

NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.
 (Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.

ELECTRICAL PERFORMANCE SPECIFICATIONS

The supply voltage is 12 ± 0.3 V DC, from a regulated power supply.
 The room temperature is 25 ± 3 degrees C.

RECEIVING SECTION

1. Speaker impedance: 8 ohms
2. Output reference level is 100 mW total power
3. Modulation 1 kHz 30 %

Antenna maximum sensitivity

S + N/N ratio at 1 mV input

Selectivity at ± 10 kHz

Image rejection ratio

Distortion at 5 mV input

Power output at 10 % distortion

Audio frequency response at 400 Hz

Audio frequency response at 2,000 Hz

Squelch "on" level

Squelch Range

DC current drain, no signal

UNIT	NOMINAL	LIMIT
μ V	0.6	< 1.4
dB	46	> 36
dB	37	> 26
dB	8	> 4
%	3	< 8
mW	400	> 300
dB	-5	
dB	-5	
μ V	1	< 2
μ V	500	100~5,000
mA	20	< 35

TRANSMITTING SECTION

Frequency error at 27.125 MHz

Output power, 50 ohm load, no modulation

Spurious radiation ratio

DC current drain, no modulation

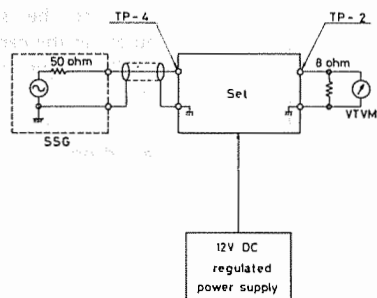
DC current drain, maximum modulation

Hz		$\pm 1,300$
mW	1,000	750~1,300
dB	67	> 60
mA	260	< 300
mA	450	< 600

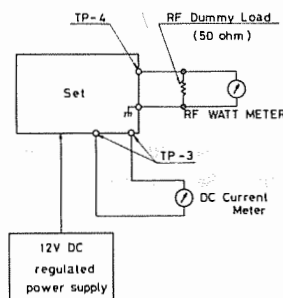
TEST CONDITIONS

Antenna load impedance: 50 ohms

Receiver Testing Circuit



Transmitter Testing Circuit



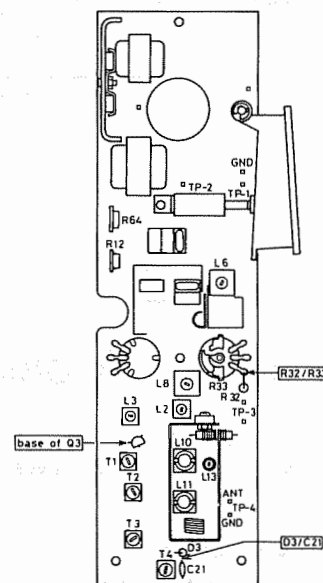
NOTE: Nominal Specs represent the design specs; all units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.

ALIGNMENT PROCEDURES AND EQUIPMENT CONNECTIONS

RECEIVER SECTIONS

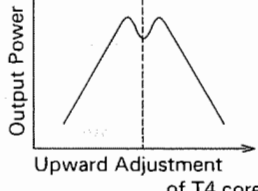
1. Test Equipment Required:

- RF Signal Generator (455 kHz and 27 MHz band), 50 ohm Output Impedance, 1 kHz, 30 % Modulation.
- V.T.V.M.
- 8 ohm Dummy Load (resistive)
- DC Power Supply (12 volt/1 A)
- Oscilloscope (bandwidth to 30 MHz)



2. Alignment Procedure:

Step	Control Setting	Test Equipment Connection	Signal Generator Setting	Adjust	Remarks
1	VOLUME control: Full clockwise SQUELCH control: Full counterclockwise. CHANNEL selector: "A" (Channel 14)	Connect Oscilloscope and V.T.V.M. to TP2 across 8 ohm Dummy Load. RF Signal Generator: Connect to Base of Q3. (Figure 5)	R.F.S.G.: Set to 455 kHz. (at 1 kHz 30% Mod.)	T1 T2 T3	Alignment of IF Adjust the cores of T1 ~ T3 for max. indication on oscilloscope and V.T.V.M.
2	Same as Step 1	Connect Oscilloscope and V.T.V.M. to TP2 across 8 ohm Dummy Load. Connect RF Signal Generator to TP-4. (Figure 6)	Freq. 27.125 MHz (Channel 14) at 1 kHz 30 % Modulation.	L3	Alignment of RF Adjust the core of L3 for max. indication on Oscilloscope and V.T.V.M. Keep output of RF SG as low as possible (to avoid overloading, AGC and swamping problems) and still obtain usable output.
3	Same as Step 1	Same as Step 2	Same as Step 2	L2	Alignment of RF Adjust L2 for max. indication on Scope & V.T.V.M. Check to be sure you are in the center of L2's adjustment range.
4	Repeat Steps 2 and 3. You will note that just a small adjustment of L3 results in a sharp drop-off from maximum output. Set both coils carefully.				

Step	Control Setting	Test Equipment Connection	Signal Generator Setting	Adjust	Remarks
5	Adjust output power to 100 mW with VOLUME control. SQUELCH control: Full counterclockwise. CHANNEL selector: "A" (Channel 14)	Same as Step 2	Freq. 27.125 MHz (Channel 14) at 1 kHz 30 % Modulation. Increase SG Output to 31.6 ~ 100 μ V.	T4	Alignment of IF Adjust core of T4 for point of max. output and min. distortion (output will show a dip between two peaks — set to center point between these two peaks). 
6	Repeat Steps 1 through 5 as necessary to obtain maximum output (keep output of RF Signal Generator at a low level to avoid overloading, swamping and AGC action). After final adjustments, seal the cores of L2 and L3 (then check sensitivity once more).				
7	Turn SQUELCH control fully clockwise and check Squelch function (output should cease). Return SQUELCH to minimum.				
8	Adjust output power to 100 mW with VOLUME control. SQUELCH control: Full clockwise. CHANNEL selector: "A" (Channel 14)	Same as Step 2	Freq. 27.125 MHz (Channel 14) at 1 kHz 30 % Modulation. Increase SG Output to 500 μ V.	R12	Adjust. of SQUELCH Adjust R12 so Squelch just opens/closes with 500 μV signal input.
9	Check for SQUELCH range and level (see Specs.). Repeat Step 8, if necessary.				

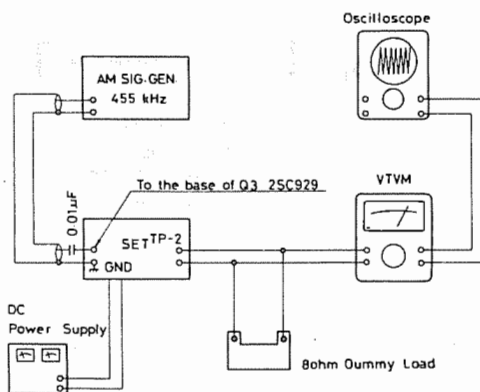


Figure 5 Receiver IF Alignment Equipment Setup

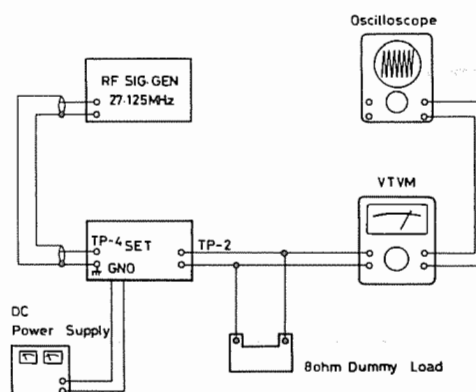


Figure 6 Receiver RF Alignment Equipment Setup

TRANSMITTER SECTION

1. Test Equipment Required:

- RF Output Power Meter (50 ohm impedance)
- Oscilloscope (bandwidth to 30 MHz)
- 50 ohm RF Dummy Load
- Coupler
- DC Ampere Meter (approx. 1000 mA full-scale)
- DC Power Supply (12 volt/1 A)
- Field Strength Meter (or Spectrum Analyzer)
- Frequency Counter
- AF Generator
- V.T.V.M.
- Decade Attenuator

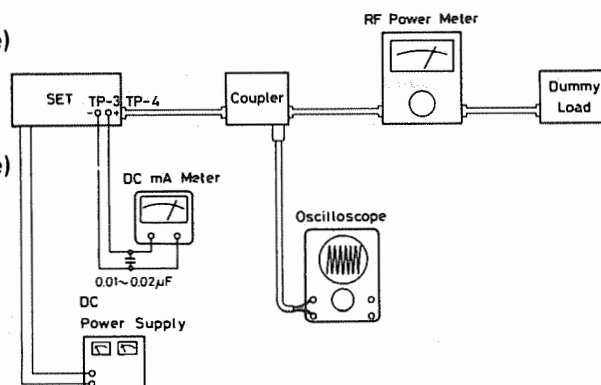


Figure 7 Transmitter RF Alignment Equipment Setup

2. Alignment Procedure:

Step	Control Setting	Test Equipment Connection and Setting	Adjust	Remarks
1	Press the TALK switch. CHANNEL selector: "A" (Channel 14)	Connect Dummy Load to RF Power Meter and Oscilloscope through coupler to TP-4 on set. Remove jumper from TP-3 and connect DC mA Meter in series with circuit. Connect 0.01 ~ 0.02 μ F capacitor in parallel with DC mA Meter. (Figure 7)	L6	Alignment of OSC Set core of L6 fully clockwise. Then, slowly adjust in a counterclockwise direction. After oscillation starts, adjust core 1 turn downward.
2	Same as Step 1		L8	Alignment of DRIVER Adjust for max. indication on oscilloscope and DC mA Meter.
3	Same as Step 1		L10	Alignment of Power Stage Fully clockwise.
4	Same as Step 1		L11	Alignment of Power Stage Adjust for maximum indication on RF Power Meter.
5	Same as Step 1		L10	Alignment of Power Stage Gradually adjust L10 counterclockwise. Set for 1 watt output with 180-200 mA of current.

Step	Control Setting	Test Equipment Connection and Setting	Adjust	Remarks
6	Check DC current reading (must not be above 200 mA). If current reading is over 200 mA, readjust L11 & L10 or check Q11 through Q13 circuitry. Repeat Steps 1 through 5 to assure optimum adjustments. Remove DC mA meter and restore jumper at TP-3.			
* 7	Same as Step 1	Connect Field Strength Meter and RF Attenuator through RF Power Meter to Coupler. Connect Coupler to TP-4 on set, and connect Frequency Counter through Coupler to TP-4. (Figure 8)	L13	Alignment of TRAP Adjust L13 for min. indication of 2nd (54.25 MHz) and 3rd (81.375 MHz) harmonic frequency output on Tunable Field Strength Meter.
8	You may want to recheck Steps 4 & 5 to be sure you obtain maximum output, then check Step 7 once more.			
9	Check frequency of Transmitter on Frequency Counter; it must be within ± 1300 Hz at Channel 14. Check for proper Scope modulation pattern as you speak into the Mic.			

* If you have a Spectrum Analyzer, you can obtain more precise readings with it.

Step	Control Setting	Test Equipment Connection and Setting	Adjust	Remarks
A	Same as Step 1	Connect Spectrum Analyzer and RF Attenuator through RF Power Meter. Connect RF Power Meter and Frequency Counter through Coupler to TP-4. (Figure 9)	L13	Alignment of Trap Adjust L13 for min. indication of 2nd (54.25 MHz) and 3rd (81.375 MHz) harmonic frequency output on Spectrum Analyzer.
B	Go to Step 9.			

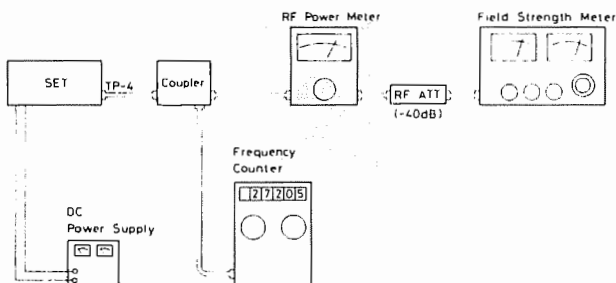


Figure 8 Transmitter L13 Adjustment Equipment Setup

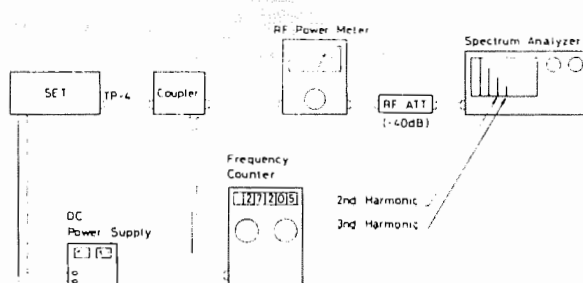
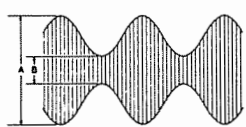
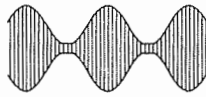


Figure 9 Transmitter L13 Adjustment Equipment Setup

Canadian Models only.

Step	Control Setting	Test Equipment Connection and Setting	Adjust	Remarks
10	Press the TALK switch. CHANNEL selector: "A" (Channel 14)	Connect Dummy Load and Oscilloscope through Coupler to TP-4. Connect AF Generator through Decade Attenuator to TP-1 across V.T.V.M. (Figure 10)	R64	Alignment of AMC Adjust R64 for fully counterclockwise. (AMC "OFF")
11	Same as Step 10	Same equipment connection as for Step 10. Adjust AF Generator (1 kHz) and Decade Attenuator input to TP-1 becomes 1 ~ 1.2 mV.		
12	Same as Step 10	Same equipment connection as for Step 10. Adjust Decade Attenuator so that the waveform on oscilloscope shows 50 % modulation. [Calculation of Modulation Degree] $M_D = \frac{A - B}{A + B} \times 100$ M _D (%): Modulation Degree		 Modulation waveform
13	Same as Step 10	Same equipment connection as for Step 10. Increase input level (TP-1) by 30 dB. (Input level = 31.6 ~ 37.9 mV)  Waveform of over modulation (30 dB up)		
14	Same as Step 10	Same equipment connection as for Step 10.	R64	Alignment of AMC Carefully turn clockwise and adjust for 100 % modulation.

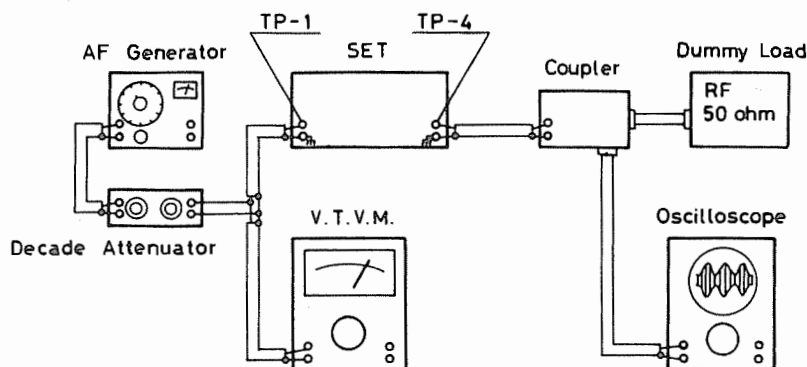


Figure 10

TROUBLE SHOOTING

Symptom	Cause and Remedy
1) Unit will not turn on (or no transmit or receive)	A) Defective power switch: Replace switch. B) Poor contact in the CHARGE Jack: Repair as required. C) Broken wire in the battery case: Repair as required. D) Defective antenna connection: Repair or replace. E) Defective transformer T6 or switch S1: Replace defective component.
2) No receive sound	A) Poor contact in the CHANNEL Switch: Replace. B) Defective Q7, Q8, Q9 or Q10 circuitry (modulation during transmit will also be distorted or absent): Replace defective component. C) Transistor, diode, IFT, resistor or capacitor in IF circuitry defective: Replace defective component. D) Defective switch S2-R or crystal X1: Replace defective component.
3) No transmission	A) Defective TALK switch: Replace switch. B) Improper adjustment of L6: Make readjustment. C) Broken wire in the MIC: Replace MIC. D) Poor contact across TP-3: Repair as required. E) Defective Q11, Q12, or Q13 circuitry: Replace defective component. F) Defective switch S2-T or crystal X2: Replace defective component.
4) No SQUELCH	A) Defective Q6 or R12 circuitry: Replace defective component.

THE VALUE SELECTED PARTS

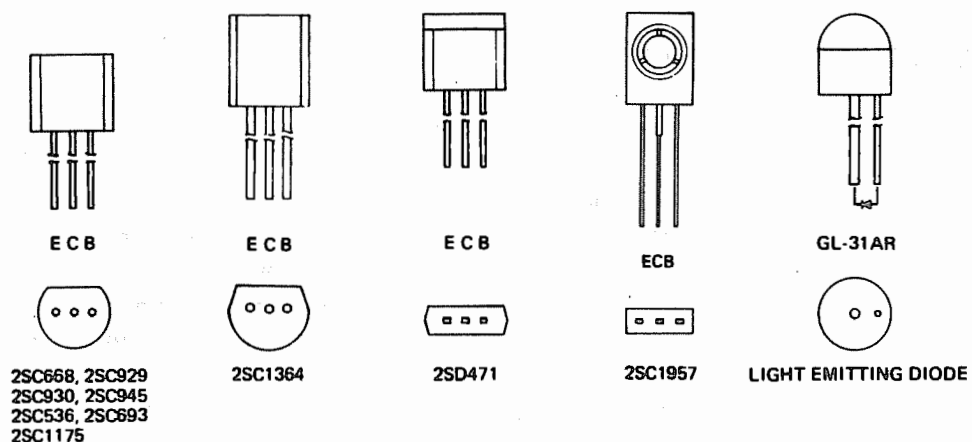
The values of some parts are selected at the factory for optimum operation. If the circuitry does not operate properly, you can change these values.

The chart below shows the effect when the values are increased.

Ref. No.	Effect of Increase in Resistance
R 6	Decreases sensitivity
R 20	Increases IF gain
R 30	Increases output level from the Detector circuit
R 36	Decreases Audio gain
* R 44	Increases Current Drain
R 58	Decreases RF Drive (and RF output power)

* R44: This is to control distortion level, output level and cross modulation level (these are caused by variability of h_{FE} for Q9/10). Try different values within the range shown in the Parts List when you can't get optimum results with the original value.

TRANSISTOR LEAD IDENTIFICATION



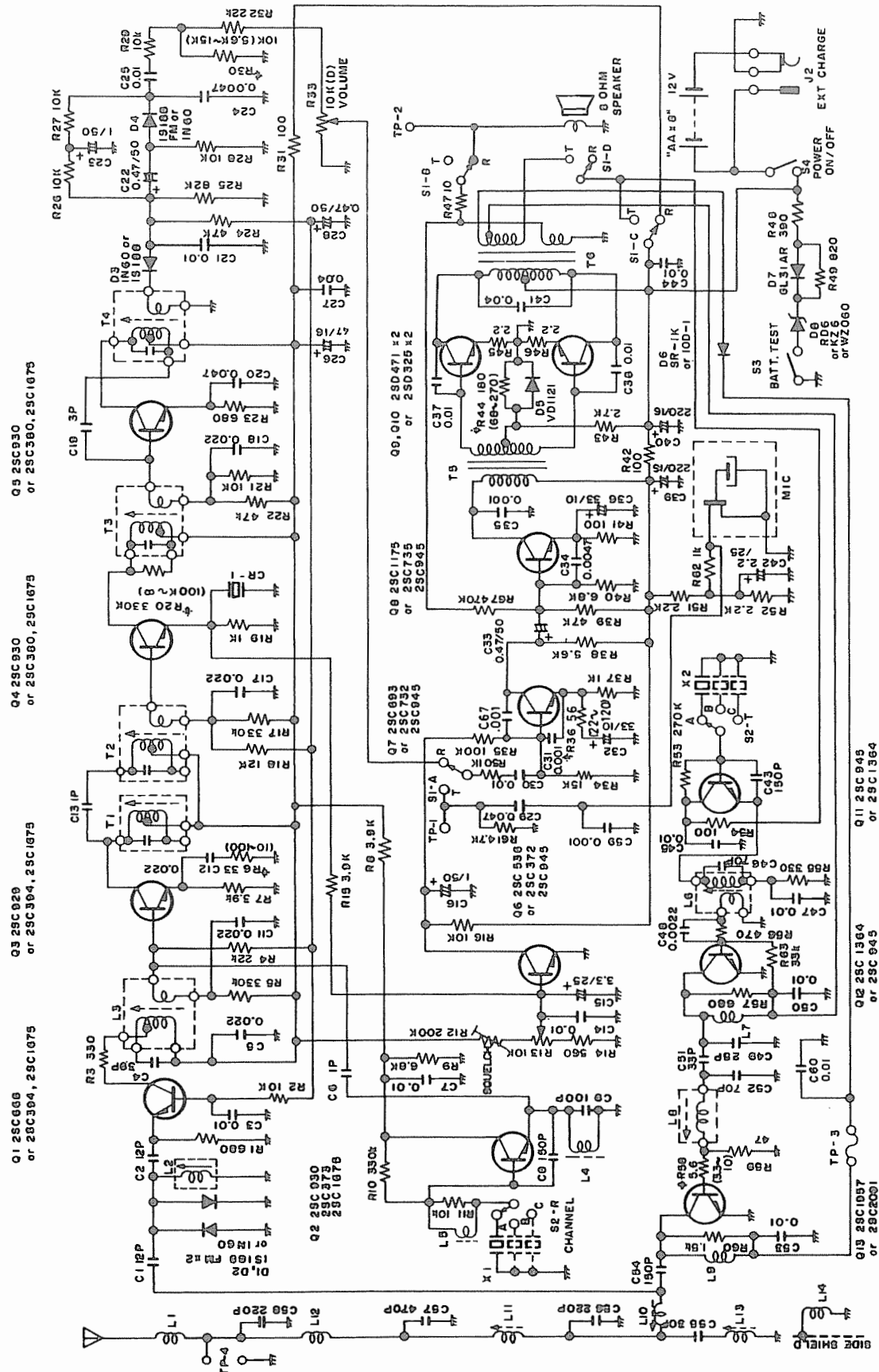
TRANSISTOR VOLTAGE CHART

Transistor Number	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
Receive	0.5	11.0	1.0	1.4	4.0	2.0	1.2	11.3	1.8	1.1	11.3	1.7	1.2	11.5	1.9	0	0.3	0.6	0.7	7.2	1.3
Transmit	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.7	7.2	1.3

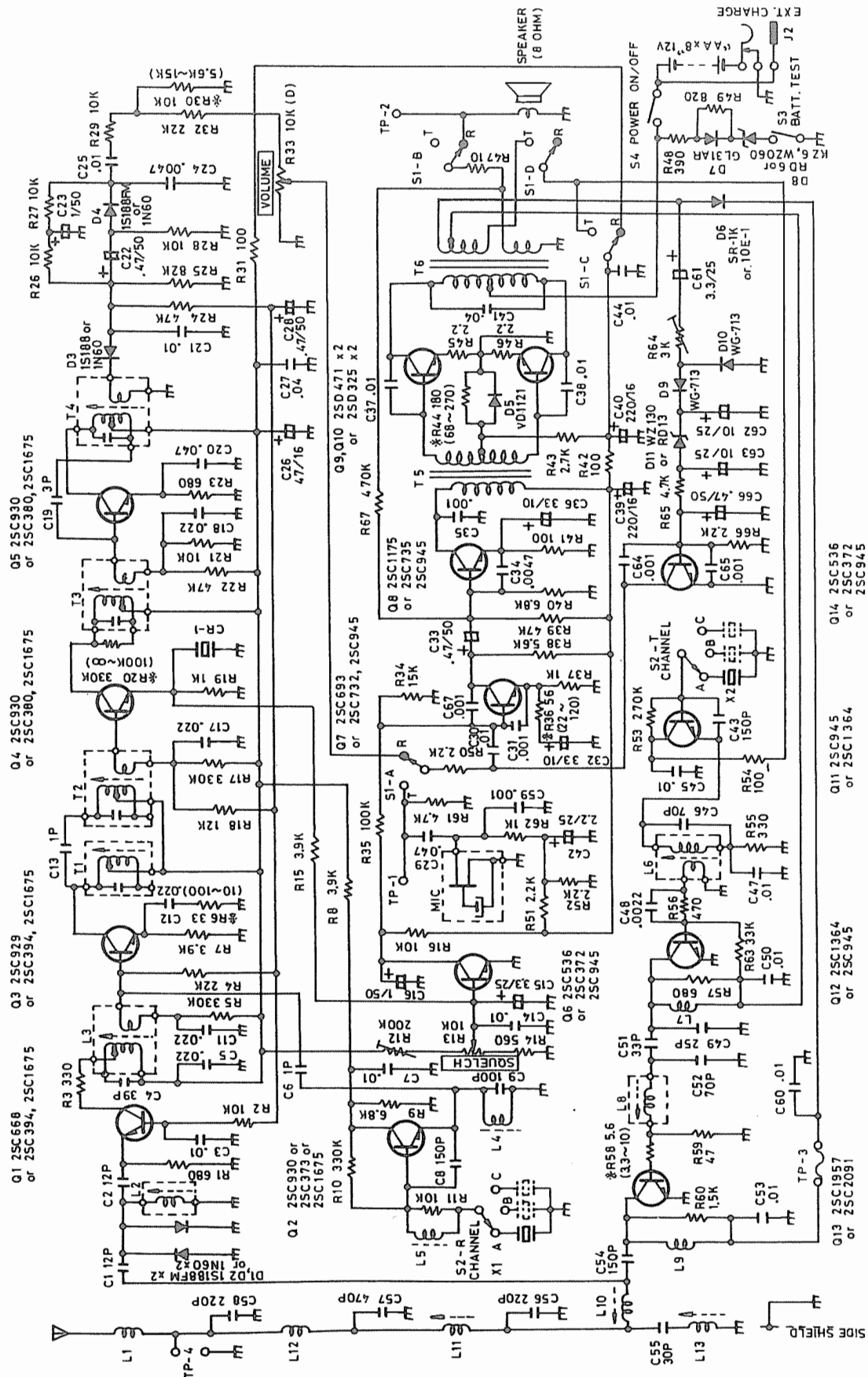
Transistor Number	Q8			Q9			Q10			Q11			Q12			Q13		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Receive	0.4	10.5	1.0	0	12	0.6	0	12	0.6	—	—	—	—	—	—	—	—	—
Transmit	0.4	10.5	1.0	0	12	0.6	0	12	0.6	2.6	12	3.3	0	12	0	0	10.8	0.6

NOTE: ALL VOLTAGE VALUES ARE INDICATED IN VOLTS WITH NO SIGNAL, MEASURED WITH V.T.V.M. (*SQUELCH ON/OFF, USING TP-4 AS GROUND POINT)

U.S.A.



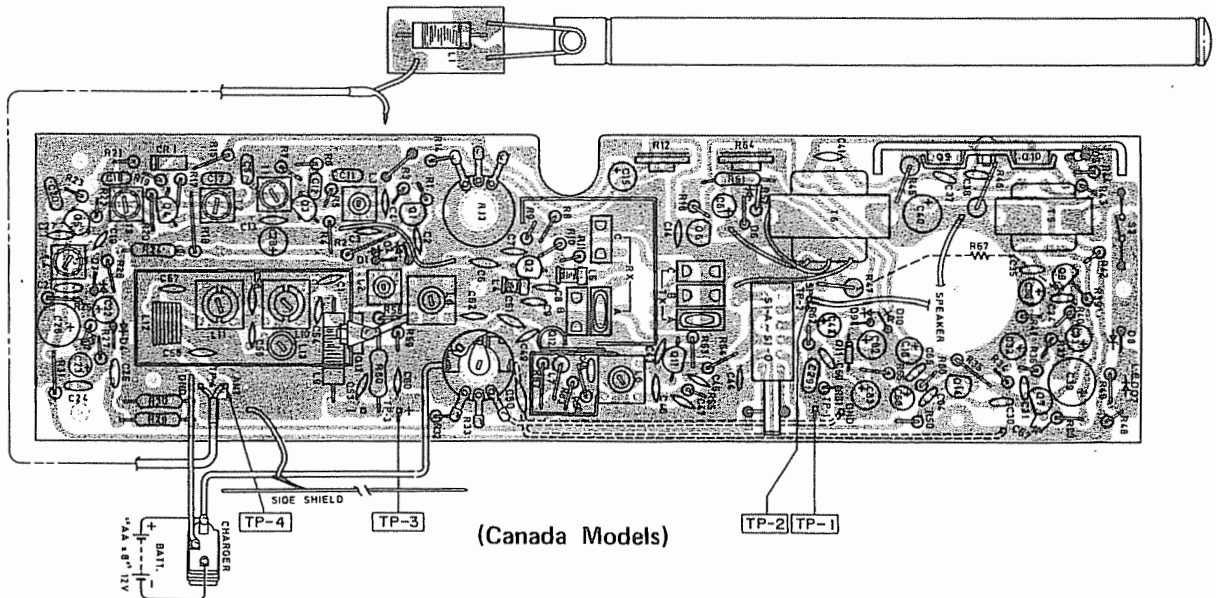
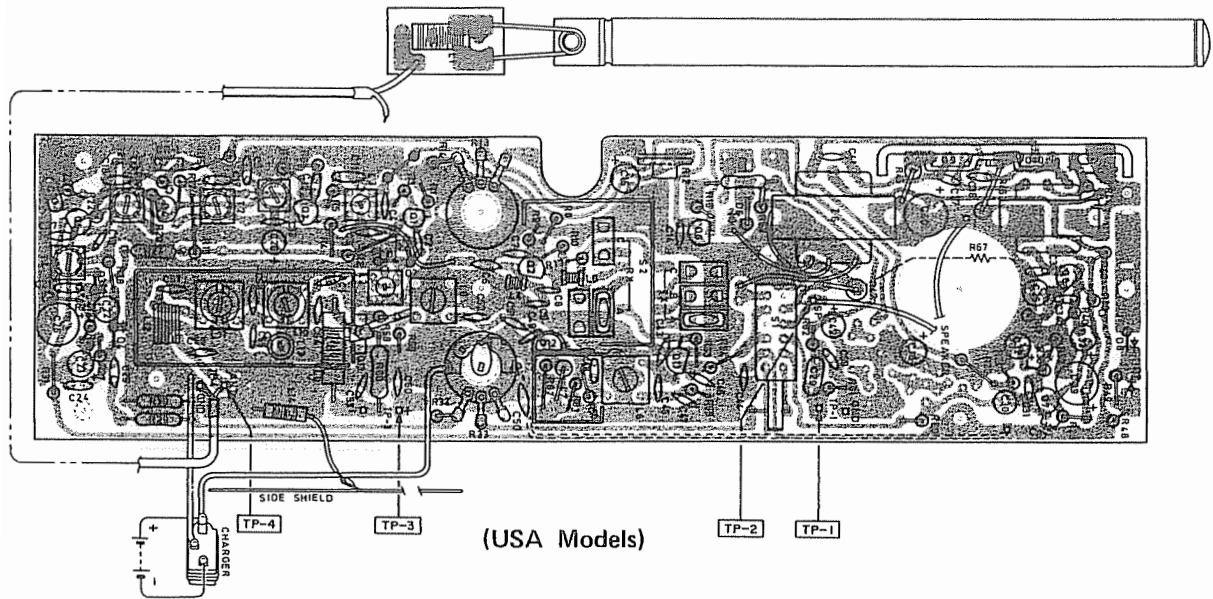
- NOTE
- 1) SWITCH SI-A, SI-B, SI-C, TALK SWITCH
 - 2) SWITCH S2-R, S2-T, CHANNEL SELECTOR SWITCH
 - 3) ALL RESISTOR VALUES ARE INDICATED IN "OHM" ($K=10^3$ OHM)
 - 4) ALL CAPACITOR VALUES ARE INDICATED IN μF ($P=10^{-9} \mu F$)



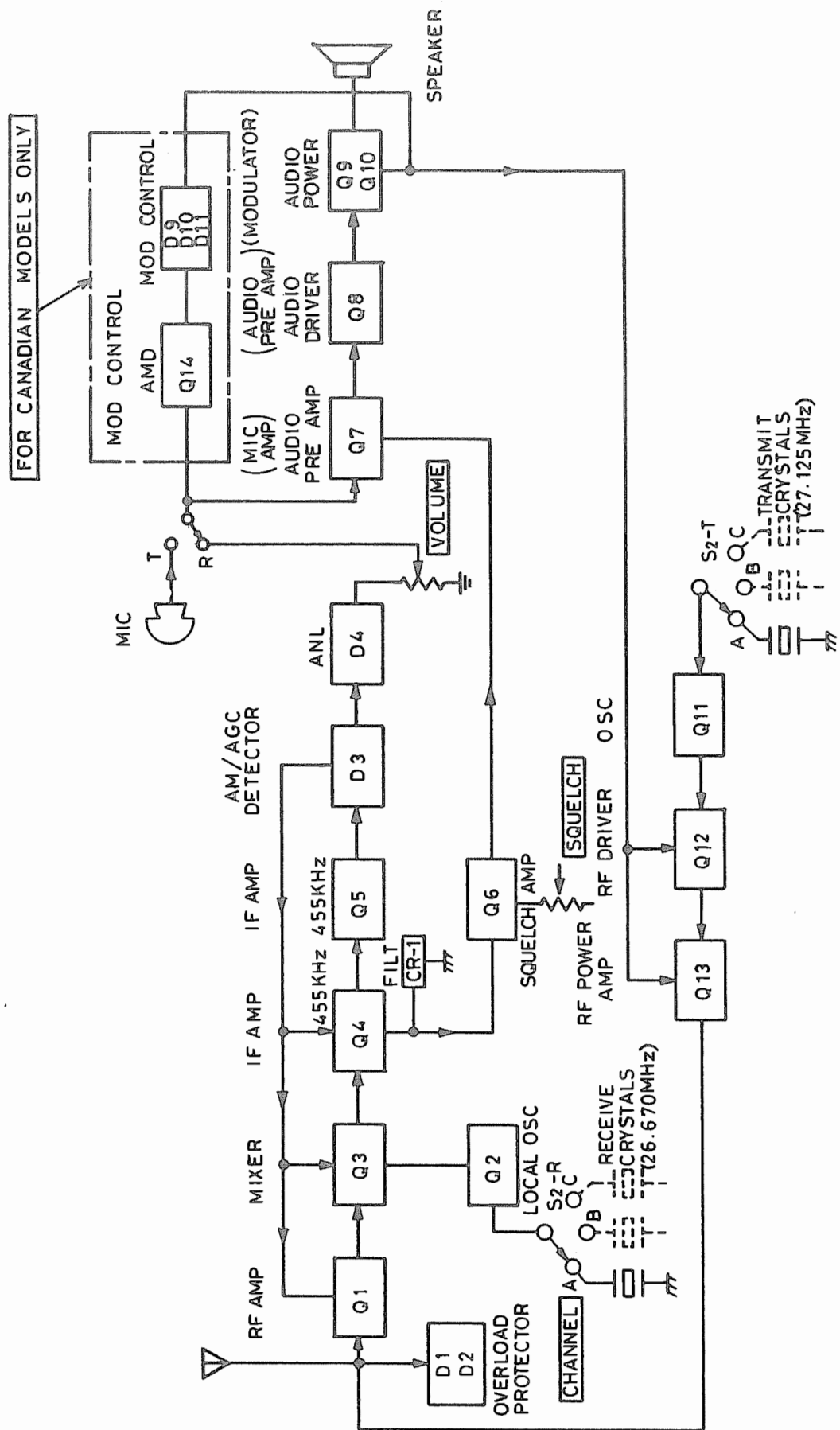
NOTE

- (1) SWITCH: S1-A, S1-B, S1-C, S1-D TALK SWITCH
- (2) SWITCH: S2-R, S2-T CHANNEL SELECTOR SWITCH
- (3) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10^3 OHM)
- (4) ALL CAPACITOR VALUES ARE INDICATED IN "μF" (P = 10^{-6} μF)

PRINTED CIRCUIT BOARD (TOP VIEW)



BLOCK DIAGRAM



ELECTRICAL PARTS LIST

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
CAPACITORS SL: 350 ~ 1000 ppm/°C			
C1	Ceramic 12pF ± 5 % 50 WV (SL)		
C2	Ceramic 12pF ± 5 % 50 WV (SL)		
C3	Ceramic 0.01 μF 25 WV		
C4	Ceramic 39 pF ± 10 % 50 WV (SL)		
C5	Mylar 0.022 μF ± 10 % 50 WV		
C6	Ceramic 1 pF ± 0.25pF 50 WV (SL)		
C7	Ceramic 0.01 μF 25 WV (SL)		
C8	Ceramic 150 pF ± 10 % 50 WV (SL)		
C9	Ceramic 100 pF ± 10 % 50 WV (SL)		
C10	(Not used)		
C11	Mylar 0.022 μF ± 10 % 50 WV		
C12	Mylar 0.022 μF ± 10 % 50 WV		
C13	Ceramic 1 pF ± 0.25pF 50 WV (SL)		
C14	Ceramic 0.01 μF 25 WV		
C15	Electrolytic 3.3 μF /25 V		
C16	Electrolytic 1 μF /50 V		
C17	Mylar 0.022 μF ± 10 % 50 WV		
C18	Mylar 0.022 μF ± 10 % 50 WV		
C19	Ceramic 3 pF ± 0.5pF 50 WV (SL)		
C20	Mylar 0.047 μF ± 10 % 50 WV		
C21	Mylar 0.01 μF ± 10 % 50 WV		
C22	Electrolytic 0.47 μF /50 V		
C23	Electrolytic 1 μF /50 V		
C24	Mylar 0.0047 μF ± 10 % 50 WV		
C25	Mylar 0.01 μF ± 10 % 50 WV		
C26	Electrolytic 47 μF /16 V		
C27	Ceramic 0.04 μF 25 WV		
C28	Electrolytic 0.47 μF /50 V		
C29	Mylar 0.047 μF ± 10 % 50 WV		
C30	Mylar 0.01 μF /50 V		
C31	Mylar 0.001 μF ± 10 % 50 WV		
C32	Electrolytic 33 μF /10 V		
C33	Electrolytic 0.47 μF /50 V		
C34	Mylar 0.0047 μF ± 10 % 50 WV		
C35	Mylar 0.001 μF ± 10 % 50 WV		
C36	Electrolytic 33 μF /10 V		
C37	Mylar 0.01 μF ± 10 % 50 WV		
C38	Mylar 0.01 μF ± 10 % 50 WV		
C39	Electrolytic 220 μF /16 V		
C40	Electrolytic 220 μF /16 V		
C41	Ceramic 0.04 μF 25 WV		
C42	Electrolytic 2.2 μF /25 V		
C43	Ceramic 150 pF ± 10 % 50 WV (SL)		
C44	Ceramic 0.01 μF 25 WV		
C45	Ceramic 0.01 μF 25 WV		
C46	Ceramic 70 pF ± 10 % 50 WV (SL)		

REF. NO.	DESCRIPTION			RS PART NO.	MFR'S PART NO.
C47	Ceramic	0.01 μ F	25 WV		
C48	Mylar	0.0022 μ F $\pm$ 10 %	50 WV		
C49	Ceramic	25 pF $\pm$ 10 %	50 WV (SL)		
C50	Ceramic	0.01 μ F	25 WV		
C51	Ceramic	33 pF $\pm$ 10 %	50 WV (SL)		
C52	Ceramic	70 pF $\pm$ 10 %	50 WV (SL)		
C53	Ceramic	0.01 μ F	25 WV		
C54	Ceramic	150 pF $\pm$ 10 %	50 WV (SL)		
C55	Ceramic	30 pF $\pm$ 10 %	50 WV (SL)		
C56	Ceramic	220 pF $\pm$ 10 %	50 WV (SL)		
C57	Ceramic	470 pF $\pm$ 10 %	50 WV (SL)		
C58	Ceramic	220 pF $\pm$ 10 %	50 WV (SL)		
C59	Mylar	0.001 μ F $\pm$ 10 %	50 WV		
C60	Ceramic	0.01 μ F	25 WV		
*C61	Electrolytic	3.3 μ F /25 V			
*C62	Electrolytic	10 μ F /25 V			
*C63	Electrolytic	10 μ F /25 V			
*C64	Mylar	0.001 μ F $\pm$ 10 %	50 WV		
*C65	Mylar	0.001 μ F $\pm$ 10 %	50 WV		
*C66	Electrolytic	0.47 μ F /50 V			
C67	Mylar	0.001 μ F $\pm$ 10 %	50 WV		
CERAMIC FILTER					
CR-1	Ceramic Filter			C-0801	P-130051
DIODES					
D 1	Germanium Diode	1S188FM-1 or 1N60P		OX-0241	
D 2	Germanium Diode	1S188FM-1 or 1N60P		OX-0241	
D 3	Germanium Diode	1S188FM-1 or 1N60P		OX-0241	
D 4	Germanium Diode	1S188FM-1 or 1N60P		OX-0241	
D 5	Silicon Varistor	VD1121		OX-0513	
D 6	Silicon Diode	SR-1K-2 or 10D-1		OX-0475	
D 7	Light Emitting Diode	GL 31-AR		OX-0135	
D 8	Zener Diode	WZ-061 or RD6AN		OX-0530	
*D 9	Silicon Diode	WG-713			
*D10	Silicon Diode	WG-713			
*D11	Zener Diode	WZ-130 or RD 13E			
JACK					
J 1	EXT CHARGE Jack			J-0675	P-190072
COILS					
L 1	Loading Coil			CA-3784	P-380109
L 2	Antenna Coil			CA-3554	P-380051
L 3	RF Coil			CA-4722	P-380052
L 4	Loading Coil			CA-3717	P-380013
L 5	Loading Coil			CA-3717	P-380013
L 6	OSC Coil			CA-4724	P-380061

* For Canadian Models Only.

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
L 7	Choke Coil	CB-2281	P-380057
L 8	Drive Coil	CA-3553	P-380053
L 9	Choke Coil	CB-2282	P-380058
L10	Filter Coil	CA-3781	P-380106
L11	Filter Coil	CA-3782	P-380107
L12	Filter Coil	CA-3783	P-380108
L13	Trap Coil	CA-3550	P-380056
L14	Choke Coil	CB-2281	P-380057
* L14	(Not used)		
TRANSISTORS			
Q 1	Transistor 2SC668 (E) or 2SC394 or 2SC1675		
Q 2	Transistor 2SC930 (E) or 2SC373 or 2SC1675		
Q 3	Transistor 2SC929 (E) or 2SC394 or 2SC1675		
Q 4	Transistor 2SC930 (E) or 2SC380 or 2SC1675		
Q 5	Transistor 2SC930 (E) or 2SC380 or 2SC1675		
Q 6	Transistor 2SC536 (E) or 2SC372 or 2SC945		
Q 7	Transistor 2SC693 (G) or 2SC732 or 2SC945		
Q 8	Transistor 2SC1175(D) or 2SC735 or 2SC945		
Q 9	Transistor 2SD 471 or 2SD325		
Q10	Transistor 2SD 471 or 2SD325		
Q11	Transistor 2SC945(P) or 2SC1364		
Q12	Transistor 2SC1364(6),(7) or 2SC945		
Q13	Transistor 2SC1957(K) or 2SC2091		
* Q14	Transistor 2SC536 (E) or 2SC372 or 2SC945		
RESISTORS (): Typical Value, UY: Radial Type, PY: Axial Type.			
R 1	Carbon UY 680 Ω $\frac{1}{4}$ W	NFE-0183	
R 2	Carbon UY 10 K Ω $\frac{1}{4}$ W	NFE-0063	
R 3	Carbon UY 330 Ω $\frac{1}{4}$ W	NFE-0159	
R 4	Carbon UY 22 K Ω $\frac{1}{4}$ W	NFE-0078	
R 5	Carbon UY 330 K Ω $\frac{1}{4}$ W	NFE-0159	
R 6	Carbon UY 10~100 (33) Ω $\frac{1}{4}$ W	NFE-0099	
R 7	Carbon UY 3.9 K Ω $\frac{1}{4}$ W	NFE-0040	
R 8	Carbon UY 3.9 K Ω $\frac{1}{4}$ W	NFE-0040	
R 9	Carbon UY 6.8 K Ω $\frac{1}{4}$ W	NFE-0054	
R10	Carbon UY 330 K Ω $\frac{1}{4}$ W	NFE-0159	
R11	Carbon UY 10 K Ω $\frac{1}{4}$ W	NFE-0063	
R12	Semi-Fixed 200 K Ω B	P-6340	P-170208
R13	SQUELCH I6 ϕ 10 K Ω B	P-1661	P-170193
R14	Carbon PY 560 Ω $\frac{1}{4}$ W	NFE-0176	
R15	Carbon UY 3.9 K Ω $\frac{1}{4}$ W	NFE-0040	
R16	Carbon UY 10 K Ω $\frac{1}{4}$ W	NFE-0063	
R17	Carbon UY 330 K Ω $\frac{1}{4}$ W	NFE-0149	
R18	Carbon UY 12 K Ω $\frac{1}{4}$ W	NFE-0067	
R19	Carbon UY 1 K Ω $\frac{1}{4}$ W	NFE-0196	
R20	Carbon UY 100K~ ∞ (330K) Ω $\frac{1}{4}$ W	NFE-0159	
R21	Carbon UY 10 K Ω $\frac{1}{4}$ W	NFE-0063	
R22	Carbon UY 47 K Ω $\frac{1}{4}$ W	NFE-0092	
R23	Carbon UY 680 Ω $\frac{1}{4}$ W	NFE-0183	

* For Canadian Models Only.

REF. NO.	DESCRIPTION				RS PART NO.	MFR'S PART NO.
R24	Carbon	PY	47 K Ω	$\frac{1}{4}$ W	NFE-0099	P-170192
R25	Carbon	UY	82 K Ω	$\frac{1}{4}$ W	NFE-0122	
R26	Carbon	UY	10 K Ω	$\frac{1}{4}$ W	NFE-0063	
R27	Carbon	UY	10 K Ω	$\frac{1}{4}$ W	NFE-0063	
R28	Carbon	UY	10 K Ω	$\frac{1}{4}$ W	NFE-0063	
R29	Carbon	PY	10 K Ω	$\frac{1}{4}$ W	NFE-0063	
R30	Carbon	PY	5.6K~15K(10K)	$\frac{1}{4}$ W	NFE-0063	
R31	Carbon	UY	100 Ω	$\frac{1}{4}$ W	NFE-0132	
R32	Carbon	PY	22 K Ω	$\frac{1}{4}$ W		
R33	VOLUME 16 ϕ			10 K Ω D	P-1660	
R34	Carbon	UY	15 K Ω	$\frac{1}{4}$ W	NFE-0074	
R35	Carbon	UY	100 K Ω	$\frac{1}{4}$ W	NFE-0132	
R36	Carbon	UY	22~120(56) Ω	$\frac{1}{4}$ W	NFE-0132	
R37	Carbon	UY	1 K Ω	$\frac{1}{4}$ W	NFE-0196	
R38	Carbon	UY	5.6 K Ω	$\frac{1}{4}$ W	NFE-0052	
R39	Carbon	UY	47 K Ω	$\frac{1}{4}$ W	NFE-0099	
R40	Carbon	UY	6.8 K Ω	$\frac{1}{4}$ W	NFE-0054	
R41	Carbon	UY	100 Ω	$\frac{1}{4}$ W	NFE-0132	
R42	Carbon	UY	100 Ω	$\frac{1}{4}$ W	NFE-0132	
R43	Carbon	UY	2.7 K Ω	$\frac{1}{4}$ W	NFE-0034	
R44	Carbon	UY	68~270(180) Ω	$\frac{1}{4}$ W	NFE-0144	
R45	Carbon	PY	2.2 Ω	$\frac{1}{2}$ W	NFE-0032	
R46	Carbon	PY	2.2 Ω	$\frac{1}{2}$ W	NFE-0032	
R47	Metal Oxide		10 Ω	2 W	NFE-0148	
R48	Carbon	UY	390 Ω	$\frac{1}{4}$ W	NFE-0162	
R49	Carbon	UY	820 Ω	$\frac{1}{4}$ W	NFE-0187	
R50	Carbon	UY	1 K Ω	$\frac{1}{4}$ W	NFE-0196	
* R50	Carbon	UY	2.2 K Ω	$\frac{1}{4}$ W		
R51	Carbon	PY	2.2 K Ω	$\frac{1}{4}$ W	NFE-0032	
R52	Carbon	UY	2.2 K Ω	$\frac{1}{4}$ W	NFE-0032	
R53	Carbon	UY	270 K Ω	$\frac{1}{4}$ W	NFE-0155	
R54	Carbon	UY	100 Ω	$\frac{1}{4}$ W	NFE-0132	
R55	Carbon	UY	330 Ω	$\frac{1}{4}$ W	NFE-0159	
R56	Carbon	UY	470 Ω	$\frac{1}{4}$ W	NFE-0169	
R57	Carbon	UY	680 Ω	$\frac{1}{4}$ W	NFE-0183	
R58	Carbon	UY	3.3~10(5.6) Ω	$\frac{1}{4}$ W	NFE-0052	
R59	Carbon	UY	47 Ω	$\frac{1}{4}$ W	NFE-0099	
R60	Carbon	PY	1.5 K Ω	$\frac{1}{2}$ W	NFE-0183	
R61	Carbon	UY	4.7 K Ω	$\frac{1}{4}$ W	NFE-0247	
R62	Carbon	UY	1 K Ω	$\frac{1}{4}$ W	NFE-0196	
R63	Carbon	UY	33 K Ω	$\frac{1}{4}$ W	NFE-0087	
* R64	Semi-Fixed		3 K Ω (B)			
* R65	Carbon	UY	4.7 K Ω	$\frac{1}{4}$ W		
* R66	Carbon	UY	2.2 K Ω	$\frac{1}{4}$ W		
R67	Carbon	PY	470 K Ω	$\frac{1}{4}$ W		

* For Canadian Models Only.

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
SWITCHES			
S 1	TALK Switch	S-7265	P-180177
S 2	CHANNEL Selector Switch	S-2389	P-180247
S 3	BATTERY TEST Switch	RB-5618	P-440086
S 4	POWER Switch	P-1660	P-170192
TRANSFORMERS			
T 1	IFT 7A-025	CA-7601	P-130025
T 2	IFT 7A-025	CA-7601	P-130025
T 3	IFT 7A-026	CA-7513	P-130026
T 4	IFT 7A-027	CA-7514	P-130027
T 5	Input Transformer	TN-0099	P-100348
T 6	Mod. Transformer	TB-0407	P-100447
CRYSTALS			
X 1	Crystal HC-25/U 26.670 MHz	MX-2280	P-390027
X 2	Crystal HC-25/U 27.125 MHz	MX-2281	P-390028
or			
X 1	Crystal HC-25/U 26.670 MHz		P-390045
X 2	Crystal HC-25/U 27.125 MHz		P-390046
	Crystal Socket		P-190082

EXPLODED VIEW PARTS LIST

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
*	Case, Rear	Z-3585	P-600111
	Battery Cover	Z-3585	P-600111
	Strap	H-6193	P-670010
	FCC Panel	HB-6414	P-730187
	DOC Panel		P-730213
	Washer for Strap	HB-3856	P-410565
	Battery Spring	RB-5408	P-440064
	Crystal Compartment Cover	OA-0210	P-411230
	Battery Case	B-0206	P-610317
	Battery Terminal for "+"	HB-3853	P-410566
	Dummy Battery		P-610503
	Heat Sink B	HH-0231	P-411241
	Transistor Holder	HB-2842	P-410752
	TALK Button	R-2182	P-650160
	TALK Shaft	HB-2843	P-420213
	Spacer (Date Code 7A7 ~ 9A7)	HB-5938	P-420237
	Spacer (Date Code 10A7 and after)		P-420267

* For Canadian Models Only.

REF. NO.	DESCRIPTION	RS PART NO.	MFR'S PART NO.
*	Main P.C.B.		P-200437
	Main P.C.B.		P-200363
	Switch Cover	HB-2837	P-680113
	Heat Sink	HB-0230	P-411223
	Rod Antenna	A-0080	P-330004
	Side Panel (R)	Z-3584	P-710124
	Case, Front	Z-3582	P-600112
	Button, Battery TEST	K-2609	P-650139A
	Speaker Net	HB-6410	P-660149
	Speaker	S-4574	P-270042
	ANT P.C.B.		P-200268
	Mic Holder	M-3106	P-680152
	Mic 9.4 ϕ 1 K Ω	M-2285	P-270059
	Mic Cushion B	HB-6413	P-820421
	Mic Cushion A	HB-6412	P-820420
	Mic Net	HB-2840	P-660109
	Side Panel	HB-6411	P-610502
	CHARGE Jack	J-0675	P-190072
	Side Panel (L)	Z-3583	P-710123
	Knob, Volume and Squelch	K-2184	P-650163
	Side Shield	HB-6409	P-411222
	Switch Holder	HB-5939	P-411011
	Leaf Spring (Date Code 7A7 ~ 9A7)	RB-5618	P-440086
	Leaf Spring (Date Code 10A7 and after)		P-440117
	Tapping Screw 3 ϕ X 55PTII		
	Screw (Black) 3 ϕ X 6P		
	Nylon Rivet (Black) 3 ϕ X 6.5		
	Triple Screw 2.6 ϕ X 6P		
	Screw 2 ϕ X 10P		
	Tapping Screw 3 ϕ X 8PTII		
	Tapping Screw 3 ϕ X 10PTII		
	Screw 3 ϕ X 16P		
	Nut 2.6 N		
	E-Ring		
	Nylon Washer 4.2 ϕ X 8 ϕ X 0.5t		
	Nut 2 N		
	Spring Washer 3SW		
	Nut 3 N		

*For Canadian Models Only.

NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.
 (Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.

SPECIFICATIONS

GENERAL SPECIFICATIONS

Description

Transmitter	Crystal controlled PLL synthesizer, amplitude modulation
Receiver	Crystal controlled double conversion, superheterodyne system
Communicating frequencies	All 40 CB channels (26.965 to 27.405 MHz) (All 18 channels (27.015 to 27.225 MHz) for Australian models)
Voltage operation	12 — 16 V DC (positive or negative ground vehicles)
Temperature and Humidity range	—30° C to +60° C and 10% to 90%
Transmitter/Receiver switching	Electronic

STANDARD TEST CONDITIONS

Battery supply voltage	13.8 V DC
Modulation	1000 Hz, 30%
Receiver output power	500 mW at external SP.
Receiver output impedance	8 ohms, non-inductive
Ant. load impedance of transmitter	50 ohms, non-inductive
Ambient conditions	
temperature	17 to 23°C
humidity	40 to 70%

TRANSMITTER SPECIFICATIONS

Description	Nominal	Limit
RF power output	4.0 watts (max.)	3.6-4.4watts
Emission	8A3 (6A3 for Australian models)	
Modulation Capabilities	+90%, -100%	
AMC Range at 1 kHz	40 dB	30 dB
Frequency accuracy	0.002%	0.005%
Spurious radiation & Harmonic signal radiation ratio from fundamental	-65 dB	-60 dB
Mic Sensitivity (50% Mod. 1 kHz)	1.5 mV	<2 mV
Current consumption		
unmodulated	1050 mA	1400 mA
1 kHz, 80% mod.	1650 mA	1950 mA
Envelope distortion	10% max. 1000 Hz, 50% mod.	
Hum and Noise level	40 dB min. below max. mod.	
Stability against variation of antenna impedance	Satisfactory when dummy antenna is varied from 40 ohms to 200 ohms.	

RECEIVER SPECIFICATIONS

Description	Nominal	Limit
Intermediate frequency		
1st IF	10.695 MHz	
2nd IF	455 kHz	
Sensitivity for 500 mW output	0.25 μ V	0.5 μ V
Sensitivity at 10 dB S + N/N	0.6 μ V	1.2 μ V
Adjacent Channel Rejection	60 dB	56 dB
Image Rejection at 5.7 MHz	45 dB	35 dB
Bandwidth (-6 dB)	7.6 kHz	5 - 9 kHz
Signal-to-Noise ratio		
at 1 mV input	40 dB	34 dB
Distortion at 1 mV input	2.5%	<5%
AGC figure of merit		
at 50 mV input	90 dB	>70 dB
Power output at 500 μ V Input		
Undistorted (10% THD)	3.5W	>3 W
Maximum	5 W	>4 W
Electrical fidelity compared to 1000 Hz		
450 Hz	-6 dB	-6 $\pm$ 3 dB
2500 Hz	-6 dB	-6 $\pm$ 3 dB
Cross Modulation	50 dB	>45 dB
Squelch	Adjustable from 0.8 μ V to 1 mV	
Current consumption		
(no signal)	300 mA	<350 mA

OTHER ITEMS

Fuse	2 Amp.
General power requirement	12 - 16 V DC
Dimensions	(H)1-21/32"(42mm) $\times$ (W)5-15/32"(139mm) $\times$ (D)8-9/16"(217mm)
Weight	2 Lbs. 3 oz. (1.0 kg)

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.

ALIGNMENT INSTRUCTIONS

PLL SECTION

1. Test Equipment Required

- Frequency Counter
- DC Power Supply (13.8 Volt, 2.5 Amp.)
- RF Output Power Meter
- DC Volt Meter (above 100 K Ω /V)

NOTE: Figure 1 provides test point and alignment location information.

2. Alignment Procedure

Figure 1

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
1	MIC: Receive, POWER: "on", VOLUME: Optional, SQUELCH: Optional, Channel Selector: Optional, ANL: OUT.		
2	Connect Frequency Counter to pin 14 of IC-1. (Figure 2)	C75	If the frequency is not 10.240 MHz $\pm$ 300 Hz, change value of C75 (15 — 33 pF).
3	Connect RF V.T.V.M. (or Oscilloscope) to pin 22 on IC-1. (Figure 3)	T7	Alignment of Programmable Divider Input Adjust for maximum indication on RF V.T.V.M. (or Oscilloscope). REFERENCE: 0.8 — 1.2 Vpp
4	MIC: Transmit, Channel Selector: Channel 40 (Channel 18 for Australian models).		
5	Connect DC Volt Meter to R71/R72 (Figure 4)	T8	Alignment of VCO Adjust for 6.0 (5.0 for Australian models) Volt indication on DC Volt Meter.
6	MIC: Receive, Channel Selector: Channel 1		
7	Same as step 5		Check for indication on DC Volt Meter; must be 2.8—3.3 Volt (or 3.0—4.0 Volt for Australian models). If DC Volt Meter does not indicate 2.8—3.3 Volt (or 3.0—4.0 Volt for Australian models) readjust T8 (return to step 5).

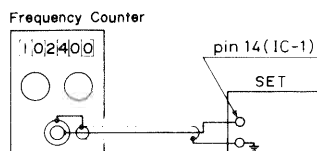


Figure 2

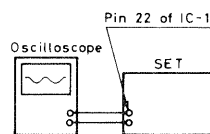


Figure 3

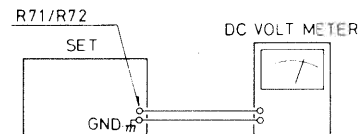


Figure 4

TRANSMITTER SECTION

1. Test Equipment Required

- RF Output Power Meter
- 50 Ohm Load (non-inductive)
- RF Attenuator
- Oscilloscope
- Audio Generator
- DC Power Supply (13.8 Volt, 2.5 Amp.)
- Field Strength Meter (or Spectrum Analyzer)
- Frequency Counter
- Coupler

NOTE: Figure 1 provides test point and alignment location information.

2. Alignment Procedure

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
1	MIC: Transmit, POWER: "on", VOLUME: Optional, SQUELCH: Optional, Channel Selector: Channel 18 (Channel 9 for Australian models), ANL: OUT		
2	Connect RF V.T.V.M. to pin 4 of IC-2 (Figure 5)	T9	Alignment of Transmit Mixer ① Adjust for maximum indication on RF V.T.V.M. ② If the indication on RF V.T.V.M. is above 110 mV, adjust core of T9 upwards (counter-clockwise) to obtain a 110 mV reading.
3	Disconnect R95 (or short base of Q19 to ground with 0.01 μ F). (Figure 6)		
4	Connect RF V.T.V.M. to pin 7 of IC-2. (Figure 7)	T10	Alignment of Pre-Driver Stage Adjust for maximum indication on RF V.T.V.M.
5	Connect RF V.T.V.M. to base of Q17. (Figure 8)	T11	
6	① Make sure that the level (at base of Q17) of Channel 1 and Channel 40 (Channel 18 for Australian models) is above 500 mV on RF V.T.V.M. ② Make sure that the differential level (at base of Q17) of Channel 1 and Channel 40 (Channel 18 for Australian models) is below 30 mV on RF V.T.V.M. If the differential level (and level) is above 30 mV (and below 500 mV), repeat steps 4 and 5 as necessary to obtain maximum output.		
7	Connect RF V.T.V.M. to base of Q18. Connect Power Meter through Dummy Load to ANT connector. (Figure 9)	L5	Alignment of Pre-Driver Adjust for maximum indication on RF V.T.V.M.; then back off 1/2 turn (downwards) from peak.
8	Re-connect R95 (or remove shorting capacitor). (Figure 10)		
9	Connect RF V.T.V.M. to base of Q19 (Figure 11)	L4	Alignment of Drive Adjust for maximum indication on RF V.T.V.M.
10	Set Channel Selector to Channel 40 (Channel 18 for Australian models).		
11	Connect Dummy Load and Frequency Counter through Coupler to RF Power Meter. Connect RF Power Meter to EXT. ANT Jack on Set. (Figure 12)	L3	Alignment of Final Stage Adjust for maximum indication on RF Power Meter; then adjust 1/2 turn up from peak. Also check if frequency is correct.

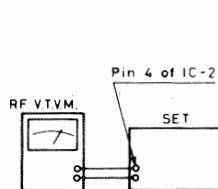


Figure 5

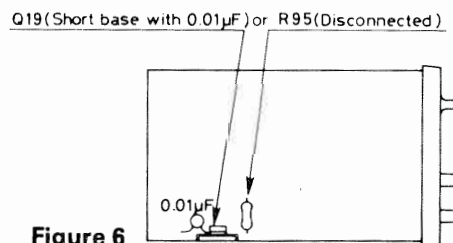


Figure 6

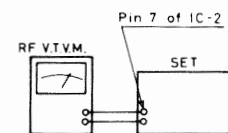


Figure 7

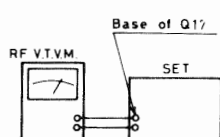


Figure 8

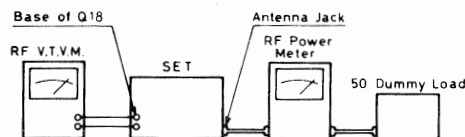


Figure 9

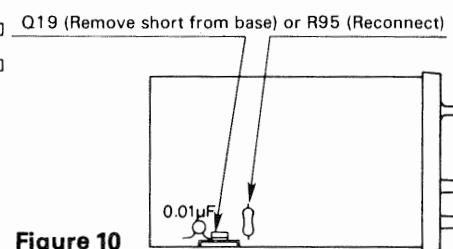


Figure 10

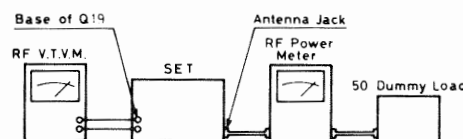


Figure 11

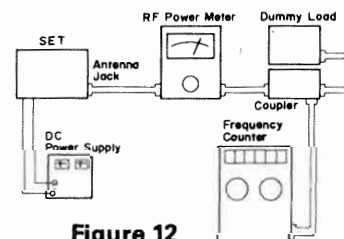


Figure 12

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
12	Make sure that the differential output power between channels is less than 0.2 Watt. If the differential output power is more than 0.2 Watt, repeat steps 9 through 11 until no further improvement can be made.		
13	Set Channel Selector to Channel 18 (Channel 9 for Australian models).		
14	Same as step 11.	Check that RF output power is 3.7 to 4.3 W on all channels with no modulation. If it is not within the above range, change R95 value (0—15 ohms).	
15	Connect Dummy Load and Oscilloscope through Coupler to RF Power Meter. Connect RF Power Meter to EXT. ANT Jack on Set. (Figure 13)		
16	Audio Generator (1 kHz) across C115 or to Microphone Connector, pin 4. (Figure 13) Adjust audio signal level to obtain 80—100% modulation level.		Check scope pattern for proper modulation
17	Connect Dummy Load and Field Strength Meter through Coupler to RF Power Meter. Connect RF Power Meter to EXT. ANT Jack on set. (Figure 14) Tune to 2nd harmonic frequency 54.35 MHz (54.23 MHz for Australian models) on Field Strength Meter.	T12	Alignment of 2nd harmonic frequency Adjust for min. 54.35 MHz (54.23 MHz for Australian models) indication on Field Strength Meter.
18	Check level of fundamental and 2nd harmonic frequency 54.35 MHz (54.23 MHz for Australian models).		
19	Check suppression of 2nd harmonic frequency 54.35 MHz (54.23 MHz for Australian models) compared to fundamental (must be better than —70 dB).		
20	Check all Channels and if necessary, repeat steps 17 through 19 to obtain more than —65 dB on all channels with no modulation.		
21	When output power of transmit is 4 ± 0.3 Watt, make sure that S/RF Meter on set indicates 1/4—7/8 on red zone. If indication of S/RF Meter is not 1/4—7/8 on red zone, change R2 (4.7K Ω — 15K Ω). (see Figure 15)		

:If you have a Spectrum Analyzer, you can obtain more precise readings with it.

STEP	OUTPUT INDICATOR CONNECTION	ADJUST	ADJUST FOR
A	Connect Spectrum Analyzer and RF Attenuator through RF Power Meter. Connect RF Power Meter to EXT. ATN. Jack on Set. (Figure 16)	T12	Adjust for min. 54.35 MHz (54.23 MHz for Australian models) indication on Spectrum Analyzer.
B	Go to step 18.		

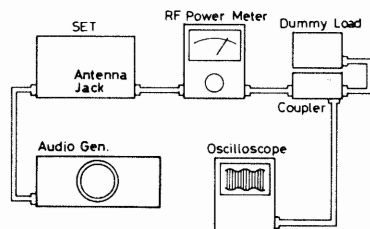


Figure 13

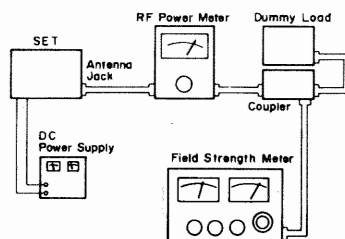


Figure 14

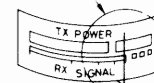
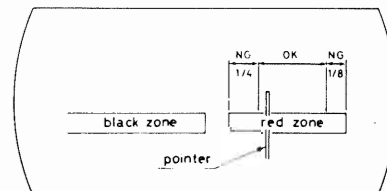


Figure 15

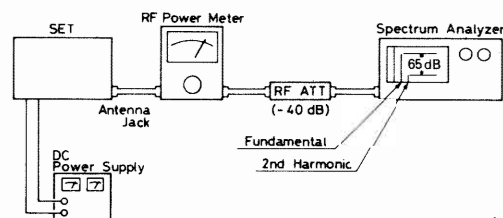


Figure 16

RECEIVER SECTION

1. Test Equipment Required

- RF Signal Generator
- V.T.V.M.
- Oscilloscope
- Distortion Meter

2. General Alignment Conditions

- Signal input must be kept as low as possible, to avoid overload and clipping. (Use highest possible sensitivity of output indicator.)
- Standard modulation is 1000 Hz at 30% amplitude.
- A non-metallic alignment tool must be used for all adjustments.
- Power supply adjusted for 13.8V DC, 2A

NOTE: Figure 1 provides alignment location information.

3. Alignment Procedure

STEP	SET SIGNAL	ADJUST	ADJUST FOR
1	MIC: Receive, POWER: "on", VOLUME: fully clockwise, SQUELCH: fully counterclockwise, Channel Selector: Channel 18 (Channel 9 for Australian models), ANL: OUT.		
2	Connect RF Signal Generator to base of Q4 through 0.01 μ F Capacitor. Connect V.T.V.M. across EXT. Speaker Jack with 8 Ω Dummy load. (Figure 17)		
3	455 kHz, 1 kHz 30% Modulation. The output of RF Signal Generator must be adjusted to minimum level so that the IF circuit is not saturated.	T4	Alignment of 2nd IF
4		T5	Adjust for maximum output.
5	Connect RF Signal Generator to Antenna Connector. Connect V.T.V.M. and Distortion Meter across EXT. Speaker Jack with 8 Ω Dummy load. (Figure 18)		
6	27.175 MHz (*27.115) 1 kHz, 30% Mod.	T1	Overall Adjustment
7		T2	Adjust for maximum indication on V.T.V.M. Be sure to lower RF input signal level to maintain an audio output level of 500 mW (2 V).
8		T3	
9	If Audio output is below 500 mW when RF SG output is 0.25 μ V, go back to step 6 through 8 and readjust. If still improper, change R15 value (0—15 ohms).		
10	27.175 (*27.115) MHz 1 kHz, 30% Mod. Set Output of RF SG to 5 mV.	T5	Alignment of T5 Adjust for minimum indication on Distortion Meter (reference 1.5 — 2%)
11	27.175 (*27.115) MHz 1 kHz, 30% Mod. Set output of RF SG to 100 μ V.	VR-4	Adjustment of S-Meter Adjust for S-9 indication on S/RF Meter.
12	27.175 (*27.115) MHz 1 kHz, 30% Mod. Set output of RF SG to 1 mV.	VR-3	Adjustment of SQUELCH 1. Turn VR-3 fully counterclockwise. (At this time, output will be "ON".) 2. Then, slowly adjust in a counterclockwise direction. As you rotate, output will cease; as you continue, output will return. The best adjustment point is just when output returns.

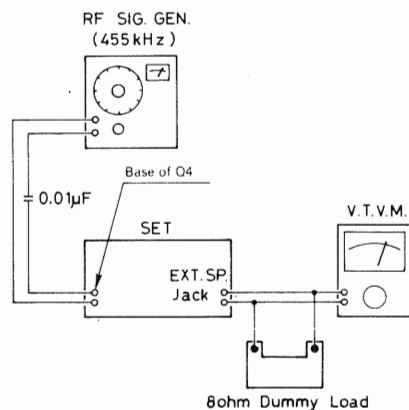


Figure 17

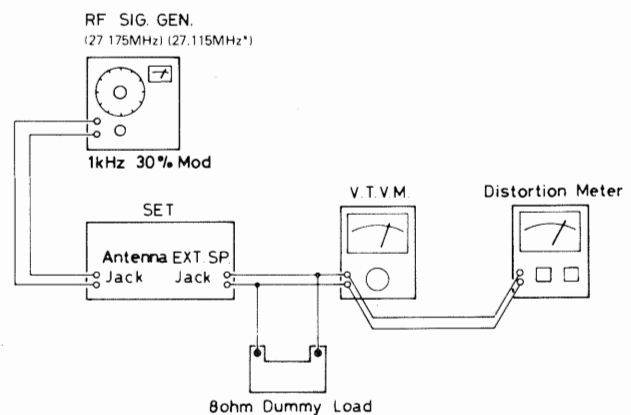


Figure 18

FREQUENCIES GENERATED AND MIXED TO OBTAIN EACH CHANNEL RECEIVE

*VCO FREQUENCY = $[(N/2048 + 1.5)] \times [\text{REFERENCE FREQUENCY (10.240 MHz)}]$

TRANSMIT

*VCO FREQUENCY = $[(N/2048 + 1.5) \times (\text{REFERENCE FREQUENCY (10.240 MHz)})]$

*TRANSMIT FREQUENCY

= (VCO FREQUENCY) + [REFERENCE FREQUENCY (10.240 MHz)]

For USA & Canadian models

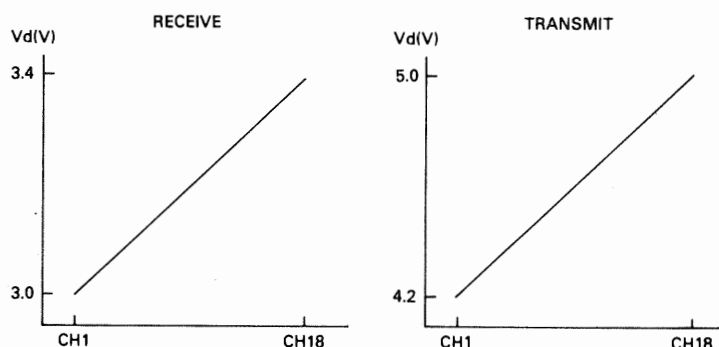
CHANNEL NUMBERS	BCD INPUT TO IC-1		RECEIVE		TRANSMIT		
	IC-1 PIN NUMBERS		N	VCO FREQUENCY (MHz)	N	VCO FREQUENCY (MHz)	TRANSMIT FREQUENCY (MHz)
	8 7 6 5	4 3 2 1					
1	0000	0001	182	16.270	273	16.725	26.965
2	0000	0010	184	16.280	275	16.735	26.975
3	0000	0011	186	16.290	277	16.745	26.985
4	0000	0100	190	16.310	281	16.765	27.005
5	0000	0101	192	16.320	283	16.775	27.015
6	0000	0110	194	16.330	285	16.785	27.025
7	0000	0111	196	16.340	287	16.795	27.035
8	0000	1000	200	16.360	291	16.815	27.055
9	0000	1001	202	16.370	293	16.825	27.065
10	0001	0000	204	16.380	295	16.835	27.075
11	0001	0001	206	16.390	297	16.845	27.085
12	0001	0010	210	16.410	301	16.865	27.105
13	0001	0011	212	16.420	303	16.875	27.115
14	0001	0100	214	16.430	305	16.885	27.125
15	0001	0101	216	16.440	307	16.895	27.135
16	0001	0110	220	16.460	311	16.915	27.155
17	0001	0111	222	16.470	313	16.925	27.165
18	0001	1000	224	16.480	315	16.935	27.175
19	0001	1001	226	16.490	317	16.945	27.185
20	0010	0000	230	16.510	321	16.965	27.205
21	0010	0001	232	16.520	323	16.975	27.215
22	0010	0010	234	16.530	325	16.985	27.225
23	0010	0011	240	16.560	331	17.015	27.255
24	0010	0100	236	16.540	327	16.995	27.235
25	0010	0101	238	16.550	329	17.005	27.245
26	0010	0110	242	16.570	333	17.025	27.265
27	0010	0111	244	16.580	335	17.035	27.275
28	0010	1000	246	16.590	337	17.045	27.285
29	0010	1001	248	16.600	339	17.055	27.295
30	0011	0000	250	16.610	341	17.065	27.305
31	0011	0001	252	16.620	343	17.075	27.315
32	0011	0010	254	16.630	345	17.085	27.325
33	0011	0011	256	16.640	347	17.095	27.335
34	0011	0100	258	16.650	349	17.105	27.345
35	0011	0101	260	16.660	351	17.115	27.355
36	0011	0110	262	16.670	353	17.125	27.365
37	0011	0111	264	16.680	355	17.135	27.375
38	0011	1000	266	16.690	357	17.145	27.385
39	0011	1001	268	16.700	359	17.155	27.395
40	0000	0000	270	16.710	361	17.165	27.405

IC-1 VOLTAGE CHART & DC VOLTAGE OF PLL LOW PASS FILTER OUTPUT (Vd). (FOR AUSTRALIAN MODELS)

IC-1 (HD42856) Voltage Chart

PIN NO.	1	2	3	4	5	6	7	8	9	10	11
RECEIVE	4.7	0	0	4.7	0	0	2.1	1.2	4.6	0.8	4.7
TRANSMIT	4.7	0	0	4.7	0	0	2.1	0.9	0.4	0.8	4.7
PIN NO.	12	13	14	15	16	17	18	19	20	21	22
RECEIVE	2.0	2.2	0.8	0	4.7	1.5	1.5	3.2	0	0	2.1
TRANSMIT	2.0	2.2	0.8	4.6	4.6	1.3	1.3	4.7	0	0	2.1

DC Voltage of PLL Low Pass Filter Output (Vd)



FREQUENCIES GENERATED AND MIXED TO OBTAIN EACH CHANNEL (Australian Models)

RECEIVE

$$*VCO \text{ FREQUENCY} = [(N/2048 + 1.5)] \times [\text{REFERENCE FREQUENCY (10.240 MHz)}]$$

TRANSMIT

$$*VCO \text{ FREQUENCY} = [(N/2048 + 1.5) \times (\text{REFERENCE FREQUENCY (10.240 MHz)})]$$

$$*TRANSMIT \text{ FREQUENCY}$$

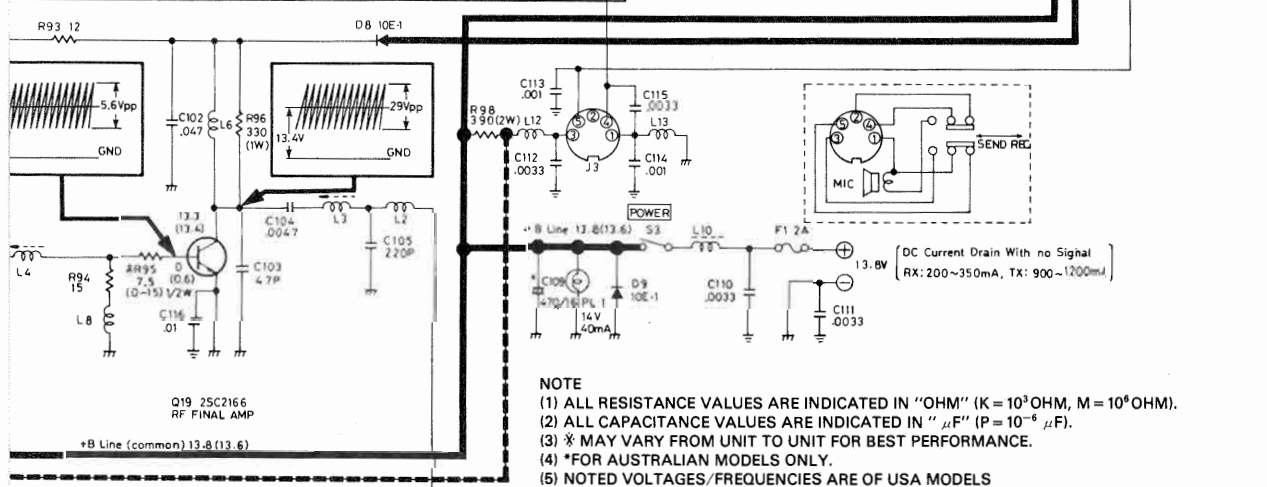
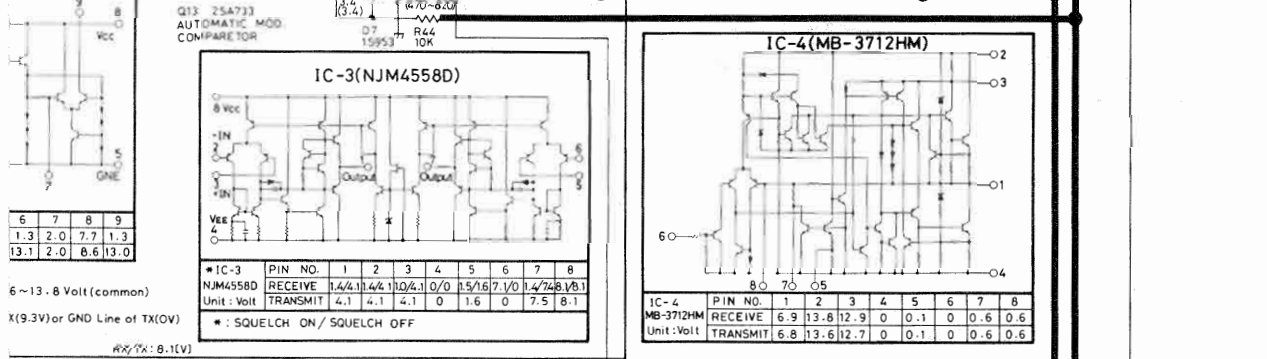
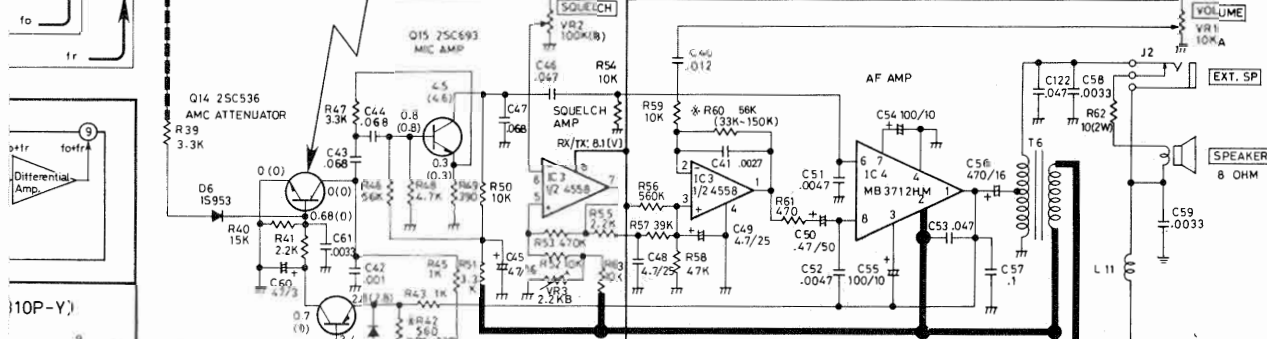
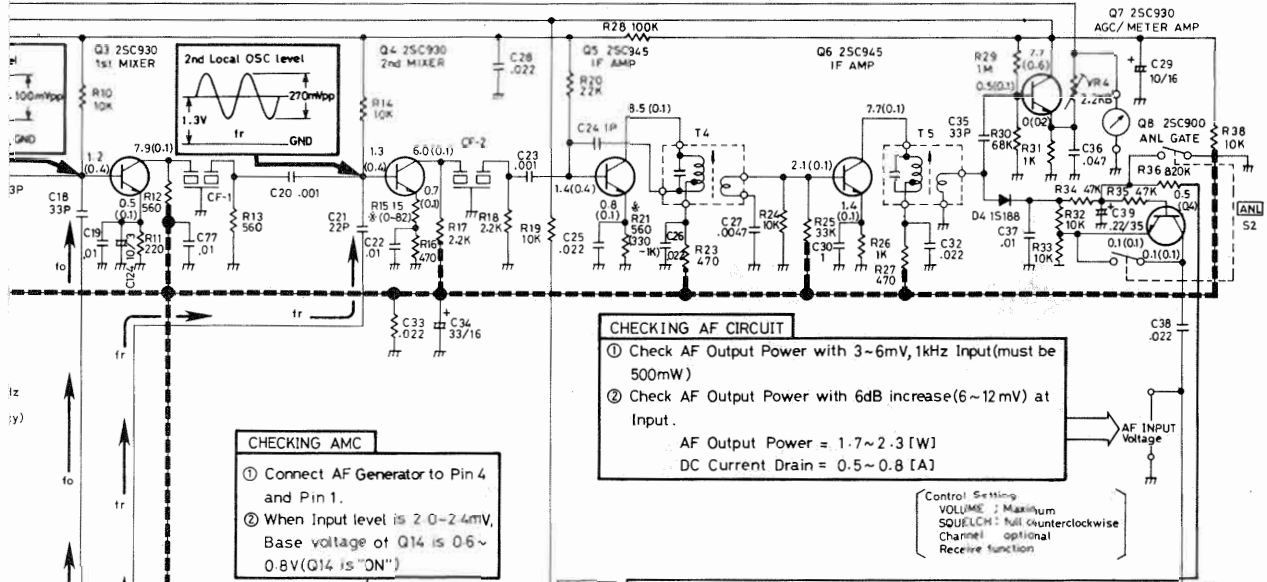
$$= (VCO \text{ FREQUENCY}) + [\text{REFERENCE FREQUENCY (10.240 MHz)}]$$

For Australian models

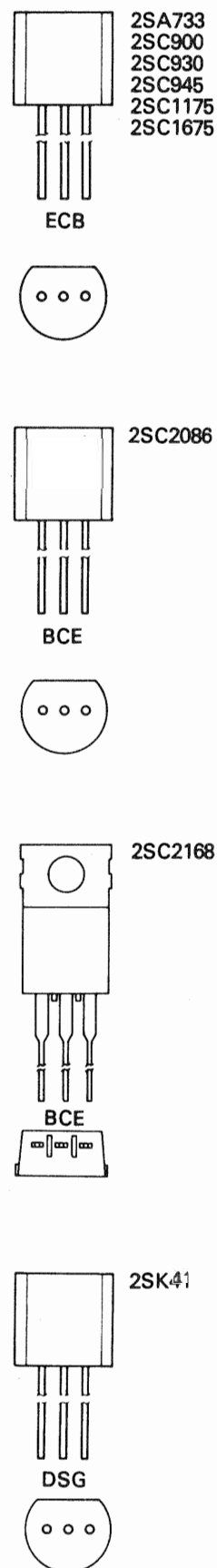
CHANNEL NUMBERS	BCD INPUT TO IC-1		RECEIVE		TRANSMIT		
	IC-1 PIN NUMBERS		N	VCO FREQUENCY (MHz)	N	VCO FREQUENCY (MHz)	TRANSMIT FREQUENCY (MHz)
	8 7 6 5	4 3 2 1					
1	0 0 0 0	0 0 0 1	192	16.320	283	16.775	27.015
2	0 0 0 0	0 0 1 0	194	16.330	285	16.785	27.025
3	0 0 0 0	0 0 1 1	196	16.340	287	16.795	27.035
4	0 0 0 0	0 1 0 0	200	16.360	291	16.815	27.055
5	0 0 0 0	0 1 0 1	202	16.370	293	16.825	27.065
6	0 0 0 0	0 1 1 0	206	16.390	297	16.845	27.085
7	0 0 0 0	0 1 1 1	208	16.400	299	16.855	27.095
8	0 0 0 0	1 0 0 0	210	16.410	301	16.865	27.105
9	0 0 0 0	1 0 0 1	212	16.420	303	16.875	27.115
10	0 0 0 1	0 0 0 0	214	16.430	305	16.885	27.125
11	0 0 0 1	0 0 0 1	216	16.440	307	16.895	27.135
12	0 0 0 1	0 0 1 0	220	16.460	311	16.915	27.155
13	0 0 0 1	0 0 1 1	222	16.470	313	16.925	27.166
14	0 0 0 1	0 1 0 0	224	16.480	315	16.935	27.175
15	0 0 0 1	0 1 0 1	226	16.490	317	16.945	27.185
16	0 0 0 1	0 1 1 0	228	16.500	319	16.955	27.195
17	0 0 0 1	0 1 1 1	230	16.510	321	16.965	27.205
18	0 0 0 1	1 0 0 0	234	16.530	325	16.985	27.225

Q7 25C930
AGC/ METER AMP

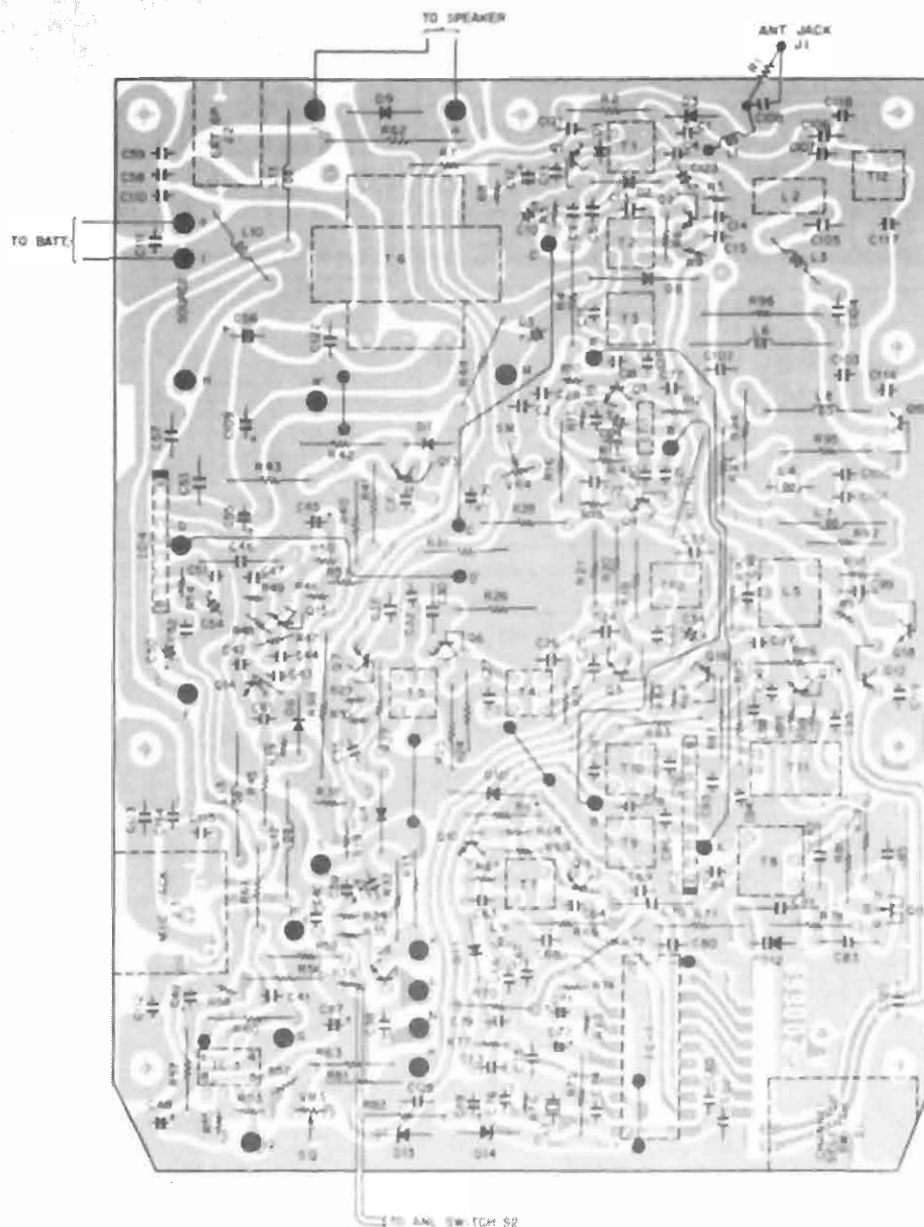
Q7 25C930
AGC/ METER AMP



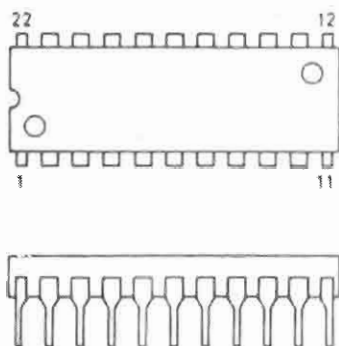
REALISTIC TRC-420A(21-1501)
TRC-420A-18(21-9420A)



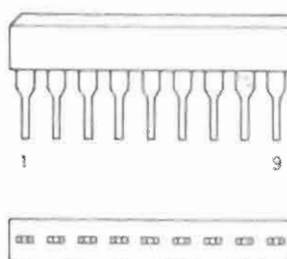
PRINTED CIRCUIT BOARD (BOTTOM VIEW)



IC-1 HD42853 or μ PD2814C
(HD42856 for Australian models)



IC-2 TA7310P or KIA7310P



IC-3 NJM4558D

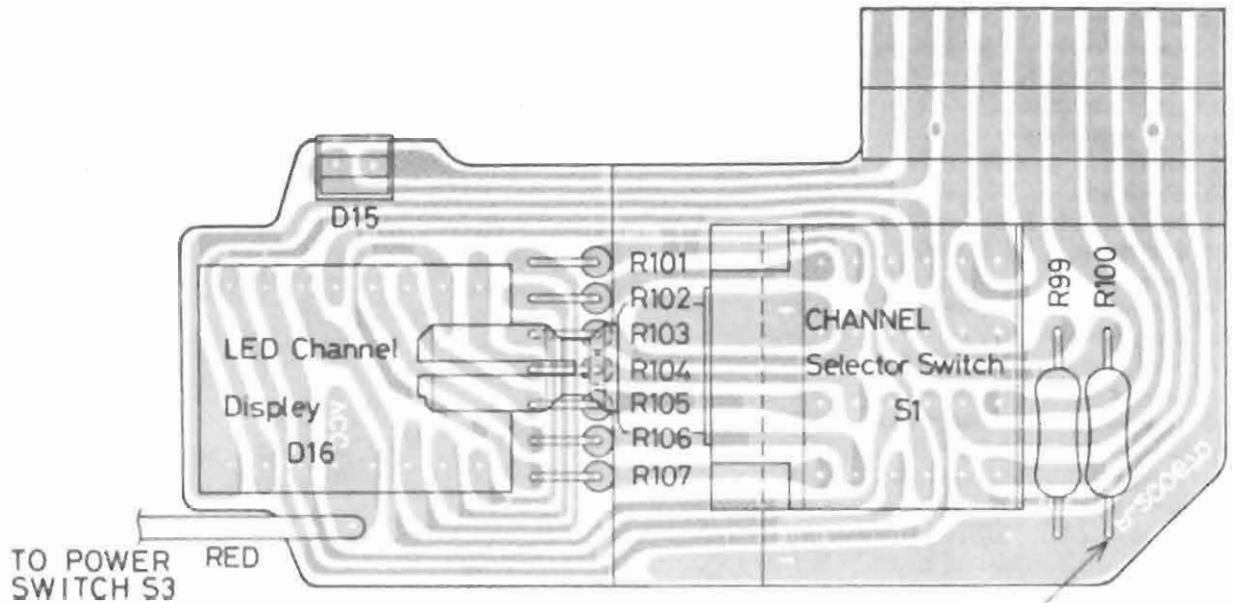


IC-4 MB3712



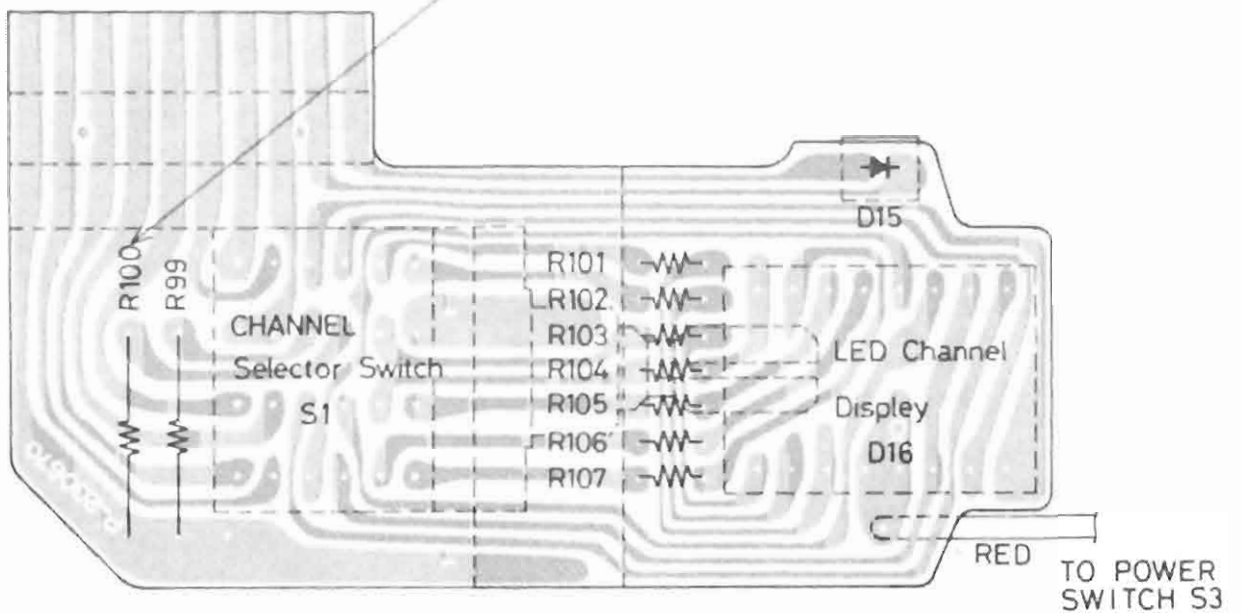
FLEXIBLE PRINTED CIRCUIT BOARD

TOP VIEW



*Not Used for AUSTRALIAN MODELS

BOTTOM VIEW



ELECTRICAL PARTS LIST

Ref. No.	Description	R/S Part No. Mfr's Part No.	Ref. No.	Description	R/S Part No. Mfr's Part No.
CAPACITORS SL: 350 — 1000 ppm/°C					
C 1	Ceramic 2pF ± 0.25pF 50 WV SL	CF-1025	C50	Electrolytic 0.47μF/50V	
C 2	Ceramic 0.01μF 50 WV SL		C51	Mylar 0.0047μF ± 10% 50 WV	
C 3	Electrolytic 220μF/6.3V		C52	Mylar 0.0047μF ± 10% 50 WV	
C 4	Mica 39pF ± 5 % 50 WV		C53	Mylar 0.047μF 50 WV	
C 5	Ceramic 22pF ± 10% 50 WV SL		C54	Electrolytic 100μF/10V	
C 6	(Not used)	CF-1490	C55	Electrolytic 100μF/10V	
C 7	(Not used)		C56	Electrolytic 470μF/16V	
C 8	(Not used)		C57	Mylar 0.1μF 50 WV	
C 9	Mylar 0.001μF ± 10% 50 WV		C58	Mylar 0.0033μF ± 10% 50 WV	
C10	Electrolytic 4.7μF/25V		C59	Mylar 0.0033μF ± 10% 50 WV	
C11	Mylar 0.0047μF ± 10% 50 WV	CF-1015	C60	Tantalum 47μF/3.15V	
C12	Electrolytic 22μF/10V		C61	Mylar 0.0033μF ± 10% 50 WV	
C13	Ceramic 1pF ± 0.25pF 50 WV SL		C62	(Not used)	
C14	Ceramic Barrier 0.01μF 25 WV		C63	Ceramic Barrier 0.01μF 25 WV	
C15	Ceramic Barrier 0.01μF 25 WV		C64	Ceramic 5pF ± 0.25pF 50 WV SL	CF-1100
C16	Mica 33 pF ± 5 % 50 WV	CF-1015	C65	Ceramic 0.01μF 50 WV SL	
C17	Ceramic 33pF ± 10% 50 WV SL		C66	Ceramic 150pF ± 10% 50 WV SL	CF-1462
C18	Ceramic 33pF ± 10% 50 WV SL		C67	Ceramic 180pF ± 10% 50 WV SL	CF-1470
C19	Ceramic Barrier 0.01μF 25 WV		C68	Mylar 0.001μF ± 10% 50 WV	
C20	Mylar 0.001μF ± 10% 50 WV		C69	Mylar 0.022μF ± 10% 50 WV	
C21	Ceramic 22pF ± 10% 50 WV SL	CF-1015	C70	Ceramic 1 ~ 5(2)pF ± 0.25pF 50 WV SL	CF-1025
C22	Mylar 0.01μF ± 10% 50 WV		C71	Tantalum 1μF/25V	
C23	Mylar 0.001μF ± 10% 50 WV		C72	Electrolytic 1μF/50V	
C24	Ceramic 1pF ± 0.25pF 50 WV SL		C73	Ceramic 2pF ± 0.25pF 50 WV SL	CF-1025
C25	Mylar 0.022μF ± 10% 50 WV		C74	Mica 10pF ± 5 % 50 WV	
C26	Mylar 0.022μF ± 10% 50 WV	CF-1015	C75	Mica 18 ~ 33(20)pF ± 5 % 50 WV	
C27	Mylar 0.0047μF ± 10% 50 WV		C76	Mica 39pF ± 5 % 50 WV	
C28	Mylar 0.022μF ± 10% 50 WV		C77	Ceramic 0.01μF 50 WV	
C29	Electrolytic 10μF/16V		C78	Ceramic 220pF ± 10% 50 WV SL	CF-1490
C30	Ceramic Barrier 0.1μF 25 WV		C79	Mylar 0.022μF ± 10% 50 WV	
C31	(Not used)	CF-1015	C80	Mylar 0.047μF 50 WV	
C32	Mylar 0.022μF ± 10% 50 WV		C81	Ceramic 82pF ± 5 % 50 WV	CF-1823
C33	Mylar 0.022μF ± 10% 50 WV		C82	Ceramic 39pF ± 5 % 50 WV	CF-1326
C34	Electrolytic 33μF/16V		C83	Ceramic 47pF ± 5 % 50 WV	CF-1360
C35	Ceramic 33pF ± 10% 50 WV SL		C84	Ceramic 1 ~ 4(3)pF ± 0.25pF 50 WV SL	CF-1045
C36	Ceramic 0.047μF 50 WV SL	CF-1015	C85	Ceramic 0.01μF 50 WV	
C37	Mylar 0.01μF ± 10% 50 WV		C86	Mylar 0.0012μF ± 10% 50 WV	
C38	Mylar 0.022μF ± 10% 50 WV		C87	Electrolytic 100μF/10V	
C39	Tantalum 0.022μF/35V		C88	Ceramic 0.01μF 50 WV	
C40	Mylar 0.012μF ± 10% 50 WV		C89	Electrolytic 47μF/10V	
C41	Mylar 0.0027μF ± 10% 50 WV	CF-1015	C90	Ceramic 0.047μF 50 WV	
C42	Mylar 0.001μF ± 10% 50 WV		C91	Ceramic Barrier 0.01μF 25 WV	
C43	Ceramic Barrier 0.068μF 25 WV		C92	Mylar 0.0047μF ± 10% 50 WV	
C44	Ceramic Barrier 0.068μF 25 WV		C93	Ceramic Barrier 0.01μF 25 WV	
C45	Electrolytic 47μF/16V		C94	Ceramic Barrier 0.01μF 25 WV	
C46	Mylar 0.047μF ± 10% 50 WV	CF-1015	C95	Ceramic 75 ~ 100(82)pF ± 10% 50 WV SL	CF-1823
C47	Ceramic Barrier 0.068μF 25 WV		C96	Ceramic Barrier 0.01μF 25 WV	
C48	Electrolytic 4.7μF/25V		C97	Ceramic Barrier 0.01μF 25 WV	
C49	Electrolytic 4.7μF/25V		C98	Mica 47pF ± 5 % 50 WV	
			C99	Mica 220pF ± 10% 50 WV	

Ref. No.	Description	R/S Part No. Mfr's Part No.
C100	Mica 56pF ± 5 % 50 WV	
C101	Mica 27pF ± 5 % 50 WV	
C102	Ceramic 0.047μF ± 5 % 50 WV	
C103	Mica 47pF ± 5 % 50 WV	
C104	Ceramic 0.0047μF 50 WV	
C105	Mica 220pF ± 10% 50 WV	
C106	Mica 220pF ± 10% 50 WV	
C107	Mica 39pF ± 5 % 50 WV	
C108	Mica 220pF ± 10% 50 WV	
C109	Electrolytic 470μF/16V	
C110	Mylar 0.0033μF ± 10% 50 WV	
C111	Mylar 0.0033μF ± 10% 50 WV	
C112	Mylar 0.0033μF ± 10% 50 WV	
C113	Mylar 0.001μF ± 10% 50 WV	
C114	Mylar 0.001μF ± 10% 50 WV	
C115	Mylar 0.0033μF ± 10% 50 WV	
C116	Ceramic Barrier 0.01μF 25 WV	
C117	Ceramic Barrier 0.01μF 25 WV	
C118	Ceramic Barrier 0.01μF 25 WV	
C119	Ceramic Barrier 0.01μF 25 WV	
C120	Ceramic 0.047μF 50 WV	
C121	Ceramic 0.022μF 50 WV	
C122	Ceramic 0.047μF 50 WV	
C123	Electrolytic 10μF/16V	
C124	Tantalum 10μF/3.15V	
C125	Ceramic 0.047μF 50 WV	
C126		
C127		
C128		
C129		
C130		
C131		
C132		
C133		
C135		
C136		
Ref. No.	Description	R/S Part No. Mfr's Part No.
FILTERS		
CF 1	Ceramic Filter SFE 10.7 MJ	C-0913 P-130056
CF 2	Ceramic Filter CF 455 or SFP455H	C-0957 P-130061 C-0991 or P-130069

Ref. No.	Description	R/S Part No.	Mfr's Part No.
DIODES			
D 1	Silicon Diode 1S953	DX-0259	
D 2	Silicon Diode 1S953	DX-0259	
D 3	Silicon Diode 1S953	DX-0259	
D 4	Germanium Diode 1S188AM or 1N60	DX-0240 DX-0161	
D 5	(Not used)		
D 6	Silicon Diode 1S953	DX-0259	
D 7	Silicon Diode 1S953	DX-0259	
D 8	Silicon Diode 10E1	DX-1039	
D 9	Silicon Diode 10E1	DX-1039	
D10	Silicon Diode 1S953	DX-0259	
D11	Silicon Diode 1S953	DX-0259	
D12	Variable Capacitance Diode ITT310S	DX-1080	
D13	Zener Diode RD8.2EB1	DX-1249	
D14	Zener Diode RD4.7EB2	DX-1248	
D15	Light Emitting Diode SLP137B		
D16	Light Emitting Diode TLR321 or KLR321		
FUSE			
F 1	Fuse (Tube Type) 125V, 2A		P-250115
INTEGRATED CIRCUIT			
IC 1	μPD2814C	MX-3878	
*IC 1	HD42856		
IC 2	TA7310P(Y) or KIA7310P(Y)	MX-3547	
IC 3	NJM4558D-G	MX-3877	
IC 4	MB3712HM		
COILS			
L 1	Filter Coil	CA-3548	P-380043
L 2	Filter Coil	CA-3918	P-380044
L 3	Filter Coil	C-0755	P-380092
L 4	Filter Coil	CA-3910	P-380134
L 5	Pri Drive Coil	CA-3937	P-380158
L 6	Choke Coil	CB-2284	P-380048
L 7	Choke Coil	CB-2283	P-380047
L 8	Choke Coil	CB-2318	P-390098
L 9	RF Choke Coil	CA-7625	P-380035
L10	Line Choke Coil	CA-5011	P-380186
L11	Choke Coil	CB-2318	P-380098
L12	Choke Coil	CB-2318	P-380098
L13	Choke Coil	CB-2318	P-380098

* For Australian models

Ref. No.	Description	R/S Part No.	Mfr's Part No.	Ref. No.	Description	R/S Part No.	Mfr's Part No.
JACKS				RESISTORS (): Typical Value, UY: Radial Type, PY: Axial Type			
J 1	Antenna Connector	J-0843	P-190111	R 1	Carbon PY 1.5 K Ω ½W	NEF-0206	
J 2	EXT. SP. Jack	J-1032	or P-190184	R 2	Carbon PY 2.2 ~ 15(4.7) K Ω ¼W	NEE-0247	
J 3	Mic Connector	J-0957	P-190133	R 3	Carbon UY 1 K Ω ¼W	NEE-0196	
		J-6707	P-190180	R 4	Carbon PY 10 K Ω ¼W	NEE-0281	
METER				R 5	Carbon UY 470 Ω ¼W	NEE-0169	
M1	S/RF Meter 560 μ A	M-0320	P-230055	R 6	Carbon UY 100 ~ 470(330) Ω ¼W	NEE-0159	
LAMP				R 7	Carbon UY 3.3 K Ω ¼W	NEE-0230	
PL1	Meter Lamp		P-240119	R 8	Carbon UY 560 Ω ¼W	NEE-0176	
TRANSISTORS				R 9	Carbon UY 1 K Ω ¼W	NEE-0196	
Q 1	2SA733 (P)			R10	Carbon UY 10 K Ω ¼W	NEE-0281	
Q 2	2SC930 (D)			R11	Carbon UY 220 Ω ¼W	NEE-0149	
Q 3	2SC930 (D)			R12	Carbon UY 560 Ω ¼W	NEE-0176	
Q 4	2SC930 (C)			R13	Carbon UY 560 Ω ¼W	NEE-0176	
Q 5	2SC945 (P)			R14	Carbon UY 10 K Ω ¼W	NEE-0281	
Q 6	2SC945 (P)			R15	Carbon UY 0 ~ 82(15) Ω ¼W	NEE-0074	
Q 7	2SC930 (E)			R16	Carbon PY 470 Ω ¼W	NEE-0169	
Q 8	2SC900 (U)			R17	Carbon PY 2.2 K Ω ¼W	NEE-0216	
Q 9	2SC1675(K or L)			R18	Carbon PY 2.2 K Ω ¼W	NEE-0216	
Q10	2SC1675(K or L)			R19	Carbon UY 10 K Ω ¼W	NEE-0281	
Q11	FET 2SK41 (E1)			R20	Carbon PY 22 K Ω ¼W	NEE-0311	
Q12	2SA733 (P)			R21	Carbon PY 330 ~ 1K(560) Ω ¼W	NEE-0176	
Q13	2SA733 (P)			R22	(Not used)		
Q14	2SC536 (F)			R23	Carbon UY 470 Ω ¼W	NEE-0169	
Q15	2SC693 (G)			R24	Carbon PY 10 K Ω ¼W	NEE-0281	
Q16	2SA733 (P)			R25	Carbon PY 33 K Ω ¼W	NEE-0324	
Q17	2SC1175(D or E)			R26	Carbon PY 1 K Ω ¼W	NEE-0196	
Q18	2SC2086			R27	Carbon PY 470 Ω ¼W	NEE-0169	
Q19	2SC2166			R28	Carbon PY 100 K Ω ¼W	NEE-0371	
				R29	Carbon UY 1M Ω ¼W	NEE-0445	
				R30	Carbon UY 68 K Ω ¼W	NEE-0354	
				R31	Carbon PY 1 K Ω ¼W	NEE-0196	
				R32	Carbon PY 10 K Ω ¼W	NEE-0281	
				R33	Carbon PY 10 K Ω ¼W	NEE-0281	
				R34	Carbon UY 47 K Ω ¼W	NEE-0340	
				R35	Carbon UY 47 K Ω ¼W	NEE-0340	
				R36	Carbon UY 820 K Ω ¼W		
				R37	(Not used)		
				R38	Carbon UY 10 K Ω ¼W	NEE-0281	
				R39	Carbon UY 3.3 K Ω ¼W	NEE-0230	
				R40	Carbon PY 15 K Ω ¼W	NEE-0297	
				R41	Carbon PY 2.2 K Ω ¼W	NEE-0216	
				R42	Carbon PY 470~820(560)K Ω ¼W	NEE-0429	
				R43	Carbon PY 1 K Ω ¼W	NEE-0196	
				R44	Carbon PY 10 K Ω ¼W	NEE-0281	
				R45	Carbon PY 1 K Ω ¼W	NEE-0196	
				R46	Carbon UY 56 K Ω ¼W	NEE-0345	
				R47	Carbon UY 3.3 K Ω ¼W	NEE-0230	
				R48	Carbon UY 4.7 K Ω ¼W	NEE-0247	
				R49	Carbon UY 390 Ω ¼W	NEE-0162	
				R50	Carbon UY 10 K Ω ¼W	NEE-0281	

Ref. No.	Description				R/S Part No. Mfr's Part No.
R51	Carbon	UY	3.3 K Ω	$\frac{1}{4}$ W	NEE-0230
R52	Carbon	UY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R53	Carbon	UY	470 K Ω	$\frac{1}{4}$ W	NEE-0423
R54	Carbon	UY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R55	Carbon	UY	2.2 K Ω	$\frac{1}{4}$ W	NEE-0216
R56	Carbon	PY	560 K Ω	$\frac{1}{4}$ W	NEE-0429
R57	Carbon	PY	39 K Ω	$\frac{1}{4}$ W	NEE-0330
R58	Carbon	UY	47 K Ω	$\frac{1}{4}$ W	NEE-0340
R59	Carbon	PY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R60	Carbon	PY	33~150 (56) K Ω	$\frac{1}{4}$ W	NEE-0345
R61	Carbon	PY	470 Ω	$\frac{1}{4}$ W	NEE-0423
R62	Metal Film	PY	10 Ω	2W	NEH-0063
R63	Carbon	PY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R64	Carbon	UY	1 K Ω	$\frac{1}{4}$ W	NEE-0196
R65	Carbon	PY	220 Ω	$\frac{1}{4}$ W	NEE-0149
R66	Carbon	PY	2.2 K Ω	$\frac{1}{4}$ W	NEE-0216
R67	Carbon	UY	1 K Ω	$\frac{1}{4}$ W	NEE-0196
R68	Carbon	UY	2.2 K Ω	$\frac{1}{4}$ W	NEE-0216
R69	Carbon	UY	1 M Ω	$\frac{1}{4}$ W	NEE-0445
R70	Carbon	PY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R71	Carbon	PY	100 K Ω	$\frac{1}{4}$ W	NEE-0371
R72	Carbon	PY	22 K Ω	$\frac{1}{4}$ W	NEE-0311
R73	Carbon	UY	3.3 K Ω	$\frac{1}{4}$ W	NEE-0230
R74	Carbon	UY	3.3 K Ω	$\frac{1}{4}$ W	NEE-0230
R75	Carbon	PY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R76	Carbon	UY	330 K Ω	$\frac{1}{4}$ W	NEE-0410
R77	Carbon	UY	470 Ω	$\frac{1}{4}$ W	NEE-0169
R78	Carbon	PY	47 K Ω	$\frac{1}{4}$ W	NEE-0340
R79	Carbon	PY	100 Ω	$\frac{1}{4}$ W	NEE-0132
R80	Carbon	PY	220 Ω	$\frac{1}{4}$ W	NEE-0149
R81	Carbon	PY	220 Ω	$\frac{1}{4}$ W	NEE-0149
R82	Carbon	PY	470 Ω	$\frac{1}{4}$ W	NEE-0169
R83	Carbon	PY	100 Ω	$\frac{1}{4}$ W	NEE-0132
R84	Carbon	UY	10 K Ω	$\frac{1}{4}$ W	NEE-0281
R85	Carbon	PY	100 Ω	$\frac{1}{4}$ W	NEE-0132
R86	Carbon	PY	220 Ω	$\frac{1}{4}$ W	NEE-0149
R87	Carbon	PY	270 Ω	$\frac{1}{4}$ W	NEE-0155
R88	Carbon	UY	6.8 K Ω	$\frac{1}{4}$ W	NEE-0262
R89	Carbon	UY	4.7 K Ω	$\frac{1}{4}$ W	NEE-0247
R90	Carbon	PY	100 Ω	$\frac{1}{4}$ W	NEE-0132
R91	Carbon	UY	100 Ω	$\frac{1}{4}$ W	NEE-0132
R92	Carbon	PY	560 Ω	$\frac{1}{4}$ W	NEE-0176
R93	Carbon	PY	12 Ω	$\frac{1}{4}$ W	NEE-0067
R94	Carbon	PY	15 Ω	$\frac{1}{4}$ W	NEE-0074
R95	Carbon	PY	0 ~ 15(7.5) Ω	$\frac{1}{2}$ W	
R96	Metal Oxide	PY	330 Ω	1W	NEG-0159
R97	Carbon	UY	33 K Ω	$\frac{1}{4}$ W	NEE-0324
R98	Metal Oxide	PY	390 Ω	2W	NEH-0162
R99	Carbon	PY (*1.2 K)	820 Ω	$\frac{1}{4}$ W	NEE-0187
R100	Carbon	PY (*Not used)	1.2 K Ω	$\frac{1}{4}$ W	NEE-0199
R101	Carbon		2.2 K Ω	1/5W	
R102	Carbon		2.2 K Ω	1/5W	
R103	Carbon		2.2 K Ω	1/5W	
R104	Carbon		2.2 K Ω	1/5W	

Ref. No.	Description				R/S Part No. Mfr's Part No.
R105	Carbon		2.2 K Ω	1/5W	
R106	Carbon		2.2 K Ω	1/5W	
R107	Carbon		2.2 K Ω	1/5W	

Ref. No.	Description	R/S Part No.	Mfr's Part No.
SPEAKER			
SP	Speaker	S-4615 S-4645	P-270075 or P-270051

Ref. No.	Description	R/S Part No.	Mfr's Part No.
SWITCHES			
S 1	CHANNEL Selector Switch STH-40		P-180377
*S 1	CHANNEL Selector Switch		P-180447
S 2	ANL Switch ANL/OUT	S-2518	P-180378
S 3	Power Switch (with VR-1)	P-1961	P-170462

Ref. No.	Description	R/S Part No.	Mfr's Part No.
TRANSFORMERS			
T 1	ANT. Coil	CZ-3543	P-380038
T 2	Tuning Coil 27 MHz	CA-3916	P-380140
T 3	Tuning Coil 27 MHz	CA-3917	P-380141
T 4	IF Transformer	CA-7972	P-130066
T 5	IF Transformer	CA-7973	P-130067
T 6	Modulation Transformer	TD-0172	P-100519
T 7	Tripler Coil	CA-4939	P-380136
T 8	VCO Coil	CA-3911	P-380137
T 9	Filter Coil 10.24MHz	CA-3935	P-380160
T10	Tuning Coil 27 MHz	CA-3923	P-380149
T11	Filter Coil 27 MHz	CA-3925	P-380151
T12	Trap Coil	CA-3908	P-380132

Ref. No.	Description	R/S Part No.	Mfr's Part No.
VARIABLE RESISTOR			
VR-1	VOLUME Resistor (with S3) 10K Ω (A)	P-1961	P-170462
VR-2	SQUELCH Resistor 100K Ω (B)	P-1960	P-170463
VR-3	Semi-Fixed Resistor SR19R 2.2K Ω B	P-6543	P-170298
VR-4	Semi-Fixed Resistor SR19R 2.2K Ω B	P-6543	P-170298

Ref. No.	Description	R/S Part No.	Mfr's Part No.
CRYSTAL			
X1	Crystal HC-18/U 10.240 MHz	MX-2295 MX-2297 MX-2388	P-390047 or P-390049 or P-390066

* For Australian models

EXPLODED VIEW PARTS LIST

Ref. No.	Description	R/S Part No.	Mfr's Part No.	Ref. No.	Description	R/S Part No.	Mfr's Part No.
	Thumb Screw for Mounting Bracket	K-2181	P-650170		Tapping Screw (Tap Tight) 3φ x 6P		P470021
	Mounting Bracket	MB-0229	P-411749		Tapping Screw (Poly Wave) 3φ x 6PTII		
	Rubber Washer	HB-6357	P-680114		Rivet YB-320		
	Case Top	Z-4742	P-411753		Screw 3φ x 8P		
	Cushion	HB-6023	P-660123		Spring Washer 3SW		
	In-line Fuse Holder	F-1147	P-260023		Nut 3N		
	Main P.C.B.	X-8093	P-200668		Screw 2.6φ x 6P		
	Main P.C.B.		P-200669		Screw 2φ x 4P		
	Earth Plate	HB-8559	P-411841		Nut 2.6N		
	Insulator Plate	HB-8560	P-480252		Screw 2φ x 6P		
	Strain Relief	HB-0598	P-480010		Screw 3φ x 5P		
	FCC Panel	HB-8563	P-730260		Screw (Black) 3φ x 6P		
	DOC Panel	HB-8564	P-730274				
	PMG Panel		P-730248				
	Chassis		P-400232				
	Heat Sink "A"	HH-0321	P-411752				
	Insulator "A"	HB-8556	P-480238				
	IC-4 (MB 3721)						
	Plate Nut	HD-7130	P-411751				
	Antenna Connector	J-0843	P-190111				
			or P-190184				
	EXT. SP. Jack	J-0957	P-190133				
	Q19 (2SC2166)						
	Insulator "B"	HH-0205	P-480156				
	Heat Sink (with Q18)						
	Mic Connector, 5P DIN	J-6707	P-190180				
	Earth Lug	HB-7744	P-411541				
	VOLUME Control (VR-1/S3)	P-1961	P-170462				
	SQUELCH Control (VR-2)	P-1960	P-170463				
	Slide Switch (S2)	S-2518	P-180378				
	Meter Lamp		P-240119				
	Lamp Cover	HB-7594	P-680176				
	Meter Holder	HB-8562	P-610620				
	Flexible P.C.B.		P-200670				
	LED Cushion	HB-7595	P-680179				
	Channel Selector Switch		P-180377				
	Channel Selector Switch		P-180447				
	LED Channel Display						
	Meter	M-0320	P-230055				
	Meter Cover	HB-7590	P-610572				
	Heat Sink	HH-0282	P-411540				
	Front Panel	Z-4741	P-700370				
	Knob for Channel Selector	K-2974	P-650266A				
	Knob for VOLUME & SQUELCH	K-2973	P-650265				
	Speaker 77m/m 8 ohm	S-4645	P-270051				
		or S-4815	P-270075				
	Speaker Bracket	HB-7596	P-411240				
	Net	HB-7597	P-820380				
	Case Bottom	Z-4743	P-411754				
	Spacer	HB-8561	P-680185				

• For Canadian models

* For Australian models

NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.

SERVICE SPECIFICATIONS
Transmitter:

- RF Power output: 4 watts max. (FCC Limit)
- Modulation capability: Range 80-100%
- Automatic 100% modulation limiter circuit
- Frequency accuracy: Better than 0.005%
- Spurious and harmonic suppression:
Better than 60db below carrier

Current Drain:

- Receive mode @ No Signal - 350 mA Max.
- Transmit Mode @ 0% Mod - 1100 mA Max.
- Transmit Mode @ Max. Mod - 1700 mA Max.

Receiver:

- System: Dual conversion superheterodyne
 - Sensitivity $10 \text{ db } \frac{S+N}{N}$: Less than $1 \mu\text{v}$
 - Receiver antenna spurious emission:
Maximum 0.2 Nano watts
 - Automatic Noise Limiter (ANL): Built-in
- All Measurements at 25° nominal and 13.8 volt DC.

General:

- Transceiver circuitry:
IC's (Integrated Circuits) and solid state technology
- Internal Burn-out circuit protection:
Component failure protection for min. of 5 minutes of continuous transmitting with open or loose antenna
- DC power input range:
10.5 - 16 volt DC (Neg. (-) Ground)
- Circuit protection:
2 Amp fused power cord
- Power regulation: Voltage regulated for critical circuits
- Antenna impedance: 50Ω nominal
- Frequency range: 26.965 MHz - 27.405 MHz
- Filters: Two ceramic filters for adjacent channel rejection
- Speaker impedance: 8Ω nominal

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Adjustments made with 13.8 volt DC input. Connect low sides of test equipment to ground unless specified otherwise. Connect 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

Suggested Alignment Tools:

GC ELECTRONICS:

CT1.....5000
T7,T8,T9.....5000,8728
T1,T2,T3,T4,T5,T6.....9440

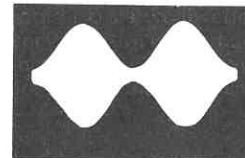


FIG. 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to Q8 Emitter			Check for 10.240MHz ± 200 Hz.
Input of DC meter to TP.	Ch. 40	T1	Adjust for 3.6V ± 0.2 V.
	Ch. 1		Check for a reading of 1.5V to 2.0V.
Input of DC meter to TP.	Ch. 40, XMT	CT1	Adjust for 3.6V ± 0.2 V.
	Ch. 1, XMT		Check for a reading of 1.5V to 2.2V.
Input of frequency counter to junction of T1 and C6.	Ch. 1		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.)
	Ch. 1, XMT		Check for 13.4825MHz. Check all channels. (See Truth Chart for correct frequencies.)

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting. Set Receiving Range to Distant.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator to Q12, base. 455kHz, 1000Hz @ 30% modulation.	Ch. 19	T9, T8	Adjust for maximum audio output.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	T7, T6, T5	Adjust for maximum audio output. Readjust T8 and T9 for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Receiving Range - Local	RV2	Adjust so squelch just breaks.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	RV1	Adjust so that all four LED'S just light.

TRANSMITTER ALIGNMENT

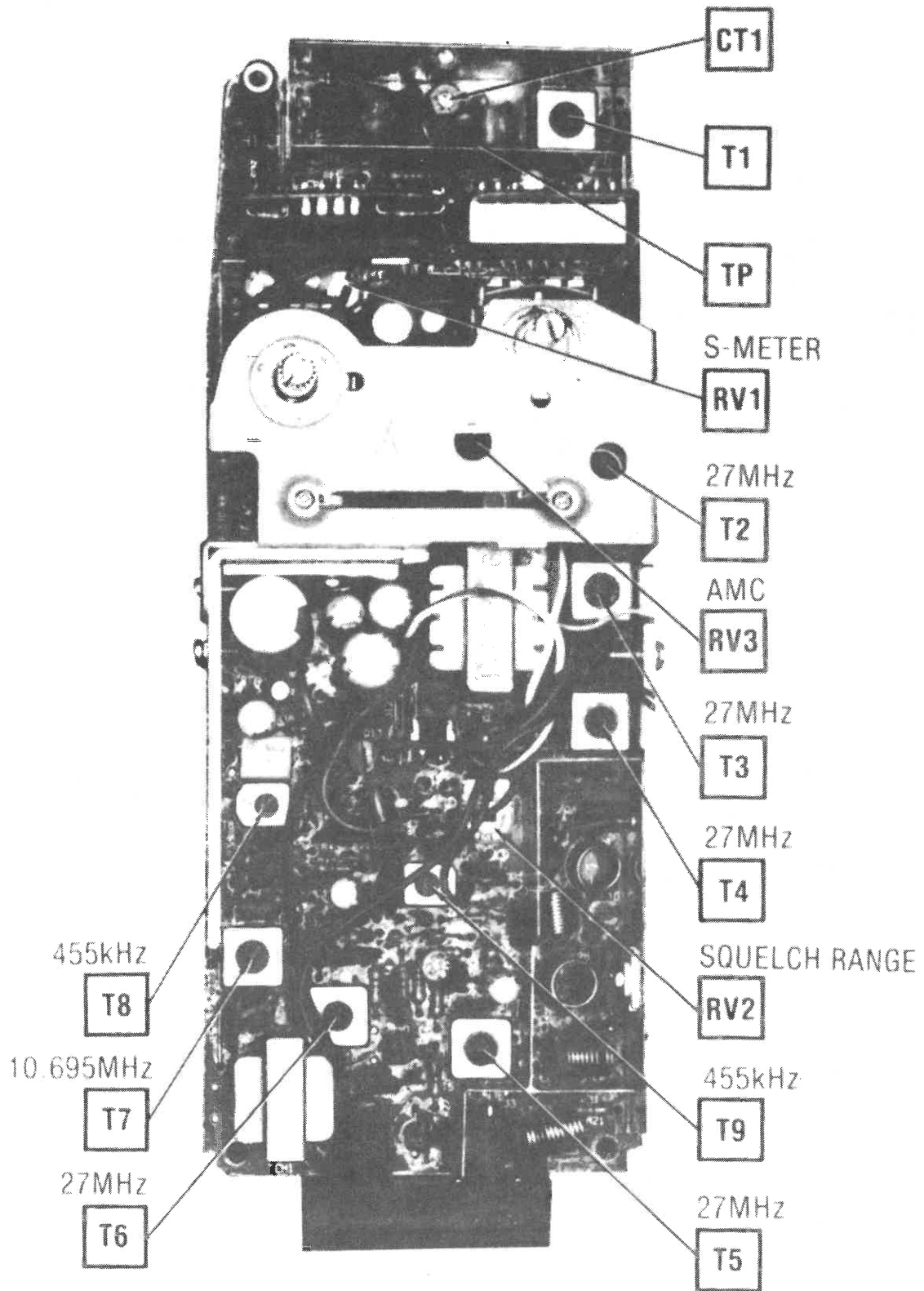
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19, XMT	T2, T3, T4	Adjust for maximum output.
Input of RF wattmeter to antenna input.	Ch. 19, XMT	L6	Adjust for 3.8 watts.

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.

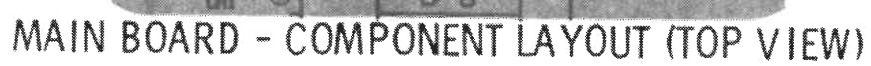
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 30mV signal at MIC input.	Ch. 19, XMT	RV3	Adjust for 90% modulation. See Figure 1.

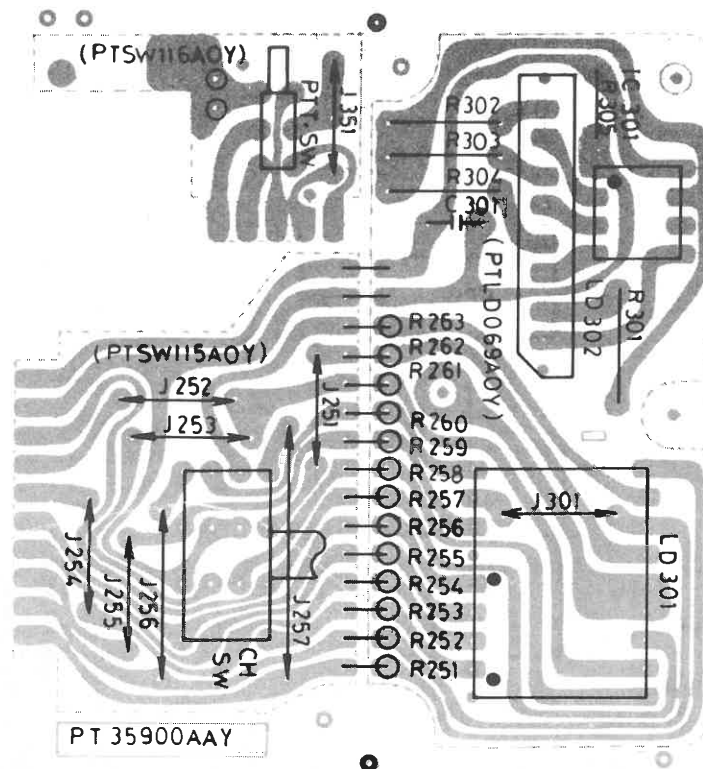


ALIGNMENT POINTS

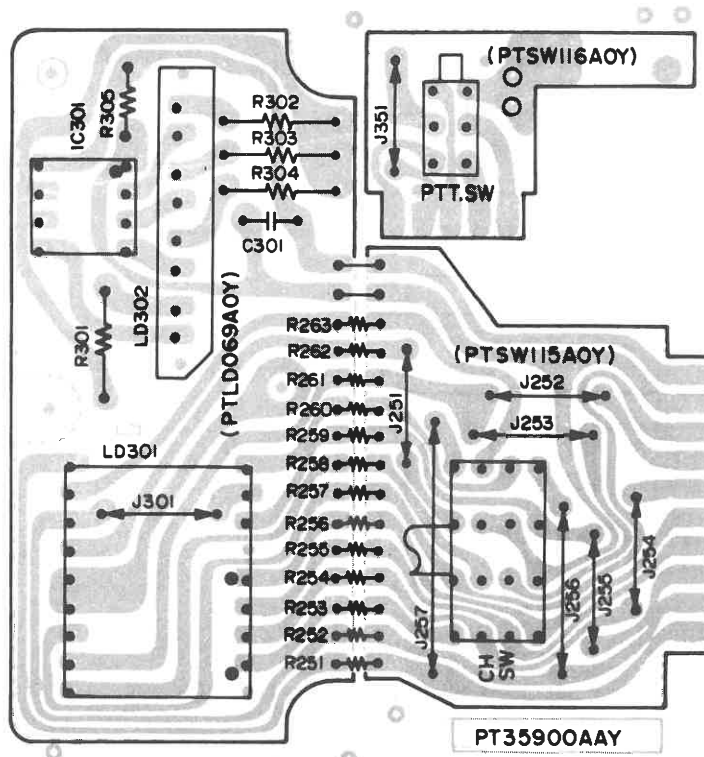
TRUTH CHART

CHANNEL	1 = 7.8V								REC VCO OUTPUT IN MHz AT JUNCTION T1 & C6	XMT VCO OUTPUT IN MHz AT JUNCTION T1 & C6	
	IC1										
	PINS										
	10	11	12	13	14	15	16	17			
1	1	1	1	1	1	1	1	1	16.270	13.4825	
2	1	0	0	0	0	1	1	1	16.280	13.4875	
3	1	0	0	1	0	1	1	1	16.290	13.4925	
4	0	1	0	1	1	1	1	1	16.310	13.5025	
5	0	0	0	1	0	1	1	1	16.320	13.5075	
6	0	1	0	0	0	1	1	1	16.330	13.5125	
7	1	0	1	1	1	1	1	1	16.340	13.5175	
8	0	0	0	0	0	1	1	1	16.360	13.5275	
9	0	0	0	1	1	1	1	1	16.370	13.5325	
10	0	0	1	0	0	0	1	1	16.380	13.5375	
11	1	1	1	1	1	0	1	1	16.390	13.5425	
12	1	0	0	0	0	0	1	1	16.410	13.5525	
13	1	0	0	1	0	0	1	1	16.420	13.5575	
14	0	1	0	1	1	0	1	1	16.430	13.5625	
15	0	0	0	1	0	0	1	1	16.440	13.5675	
16	0	1	0	0	0	0	1	1	16.460	13.5775	
17	1	0	1	1	1	0	1	1	16.470	13.5825	
18	0	0	0	0	0	0	1	1	16.480	13.5875	
19	0	0	0	1	1	0	1	1	16.490	13.5925	
20	0	0	1	0	0	1	0	1	16.510	13.6025	
21	1	1	1	1	1	1	0	1	16.520	13.6075	
22	1	0	0	0	0	1	0	1	16.530	13.6125	
23	1	0	0	1	0	1	0	1	16.560	13.6275	
24	0	1	0	1	1	1	0	1	16.540	13.6175	
25	0		0	1	0	1	0	1	16.550	13.6225	
26	0	1	0	0	0	1	0	1	16.570	13.6325	
27	1	0	1	1	1	1	0	1	16.580	13.6375	
28	0	0	0	0	0	1	0	1	16.590	13.6425	
29	0	0	0	0	1	1	0	1	16.600	13.6475	
30	0	0	1	0	0	0	0	1	16.610	13.6525	
31	1	1	1	1	1	0	0	1	16.620	13.6575	
32	1	0	0	0	0	0	0	1	16.630	13.6625	
33	1	0	0	1	0	0	0	1	16.640	13.6675	
34	0	1	0	1	1	0	0	1	16.650	13.6725	
35	0	0	0	1	0	0	0	1	16.660	13.6775	
36	0	1	0	0	0	0	0	1	16.670	13.6825	
37	1	0	1	1	1	0	0	1	16.680	13.6875	
38	0	0	0	0	0	0	0	1	16.690	13.6925	
39	0	0	0	1	1	0	0	1	16.700	13.6975	
40	0	0	1	0	0	0	1	0	16.710	13.7025	

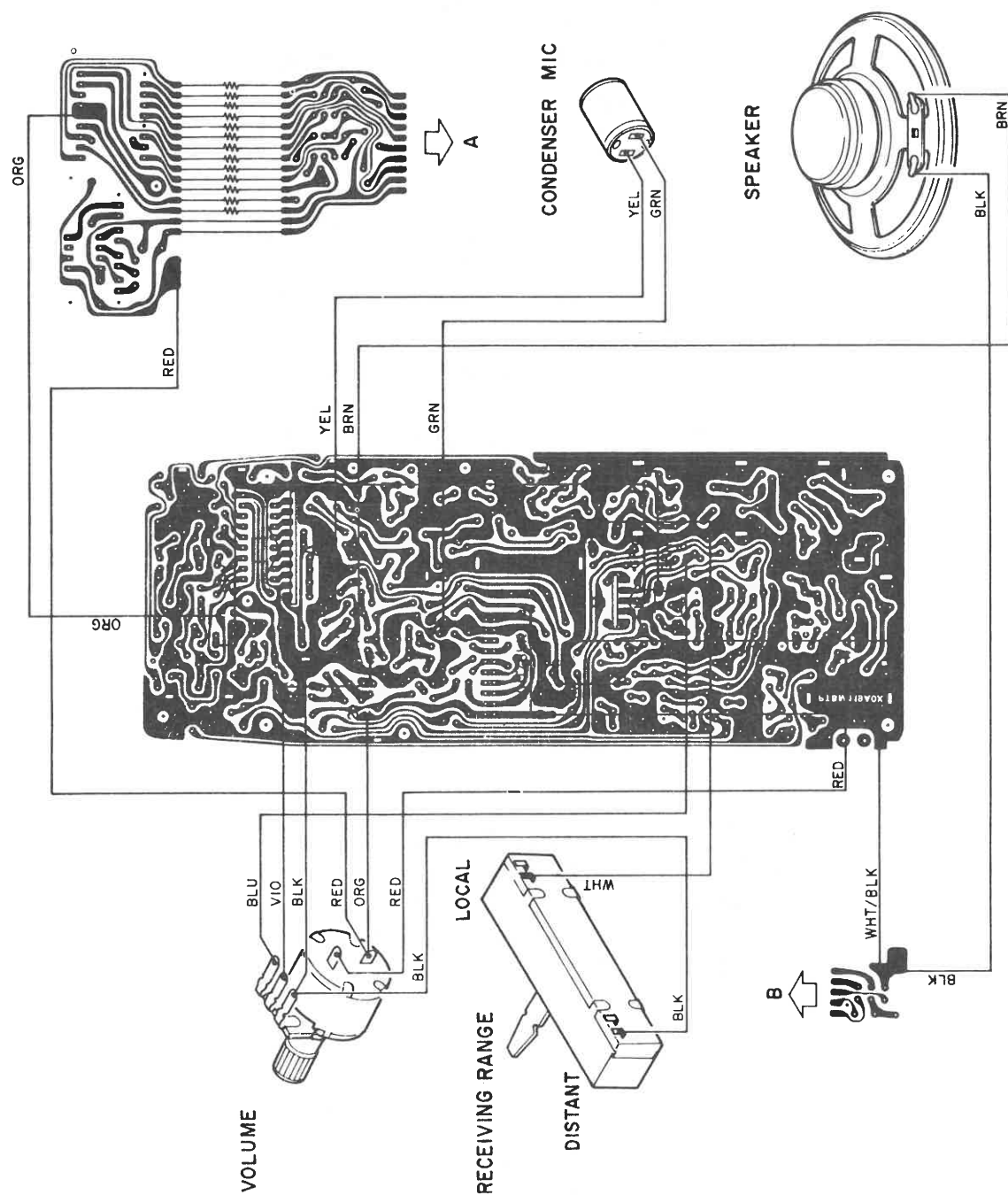




CHANNEL SELECTOR BOARD (TOP VIEW)



CHANNEL SELECTOR BOARD (BOTTOM VIEW)



INTERCONNECTION DIAGRAM MODEL 3-5900A

CAT. NO.	REF.	DESCRIPTION
<u>CAPACITORS - CERAMIC</u>		
C38		8pf, $\pm .5$ pf, 50V
C47		12pf, $\pm 10\%$, 50V
C7, 17		15pf, $\pm 10\%$, 50V
C8, 10, 91		22pf, $\pm 10\%$, 50V
C6, 32		27pf, $\pm 10\%$, 50V
C37, 90		33pf, $\pm 10\%$, 50V
C3, 42		47pf, $\pm 10\%$, 50V
C11, 21		82pf, $\pm 10\%$, 50V
C28		100pf, $\pm 10\%$, 50V
C14, 15, 18, 29		120pf, $\pm 10\%$, 50V
C26, 33, 35		150pf, $\pm 10\%$, 50V
C73		180pf, $\pm 10\%$, 50V
C12, 27, 75		220pf, $\pm 10\%$, 50V
C30		270pf, $\pm 10\%$, 50V
C36		330pf, $\pm 10\%$, 50V
C24, 31		390pf, $\pm 10\%$, 50V
C301		1000pf, $\pm 10\%$, 50V
C65, 67		2200pf, $+100\%$ -0, 50V
C2, 9, 23		4700pf, $+100\%$ -0, 50V
C1, 5, 16, 19, 20, 25, 34, 39, 41, 44, 50, 51, 61, 86, 87, 88		.01MF, $+100\%$ -0, 50V
C48		.01MF $\pm 10\%$, 50V
C22, 52, 66		.022MF, $\pm 20\%$, 50V
C43, 45, 53, 56, 58		.047MF, $\pm 20\%$, 50V
C64		.1MF, $\pm 20\%$, 25V

CAPACITORS - MYLAR

C62	3300pf, $\pm 10\%$, 50V
C59	6800pf, $\pm 10\%$, 50V
C55	.01MF, $\pm 10\%$, 50V
C13	.022MF, $\pm 10\%$, 50V
C57	.047MF, $\pm 10\%$, 50V
C74, 78	.068MF, $\pm 10\%$, 50V

CAPACITORS - ELECTROLYTIC

C4, 63, 84, 89	1MF, 50V
C60, 71, 79, 82	3.3MF, 25V
C49	4.7MF, 25V
C46	10MF, 16V
C69, 72, 81	33MF, 6.3V
C68, 76	47MF, 16V
C85	47MF, 25V
C40	100MF, 10V
C77	220MF, 16V
C80	1000MF, 16V

CAPACITORS - TANTALUM

C70	3.3MF, $\pm 20\%$, 25V
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CAPACITORS - TRIMMER

EA30X84	CT1	VCO Adjust
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CAT. NO.	REF.	DESCRIPTION
<u>INTEGRATED CIRCUITS & TRANSISTORS</u>		
EA33X8543	IC1	PLL Microcircuit, TC9109P
EA33X8396	IC2	AF/Mod. Amp., TA7205AP
EA33X8550	IC301	Analog Level Det., TL489CP
EA15X251	Q1	Buffer, 2SC1359B
EA15X325	Q2	TX Switch, 2SC828T
EA15X251	Q3	VCO, 2SC1359B
EA15X251	Q4	Doubler, 2SC1359B
EA15X364	Q5	RF PreAmp, 2SC710D
EA15X383	Q6	RF Driver, 2SC1846Q
EA15X467	Q7	RF Power Amp, 2SC1974
EA15X350	Q8/Or	Reference Osc., 2SC1675M
EA15X364	Q8	Reference Osc., 2SC710D
EA15X250	Q9	Regulator, 2SC1383Q
EA15X364	Q10	RF Amp, 2SC710C
EA15X364	Q11	Mixer, 2SC710D
EA15X374	Q12/Or	Mixer, 2SC1675K
EA15X364	Q12	Mixer, 2SC710D
EA15X364	Q13	IF Amp, 2SC710D
EA15X325	Q14	IF Amp, 2SC828C
EA15X466	Q15	ALC, 2SA564Q
EA15X335	Q16	Squelch, 2SC945AQ

DIODES & LED'S

EA16X106	D1	Vari-Cap
EA16X146	D2, 4, 5, 6, 8, 9, 12	Diode, 1S1555
EA16X137	D3	Zener, RD9.1E
EA16X428	D7, 10, 13	Diode, 1N60
EA16X430	D11	Diode, 10V-200
EA16X230	LD301	Channel Indicator LED, LN524RA
EA16X231	LD302	RX/TX Indicator LED, LN04220P

COILS & TRANSFORMERS

EA36X574	L1	RF Coil
EA36X575	L2	RF Coil
EA36X245	L3	RF Coil
EA36X240	L4	RF Coil
EA36X522	L5	RF Coil
EA36X521	L6	RF Coil
EA36X261	L7	RF Coil
EA36X576	L8, 10	RF Coil
EA36X294	L9	RF Coil
EA64X45	CH1	Choke Coil
EA36X337	T1	RF Coil
EA36X283	T2, 3	RF Transformer
EA36X248	T4	RF Transformer
EA36X249	T5	RF Coil
EA36X265	T6	RF Coil
EA36X266	T7	RF Coil
EA61X188	T8	IF Transformer
EA61X190	T9	IF Transformer
EA64X30	T10	Audio Output/Mod. Transformer

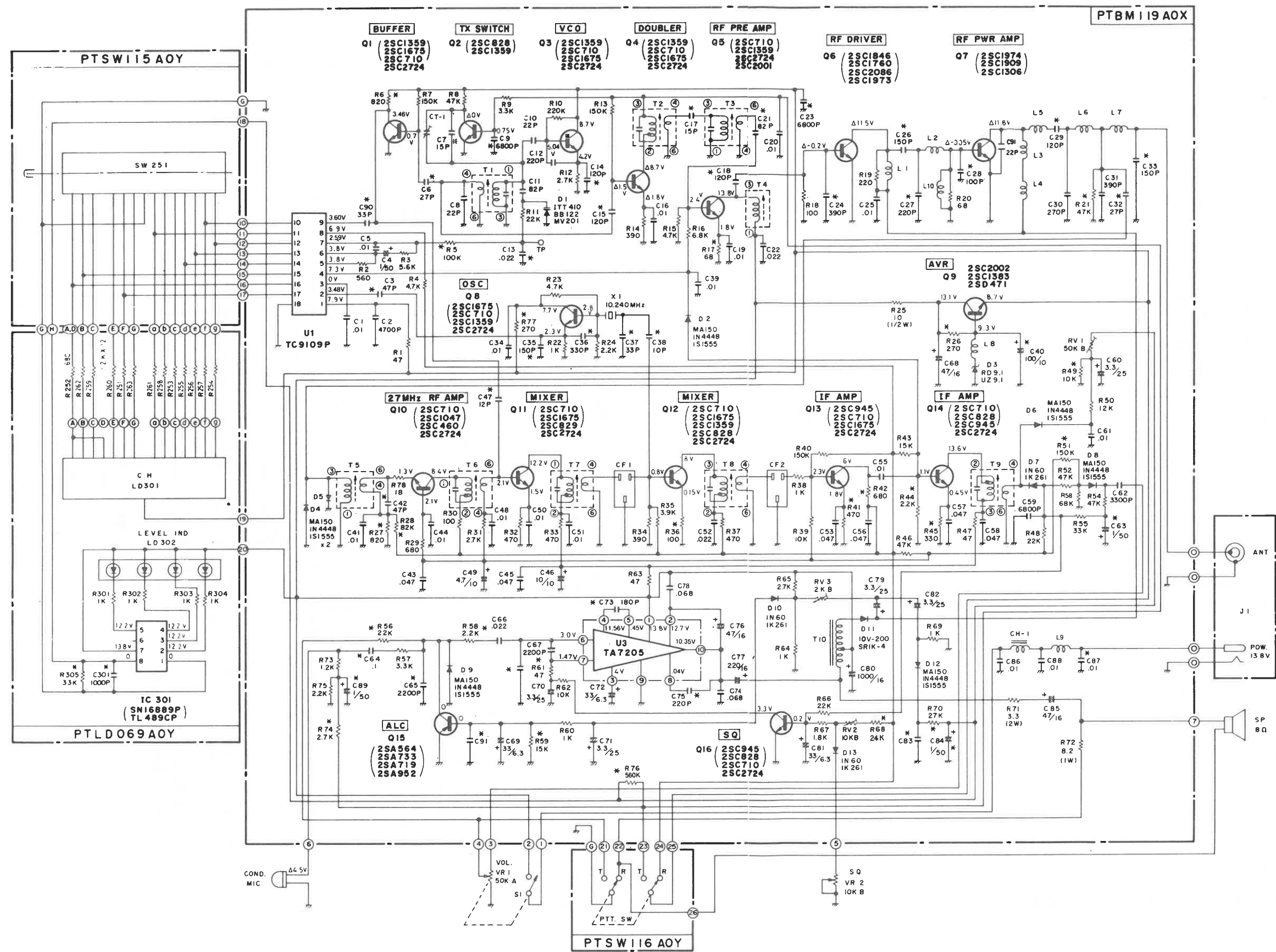
CAT. NO.	REF.	DESCRIPTION
<u>MISCELLANEOUS</u>		
EA36X448	CF1	Ceramic Filter
EA36X573	CF2	Ceramic Filter
EA49X438	RV1	RX Trim Pot, 50K
EA49X528	RV2	Squelch Trim Pot, 10K
EA49X529	RV3	ALC Trim Pot, 2K
EA49X579	VR1 w/S1	Volume Control w/ON/OFF Switch, 50K
EA49X580	VR2	Receive Range Control, 10K
EA75X6	X1	Ref. Crystal, 10.240MHz
EA39X381	PTT-SW	Push to Talk Switch
EA55X155	SW251	Channel Select Switch
EA62X263	CM1	Microphone
EA95X162	SP	Speaker, 8 Ω
EA41X271	J1, J2	Jack Assembly
EA9X496	MS-1	Talk Bar
EA43X1130	MS-2	Channel Select Knob
EA43X1131	MS-3	Receiving Range Knob
EA43X1132	MS-4	Volume Knob
EA9X497	MS-5	Hanger

CAT. NO.	REF.	DESCRIPTION
<u>ACCESSORIES</u>		
5-1832	AC-1	Antenna Adaptor
5-1833	AC-2	Power Harness f/5-1210
5-1834	AC-3	Extendable Magnetic Antenna
5-1835	AC-4	Rechargeable 12 Volt Battery Pack
5-1836	AC-5	12 Volt Cigarette Lighter Adaptor
5-1210	AC-6	13.8 Power Supply

NOTE: CA & MS references are for factory use only

Items not listed or listed without a catalog number, are non-stocked as service parts. Capacitors and resistors are to be obtained from local parts jobbers.

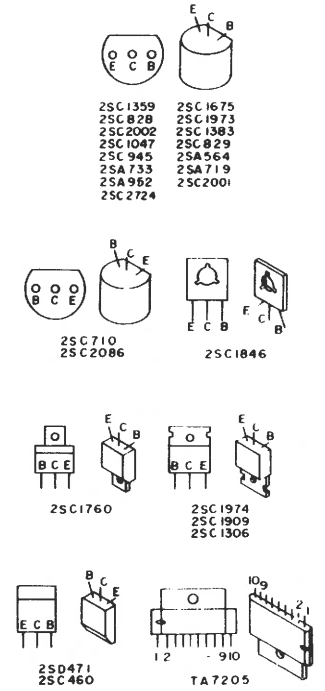
Replacement parts may be ordered from: General Electric Co., National Parts Distribution, 200 Crompton St., P.O. Box 7025, Charlotte, N.C. 28217



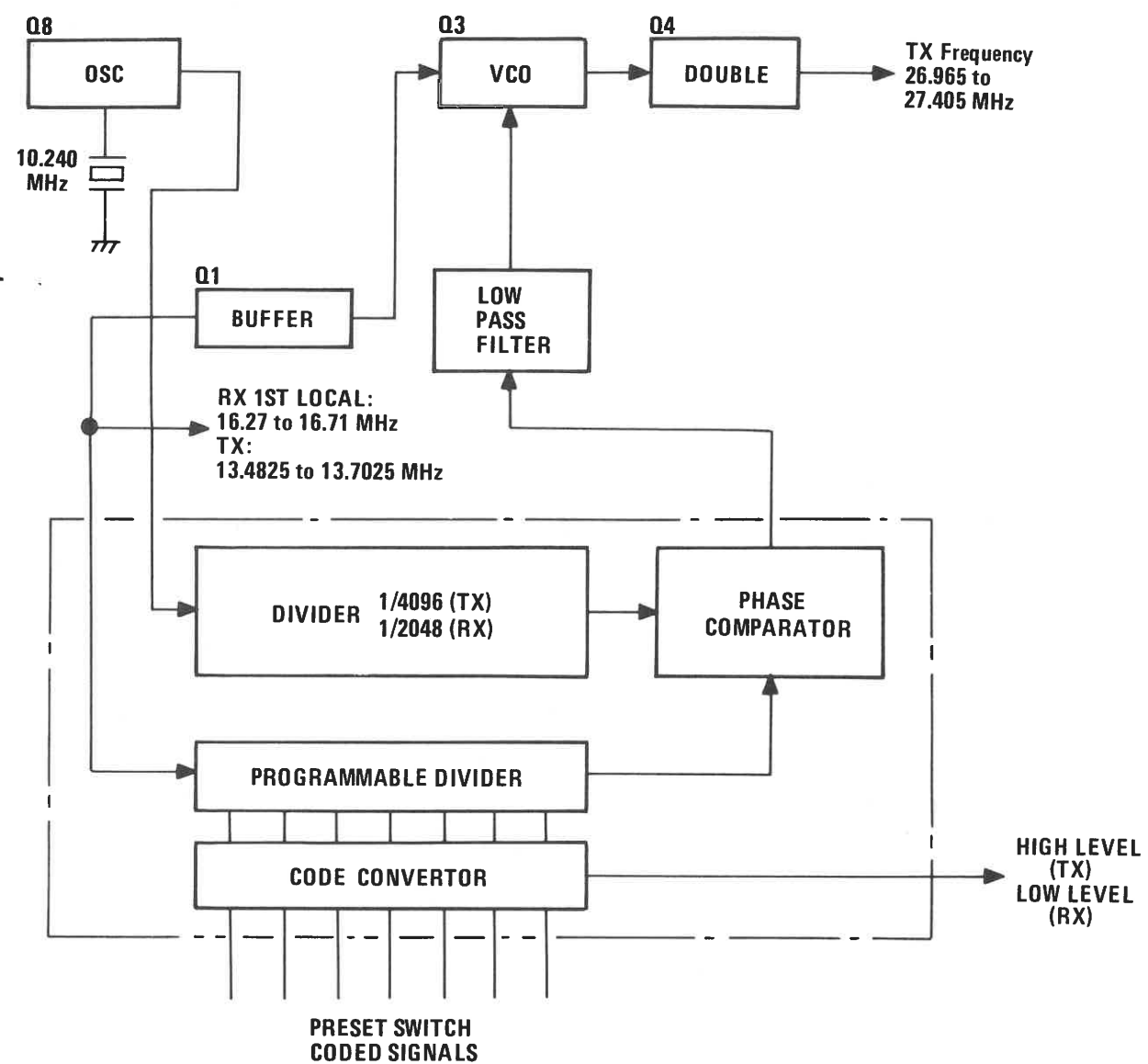
TRANSFORMER TERMINATION INFORMATION (BOTTOM VIEW)



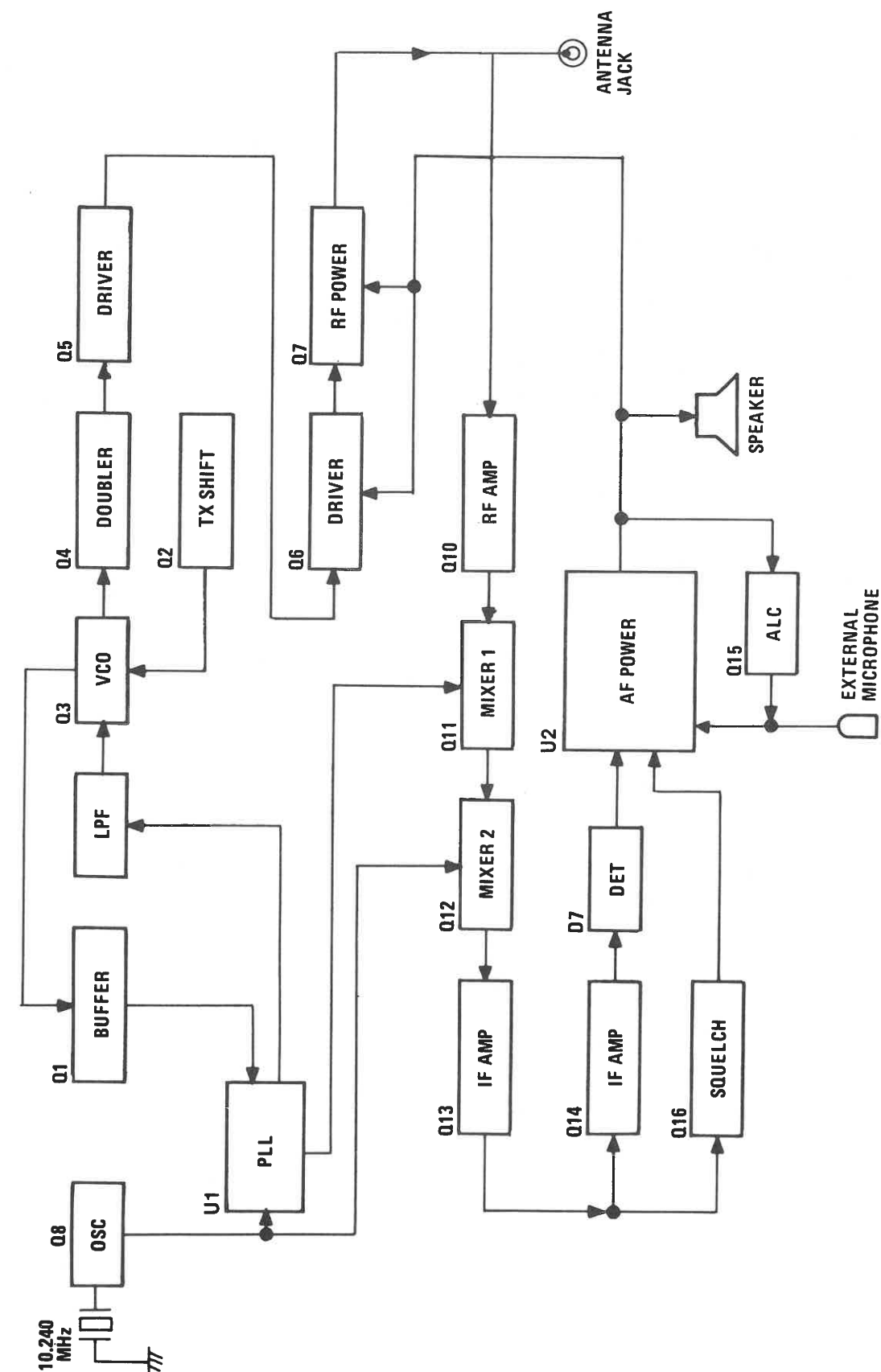
TRANSISTOR BASE INFORMATION E: EMITTER C: COLLECTOR B: BASE



NOTE:
Δ VOLTS AT TRANSMIT CONDITION
ALL VOLTAGES MEASURED FROM PC BOARD
GND WITH D.C. VTVM AT NO SIGNAL
(AT 13.8V POWER SUPPLY) IF MEASUREMENT
VALUES OBTAINED ARE IN EXCESS OF ±20% OF
VALUES SHOWN THEN REASON FOR DIFFERENCE
SHOULD BE CORRECTED
± CHASSIS GND * PC BOARD GND
* ADJUSTED (TYPICAL VALUE SHOWN)



PLL CIRCUIT BLOCK DIAGRAM



BLOCK DIAGRAM

NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.

TRANSMITTER

R.F. Power Output: 4 watts maximum at 13.8VDC

R.F. Harmonic Attenuation (T.V.I. Suppression): More than 65dB down.

Audio Frequency Response: +1 to -10dB, 300 to 3000Hz.

Microphone Sensitivity: 26mV $\pm$ 4dB at knee of compression.

Modulation Limiting: 85% to 100% modulation for inputs up to 40dB above mic sensitivity.

FCC Designator: CB1141 emission 6A3.

SPECIFICATIONS

Frequency Range: 26.965 to 27.405 MHz

Frequency Stability: $\pm$ 0.05% from -30° C (-22° F) to +50° C (122° F)

Receiver System: Single conversion superheterodyne with dual gate MOSFET R.F. amp, FET mixer, ceramic IF filter, and integrated circuit IF system.

Microphone: Dynamic cartridge design with pre-amp circuitry and adjustable gain.

Input Voltage: 13.8VDC $\pm$ 20%, neg. GND with reverse polarity protection.

Shock and Vibration: Exceeds EIA standard RS382.

Dimensions: 2.6" high X 7.05" wide X 9.4" deep (6.6CM x 17.9CM x 24.1CM).

Weight: Less than 5 pounds.

RECEIVER

Sensitivity: 0.5uV or less for 10dB (S & N)/(30% modulation at 1KHz) EIA method.

Squelch Sensitivity: Less than .25uV at threshold.

Adjacent Channel Selectivity: More than 70dB down at $\pm$ 10KHz; EIA method.

Cross Modulation Rejection: More than 70dB at $\pm$ 50KHz.

RF Blocking Protection: More than 70dB at $\pm$ 50KHz.

Spurious Rejection: More than 50dB, EIA method.

Intermediate Frequency: 455KHz.

Automatic Gain Control (AGC): Less than 12dB audio rise with signal levels of 1 to 200,000uV EIA method.

Audio Distortion: Less than 5% at 2.5 watts.

RF Gain: 30dB minimum degradation in sensitivity.

IF Gain: Adjusts AGC threshold and extender/noise blanker shut off level.

RECEIVER – TRANSMITTER BOARD ALIGNMENT

a. Introduction

Under normal conditions, the radio set will require only "touch-up" alignment. Unnecessary alignment should be avoided. Complete alignment is necessary only after replacing a component in a frequency sensitive network. Read the following prealignment notes carefully and set up the equipment as specified before starting the alignment procedure.

b. Prealignment Notes

(1) Radio transmitters may be tuned or adjusted only by persons holding an FCC first or second class radiotelephone license or by personnel working under their immediate supervision.

(2) The power output shall not exceed 4 watts.

(3) The frequency, power output, and modulation must be checked after alignment or any repair that would affect compliance with FCC limits specified in Part 95 of the FCC Rules and Regulations.

(4) Replacement or substitution of crystals and/or components with parts which could cause violation of the technical requirements of Part 95 of the FCC Rules and Regulations is strictly prohibited.

(5) In some cases, peak meter readings may occur at two points in the tuning range of a coil. Always choose the point where the slug is nearest the top of the coil form (away from the circuit board).

(6) Before starting this procedure, set the radio front panel controls as follows:

On-off switch - off - fully counter-clockwise.
PA switch - CB position
Extender (Noise Blanker) Switch - Off
Squelch Control - Full CCW
Meter Switch - Set to S/RF
RF Gain Control - Fully CW
IF Gain Control - Fully CW
Noise Limiter Control - Fully CW

(7) If radio components have been replaced or if radio has been seriously detuned, preset tuning adjustments as follows before beginning the alignment procedure.

L102, L103 -- core 1/4 inch below top of form.
L101, T104, T105, T106, L402 -- cores two turns below top of form.

(8) Attach radio antenna jack to RF wattmeter and load.

(9) Connect radio power input to 13.8VDC supply.

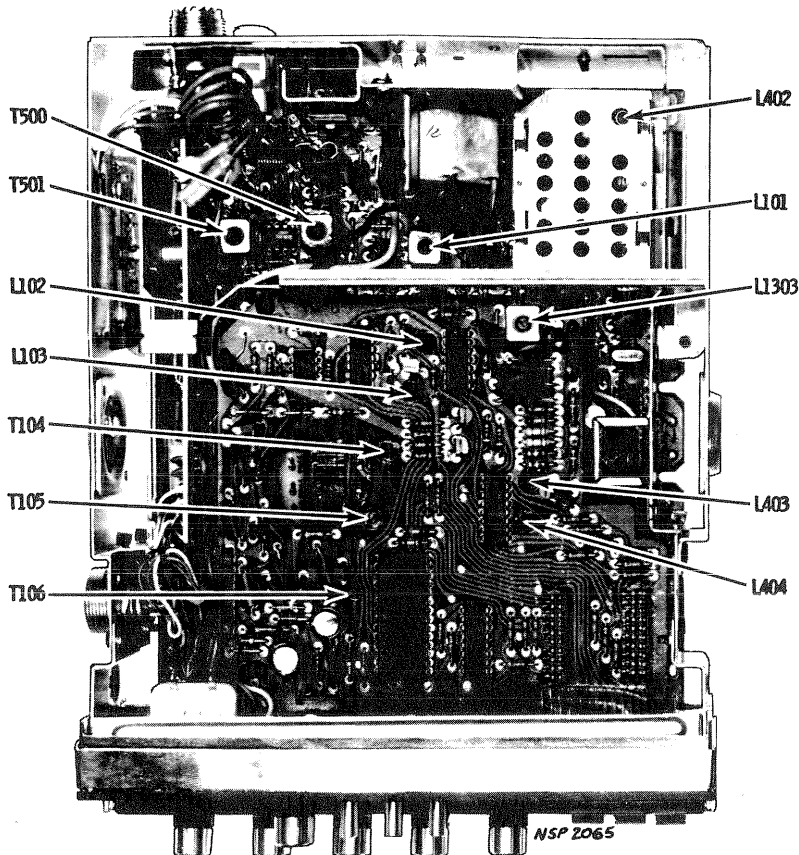
(10) Turn on-off switch on 1/4 turn CW.

c. Alignment Procedure

The receive-transmit board alignment procedure is given in table 2. See figure 12 for location of all alignment and test points except TP2. See solder side for location of TP2.

CAUTION

DO NOT USE METALLIC ALIGNMENT TOOLS. THEY MAY DAMAGE TUNING CORES OR CAUSE DETUNING EFFECTS.



RECEIVER - TRANSMITTER ALIGNMENT POINT LOCATION

TRANSMIT-RECEIVE BOARD ALIGNMENT PROCEDURE

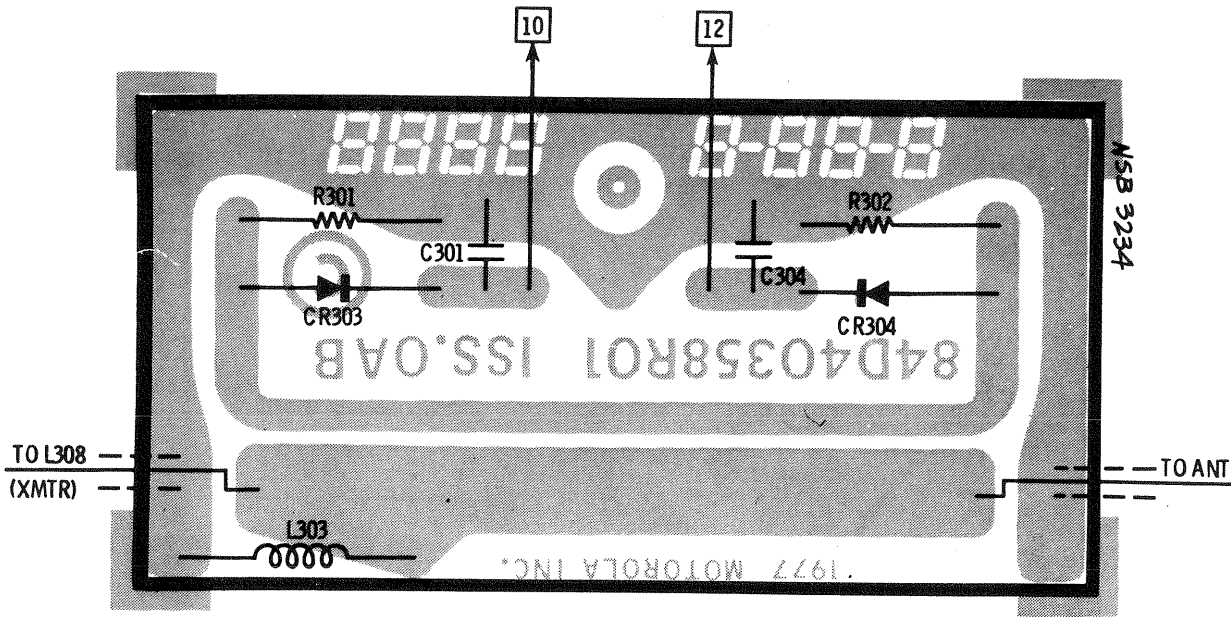
STEP	TEST POINT	ADJUSTMENT	PROCEDURE
SYNTHESIZER			
1	DC voltmeter at TP2 (accessible only from solder side.) 50-ohm load at ANT jack.	VCO L402 (rcvr)	a. Set Up/Down Selector buttons to 1 (26.510MHz $\pm$ 50Hz) b. Adjust L402 for 6.0VDC
2	Frequency counter at TP3 50-ohm load at ANT jack.	Offset oscillator frequency: L403 (rcvr) and L404 (xmtr)	a. Set Up/Down Selector buttons to 1 b. Adjust L403 for 26.510MHz $\pm$ 50Hz on freq.counter. c. Set Up/Down Selector buttons to 40. Key the radio. d. Adjust L404 for 27.405MHz $\pm$ 50Hz on frequency counter.
RECEIVER			
3	RF wattmeter at antenna output	Receiver rf & i-f: T104, T105, T106, L103, L102, L101	a. Set Up/Down selector buttons to channel 22 (27.225MHz). b. Read output power on wattmeter (3.5 to 4.0 W). Cut out R307 if necessary to reduce power level to meet specs.
4	DC voltmeter at TP5		a. Set Up/Down Selector buttons to 18 b. Connect rf signal generator to ANT jack. CAUTION: Do not tune for an audio peak. c. Set rf signal generator to 27.175MHz $\pm$ 50Hz at 100 μ V output level. d. Connect dc voltmeter to TP5 . Note reading. e. Adjust T104 (yellow), T105 (white), and T106 (black) for minimum voltage at TP5 . If necessary, reduce rf signal generator output to keep voltage at TP5 from falling below 4 volts. Repeat adjustment. f. Adjust L101 (orange), L102 (rf coil), and L103 (rf coil) for minimum reading as in e.
"EXTENDER" NOISE BLANKER			
5	DC voltmeter at TP4	Blanker rf: T500, T501	a. Connect rf signal generator to ANT jack and adjust to 1.00mV at 24.000MHz, with no modulation. b. Extend switch (up position). Disable VCO by grounding TP7 (junction of C409 and C410. See radio set plated board diagram). c. Alternately adjust T500 (blue) and T501 (red) for peak reading on dc voltmeter. Readjust rf signal generator level as necessary to maintain a reading be- tween 0.8 and 1.0V on dc voltmeter.
6	Oscilloscope at TP6	"Extender" Shut Off Level control R520	a. Set Up/Down Selector buttons to 18. Enable VCO by removing ground from TP7 . b. Connect rf signal generator and noise simulator to ANT jack. Use a tee connector. c. Adjust rf signal generator to 27.175MHz. Set level at 70 μ V. d. Adjust noise simulator to 100Hz repetition rate and maximum noise level. A series of pulses will be seen on the oscilloscope. e. Adjust "Extender" Shut Off Level Control R520 until these pulses "just" disappear.
7	DC voltmeter at TP5	RF amplifier peaking L101	a. Remove noise simulator. Reduce RF signal generator level til voltage at TP5 is just above 4 volts. b. Adjust L101 for minimum agc voltage at TP5

PROGRAM CODING

Program coding for channel selection is shown in table below.

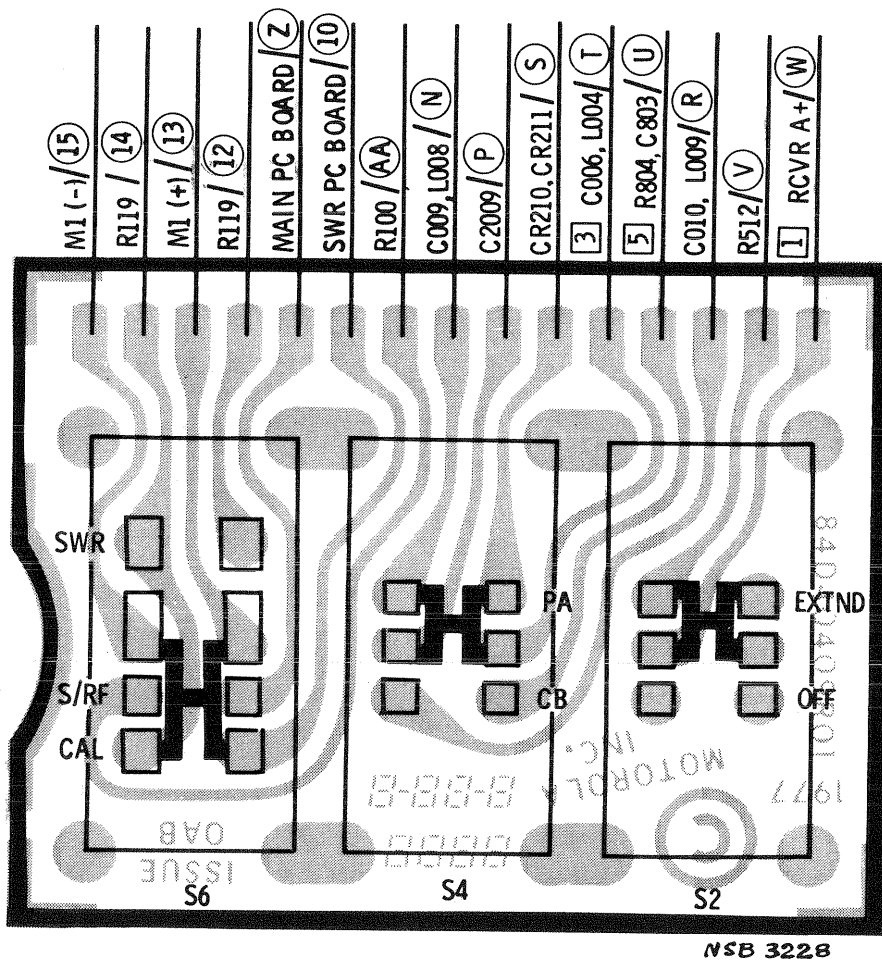
CHANNEL FREQUENCIES AND CHANNEL SELECTOR SWITCH CLOSURES

CHAN	XMTR FREQ (MHZ)	RCVR LO FREQ (MHZ)	DIVISOR	BINARY WORD	TENS SEGMENT	UNITS SEGMENT
				$2^5 2^4 2^3 2^2 2^1 2^0$	A B C D E F G	A B C D E F G
1	26.965	26.510	252	1 1 1 1 0 0	0 0 0 0 0 0 0	0 0 0 0 1 1 0
2	26.975	26.520	251	1 1 1 0 1 1	0 0 0 0 0 0 0	1 1 0 1 1 0 1
3	26.985	26.530	250	1 1 1 0 1 0	0 0 0 0 0 0 0	1 0 0 1 1 1 1
4	27.005	26.550	248	1 1 1 0 0 0	0 0 0 0 0 0 0	0 0 1 0 1 1 1
5	27.015	26.560	247	1 1 0 1 1 1	0 0 0 0 0 0 0	1 0 1 1 0 1 1
6	27.025	26.570	246	1 1 0 1 1 0	0 0 0 0 0 0 0	1 1 1 0 0 1 1
7	27.035	26.580	245	1 1 0 1 0 1	0 0 0 0 0 0 0	0 0 0 1 1 1 0
8	27.055	26.600	243	1 1 0 0 1 1	0 0 0 0 0 0 0	1 1 1 1 1 1 1
9	27.065	26.610	242	1 1 0 0 1 0	0 0 0 0 0 0 0	0 0 1 1 1 1 1
10	27.075	26.620	241	1 1 0 0 0 1	0 0 0 0 1 1 0	1 1 1 1 1 1 0
11	27.085	26.630	240	1 1 0 0 0 0	0 0 0 0 1 1 0	0 0 0 0 1 1 0
12	27.105	26.650	238	1 0 1 1 1 0	0 0 0 0 1 1 0	1 1 0 1 1 0 1
13	27.115	26.660	237	1 0 1 1 0 1	0 0 0 0 1 1 0	1 0 0 1 1 1 1
14	27.125	26.670	236	1 0 1 1 0 0	0 0 0 0 1 1 0	0 0 1 0 1 1 1
15	27.135	26.680	235	1 0 1 0 1 1	0 0 0 0 1 1 0	1 0 1 1 0 1 1
16	27.155	26.700	233	1 0 1 0 0 1	0 0 0 0 1 1 0	1 1 1 0 0 1 1
17	27.165	26.710	232	1 0 1 0 0 0	0 0 0 0 1 1 0	0 0 0 1 1 1 0
18	27.175	26.720	231	1 0 0 1 1 1	0 0 0 0 1 1 0	1 1 1 1 1 1 1
19	27.185	26.730	230	1 0 0 1 1 0	0 0 0 0 1 1 0	0 0 1 1 1 1 1
20	27.205	26.750	228	1 0 0 1 0 0	1 1 0 1 0 0 1	1 1 1 1 1 1 0
21	27.215	26.760	227	1 0 0 0 1 1	1 1 0 1 1 0 1	0 0 0 0 1 1 0
22	27.225	26.770	226	1 0 0 0 1 0	1 1 0 1 1 0 1	1 1 0 1 1 0 1
23	27.255	26.800	223	0 1 1 1 1 1	1 1 0 1 1 0 1	1 0 0 1 1 1 1
24	27.235	26.780	225	1 0 0 0 0 1	1 1 0 1 1 0 1	0 0 1 0 1 1 1
25	27.245	26.790	224	1 0 0 0 0 0	1 1 0 1 1 0 1	1 0 1 1 0 1 1
26	27.265	26.810	222	0 1 1 1 1 0	1 1 0 1 1 0 1	1 1 1 0 0 1 1
27	27.275	26.820	221	0 1 1 1 0 1	1 1 0 1 1 0 1	0 0 0 1 1 1 0
28	27.285	26.830	220	0 1 1 1 0 0	1 1 0 1 1 0 1	1 1 1 1 1 1 1
29	27.295	26.840	219	0 1 1 0 1 1	1 1 0 1 1 0 1	0 0 1 1 1 1 1
30	27.305	26.850	218	0 1 1 0 1 0	1 0 0 1 1 1 1	1 1 1 1 1 1 0
31	27.315	26.860	217	0 1 1 0 0 1	1 0 0 1 1 1 1	0 0 0 0 1 1 0
32	27.325	26.870	216	0 1 1 0 0 0	1 0 0 1 1 1 1	1 1 0 1 1 0 1
33	27.335	26.880	215	0 1 0 1 1 1	1 0 0 1 1 1 1	1 0 0 1 1 1 1
34	27.345	26.890	214	0 1 0 1 1 0	1 0 0 1 1 1 1	0 0 1 0 1 1 1
35	27.355	26.900	213	0 1 0 1 0 1	1 0 0 1 1 1 1	1 0 1 1 0 1 1
36	27.365	26.910	212	0 1 0 1 0 0	1 0 0 1 1 1 1	1 1 1 0 0 1 1
37	27.375	26.920	211	0 1 0 0 1 1	1 0 0 1 1 1 1	0 0 0 1 1 1 0
38	27.385	26.930	210	0 1 0 0 1 0	1 0 0 1 1 1 1	1 1 1 1 1 1 1
39	27.395	26.940	209	0 1 0 0 0 1	1 0 0 1 1 1 1	0 0 1 1 1 1 1
40	27.405	26.950	208	0 1 0 0 0 0	0 0 1 0 1 1 1	1 1 1 1 1 1 0



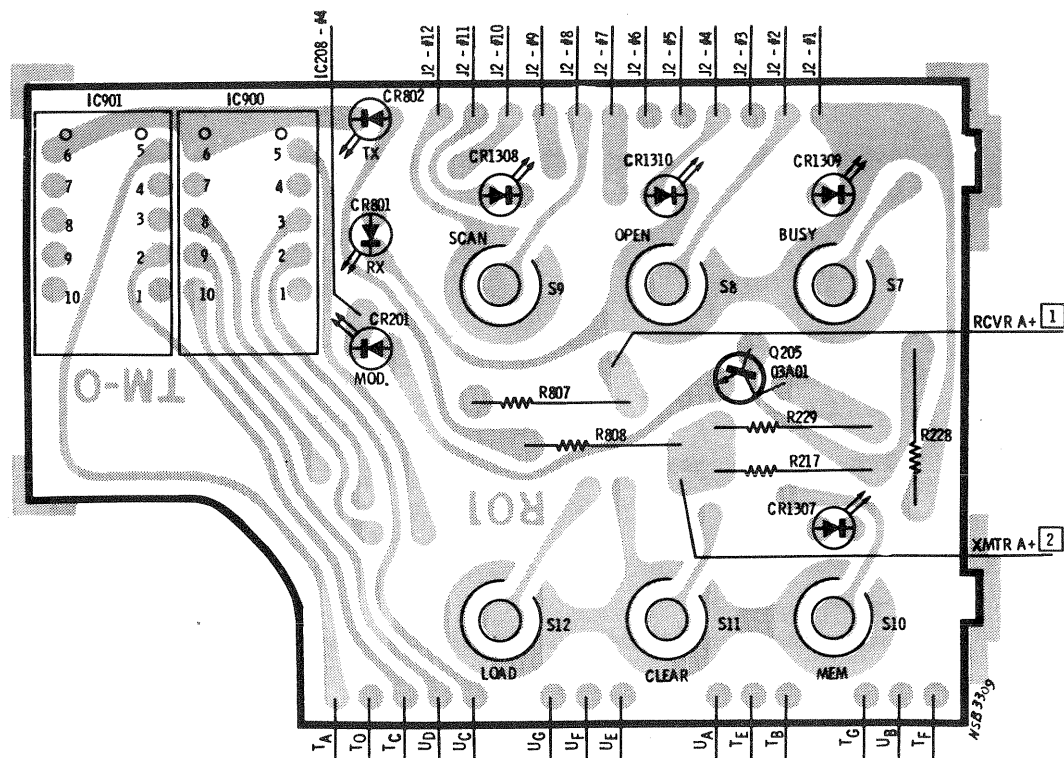
BOTTOM VIEW - WIRING SIDE

"SWR" PLATED BOARD DIAGRAM

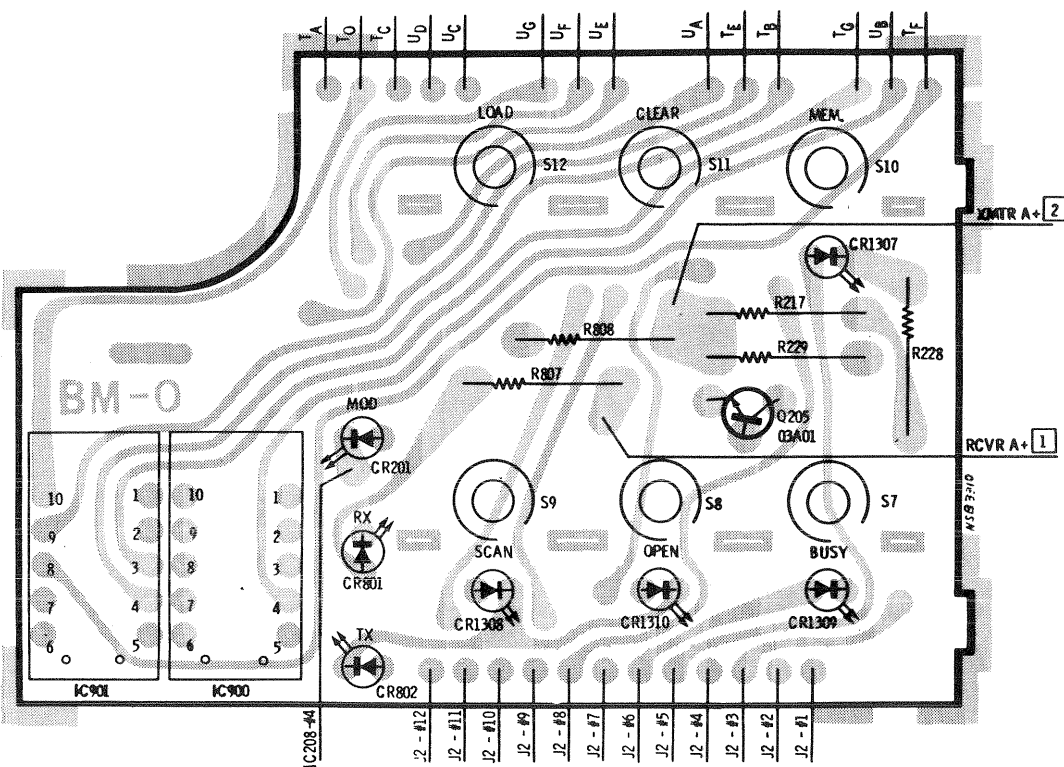


TOP VIEW - COMPONENT SIDE

"SWITCH" PLATED BOARD DIAGRAM



TOP VIEW - COMPONENT SIDE



BOTTOM VIEW - WIRING SIDE

"LED DISPLAY" PLATED BOARD DIAGRAM



TRANSISTOR & IC VOLTAGE CHART

<u>Q101</u>	<u>Q102</u>	<u>Q103</u>	<u>Q201</u>	<u>Q202</u>	<u>Q203</u>	<u>Q204</u>
G1 = 1.5UV AC 2.4V DC G2 = 5VDC D = 13.1V S = 3.5V	G = 0V D = 12.8V S = 2.2V	B = 0.7V E = 0.0V C = 0.0V	B = 0.28V E = 0.0V C = 0.0V	B = 12.8V E = 13.5V C = 12.6V	B = 2.1V E = 2.8V C = 0.0V	B = 12.8V E = ~ C = 10V
			UNSQUELCHED	SQUELCHED		

<u>Q301</u>	<u>Q302</u>	<u>Q501</u>	<u>Q502</u>	<u>Q503</u>	<u>Q505</u>	<u>Q506</u>
B = -0.1V E = 0.0V C = 6.4VRMS	B = --- E = 0.0V C = 11.5VRMS	B = 1.0V E = 0.4V C = 11.5V	B = 13V E = 13.0V C = 0.0V	B = 0.0V E = 0.0V C = 13.0V	B = 13.0V E = 13.0V C = 0.0V	B = 2.8V E = ~ C = 12.3V

<u>Q401</u>	<u>Q402</u>	<u>Q403</u>	<u>Q404</u>	<u>Q405</u>	<u>Q406</u>	<u>Q407</u>	<u>Q410</u>
G = 0.0V D = 5.7V S = 0.7V	G = 0.0V D = 9.0V S = 1.6V	B = 0.64V E = 0.0V C = 4.0V	B = 5.0V E = 4.3V C = 9.1V	B = 5.5V E = 4.8VDC C = 9.1V	B = 1.0V E = 0.29V C = 4.0V	B = 5.7V E = 5.0V C = 9.1V	B = 9.8V E = 9.1V C = 13.7V

<u>Q601</u>	<u>Q603</u>	<u>Q801</u>	<u>Q802</u>
B = 0.1V E = 6.0V C = 5.66V	B = 3.3V E = 2.6V C = 517V	B = 13.0V E = 13.7V C = 13.5V	B = 12.7V E = 13.7V C = 13.5V

<u>Q701</u>			
MIC. GAIN SETTING	BASE VOLTS	EMITTER VOLTS	COLLECTOR VOLTS
"1" MIN	0.94	0.3	5.4
"6.5" MID	0.8	0.134	4.6
"9." MAX	0.67	0.0	4.0

IC100

<u>PIN</u>	<u>VOLTS</u>	<u>PIN</u>	<u>VOLTS</u>
1	1.4	9	2.7
2	1.4	10	5.6
3	5.6	11	~
4	0.6	12	~.7
5	1.4	13	~
6		14	0.7
7	1.4	15	0.85
8	1.4	16	8.2

IC200

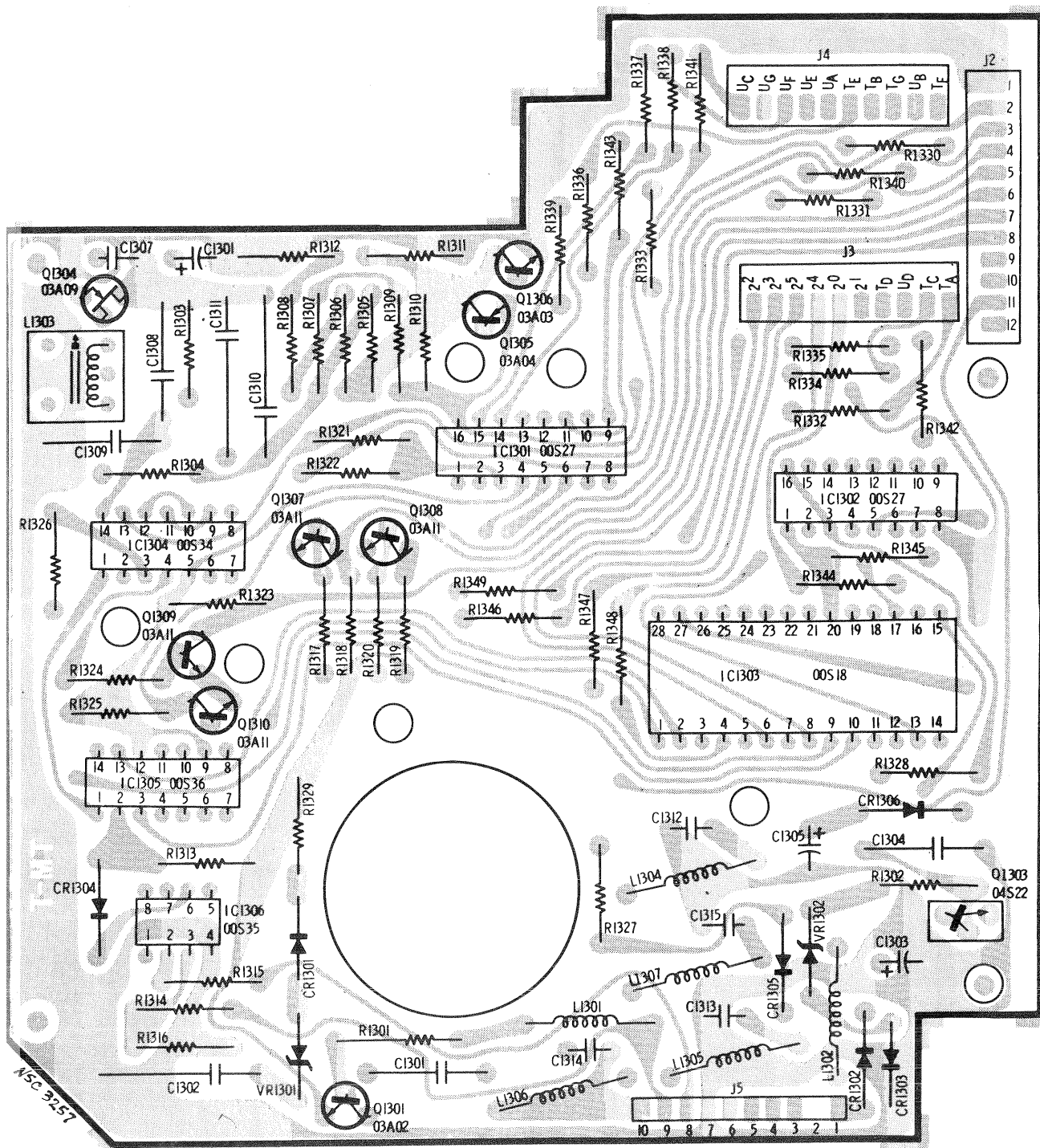
<u>PIN</u>	<u>VOLTS</u>
1	0.7
2	0.7
3	00
4	6.8
5	13.7

IC400

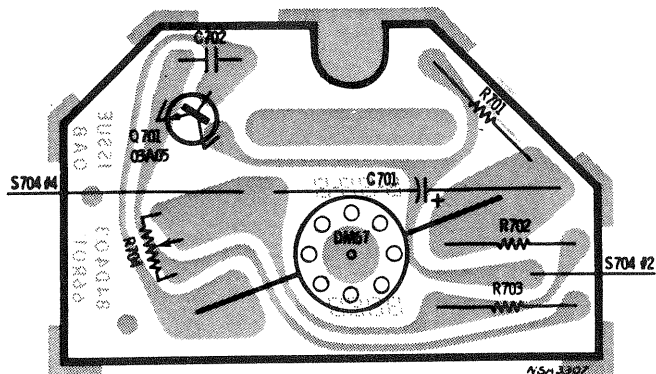
<u>PIN</u>	<u>VOLTS</u>	<u>PIN</u>	<u>VOLTS</u>
1	9.1	9	9.1
2	4.4	10	
3	4.6	11	
4	4.7	12	
5	NC	13	
6	5.5	14	
7	NC	15	
8	9.1	16	0.0

IC500

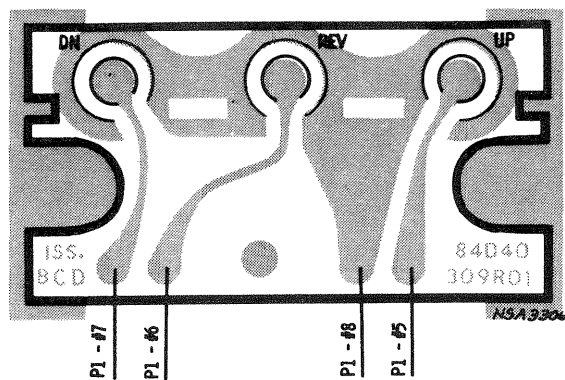
<u>PIN</u>	<u>VOLTS</u>	<u>PIN</u>	<u>VOLTS</u>
1	12.3	5	12.3
2	11.9	6	3.7
3	0.0	7	0.0
4	3.7	8	12.3



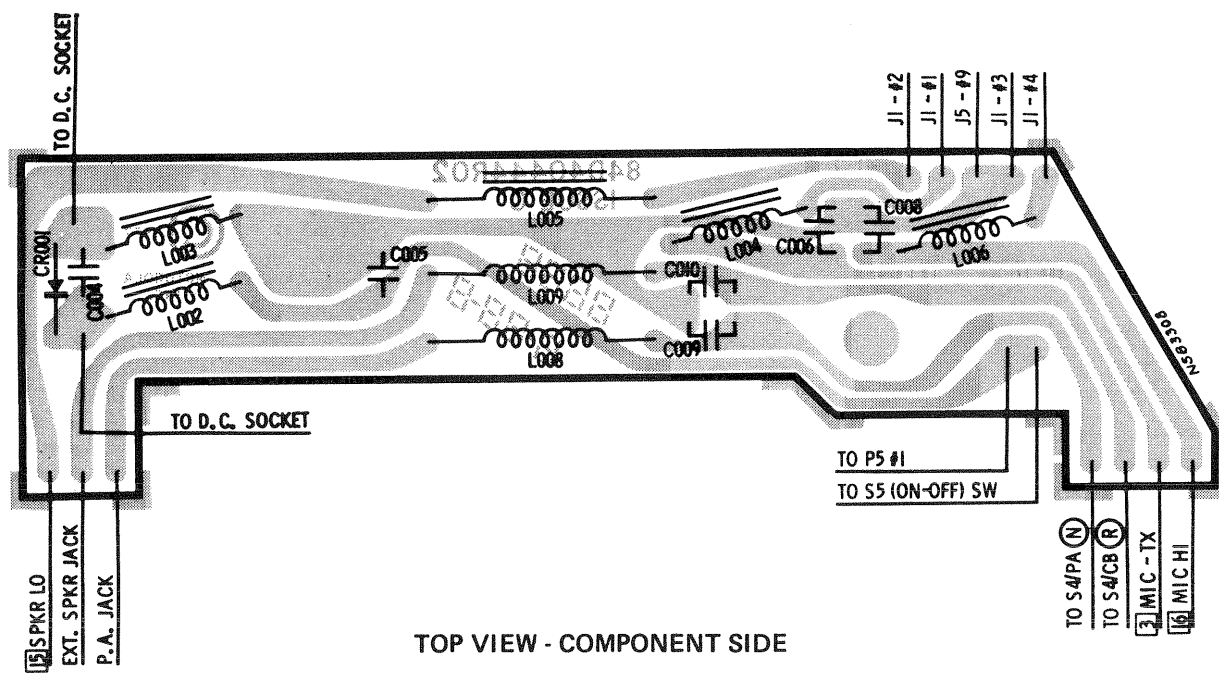
TOP VIEW - COMPONENT SIDE



BOTTOM VIEW - WIRING SIDE
CONTROL BOARD DIAGRAM



BUTTON SWITCH BOARD DIAGRAM



TOP VIEW - COMPONENT SIDE
"FILTER" PLATED BOARD DIAGRAM

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
ELECTRICAL PARTS			C228	21-03038A06	.01MF +80-20% 16V Y5S disc
CAPACITORS			C230	21-03030A19	100PF 5% 100V N750 disc
C004	21-03246A01	.001MF +80-20% 100V Y5S disc	C301	21-03036A01	.001MF +80-20% 100V Y5S disc
C005	21-03246A01	.001MF +80-20% 100V Y5S disc	C302	21-03030A19	100PF 5% 100V N750 disc
C006	21-03246A01	.001MF +80-20% 100V Y5S disc	C303	21-03030A14	82PF 5% 100V N750 disc
C008	21-03246A01	.001MF +80-20% 100V Y5S disc	C304	21-03036A01	.001MF +80-20% 100V Y5S disc
C009	21-03246A01	.001MF +80-20% 100V Y5S disc	C307	21-03030A26	270PF 5% 100V N750 disc
C010	21-03246A01	.001MF +80-20% 100V Y5S disc	C310	21-03036A01	.001MF +80-20% 100V Y5S disc
C100	21-03236A01	.001MF +80-20% 100V Y5S disc	C311	21-03245A30	300PF 5% 100V N750 disc
C101	21-03030A38	36PF 5% 100V N220 disc	C312	21-03132A48	270PF 2% 100V N750 disc
C102	21-03038A01	.05MF +80-20% 25V Y5U disc	C313	21-03245A22	190PF 5% 100V N750 disc
C103	21-03030A34	8PF 0.5% 100V N220 disc	C314	21-03030A56	370PF 5% 100V N750 disc
C104	21-03030A05	12PF 5% 100V N220 disc	C315	21-03036A06	.01MF +80-20% 100V Y5U disc
C105	21-03036A01	.001MF +80-20% 100V Y5S disc	C317	21-03045A01	1.5PF 0.5% 500V molded
C106	21-03030A32	100PF 5% 100V NPO disc	C318	21-03036A01	.001MF +80-20% 100V Y5S disc
C107	21-03036A01	.001MF +80-20% 100V Y5S disc	C401	21-03030A11	51PF 5% 100V N220 disc
C108	21-03045A02	0.56PF 5% 500V MOLDED	C402	21-03038A03	.05MF +80-20% 16V Y5S disc
C109	21-03030A32	100PF 5% 100V NPO disc	C403	21-03030A20	120PF 5% 100V N220 disc
C110	21-03036A01	.001MF +80-20% 100V Y5S disc	C404	21-03030A39	39PF 5% 100V N220 cer.
C111	21-03030A28	18PF 5% 100V NPO disc	C405	21-40012S34	30PF 5% 50V NPO cer.
C112	21-03036A01	.001MF +80-20% 100V Y5S disc	C409	21-40012S57	150PF 5% 50V NPO cer.
C113	21-03038A02	.01MF +80-20% 25V Y5U disc	C410	21-03036A01	.001MF +80-20% 100V Y5S disc
C114	21-03038A03	.05MF +80-20% 100V Y5S disc	C411	21-03045A01	1.5PF 5% 500V NPO molded
C115	21-03038A03	.05MF +80-20% 100V Y5S disc	C412	21-03030A14	82PF 5% 100V N220 disc
C116	*21-03035A02	10MF 25V lytic	C413	21-03036A01	.001MF +80-20% 100V Y5S disc
C117	21-03038A06	.01MF +80-20% 100V Y5S disc	C415	21-03038A03	.05MF +80-20% 16V Y5S disc
C118	21-03038A03	.05MF +80-20% 16V Y5S disc	C417	21-03036A01	.001MF +80-20% 100V Y5S disc
C119	21-03036A01	.001MF +80-20% 100V Y5S disc	C419	23-10218A29	1MF 20% 15V lytic
C120	21-03036A01	.001MF +80-20% 100V Y5S disc	C422	8-42208B18	.047MF 10% 50V mylar
C121	21-03038A01	.05MF +80-20% 25V Y5U disc	C423	23-10818A65	100MF 16V lytic
C122	23-03035A02	10MF 25V lytic	C424	21-40014S08	.047MF +80-20% 50V Z5U cer.
C123	21-03030A19	100PF 5% 100V N750 disc	C432	21-03036A01	.001MF +80-20% 100V Y5S disc
C124	21-03045A01	1.5PF 0.5% 500V molded	C433	21-03038A03	.05MF +80-20% 16V Y5S disc
C125	21-03045A03	3.9PF 5% 500V molded	C434	21-03030A11	51PF 5% 100V N220 disc
C126	21-03030A32	100PF 5% 100V NPO disc	C435	21-40014S08	.047MF +80-20% 50V Z5U cer.
C127	23-03035A01	1MF 25V lytic	C440	21-03038A06	.01MF +80-20% 16V Y5S disc
C128	21-03038A05	.01MF 10% 16V Y5F disc	C441	21-03030A46	57PF 5% 100V N150 disc
C129	21-03038A06	.01MF +80-20% 16V Y5F disc	C442	21-03038A03	.05MF +80-20% 16V Y5S disc
C130	21-03038A03	.05MF +80-20% 16V Y5S disc	C443	21-03030A11	51PF 5% 100V N220 disc
C131	21-03038A03	.05MF +80-20% 16V Y5S disc	C444	23-10818A65	100MF 16V lytic
C132	21-40014S09	.1MF +80-20% 50V Y5U cer.	C445	21-40016S01	43PF 5% 100V N470 cer.
C133	21-03038A06	.01MF +80-20% 16V Y5S disc	C463	21-03030A54	5% 100V NPO disc
C134	21-03038A04	.05MF +80-20% 12V Y5S disc	C472	21-03030A01	5PF 0.25PF 100V NPO disc
C135	23-03035A05	175MF 15V lytic	C474	21-03036A01	.001MF +80-20% 100V Y5S disc
C136	21-03036A01	.001MF +80-20% 100V Y5S disc	C500	21-03036A01	.001MF +80-20% 100V Y5S disc
C137	23-10818A65	100MF 16V lytic	C501	21-03036A01	.001MF +80-20% 100V Y5S disc
C138	23-03035A02	100MF 25V lytic	C503	21-03036A01	.001MF +80-20% 100V Y5S disc
C139	21-40014S09	.1MF +80-20% 50V Y5U cer.	C505	21-03036A01	.001MF +80-20% 100V Y5S disc
C140	21-03038A05	.01MF 10% 16V Y5F disc	C506	21-03036A01	.001MF +80-20% 100V Y5S disc
C141	23-03035A12	2.2MF 25V lytic	C507	21-03030A19	100PF 5% 100V N750 disc
C142	21-03038A06	.01MF +80-20% 16V Y5S disc	C508	21-03036A05	.00068MF 10% 100V Y5D disc
C143	23-10818A65	100MF 16V lytic	C509	23-03035A02	10MF 25V lytic
C144	23-03035A01	1.MF 25V lytic	C512	21-03036A05	.00068MF 10% 100V Y5D disc
C145	21-03038A06	.01MF +80-20% 16V Y5S disc	C513	23-03035A02	10MF 25V lytic
C146	23-03035A01	1MF 25V lytic	C514	21-03030A34	8PF 5% 100V N220 disc
C147	21-03246A01	.001MF +80-20% 100V Y5S disc	C515	21-03038A03	.05MF +80-20% 16V Y5S disc
C148	21-03030A19	100PF 5% 100V N750 disc	C600	21-03030A03	10PF 5% 100V N330 disc
C149	21-03030A19	100PF 5% 100V N750 disc	C603	21-03030A12	62PF 5% 100V N220 disc

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REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
ELECTRICAL PARTS (cont)			DIODES (LED, RECTIFIER, ZENER)		
C604- C606	21-03036A01	.001MF +80-20% 100V Y5S disc	CR001, CR100 CR101 CR104, CR105 CR201 CR202, CR203	48-03005A07 *48-40001S29 48-03005A06 *48-40001S27 48-03005A03	SILICON, RECTIFIER: 05A07 LED: AMBER SILICON: 05A06 LED: RED GERMANIUM: 05A03
C607 C701 C702 C800 C802	21-03030A19 23-03035A13 21-03246A01 23-42674B21 23-42674B24	100PF 5% 100V N750 disc 1MF 25V lytic .001MF +80-20% 100V Y5S disc 1800MF 16V lytic 1000MF 16V lytic	CR204, CR205 CR206 CR210, CR211 CR301	48-03005A01 48-03005A06 48-03005A01 48-03005A06	SILICON: 05A01 SILICON: 05A06 SILICON: 05A01 SILICON: 05A06
C803 C1301 C1302 C1303 C1304	21-03036A01 21-03036A01 21-03038A02 23-10818A65 21-03036A01	.001MF +80-20% 100V Y5S disc .001MF +80-20% 100V Y5S disc .1MF +80-20% 25V Y5U disc 100MF 16V lytic .001MF +80-20% 100V Y5S disc	CR302 CR303, CR304 CR401, CR402 CR403	48-03005A07 48-03005A03 48-03005A05 48-03005A08	SILICON, RECTIFIER: 05A07 GERMANIUM: 05A03 DIODE, PIN: 05A05 VARACTOR: 05A08
C1305 C1306 C1307 C1308 C1309	23-10818A65 23-10218A29 *21-40367A41 21-03036A07 21-03038A03	100MF 16V lytic 1MF 20% 15V lytic 500PF 10% mica .002MF Y5F disc .05MF +80-20% 16V Y5S disc	CR406, CR501, CR504- CR507 CR508	 48-03005A06 48-03005A03	 SILICON: 05A06 GERMANIUM: 05A03
C1310, C1311 C1312- C1315	21-03038A02 21-03246A01	.1MF +80-20% 25V Y5U disc .001MF +80-20% 100V Y5S disc	CR800 CR801 CR802 CR1301 CR1302 CR1303 CR1304, CR1305 CR1306 R1307- R1310 VR106	48-03005A06 *48-40001S28 *48-40001S27 48-03005A06 48-03005A07 48-03005A06 48-03005A03 48-03005A07 *48-40001S27 48-03073A10	SILICON: 05A06 LED: GREEN LED: RED SILICON: 05A06 SILICON: 05A07 SILICON: 05A06 GERMANIUM: 05A03 SILICON: 05A07 LED: RED ZENER: 2.4V - 1/2W
COILS & CHOKES			INTEGRATED CIRCUITS		
L002- L004, L006 L005, L008, L009 L101 L102, L103 L107	24-03304A01 24-03298A01 24-03051A01 24-40282R21 24-03102A03	CHOKE, 10uH (FILTER) CHOKE, 10uH (FILTER) COIL, RF: 5.5uH (27MHz) COIL, RF: .35uH COIL, RF: .47uH	VR209 VR305 VR405 VR1301 VR1302	48-03073A06 48-03073A08 48-03073A09 48-03073A06 48-03073A09	ZENER: 8.2V 5% 1/2W ZENER: 43V 1W ZENER: 9.1V 5% 1W ZENER: 8.2V 5% 1/2W ZENER: 9.1V 5% 1/2W
L108 L303 L304 L305 L306	24-03047A01 24-03047A05 24-03102A04 24-03229A01 24-03044A05	CHOKE, RF: 18uH 10% CHOKE, RF: .82uH 10% COIL, RF: CHOKE, RF: COIL, RF: (HARMONIC FILTER)	IC100 51-03009A07 09A07 (FM IF AMP & DETECTOR)		
L307, L308 L401 L402 L403, L404 L405- L409	24-03044A02 24-03047A01 24-40009S01 24-03070A01 24-03047A01	COIL, RF: (HARMONIC FILTER) CHOKE, RF: 18uH 10% COIL, RF COIL, WARP CHOKE, RF: 18uH 10%	IC100 IC200 IC400 IC500 IC900, IC901	51-03009A07 51-40000S08 51-40000S09 51-03009A02 48-40018S08	00S08 (AUDIO AMP) 00S09 (FREQ GENERATOR) 09A02 (DETECTOR) 7-SEG. LED., (CHAN. IND.) (UNITS & TENS)
L602 L800 L801 L1301, L1302 L1303 L1304- L1307	24-03102A02 25-40953D03 25-03080A01 24-03047A01 *24-40009S02 24-03304A01	COIL, RF CHOKE, A.F. FILTER: 1.2mH CHOKE, AF FILTER: 2.5mH CHOKE, RF: 18uH 10% COIL, 262KHz CHOKE	IC1301, IC1302 IC1303 IC1304 IC1305 IC1306	*51-40000S27 *51-40000S18 *51-40000S34 *51-40000S36 *51-40000S35	00S27 (DRIVER) 00S18 (CONTROL) 00S34 (4 HAND) 00S36 (4 EXCL OR) 00S35 (OP AMP)
CRYSTALS					
FL101 Y401 Y402 Y403	91-40050R01 48-03091A01 48-03091A02 48-40000R01	CRYSTAL, FILTER: 455KHz (6-POLE) CRYSTAL, QUARTZ: 29.030MHz CRYSTAL, QUARTZ: 29.485MHz CRYSTAL, QUARTZ: 10.24MHz			

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REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
MISCELLANEOUS ELECTRICAL PARTS					
DM67	59-03002A01	CARTRIDGE, DYNAMIC: MIC	Q503	48-03003A12	03A12 (PULSE AMPLIFIER)
F001	65-03101A02	FUSE: 3A-250V 3AG	Q505	48-03003A04	03A04 (PULSE AMPLIFIER)
M1	72-40331R02	METER: S/RF-SWR W/LITE	Q506	48-03003A11	03A11 (EXTENDER SHUT OFF)
	65-40282R32	BULB, LITE: 40MA 12V (METER)	Q601,		
SPKR-1	50-03016A01	SPEAKER: 3.5" 4Ω	Q605	48-03003A03	03A03 (EXCITER)
			Q701	48-03003A05	03A05 (MIC AMP)
	1-40282R55	MIC, complete	Q801,		
	*50-40465R01	MIC TMN6139A	Q802	48-03003A06	03A06 (POWER SWITCHING)
RESISTORS (FIXED & VARIABLE)			Q1301	48-03003A02	03A02
THOSE LISTED ARE UNIQUE ITEMS: ALL OTHERS USED			Q1303	48-40004S22	04S22
ARE 5% - 1/4W.			Q1304	48-03003A09	03A09
			Q1305	48-03003A04	03A04
R111	18-40373R03	CONTROL, VAR: 100K W/SW	Q1306	48-03003A03	03A03
		(RF GAIN)	Q1307	48-03003A11	03A11
R113	18-40373R05	CONTROL, VAR: 50K W/SW	Q1308	48-03003A11	03A11
		(IF GAIN)	Q1309	48-03003A11	03A11
R119	18-40373R06	CONTROL, VAR: 50K (SWR CAL)	Q1310	48-03003A11	03A11
R204	6-10164B12	150 5% 1/2W			
R205	6-03227A05	866 1% 1/4W	SWITCHES		
			S2	40-40387R01	EXTEND/OFF
R209	18-40373R04	CONTROL, VAR: 5K (ANL)	S4	40-40387R01	PA/CB
R215	18-40373R01	CONTROL, VAR: 100K W/SW (S5),	S5		ON/OFF - PART OF R215
		(VOLUME)	S6	40-40388R01	S/RF - SWR - CAL
R230	6-03227A02	2740 1% 1/4W	S701	40-03067A01	RECEIVE/TRANSMIT
R231	18-40373R02	CONTROL, VAR: 2.5K (SQUELCH)			
R520	18-03072A02	TRIMMER, VAR: 2K 30% (EX-	S8		OPEN P/O SCAN BD
		TENDER SHUT OFF ADJ.)	S7		BUSY P/O SCAN BD
R704	18-40365R01	CONTROL, VAR: 500 (MIC GAIN)	S11		CLR P/O SCAN BD
R803	6-10164B29	820 5% 1/2W	S9		AUTO P/O SCAN BD
R1301	*6-10164B21	390 5% 1/2W	S10		MEM P/O SCAN BD
			S12		LOAD P/O SCAN BD
TRANSFORMERS			MECHANICAL		
T104	24-03050A01	1ST AM IF: 455KHz			
T105	24-03050A02	2ND AM IF: 455KHz	*		BOARD, PLATED: LED
T106	24-03050A03	3RD AM IF: 455KHz			(COMPLETE)
T301	25-40190R01	MODULATION			BOARD, PLATED: MIC (COMPL.)
T500	24-03051A02	RF: 27MH			BOARD, PLATED: MIC GAIN
T501	24-03051A03	RF: 24MH			(COMPLETE)
			*		BOARD, PLATED: SCAN (COMPL.)
					BOARD, PLATED: SWR (COMPLETE)
TRANSISTORS					
Q101	48-03003A10	03A10 (RF AMP)			BOARD, PLATED: SWITCH (COMPL.)
Q102	48-03003A09	03A09 (MIXER)			BOARD, PLATED: TRANSCEIVER
Q103	48-03003A12	03A12 (RF ATTENUATOR)			(COMPLETE)
Q201	48-03003A11	03A11 (AUDIO SHUNT GATE)	7-03089A01		BRACKET, TRUNNION (USE ST1418)
Q202	48-03003A06	03A06 (SQUELCH AMP)	38-40434R01		BUTTON: UP, REV, DN. (MIC)
			38-03007A01		BUTTON: P.T.T. (MIC)
Q203	48-03003A06	03A06 (SQUELCH SWITCH)			
Q204	48-03003A11	03A11 (AGC BUFFER)	*38-40410R01		BUTTON: LOAD, CLEAR, MEM.
Q205	48-03003A11	03A11 (MODULATION INDICATOR)	*38-40410R02		BUTTON: SCAN, OPEN, BUSY
Q301	48-40004S05	04S05 (TRANSMITTER DRIVER)	43-40498R01		BUSHING, THREADED (FILTER BD)
Q302	48-40004S06	04S06 (TRANSMITTER DRIVER)	1-40575R51		CABLE, D.C. 3" (RED)
			1-40201R52		CABLE, D.C.; INC'L FUSE HOLDER
Q401	48-03003A09	03A09 (BUFFER)			(TKN6873A)
Q402	48-03003A09	03A09 (VCO)	1-40575R50		CABLE, DC 3" (BLACK)
Q403	48-03003A12	03A12 (DIFFERENCE AMP)	1-40280R74		CABLE, SPKR.
Q404	48-03003A12	03A12 (BUFFER)	*28-40428R01		CONNECTOR, MALE (10 PIN -
Q405	48-03003A12	03A12 (OFF SET OSC/CONVERTER)			1.5" HIGH)
Q406	48-03003A03	03A03 (VCO BUFFER)	*28-40432R01		CONNECTOR, MALE (10 PIN -
Q407	48-03003A12	03A12 (BUFFER)			.56" HIGH)
Q410	48-03003A02	03A02 (9.1 VOLT REGULATOR)	*1-40650R36		CORD, MIC (COMPLETE)
Q501	48-03003A05	03A05 (DETECTOR)	*13-40496R03		ESCUTCHEON, TRIM: UP, REV, DN (MIC)
Q502	48-03003A04	03A04 (PULSE AMPLIFIER)			

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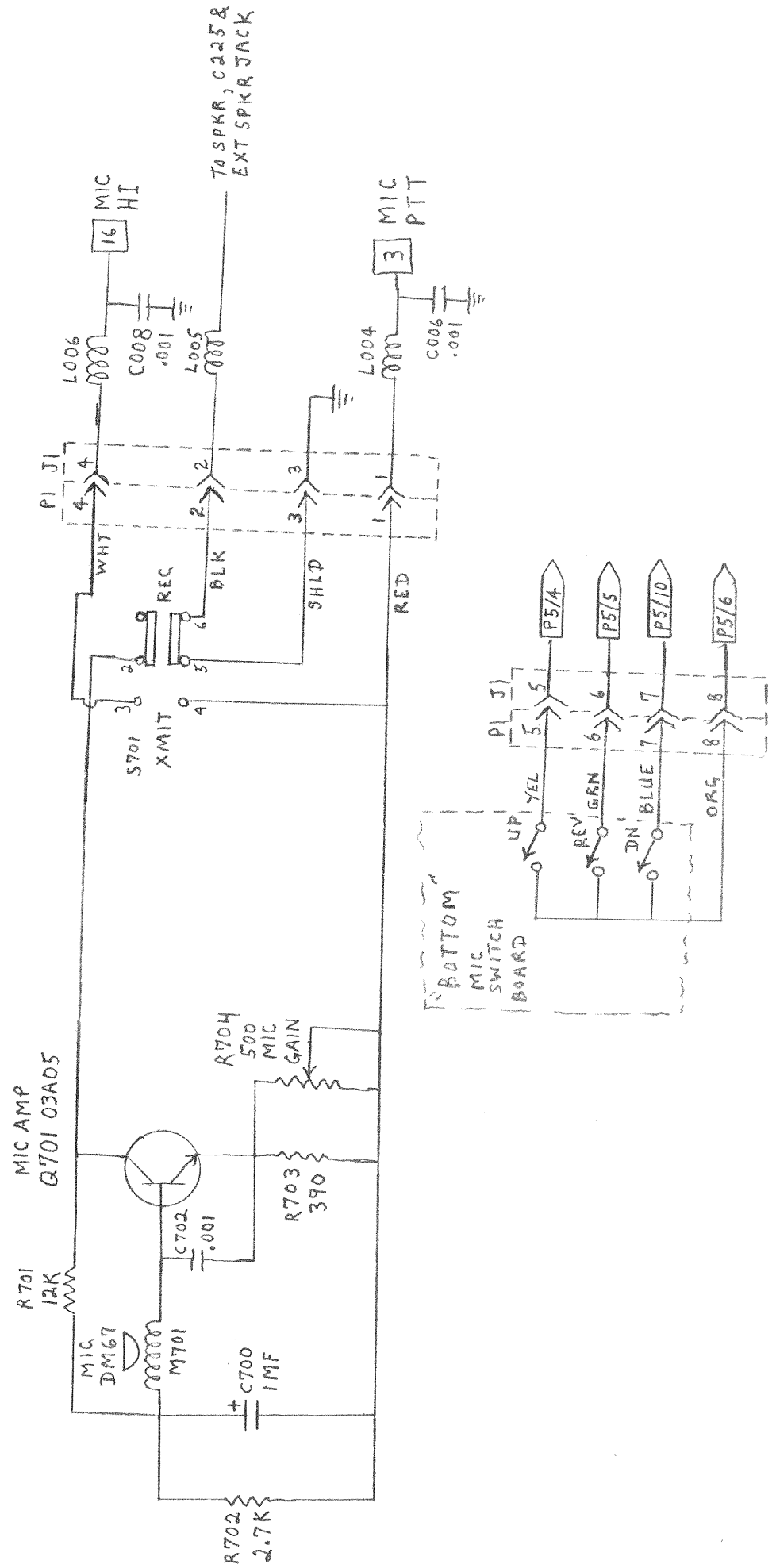
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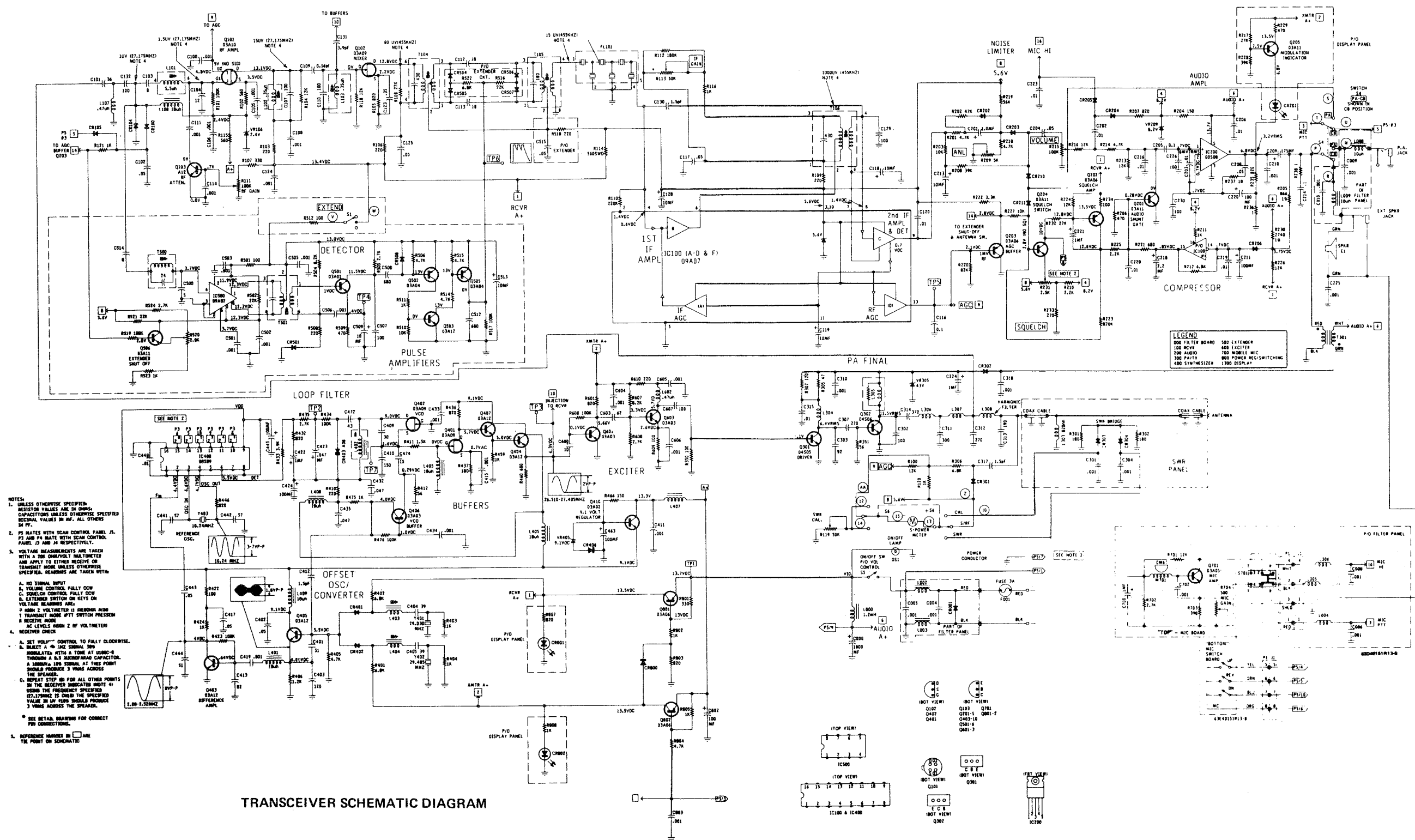
REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
MISCELLANEOUS ELECTRICAL PARTS (cont)					
	15-03077A01	HOUSING, FRONT: MIC (LESS NAMEPLATE)			
	1-40670R01	HOUSING, REAR: MIC (COMPLETE)			
	15-03060A01	HOUSING, DC PLUG: LESS PINS & LEADS			
	15-03061A01	HOUSING, DC RECEPTACLE: LESS PINS & LEADS			
	14-03108A01	INSULATOR, XTAL.			
	1-40280R13	KIT, INSTALLATION: 7RN8119A (INCL'S*)			
	42-03117A01	*CLIP, MIC HANG-UP			
	3-03130A04	*SCREW, TPG: 10-16 X 3/4 (TRUNNION BRKT MTG)			
	3-03218A01	*SCREW, MCH: 10-32 X 1/2 (TRUNNION)			
	3-03130A06	*SCREW, tpg: 8-18 X 1/2 (MIC CLIP MTG)			
	9-03150A01	*SOCKET, QUICK-SPLICE			
	36-40383R01	KNOB, FUNCTION			
	75-03233A10	PAD: 2 X 2 X 1/4 (BOTTOM COVER)			
	3-03130A12	SCREW, tpg., 4-40 (METER BRKT MTG)			
	3-00140026	SCREW tpg: 4-40 X 1/4 (CHASSIS MTG)			
	*3-00124432	SCREW MCH: 4-40 X 1/4 (TRM ESTCH. MTG)			
	3-03125A01	SCREW, tpg: 5-20 X .625 (MIC ASSEM)			
	26-03241A01	SHIELD, SNAP-ON			
	26-40168R01	SHIELD, VCO			
	41-40424R01	SPRING, BUTTON RETURN (POLY)			
	4-10699A01	WASHER, 4 X .22 X .1431			
	4-40403R01	WASHER: FELT			

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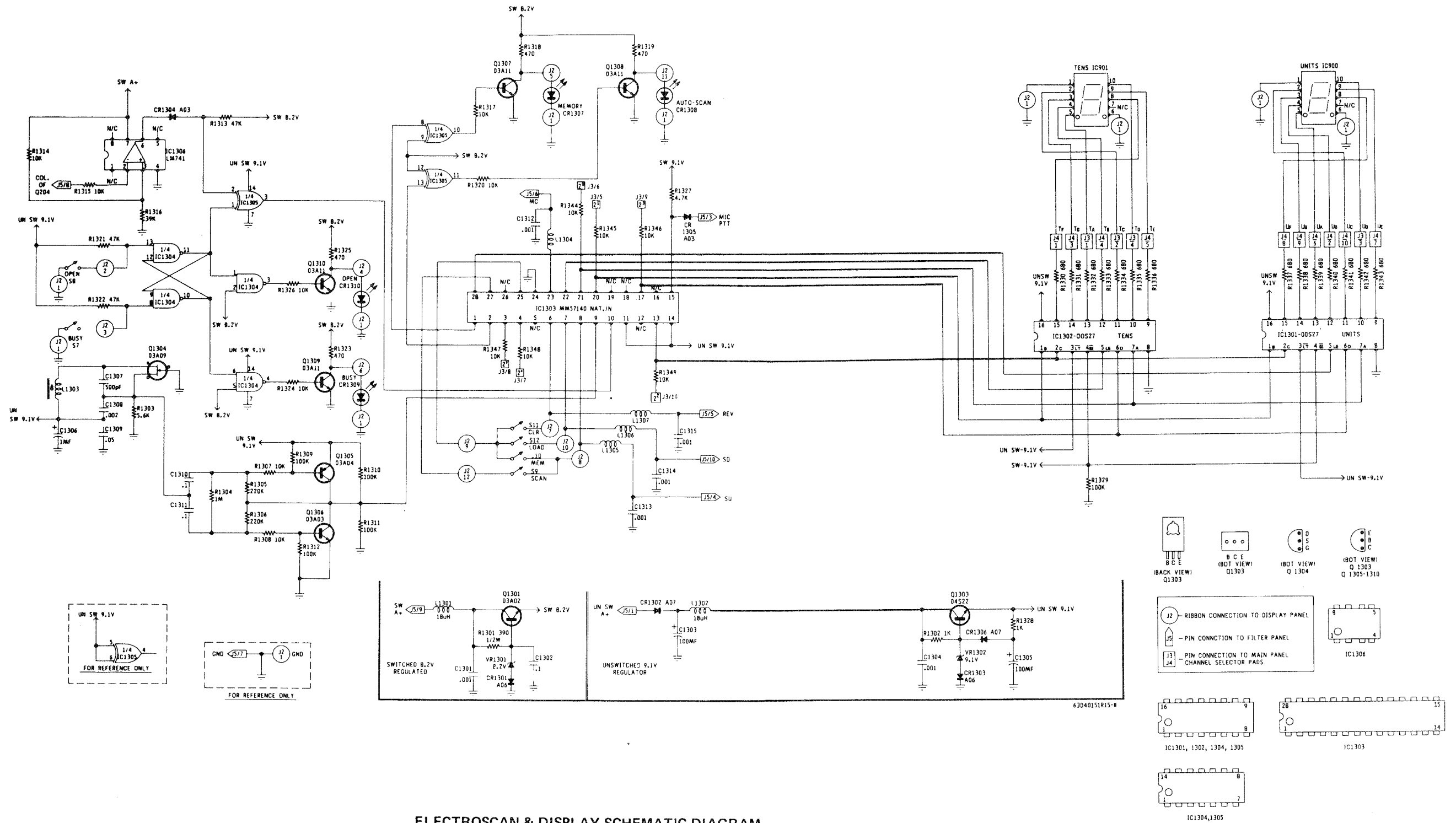
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