PEARCE-SIMPSON
DIVISION OF GLADDING CORPORATION

COUGAR 23

SECTION 1
GENERAL INFORMATION

DESCRIPTION

Your new PEARCE-SIMPSON COUGAR 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 VDC power source, either negative or positive. A 12 VDC power cord and a mounting cradle are included with your Cougar 23. To provide the crystal-controlled, 23-channel operation, PEARCE-SIMPSON utilizes an all-transistor HetroSync^{R} circuit.

The receiver is a sensitive superheterodyne circuit featuring: Dual conversion, low noise RF stage, delta tune, 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^{R} 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 : 7⅛ "Wide × 2⅜ "High × 8¼ "Deep.
Weight : 4.4 Pounds
Antenna : 52-ohm Coaxial
Primary Power : Input Voltage — 13.8 VDC (EIA Standard)

TRANSISTOR COMPLEMENT:

TR-1	2SC372	Noise Blanker Pulse Amplifier
TR-2	2SC372	Noise Blanker Pules Amplifier
TR-3	2SC839	1st IF Amplifier
TR-4	2SC372	23MHz. Oscillator
TR-5	2SC372	Oscillator Mixer
TR-6	2SC372	14MHz. Oscillator
TR-7	2SC372	2nd Local
TR-8	2SC372	IF Amplifier
TR-9	2SC372	Receiver Audio
TR-10	2SC372	Squelch
TR-11	2SC372	Squelch
TR-12	2SC372	Transmitter Audio Amplifier

TR-13	2SC735	Audio Driver
TR-14	2SD130	Audio Power Amplifier
TR-15	2SD130	Audio Power Amplifier
TR-16	2SC372	Transmitter Oscillator
TR-17	2SC372	Transmitter Oscillator Mixer
TR-18	2SC478	Transmitter Amplifier
TR-19	2SC696	Transmitter Driver
TR-20	2SC799	Transmitter Final
FET-1	2SK19	RF Amplifier
IC-1	TA-7027M	Noise Amplifier
IC-2	TA-7045M	IF Amplifier

DIODE COMPLEMENT:

D-1	SD-46	Noise Detector
D-2	SD-46	Protector
D-3	SD-46	Limiter
D-4	SD-46	Limiter
D-5	IN-60P	Mixer & Noise Gate
D-6	IN-60P	Mixer & Noise Gate
D-7	SD-46	AGC Detector
D-8	WG-1012	Detector
D-9	SD-46	S-Meter Detector
D-10	SD-46	RF Power Meter Detector
D-11	SD-46	ANL Gate
D-12	SD-46	Squelch Gate
D-13	IN756A	RX Voltage Regulator
D-14	SD-46	AMC Detector
D-15	VO-3C	Polarity Protector
D-16	M8513R	Temperature Compensator
D-17	IN-60P	SWR Detector
D-18	IN-60P	SWR Detector
D-19	SD-46	RF Power Meter Detector

RECEIVER:

Frequency Range	: 26.965 MHz — 27.255 MHz
Sensitivity	: 0.3μV 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	: 11.275 MHz
2nd I.F. Frequency	: 455 KHz
P.A. Maximum Audio Output Power	: 5 W
Speaker	: 3⅝"

TRANSMITTER:

Frequency Range	: 26.965 MHz – 27.255 MHz
Carrier Frequency Stability	: 0.003%, –30° C to + 65° C
Output Power	: 3.2 W into 52 ohm with 13.8 VDC power supply
Modulation Capability	: 100%
Spurious Harmonic Suppression	: 55dB 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 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 COUGAR 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 COUGAR 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 COUGAR 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 COUGAR 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.

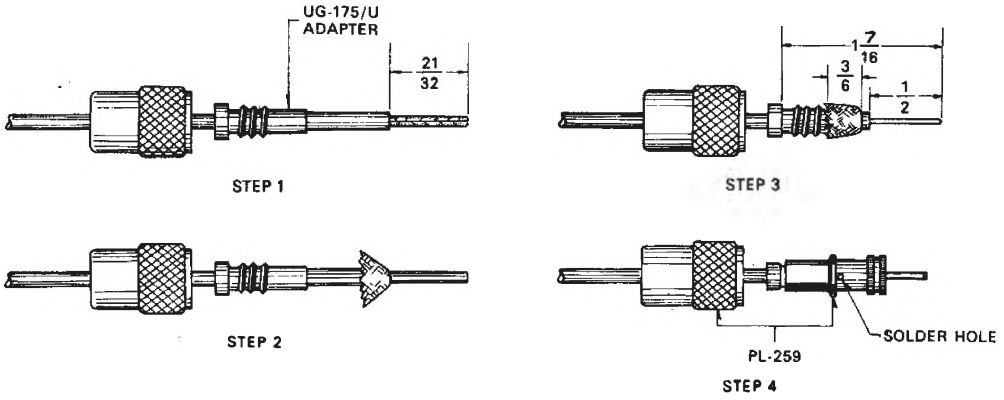
The most efficient and practical installation is a full quarter wave whip mounted on the left rear deck of fender top midway between the rear window and bumper.

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 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 COUGAR 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 COUGAR 23 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

There are five controls and two indicators on the front panel of your COUGAR 23. (See Figure 2).

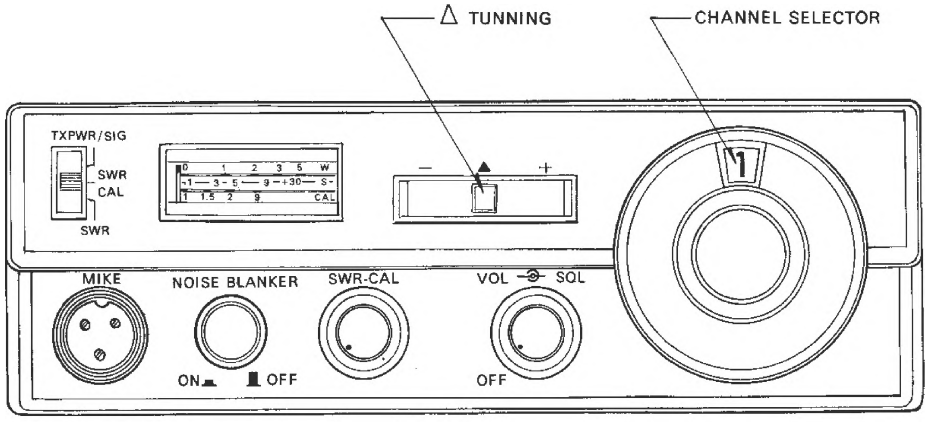


Figure 2

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^{R} 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 COUGAR 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.

NOISE BLANKER

The noise blanker is designed to reduce excessive noise such as electrical interference, ignition noise, etc. To operate, simply push in the button. To turn off, push it again.

DELTA TUNE

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

SWR SENSITIVITY CONTROL

This control is installed to adjust the sensitivity of SWR-FORWARD meter. Connect antenna, and turn on the power switch. Then, press the microphone button and adjust the SWR-CAL control so that the needle on the meter comes to "CAL" point. Set the slide switch to "SWR-CAL" position in the middle. 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 slide switch to "TX PWR/SIG" 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 the slide 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 23 consists of the following circuits: the PEARCE-SIMPSON HetroSync^{R} 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^{R} CIRCUIT

PEARCE-SIMPSON's method of frequency synthesis makes use of 12 crystals to provide crystal-controlled, 23 channel coverage on both transmit and receive functions. The circuit is composed of 38.240 to 38.530 mc master oscillator (TR5), 11.730 mc receive oscillator (TR7) 11.275 mc transmit oscillator (TR16) and a transmit mixer (TR17). In the transmit function, the output of the master oscillator (TR5) and the transmit oscillator (TR16) are fed into the transmit mixer (TR17). 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 38.340 mc and 11.275 mc. The mixer outputs are 38.340

mc, 11.275 mc, 49.615 mc and 27.065 mc. The other frequencies present at much lower levels are the harmonics of the two input frequencies such as 22.550 mc, 33.825 mc, 45.100 mc 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 mc which is the carrier frequency for Channel 9. The nearest unwanted frequency to the carrier frequency is at least 0.955 mc 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(TR17), which is part of the HetroSync® circuit. The signal is amplified by the buffer(TR18), which is a voltage amplifier, whose output is fed to the driver(TR19). Bandpass transformers L11 through L13 provide the selectivity to select the desired carrier frequency from the mixer(TR17) 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(TR20). 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(TR12) and transmit audio amplifier(TR13) amplify the signal and drive the audio power amplifier(TR14 & TR15). 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 23 is a dual conversion superheterodyne circuit. Channel 9 (27.065 mc) will be used as an example to show how the receiver circuit works. A signal at 27.065 mc is received at the antenna and amplified by RF amplifier(FET-1) and fed into 1st receiver mixer(TR3). The 27.065 mc signal is mixed with 38.340 mc injection from the HetroSync® circuit. The 11.275 mc 1st IF output from the 1st receiver mixer is fed into the 2nd receiver mixer(TR7) along with the 11.730 mc injection from the HetroSync® circuit. The 455 kc 2nd IF output from the 2nd receiver mixer is amplified by the IF amplifiers TR8 and IC2. Then, the signal is detected by detector diode D8 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 receiver amplifier TR13. TR13 in turn, feeds the audio to the audio power amplifier(TR13 & TR14) which drives the speaker.

SECTION 5
REPLACEMENT PARTS

CAPACITORS

SYMBOL	DESCRIPTION
C-1,36,39	50 pF 50VDC Disc
C-2,5,6	0.1 µF 12VDC Disc
C-3,4,9,68	0.04 µF 25VDC Disc
C-7	150 pF 50VDC Disc
C-8	0.05 µF 25VDC Disc
C-10	0.02 µF 25VDC Disc
C-11	100 pF 50VDC Disc
C-12,46	1,000 pF 25VDC Styrol
C-13,74,104	500 pF 50VDC Disc
C-14,31,60,65,114,116,121	100 pF 50VDC Disc
C-15,17,19,21,22,23,24,35 37,47,51,54,55,63,66,70, 84,86,90,99,106,110,112, 119,124,126,135	0.01 µF 50VDC Mylar
C-16,38,40,43	1.5 pF 50VDC Disc
C-18,75,76,80,83,85,89,102, 127,132,134,136	0.1 µF 35VDC Mylar
C-20	20 pF 50VDC Disc
C-25	40 pF 50VDC Disc
C-26,28,41,62,103,143	30 pF 50VDC Disc
C-27,59	200 pF 50VDC Disc
C-29,34,107,108	60 pF 50VDC Disc
C-30	35 pF 50VDC Disc
C-32	6 pF 50VDC Disc
C-33,53	0.001 µF 35VDC Mylar
C-42,64,81,82,117,131	0.04 µF 50VDC Mylar
C-44,58	10 pF 50VDC Disc
C-45	15 pF 50VDC Disc
C-48	10 µF 10VDC Electrolytic
C-49,72,73,	1 µF 6VDC Electrolytic
C-50,95,96	10 µF 6VDC Electrolytic
C-52,56,71,101,120	0.02 µF 50VDC Mylar
C-57,61	80 pF 50VDC Disc
C-67	4.7 µF 6VDC Electrolytic
C-69	0.1 µF 6VDC Electrolytic
C-78,87,91	100 µF 6VDC Electrolytic
C-79,97,125	30 µF 15VDC Electrolytic
C-77	0.005 µF 35VDC Mylar
C-88,98	50 µF 15VDC Electrolytic
C-92	100 µF 15VDC Electrolytic
C-93,94,130	0.03 µF 50VDC Mylar
C-100	1,000 µF 15VDC Electrolytic
C-105	5 pF 50VDC Disc
C-109	70 pF 50VDC Disc
C-113,115	3 pF 50VDC Disc

REPLACEMENT PARTS

CAPACITORS

SYMBOL	DESCRIPTION
C-111,118	150 pF 50VDC Disc
C-122	680 pF 50VDC Disc
C-123,138,139	300 pF 50VDC Disc
C-128,129	200 pF 50VDC Disc
C-133	12 pF 50VDC Disc
C-137	250 pF 50VDC Disc
C-140	1 pF 50VDC Disc
C-141,142	0.01 μF 25VDC Disc

RESISTORS

SYMBOL	DESCRIPTION
R-1,35,36,62,67,75	5.6K Ohms, 1/4Watt
R-2,87	330 Ohms, 1/4Watt
R-3,4,8,70,103	10K Ohms, 1/4Watt
R-5,48,93	15K Ohms, 1/4Watt
R-6,12,41,72	100K Ohms, 1/4Watt
R-7,31	680 Ohms, 1/4Watt
R-9,38,39,66,74	2.2K Ohms, 1/4Watt
R10	82K Ohms, 1/4Watt
R-11	8.2K Ohms, 1/4Watt
R-13,46,50,59,77,91	100 Ohms, 1/4Watt
R-14	33 Ohms, 1/4Watt
R-15,30	3.3K Ohms, 1/4Watt
R-16	560 Ohms, 1/4Watt
R-17,21,32,45,71,89	4.7K Ohms, 1/4Watt
R-18	18K Ohms, 1/4Watt
R-19,23,27,43	220 Ohms, 1/4Watt
R-20,29,40,42,49,64,65,69, 73,88	1K Ohm, 1/4Watt
R-22,34,44,90	22K Ohms, 1/4Watt
R-24,94	47 Ohms, 1/4Watt
R-25,80,85	1.2K Ohms, 1/4Watt
R-26,61,86	6.8K Ohms, 1/4Watt
R-28,33	1.5K Ohms, 1/4Watt
R-37,76	33K Ohms, 1/4Watt
R-47	68K Ohms, 1/4Watt
R-51,55,101	4.7K Ohms, 1/4Watt
R-52	3.3 K Ohms, 1/4Watt
R-53	10K Ohms, 1/4Watt
R-54,56	5.6K Ohms, 1/4Watt
R-57	270K Ohms, 1/4Watt
R-58	100K Ohms, 1/4Watt
R-63	56K Ohms, 1/4Watt

REPLACEMENT PARTS

RESISTORS

SYMBOL	DESCRIPTION
R-68	39K Ohms, 1/4Watt
R-78	56 Ohms, 1/4Watt
R-79,95,98	150 Ohms, 1/4Watt
R-81	1 Ohm, 1/2Watt
R-82	5 Ohms, 1/2Watt
R-83	10 Ohms, 1/2Watt
R-92	2.7K Ohms, 1/4Watt
R-96	220 Ohms, 1/2Watt
R-97	2.2 Ohms, 1/4Watt
R-99	6.8 Ohms, 1/4Watt
R-100	56 Ohms, 1/4Watt
R-102	27K Ohms, 1/4Watt

SEMICONDUCTORS

SYMBOL	DESCRIPTION
TR-1,2	2SC372 Noise Blanker Pluse Amplifier
TR-3	2SC839 1st IF Amplifier
TR-4	2SC372 23 MHz. Oscillator
TR-5	2SC372 Oscillator Mixer
TR-6	2SC372 14 MHz. Oscillator
TR-7	2SC372 2nd Local
TR-8	2SC372 IF Amplifier
TR-9	2SC372 Receiver Audio
TR-10,11	2SC372 Squelch
TR-12	2SC372 Transmit Audio Amplifier
TR-13	2SC735 Audio Driver
TR-14,15	2SD130 Audio Power Amplifier
TR-16	2SC372 Transmit Oscillator
TR-17	2SC372 Transmit Oscillator Mixer
TR-18	2SC478 Transmit Amplifier
TR-19	2SC696 Transmit Driver
TR-20	2SC799 Transmit Final
FET-1	2SK19 Noise Amplifier
IC-1	TA-7027M Noise Amplifier
IC-2	TA-7045M IF Amplifier
D-1	SD-46 Noise Detector
D-2	SD-46 Protector
D-3,4	SD-46 Limiter
D-5,6	1N-60P Mixer & Noise Gate
D-7	SD-46 AGC Detector
D-8	WG-1012 Detector
D-9	SD-46 S Meter Detector
D-10	SD-46 RF Power Meter Detector
D-11	SD-46 ANL Gate
D-12	SD-46 X Squelch Gate

REPLACEMENT PARTS

DIODES

SYMBOL	DESCRIPTION
D-13	1N756A Receiving Voltage Regulator
D-14	SD-46 AMC Detector
D-15	VO-3C Polarity Protector
D-16	M8513R Temperature Compensator
D-17,18	1N-60P SWR Detector
D-19	SD-46 RF Power Meter Detector

INDUCTANCE

SYMBOL	DESCRIPTION
L-1,2	TKX-14299A Noise Amplifier
L-3	KXN-13637BC Receiving Antenna
L-4	KXN-6710A Receiving RF
L-5	NB711-F83 23 MHz. Oscillator
L-6	NB711-F82 14 MHz. Oscillator
L-7,8,11,12	KXN-13638HM Oscillator Mixer
L-9,13	KXN-13636BM Oscillator Mixer
L-10	KAN-7376BM2 Transmitting Oscillator
L-14	NY10-B33 Transmitting Amplifier
L-15	LF4-2R2 Micro Inductor
L-16	NB711-F81 Transmitting Driver
L-17	LF4-3R3 Micro Inductor
L-18	NP-401 Transmitting Final
L-19	NS-1344 Transmitting Filter
L-20,21	NS-1313 Transmitting Filter
L-22	TVI Trap 3.5 t
L-23	KAN-7376BM2 Receiving 2nd Oscillator
L-24	NS-1373 RF
L-25	N-0235 RF
L-26	NS-1041 RF

TRANSFORMERS

SYMBOL	DESCRIPTION
T-1	KAC-6184A I.F.
T-2	TKAC-14294ZPX I.F.
T-3	MFH-52T Ceramic Filter
T-4	YXE-10857AIA Filter Matching
T-5	YMC-19088AC I.F.
T-6	YLC-15431 I.F.
T-7	69M Input Transformer
T-8	91R Output Transformer
T-9	700C Power Choke Transformer

REPLACEMENT PARTS

VARIABLE RESISTORS

SYMBOL	DESCRIPTION
VR-1,5	EVK-AOKF20-105 10K Ohm A & B Dual
VR-2	30K Ohms B Semi-fixed
VR-3	20K Ohms B Semi-fixed
VR-4	100K Ohms B Semi-fixed
VR-6	10K Ohms B Semi-fixed
VR-7	EVK-BOAK25B13 1k Ohm B

SWITCHES

SYMBOL	DESCRIPTION
S-1-1..5	RL3.6.24 Channel Rotary
S-2-1..4	MH-4P Relay
S-3	UEG-220K Power ON-OFF
S-4	BS-1.2.3. Delta Tune
S-5-1..4	SLW-12P SWR

CRYSTALS

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

METER

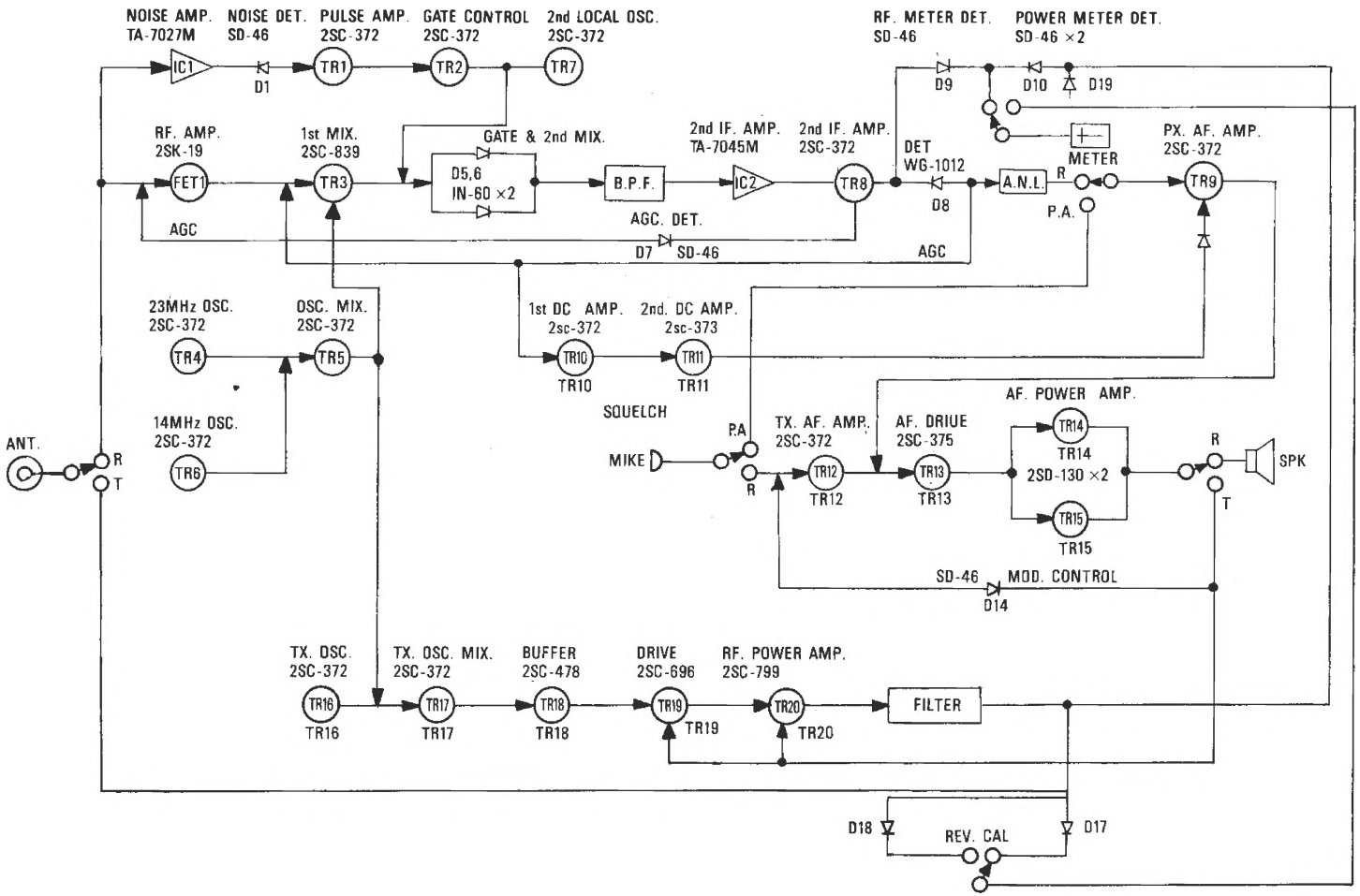
SYMBOL	DESCRIPTION
M	Type 31 Pearce-Simpson's Five Way Meter

REPLACEMENT PARTS

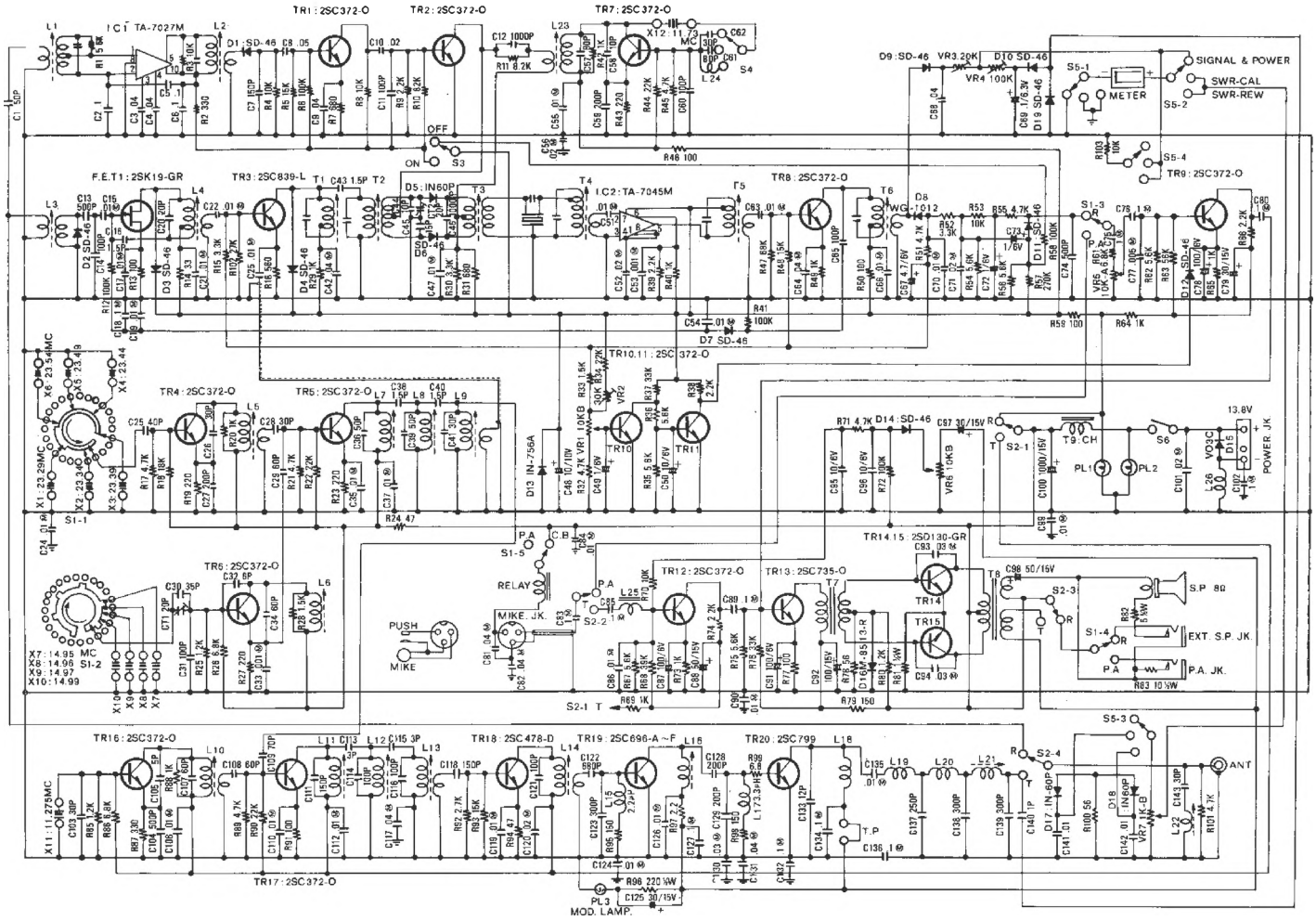
MISCELLANEOUS PARTS

Printed Circuit Board
Speaker 8 Ohms, 1-Watt
Crystal Socket S-DO105
Heat Sink 215AC835
Pilot Lamp
Ext. Power Connector CN-3795
Ext. Antenna Connector M-R
Ext. Speaker Jack SJ-296
Ext. P.A. Jack SJ-296
Ext. Microphone Jack SM-143
Ext. Microphone Plug
Relay Socket PM-14-0
Fuse Holder RF-013
Fuse 1.5 Amp.
Dynamic Microphone 22-115-25
Front Panel ABS
Metal Cabinet Complete
Metal Chassis Complete
Mounting Bracket
Channel Selector Knob
Delta Tune Knob
Volume Control Knob
Squelch Control Knob
Ext. Power Cord
Brand Plate
Control Plate
FCC Plate
Microphone Plate
Styrofoam Box
Display Box
Instruction Booklet
FCC Application Form

COUGAR 23 BLOCK DIAGRAM



SCHEMATIC DIAGRAM



XTAL	CHANNEL																						
MASTER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
23,290	●	●	●	●																			
23,340					●	●	●	●															
23,390									●	●	●	●											
23,440													●	●	●	●							
23,490																	●	●	●	●			
23,540																					●	●	●
14,950	●				●				●				●				●				●		
14,960		●				●				●				●				●				●	
14,970			●				●				●				●				●				
14,990				●				●				●				●				●			●
XMTR																							
11,275	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
RCVR																							
11,730	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

CRYSTAL FREQUENCY CHART

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 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.

PEARCE-SIMPSON
DIVISION OF GLADDING CORPORATION

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P.O. Box 800, Biscayne Annex, Miami, Florida 33152
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