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**PEARCE-SIMPSON**  
DIVISION OF **GLADDING** CORP.

# **BOBCAT 23E**

## SECTION 1 GENERAL INFORMATION

### DESCRIPTION

Your new PEARCE-SIMPSON BOBCAT 23E 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 13.8 volt DC power source. A DC power cord and a mounting cradle are included with your BOBCAT 23E. 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, adjustable squelch, automatic noise limiting, S-meter, 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 two crystal-controlled oscillators which are mixed 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: 5-7/8" Wide × 2" High × 7-1/4" Deep  
Weight: 3 Pounds  
Antenna: 52-Ohm Coaxial  
Primary Power: Input Voltage-13.8 VDC (EIA Standard)

#### TRANSISTOR COMPLEMENT:

TR-1	MPS706	: RF Amplifier
TR-2	MPS706	: 1st Receiver Mixer
TR-3	MPS706	: 37 MHz. 1st Local
TR-4	MPS5172	: 2nd Receiver Mixer
TR-5	MPS706	: 10 MHz. 2nd Local Oscillator
TR-6	MPS5172	: 455 KHz. IF Amplifier
TR-7	MPS5172	: 455 KHz. IF Amplifier
TR-8	MPS5172	: Squelch Amplifier
TR-9	MPS5172	: 1st AF Amplifier
TR-10	MPS706	: 2nd AF Amplifier
TR-11	MJE180	: AF Power Amplifier
TR-12	MJE180	: AF Power Amplifier
TR-13	MPS706	: Transmit Oscillator
TR-14	MPS706	: Transmit Mixer
TR-15	MPS706	: Transmit Buffer
TR-16	MPS-U02	: Transmit Driver
TR-17	MRF8004	: Transmit Final
TR-18	MPS706	: Modulation Lamp Amplifier

## DIODE COMPLEMENT :

D-1	1N914A	: Receiver AF Amplifier Protector
D-3	1N914A	: Mode Switching
D-4	1N270	: Transmit Power Meter Detector
D-5	1N270	: S Meter Detector
D-6	1N270	: Detector
D-7	1N914A	: ANL Gate
D-8	1N914A	: Varistor
D-9	1N270	: AMC Detector
D-10	1A-200PIV	: Modulation Stabilizer
D-11	1N914A	: Mode Switching
D-12	9.1V-1W	: Receiver Voltage Regulator
D-13	1A-200PIV	: Protector

## RECEIVER :

Frequency Range	: 26.965 MHz. — 27.255 MHz.
Sensitivity	: 0.3 $\mu$ V for S + N/N using 1,000 Hz., 30% Modulation
Selectivity	: 6 db band width 5 KHz 50 db band width 20 KHz.
Cross Modulation	: 75 db for 10 $\mu$ V desired
Spurious Rejection	: 60 db minimum
Adjacent Channel Rejection	: 50 db minimum
Squelch Range	: Adjustable from 0.5 $\mu$ V — 300 $\mu$ V
Automatic Noise Limiter	: Built in
1st I.F. Frequency	: 10.7 MHz. for center frequency
2nd I.F. Frequency	: 455 KHz.
P.A. Maximum Audio Output Power	: 5W
Audio Output Power for 10% Distortion	: 3.5W
Speaker	: 3-5/8"

## TRANSMITTER :

Frequency Range	: 26.965 MHz. — 27.255 MHz.
Carrier Frequency Stability	: 0.003%, -30° C to +50 °C
Output Power	: 3.8 W into 52 ohms with 13.8 V DC power supply
Modulation Capability	: 100%
Spurious & Harmonics Suppression	: 55 db minimum
Emission	: 8A3

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))

### WARNING

Operation of this equipment requires a valid station license issued by the Federal Communications Commission. Do not transmit with your equipment until you have received your license. Illegal operation can result in severe penalties. Be certain that you have read Part 95 of the FCC Rules and Regulations before operating your station.

License applications are to be made on FCC Form 505 available from your nearest FCC field office. (A copy of this form is included with your new transceiver).

You are required to maintain a current copy of Part 95 of the FCC Rules as a part of your station records. Copies of Part 95 are available from: Superintendent of Documents, GPO, Washington, DC 20402 for fee of \$3.50.

Your station license is to be posted in accordance with paragraph 95.101 of the Rules and an executed Transmitter Identification Card (FCC Form 452-C) is to be attached to each transmitter. (A copy of this form is included with your new transceiver).

FCC Rules require that all transmitter adjustments, other than those supplied by the manufacturer as front panel operating controls, be made by or under the supervision of the holder of an FCC issued 1st or 2nd class radio operator license.

Replacement or substitution of crystals, transistors, regulator diodes or any other part of a unique nature, with parts other than those recommended by the manufacturer, may cause violation of the technical regulations of Part 95 of the FCC Rules or violation of the Type Acceptance requirements of Part 2 of the Rules.

## 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 serves as a means of mounting your BOBCAT 23E in any position and attitude which will be convenient to the user. After you have determined the most convenient location in your vehicle, hold the BOBCAT 23E, mounted in the cradle, in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the cradle from the BOBCAT 23E and use it as a template to mark the location for the mounting bolts. Before drilling the holes, make sure nothing will interfere with the installing of the mounting bolts.

#### POWER CONNECTION

The red lead is to be connected to the positive voltage source. The black lead is connected to the negative voltage source. If existing wiring is used, make 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 turned "OFF", and power will be supplied to the radio when it is in the "ON" or "ACCESSORY" position. In a negative ground vehicle, the accessory switch will usually be a positive source. In a positive ground vehicle, the accessory switch will usually be a negative source.

NOTE: Do not connect the power leads "backwards", i.e., red lead to negative and black lead to positive. (The radio is reverse polarity protected so that if you make an error in connecting the leads, SUBSTANTIAL damage will be prevented, however, the fuse will blow. It is essential that the proper fuse be used to maintain this protection. The proper fuse rating is 2 Amperes.)

## ANTENNAS

Your BOBCAT 23E 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.

For a marine installation, the full-length quarter wave whip antenna is very efficient, however it requires radials which makes it hard to mount in small boats. Another excellent antenna is the coaxial sleeve type which requires no radials. A similar antenna is the center loaded 1/2 wave which is about the same as the full length 1/4 wave whip and 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.

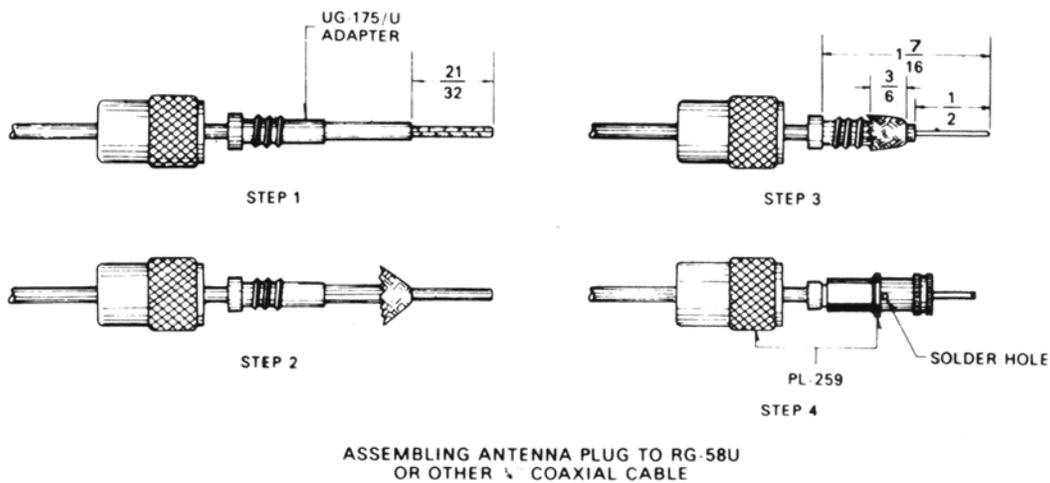


Figure 1

## 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 BOBCAT 23E 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 received, 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 BOBCAT 23E 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 BOBCAT 23E contains automatic noise limiter built in 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

The controls and indicators on the front panel of your BOBCAT 23E are shown in Figure 2.

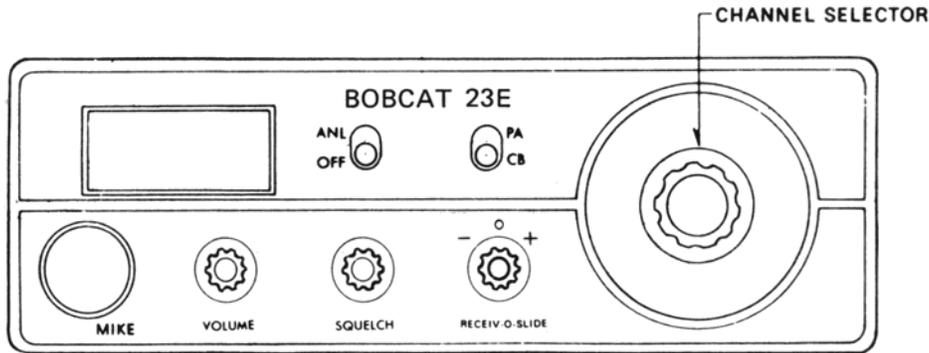


Figure 2

#### 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.

#### 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 BOBCAT 23E is unsquelched (no noise silencing at all). In the fully clockwise position, the unit is squelched for even very strong signals.

#### VOLUME CONTROL AND ON-OFF SWITCH

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

#### PEARCE-SIMPSON'S EXCLUSIVE FIVE-WAY METER

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

1. An indicator of the received signal. A change of one S unit indicates a change of 6 db in signal level. The metering circuit is calibrated so that for 100 microvolts, the S-meter will read S9.
2. An indicator of RF output power.

3. A receiver-on indicator: when the receiver is on, the meter lights up in amber color.
4. A transmitter-on indicator: when the transmitter is on, the meter lights up in red color.
5. Modulation indicator: the meter fluctuates in brilliant red when the transmitter is modulated.

#### PA-CB SWITCH

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

#### ANL SWITCH

Slide the ANL switch to ANL position. It will activate the automatic noise limiter in the audio circuits.

#### RECEIVE-O-SLIDE

This permits pinpoint tuning of receiver for reception of off-frequency stations. Every signal will come in sharp and clear.

### OPERATING THE BOBCAT 23E

#### CAUTION

DO NOT PUSH TRANSMIT SWITCH WITHOUT FIRST CONNECTING A 52-OHM ANTENNA OR DUMMY LOAD.

Rotate SQUELCH CONTROL fully counterclockwise.

Rotate the VOLUME CONTROL clockwise, to apply power, and advance the VOLUME CONTROL until noise or signal is heard in the speaker.

(Since your BOBCAT 23E uses all transistors, no warmup time is required.)

With no signal present, rotate the SQUELCH CONTROL clockwise to a position in which no noise is heard. Advance this control only far enough to prevent noise from being heard. Advancing it too far may result in a weak station being unable to open the squelch. Since the squelch has been adjusted with no signal present, when a station transmits on the channel to which your BOBCAT 23E is tuned, the squelch circuit will open and the station will be heard. When the station stops transmitting and no signal is received, the squelch gate will be closed and all sound will be "Turned Off". Sometimes noise will build up as a result of a passing truck, etc. If this happens, the SQUELCH CONTROL should be advanced just far enough to keep the circuit closed during these noise peaks.

Rotate the CHANNEL SELECTOR to the desired channel.

Adjust the volume as desired for the station you are listening to.

To transmit, hold the microphone 2 to 3 inches from your mouth. Normally, it is best to hold it so that you talk across it rather than directly into it. This will prevent the sound of your breathing being transmitted. Hold the Push-to-Talk button on the microphone in, and speak in a normal conversational level.

When your transmission is completed, release the button on the microphone and listen for your reply.

When listening to a weak signal, adjust your delta tune switch for strongest signal. The automatic noise limiter will ordinarily be kept on. When under conditions of low noise you may wish to turn it off for extra sensitivity.

## SECTION 4

### MAINTENANCE & SERVICING

#### CIRCUIT DESCRIPTION

Your BOBCAT 23E 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 13.8V DC 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 37.600 to 37.850 MHz master oscillator (TR3), 10.140 to 10.180 MHz receive oscillator (TR5), 10.595 to 10.635 MHz transmit oscillator (TR13) and a transmit mixer (TR14). In the transmit function, the output of the master oscillator (TR3) and the transmit oscillator (TR13) are fed into the transmit mixer (TR14). 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.

#### TRANSMITTER CIRCUIT

The transmitter circuit makes use of the carrier frequency signal output of the transmit mixer (TR14), which is part of the HetroSync™ circuit. The signal is amplified by the buffer (TR15), which is a voltage amplifier, whose output is fed to the driver (TR16). Bandpass transformers T11 through T13 provide the selectivity to select the desired carrier frequency from the mixer (TR14) 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 (TR17). The final supplies RF power to the antenna through a double pi-matching network. The function 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 9) and audio driver (TR 10) amplify this signal and drive the audio power amplifier (TR11 & TR12). 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 of the carrier output thus producing amplitude modulation.

## RECEIVER CIRCUIT

The receiver in the BOBCAT 23E 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 (TR1) and fed into 1st receiver mixer (TR2). The 27.065 MHz signal is mixed with 37.700 MHz injection from the HetroSync<sup>R</sup> circuit. The 10.635 MHz 1st IF output from the 1st receiver mixer is fed into the 2nd receiver mixer (TR4) along with the 10.180 MHz injection from the HetroSync<sup>R</sup> circuit. The 455 kc 2nd IF output from the 2nd receiver mixer is amplified by the IF amplifiers TR6 and TR-7. Then, the signal is detected by detector diode D6 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 (TR9). 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 to the 2nd audio driver (TR10). TR10 in turn, feeds the audio to the audio power amplifier (TR 11 & TR12) which drives the speaker.

## ALIGNMENT-TRANSMITTER

### A. EQUIPMENT REQUIRED:

- a) RF Output Power meter (50 ohm, 5 watts)
- b) Frequency counter
- c) DC milliampere meter (500/1000 mA)
- d) Power supply (DC 13.8V)
- e) Field strength meter.
- f) RF V. T. V. M.
- g) AF signal generater

### B. PROCEDURE:

Remarks: Warm up the sample and test equipment at least 15 minutes before starting alignment.

RF output meter or 50 ohm dummy load must be connected to antenna jack.

Coupling to frequency counter should be as loose as possible, to prevent a frequency error.

STEP	SET CONDITION	CONNECTIONS	ADJUSTMENT	REMARKS
1.	Receiving Position (23 CH.)	RF V. T. V. M. to TP1 and TP2.	T5	Adjust for OSC. peak, then turn the slug CW, and fix at the point of 10% down from the OSC. peak.
2.	Transmitting no modulation (13 CH.)	RF V. T. V. M. to TP3 and TP2.	T11, T12 and T13.	Adjust for max. output.
3.	Same as Step 2.	RF output power meter to antenna (J1). jack	L4, L5 and L8.	Adjust for max. point.
4.	Same as Step 2.	Same as Step 3	L8.	Adjust to obtain a maximum of 4W output
5.	Same as Step 2.	Field strength meter to ant. jack (J1).	L10.	Adjust for min. point to eliminate spurious radiation near 54MHz.
6.	Same as Step 2.	Same as Step 3.	VR2.	Adjust so that needle of meter on the unit advances a little bit into red zone and comes over "+" between 9 and 10 as calibrated on meter face.
7.	Repeat the above adjustments, in order to make sure that adjustments have been made correctly.			
8.	Transmitting no modulation all channels.	Frequency counter to ant. through a suitable load and attenuator.		Check frequency of all channels.

## ALIGNMENT-RECEIVER

### A. EQUIPMENT REQUIRED:

- a) Signal Generator: 27MHz  
1000Hz, 30% AM Modulation and  
Output Impedance 50 ohms
- b) AF Output Meter (V. T. V. M.)
- c) Power supply (DC 13.8V)
- d) Dummy load (8 ohm, 5 watts, Resistive)

### B. PROCEDURE:

Remarks: Warm up the sample and test equipments at least 15 minutes before starting alignment.

Output level: Keep signal generator output low enough to prevent AGC overload.

(Below approx. 2 volts on output meter)

Step	SG Connection & Frequency	Set Condition	Output Meter Connection	Adjustment	Remarks
1.	To antenna jack (J1). Freq: 27.115MHz	SQ: Min. VOL: Max.	To EXT. SP. jack (J3).	T1, 2, 3, 4, 6, 7 and T8.	Adjust for max. point
2.	Same as Step 1. and output level: 0.5 $\mu$ V	Same as Step 1.	Same as Step 1.	VR 1.	Adjust for 1V AF output.
3.	Same as Step 1. and output level 300 $\mu$ V	SQ: Max. VOL: Max. ANL: OFF	Same as Step 1.	VR 4.	Adjust for a open squelch point.
4.	Same as Step 1. and output level: 100 $\mu$ V	Same as Step 1.	Same as Step 1.	VR 3.	Adjust for "S-9" on "S" meter of the unit.
5.	Repeat the above adjustments, in order to make sure that adjustments have been made correctly.				

## TRANSISTOR VOLTAGE CHART

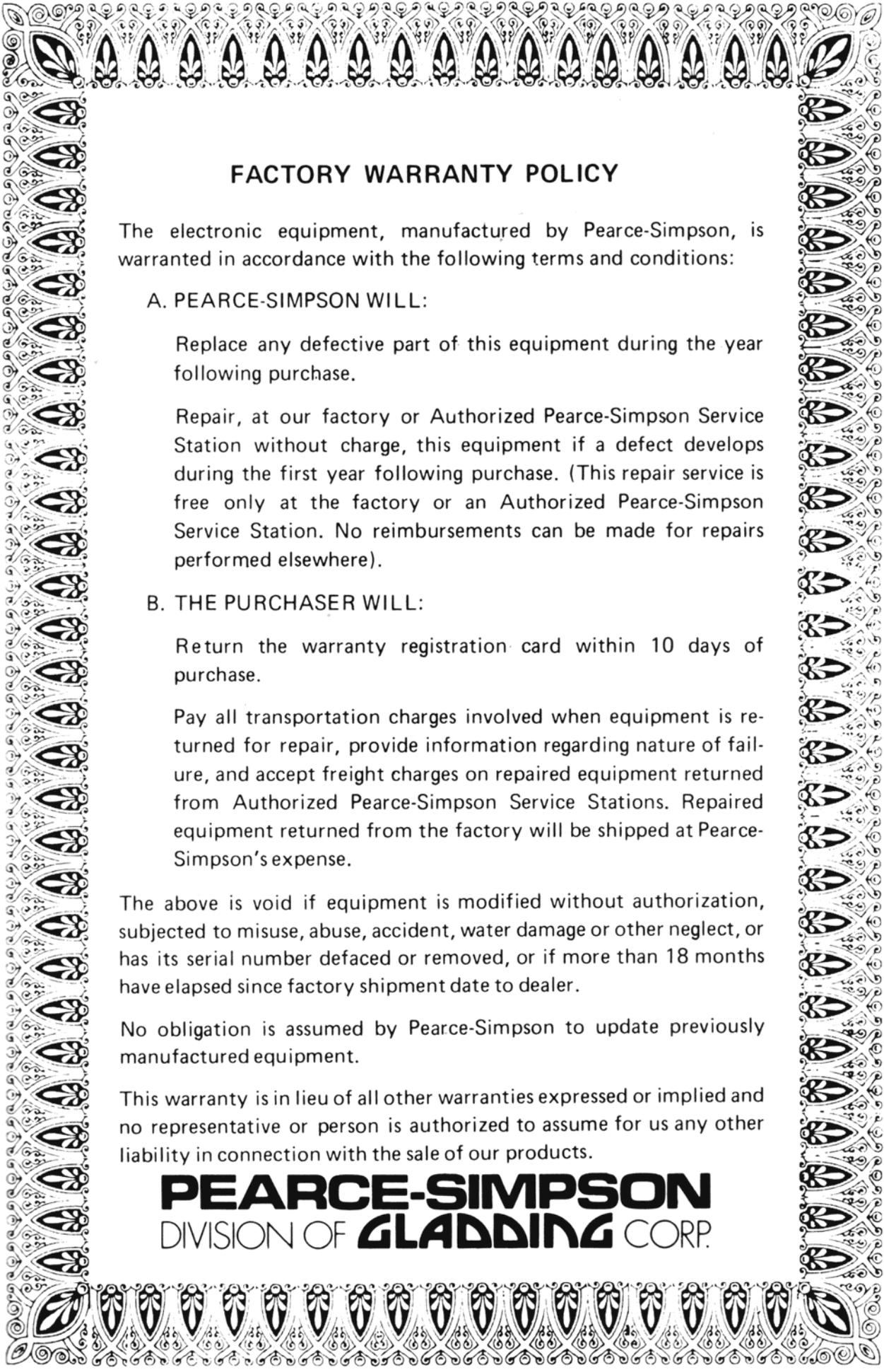
TR No	Rx			Tx			PA		
	B	E	C	B	E	C	B	E	C
1	1.2	0.6	5.2	0.2	0.1	0.6	0.2	0	0.6
2	1.2	0.6	9.1	0.2	0	9.2	0.2	0	9.2
3	2.4	2.0	12.3	2.4	2.0	12.3	0	0	0
4	1.2	0.6	9.1	0	0	9.2	0	0	9.2
5	1.3	0.7	4.9	0.2	0	0.6	0.2	0	0.6
6	1.2	0.5	9.2	1.2	0.5	9.2	1.2	0.5	9.2
7	1.2	0.5	9.2	1.2	0.5	9.2	1.2	0.5	9.2
8	0.6	0	7.8	0.05	0	7.8	0.05	0	7.8
9	1.8	1.2	3.7	1.8	1.2	3.7	1.8	1.2	3.7
10	2.1	1.5	10.5	2.2	1.5	10.5	2.2	1.5	10.5
11	0.6	0.05	13.4	0.6	0.05	13.4	0.6	0.05	13.4
12	0.6	0.05	13.4	0.6	0.05	13.4	0.6	0.05	13.4
13	3.6	5.5	13.2	2.1	2.2	9.9	0	0	0
14	1.3	0.4	12.5	1.3	0.4	12.5	0	0	0
15	1.8	5.5	13.5	1.4	1.1	13.5	0	0	0
16		0	13.4		0	12.4		0	13.4
17		0	13.4		0	12.4		0	13.4
18		0	13.4		0	5.5		0	13.4

NOTE: 1. In PA mode the PTT switch should be depressed when making measurements.

2. B: Base E: Emitter C: Collector

3. Operating Voltage: 13.8V DC

4. Unit: DC Volts



## FACTORY WARRANTY POLICY

The electronic equipment, manufactured by Pearce-Simpson, is warranted in accordance with the following terms and conditions:

### A. PEARCE-SIMPSON WILL:

Replace any defective part of this equipment during the year following purchase.

Repair, at our factory or Authorized Pearce-Simpson Service Station without charge, this equipment if a defect develops during the first year following purchase. (This repair service is free only at the factory or an Authorized Pearce-Simpson Service Station. No reimbursements can be made for repairs performed elsewhere).

### B. THE PURCHASER WILL:

Return the warranty registration card within 10 days of purchase.

Pay all transportation charges involved when equipment is returned for repair, provide information regarding nature of failure, and accept freight charges on repaired equipment returned from Authorized Pearce-Simpson Service Stations. Repaired equipment returned from the factory will be shipped at Pearce-Simpson's expense.

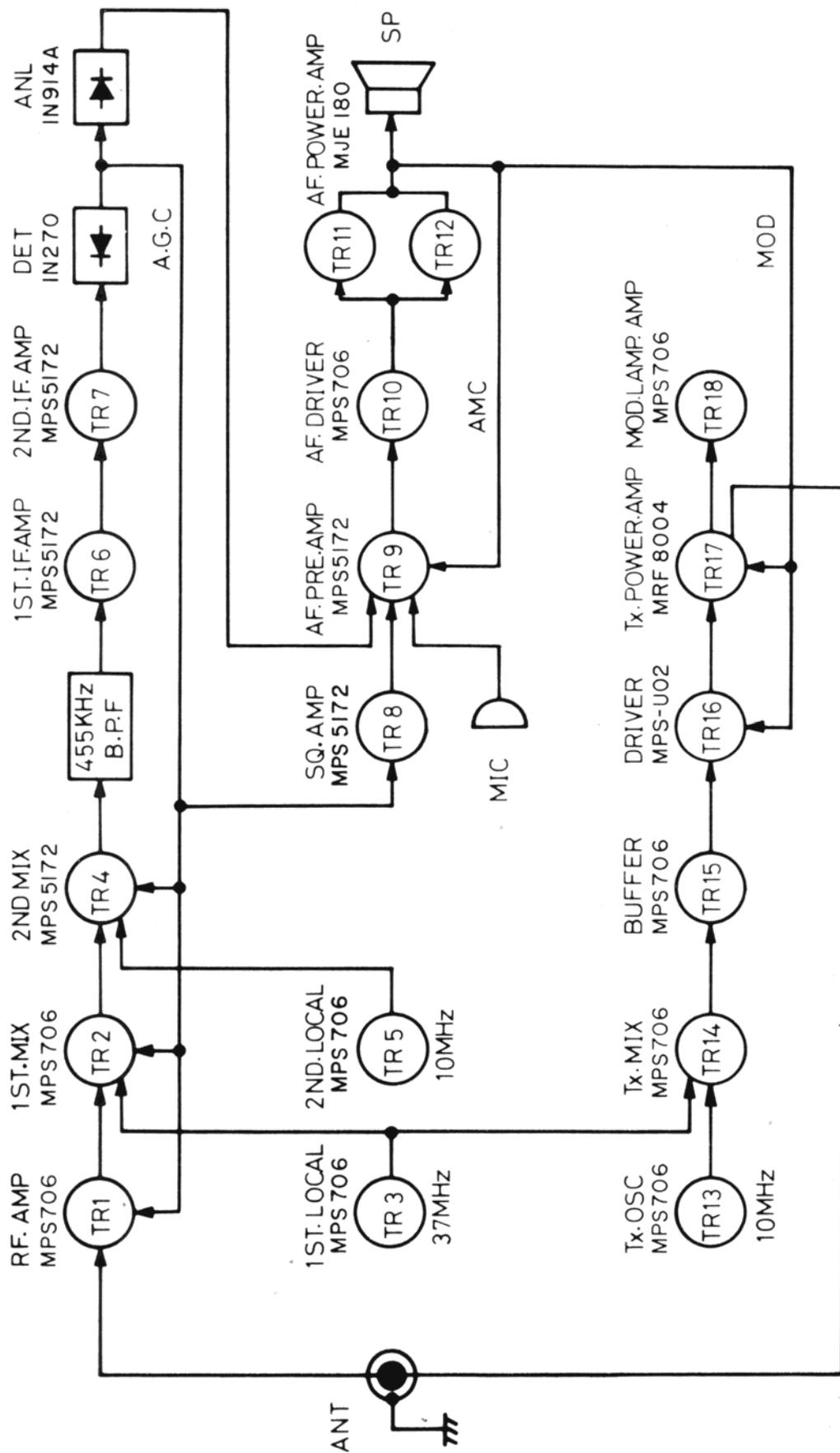
The above is void if equipment is modified without authorization, subjected to misuse, abuse, accident, water damage or other neglect, or has its serial number defaced or removed, or if more than 18 months have elapsed since factory shipment date to dealer.

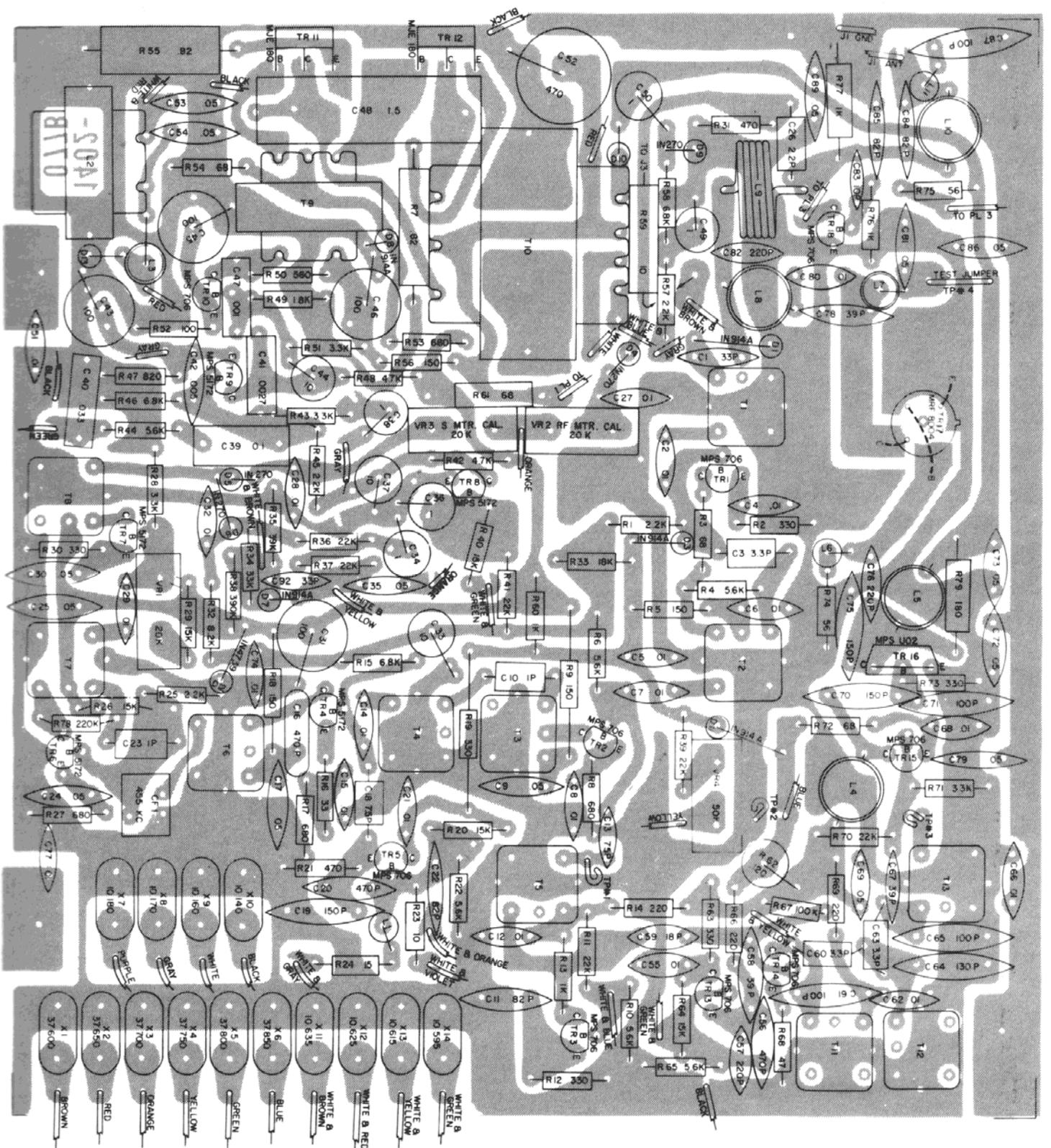
No obligation is assumed by Pearce-Simpson to update previously manufactured equipment.

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.

**PEARCE-SIMPSON**  
DIVISION OF **GLADDING** CORP.

# BLOCK DIAGRAM





011B  
S041  
1405-

- X1 BROWN
- X2 RED
- X3 ORANGE
- X4 YELLOW
- X5 GREEN
- X6 BLUE
- X7 WHITE & BROWN
- X8 WHITE & RED
- X9 WHITE & YELLOW
- X10 WHITE & BLACK
- X11 WHITE & GREEN
- X12 WHITE & BLUE
- X13 WHITE & ORANGE
- X14 WHITE & VIOLET

SYMBOL	DESCRIPTION	PART NUMBER
C1, 92	33PF, 500V, Disc, NPO	0411-095
C2, 4, 5, 6, 7, 8, 12, 14, 15, 21, 28, 29, 32, 51, 55, 62, 66, 68, 72, 74, 77, 80, 81	0.01 UF, 50V, Disc, Z5U	0401-032
C3, 60, 63	3.3PF, 500V, Tubular	0401-043
C9, 17, 24, 25, 30, 35, 53, 54, 69, 73, 79, 86, 89	0.05UF, 16V, Disc, Y5T	0401-059
C10, 23	1PF, 500V, Tubular	0401-041
C11, 22, 84, 85	82PF, 500V, Disc, N330	0401-090
C13, 18	7.5PF, 500V, Disc, NPO	0401-092
C16	470PF, 100V, Mica	0402-052
C20, 56	470PF, 500V, Disc, Y5S	0411-052
C19, 70, 75	150PF, 500V, Disc, N750	0411-091
C26	2.2PF, 500V, Tubular	0401-042
C27	0.1UF, 16V, Disc, Y5T	0411-072
C31	100UF, 16V, Electrolytic	0406-082
C33, 37, 44	10UF, 16V, Electrolytic	0406-084
C34, 36, 38, 49, 50	1UF, 40V, Electrolytic	0406-085
C39	0.1UF, 250V, Film	0404-021
C40	0.033UF, 250V, Film	0404-024
C41	0.002UF, 250V, Film	0404-035
C42	0.005UF, 500V, Disc, Z5U	0401-018
C43, 45, 46	100UF, 16V, Electrolytic	0406-086
C47	0.001UF, 250V, Film	0404-034
C48	1.5UF, 250V, Film	0404-030
C52	470UF, 16V, Electrolytic	0406-088
C57, 76, 82	220PF, 500V, Disc, Y5P	0411-103
C58, 67	39PF, 500V, Disc, NPO	0411-096
C59	18PF, 500V, Disc, NPO	0411-056
C61, 65, 71, 87, 88	100PF, 500V, Disc, N220	0411-093
C64	130PF, 500V	0411-100
C78	39PF, 500V, Disc, N2200	0411-085
C83	10PF, 500V, Disc, NPO	0411-061
R1, 25, 57	2.2K OHM, 0.25W, Carbon	2025-222
R2, 12, 19, 30, 63, 73	330, 0.25W, Carbon	2025-331
R3, 54, 72	68, 0.25W, Carbon	2025-680
R4, 6, 10, 22, 44, 65	5.6K OHM, 0.25W, Carbon	2025-562
R5, 9, 18, 56	150, 0.25W, Carbon	2025-151
R7, 55	0.82, 1W, Wirewound	2000-016
R8, 17, 27, 53	680, 0.25W, Carbon	2025-681
R11, 36, 37, 39, 41, 45, 70	22K OHM, 0.25W, Carbon	2025-223
R13, 60, 76	1K OHM, 0.25W, Carbon	2025-102
R14, 66, 69	220, 0.25W, Carbon	2025-221
R15, 46, 58	6.8K OHM, 0.25W, Carbon	2025-682
R16	33, 0.25W, Carbon	2025-330
R20, 26, 29, 40, 64	15K OHM, 0.25W, Carbon	2025-153
R21, 31	470, 0.25W, Carbon	2025-471
R23	10 OHM, 0.25W, Carbon	2025-100
R24	15 OHM, 0.25W, Carbon	2025-150
R28, 51, 71	3.3K OHM, 0.25W, Carbon	2025-332
R32	8.2K OHM, 0.25W, Carbon	2025-822
R33	18K OHM, 0.25W, Carbon	2025-183
R34, 43	33K OHM, 0.25W, Carbon	2025-333
R35	39K OHM, 0.25W, Carbon	2025-393
R38	390K OHM, 0.25W, Carbon	2025-394
R42, 48	4.7K OHM, 0.25W, Carbon	2025-472
R46	1.8K OHM, 0.25W, Carbon	2025-182
R47	820 OHM, 0.25W, Carbon	2025-821
R50	560, 0.25W, Carbon	2025-561
R52	100, 0.25W, Carbon	2025-101
R59	10, 2W, Carbon	2003-100
R61	68, 0.5W, Carbon	2001-680
R62	120, 2W, Carbon	2003-121
R67, 78	100K OHM, 0.25W, Carbon	2025-104
R68	47, 0.25W, Carbon	2025-470
R74, 75	56, 0.25W, Carbon	2025-560
R77	1K OHM, 0.5W, Carbon	2001-102
R79	180 OHM, 0.5W, Carbon	2001-181
TR-1, 2, 3, 5, 10, 13, 14, 15, 18	MPS 706	2904-033
TR-4, 6, 7, 8, 9	MPS 5172	2904-054

SYMBOL	DESCRIPTION	PART NUMBER
TR-11, 12	MJE 180	2904-057
TR-16	MPS U02	2904-058
TR-17	MRF 8004	2904-059
D-1, 3, 7, 8, 11	1N914A	2102-029
D-4, 5, 6, 9	1N270	2102-028
D-10, 13	1A, 200V PIV	2102-014
D-12	9.1V 1 Watt Zener	2102-032
L-1, 6, 11	RF Choke	1201-266
L-2	Choke Transformer	1202-174
L-3	RF Choke	1201-264
L-4, 8	4½ T Slug Tuned	1201-263
L-5, 10	2½ T Slug Tuned	1201-262
L-7	RF Choke	1201-265
L-9	Air Core Coil	1201-261
T-1	RX Ant Coil	1201-268
T-2	RF Amp Coil	1201-272
T-3, 4	10 MHz Coil	1201-238
T-5	37 MHz Coil	1201-267
T-6	455 KHz 1F Coil	1201-269
T-7	455 KHz 1F Coil	1201-270
T-8	455 KHz 1F Coil	1201-271
T-9	Audio Input Transformer	1202-175
T-10	Audio Output Transformer	1202-176
T-11, 12, 13	27 MHz 1F Coil	1201-273
VR-1,2,3	20K OHM, Trimmer	2008-083
VR-4	50K OHM, Trimmer	2008-086
VR-5	5K OHM, 0.25W, Linear Taper Pot	2008-085
VR-6	10K OHM, 0.25W, Audio Taper Pot w/switch	2008-084
X-1	37.600 MHz Crystal	0528-009
X-2	37.650 MHz Crystal	0528-010
X-3	37.700 MHz Crystal	0528-011
X-4	37.750 MHz Crystal	0528-012
X-5	37.800 MHz Crystal	0528-013
X-6	37.850 MHz Crystal	0528-014
X-7	10.180 MHz Crystal	0528-004
X-8	10.170 MHz Crystal	0528-003
X-9	10.160 MHz Crystal	0528-002
X-10	10.140 MHz Crystal	0528-001
X-11	10.635 MHz Crystal	0528-008
X-12	10.625 MHz Crystal	0528-007
X-13	10.615 MHz Crystal	0528-006
X-14	10.595 MHz Crystal	0528-005

### MISCELLANEOUS PARTS

DESCRIPTION	PART NUMBER
Ceramic Filter	0516-003
Crystal Socket	2301-084
Slide Switch	2701-107
Channel Switch	2701-108
Speaker	2501-026
S/RF Meter	3701-014
Antenna Connector	2303-004
Microphone Plug	2304-050
Microphone Jack	2303-052
DC Power Receptacle	2304-049
DC Power Cord Assy.	2601-138
Pilot Lamp 14V 40mA, Clear	1801-030
Pilot Lamp 14V 40mA, Amber	1801-031
Pilot Lamp 4.5V 40mA, Red	1801-032
Microphone Assembly	1601-032
Front Panel, Molded	1511-138
Top Cover	1510-072
Bottom Cover	1510-073
Mounting Cradle	1506-181
Channel Selector Knob	1301-069
Power On-Off/Volume Control Knob	1301-068
Squelch Control Knob	1301-068
Name Plate, Woodgrain	1511-142
Control Decorative	1511-143
Thumb Screw For Mounting Cradle	1103-154
Receive-O-Slide Switch	2701-109

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