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**Realistic TRC-57 Service Manual**

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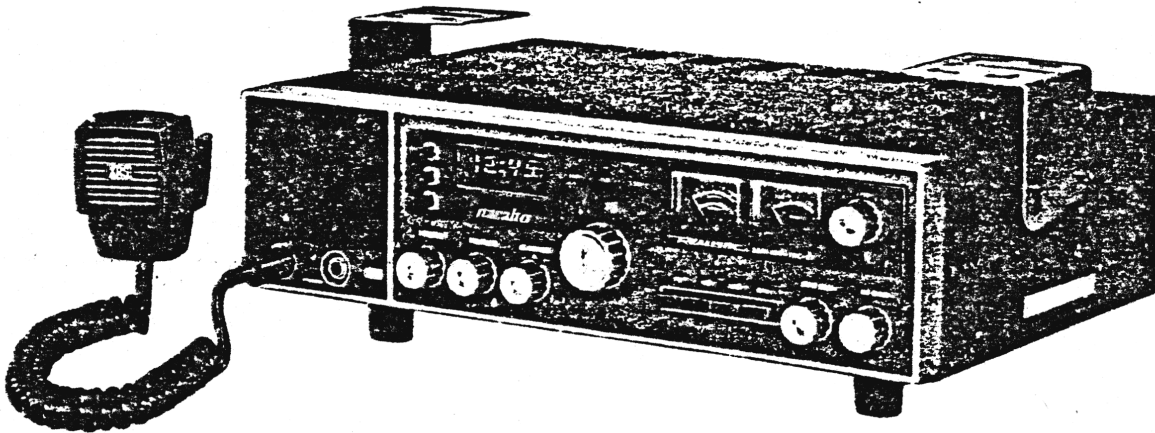
# Service Manual

21-157

TRC-57

## CB TRANSCEIVER

Catalog Number 21-157



CUSTOM MANUFACTURED FOR RADIO SHACK  A TANDY CORPORATION COMPANY

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# 1. ELECTRICAL PERFORMANCE SPECIFICATIONS

## GENERAL :

- \* Channels : 23
- \* Frequency Range : 26.965 MHz to 27.255 MHz.
- \* Semiconductors : 47 Transistors, 4 FET's, 81 Diodes, 13 IC's, 9 LED's.
- \* Crystals : 5
- \* Microphone : 600 ohms, Dynamic Type.
- \* Speaker : 8 ohms, 2.5W.
- \* Antenna Connector : M-Type.
- \* Meter (1) : TX Power, RX Signal.
- \* Meter (2) : SWR.
- \* Clock : Digital Type (Solid State).
- \* Size : 5-5/6 × 13-3/4 × 11-1/5" (14.8 × 34.9 × 28.4cm) (HWD)
- \* Jacks & Connectors : EXT SP & PA SP - 3.5 dia., Headphone - 6.0 dia., Microphone - DIN Type, 5P, AC Power, DC Power, AC Fuse Holder, Antenna.
- \* Controls : Channel Selector, Mode Selector (AM-USB-LSB), ON-OFF Power Switch/Volume, Squelch, RF Gain, Receive Clarifier, SWR Cal, Noise Blanker Switch, PA-CB Switch, SWR-Cal Switch, Time Setting Switch (Fast-Slow-Hold), ANL Switch, 12 Hour-24 Hour Change Switch.
- \* Illumination : Channel Selector, Meter (In Transmit Position, Meter Illumination Lamp to Change to Red Color).
- \* Accessories : AC Power Cable, DC Power Cable (Fuse Built in), Microphone, Microphone Hanger.
- \* Power Source : AC 120 V (60 Hz), DC 13.8 V.

## MEASUREMENT CONDITIONS

1. Power source ..... 120 V 60 Hz (AC), 13.8 V (DC).
2. Antenna impedance ..... 50 ohms.
3. Test temperature ..... 25°C.
4. AM modulation frequency ..... 1 kHz.
5. SSB modulation frequency..... 500 Hz & 2.4 kHz (Two Tone), 1 kHz (Single Tone).
6. Standard Antenna input voltage ..... 1000 μV.
7. Standard Audio output power ..... 0.5 W.
8. SSG modulation (AM) ..... 1 kHz 30%.
9. Audio output frequency (SSB) ..... 1 kHz.
10. Audio output load ..... 8 ohms.
11. Channel of operation ..... 13.



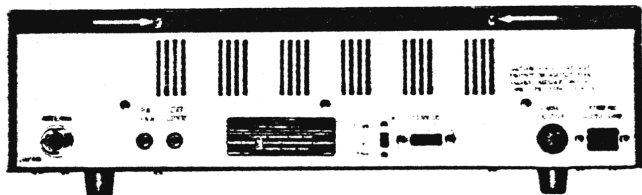
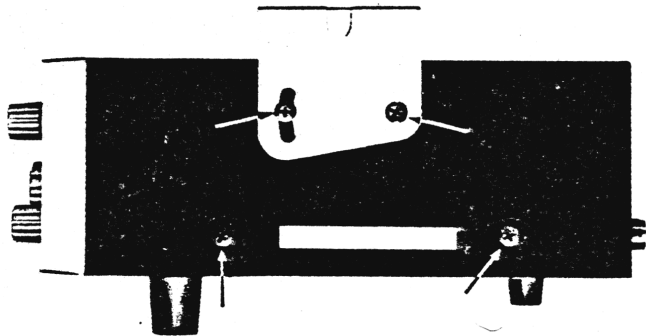
# 1. ELECTRICAL PERFORMANCE SPECIFICATIONS

TRANSMITTER	NOMINAL			LIMIT	
	UNIT	AM	SSB	AM	SSB
1. Frequency tolerance at 25°C (after 5 minutes warm up).	%	±0.0002	±0.0002	±0.0002	±0.0002
2. RF output power at no modulation.	W	3.8	*	3.0 to 4.0	*
3. Maximum output power, USB or LSB. (SSB, Two Tone).	W PEP	*	12	*	10.5
4. Modulation distortion at 1 kHz, 80% modulation (AM).	%	3	*	7	*
5. Spurious emission.	dB	-55	-55	-55	-50
6. Carrier & all unwanted frequency emission.	dB	*	-55	*	-40
7. Battery drain at no modulation.	mA	1700	1000	2300	1600
8. Battery drain at 80% modulation (AM), 10 W PEP output (SSB, two tone).	mA	2200	2200	2900	2900
9. AC power drain at no modulation.	W	65	45	95	75
10. AC power drain at 80% modulation (AM), 10 W PEP (SSB, two tone).	W	75	75	100	100
11. Modulation fidelity (1 kHz, 0 dB reference) at 450 Hz, EIA.	dB	-3	-3	-7	-7
12. Modulation fidelity (1 kHz, 0 dB reference) at 3 kHz, EIA.	dB	-3	-3	-7	-7
13. Channel power difference at no modulation (AM).	W	0.3 W	*	0.4 W	*
14. Mic input level difference at 2.5 kHz 4 W output (SSB).	dB	*	2	*	3
15. Mic input level difference between in USB/LSB for 2.5 kHz 4 W output.	dB	*	1	*	3
16. Microphone Amp sensitivity at 50% modulation (AM), 4 W PEP output (SSB).	mV	0.4	0.4	0.8	0.8
17. Microphone Amp dynamic range at 98% modulation from 50% modulation (AM), at 12 W PEP output from 10 W PEP output (SSB, two tone).	dB	60	60	40	40
<b>RECEIVER</b> (ANL & noise blanker off)					
1. Sensitivity for 500 mW output.	µV	0.5	0.25	1	0.5
2. Sensitivity for 10 dB S/N.	µV	0.5	0.25	1	0.5
3. AGC figure-of-merit (10 mV for 10 dB change in audio output).	dB	80	80	70	70
4. AGC figure-of-audio-output variation (from 10 mV).	dB	±3	±3	±5	±5

# 1. ELECTRICAL PERFORMANCE SPECIFICATIONS

RECEIVER (continued)	NOMINAL			LIMIT	
	UNIT	AM	SSB	AM	SSB
5. Over all bandwidth at 6 dB down (Upper frequency).	kHz	2.1	4.2	1.75 to 2.5	3.0 to 5.0
6. Over all bandwidth at 6 dB down (Lower frequency).	kHz	0.3	0.3	0.1 to 0.5	0.1 to 0.5
7. Cross modulation, RS standard, EIA standard (SSB).	dB	60	60		55
8. Adjacent channel selectivity (10 kHz).	dB	60	70	50	60
9. Noise blanker effect, EIA standard.	dB	3	3	4	4
10. Maximum audio output power.	W	6.0	6.0	4.0	4.0
11. Audio output power at 10% distortion.	W	4.5	4.5	3.5	3.5
12. Total harmonic distortion at 500 mW output (1000 $\mu$ V input).	%	3	3	6	6
13. Total harmonic distortion at 80% modulation (1000 $\mu$ V input).	%	5	*	10	*
14. RF GAIN attenuation (0.5 $\mu$ V = 0 dB reference).	dB	60	60	50 to 80	50 to 80
15. Hum & Noise ratio below 1000 $\mu$ V antenna input.	dB	50	50	40	40
16. Squelch sensitivity at threshold.	$\mu$ V	0.3	0.15	1	0.5
17. Squelch sensitivity at maximum.	$\mu$ V	1000	1000	300 to 3000	300 to 3000
18. S meter sensitivity at "S" 9 (at no modulation, AM).	$\mu$ V	100	100	50 to 200	50 to 200
19. Image rejection at 30.8 MHz.	dB	50	50	45	45
20. Front-end attenuation at IF frequency of 7.8 MHz.	dB	90	90	80	80
21. Oscillator dropout voltage.	V	9.0	9.0	11	11
22. Battery drain at no signal.	mA	700	700	1000	1000
23. Battery drain at maximum output power.	mA	1600	1600	2200	2200
24. AC power drain at no signal.	W	40	40	50	50
25. AC power drain at maximum output power.	W	60	60	80	80
26. Clarifier range.	kHz	$\pm 1.5$	$\pm 1.5$	$\pm 1$ to $\pm 2$	$\pm 1$ to $\pm 2$
<b>PUBLIC ADDRESS</b>					
1. Microphone Amp sensitivity for 4 watts output at 1 kHz.	mV		3		6
2. Maximum output power.	W		6		4

## 2. DISASSEMBLY INSTRUCTIONS



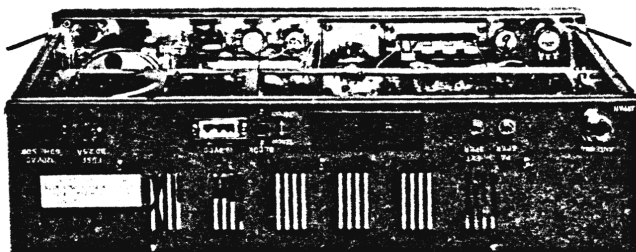
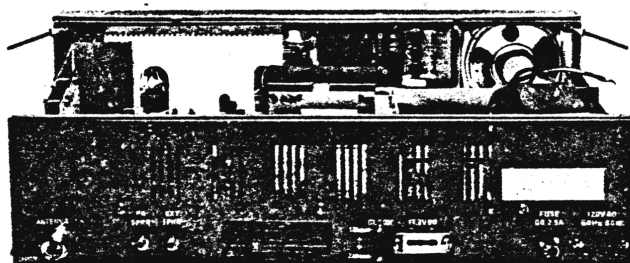
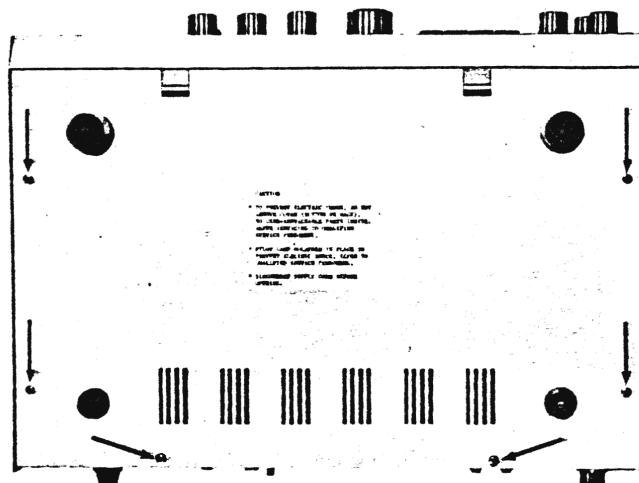
### 1. To Remove Top:

Remove 4 screws from the side (2 from each side), 2 screws from the rear and 2 screws from the top (if installed).

Slip the Top toward the rear and off the chassis.

### 2. To Remove Bottom Cover:

Remove 6 screws around the edge of the bottom cover. Slide the cover toward the rear of the chassis and remove.



### 3. Removing the Front Panel:

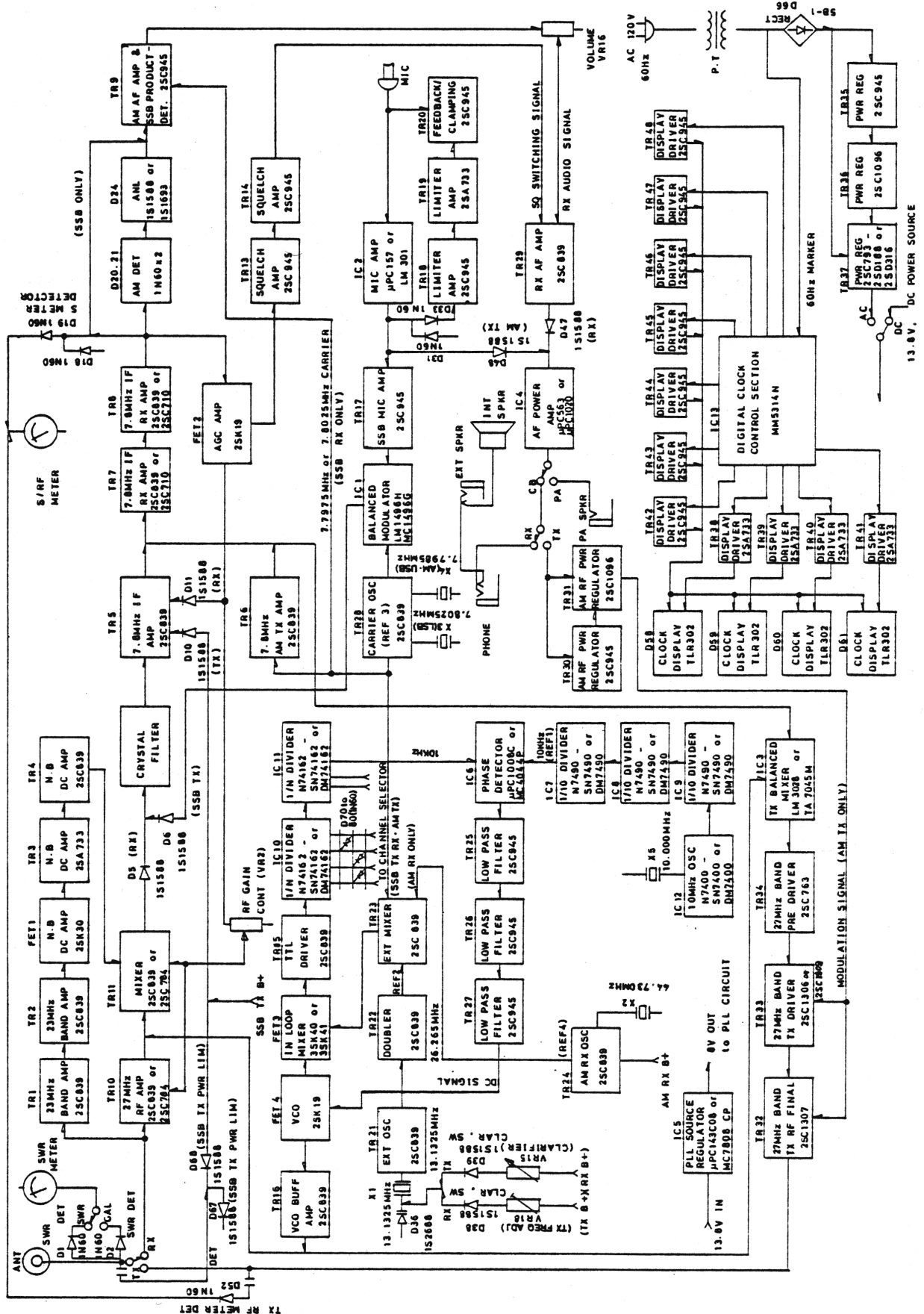
You can remove the Front Panel as a separate sub-assembly by removing the four screws holding the Panel brackets to the chassis (remove screws from inside the bottom of the chassis).

Or, you can remove only the Front Panel by removing the four screws fastening each of the four corners of the Front Panel (from the rear of the front panel).

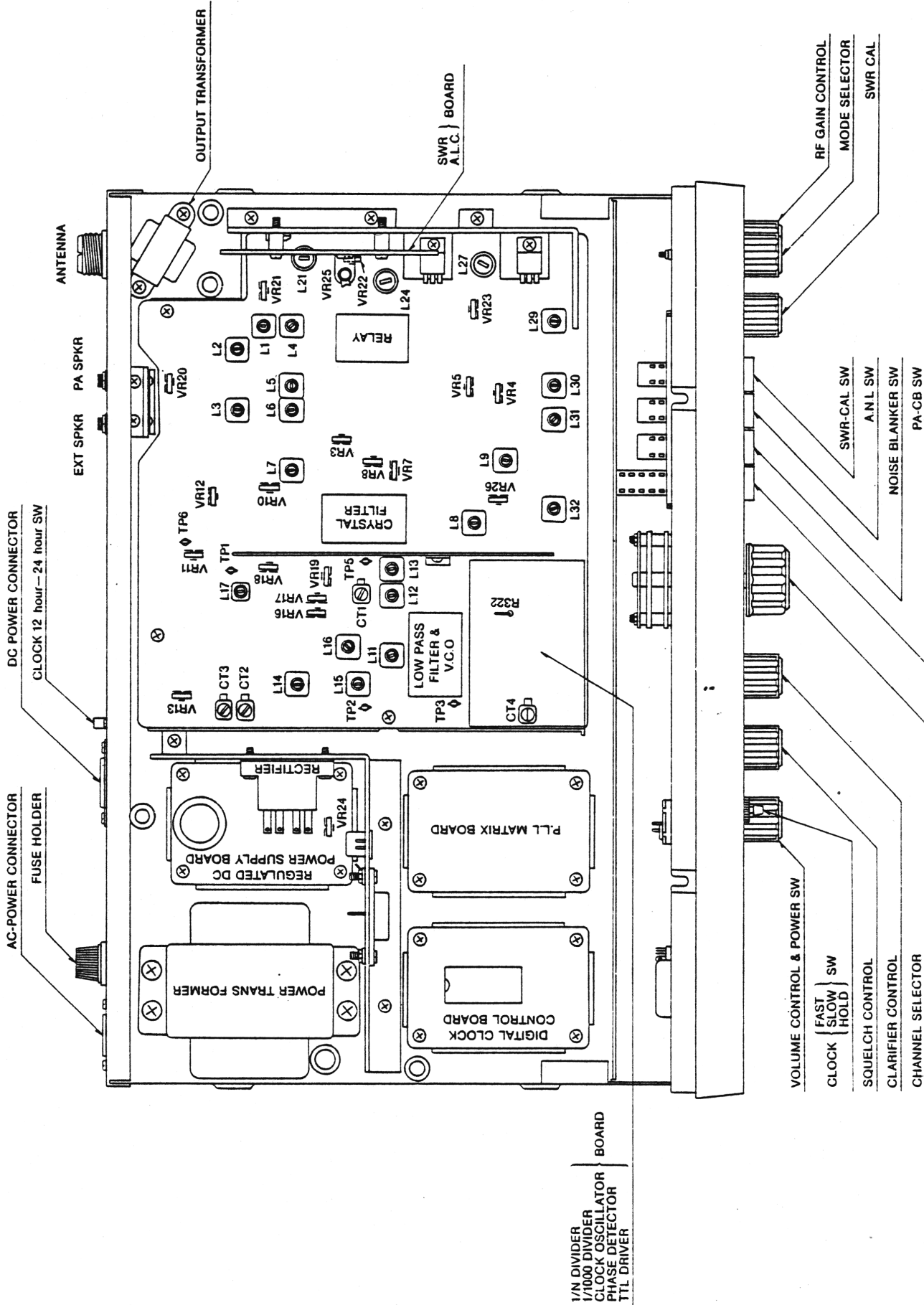
In either case take care that you do not break wires or damage any components as you remove and/or reposition the Front Panel.

To replace the Front Panel you must carefully remove all knobs, controls and wiring sub-assemblies from the Front Panel.

# 3. BLOCK DIAGRAM



# 4. CHASSIS LAYOUT & ALIGNMENT POINTS



## 5. ALIGNMENT INSTRUCTIONS

### TEST EQUIPMENTS

- A. DC Volt Meter
- B. RF VTVM
- C. Frequency Counter

### TEST CONDITIONS

- A. No Input Signal
- B. No Modulation

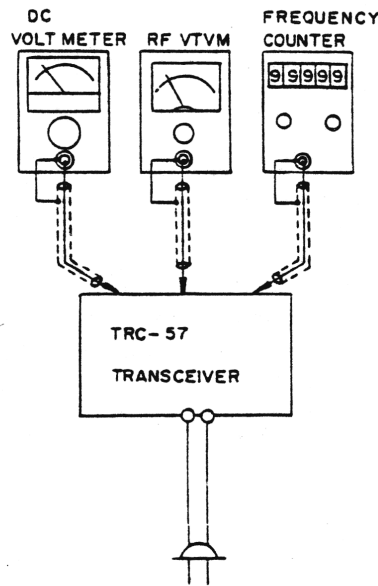


Fig. 1

### PLL & Local Oscillator Alignment (\* Refer to Fig.1)

Step	Control Setting and Input	Connections	Adjust	Adjust For
1	RX USB No input signal	Frequency Counter to between R301 & C305	CT4	Adjust for 10.000000 MHz (Overall Reference Frequency Adjustment). This adjustment must be precise. Couple the counter as loosely as possible so you do not upset the circuit.
2	RX USB	VTVM with RF Probe to secondary of L17 (TP-1)	L17	Adjust for maximum oscillation (7.8 MHz oscillation alignment). Adjust to the gradual drop-off side of resonance, not the oscillator drop-out side.
3	Same as Step-1	Frequency Counter to TP-1	CT3	Adjust for 7.7975 MHz Frequency (7.7975 MHz Crystal Adjustment)
4	RX LSB	Same as Step-3	CT2	Adjust for 7.8025 MHz Frequency (7.8025 MHz Crystal Adjustment)
5	Same as Step-4	VTVM with RF Probe to secondary of L15 (TP-2)	L14 L15	Adjust for maximum Output Level (18 MHz EXT-Mixer alignment)
6	RX AM	Same as Step-5	L16	Same Adjustment as Step-4 (44 MHz oscillation Alignment)
7	RX USB Channel 23	VTVM with DC Probe to Low pass Filter Output (TP-3)	L11	Adjust for 4 Volts (VCO Control Voltage Setting). This is a critical adjustment.
8	RX USB Channel 13	VTVM with RF Probe to Secondary of L13 (TP-5)	L12 L13	Adjust for Maximum Output Level (19 MHz Local Alignment)
9	RX USB Channel 1 Clarifier +Max	Frequency Counter to TP-5	VR19	Adjust for 19.169 MHz (Local Frequency & Clarifier Alignment)
10	RX USB Channel 1 Clarifier -Max	Same as Step-9	VR16	Adjust for 19.166 MHz (Local Frequency & Clarifier Alignment)
11	RX USB Channel 1 Clarifier Center	Same as Step-9	VR17	Adjust for 19.1675 MHz (Local Frequency Alignment)
12	RX AM Channel 1 Clarifier Center	Same as Step-9	CT-1	Adjust for 19.165 MHz (Local Frequency Alignment)

## 5. ALIGNMENT INSTRUCTIONS

### RECEIVER ALIGNMENT

Step	Control Setting and Input	Connections	Adjust	Adjust For
1	USB, SQ = min. Clarifier = Center VOL & RF Gain = Max PA-CB = CB ANL & NB = OFF Channel = 13 SG Freq. = 27.116 MHz	27 MHz, SG = Antenna Jack AF Voltmeter = EXT SPKR Jack (Refer to Fig. 2)	L4,5, 6,7,8, 9, VR26	Adjust for Maximum Reading of AF Output Meter
2	Same as Step-1 Antenna Input = 0.125 $\mu$ V	Same as Step-1	VR7, 20,5	Adjust for 0.5 Watts AF Output Power
3	Same as Step-1 Antenna Input = 100 $\mu$ V (S Meter-Adjustment)	Same as Step-1	VR4	Adjust for S = 9 Reading on S Meter
4	Same as Step-1 Antenna Input = 1000 $\mu$ V VOL & SQ = Max (Squelch Adjustment)	Same as Step-1	VR8	Adjust for 2V AF Output
5	Same as Step-1 SSG Freq. = 23.5 MHz 1000 $\mu$ V NB = ON (N.B Alignment)	VTVM with DC Probe to D4 Cathode (TP)	L1,2, 3	Adjust for Maximum Output of DC Voltage
6	USB, SQ = min. Clarifier = Center VOL = 500 mW Output at Antenna Input 0.5 $\mu$ V PA-CB = CB ANL & NB = OFF Channel #13 SG Freq. = 27.116 MHz	Same as Step-1	VR3	Adjust VR-3 to get 500 mW Audio Output at Antenna input Signal of 1000 $\mu$ V

### RECEIVER TEST EQUIPMENT SET UP DIAGRAM

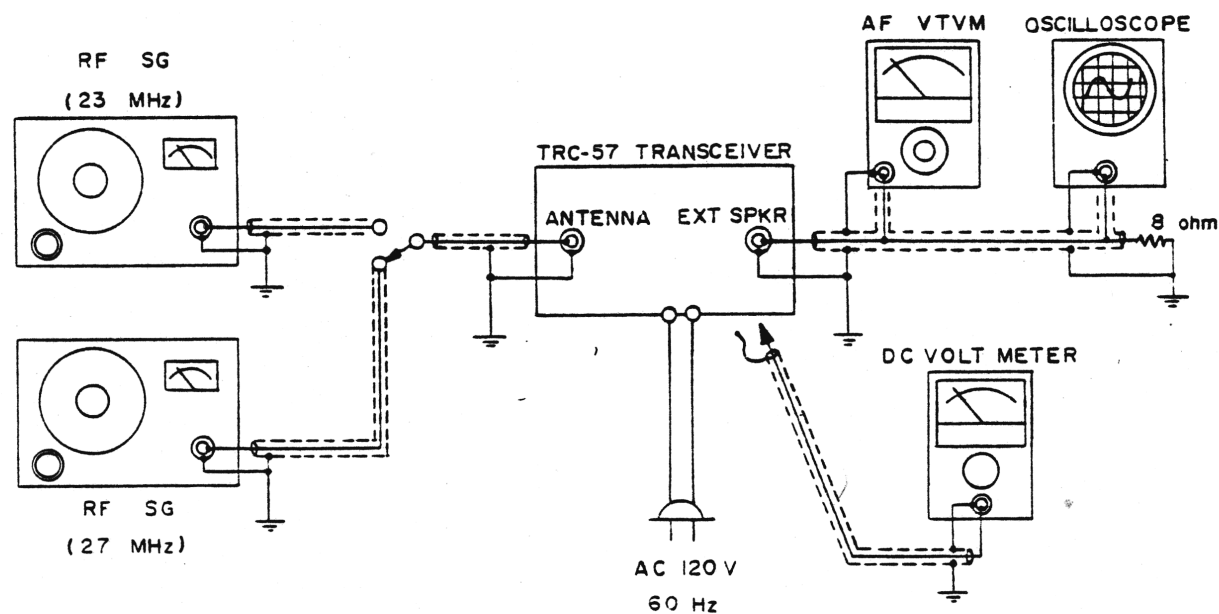


Fig. 2

# 5. ALIGNMENT INSTRUCTIONS

## TRANSMITTER ALIGNMENT

Step	Control Setting and Input	Connections	Adjust	Adjust For
1	Transmit Channel 12, USB, PA-CB = CB, VR11 = Center, VR23 = Center, VR25 = Max Resistance, VR13 = Center, AF Oscillator = 500 Hz & 2400 Hz two tone (about 2 mV)	Refer to Fig. 3	L32, 31,30, 29,27, 24	Adjust for Maximum Reading on RF VTVM
2	Same as Step-1	Refer to Fig. 3	VR11	Adjust for 14.5W-PEP on RF VTVM, 27 volts across 50 ohms (Mic Amp output adjust).
3	Same as Step-1	Refer to Fig. 3	VR25	Adjust for 12W-PEP on RF VTVM, 24.5 volts across 50 ohms (Max Power Adjust)
4	Same as Step-1 No Modulation	Refer to Fig. 3	VR10	Adjust for minimum reading on RF VTVM (Carrier Rejection)
5	Same as Step-1 AF Oscillator = Two tone, 0.3 mV	Refer to Fig. 3	VR13	Adjust for 4W-PEP on RF VTVM, 14.14 volts across 50 ohms (Microphone Sensitivity Adjust)
6	Same as Step-1	Refer to Fig. 3	VR23	Adjust for no crossover of Waveform on Oscilloscope ie. minimum waveform distortion (TR32 Bias Adjustment)
7	Channel 12, AM, No Mod. PA-CB = CB	Refer to Fig. 3	VR21	Adjust for no more than 4W on RF Power meter (Carrier Power Adjust)
8	Channel 12, AM, Modulation Frequency = 1 kHz, 8 mV	Refer to Fig. 3	VR12	Adjust for 90% Modulation of waveform on Oscilloscope (Modulation Adjust)
9	Same as Step-7	Field Strength Meter to Antenna with 50 ohm load and suitable RF Attenuator	L21	Adjust for minimum Output at 54 MHz (TVI Trap Adjustment)
10	Channel 12, AM, No Mod.	Refer to Fig. 3	VR22	Adjust so that the pointer needle of the Power meter on the unit rests at red line on the meter scale.
11	Channel 1, AM, No Mod.	Refer to Fig. 3	VR18	Adjust for 26.965000 MHz on Frequency Counter and Check Frequency of all Channels & USB-LSB positions.

## TRANSMITTER TEST EQUIPMENT SET UP DIAGRAM

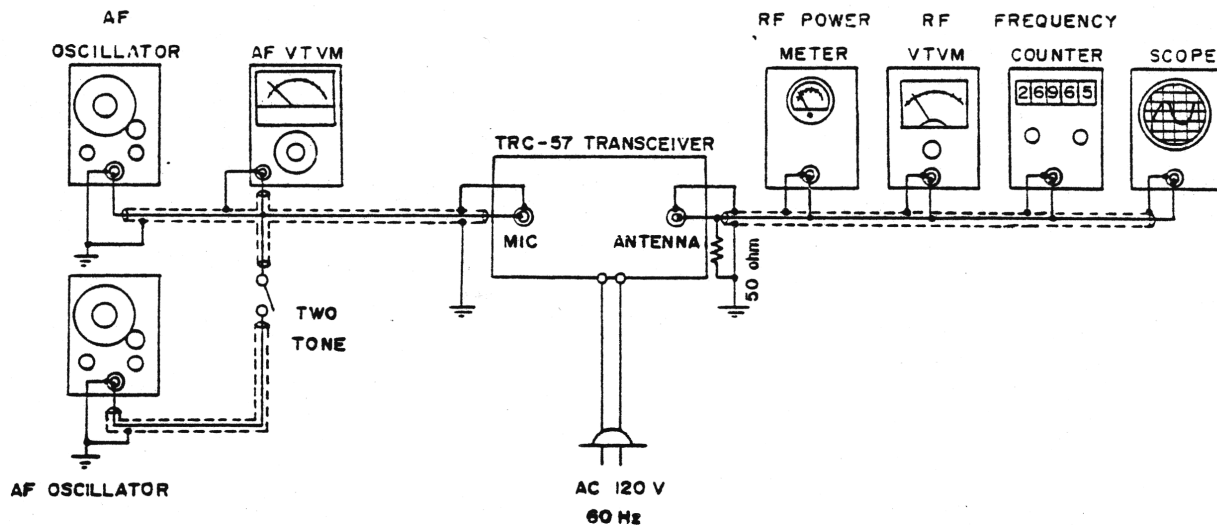


Fig. 3



## 5. ALIGNMENT INSTRUCTIONS

### REGULATED DC POWER SUPPLY ALIGNMENT

Step	Preset	Connect	Adjust	Adjust For
1	Receiver any mode	AC 120 V 60 Hz to the AC power connector. Connect DC voltmeter between Power SW and Ground line of DC Power supply circuit printed board.	VR-24	Adjust for 13.8 V on VTVM

### IC 10 (1/N DIVIDER) VOLTAGE CHART

PIN NO.	CHANNEL	CHANNEL																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
3		0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	3.0	0.2	3.0	0.2	3.0	0.2	3.0
4		0.2	0.2	0.2	3.0	0.2	0.2	3.0	0.2	0.2	0.2	0.2	3.0	0.2	0.2	3.0	0.2	0.2	0.2	0.2	3.0	0.2	0.2	0.2	
5		0.2	0.2	0.2	3.0	3.0	3.0	0.2	0.2	0.2	0.2	3.0	3.0	3.0	0.2	0.2	0.2	0.2	0.2	3.0	3.0	3.0	0.2	0.2	
6		0.2	3.0	3.0	0.2	0.2	0.2	0.2	0.2	0.2	3.0	3.0	0.2	0.2	0.2	0.2	0.2	0.2	3.0	3.0	0.2	0.2	0.2	0.2	

### IC 11 (1/N DIVIDER) VOLTAGE CHART

PIN NO.	CHANNEL	CHANNEL																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
3		5.0	0	0	0	0	0	0	0	0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0	0	0	0	0	0
4		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

### FREQUENCY CHART

CHANNEL NO.	N	1/N INPUT	AM RX OSCILLATOR	CARRIER OSCILLATOR		VCO OUTPUT (LOCAL OUTPUT)			ANTENNA OUT
				AM TX & USB	LSB	AM RX	AM TX & USB	LSB	
1	70	700 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.1650 MHz	19.1675 MHz	19.1625 MHz	26.965 MHz
2	71	710 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.1750 MHz	19.1775 MHz	19.1725 MHz	26.975 MHz
3	72	720 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.1850 MHz	19.1875 MHz	19.1825 MHz	26.985 MHz
4	74	740 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2050 MHz	19.2075 MHz	19.2025 MHz	27.005 MHz
5	75	750 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2150 MHz	19.2175 MHz	19.2125 MHz	27.015 MHz
6	76	760 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2250 MHz	19.2275 MHz	19.2225 MHz	27.025 MHz
7	77	770 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2350 MHz	19.2375 MHz	19.2325 MHz	27.035 MHz
8	79	790 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2550 MHz	19.2575 MHz	19.2525 MHz	27.055 MHz
9	80	800 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2650 MHz	19.2675 MHz	19.2625 MHz	27.065 MHz
10	81	810 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2750 MHz	19.2775 MHz	19.2725 MHz	27.075 MHz
11	82	820 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.2850 MHz	19.2875 MHz	19.2825 MHz	27.085 MHz
12	84	840 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3050 MHz	19.3075 MHz	19.3025 MHz	27.105 MHz
13	85	850 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3150 MHz	19.3175 MHz	19.3125 MHz	27.115 MHz
14	86	860 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3250 MHz	19.3275 MHz	19.3225 MHz	27.125 MHz
15	87	870 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3350 MHz	19.3375 MHz	19.3325 MHz	27.135 MHz
16	89	890 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3550 MHz	19.3575 MHz	19.3525 MHz	27.155 MHz
17	90	900 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3650 MHz	19.3675 MHz	19.3625 MHz	27.165 MHz
18	91	910 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3750 MHz	19.3775 MHz	19.3725 MHz	27.175 MHz
19	92	920 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.3850 MHz	19.3875 MHz	19.3825 MHz	27.185 MHz
20	94	940 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.4050 MHz	19.4075 MHz	19.4025 MHz	27.205 MHz
21	95	950 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.4150 MHz	19.4175 MHz	19.4125 MHz	27.215 MHz
22	96	960 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.4250 MHz	19.4275 MHz	19.4225 MHz	27.225 MHz
23	99	990 kHz	44.730 MHz	7.7975 MHz	7.8025 MHz	19.4550 MHz	19.4575 MHz	19.4525 MHz	27.225 MHz

## 6. TROUBLE SHOOTING HINTS

### \* UNIT WILL NOT TURN ON

1. Defective power switch.
2. Fuse blown.
3. Broken AC or DC power cable and/or Power Transformer.
4. Poor solder connection or other open connection in power circuit.

### \* NO RECEIVE SOUND

1. Defective External Speaker jack.
2. Defective Headphone jack.
3. Defective internal speaker.
4. Defective semiconductor in RX circuit.

### \* NO NOISE

1. Apply audio signal to TR-29 emitter (signal inject/trade).
2. Measure transistor & IC voltages in all audio stages and receiver section. Compare with voltages noted on the schematic.
3. Improper local oscillator adjustment.

### \* NO TRANSMISSION

1. Defective microphone.
2. Defective push switch on microphone.
3. Improper adjustment of carrier oscillator or local oscillator.

4. If you have checked all channels and obtain no RF output, check V.C.O. and/or signal trace through transmitter circuit.
5. Defect in power supply.
6. Defective antenna connector and/or relay.

### \* NO MODULATION

1. Defective microphone.
2. Poor audio output/Defective modulator.
3. Inoperative microphone amplifier.
4. Defective microphone connector.
5. Apply audio signal to pin No.4 of microphone connector and trace to defective stage.

### \* Channel will not switch, when you turn channel selector:

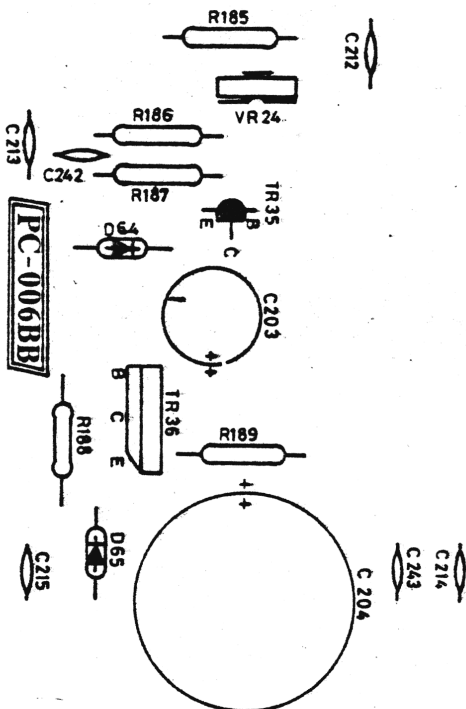
1. Check wiring (soldering) of the rotary switch.
2. Check voltage for programing switching, IC-10 and 11.
3. Check whether DC voltage of PLL low-pass filter output (TP-3) is 2 V to 5 V at channel 1 and 3 V to 7 V at channel 23.

### \* TVI Problems will come out or interrupt the other equipments.

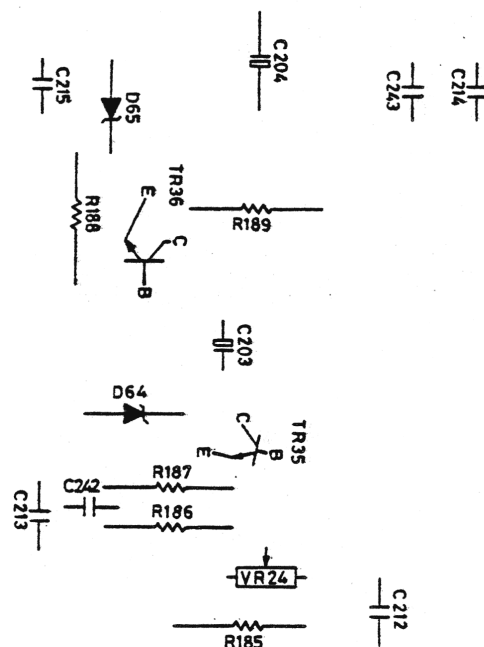
1. Check the soldering of L21 and C183.
2. Check whether ground side of antenna connector is disconnected.
3. Read SWR meter of the unit and readjust the antenna, if the SWR meter shows more than "2"

## 7. REGULATED DC POWER SUPPLY BOARD

TOP VIEW

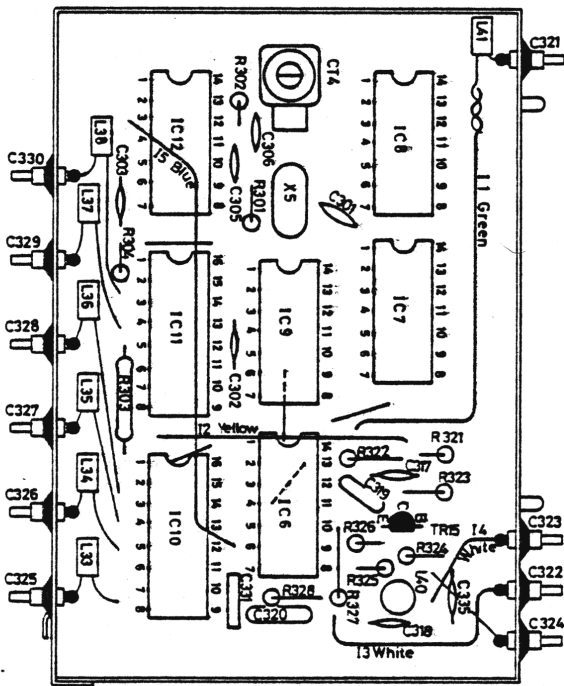


BOTTOM VIEW

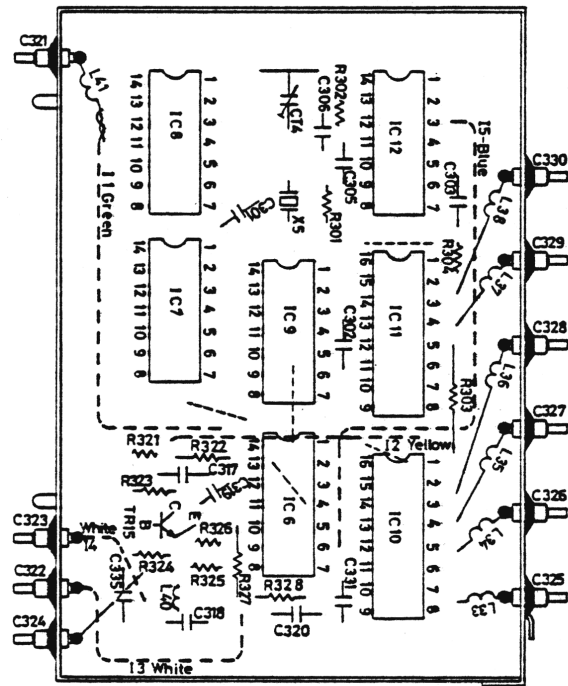


## 8. DIGITAL CLOCK BOARD WIRING

TOP VIEW

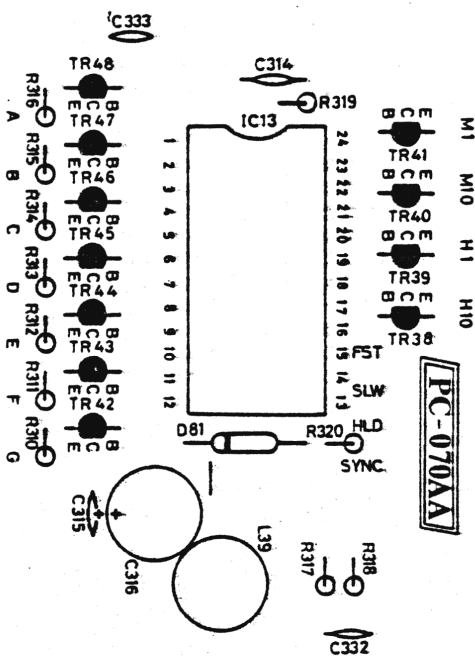


BOTTOM VIEW

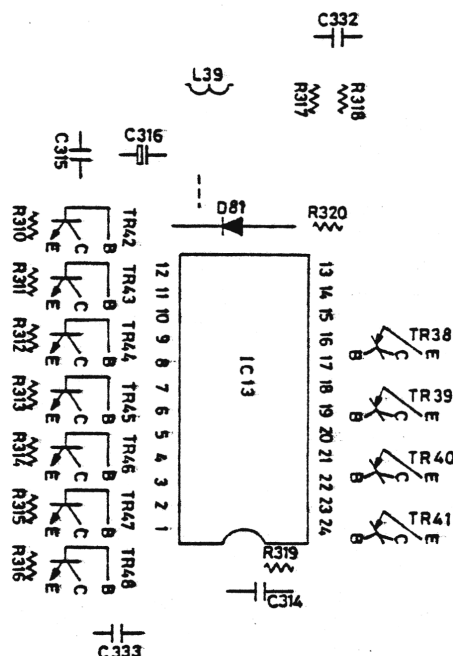


## 9. DIGITAL CLOCK CONTROL BOARD

TOP VIEW

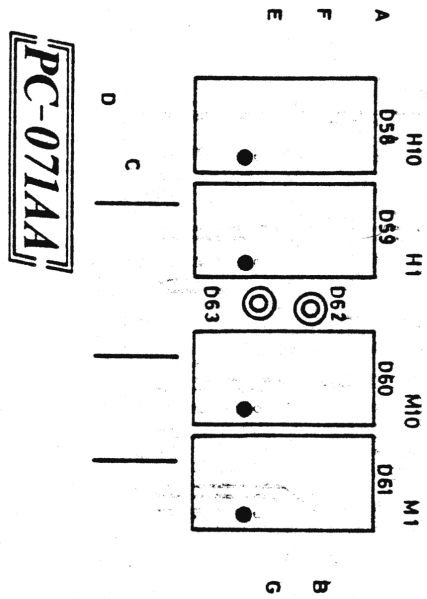


BOTTOM VIEW

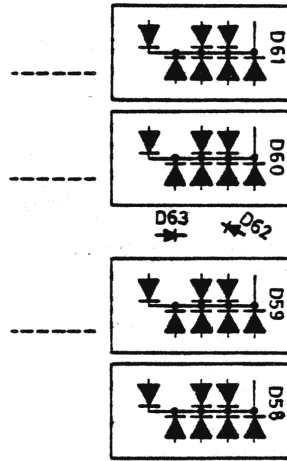


# 10. DIGITAL CLOCK DISPLAY BOARD

TOP VIEW

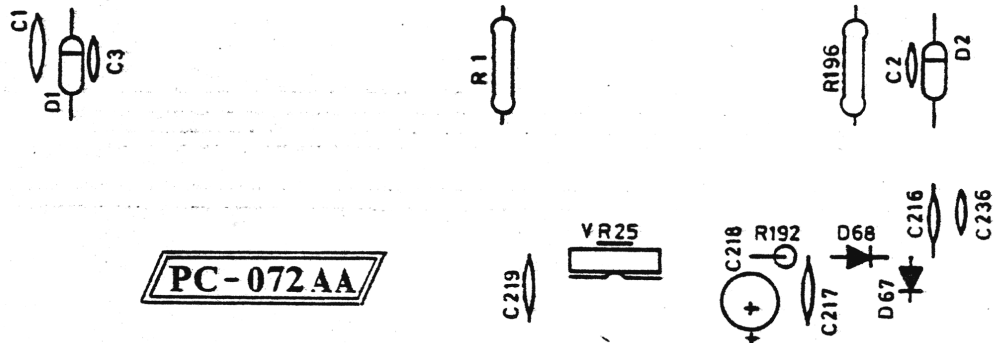


BOTTOM VIEW

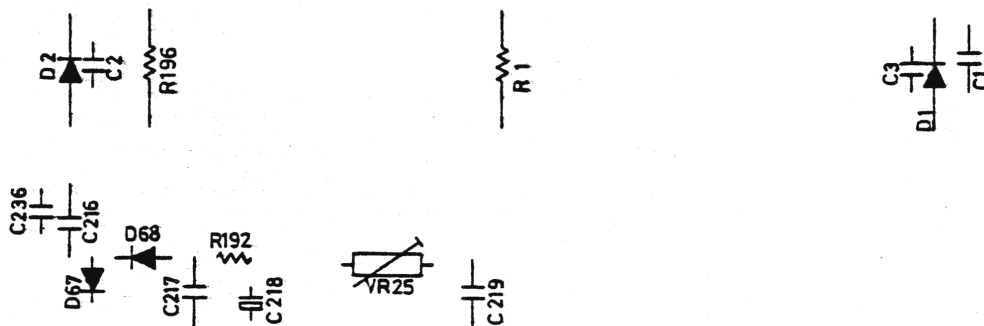


# 11. SWR & ALC BOARD

TOP VIEW

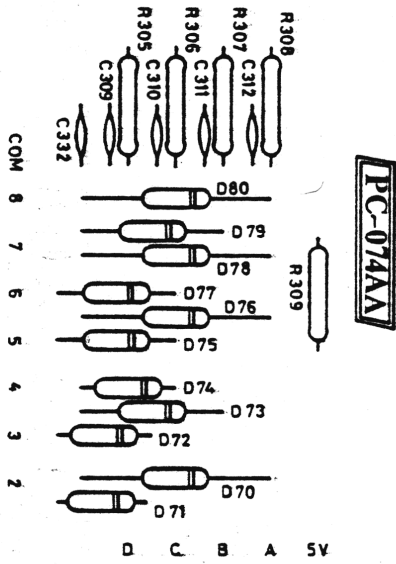


BOTTOM VIEW

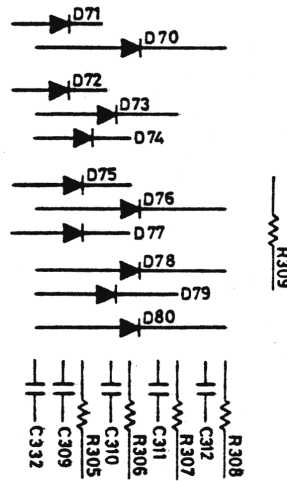


# 12. PLL MATRIX BOARD

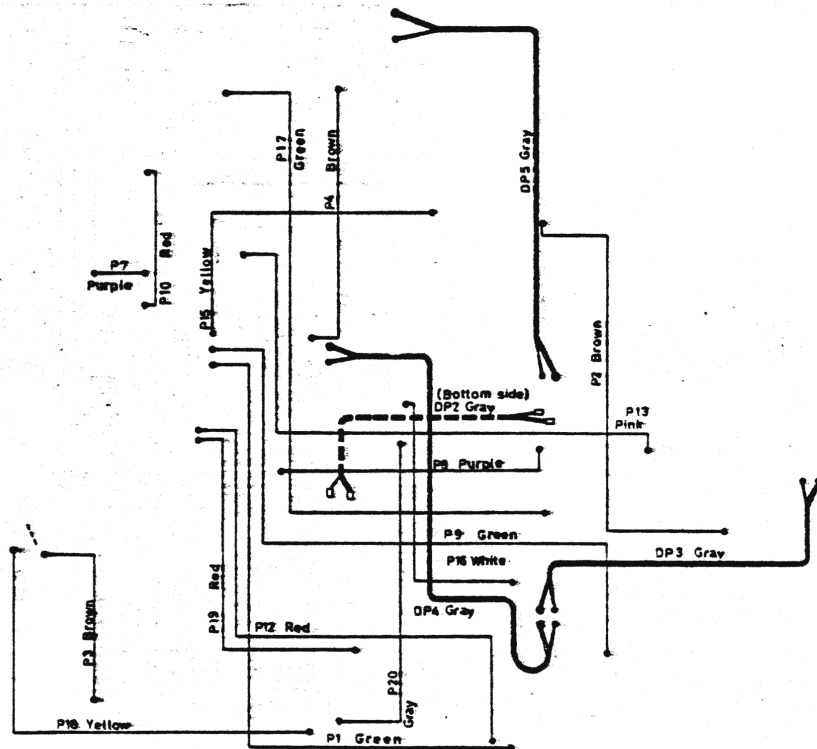
TOP VIEW



BOTTOM VIEW

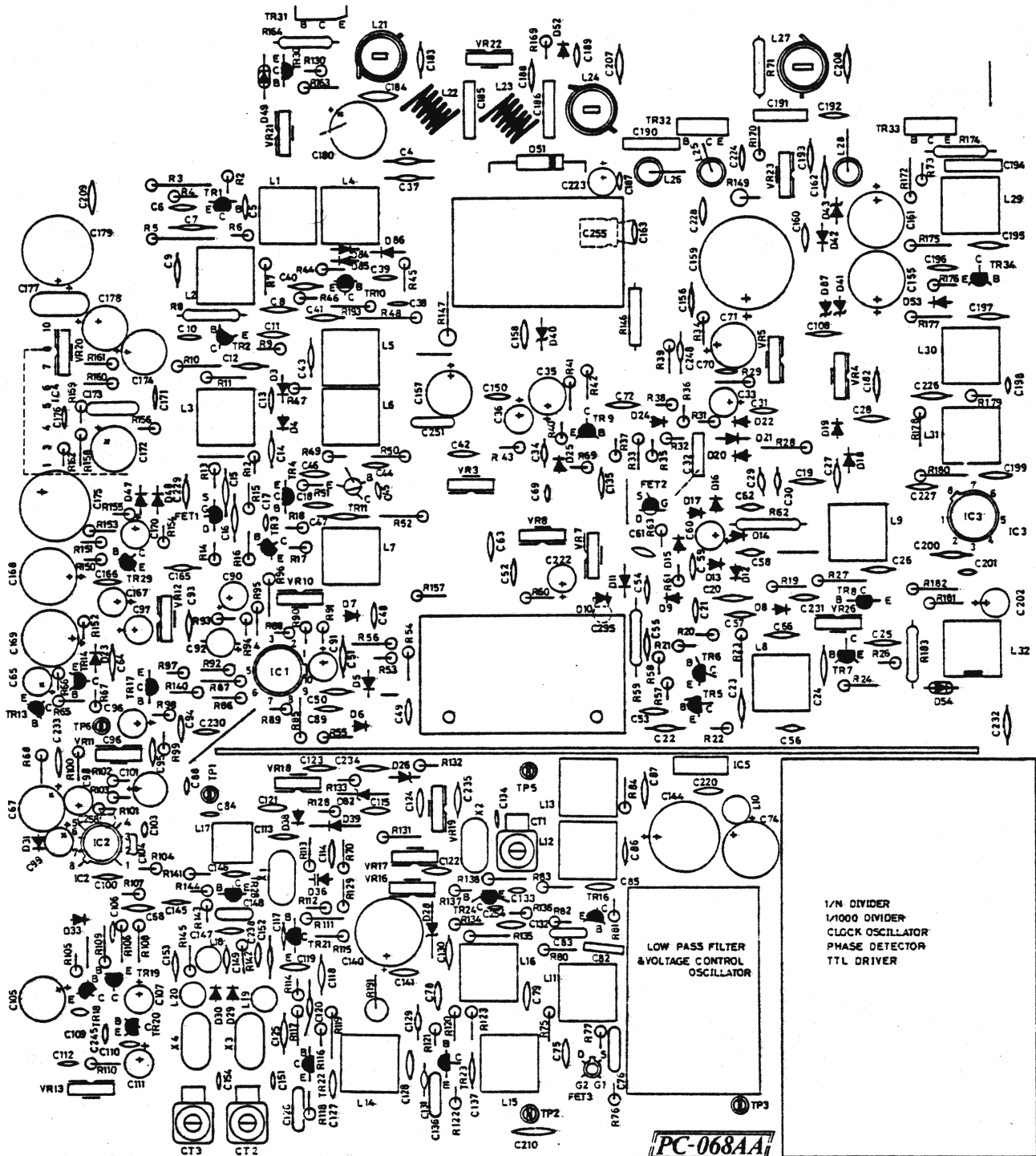


# 13. MAIN BOARD WIRING



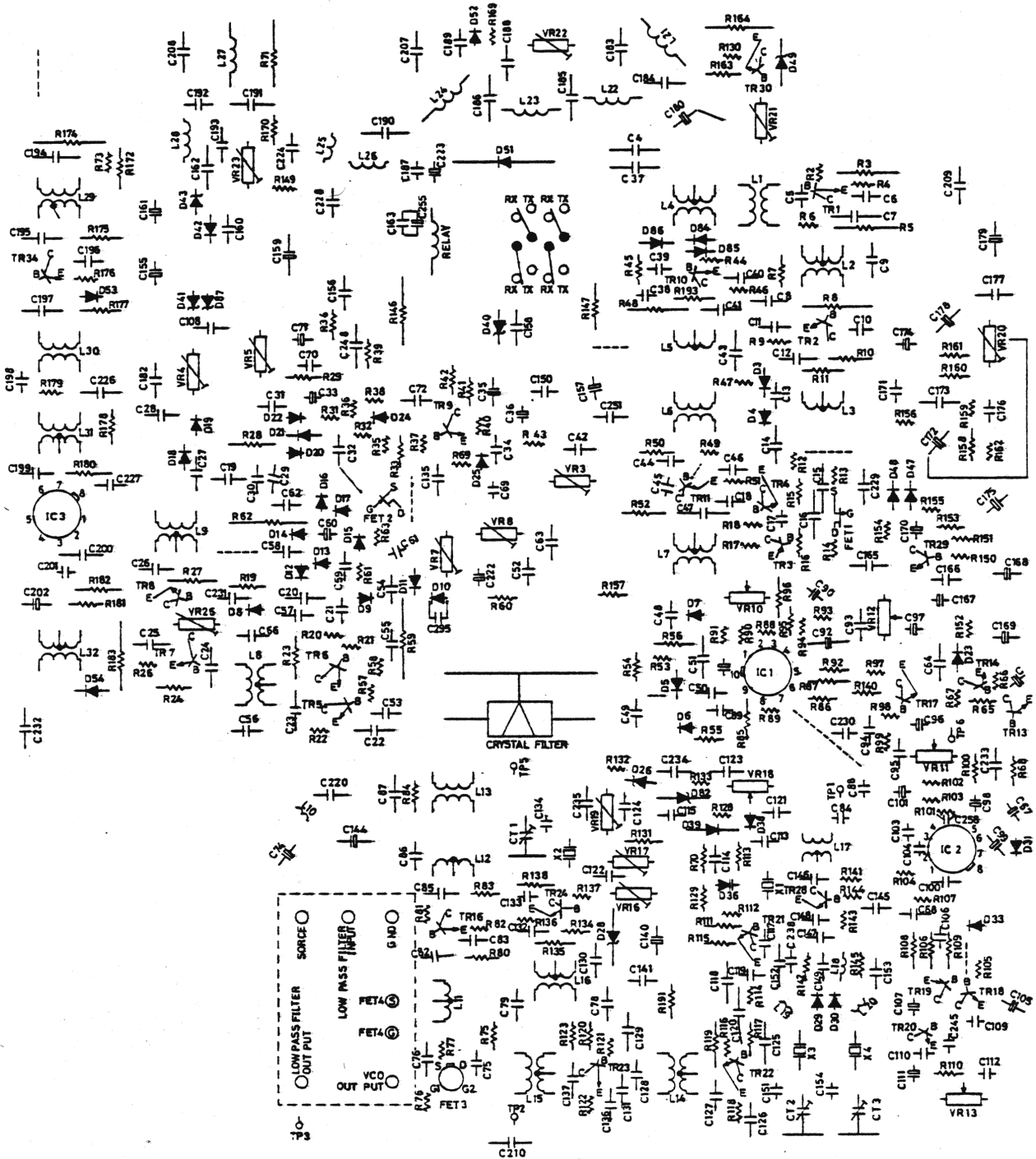
# 14. MAIN BOARD

## TOP VIEW

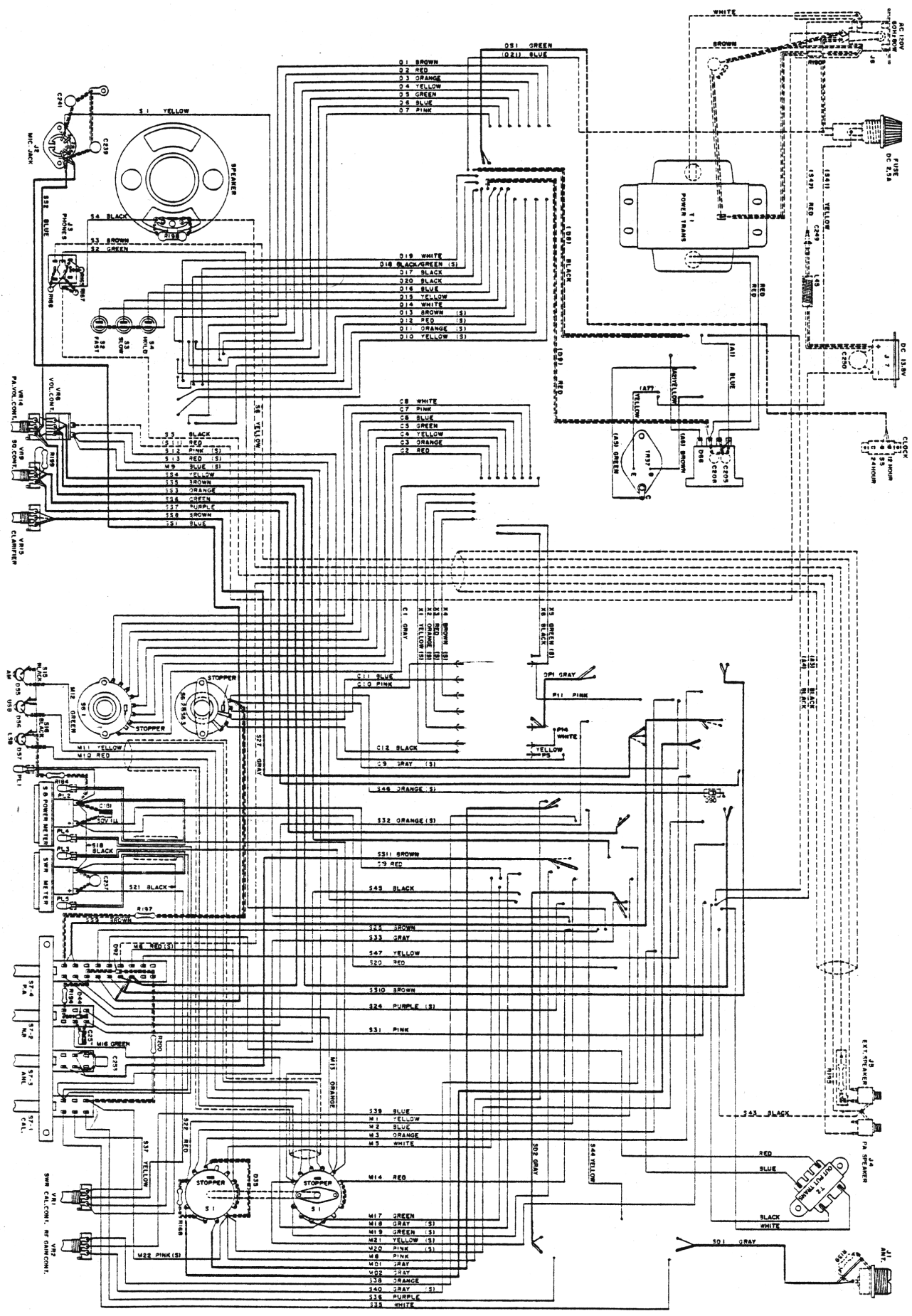


# 14. MAIN BOARD

## BOTTOM VIEW

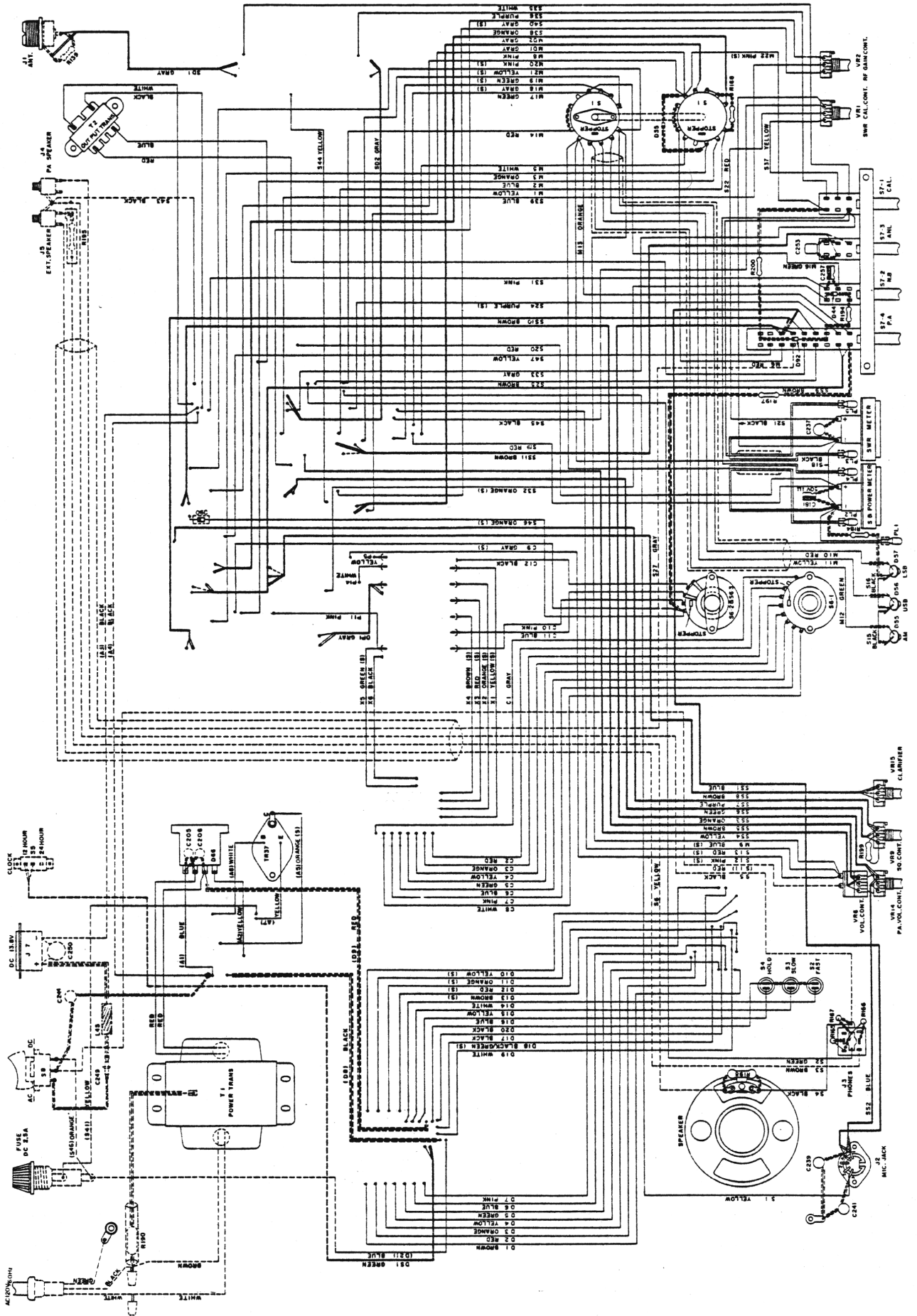


# 15. WIRING DIAGRAM FOR USA MODEL





# 16. WIRING DIAGRAM FOR CSA MODEL



## 17. ELECTRICAL PARTS LIST

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>CAPACITORS</b>			
C-1	Ceramic Capacitor	0.1 $\mu$ F 50V Z ZF	CZZY002104
C-2	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-3	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-4	Ceramic Capacitor	47 PF 50V J CH	CCCB814704
C-5	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-6	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-7	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-8	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-9	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-10	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-11	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-12	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-13	Ceramic Capacitor	47 PF 50V J CH	CCCB814704
C-14	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-15	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-16	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-17	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-18	Ceramic Capacitor	0.005 $\mu$ F 50V M-YA	CKAE815026
C-19	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-20	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-21	Ceramic Capacitor	20 PF 50V C CH	CCCB812004
C-22	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-23	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-24	Ceramic Capacitor	0.3 $\mu$ F 50V Z ZF	CZZY002304
C-25	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-26	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-27	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-28	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-29	Ceramic Capacitor	5 PF 50V C CH	CCCB815091
C-30	Ceramic Capacitor	5 PF 50V C CH	CCCB815091
C-31	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-32	Ceramic Capacitor	470 PF 50V K	CDCG814715
C-33	Aluminum Capacitor	0.1 $\mu$ F	CAAH511086
C-34	Ceramic Capacitor	20 PF 50V C CH	CCCB812004
C-35	Electrolytic Capacitor	33 $\mu$ F 10V	CELF113300
C-36	Aluminum Capacitor	0.1 $\mu$ F	CAAH511086
C-37	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-38	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-39	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-40	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-41	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-42	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-43	Ceramic Capacitor	2 PF 50V C CH	CCCB812091
C-44	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-45	Ceramic Capacitor	33 PF 50V C CH	CCCB813304
C-46	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-47	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-48	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-49	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-50	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-51	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-52	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-53	Ceramic Capacitor	0.011 $\mu$ F 50V M-YA	CKAE811036
C-54	Ceramic Capacitor	0.005 $\mu$ F 50V M-YA	CKAE815026
C-55	Ceramic Capacitor	0.005 $\mu$ F 50V M-YA	CKAE815026
C-56	Ceramic Capacitor	2 PF 50V C CH	CCCB812091

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>CAPACITORS</b>			
C-57	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-58	Ceramic Capacitor	5 PF 50V C CH	CCEB815091
C-59	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-60	Electrolytic Capacitor	1 $\mu$ F 50V	CELF811090
C-61	Electrolytic Capacitor	0.47 $\mu$ F 50V	CELF814780
C-62	Ceramic Capacitor	5 PF 50V C CH	CCEB815091
C-63	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFE514030
C-64	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-65	Electrolytic Capacitor	10 $\mu$ F 16V	CELF112200
C-66	Electrolytic Capacitor	100 $\mu$ F 10V	CKFB514030
C-67	Electrolytic Capacitor	100 $\mu$ F 10V	CELF111010
C-68	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-69	Ceramic Capacitor	20 PF 50V C CH	CCEB812004
C-70	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-71	Electrolytic Capacitor	33 $\mu$ F 10V	CELF113300
C-72	Ceramic Capacitor	0.0033 $\mu$ F 50V M-YA	CKAF813326
C-73	Ceramic Capacitor	0.3 $\mu$ F 50V Z ZF	CZZY002304
C-74	Electrolytic Capacitor	330 $\mu$ F 10V	CELF113310
C-75	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-76	Mylar Capacitor	0.04 $\mu$ F 50V K	COME814035
C-77	Mylar Capacitor	10 PF 50V K	CDCG811005
C-78	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-79	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-80	Mylar Capacitor	47 PF 50V K	DCCG814705
C-81	Mica Capacitor	47 PF 50V K	CDCG814705
C-82	Mica Capacitor	6 PF 50V	CDCG816092
C-83	Mylar Capacitor	0.01 $\mu$ F 50V K	CQME811035
C-84	Ceramic Capacitor	5 PF 50V C CH	CCEB815091
C-85	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-86	Ceramic Capacitor	5 PF 50V C CH	CCEB814091
C-87	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-88	Ceramic Capacitor	7 PF 50V C CH	CCEB817091
C-89	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-90	Electrolytic Capacitor	22 $\mu$ F 10V	CELF112200
C-91	Electrolytic Capacitor	2.2 $\mu$ F 25V	CELF512290
C-92	Electrolytic Capacitor	10 $\mu$ F 16V	CELF311000
C-93	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-94	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-95	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-96	Electrolytic Capacitor	10 $\mu$ F 16V	CELF311000
C-97	Aluminum Capacitor	0.1 $\mu$ F	CAAH511086
C-98	Electrolytic Capacitor	10 $\mu$ F 16V	CELF311000
C-99	Electrolytic Capacitor	0.47 $\mu$ F 50V	CELF814780
C-100	Ceramic Capacitor	10 PF 50V C CH	CCEB813091
C-101	Electrolytic Capacitor	47 $\mu$ F 10V	CELF114700
C-102	Electrolytic Capacitor	22 $\mu$ F 10V	CELF112200
C-103	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-104	Mylar Capacitor	0.001 $\mu$ F 50V K	CQME811025
C-105	Electrolytic Capacitor	100 $\mu$ F 10V	CELF111010
C-106	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-107	Electrolytic Capacitor	1 $\mu$ F 50V	CELF811090
C-108	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-109	Electrolytic Capacitor	22 $\mu$ F 10V	CELF112200
C-110	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026
C-111	Electrolytic Capacitor	1 $\mu$ F 50V	CELF811090
C-112	Ceramic Capacitor	0.001 $\mu$ F 50V M-YA	CKAE811026

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
C-113	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-114	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-115	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-117	Ceramic Capacitor	220 PF 25V K RH	CCRB512215
C-118	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-119	Ceramic Capacitor	100 PF 25V K CH	CCCB511015
C-120	Ceramic Capacitor	5 PF 50V C CH	CCCB811504
C-121	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-122	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-123	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-124	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-125	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-126	Mylar Capacitor	0.04 $\mu$ F 50V K	CQME814035
C-127	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-128	Ceramic Capacitor	15 PF 50V C CH	CCCB811504
C-129	Ceramic Capacitor	5 PF 50V C CH	CCCB815091
C-130	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-131	Ceramic Capacitor	5 PF 50V C CH	CCCB815091
C-132	Ceramic Capacitor	0.4 $\mu$ F 25V YG	CKFB514030
C-133	Ceramic Capacitor	33 PF 50V C CH	CCCB813304
C-134	Ceramic Capacitor	47 PF 50V J CH	CCCB814704
C-135	Ceramic Capacitor	0.04 $\mu$ F 50V YG	CKFB514030
C-136	Mylar Capactor	0.02 $\mu$ F 50V K	CQME814035
C-137	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-138	Mylar Capacitor	0.02 $\mu$ F 50V K	CQME812035
C-139	Mylar Capacitor	0.04 $\mu$ F 50V K	CQME814035
C-140	Electrolytic Capacitor	470 $\mu$ F 10V	CELF114710
C-141	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-142	Electrolytic Capacitor	0.47 $\mu$ F 50V	CELF814780
C-143	Mylar Capacitor	0.01 $\mu$ F 50V	CQME811035
C-144	Electrolytic Capacitor	470 $\mu$ F 16V	CELF314710
C-145	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-146	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-147	Ceramic Capacitor	150 PF 25V K CH	CCCB511515
C-148	Mylar Capacitor	0.001 $\mu$ F 50V M-YA	CQME811025
C-149	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-150	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-151	Ceramic Capacitor	20 PF 50V C CH	CCCB812004
C-152	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-153	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-154	Ceramic Capacitor	20 PF 50V C CH	CCCB812004
C-155	Electrolytic Capacitor	47 $\mu$ F 10V	CELF114700
C-156	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-157	Electrolytic Capacitor	100 $\mu$ F 10V	CELF111010
C-158	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-159	Electrolytic Capacitor	1000 $\mu$ F 16V	CELF311020
C-160	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-161	Electrolytic Capacitor	220 $\mu$ F 10V	CELF112210
C-162	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-163	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-165	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-166	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-167	Electrolytic Capacitor	1 $\mu$ F 50V	CELF811090
C-168	Electrolytic Capacitor	470 $\mu$ F 10V	CELF114710
C-169	Electrolytic Capacitor	220 $\mu$ F 63V	CELF902210
C-170	Aluminum Capacitor	0.1 $\mu$ F 25V	CAAH511086
C-171	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-172	Electrolytic Capacitor	100 $\mu$ F 16V	CELF311010

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>CAPACITORS</b>			
C-173	Aluminum Capacitor	0.1 $\mu$ F	CAAH511086
C-174	Electrolytic Capacitor	47 $\mu$ F 16V	CELF314700
C-175	Electrolytic Capacitor	470 $\mu$ F 16V	CELF314710
C-176	Ceramic Capacitor	120 PF 25V K CH	CCCB511215
C-177	Mylar Capacitor	0.22 $\mu$ F 50V K	CQME812245
C-178	Electrolytic Capacitor	47 $\mu$ F 16V	CELF314700
C-179	Electrolytic Capacitor	470 $\mu$ F 16V	CELF314710
C-180	Electrolytic Capacitor	220 $\mu$ F 16V	CELF312210
C-181	Electrolytic Capacitor	1 $\mu$ F 50V	CELF811090
C-182	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-183	Ceramic Capacitor	47 PF 50V J CH	CCCB814704
C-185	Mica Capacitor	180 PF 50V	CDCG811815
C-186	Mica Capacitor	470 PF 50V	CDCG814715
C-187	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-188	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-189	Ceramic Capacitor	1 PF 50V C CH	CCCB811091
C-190	Mica Capacitor	260 PF 50V K	CDCG816215
C-191	Mica Capacitor	220 PF 50V K	CDCG812215
C-192	Ceramic Capacitor	60 PF 50V J CH	CCCB816004
C-193	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-194	Mica Capacitor	220 PF 50V K	CDCG812215
C-195	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-196	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-197	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-198	Ceramic Capacitor	1 PF 50V C CH	CCCB811091
C-199	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-200	Ceramic Capacitor	0.02 $\mu$ F 50V M-YA	CKAE812036
C-201	Ceramic Capacitor	15 PF 50V C CH	CCCB811504
C-202	Electrolytic Capacitor	4.7 $\mu$ F 25V	CELF514790
C-203	Electrolytic Capacitor	220 $\mu$ F 16V	CELF312210
C-204	Electrolytic Capacitor	220 $\mu$ F 25V	CZZY015222
C-205	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-206	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-207	Ceramic Capacitor	0.3 $\mu$ F 50V Z ZF	CZZY002304
C-209	Ceramic Capacitor	0.3 $\mu$ F 50V Z ZF	CZZY002304
C-210	Ceramic Capacitor	0.33 $\mu$ F 50V Z ZF	CZZY002304
C-211	Ceramic Capacitor	0.3 $\mu$ F 50V Z ZF	CZZY002304
C-212	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-213	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-214	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-215	Ceramic Capacitor	0.01 $\mu$ F 50V M-YA	CKAE811036
C-216	Ceramic Capacitor	1 PF 50V C CH	CCCB811091
C-217	Ceramic Capacitor	00.01 $\mu$ F 50V M-YA	CKAE811036
C-218	Electrolytic Capacitor	10 $\mu$ F 16V	CELF311000
C-219	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-220	Ceramic Capacitor	0.3 $\mu$ F 50V Z ZF	CZZY002304
C-221	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-222	Electrolytic Capacitor	10 $\mu$ F 16V	CELF311000
C-223	Electrolytic Capacitor	2.2 $\mu$ F 25V	CELF512290
C-224	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-226	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-227	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-228	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-229	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-230	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030
C-231	Ceramic Capacitor	0.04 $\mu$ F 25V YG	CKFB514030



## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
C-232	Ceramic Capacitor 0.3 $\mu$ F 50V Z ZF		CZZY002304
C-233	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-234	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-235	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-236	Ceramic Capacitor 68 PF 50V J CH		CCCB816804
C-237	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-238	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-239	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-240	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-241	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-242	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-243	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-244	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-245	Ceramic Capacitor 0.001 $\mu$ F 50V M-YA		CKAE811026
C-248	Ceramic Capacitor 15 PF 50V C CH		CCCB811504
C-249	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-250	Ceramic Capacitor 0.1 $\mu$ F 50V Z ZF		CZZY002104
C-251	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-253	Mylar Capacitor 0.04 $\mu$ F 50V K		CQME814035
C-254	Ceramic Capacitor 15 PF 50V JCH		CCCB811504
C-255	Electrolytic Capacitor 47 $\mu$ F 25V		CELF514700
C-256	Electrolytic Capacitor 220 $\mu$ F 16V		CELF312210
C-257	Electrolytic Capacitor 33 $\mu$ F 10V		CELF113300
C-295	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-301	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-302	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-303	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-305	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-306	Ceramic Capacitor 5 PF 50V C CH		CCCB815091
C-309	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-310	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-311	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-312	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-314	Ceramic Capacitor 0.02 $\mu$ F 50V M-YA		CKAE812036
C-315	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-317	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-318	Ceramic Capacitor 60 PF 50V J CH		CCCB816004
C-319	Mylar Capacitor 0.04 $\mu$ F 50V K		CQME814035
C-320	Mylar Capacitor 0.01 $\mu$ F 50V K		CQME811035
C-321	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-322	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-323	Feed-thru Capacitor CZ-023 3 PF		CZZY023309
C-324	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-325	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-326	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-327	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-328	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-329	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-330	Feed-thru Capacitor CZ-006 1000 PF		CZZY006102
C-331	Mica Capacitor 220 PF 50V K		CDCG812215
C-332	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-333	Ceramic Capacitor 0.01 $\mu$ F 50V M-YA		CKAE811036
C-334	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
C-335	Ceramic Capacitor 0.04 $\mu$ F 25V YG		CKFB514030
CT-1	Trimmer Capacitor CV-024 (50P)	C-0437	CCVY024006
CT-2	Trimmer Capacitor CV-024 (20P)	C-0436	CCVY024003
CT-3	Trimmer Capacitor CV-024 (20P)	C-0436	CCVY024003
CT-4	Trimmer Capacitor CV-024 (50P)	C-0437	CCVY024006

## 17. ELECTRICAL PATS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>DIODES</b>			
D-1	Diode 1N60 P		DDAY001002
D-2	Diode 1N60 P		DDAY001002
D-3	Diode 1N60 AM		DDAY001001
D-4	Diode 1N60 AM		DDAY001001
D-5	Diode 1S1588		DDAY047001
D-6	Diode 1S1588		DDAY047001
D-8	Diode 1S1588		DDAY047001
D-9	Diode 1S1588		DDAY047001
D-10	Diode 1S1588		DDAY047001
D-11	Diode 1S1588		DDAY047001
D-12	Diode 1N60 AM		DDAY001001
D-13	Diode 1S1588		DDAY047001
D-14	Diode 1S1588		DDAY047001
D-15	Diode 1S1588		DDAY047001
D-16	Diode 1N60 AM		DDAY001001
D-17	Diode 1S1588		DDAY047001
D-18	Diode 1N60 AM		DDAY001001
D-19	Diode 1N60 AM		DDAY001001
D-20	Diode 1N60 AM		DDAY001001
D-21	Diode 1N60 AM		DDAY001001
D-22	Diode 1S1588		DDAY047001
D-23	Diode 1S1588		DDAY047001
D-24	Diode 1S1693		DDAY049001
D-25	Diode 1S1588		DDAY047001
D-26	Zener Diode WZ061		DDAY008001
D-27	Diode 1S2688 B		DDAY006002
D-28	Zener Diode BZ052		DDAY009001
D-29	Diode 1S1588		DDAY047001
D-30	Diode 1S1588		DDAY047001
D-31	Diode 1N60 AM		DDAY001001
D-32	Diode 1N60 AM		DDAY001001
D-33	Diode 1N60 AM		DDAY001001
D-34	Diode 1N60 AM		DDAY001001
D-35	Diode 1S1588		DDAY04001
D-36	Diode 1S2688 B		DDAY006002
D-38	Diode 1S1588		DDAY047001
D-39	Diode 1S1588		DDAY047001
D-40	Zener Diode CZ092		DDAY010002
D-41	Zener Diode CZ092		DDAY010002
D-42	Diode SRIK-2		DDAY002002
D-43	Zener Diode CZ092		DDAY010002
D-44	Diode 1S1588		DDAY047001
D-45	Diode SRIK-2		DDAY002002
D-46	Diode SRIK-2		DDAY002002
D-47	Diode 1S1588		DDAY047001
D-48	Diode 1S1588		DDAY047001
D-49	Zener Diode WZ061		DDAY008001
D-52	Diode 1N60 AM		DDAY001001
D-53	Varistor KB262		DDAY004002
D-54	Diode 1S1588		DDAY047001
D-55	Diode TLR104		DDAY007001
D-56	Diode TLR104		DDAY007001
D-57	Diode TLR104		DDAY007001
D-58	Diode TLR302		DDAY041001
D-59	Diode TLR302		DDAY041001
D-60	Diode TLR302		DDAY041001

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>DIODES</b>			
D-61	Diode TLR302		DDAY041001
D-62	Diode TLR102		DDAY04001
D-63	Diode TLR102		DDAY04001
D-64	Zener Diode WZ061		DDAY008001
D-65	Zener Diode BZ162		DDAY009003
D-66	Diode 5B-1		DDAY042001
D-67	Diode 1N60 AM		DDAY001001
D-68	Diode 1N60 AM		DDAY001001
D-70	Diode 1N60 AM		DDAY001001
D-71	Diode 1N60 AM		DDAY001001
D-72	Diode 1N60 AM		DDAY001001
D-73	Diode 1N60 AM		DDAY001001
D-74	Diode 1N60 AM		DDAY001001
D-75	Diode 1N60 AM		DDAY001001
D-76	Diode 1N60 AM		DDAY001001
D-77	Diode 1N60 AM		DDAY001001
D-78	Diode 1N60 AM		DDAY001001
D-79	Diode 1N60 AM		DDAY001001
D-80	Diode 1N60 AM		DDAY001001
D-81	Diode 1S1588		DDAY047001
D-82	Zener Diode WZ061		DDAY008001
D-84	Diode 1N60 FMI		DDAY001003
D-85	Diode 1N60 FMI		DDAY001003
D-86	Diode 1S1588		DDAY047001
D-87	Zener Diode WZ081		DDAY008003
<b>FET'S</b>			
FE-1	FET 2SK30GR		DDCY002002
FE-2	FET 2SK19GR		DDCY001001
FE-3	FET 3SK41M		DDCY103001
FE-4	FET 2SK19GR		DDCY001001
<b>INTEGRATED CIRCUITS</b>			
IC-1	IC LM1496H		DDEY001001
IC-2	IC $\mu$ PC157A		DDEY026001
IC-3	IC LM3028BH		DDEY002001
IC-4	IC $\mu$ PC563HZ		DDEY027001
IC-5	IC $\mu$ PC143C08		DDEY028001
IC-6	IC $\mu$ PC100Z		DDEY017001
IC-7	IC DM7490N		DDEY029001
IC-8	IC DM7490N		DDEY029001
IC-9	IC DM7490N		DDEY029001
IC-10	IC N74162B		DDEY015001
IC-11	IC N74162B		DDEY015001
IC-12	IC DM7400N		DDEY030001
IC-13	IC MM5314N		DDEY031001
<b>COILS</b>			
L-1	Coil LA-104	CA-3427	LLAY104001
L-2	Coil LA-060	CA-3428	LLAY060001
L-3	Coil LA-060	CA-3428	LLAY060001
L-4	Coil LA-080	CA-3417	LLAY080001
L-5	Coil LA-088	CA-3420	LLAY088001
L-6	Coil LA-088	CA-3420	LLAY088001
L-7	Coil LA-038	CA-3414	LLAY038001
L-8	Coil LA-094	CA-3423	LLAY094001



## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>COILS</b>			
L-9	Coil LA-096	CA-3424	LLAY096001
L-10	Micro Inductor LF1 470 $\mu$ H	C-0633	LLZY001021
L-11	Coil LA-141	CA-3407	LLAY141001
L-12	Coil LA-091	CA-3421	LLAY091001
L-13	Coil LA-092	CA-3422	LLAY092001
L-14	Coil LA-138	CA-3426	LLAY138001
L-15	Coil LA-091	CA-3421	LLAY091001
L-16	Coil LA-103	CA-3425	LLAY103001
L-17	Coil LB-013	CA-3408	LLAY14001
L-18	Micro Inductor LF1 470 $\mu$ H	C-0633	LLZY001021
L-19	Micro Inductor LF1 470 $\mu$ H	C-0633	LLZY001021
L-20	Micro Inductor LF1 470 $\mu$ H	C-0633	LLZY001021
L-21	Coil LC-018	CA-3409	LLCY018001
L-22	Coil LE-008	CA-3411	LLEY008001
L-23	Coil LE-008	CA-3411	LLEY008001
L-24	Coil LC-018	CA-3409	LLCY018001
L-25	Coil LD-021	CA-3410	LLDY021001
L-26	Coil LD-021	CA-3410	LLDY021001
L-27	Coil LC-018	CA-3409	LLCY018001
L-28	Coil LD-021	CA-3410	LLDY021001
L-29	Coil LA-069	CA-3416	LLAY068001
L-30	Coil LA-087	CA-3419	LLAY087001
L-31	Coil LA-082	CA-3418	LLAY082001
L-32	Coil LA-068	CA-3415	LLAY068001
L-33	Micro Inductor LF4 4.7 $\mu$ H	C-0634	LLZY002009
L-34	Micro Inductor LF4 4.7 $\mu$ H	C-0634	LLZY002009
L-35	Micro Inductor LF4 4.7 $\mu$ H	C-0634	LLZY002009
L-36	Micro Inductor LF4 4.7 $\mu$ H	C-0634	LLZY002009
L-37	Micro Inductor LF4 4.7 $\mu$ H	C-0634	LLZY002009
L-38	Micro Inductor LF4 4.7 $\mu$ H	C-0634	LLZY002009
L-39	Micro Inductor LF5 2.7 $\mu$ H	C-0635	LLZY003010
L-40	Micro Inductor LF1 100 $\mu$ H	C-0432	LLZY001013
L-41	Micro Inductor LF1 68 $\mu$ H	C-0431	LLZY001011
L-45	Coil LE-003	CA-3412	LLEY003001
<b>PILOT LAMPS</b>			
PL-1	Pilot Lamp PL-002 14V 43 mA	L-0410	VPLY002005
PL-2	Pilot Lamp PL-032 14V 70 mA	L-0413	VPLY032003
PL-3	Pilot Lamp PL-032 14V 70 mA	L-0413	VPLY032003
PL-4	Pilot Lamp PL-002 14V 43 mA	L-0411	VPLY002011
PL-5	Pilot Lamp PL-002 14V 43 mA	L-0412	VPLY002007
<b>RESISTORS</b>			
R-1	Carbon Resistor 560 ohm $\frac{1}{4}$ W J		RPBZ145604
R-2	Carbon Resistor 3.3K ohm $\frac{1}{4}$ W		RUBZ143324
R-3	Carbon Resistor 15K ohm $\frac{1}{4}$ W J		RUBZ141534
R-4	Carbon Resistor 1K ohm $\frac{1}{4}$ W		RUBZ141024
R-5	Carbon Resistor 100 ohm $\frac{1}{4}$ W J		RUBZ141014
R-6	Carbon Resistor 1.5K ohm $\frac{1}{4}$ W		RUBZ141524
R-7	Carbon Resistor 3.3K ohm $\frac{1}{4}$ W J		RUBZ143324
R-8	Carbon Resistor 15K ohm $\frac{1}{4}$ W J		RPBZ141534
R-9	Carbon Resistor 1K ohm $\frac{1}{4}$ W J		RUBZ141024
R-10	Carbon Resistor 100 ohm $\frac{1}{4}$ W J		RUBZ141014
R-11	Carbon Resistor 3.3K ohm $\frac{1}{4}$ W J		RUBZ141024
R-12	Carbon Resistor 2.2M ohm $\frac{1}{4}$ W J		RUBZ141054
R-13	Carbon Resistor 5.6K ohm $\frac{1}{4}$ W		RUBZ145624

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>RESISTORS</b>			
R-14	Carbon Resistor 5.6K ohm 1/4W		RUBZ145624
R-15	Carbon Resistor 2.2M ohm 1/4W J		RUBZ141054
R-16	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-17	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-18	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-19	Carbon Resistor 1.5K ohm 1/4W		RUBZ141524
R-20	Carbon Resistor 22K ohm 1/4W J		RUBZ142234
R-21	Carbon Resistor 5.6K ohm 1/4W		RUBZ145624
R-22	Carbon Resistor 330 ohm 1/4W J		RUBZ143314
R-23	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-24	Carbon Resistor 1000K ohm 1/4W J		RUBZ141044
R-26	Carbon Resistor 150 ohm 1/4W J		RUBZ141514
R-27	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-28	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-29	Carbon Resistor 5.6K ohm 1/4W		RUBZ145624
R-31	Carbon Resistor 220K ohm 1/4W J		RUBZ142244
R-32	Carbon Resistor 150K ohm 1/4W J		RUBZ141544
R-33	Carbon Resistor 1M ohm 1/4W J		RUBZ141054
R-34	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-35	Carbon Resistor 150K ohm 1/4W J		RUBZ141544
R-36	Carbon Resistor 220K ohm 1/4W J		RUBZ142244
R-37	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-38	Carbon Resistor 22K ohm 1/4W J		RUBZ142234
R-39	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-40	Carbon Resistor 220K ohm 1/4W J		RUBZ142214
R-41	Carbon Resistor 1K ohm 1/4W		RUBZ141024
R-42	Carbon Resistor 3.3K ohm 1/4W		RUBZ143324
R-43	Carbon Resistor 1.5K ohm 1/4W		RUBZ141524
R-44	Carbon Resistor 56 ohm 1/4W J		RUBZ145604
R-45	Carbon Resistor 18K ohm 1/4W J		RUBZ141834
R-46	Carbon Resistor 1K ohm 1/4W		RUBZ141024
R-47	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-48	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-49	Carbon Resistor 150 ohm 1/4W J		RUBZ141514
R-50	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-51	Carbon Resistor 560 ohm 1/4W		RUBZ145614
R-52	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-53	Carbon Resistor 1.5K ohm 1/4W		RUBZ141524
R-54	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-55	Carbon Resistor 1.5K ohm 1/4W		RUBZ141524
R-56	Carbon Resistor 3.3K ohm 1/4W		RUBZ143324
R-57	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-58	Carbon Resistor 150 ohm 1/4W J		RUBZ141514
R-59	Carbon Resistor 10K ohm 1/4W J		RPBZ140134
R-60	Carbon Resistor 39K ohm 1/4W J		RUBZ143934
R-61	Carbon Resistor 470K ohm 1/4W J		RUBZ142244
R-62	Carbon Resistor 3.3K ohm 1/4W J		RPBZ143324
R-63	Carbon Resistor 56 ohm 1/4W J		RUBZ145604
R-65	Carbon Resistor 33K ohm 1/4W J		RUBZ143334
R-66	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-67	Carbon Resistor 2.2K ohm 1/4W J		RUBZ142224
R-68	Carbon Resistor 470 ohm 1/4W J		RUBZ144714
R-69	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-70	Carbon Resistor 820 ohm 1/4W		RUBZ148214
R-71	Carbon Resistor 39 ohm 1/4W J		RPBZ143904
R-72	Carbon Resistor 0.5 ohm 1/4W J		RUBZ145084

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>RESISTORS</b>			
R-73	Carbon Resistor 56 ohm 1/4W J		RUBZ145604
R-75	Carbon Resistor 2.2K ohm 1/4W J		RUBZ14224
R-76	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-77	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-78	Carbon Resistor 470 ohm 1/4W J		RUBZ144714
R-79	Carbon Resistor 2.2K ohm 1/4W J		RUBZ142224
R-80	Carbon Resistor 18K ohm 1/4W J		RUBZ141834
R-81	Carbon Resistor 2.7K ohm 1/4W J		RUBZ142724
R-82	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-83	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-84	Carbon Resistor 4.7K ohm 1/4W J		RUBZ144724
R-85	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-86	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-87	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-88	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-89	Carbon Resistor 56 ohm 1/4W J		RUBZ145604
R-90	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-91	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-92	Carbon Resistor 1.2K ohm 1/4W J		RUBZ141224
R-93	Carbon Resistor 820 ohm 1/4W J		RUBZ148214
R-94	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-95	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-96	Carbon Resistor 1.5K ohm 1/4W J		RUBZ141524
R-97	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-98	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-99	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-100	Carbon Resistor 2.7K ohm 1/4W J		RUBZ142724
R-101	Carbon Resistor 470K ohm 1/4W J		RUBZ141054
R-102	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-103	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-104	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-105	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-106	Carbon Resistor 2.7K ohm 1/4W J		RUBZ142724
R-107	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-108	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-109	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-110	Carbon Resistor 4.7K ohm 1/4W J		RUBZ142734
R-111	Carbon Resistor 27K ohm 1/4W J		RUBZ142734
R-112	Carbon Resistor 10K ohm 1/4W J		RUBZ14034
R-113	Carbon Resistor 10K ohm 1/4W J		RUBZ14034
R-114	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-115	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-116	Carbon Resistor 2.2K ohm 1/4W J		RUBZ142224
R-117	Carbon Resistor 39K ohm 1/4W J		RUBZ143934
R-118	Carbon Resistor 10 ohm 1/4W J		RUBZ141004
R-119	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-120	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-121	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-122	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-123	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-124	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-125	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-126	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-127	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-128	Carbon Resistor 3.9K ohm 1/4W J		RUBZ143924
R-129	Carbon Resistor 4.7K ohm 1/4W J		RUBZ144724

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
R-130	Carbon Resistor 270 ohm 1/4W J		RUBZ142714
R-131	Carbon Resistor 4.7K ohm 1/4W J		RUBZ144724
R-132	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-133	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-134	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-135	Carbon Resistor 4.7K ohm 1/4W J		RUBZ144724
R-136	Carbon Resistor 470 ohm 1/4W J		RUBZ144714
R-137	Carbon Resistor 15K ohm 1/4W J		RUBZ141534
R-138	Carbon Resistor 4.7K ohm 1/4W J		RUBZ144724
R-139	Carbon Resistor 1.8M ohm 1/2W J		RPBZ121854
R-140	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-141	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-142	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-143	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-144	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-145	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-146	Carbon Resistor 39 ohm 1/2W J		RPBZ123904
R-147	Carbon Resistor 470 ohm 1/2W J		RPBZ124704
R-149	Carbon Resistor 470 ohm 1/2W J		RPBZ124704
R-150	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-151	Carbon Resistor 27K ohm 1/4W J		RUBZ142734
R-152	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-153	Carbon Resistor 4.7K ohm 1/4W J		RUBZ145624
R-154	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-155	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-156	Carbon Resistor 4.7K ohm 1/4W J		RUBZ144724
R-157	Carbon Resistor 220 ohm 1/4W J		RUBZ142214
R-158	Carbon Resistor 18K ohm 1/4W J		RUBZ141834
R-159	Carbon Resistor 22K ohm 1/4W J		RUBZ142234
R-160	Carbon Resistor 39K ohm 1/4W J		RUBZ143934
R-161	Carbon Resistor 82 ohm 1/4W J		RUBZ148204
R-162	Carbon Resistor 390 ohm 1/4W J		RUBZ143914
R-163	Carbon Resistor 330 ohm 1/4W J		RUBZ143314
R-164	Carbon Resistor 680 ohm 1/4W J		RPBZ146814
R-165	Carbon Resistor 330 ohm 1/2W J		RPBZ123314
R-166	Carbon Resistor 330 ohm 1/2W J		RPBZ123314
R-167	Metalized Resistor 10 ohm 2 W K		RSJZ201005
R-168	Carbon Resistor 33 ohm 1/4W J		RPBZ143324
R-169	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-170	Carbon Resistor 390 ohm 1/4W J		RUBZ143914
R-172	Carbon Resistor 330 ohm 1/4W J		RUBZ143314
R-174	Carbon Resistor 2.2 ohm 1/4W J		RPBZ142294
R-175	Carbon Resistor 10 ohm 1/4W J		RUBZ141004
R-176	Carbon Resistor 27 ohm 1/4W J		RUBZ142704
R-177	Carbon Resistor 4.7 ohm 1/4W J		RUBZ144724
R-178	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-179	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-180	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-181	Carbon Resistor 6.8K ohm 1/4W J		RUBZ146824
R-182	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-183	Carbon Resistor 10K ohm 1/4W J		RPBZ140134
R-184	Carbon Resistor 680 ohm 1/4W J		RPBZ141024
R-185	Carbon Resistor 330 ohm 1/4W J		RPBZ143314
R-186	Carbon Resistor 330 ohm 1/4W J		RPBZ143314
R-187	Carbon Resistor 680 ohm 1/4W J		RPBZ141024
R-188	Carbon Resistor 470 ohm 1/4W J		RPBZ144714
R-189	Carbon Resistor 220 ohm 1/2W J		RPBZ122214

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>RESISTORS</b>			
R-190	Carbon Resistor 2.2M ohm 1/2W J		RPBZ12254
R-191	Metalized Resistor 12 ohm 2 W K		RSJZ201205
R-192	Carbon Resistor 15K ohm 1/4W J		RUBZ141534
R-193	Carbon Resistor 10K ohm 1/4W J		RUBZ141034
R-194	Carbon Resistor 1K ohm 1/4W J		RPBZ141024
R-195	Metalized Resistor 10 ohm 2 W K		RSJZ201005
R-301	Carbon Resistor 1K ohm 1/4W J		RPBZ141024
R-302	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-303	Carbon Resistor 1K ohm 1/4W J		RPBZ141024
R-304	Carbon Resistor 1K ohm 1/4W J		RUBZ141024
R-305	Carbon Resistor 470 ohm 1/4W J		RPBZ144714
R-306	Carbon Resistor 470 ohm 1/4W J		RPBZ144714
R-307	Carbon Resistor 470 ohm 1/4W J		RPBZ144714
R-308	Carbon Resistor 470 ohm 1/4W J		RPBZ144714
R-309	Carbon Resistor 100 ohm 1/4W J		RPBZ141014
R-310	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-311	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-312	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-313	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-314	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-315	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-316	Carbon Resistor 100 ohm 1/4W J		RUBZ141014
R-317	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-318	Carbon Resistor 3.3K ohm 1/4W J		RUBZ143324
R-319	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-320	Carbon Resistor 100K ohm 1/4W J		RUBZ141044
R-321	Carbon Resistor 2.2K ohm 1/4W J		RUBZ142224
R-322	Carbon Resistor 470 ohm 1/4W J		RPBZ144714
R-323	Carbon Resistor 470 ohm 1/4W J		RUBZ144714
R-325	Carbon Resistor 5.6K ohm 1/4W J		RUBZ145624
R-326	Carbon Resistor 27 ohm 1/4W J		RUBZ142704
R-327	Carbon Resistor 56K ohm 1/4W J		RUBZ145634
R-328	Carbon Resistor 56K ohm 1/4W J		RUBZ145634
<b>SWITCHES</b>			
S-1	Rotary Switch USW-0042	S-1202	SSRY104001
S-2	Fast Push Switch SW-063	S-7254	SSWY063001
S-3	Slow Push Switch SW-063	S-7254	SSWY063001
S-4	Hold Push Switch SW-063	S-7254	SSWY063001
S-5	12/24HR Slide Switch SW-006	S-2304	SSWY006001
S-6	Channel Rotary Switch USW-0041	S-1201	SSRY103001
S-7	PA, NB, ANL, CAL Push Assembly SW-064	S-7255	SSWY064001
<b>TRANSFORMERS</b>			
T-1	Power Transformer	TA-0529	TTFY085001
T-2	Audio Transformer	TN-0091	TTFY087001
<b>TRANSISTORS</b>			
TR-1	TR 2SC839H		DDBY222002
TR-2	TR 2SC839H		DDBY222002
TR-3	TR 2SA733P		DDBY003001
TR-4	TR 2SC839H		DDBY222002
TR-5	TR 2SC839H		DDBY222002
TR-6	TR 2SC839H		DDBY222002
TR-7	TR 2SC839H		DDBY222002
TR-8	TR 2SC839H		DDBY222002

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>TRANSISTORS</b>			
TR-9	TR 2SC945R		DDBY224002
TR-10	TR 2SC784R		DDBY219001
TR-11	TR 2SC784R		DDBY219001
TR-13	TR 2SC945R		DDBY224002
TR-14	TR 2SC949R		DDBY224002
TR-15	TR 2SC839H		DDBY222002
TR-16	TR 2SC835H		DDBY222002
TR-17	TR 2SC945R		DDBY224002
TR-18	TR 2SC943R		DDBY224002
TR-19	TR 2SA735P		DDBY003001
TR-20	TR 2SC949R		DDBY224002
TR-21	TR 2SC839H		DDBY222002
TR-22	TR 2SC839H		DDBY222002
TR-23	TR 2SC839H		DDBY222002
TR-24	TR 2SC835H		DDBY222002
TR-25	TR 2SC945R		DDBY224002
TR-26	TR 2SC945R		DDBY224002
TR-27	TR 2SC945R		DDBY224002
TR-28	TR 2SC839H		DDBY222002
TR-29	TR 2SC839H		DDBY222002
TR-30	TR 2SC945R		DDBY224002
TR-31	TR 2SC1096M		DDBY227001
TR-32	TR 2SC1307 (1)		DDBY231002
TR-33	TR 2SC1306		DDBY230001
TR-34	TR 2SC763D		DDBY216002
TR-35	TR 2SC945R		DDBY224002
TR-36	TR 2SC1096M		DDBY227001
TR-37	TR 2SD188M		DDBY403001
TR-38	TR 2SA733P		DDBY003001
TR-39	TR 2SA733P		DDBY003001
TR-40	TR 2SA733P		DDBY003001
TR-41	TR 2SA733P		DDBY003001
TR-42	TR 2SC945R		DDBY224002
TR-43	TR 2SC945R		DDBY224002
TR-44	TR 2SC945R		DDBY224002
TR-45	TR 2SC945R		DDBY224002
TR-46	TR 2SC945R		DDBY224002
TR-47	TR 2SC945R		DDBY224002
TR-48	TR 2SC945R		DDBY224002
<b>VARIABLE RESISTORS</b>			
VR-1	Variable Resistor SWR Cal 20KB	P-1602	RRVY049001
VR-2	Variable Resistor RF Gain 100KB	P-1603	RRVY048001
VR-3	Semi-Fixed Resistor 6BM 100K	P-6320	RRVY103011
VR-4	Semi-Fixed Resistor 6BM 20K	P-6318	RRVY103008
VR-5	Semi-Fixed Resistor 6BM 30K	P-6319	RRVY103009
VR-6/14	Variable Resistor Volume W/Power SW 10KAX	P-1401	RRVY136001
VR-7	Semi-Fixed Resistor 6BM 10K	P-6317	RRVY103007
VR-8	Semi-Fixed Resistor 6BM 100K	P-6320	RRVY103011
VR-9	Variable Resistor Squelch 100KB	P-1603	RRVY048001
VR-10	Semi-Fixed Resistor 5BM 50K	P-6313	RRVY102010
VR-11	Semi-Fixed Resistor 5BM 10K	P-6312	RRVY102007
VR-12	Semi-Fixed Resistor 5BM 10K	P-6312	RRVY102007
VR-15	Variable Resistor Clarifier 20KB	P-1602	RRVY049001
VR-16	Semi-Fixed Resistor 6BM 5K	P-6316	RRVY103006

## 17. ELECTRICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
<b>VARIABLE RESISTORS</b>			
VR-17	Semi-Fixed Resistor 6BM 5K	P-6316	RRVY103006
VR-19	Semi-Fixed Resistor 6BM 5K	P-6316	RRVY103006
VR-21	Semi-Fixed Resistor 6BM 3K	P-6315	RRVY103005
VR-22	Semi-Fixed Resistor 6BM 100K	P-6320	RRVY103011
VR-23	Semi-Fixed Resistor 6BM 300Ω	P-6314	RRVY103002
VR-24	Semi-Fixed Resistor 5BM 200Ω	P-6311	RRVY102001
VR-25	Semi-Fixed Resistor 6BM 100K	P-6320	RRVY103011
VR-26	Semi-Fixed Resistor 6BM 10K	P-6317	RRVY103007
<b>CRYSTALS</b>			
X-1	Xtal 13.1325 MHz	CX-0173	QQXY055001
X-2	Xtal 44.730 MHz	CX-0174	QQXY056001
X-3	Xtal 7.8025 MHz	CX-0171	QQXY017001
X-4	Xtal 7.7975 MHz	CX-0172	QQXY054001
<b>MISCELLANEOUS</b>			
J-2	Jack JK-008	J-0723	JTKY008001
J-3	Jack JK-005	J-0725	JTKY005002
J-4	Jack JK-010	J-0724	JTKY010001
J-5	Jack JK-010	J-0724	JTKY010001
J-6	Jack JK-043	J-0726	JTKY043001
J-7	Jack JK-011	J-0727	JTKY011001
TP-1	Test Terminal	J-4431	JTPY020001
TP-2	Test Terminal	J-4431	JTPY020001
TP-3	Test Terminal	J-4431	JTPY020001
TP-4	Test Terminal	J-4431	JTPY020001
TP-5	Test Terminal	J-4431	JTPY020001
TP-6	Test Terminal	J-4431	JTPY020001
	Power Supply	X-4987	PC-006BB
	Main P. C. B.	X-4988	PC-068AA
	Clock	X-4989	PC-069AA
	Clock Control	X-4990	PC-070AA
	Clock Display	X-4991	PC-071AA
	SWR	X-4992	PC-072AA
	VCO	X-4993	PC-073AA
	Matrix	X-4994	PC-074AA



## 18. MECHANICAL PARTS LIST

SYMBOL NO.	DESCRIPTION	RS PART. NO.	MFRS. PART NO.
ZMC3	Chassis	Z-2588	MDBP103012
	Cabinet (Assembly)	Z-2589	MDBP103013
ZMC3	Rear Panel SPCC 1.0t	Z-2590	MDBP203014
ZMC3	Bottom Panel SPCC 1.0t	Z-2591	MDBP203015
	Heat Sink AIP 2.0t	HH-0142	MDBP303016
	Heat Sink AIP 2.0t	HH-0143	MDBP303017
	Heat Sink AIP 2.0t	HH-0144	MDBP403018
ZMC3	Front Panel Bracket SPCC 1.0t	HB-4043	MDBP403019
ZMC3	Switch Bracket SPCC 1.0t	HB-4044	MDBP403021
ZMC3	Switch Bracket SPCC 1.6t	HB-4045	MDBP403022
ZMC3	Lamp Holder SPCC 1.0t	HB-4066	MDBP403023
	Shield Case SPT 0.5t	HB-4047	MDBP403039
	Shield Case Top SPT 0.5t	HB-4048	MDBP403041
NI3	Capacitor Bracket SPCC 1.0t	HB-4049	MDBP400617
ZMC3	Speaker Bracket SPCC 0.8t	HB-4010	MDBP400048
	Shield Top for VCO SPT 0.35t	HB-4071	MDBP400050
	Shield for VCO SPT 0.35t	HB-4072	MDBC400051
ZMC3	Bracket for Lamp SPCC 0.8t	HB-4073	MDBP400129
ZMC3	Trans Setting Metal SPCC 1.6t	HB-4074	MDBP400683
	Knob Stopper PBP 0.5t	HB-4075	MDBP400809
ZMC3	L. Bracket (right)	MB-0134	MDBP301375
ZMC3	L. Bracket (left)	MB-0137	MDBP301376
	Shield Board SPT 0.35t	HB-4074	MDBP402318
	Front Panel	Z-2592	MDMP103011
	Channel Knob	K-2042	MDMP403031
	Knob	K-2043	MDMP403032
	Polyestel Bushing	HB-4077	MDMP400085
	Control Plate AIP 0.5t	HB-4078	MDMP303035
	Name Plate AIP 0.3t	HB-4079	MDMP403036
	FCC Plate AIP 0.3t	HB-4080	MDNP403037
	Clock Window	D-5192	MDAD403024
	Channel Window	G-0229	MDAD403025
	Channel Disk	K-2044	MDAD403027
	Rubber Spacer	HB-4081	MDZP400706
	Boss	HB-4082	MDHP403028
	Spacer	HB-4083	MDHP400637
	Fiber	HB-4084	MDZP403048
	Washer	HB-1125	MDZP403079
	Speaker Net	HB-4085	MDZP403030
	Rubber Washer	HW-1123	MDZP400638
	Rubber Washer	HW-1124	MDZP401383
	Insulator	HB-4086	MDZP402724
	Serial No. Label	HB-4087	MDLP402730
	Warning label	HB-4088	MDLP402800
	Rubber Foot (Large)	F-0174	MZTT010001
	Rubber Foot (Small)	F-0175	MZTT010004
	Screw M3 × 6	HS-2241	MZSS123006
	Bind Screw M2 × 5	HS-2242	MZSN192005
	Bind Screw M2.6 × 5	HS-2243	MZSN192605
	Bind Screw M3 × 5	HS-2244	MZSN193005
	Bind Screw M3 × 8	HS-2245	MZSN193008
	Bind Screw M3 × 14	HS-2246	MZSN193014
	Bind Screw M4 × 10	HS-2247	MZSN194010
	Bind Screw M5 × 8	HS-2248	MZSB195008
	Bind Tapping Screw	HS-2249	MZSZ263006
	Bind Tapping Screw 3 φ × 8	HS-2270	MZSZ263008



## 18. MECHANICAL PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
	Bind Tapping Screw $3\phi \times 10$	HS-2271	MZSZ263010
	Bind Tapping Screw $3\phi \times 12$	HS-2272	MZSZ263012
	Bind Tapping Screw $3\phi \times 14$	HS-2273	MZSZ263014
	Tapping Screw $3.5\phi \times 8$	HS-2274	MZSZ293508
	Spring Washer	HW-1124	MZSN510030
	Spring Washer	HW-1127	MZSN510040
	Spring Washer	HW-1128	MZSN510050
	Jaggled Washer	HW-1129	MZSZ530035
	Jaggled Washer	HW-1130	MZSZ540050
	Jaggled Washer	HW-1131	MZSZ540030
	Lug	HB-4089	MZTT150003

## 19. EXPLODED VIEW PARTS LIST

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
1	Chassis	Z-2588	
2	Cabinet (Assembly)	Z-2589	
3	Rear Panel	Z-2590	
4	Bottom Panel	Z-2591	
5	Heat Sink	HH-0142	
6	Heat Sink	HH-0143	
7	Heat Sink	HH-0144	
8	Front Panel Bracket	HB-4043	
9	Switch Bracket	HB-4044	
10	Switch Bracket	HB-4045	
11	Lamp Holder	HB-4046	
12	Shield Case	HB-4047	
13	Shield Case Top	HB-4048	
14	Speaker Bracket	HB-4070	
15	Shield Top for VCO	HB-4071	
16	Shield for VCO	HB-4072	
17	Bracket	HB-4073	
18	Plate for mounting T-1	HB-4074	
19	L Bracket (right)	HB-0134	
20	L Bracket (left)	HB-0137	
21	Shield Board	HB-4074	
22	Front Panel	Z-2592	
23	Channel Knob	K-2042	
24	Knob	K-2043	
25	Poly Bushing	HB-4077	
26	Control Plate	HB-4078	
27	Name Plate	HB-4079	
28	FCC Plate	HB-4080	
29	Clock Window	D-5192	
30	Channel Window	G-0229	
31	Channel Disk	K-2044	
32	Spacer	HB-4083	
33	Fiber	HB-4084	
34	Washer	HW-1125	

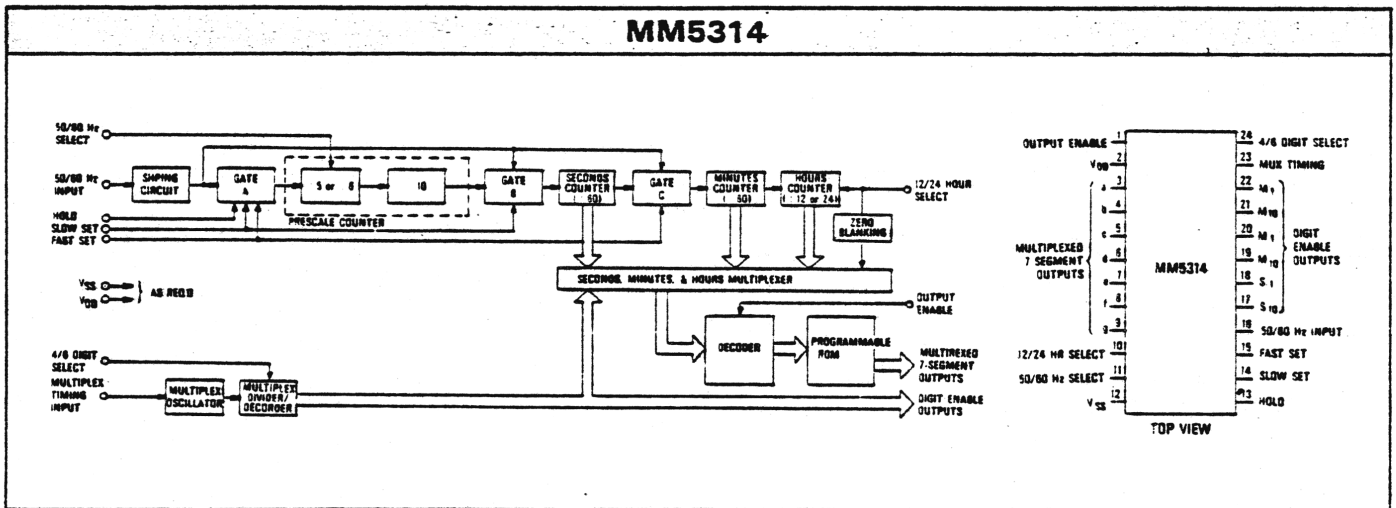
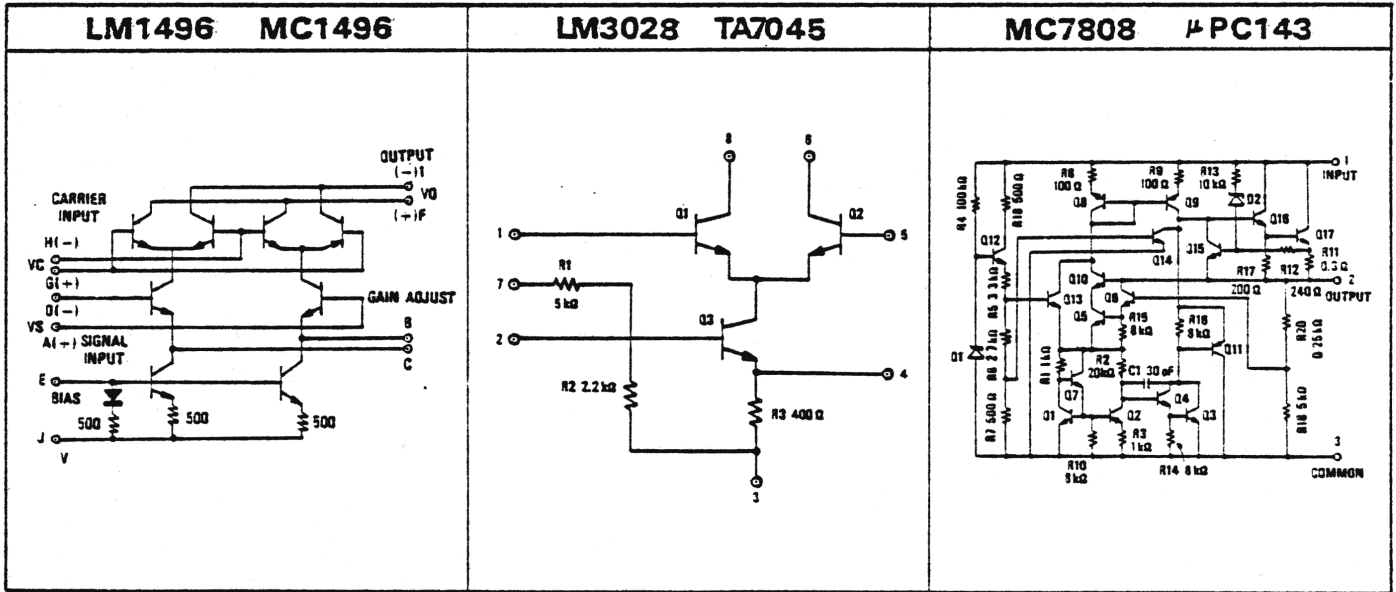
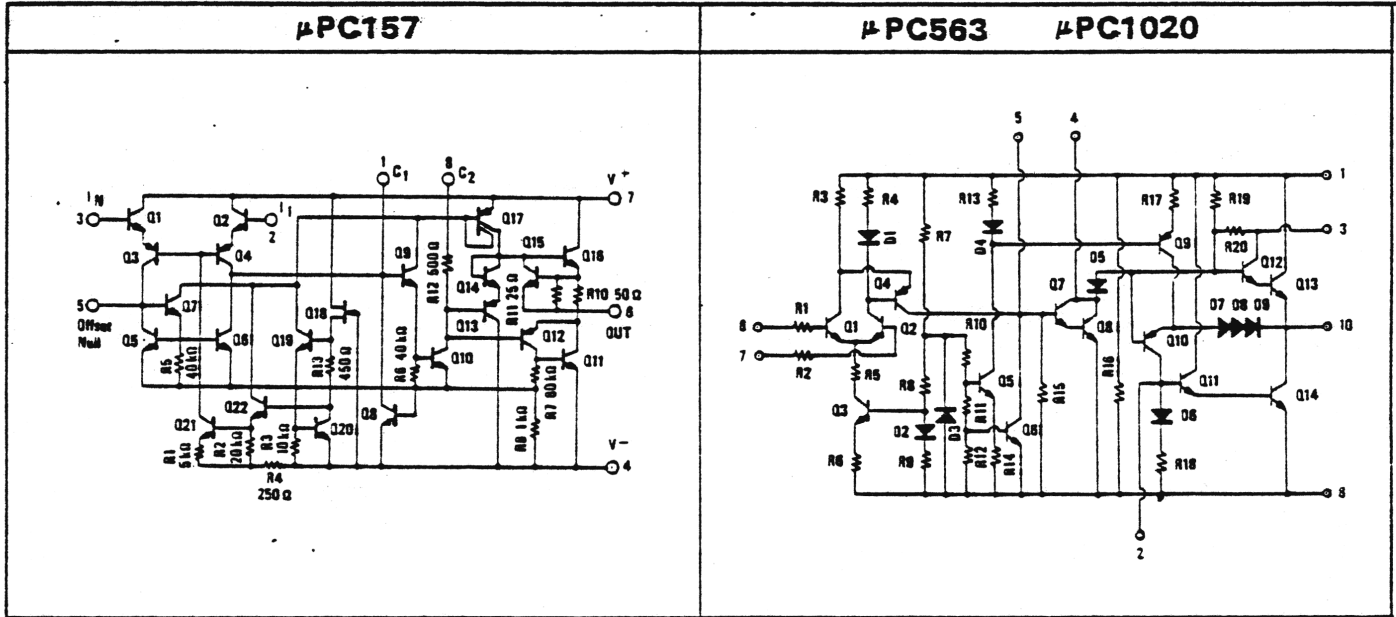
## 19. EXPLODED VIEW PARTS LIST (continued)

SYMBOL NO.	DESCRIPTION	RS PART NO.	MFRS. PART NO.
35	Speaker Net	HB-4085	
36	Rubber Washer	HW-1123	
37	Rubber Washer	HW-1124	
38	Rubber Foot (Large)	F-0174	
39	Rubber (Small)	F-0175	
40	Speaker SP-030	S-1404	
41	Power Transformer	TA-0529	
42	Audio Transformer	TN-0091	
43	Variable Resistor 20KB	P-1402	
44	Variable Resistor 100KB	P-1403	
45	Variable Resistor 10KA × 2	P-1401	
46	Channel Rotary Switch USW-0041	S-1201	
47	Mode Rotary Switch USW-0042	S-1202	
48	12/24 HR, Slide Switch SW-006	S-2304	
49	Push Switch SW-063	S-7254	
50	Push Switch Assembly SW-064	S-7255	
51	Meter S/P MT-054	M-0274	
52	Meter SWR MT-055	M-0277	
53	P. C. Board Comp. for Power Supply	X-4987	
54	Main P. C. Board Completed	X-4988	
55	P. C. Board Comp, for Clock Control	X-4990	
56	P. C. Board Comp, for Clock Display	X-4991	
57	P. C. Board Comp, for SWR	X-4992	
58	P. C. Board Comp, for Matrix	X-4994	
59	Jack JK-008	J-0723	
60	Jack JK-005	J-0725	
61	Jack JK-010	J-0724	
62	Jack JK-043	J-0726	
63	Jack JK-011	J-0727	
64	AC Fuse Holder FH-007	F-1112	
65	Relay RL-002	R-8072	
66	Xtal Filter UF-0742B	C-0440	



# 20. TRANSISTOR & IC CONNECTIONS

## INTEGRATED CIRCUIT CONNECTIONS & INTERNAL DIAGRAMS



22. EXPLODED VIEW

