 470k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R132	Carbon Film 10k Ω $\pm 10\%$ $\frac{1}{4}$ GF				
R133	Wire Wound 15 Ω $\pm 10\%$ 15GF				
		P-6242			

Symbol No.	Description	RS Parts No.	Symbol No.	Description	RS Parts No.
C 29	Ceramic disc 0.02 μ F +80% - 20%		C 69	Ceramic disc 0.01 μ F +80% - 20%	
C 30	Mylar 0.033 μ F \pm 20%		C 70	Ceramic disc 15pF \pm 10%	
C 31	Electrolytic 47 μ F 16V		C 71	Ceramic disc 150pF \pm 10%	
C 32	Ceramic disc 0.02 μ F +80% - 20%		C 72	Ceramic disc 0.01 μ F +80% - 20%	
C 33	Electrolytic 3.3 μ F 50V		C 73	Ceramic disc 70pF \pm 10%	
C 34	Mylar 0.01 μ F \pm 20%		C 74	Ceramic disc 0.01 μ F +80% - 20%	
C 35	Electrolytic 1 μ F 50V		C 75	Ceramic disc 82pF \pm 10%	
C 36	Ceramic disc 0.02 μ F +80% - 20%		C 76	Ceramic disc 500pF \pm 10%	
C 37	Mylar 0.0047 μ F \pm 20%		C 77	Ceramic disc 0.04 μ F +80% - 20%	
C 38	Mylar 0.01 μ F \pm 20%		C 78	Ceramic disc 270pF \pm 10%	
C 39	Electrolytic 1 μ F 50V		C 79	Ceramic disc 0.04 μ F +80% - 20%	
C 40	Ceramic disc		C 80	Ceramic disc 180pF \pm 10%	
C 41	Ceramic disc 33pF \pm 10%		C 81	Ceramic disc 390pF \pm 10%	
C 42	Ceramic disc 0.01 μ F +80% - 20%		C 82	Electrolytic 1 μ F 50V	
C 43	Ceramic disc 0.01 μ F +80% - 20%		C 83	Electrolytic 10 μ F 35V	
C 44	Ceramic disc 15pF \pm 10%		C 84	Electrolytic 100 μ F 10V	
C 45	Ceramic disc 22pF \pm 10%		C 85	Ceramic disc 300pF \pm 10%	
C 46	Ceramic disc 100pF \pm 10%		C 86	Mylar 0.033 μ F \pm 20%	
C 47	Ceramic disc 250pF \pm 10%		C 87	Ceramic disc 0.04 μ F +80% - 20%	
C 48	Ceramic disc 1000pF \pm 10%		C 88	Electrolytic 33 μ F 10V	
C 49	Ceramic disc 0.02 μ F +80% - 20%		C 89	Electrolytic 47 μ F 16V	
C 50	Ceramic disc 0.02 μ F +80% - 20%		C 90	Mylar 0.033 μ F \pm 20%	
C 51	Ceramic disc 150pF \pm 10%		C 91	Ceramic disc 0.04 μ F +80% - 20%	
C 52	Ceramic disc 27pF \pm 10%		C 92	Electrolytic 1 μ F 50V	
C 53	Mylar 0.082 μ F \pm 20%		C 93	Mylar 0.001 μ F \pm 20%	
C 54	Mylar 0.047 μ F \pm 20%		C 94	Electrolytic 22 μ F 16V	
C 55	Electrolytic 10 μ F 10V		C 95	Ceramic disc 0.04 μ F +80% - 20%	
C 56	Electrolytic 1 μ F 50V		C 96	Ceramic disc 0.04 μ F +80% - 20%	
C 57	Electrolytic 1 μ F 50V		C 97	Ceramic disc 0.001 μ F +80% - 20%	
C 58	Ceramic disc 0.04 μ F +80% - 20%		C 98	Ceramic disc 0.04 μ F +80% - 20%	
C 59	Electrolytic 10 μ F 16V		C 99	Electrolytic 1 μ F 50V	
C 60	Electrolytic 220 μ F 16V		C100	Electrolytic 33 μ F 25V	
C 61	Electrolytic 33 μ F 10V		C101	Electrolytic 2200 μ F 35V	
C 62	Ceramic disc 0.04 μ F +80% - 20%		C102	Ceramic disc 0.02 μ F +80% - 20%	
C 63	Ceramic disc 0.04 μ F +80% - 20%		C103	Ceramic disc 0.02 μ F +80% - 20%	
C 64	Electrolytic 470 μ F 16V		C104	Ceramic disc 1000pF 1400V	
C 65	Ceramic disc 0.01 μ F +80% - 20%		C105	Ceramic disc 18pF \pm 10%	
C 66	Ceramic disc 150pF \pm 10%		C106	Ceramic disc 0.01 μ F +80% - 20%	
C 67	Ceramic disc 10pF \pm 10%				
C 68	Ceramic disc 33pF \pm 10%				

Symbol No.	Description	RS Parts No.	Symbol No.	Description	RS Parts No.
C107	Ceramic disc 0.01 μ F +80% - 20%		Q 27	Transistor 2SC945	
C108	Ceramic disc 0.01 μ F +80% - 20%		Q 28	Transistor 2SC945	
C109	Ceramic disc 0.01 μ F +80% - 20%		Q 29	Transistor 2SC945	
C110	Ceramic disc 0.01 μ F +80% - 20%		D 1	Diode 1N60	
C111	Ceramic disc 0.01 μ F +80% - 20%		D 2	Diode 1N60	
C112	Ceramic disc 0.001 μ F +80% - 20%		D 3	Diode 1S2473	
C113	Ceramic disc 0.04 μ F +80% - 20%		D 4	Diode 1N60	
C114	Ceramic disc 0.01 μ F +80% - 20%		D 5	Diode 1N60	
C115	Ceramic disc 0.04 μ F +80% - 20%		D 6	Diode 1N60	
C116	Ceramic disc 0.04 μ F +80% - 20%		D 7	Diode 1S2473	
C117	Ceramic disc 0.01 μ F +80% - 20%		D 8	Diode 1N60	
C139	Electrolytic 22 μ F 16V		D 9	Diode 1S2473	
C118	Ceramic disc 100pF \pm 10%		D 10	Diode 1S2473	
C140	Mylar 0.047 μ F \pm 20%		D 11	Diode V06C or 1N4002	
C141	Mylar 0.047 μ F \pm 20%		D 12	Diode 1S2473	
SEMICONDUCTORS			D 13	Diode 1S2473	
Q 1	Transistor 2SC945		D 14	Diode 1S2473	
Q 2	Transistor 2SC605		D 15	Diode V06C or 1N4002	
Q 3	Transistor 2SC839		D 16	Diode 1S2473	
Q 4	Transistor 2SC839		D 17	Diode RD22	
Q 5	Transistor 2SC839		D 18	Diode 1N60	
Q 6	Transistor 2SC839		D 19	Diode V06C or 1N4002	
Q 7	Transistor 2SC945 or 2SC839		D 20	Diode V06C or 1N4002	
Q 8	Transistor 2SC945		D 21	Diode V06C or 1N4002	
Q 9	Transistor 2SC945 or 2SC839		D 22	Diode V06C or 1N4002	
Q 10	Transistor 2SC945		D 23	Diode RD9, 1EB	
Q 11	Transistor 2SC945		D 24	Diode 1N60	
Q 12	Transistor 2SC945		D 25	Diode 1N60	
Q 13	Transistor 2SC1013		D 26	Diode V06C or 1N4002	
Q 14	Transistor 2SC1013		Vr	Varistor VD1123	
Q 15	Transistor 2SC945 or 2SC839		CRYSTALS		
Q 16	Transistor 2SC945		XA 1	Quartz Crystal 33.000MHz	
Q 17	Transistor 2SC815		XA 2	Quartz Crystal 33.050MHz	
Q 18	Transistor 2SC1018		XA 3	Quartz Crystal 33.100MHz	
Q 19	Transistor 2SCF8		XA 4	Quartz Crystal 33.150MHz	
Q 20	Transistor 2SC815		XA 5	Quartz Crystal 33.200MHz	
Q 21	Transistor 2SC945		XA 6	Quartz Crystal 33.250MHz	
Q 22	Transistor 2SC945		XC 1	Quartz Crystal 6.490MHz	
Q 23	Transistor 2SC945		XC 2	Quartz Crystal 6.480MHz	
Q 24	Transistor 2SC815		XC 3	Quartz Crystal 6.470MHz	
Q 25	Transistor 2SC1061		XC 4	Quartz Crystal 6.450MHz	
Q 26	Transistor 2SC1449		XB 1	Quartz Crystal 5.995MHz	
			XB 2	Quartz Crystal 6.015MHz	
			XB 3	Quartz Crystal 6.025MHz	
			XB 4	Quartz Crystal 6.035MHz	

Symbol No.	Description	RS Parts No.	Mfr's Part No.
TRANSFORMERS			
T 1	RF Transformer 27MHz	CA-3229	GT1304
T 2	RF Transformer 27MHz	CA-3230	GT1305
T 3	I.F.T. 6MHz	CA-7353	T-M051
T 4	I.F.T. 6MHz	CA-7354	T-M052
T 5	I.F.T. 455kHz	CA-7355	T-M053
T 6	I.F.T. 455kHz	CA-7356	T-M054
T 7	I.F.T. 455kHz	CA-7357	T-M055
T 8	Audio Input Transformer	TN-0075	T-A098
T 9	Audio Output/Modulation Transformer	TD-0123	T-D037
T 10	Band Pass 27MHz	CA-3085	T-T036
T 11	Band Pass 27MHz	CA-3086	T-T037
T 12	Trap Coil 6MHz	CA-3234	L-R344
T 13	Driving Transformer 27MHz	CA-3087	T-T038
T 14	Power Transformer	TA-0460	T-R469
CF 1	Mechanical Filter	CA-3092	
CF 2	Ceramic Filter	C-0585	
COILS			
L 1	TVI Trap Coil 54MHz	CA-3236	L-R326
L 2	RF Coil	CA-3230	GT1305
L 3	RF Choke Coil	CA-3239	L-R158
L 4	RF Choke Coil	CA-3239	L-R158
L 5	RF Choke Coil	CA-3237	L-R151
L 6	RF Coil	CA-3233	L-R120
L 7	RF Choke Coil	CA-3238	CH-H057
L 8	RF Choke Coil	CA-3237	L-R151
L 9	Filter Coil	CA-3232	L-R215
L 10	Filter Coil	CA-3231	L-R182
L 11	RF Choke Coil	CB-2225	CH-A170
L 12	Filter Coil	CA-3233	L-R120
L 13	RF Choke Coil		L-R347
JACKS			
J 1	Antenna Jack		
J 2	P.A. Jack	J-0622	JJ-J009
J 3	Phone Jack	J-0623	
J 4	EXT. Speaker Jack	J-0622	JJ-J009
J 5	Microphone Jack		
J 6	DC Power Jack		
J 7	AC Power Jack		
SWITCHES			
	Push Switch with Button (CAL, PA, ANL, NB)	S-7200	S-P232
SW 3	Channel Selector Switch	S-1158	S-R091
SW 8	Fine Tune Switch	S-2250	S-R092
OTHER ELECTRICAL PARTS			
SP	Speaker 8 ohm 1W	S-4532	SP-A026
MIC	Microphone	M-2244	
M1, M2	Meter (SWR, S/RF)	M-0256	M-R119
PL 1	Channel Illumination Lamp	L-0550	PL-A017
PL 2	Meter Illumination Lamp	L-0550	PL-A017
PL 3	Meter Illumination Lamp	L-0550	PL-A017
PL 4	"ON THE AIR" Lamp	L-0550	PL-A017

Symbol No.	Description	RS Parts No.	Mfr's Part No.
PL 5	"MODULATION" Lamp	L-0550	PL-A017
PL 6	Clock Illumination Lamp	L-0550	PL-A017
PL 7	Clock Illumination Lamp	L-0550	PL-A017
	Crystal Socket 10P	J-6287	
	Crystal Socket 4P	J-6288	
	Terminal 7P		
	Rubber Bushing for Lamp	HB-1830	
	Digital Clock	M-4294	
	AC Power Cord Assembly	W-1759	W-C070
	DC Power Cord Assembly	W-1761	W-C072
	Spacer for Push Switch	HB-0837	
	Pin Plug for P.C.B.		
	Pin Terminal for P.C.B.		
	Fastener		
MISCELLANEOUS (Refer to Disassembly Instruction & Illustration)			
1	Chassis		XBP-1P001
2	Cabinet Cover	Y-1428	XBP-2P005
3	Bottom Plate	HB-1835	XBP-4P015
4	Front Panel	HB-1836	XBP-2P001
5	Decoration Metal	HB-1837	XBP-4P009
6	Display Plate	HB-1842	XBP-2P004
7	Side Panel	HB-1839	XBP-2P002
8	"ON THE AIR" "MODULATION" Indicator	HB-1841	XBP-4P003
9	Channel Indicator	HB-1843	XBP-4P018
10	Mounting Bracket	HB-1831	XBP-3P001
11	Microphone Hanger		
12	Fixing Metal for Mic. Hanger	HB-1832	XBP-4P004
13	Fixing Metal for Meter	HB-1833	XBP-4P007
14	Fixing Metal for SWR C.B.	HB-1834	XBP-4P011
15	Heat Sink for 2SC1061	HH-0133	XBP-4P010
16	Heat Sink for 2SC1013	HH-0134	XBP-4P019
17	Heat Sink for 2SCF8	HH-0135	XBP-4P020
18	Fixing Metal for Channel Indicator	HB-1840	XBP-4P002
19	Insulator for 2SCF8	HB-1838	XBP-4P029
20	Channel Selector Knob	K-1739	XBP-4P013
21	Volume Control Knob	K-1740	XBO-4P014
22	Digital Clock Knob	K-1741	XBO-4P001
23	Fixing Metal for Front Panel	HB-1846	XBP-4P006
24	Foot	F-0159	XBP-4P027
25	P.C.B. "A" (Main)	X-4825	XBP-2P008
26	P.C.B. "B" (SWR)		XBP-4P029
27	P.C.B. "C" (Mic Amp.)	X-4826	XBP-4P030
28	Heat Sink for 2SC1018	HB-1850	RBC-4P113
29	Fixing Metal for Digital Clock		XBP-4P035
30	Net for Speaker	HB-1844	XBP-4P014
31	Net for Push Switch	HB-1845	XBP-4P021
32	Washer for Mounting Bracket	HW-0909	XBL-4P007
33	Mask for Clock Window		XBP-4P035
34	Display Box		XBP-4P025
35	Styrofoam Box (Right)		XBP-2P006
36	Styrofoam Box (Left)		XBP-2P007
37	Crystal Cover		XBP-4P028
38	Crystal Cover Spacer		XBP-4P008

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