Pearce Simpson Cougar 23 Owners Manual

PEARCE-SIMPSON
DIVISION OF GLADDING CORP.

COUGAR 23B

SECTION 1
GENERAL INFORMATION

DESCRIPTION

Your new PEARCE-SIMPSON COUGAR 23B is a compact, all-transistorized, 23 channel Citizens Band Transceiver. This radio, because of its low current drain, is ideally suited for mobile operation from a 12.6 VDC power source, either negative or positive ground. A 12 VDC power cord and a mounting cradle are included with your COUGAR 23B. To provide the crystal-controlled, 23-channel operation, PEARCE-SIMPSON utilizes an all-transistor HetroSync™ circuit.

The receiver is a sensitive superheterodyne circuit featuring: Dual conversion, low noise RF stage, receiv-o-slide, adjustable squelch, noise blanker, exclusive seven-way meter, built-in automatic noise limiting, ceramic filter, external speaker jack, and instantaneous selection of any of the 23 crystal controlled channels.

The transmitter section is designed around highly reliable silicon transistors and the HetroSync™ circuit. This circuit makes use of the output of three crystal-controlled oscillators which are beat together to produce the desired frequency. The transmitter final is a conservatively rated high gain RF power transistor.

SPECIFICATIONS

GENERAL:

Channels	: 23 Crystal-Controlled.
Size	: 6⅞ "Wide × 2¼ "High × 8¾ "Deep.
Weight	: 4 Pounds
Antenna	: 52-ohm Coaxial
Primary Power	: Input Voltage ±13.8 VDC (EIA Standard)

IC COMPLEMENT:

IC	TA-7061AP	Noise Amplifier

TRANSISTOR COMPLEMENT:

TR-1	2SC839	RF Amplifier
TR-2	2SC839	1st Receiver Mixer
TR-3	2SC839	37MHz Oscillator
TR-4	2SC839	2nd Receiver Mixer
TR-5	2SC839	10MHz 2nd Local Oscillator
TR-6,7	2SC839	455kHz IF Amplifier
TR-8	2SC945	Squelch Amplifier
TR-9	2SA733	Squelch Amplifier
TR-10	2SC945	AF Amplifier
TR-11	2SC733	AF Driver

TR-12,13	2SC1096	AF Power Amplifier
TR-14	2SC945	Mike Amplifier
TR-15	2SC839	10MHz Transmit Oscillator
TR-16	2SC839	Transmit Mixer
TR-17	2SC735	Transmit Buffer
TR-18	2SC1018	Transmit Driver
TR-19	2SC756	Transmit Final
TR-20	2SC733	Modulation Lamp Amplifier
TR-21	2SC945	Pulse Amplifier
TR-22	2SA733	Pulse Amplifier

DIODE COMPLEMENT:

D-1	CD37	RF Gain Control
D-2	CD37	Receiver RF Amplifier Protector
D-3	1N60	Receiver RF Amplifier Protector
D-4,15	CD37	Mode Switching
D-5,6	1N60 P	Noise Blanker Gate
D-7	1N60	Amplitude Limiter
D-8	1N60	AGC Detector
D-9,10	1N60	Detector
D-11	CD37	ANL Gate
D-12	CD37	Varistor
D-13	1N60	S Meter Detector
D-14	1N60	S Meter Mode Switching
D-16	1N60	AMC Detector
D-17,18	1N60 P	SWR Meter Detector
D-19	SR1K-1	Modulation Stabilizer
D-20	CZ092	Receiver Voltage Regulator
D-21	SR1K-1	Polarity Protector
D-22	CD37 A	Noise Blanker Amplifier Protector

RECEIVER:

Frequency Range	: 26.965 MHz — 27.255 MHz
Sensitivity	: 0.5μV for 10dB S + N/N using 1,000 Hz, 30% modulation
Selectivity	: 6dB bandwidth 5 KHz
Cross Modulation	: 75dB for 10μV desired
Spurious Rejection	: 60dB minimum
Adjacent Channel Rejection	: 50dB minimum
Squelch Range	: Adjustable from 0.5μV — 1,000μV
1st I.F. Frequency	: 10.6 MHz
2nd I.F. Frequency	: 455 KHz
P.A. Maximum Audio Output Power	: 5 W
Speaker	: 4"

TRANSMITTER:

Frequency Range	: 26.965 MHz – 27.255 MHz
Carrier Frequency Stability	: 0.005%, −30° C to + 50° C
Output Power	: 3.5 W into 52 ohm with 13.8 VDC power supply
Modulation Capability	: 90%
Spurious Harmonic Suppression	: 55dB minimum
Emission	: A3

DO NOT TRANSMIT WITH YOUR EQUIPMENT UNTIL YOU HAVE RECEIVED YOUR LICENSE FROM THE FCC. Illegal operation can result in severe penalties. Be sure that you have read and understand Part 95 of the FCC Rules and Regulations before operating your station.

FREQUENCIES AVAILABLE FOR CLASS D OPERATION

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

*Channels available for communications between units of different stations. (In accordance with FCC Part 95 .41 (d) (2))

SECTION 2
INSTALLATION & INITIAL ADJUSTMENT

IMPORTANT

BEFORE DISCARDING ANY OF THE PACKING MATERIALS, EXAMINE THEM CAREFULLY FOR ITEMS YOU MAY HAVE OVERLOOKED.

MOBILE STATION INSTALLATION

MOUNTING

For mobile installation, the mounting cradle is designed to serve as a means of mounting your COUGAR 23B in any position which is convenient. After you have determined the most convenient location, hold the COUGAR 23B and cradle in the exact location desired. If nothing interferes with it, remove the cradle from the COUGAR 23B and use it as a template to mark the location for the mounting bolts. Before drilling the holes, make certain nothing interferes with the installation of the mounting bolts.

POWER CONNECTION

The COUGAR 23B is constructed to be used in vehicles using either positive or negative ground. The red lead is the positive lead and the black lead is the negative lead. If the existing wiring is used, be sure that it is heavy enough to prevent voltage drop to the radio. A good source of battery voltage is at the accessory connection on the ignition switch. Using this as a power source insures the radio will be off when the ignition switch is in the off position and power will be supplied to the radio when it is in the on or accessory position.

ANTENNAS

Your COUGAR 23B has been adjusted at the factory to give optimum performance using a 52-ohm antenna. There are a number of 52-ohm antennas available for mobile citizens band use.

For an automobile installation, a whip may be used with good efficiency because the automobile acts as a counterpoise and reduces detuning effects. The mounting location also has a great effect on the efficiency.

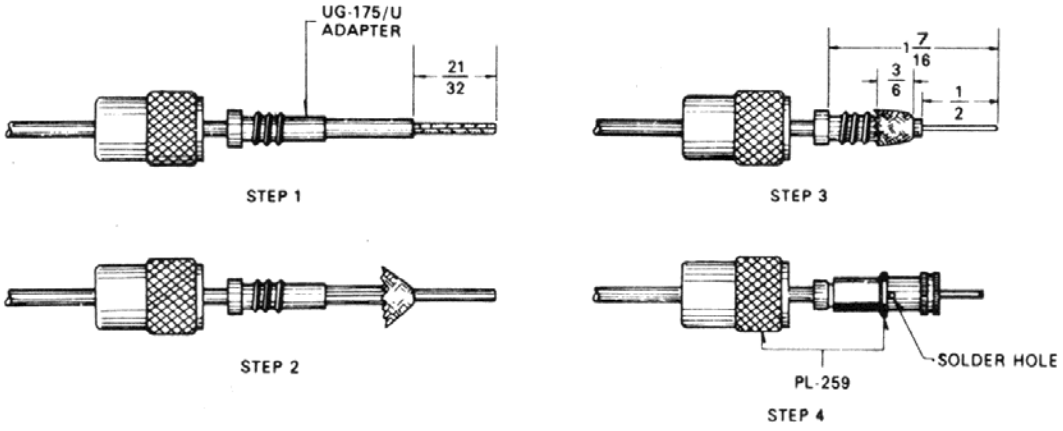
The most efficient and practical installation is a full quarter wave whip mounted on the left rear deck of fender top midway between the rear window and bumper.

The so-called "short whip" is a less efficient antenna because the radiation area is reduced. However, full use of its capability may be achieved since a shorter antenna may be mounted in a more advantageous position on an automobile, such as in the middle of the top.

There are also newer mobile antennas on the market which are made to replace the entertainment radio antenna and are similar in appearance. These antennas serve three purposes: AM and FM entertainment broadcast reception and Citizens Band transmission and reception. With some of these antennas, it is possible to simultaneously transmit on CB and receive on AM broadcast with interaction. These antennas are quite efficient for all three types operation when properly adjusted.

For a marine installation, the full-length quarter wave whip antenna is very efficient, however it requires radials which make it hard to mount in small boats. Another excellent antenna is the coaxial sleeve type which requires no radial. A similar antenna is the center loaded 1/2 wave which is about the same as the full length 1/4 wave whip and it requires no radials. Care must be used when choosing one of the shortened type antenna as considerable variation in efficiency will be found between the various makes and models. As a general rule, avoid those with short radiating elements because the greater the radiating area, the stronger the radiated signal will be.

Your PEARCE-SIMPSON dealer is prepared to offer advice and will help you choose the most desirable antenna for your needs.



ASSEMBLING ANTENNA PLUG TO RG-58U
OR OTHER ¼" COAXIAL CABLE

Figure 1

TRANSMISSION LINE

To connect an antenna to the transceiver, a 52-ohm coaxial transmission line is required. RG-8/U coax is recommended for length in excess of 50 feet and RG-58/U coax is recommended for length less than 50 feet to connect to the transceiver. The RG-8/U requires a PL-259 type connector and the RG-58/U coax requires a PL-259 connector with a UG-175/U adaptor. (See Figure 1 for assembling connector to RG-58/U.)

INSTALLATION ADJUSTMENTS

The output circuit of the COUGAR 23B transmitter has been factory adjusted to operate into any good 52-ohm antenna. No attempt should be made to tune the transmitter to the antenna. Instead, the antenna should be adjusted to present the lowest possible SWR (Standing Wave Ratio). A very low SWR means that the antenna is operating at maximum efficiency and will also mean that it is adjusted to 52 ohms. An improperly adjusted antenna causes standing waves to appear on the feed line. Since this feed line is a fixed 52 ohms, and cannot be adjusted, this mismatch appears at the transmitter. If the transmitter is adjusted to compensate for this mismatch, both it and the antenna will no longer be operating at peak efficiency. Since the transmitter has already been adjusted for 52 ohms output and the coaxial feed line has a fixed 52-ohm value, the only remaining element to be adjusted to this value is the antenna itself. When receiverd, the antenna is probably cut as near as is possible to this value. The mounting location on the vehicle or building and surrounding objects affect the antenna however, and requires that it be adjusted to compensate for them.

Many of the newer Citizens Band antennas provide means of adjusting them for lowest SWR. Instructions for doing so are included with the antenna. For such antennas as the full quarter wave length whip, it is necessary to carefully vary the length until the lowest SWR is obtained. For all adjustments to the antenna, connect an SWR meter in the feed line to the antenna.

The COUGAR 23B will work into an antenna system having an SWR as high as 3:1. For best communications, you will want this figure as near 1:1 as possible so that the antenna will be operating at its best efficiency.

NOISE SUPPRESSION

The COUGAR 23B contains automatic noise limiter and input power filtering. In most vehicular installations, the noise suppression for the entertainment radio will be sufficient. Vehicles and boats not having this suppression may require that it be installed. In most cases, installation of distributor suppressors and generator condensers will be sufficient. In severe cases, the services of a qualified technician may be required. See your PEARCE-SIMPSON dealer for advice.

SECTION 3
OPERATING INSTRUCTIONS

CONTROLS AND INDICATORS

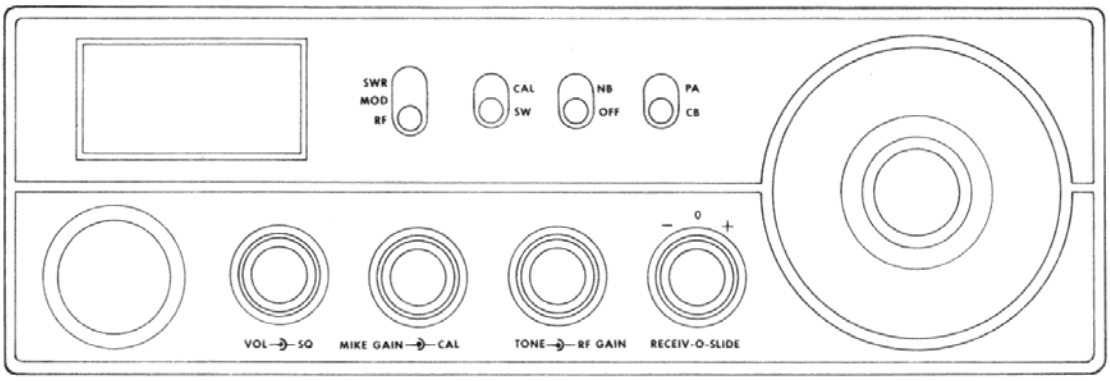


Figure 2

CHANNEL SELECTOR

The Channel Selector Switch has 23 operating positions. This switch sets both transmit and receive frequencies simultaneously by switching the proper crystals into the PEARCE-SIMPSON HetroSync circuit for any of the 23 CB channels.

VOLUME CONTROL AND ON-OFF SWITCH

This control turns the power ON and OFF, and adjusts the loudness of received signal.

SQUELCH CONTROL

The Squelch Control is used to silence background noise (atmospheric or man-made noise) in the absence of a received radio signal. In the full counterclockwise position, the COUGAR 23B is unsquelched (no noise silencing at all). In the full clockwise position, the unit is squelched for even very strong signal.

MIKE GAIN CONTROL

This control is used to vary the amount of modulation in transmit. When operating this control, set the slide switch on the extreme left to "MOD" position.

RF GAIN CONTROL

This control is used to optimize the strength of incoming signal. If too strong signal comes in, turn the control counterclockwise. If you are listening to weak signal, turn the control clockwise for optimum quality of received signal.

TONE CONTROL

This control is used to optimize the tone quality of received signal.

RECEIV-O-SLIDE

This permits pinpoint tuning of receiver for reception of off-frequency stations.

PA-CB SWITCH

This switch is to select the operating mode of either CB or PA.

NOISE BLANKER SWITCH

The Noise Blanker is designed to reduce excessive noise such as electrical interference, ignition noise, etc. To operate, simply set the switch to "ON" position.

SWR SENSITIVITY CONTROL

This control is installed to adjust the sensitivity of SWR-FORWARD meter. Connect antenna, and turn on the power switch. Set CAL-SWR switch to CAL position and SWR-MOD-RF switch to SWR position. Then, press the microphone button and adjust CAL control so that the needle on the meter comes to CAL point. Set CAL-SWR switch to SWR position and read the value on the meter. The closer to 1 the value comes, the better matched antenna system will be.

PEARCE-SIMPSON'S EXCLUSIVE SEVEN-WAY METER

This meter is exclusively designed by Pearce-Simpson to work in seven different ways. Those functions are as follows:

1. S meter: A change of one S unit indicates a change of 6dB in signal level. The metering circuit is calibrated so that for 100 microvolts, the S meter will read S9.
2. RF output meter: This shows relative RF power when transmitting. To operate, place the SWR-MOD-RF switch to "RF" position.
3. SWR-FORWARD meter: This is to adjust the sensitivity of the meter. Turn the "SWR-CAL" control knob and make sure the meter needle comes to "CAL" point.
4. SWR-REFLECTED meter: This shows the SWR. Place CAL-SWR switch to the "SWR" position and read the value on the meter. The closer to 1 it comes, the better matched antenna system will be.
5. A receiver-on indicator: when the receiver is on, the meter lights up in amber color.
6. A transmitter-on indicator: when the transmitter is on, the meter lights up in red color.
7. Modulation indicator: the meter fluctuates in brilliant red when the transmitter is modulated.

SECTION 4
MAINTENANCE & SERVICING

CIRCUIT DESCRIPTION

Your COUGAR 23B consists of the following circuits: the PEARCE-SIMPSON HetroSync™ circuit, which provides the receiver injection frequencies and the transmitter carrier frequency; a dual conversion superheterodyne receiver; and an AM-modulated transmitter. It is powered from 13.8 VDC source. (See Block Diagram and schematic.)

HETROSYNC™ CIRCUIT

PEARCE-SIMPSON's method of frequency synthesis makes use of 14 crystals to provide crystal-controlled, 23 channel coverage on both transmit and receive functions. The circuit is composed of a 37.600 to 37.850 MHz master oscillator (TR-3), an 10.140 to 10.180 MHz receive oscillators (TR-5), an 10.595 to 10.635 MHz transmit oscillator (TR-15) and a transmit mixer (TR-16). In the transmit function, the output of the master oscillator (TR-3) and the transmit oscillator (TR-15) are fed into the transmit mixer (TR-16). The two fundamental frequencies are combined in the mixer, whose output will contain the two frequencies fed in, plus the sum of the two and the difference of the two, as well as combinations of the harmonics of the input. We use only the difference frequency. Let us take Channel 9 as an example. The two input frequencies are 37.700 MHz and 10.635 MHz. The mixer outputs are 37.700 MHz, 10.635 MHz, 48.335 MHz and 27.065 MHz. The other frequencies present at much lower levels are the harmonics of the two input frequencies such as 21.270 MHz, 31.905 MHz, 42.540 MHz, etc. In addition to these, will be the sum and difference frequencies from the mixing of the various harmonic and fundamental frequencies. Of all these frequencies, only one falls within the passband of the transmitter. This is 27.065 MHz which is the carrier frequency for Channel 9. The nearest unwanted frequency to the carrier frequency is at least 0.955 MHz away and outside of the transmitter pass band is adequately suppressed.

TRANSMITTER CIRCUIT

The transmitter circuit makes use of the carrier frequency signal output of the transmit mixer (TR-16), which is part of the HetroSync™ circuit. The signal is amplified by the buffer (TR-17), which is a voltage amplifier, whose output is fed to the driver (TR-18). Bandpass transformers L11, 13 and 14 provide the selectivity to select the desired carrier frequency from the mixer (TR-16) output. The driver is a low level Class C power amplifier which supplies the necessary RF power at the carrier frequency to drive the final power amplifier (TR-19). The final supplies RF power to the antenna through a triple pi-matching network. The primary purpose of the modulator is to put the intelligence on the carrier. To do this, the microphone changes sound (mechanical energy) to electrical energy which is an audio frequency signal. Mic amplifier (TR-14) and transmit audio amplifier (TR-11) amplify the signal and drive the audio power amplifier (TR-12 & TR-13). This audio power amplifier varies the supply voltage fed to the

driver and signal at an audio rate. This variation of the supply voltage varies the amplitude modulation.

RECEIVER CIRCUIT

The receiver in the COUGAR 23B is a dual conversion superheterodyne circuit. Channel 9 (27.065 MHz) will be used as an example to show how the receiver circuit works. A signal at 27.065 MHz is received at the antenna and amplified by RF amplifier (TR-1) and fed into 1st receiver mixer (TR-2). The 27.065 MHz signal is mixed with 37.700 MHz injection from the HetroSync™ circuit. The 10.635 MHz 1st IF output from the 1st receiver mixer is fed into the 2nd receiver mixer (TR-4) along with the 10.180 MHz injection from the HetroSync™ circuit. The 455 kHz 2nd IF output from the 2nd receiver mixer is amplified by the IF amplifiers (TR-6 & TR-7). Then, the signal is detected by detector diode D-9 and 10 to remove the audio from the IF carrier. The audio is coupled from the detector through the automatic noise limiter network to the 1st receiver audio amplifier (TR-10). This amplifier also acts as a squelch gate. If the squelch control has been properly adjusted, this amplifier is biased off and will not allow any noise to be passed. When a signal is received, the amplifier is biased on and audio is allowed to be passed on the 2nd audio amplifier (TR-11). TR-11 in turn, feeds the audio to the audio power amplifier (TR-12 & TR-13) which drives the speaker.

CRYSTAL FREQUENCY CHART

Master \ TX	10.635	10.625	10.615	10.595
37.600	Chan. 1	Chan. 2	Chan. 3	Chan. 4
37.650	Chan. 5	Chan. 6	Chan. 7	Chan. 8
37.700	Chan. 9	Chan. 10	Chan. 11	Chan. 12
37.750	Chan. 13	Chan. 14	Chan. 15	Chan. 16
37.800	Chan. 17	Chan. 18	Chan. 19	Chan. 20
37.850	Chan. 21	Chan. 22		Chan. 23
RX	10.180	10.170	10.160	10.140

SERVICING — TRANSMITTER SECTION

1. EQUIPMENT REQUIRED
   a. VTVM (full scale: 1V DC, with RF probe)
   b. DC Ampere Meter (max.: 1 Amp.)
   c. RF Output power meter
   d. Field Strength Meter
   e. Frequency Counter
   f. DC power Supply (13.8V/2 Amp.)
   g. 50 ohm, load and atten.

2. PROCEDURE

STEP	PRESET TO	CONNECTIONS	ADJUSTMENTS	REMARKS
1.	Tx. Mode, No Modulation Channel No.23	VTVM to Secondary of L-3 (TP-1,2)	L-3	Adjust for OSC. peak, then turn the slug to CW, and fix at the point of 10% down from the OSC. peak.
2.	Tx. Mode, No Modulation Channel No.13	VTVM to Secondary of L-14 (TP-3,4)	L-11,13,14	Adjust for Max. reading on VTVM.
3.	Same as Step 2	RF Output Power Meter to Antenna Jack (J-1)	L-15,16	Adjust for Max. reading on RF Output Power Meter.
4.	Same as Step 2	DC Milliampere Meter to TP-5	L-19	Adjust L-19 to obtain 5.5 Watts of DC Input Power.
5.	Same as Step 2	Field strength Meter to Ant.	L-21	Adjust L-21 to eliminate spurious radiation at 54MHz.
6.	Repeat the above adjustments, in order to make sure that the adjustments have been made correctly.			
7.	Tx. Mode, No Modulation, All Channels	Frequency Counter to Ant. through a suitable load and attenuator		Check Frequency of all channels.

SERVICING — RECEIVER SECTION

1. EQUIPMENT REQUIRED:
   a. Signal Generator (455kHz and 27MHz Band, 1,000Hz., 30% AM Modulation & Output Impedance 50 ohm)
   b. AF Output Meter
   c. Oscilloscope
   d. Dummy Load (8 ohm, 5 watts, resistive)
   e. DC Power Supply (13.8V, 2 Amp.)

2. PROCEDURE:

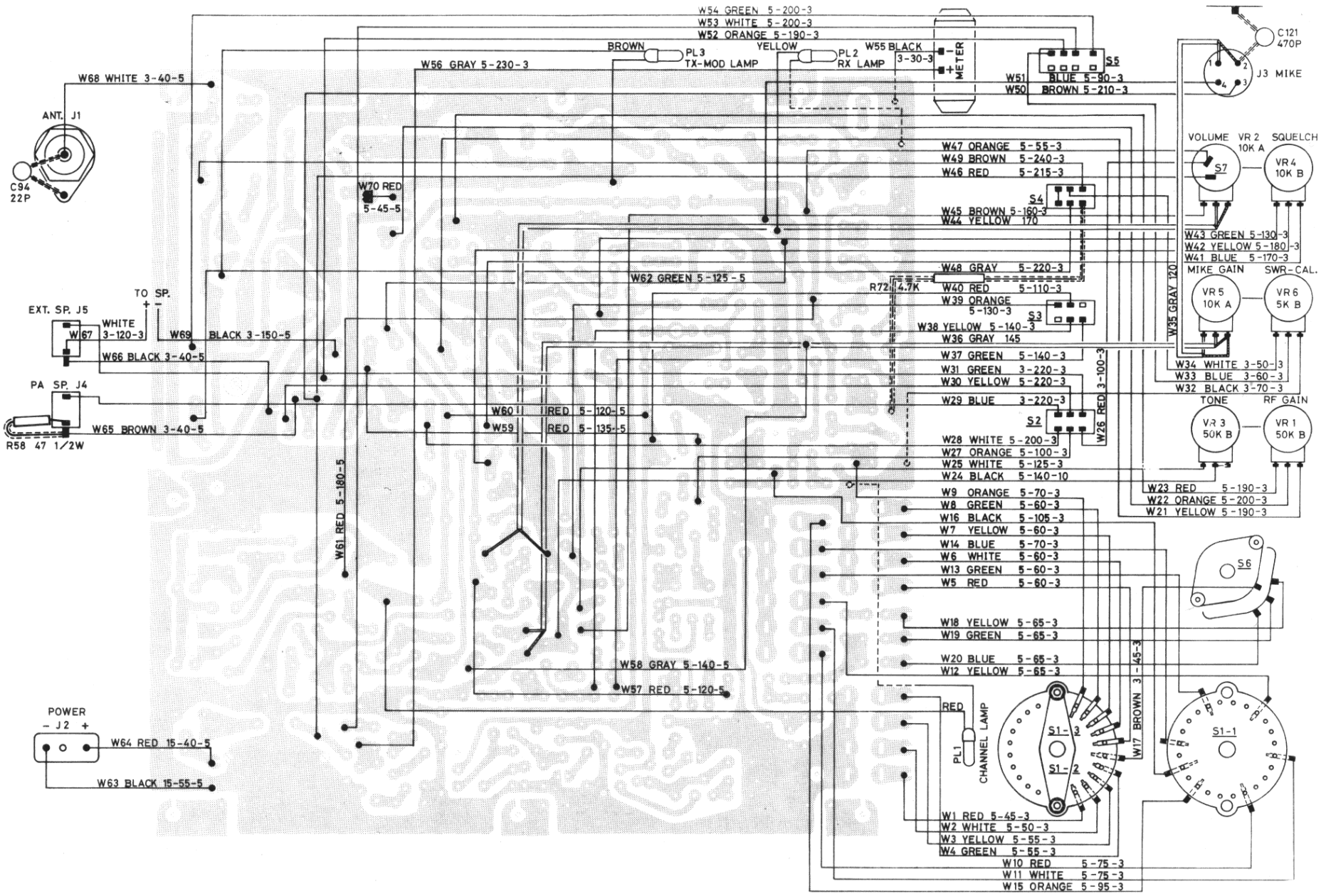
STEP	SG CONNECTION & FREQUENCY	PRESET TO	OUTPUT METER CONNECTION	ADJUSTMENT	REMARKS
1.	To the base of TR4 through 0.01μF Cap. Freq.: 455kHz.	Delta Tune: 0 SQ : Mini. VR : Max. NB : OFF Tone : Mini. RF Gain: Max.	To Ext. SP. Jack (J-3)	L7,8,9,10	Adjust for Max. Output
2.	To the Ant. Connector (J-1) Freq.: 27.115MHz.	Same as Step 1	Same as Step 1	L1,2,4,5	Adjust for Max. Output
3.	Same as Step 2	Same as Step 1	Same as Step 1	VR 7	Adjust for 2 volt AF Output at SG output Level of 0.5μV
4.	Same as Step 2	Same as Step 1	Same as Step 1	VR 8 (Squelch)	Adjust for 2V AF output at SG output level of 300μV
5.	Same as Step 2	Same as Step 1	Same as Step 1	VR 9 (S-Meter)	Adjust for S9 reading on S-Meter at SG output level of 100μV
6.	Repeat the above adjustments, in order to make sure that adjustments have been made correctly.				

TRANSISTOR VOLTAGE CHART

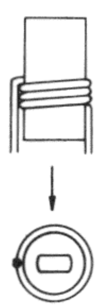
	Rx			Tx			PA		
TR	B	E	C	B	E	C	B	E	C
1	1.34	0.70	4.6	0	0	0.3	1.03	0.33	0.43
2	1.20	0.90	9.0	0.47	0.40	9.1	1.10	0.45	9.10
3	2.15	2.80	12.1	2.30	2.60	12.4	0.015	0	0.08
4	1.25	0.70	9.0	0.50	0.08	9.1	1.10	0.45	9.1
5	1.27	0.75	5.0	0.18	0	0.70	0.18	0	0.70
6	1.10	0.45	9.2	1.10	0.45	9.2	1.10	0.45	9.2
7	1.60	0.92	9.2	1.60	0.92	9.2	1.60	0.92	9.2
8	0.32	0	9.2	0.16	0	9.2	0.27	0	9.2
	(0.63)	(0)	(0.06)	(0.58)	(0)	3.2	(0.63)	(0)	(0.05)
9	9.2	4.00	0	9.2	0.50	0	9.2	0.50	0
	(0.06)	(0.65)	(0)	(3.2)	(0.50)	(0)	(0.05)	(0.50)	(0)
10	1.05	0.49	3.70	0.13	0	0.66	0.15	0	0.74
	(0.17)	(0)	(5.30)	(0.13)	(0)	(0.66)	(0.14)	0	(0.74)
11	1.60	0.95	8.6	1.55	0.94	8.5	1.55	0.94	8.5
12	0.64	0.03	13.6	0.64	0.03	13.6	0.64	0.03	13.6
13	0.64	0.03	13.6	0.64	0.03	13.6	0.64	0.03	13.6
14	1.90	4.70	9.0	1.60	0.99	4.7	1.55	0.93	3.40
15	3.65	4.78	13.5	2.35	2.35	11.0	2.40	2.35	11.0
16	1.20	0.70	13.6	1.03	0.57	13.6	1.40	0.75	13.6
17	2.80	4.80	13.6	〔1.02〕	2.2	〔3.75〕	2.55	2.00	13.6
18	0	0	13.3	〔2.4〕	0	〔11.2〕	0	0	0.015
19	0	0	13.3	〔3.2〕	0	〔20.5〕	0	0	0.015
20	0	0	13.3	〔2.8〕	0	7.3	0	0	0.015
21	0	0	8.5	0	0	8.5	0	0	8.5
22	8.5	9.2	0	8.5	9.2	0	8.5	9.2	0

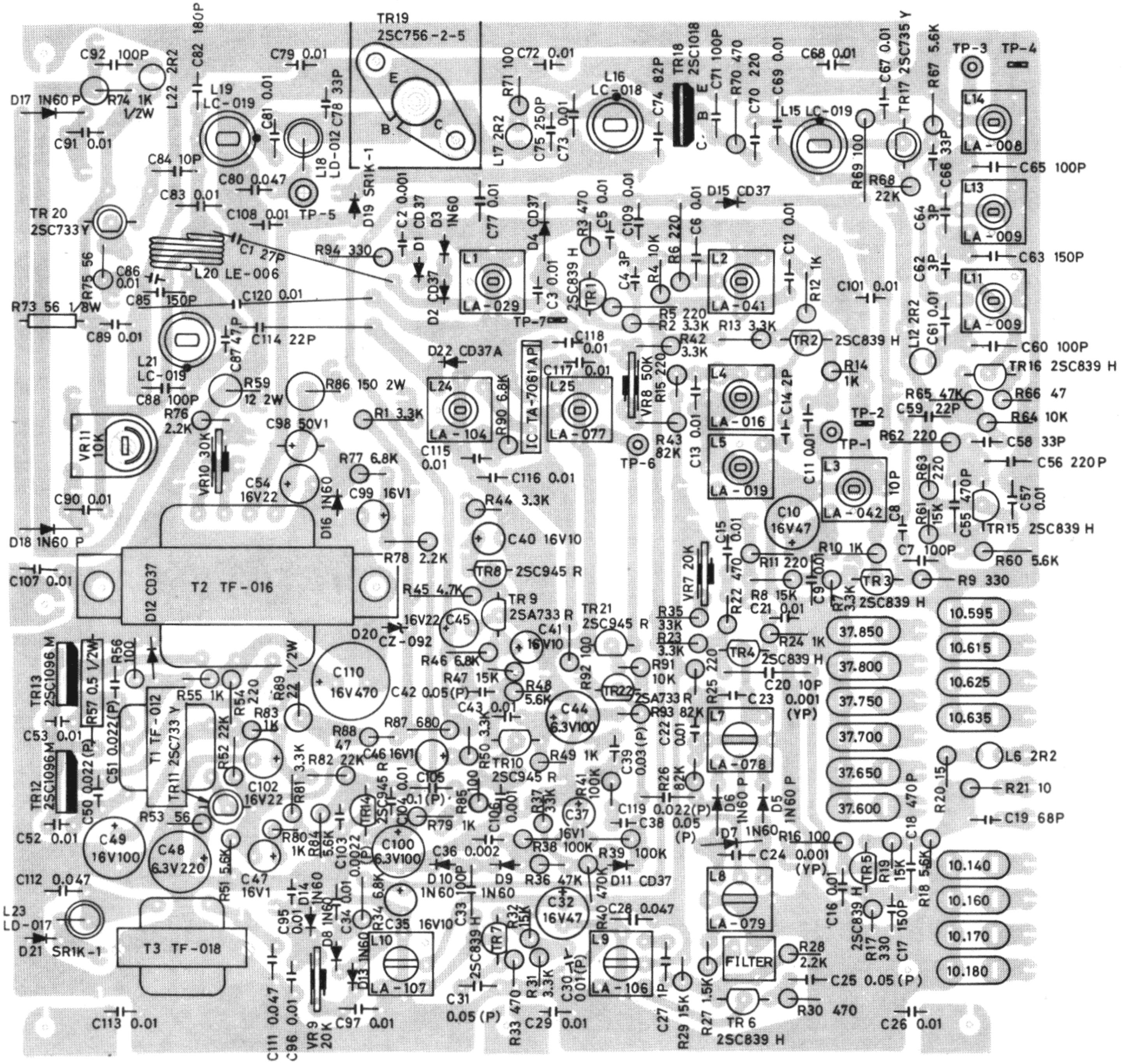
( ) = at SQ ON, 〔 〕: RF RMS, Others : DC VOLTAGE

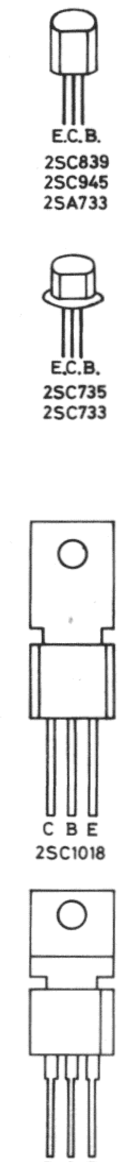
WIRING DIAGRAM



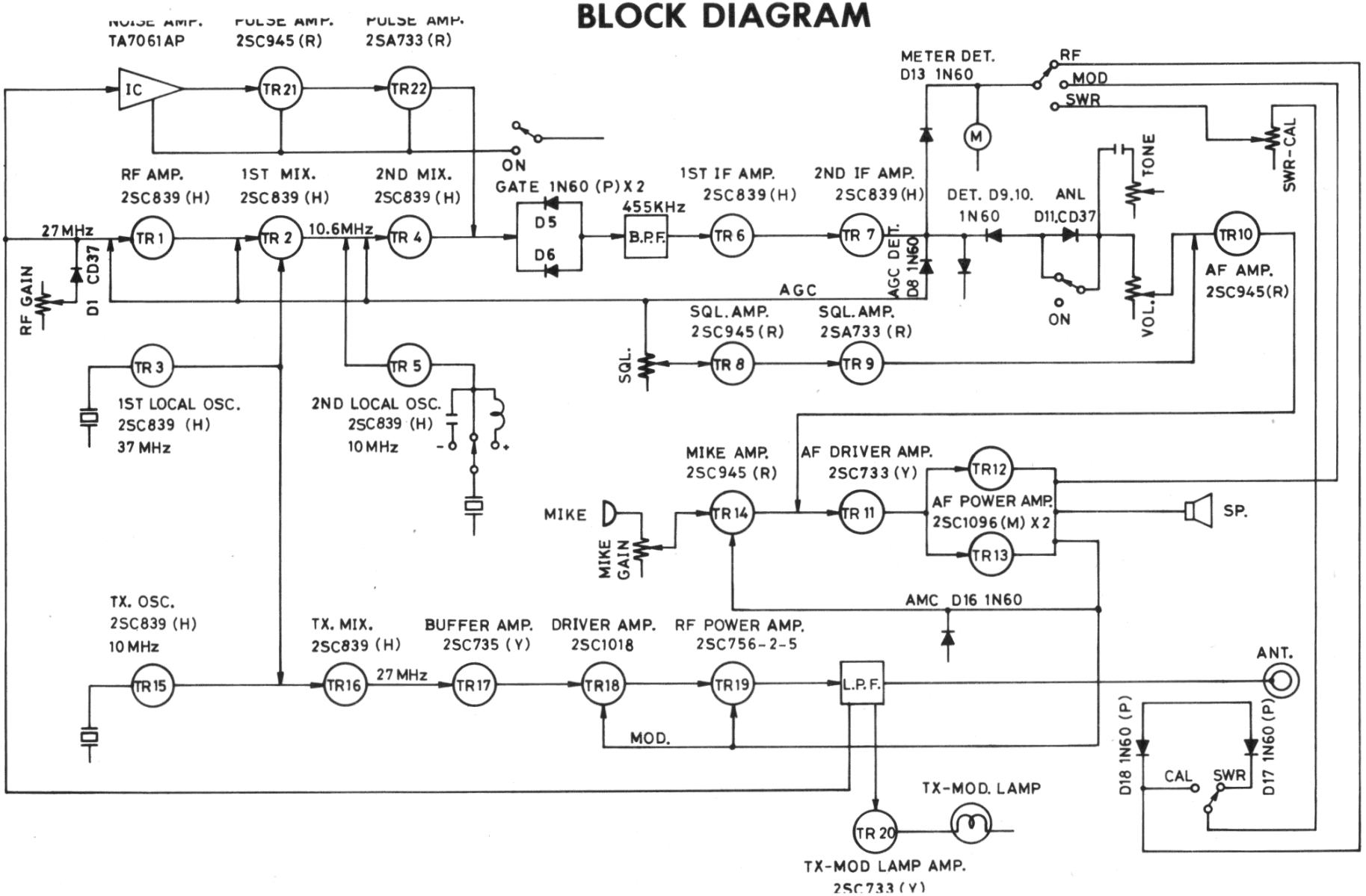
PC BOARD DETAIL







BLOCK DIAGRAM



SECTION 5
REPLACEMENT PARTS

SEMICONDUCTORS

SYMBOL	DESCRIPTION		PART NUMBER
TR-1	2SC839	RF Amplifier	5001-014
TR-2	2SC839	1st Receiver Mixer	5001-014
TR-3	2SC839	37MHz Oscillator	5001-014
TR-4	2SC839	2nd Receiver Mixer	5001-014
TR-5	2SC839	10MHz 2nd Local Oscillator	5001-014
TR-6,7	2SC839	455kHz IF Amplifier	5001-014
TR-8	2SC945	Squelch Amplifier	5001-038
TR-9	2SA733	Squelch Amplifier	5001-066
TR-10	2SC945	AF Amplifier	5001-038
TR-11	2SC733	AF Driver	5001-072
TR-12,13	2SC1096	AF Power Amplifier	5001-064
TR-14	2SC945	Mike Amplifier	5001-038
TR-15	2SC839	10MHz Transmit Oscillator	5001-014
TR-16	2SC839	Transmit Mixer	5001-014
TR-17	2SC735	Transmit Buffer	5001-021
TR-18	2SC1018	Transmit Driver	5001-044
TR-19	2SC756	Transmit Final	5001-068
TR-20	2SC733	Modulation Lamp Amplifier	5001-072
TR-21	2SC945	Pulse Amplifier	5001-038
TR-22	2SA733	Pulse Amplifier	5001-066

DIODES

SYMBOL	DESCRIPTION		PART NUMBER
D-1	CD37	RF Gain Control	5001-145
D-2	CD37	Receiver RF Amplifier Protector	5001-145
D-3	1N60	Receiver RF Amplifier Protector	5001-080
D-4,15	CD37	Mode Switching	5001-145
D-5,6	1N60 P	Noise Blanker Gate	5001-134
D-7	1N60	Amplitude Limiter	5001-080
D-8	1N60	AGC Detector	5001-080
D-9,10	1N60	Detector	5001-080
D-11	CD37	ANL Gate	5001-145
D-12	CD37	Varistor	5001-145
D-13	1N60	S Meter Detector	5001-080
D-14	1N60	S Meter Mode Switching	5001-080
D-16	1N60	AMC Detector	5001-080
D-17,18	1N60 P	SWR Meter Detector	5001-134
D-19	SR1K-1	Modulation Stabilizer	5001-117
D-20	CZ092	Receiver Voltage Regulator	5001-152
D-21	SR1K-1	Polarity Protector	5001-117
D-22	CD37 A	Noise Blanker Amplifier Protector	5001-144

CAPACITORS

SYMBOL	DESCRIPTION	
C-1	27pF	50V, Ceramic

REPLACEMENT PARTS

SYMBOL	DESCRIPTION			PART NUMBER
C-2,106	0.001μF	50V,	Ceramic	
C-3,5,6,9,11,12,13, 15	0.01μF	50V,	Ceramic	
C-4,62,64	3pF	50V,	Ceramic	
C-7,33,60,65,71, 88,92	100pF	50V,	Ceramic	
C-8,20,84	10pF	50V,	Ceramic	
C-10,32	47μF	16V,	Electrolytic	5018-034
C-14	2pF	50V,	Ceramic	
C-16,21,22,26,29, 34	0.01μF	50V,	Ceramic	
C-17,63,85	150pF	50V,	Ceramic	
C-18,55,121	470pF	50V,	Ceramic	
C-19	68pF	50V,	Ceramic	
C-23,24	0.001μF	50V,	Ceramic	
C-25,31,38,42	0.05μF	50V,	Mylar	
C-27	1pF	50V,	Ceramic	
C-28,80,111,112	0.047μF	50V,	Ceramic	
C-30	0.01μF	50V,	Mylar	
C-35,40,41	10μF	16V,	Electrolytic	5018-005
C-36	0.002μF	50V,	Ceramic	
C-37,46,47,99	1μF	16V,	Electrolytic	5018-002
C-39	0.03μF	50V,	Mylar	
C-43,52,53,57,61, 67	0.01μF	50V,	Ceramic	
C-44,100	100μF	6.3V,	Electrolytic	5018-013
C-45,54,102	22μF	16V,	Electrolytic	5018-042
C-48	220μF	6.3V,	Electrolytic	5018-044
C-49	100μF	16V,	Electrolytic	5018-012
C-50,51,119	0.022μF	50V,	Mylar	
C-56,70	220pF	50V,	Ceramic	
C-58,66,78	33pF	50V,	Ceramic	
C-59,94,114	22pF	50V,	Ceramic	
C-68,69,72,73,76, 77	0.01μF	50V,	Ceramic	
C-74	82pF	50V,	Ceramic	
C-75	250pF	50V,	Ceramic	
C-79,81,83,86,89, 90	0.01μF	50V,	Ceramic	
C-87	47pF	50V,	Ceramic	
C-91,93,95,96,97, 101	0.01μF	50V,	Ceramic	
C-98	1μF	50V,	Electrolytic	5018-035
C-103	0.0022μF	50V,	Mylar	
C-104,107,108,109, 113	0.01μF	50V,	Ceramic	
C-105	0.1μF	50V,	Mylar	
C-110	470μF	16V,	Electrolytic	5018-024

REPLACEMENT PARTS

SYMBOL	DESCRIPTION			PART NUMBER
C-82	180pF	50V,	Ceramic	
C-115,116,117,118, 120	0.01μF	50V,	Ceramic	

RESISTORS

SYMBOL	DESCRIPTION			PART NUMBER
R-1,2,7,13,23,31, 42,44,50,81	3.3K ohm	¼W,	Carbon	
R-3, 22,30,33,70	470 ohm	¼W,	Carbon	
R-4, 64,91	10K ohm	¼W,	Carbon	
R-5,6,11,15,25,54, 62,63	220 ohm	¼W,	Carbon	
R-8,19,29,32,61,47	15K ohm	¼W,	Carbon	
R-9,17,94	330 ohm	¼W,	Carbon	
R-10,14,24,49,55, 79,80,83,12	1K ohm	¼W,	Carbon	
R-16,56,69,71,85,92	100 ohm	¼W,	Carbon	
R-18,48,51,60,67,84	5.6K ohm	¼W,	Carbon	
R-20	15 ohm	¼W,	Carbon	
R-21	10 ohm	¼W,	Carbon	
R-26,43,93	82K ohm	¼W,	Carbon	
R-27	1.5K ohm	¼W,	Carbon	
R-28,76,78	2.2K ohm	¼W,	Carbon	
R-34,46,77,90	6.8K ohm	¼W,	Carbon	
R-35,37	33K ohm	¼W,	Carbon	
R-36,65	47K ohm	¼W,	Carbon	
R-38,39,41,95	100K ohm	¼W,	Carbon	
R-40	470K ohm	¼W,	Carbon	
R-45,72	4.7K ohm	¼W,	Carbon	
R-52,68,82	22K ohm	¼W,	Carbon	
R-53,75	56 ohm	¼W,	Carbon	
R-57	0.5 ohm	½W,	Wirewound	5019-004
R-58	47 ohm	½W,	Carbon	
R-59	12 ohm	2W,	Metal-covered	5019-011
R-66,88	47 ohm	¼W,	Carbon	
R-73	56 ohm	⅛W,	Solid	
R-74	1K ohm	½W,	Carbon	
R-86	150 ohm	2W,	Metal-covered	
R-87	680 ohm	¼W,	Carbon	
R-89	22 ohm	½W,	Carbon	

SWITCHES

SYMBOL	DESCRIPTION	PART NUMBER
SR-046	Channel Selector Switch	5009-037
SR-050	Receiv-O-Slide Switch	
SW-020	Slide Switch for PA-CB, Noise Blanker, CAL/SWR	
SW-031	Slide Switch for SWR Meter Mode	

REPLACEMENT PARTS

INDUCTANCE

SYMBOL	DESCRIPTION	PART NUMBER
L-1	LA-029 (TKXN-22160BU) Antenna Coil	5006-118
L-2	LA-041 (TKXC-22534BU) RF Coil	5006-189
L-3	LA-042 (TKXC-22535BM) 37MHz Oscillator Coil	5006-190
L-4	LA-016 (TKAC-20621IE) 10.6MHz 1st IF Coil	5006-111
L-5	LA-019 (TKAC-21165A) 10.6MHz 1st IF Coil	5006-112
L-6,12,17,22	Micro Inductor 2R2	5006-054
L-7	LA-078 (RLN-40479N) 455kHz 2nd IF Coil	
L-8	LA-079 (RLN-40480N) 455kHz 2nd IF Coil	
L-9	LA-106 (YOC-15001F) 455kHz 2nd IF Coil	5006-195
L-10	LA-107 (YMC-15002A) 455kHz 2nd IF Coil	5006-196
L-11,13	LA-009 (KXN-13638HM) 27MHz B.P.F. Coil	5006-049
L-14	LA-008 (KXN-13636BM) 27MHz B.P.F. Coil	5006-050
L-15	LC-019 (TC-71025) Buffer Coil	5006-188
L-16	LC-018 (TC-71024) Driver Coil	5006-116
L-18	LD-012 (TC-71029) Choke Coil	5006-122
L-19	LC-019 (TC-71025) Final Coil	5006-188
L-20	LE-006 (NS-1344) Filter Coil	5006-083
L-21	LC-019 (TC-71025) Filter Coil	5006-188
L-23	LD-017 (TC-71095) Power Filter Coil	
L-24	LA-104 (TKXN-20979A) 23.5MHz Noise Blanker Coil	
L-25	LA-077 (TKXC-14299A) 23.5MHz Noise Blanker Coil	

TRANSFORMERS

SYMBOL	DESCRIPTION	PART NUMBER
T-1	TF-012 (69M) Input Transformer	5007-008
T-2	TF-016 (91A) Output Transformer	5007-033
T-3	TF-018 (115C) Choke Transformer	5006-124

VARIABLE RESISTORS

SYMBOL	DESCRIPTION	PART NUMBER
VR-1,3	RV-082, Variable	5008-005
VR-2,4	RV-080 (EVK-AFTF20105) Variable	5008-006
VR-5,6	RV-081 (EVK-AFTF20329) Variable	5008-006
VR-7,9	20K ohm, B, 2P, 6BM, Semi-fixed	5008-008
VR-8	50K ohm, B, 2P, 6BM, Semi-fixed	5008-032
VR-10	30K ohm, B, 2P, 6BM, Semi-fixed	5008-023
VR-11	10K ohm, B, 2P, 6BM, Semi-fixed	5008-008

CRYSTALS

SYMBOL	DESCRIPTION	PART NUMBER
X-1	QX-009 37.600MHz	5003-001
X-2	QX-009 37.650MHz	5003-002
X-3	QX-009 37.700MHz	5003-003
X-4	QX-009 37.750MHz	5003-004

REPLACEMENT PARTS

SYMBOL	DESCRIPTION	PART NUMBER
X-5	QX-009 37.800MHz	5003-005
X-6	QX-009 37.850MHz	5003-006
X-7	QX-005 10.140MHz	5003-011
X-8	QX-005 10.160MHz	5003-012
X-9	QX-005 10.170MHz	5003-013
X-10	QX-005 10.180MHz	5003-014
X-11	QX-006 10.595MHz	5003-007
X-12	QX-006 10.615MHz	5003-008
X-13	QX-006 10.625MHz	5003-009
X-14	QX-006 10.635MHz	5003-010

MISCELLANEOUS

DESCRIPTION	PART NUMBER
Crystal Socket S-D0105	5010-002
Meter MT-030	
Mike Connector SM144, 4-prong	5010-021
Antenna Connector, M-R	5010-009
Power Cord Connector CN-3795	5010-026
External Speaker Jack SJ-296	5010-012
PA Speaker Jack SJ-296	5010-012
Pilot Lamp 14V 50mA Clear	5013-023
Pilot Lamp 8V 80mA Amber	
Pilot Lamp 4.5V 40mA Red	5013-015
Speaker 8 ohm 2W, SP-003	5012-003
Inline Fuse Holder RF-104	5029-001
Fuse 2A	5028-001
Microphone, MK-002	5004-009
Microphone Hanger	
DC Power Cord	
Chassis	
Metal Cabinet	5020-016
Mounting Cradle	5025-007
Front Panel	5020-015
Channel Selector Knob	5022-019
Channel Number Disc	
Power On-Off/Volume Control Knob	
Squelch Control Knob	
RF Gain Control Knob	
Tone Control Knob	
Front Plate, Silver Hairline Finish	
Brand Name Plate, Woodgrain Finish	
Microphone Name Plate	
FCC plate	
Instruction Manual	
Display Box	
Styrofoam Box	

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This electronic equipment, manufactured by Pearce-Simpson, Inc., is warranted in accordance with the following terms and conditions —

A. PEARCE-SIMPSON, INC. WILL:

Replace any defective part of this equipment during the 90 day period following purchase.

Repair, at our factory, without charge, this equipment, if a defect develops during the first 90 days following purchase. (This repair service is free only at the factory. No reimbursements can be made for non-factory repair charges.)

B. THE PURCHASER WILL:

Return the warranty registration card within 10 days of purchase.

Pay all transportation charges involved when equipment is returned for factory repair, provide information regarding nature of failure, and accept freight collect shipment of repaired equipment.

The above is void if equipment is modified or repaired without authorization, subjected to misuse, abuse, accident, water damage or other neglect, or has its serial number defaced or removed, or if more than 18 months has elapsed since factory shipment date to dealer.

No obligation is assumed by Pearce-Simpson, Inc., to update previously manufactured equipment.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

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