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# Pearce Simpson Tomcat 23 Owners Manual

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# SECTION 1 GENERAL INFORMATION

#### DESCRIPTION

Your new PEARCE-SIMPSON TOMCAT 23 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 negative ground DC power source. A 12 VDC power cord and a mounting cradle are included with your TOMCAT 23. To provide the crystal-controlled, 23 channel operation, PEARCE-SIMPSON utilizes an all-transistor HetroSync<sup>R</sup> circuit.

The receiver is a sensitive superheterodyne circuit featuring: Dual conversion, low noise RF stage, adjustable squelch, built in 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. The transmitter final is a conservatively rated high gain RF power transistor.

### SPECIFICATIONS

#### GENERAL :

Channels: 23 Crystal-Controlled Size: 5-7/8" Wide × 2-1/4" High × 8-1/2" Deep Weight: 3 Pounds Antenna: 52-Ohm Coaxial Primary Power: Input Voltage-13.8 VDC (EIA Standard)

#### TRANSISTOR COMPLEMENT:

TR-1	2SC394	: RF Amplifier
TR-2	2SC394	: 1st Receiver Mixer
TR-3	2SC372	: 2nd Receiver Mixer
TR-4	2SC372	: 2nd I.F1
TR-5	2SC372	: 2nd I.F2
TR-6	2SC372	: AF Amplifier
TR-7	2SC733	: AF Driver
TR-8,9	2SC1173	: AF Power Amplifier
TR-10	2SC372	: 23 MHz. Local
TR-11	2SC372	: Mixer
TR-12	2SC372	: 2nd Local Oscillator
TR-13	2SC373	: Squelch Amplifier
TR-14	2SC372	: Mike Amplifier
TR-15	2SC372	: 14 MHz. Local Oscillator
TR-16	2SC372	: 11 MHz. Local Oscillator
TR-17	2SC372	: Transmitter Mixer
TR-18	2SC756	: RF Final
TR-19	2SC1226	: RF Driver
TR-20	2SC735	: Transmitter Buffer

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#### **DIODE COMPLEMENT:**

D-1	CD37A	: RF Amp. (TR-1) Protector
D-2	CD37	: RF Amp. (TR-1) Protector & Switching
D-3	1N60	: A.G.C.
D-4,5	1N60	: Signal Detector
D-6	CD37	: A.N.L.
D-7	CD37	: Varistor
D-8	BZ090	: Voltage Regulator
D-9	SR1K-1	: Receiver Signal Protector
D-10	1N60	: RF Signal (Transmitter)
D-11	1N60	: RF Signal (Receiver)
D-12	SR1K-1	: Polarity 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 4 KHz
	40 db band width 20 KHz.
Cross Modulation	: 75 db for 10 #V desired
Spurious Rejection	: 60 db minimum
Adjacent Channel Rejection	: 50 db minimum
Squelch Range	: Adjustable from 0.5 #V – 1,000 #V
Automatic Noise Limiter	: Built in
1st I.F. Frequency	: 10 MHz. for center frequency
2nd I.F. Frequency	: 455 KHz.
P.A. Maximum Audio Output Powe	r : 5W
Audio Output Power at 10% T.H.D	
Speaker	: 3-5/8″

#### **TRANSMITTER:**

Frequency Range Carrier Frequency Stability	: 26.965 MHz. – 27.255 MHz. : 0.003%, –30°C to +65°C
•	: 3.5W into 52 ohm with 13.8 V
Output Power	: 3.5W INTO 52 ONIT WITH 13.0 V
	DC power supply
Modulation Capability	: 100%
Spurious & Harmonics Suppressio	n : 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	mc/s	Channel	mc/s	Channel	mc/s
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 MA-TERIALS, 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 TOMCAT 23 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 TOMCAT 23, 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 TOMCAT 23 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 power lead is to be connected to the positive terminal of the battery. The black lead is to be connected to ground. (The radio is reverse polarity protected. If you make a mistake in connecting the power leads, the radio will not be damaged. It will be inoperative until the power is connected correctly.) If existing wiring is used, be sure that it is heavy enough to prevent voltage drop to the radio. A good source of positive 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

#### ANTENNAS

Your TOMCAT 23 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.

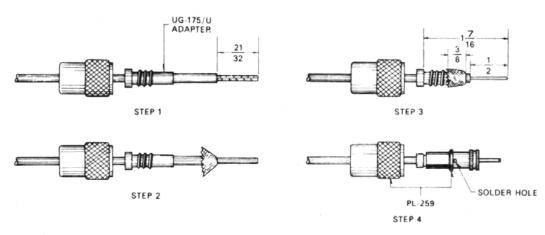
For an automobile installation, a whip may be used with good efficiency because the automobile acts as a counterpoise and reduces detuning effects. The mounting location also has a great effect on the efficiency. The most efficient and practical installation is a full quarter wave whip mounted on the left rear deck of fender top midway between the rear window and bumber.

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 %" COAXIAL CABLE



#### 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 TOMCAT 23 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 TOMCAT 23 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.

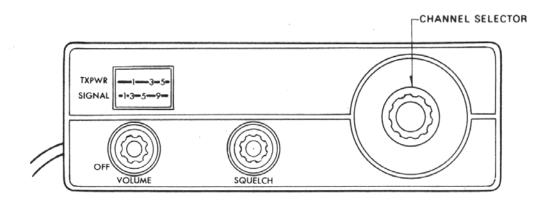
#### NOISE SUPPRESSION

The TOMCAT 23 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

There are three controls and one indicator on the front panel of your TOMCAT 23. (See Figure 2).





#### CHANNEL SELECTOR

The Channel Selector Switch has 23 operating positions. This switch sets both transmit and receive frequenceis simultaneously by switching the proper crystals into the PEARCE-SIPSON HetroSync<sup>R</sup> 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 TOMCAT 23 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.

# **OPERATING THE TOMCAT 23**

#### 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 TOMCAT 23 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, then when a station transmits on the channel to which your TOMCAT 23 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 Pushto-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.

# SECTION 4 MAINTENANCE & SERVICING

# HETROSYNC<sup>R</sup> CIRCUIT

PEARCE-SIMPSON's method of frequency synthesis makes to use of 12 crystals to provide crystal controlled 23 channel coverage on both transmit and receive function. The circuit is composed of 23 MHz. local oscillator (TR10: 23.290 to 23.540 MHz.), 14 MHz. local oscillator (TR15: 14.950 to 14.990 MHz.), 11 MHz. receiver oscillator (TR12) and 11 MHz. transmitter oscillator (TR16). These crystals are related each together to make the proper frequencies. For example, let us take Channel 9. To make channel 9 (27.065 MHz.) is used crystal of 11.275 MHz., 14.950 MHz. and 23.390 MHz. Namely, channel 9 frequency as the mixer output is made by the calculation of 23.390 MHz. + 14.950 MHz. - 11.275 MHz.

On the other hand, to make 2nd I.F. (455 KHz.) is used crystal of 11.730 MHz. instead of 11.275 MHz. Namely, is made by the calculation of 27.065 MHz. – 26.610 MHz. (23.390 + 14.950 – 11.730 MHz.)

#### TRANSMITTER CIRCUIT

The output carrier frequency of the mixer is made from the above mentioned theory. The signal is amplified by the buffer (TR20) which is a voltage amplifier, which output is fed into the RF Driver (TR19). Band-pass Transformer (TR15, TR16 & TR17) provide the selectivity to select the desired carrier frequency from the mixer output.

The driver is a low level Class C power amplifier which supplies the necessary RF power to drive the final RF power amplifier (TR18). The final RF output power is supplied to the antenna through a double pi-matching networks.

The function of the modulator is to put the intelligence on the carrier. To do this, the microphone changes the sound to electrical energy which is an audio frequency signal. This signal is amplified by Mic Amplifier (TR14) and Audio Driver (TR7), and is drived to Audio Power Amplifier (TR8 & TR9). 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 the amplitude modulation.

#### RECEIVER CIRCUIT

The receiver in the Tomcat 23 is a dual conversion superheterodyne circuit. For example, let us take Channel 9 (27.065 MHz.) to show the receiver circuit works. A signal of 27.065 MHz. is catched at the antenna and amplified by RF Amplifier (TR1). The signal (27.065 MHz.) is mixed with the signal (26.610 MHz.) which is made by TR10, TR15 and TR12. The 455 KHz. of 2nd I.F. output from the 2nd receiver mixer is amplified by I.F. amplifiers (TR4 & TR5). Then, the signal is detected by signal detector diode (D4 & D5) to remove the audio signal from I.F. carrier. The audio is coupled from the detector through A.N.L. network to the 1st Audio Amplifier (TR6) which also acts as a squelch gate, If the squelch control has been properly adjusted, this amplifier is biased off and will reject any noise. When the signal is received, the amplifier is biased on and the audio signal is allowed to pass to the Audio Driver (TR7). TR7 in turn, feeds the audio signal to the Audio Amplifier (TR8 & TR9) which drives the speaker.

# SECTION 5 REPLACEMENT PARTS

#### CAPACITORS

SYMBOL C-11 C-19,45,46,76 C-4,17,47,74 C-40,75 C-49 C-68 C-1,90 C-43,67,85,98,102 C-23,39,70,73,84,95 C-8,71,99 C-48,62,65,87 C-50,61,64 C-14 C-26 C-31,57,59,104,105,106 C-2,3,5,6,9,24,41,42,44,51, 54,63,66,69,72,78,83,89,91, 101 C-10,15,18,86,88,92,93,96,97, 100,103 C-77 C-58 C-16,21,36,37 C-33,38,60 C-81,82 C-7,12,13,20 C-27,28,29,52,79 C-25,32,53,56 C-22 C-30,34 C-80

C-94

C-35,55

DESCRIPTION

1 pF 50VDC Disc 2 pF 50VDC Disc 3 pF 50VDC Disc 5 pF 50VDC Disc 10 pF 50VDC Disc 25 pF 50VDC Disc 33 pF 50VDC Disc 47 pF 50VDC Disc 100 pF 50VDC Disc 150 pF 50VDC Disc 220 pF 50VDC Disc 250 pF 50VDC Disc 470 pF 50VDC Disc 500 pF 50VDC N1200 Disc 0.002 #F 50VDC Disc 0.005 #F 50VDC Disc 0.01 #F 50VDC Disc

0.04 #F 50VDC Disc

0.1 #F 12VDC Disc 0.001 #F 50VDC Mylar 0.04 #F 50VDC Mylar 0.1 #F 50VDC Mylar 0.2 #F 50VDC Mylar 0.01 #F 50VDC Mylar 1 #F 16VDC Electrolytic 10 *µ*F 10VDC Electrolytic 47 #F 10VDC Electrolytic 100 #F 10VDC Electrolytic 470 #F 16VDC Electrolytic 100 #F 16VDC Electrolytic

#### RESISTORS

SYMBOL

R-5,76 R-36 R-34,41,42,46,50,64,68,78 R-3,8,11,37 R-60,63,67,72 R-2 R-47 R-14,17,77 R-7,10,29,35,43,56,73 R-55 R-1,12 R-53 R-30,54,57 R-6,15,28,31,40,48,58,62,66 R-9,19 R-4,44,70,79 R-49,61,65 R-18,27,33,59 R-20,39,52 R-21,51,80 R-16,45,69 R-13/ R-22,24,25 R-32 R-23 R-71 R-74 R-75 R-81 R-38

#### DESCRIPTION

56 Ohm 1/4W Carbon 68 Ohm 1/4W Carbon 100 Ohm 1/4W Carbon 150 Ohm 1/4W Carbon 220 Ohm 1/4W Carbon 330 Ohm 1/4W Carbon 470 Ohm 1/4W Carbon 680 Ohm 1/4W Carbon 1K Ohm 1/4W Carbon 1.5K Ohm 1/4W Carbon 2.2K Ohm 1/4W Carbon 3.9K Ohm 1/4W Carbon 4.7K Ohm 1/4W Carbon 5.6K Ohm 1/4W Carbon 6.8K Ohm 1/4W Carbon 10K Ohm 1/4W Carbon 15K Ohm 1/4W Carbon 22K Ohm 1/4W Carbon 33K Ohm 1/4W Carbon 39K Ohm 1/4W Carbon 47K Ohm 1/4W Carbon 27K Ohm 1/4W Carbon 100K Ohm 1/4W Carbon 220K Ohm 1/4W Carbon 470K Ohm 1/4W Carbon 47 Ohm 1/4W Carbon 100 Ohm 1/2W Solid 1K Ohm 1/2W Solid 12 Ohm 2W Metal 0.5 Ohm 1/2W Metal

#### SEMICONDUCTORS

SYMBOL

TR-1,2 TR-3,4,5,12 TR-10,11,15,16,17 TR-6,14 TR-7 TR-8,9 TR-13 TR-18 TR-19 TR-20 D-1 D-2,6,7 D-3,4,5,10,11 D-8 D-9,12

#### INDUCTANCE

#### SYMBOL

L-1
L-2,3,11
L-4
L-5,6
L-7
L-8
L-9
L-10
L-12
L-13

#### TRANSFORMERS

SYMBOL	DESCRIPTION
T-1	TKXN-22160BU RX Antenna
T-2	TKXC-22534BU RX RF Amplifier
T-3	TKAC-22536IE 1 st I.F.
T-4	TKAC-21165A 1st I.F.
T-5	YLN-20844BM 2nd I.F.
T-6,7	YMC-20845AC 2nd I.F.
T-8 ·	YMC-20846AC 2nd I.F.
T-9	69M AF Input
T-10	N28-7518 BM AF Output
T-11	KXC-23169F 23 MHz. OSC

#### DESCRIPTION

2SC394 (Y)
2SC372 (O) or 839 (F) or 380 (O)
2SC372 (O)
2SC372 (Y) or 945 (R) or 380 (Y)
2SC733 (Y)
2SC1173 (Y)
2SC373
2SC756-2-4
2SC1226A (P)
2SC735 (O)
CD37A
CD37
1N60
BZ-090, Zenor
SR1K-1

#### DESCRIPTION

TC-71096 14 MHz. Trap Coil LF4 2R2K Micro Inductor 115C Line Filter Choke TC-71095 Power RF Choke TC-71024 TVI Trap NS-1344 Antenna Filter TC-71025 TX Matching TC-71029 TX Final TC-71023 TX Driver TC-71026 TX Pre-Driver

# TRANSFORMERS (Continued)

SYMBOL	DESCRIPTION
T-12,13	KXC-23170Z 38 MHz. Filter
T-14	TKXC-22535BM 38 MHz. Filter
T-15,16	KXN-13638HM TX 27 MHz. Filter
T-17	KXN-13636BM TX 27 MHz. Filter

#### VARIABLE RESISTORS

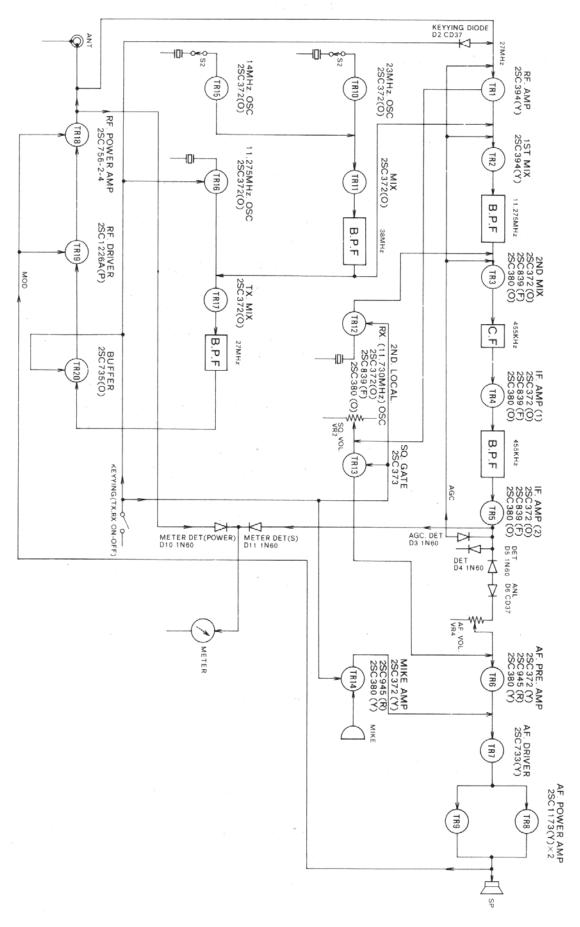
SYMBOL	DESCRIPTION
VR-1	30K Ohm 2P6BM Semi-fixed
VR-1	50K Ohm B 16¢ Variable
VR-3	50K Ohm 2P6BM Semi-fixed
VR-4	10K Ohm A 16¢ W/Switch Variable
VR-6,7	20K Ohm 2P6BM Semi-fixed

#### CRYSTALS

SYMBOL	DESCRIPTION
X-1	23.290 MHz. HC-25/U
X-2	23.340 MHz. HC-25/U
X-3	23.390 MHz. HC-25/U
X-4	23.440 MHz. HC-25/U
X-5	23.490 MHz. HC-25/U
X-6	23.540 MHz. HC-25/U
X-7	14.950 MHz. HC-25/U
X-8	14.960 MHz. HC-25/U
X-9	14.970 MHz. HC-25/U
X-10	14.990 MHz. HC-25/U
X-11	11.275 MHz. HC-25/U
X-12	11.730 MHz. HC-25/U

# MISCELLANEOUS PARTS

SYMBOL	DESCRIPTION
CF	LF-A6 Ceramic Filter
J-1	Ext. Antenna Connector
J-3	SJ-296 Ext. Speaker Jack
M	A-11 Meter
TP-3,4	T-41 & N-60 Test Terminal
- F	1.5 Amp. Fuse
	RF-104 Fuse Holder
	S-DO105 Crystal Socket
	92-62D 8 Ohm 1W Speaker
	1-2-24, 4\$32C000-A Rotary Switch
	22-115-50 Microphone
	12-42438-01 Microphone Hanger
	14V 50 mA Pilot Lamp (Blank)
	SR-3P-4 Strain Relief Bushing
	DC Power Cord Complete
	Printed Circuit Board
	Metal Cabinet (top)
	Metal Cabinet (bottom)
	Rubber Washer for Bracket
	Screw for Bracket
	Heat-sink
	Front Panel (ABS)
	Channel Disk
	Channel Knob
	Volume & Squelch Knob
	FCC Plate
	Mike Plate
	Brand Plate
	Control Plate
	Instruction Book
	Display Box
	Styrofoam Box
	Warranty Card
	FCC Application Form



TOMCAT23 BLOCK DIAGRAM

# FACTORY WARRANTY POLICY

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 9 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.

# PEARCE-SIMPSON DIVISION OF GLADDING CORP.



**Other Gladding Outdoor Recreation Products Include:** Gladding-Hedlund Water Skis; Gladding-Kalamazoo Sleds; Del-Rey Campers and Recreational Vehicles; Gladding-Ranger Sleeping Bags, Bowling, School, Club and Utility Bags; Gladding-South Bend Fishing Tackle; H-I Fishing Tackle; Gladding-Fishing Lines; Gladding-Marine Ropes and Cords; Pearce-Simpson Marine Communications Equipment; Del-Rey Campers and Travel Trailers; Omega Motor Homes and Travel Trailers; Aqua-Float Life Vests, Life Belts and Ring Buoys; Claricon Home Stereo Sets; Carter Sportswear and Outer Clothing.