PEARCE-SIMPSON
DIVISION OF GLADDING CORP.

Operating Manual

SUPER PANTHER DX

Mobile 80-Channel AM/SSB Transceiver

Record The Model Number and Serial Number

These numbers are located on the back (or bottom) of the unit. Please record them in the space below.

Mobile 80-Channel Transceiver
Model Number_____
Serial Number_____

INTRODUCTION

Your new PEARCE-SIMPSON transceiver is a compact, PLL Control Synthesizing System, 40 channel SSB/AM/CW Transceiver. This Radio, because of its low current drain, is ideally suited for mobile operation from a 12V, positive or negative ground DC power source. A 12V DC power cord and a mounting bracket are included with your transceiver. To provide the highly stable 80 channel SSB, AM, and CW operations, PEARCE-SIMPSON utilizes a PLL controlled synthesizing circuit. The receiver is a sensitive superheterodyne circuit featuring: low noise RF stage, adjustable Squelch, DX-Local Switch, Noise Blanker, S/RF Meter, Ceramic Filter, External Speaker Jack, CW Jack and instantaneous selection of any of the 80 PLL controlled channels with LED indicator. The transmitter section is designed around highly reliable silicon transistors and a PLL Controlled Synthesizing System. This circuit makes use of the outputs of a crystal-controlled oscillator and a voltage-controlled oscillator which are beat together to produce the desired frequency. The transmitter final is a conservatively rated high gain RF power transistor. To provide a greatly reliable SSB transmission, the Double Balanced Modulator circuit with Crystal Latice Filter has been utilized.

Careful review of this operating manual before operation will ensure optimum performance of the transceiver.

SPECIFICATIONS

GENERAL

Frequency Composition:
Phase-locked loop synthesizer

Channels:
80

Mode of Operation:
LSB/USB/AM/CW

Power Source Voltage:
13.8V DC

Speaker [built-in] :
3" dynamic type

Microphone:
500 ohm dynamic type with PTT bar

RECEIVER

System:
SSB: Single Conversion Superheterodyne
AM: Dual Conversion Superheterodyne

Sensitivity:
SSB: 0.7 μV for 10 dB S/N
AM: 1.5 μV for 10 dB S/N

Selectivity:
SSB: 2.1 kHz at 6 dB down
AM: 6 kHz at 6 dB down

Clarifier Range:
±4.5 kHz

Fine Tune Range:
±300 Hz

Audio Output:
3 watts at 10% distortion

Squelch Range:
SSB: 0.7 μV to 300 μV
AM: 1.5 μV to 300 μV

Intermediate Frequency:
SSB: 10.695 MHz
AM: 1st; 10.695 MHz, 2nd; 455 kHz

SSB TRANSMITTER

Generation:
Double Balanced Modulator with Crystal Latice Filter

RF Output Power:
12W PEP at 13.8V DC

Clarifier Range:
±4.5 kHz

Carrier Suppression:
40 dB down

Unwanted Sideband Suppression:
60 dB down

Harmonic Suppression:
40 dB down

CW SYSTEM

AM Mode:
A2 (800 Hz)

SSB Mode:
Single tone (800 Hz) modulation

AM TRANSMITTER

RF Output Power:
5 watts at 13.8V DC

Harmonic Suppression:
40 dB down

Modulation:
High Class Level B

Clarifier Range:
±4.5 kHz

CHANNEL FREQUENCIES

Channel	Channel Frequency in MHz	Channel	Channel Frequency in MHz	Channel	Channel Frequency in MHz	Channel	Channel Frequency in MHz
1	26.965	21	27.215	41	27.665	61	27.915
2	26.975	22	27.225	42	27.675	62	27.925
3	26.985	23	27.255	43	27.685	63	27.955
4	27.005	24	27.235	44	27.705	64	27.935
5	27.015	25	27.245	45	27.715	65	27.945
6	27.025	26	27.265	46	27.725	66	27.965
7	27.035	27	27.275	47	27.735	67	27.975
8	27.055	28	27.285	48	27.755	68	27.985
9	27.065	29	27.295	49	27.765	69	27.995
10	27.075	30	27.305	50	27.775	70	28.005
11	27.085	31	27.315	51	27.785	71	28.015
12	27.105	32	27.325	52	27.805	72	28.025
13	27.115	33	27.335	53	27.815	73	28.035
14	27.125	34	27.345	54	27.825	74	28.045
15	27.135	35	27.355	55	27.835	75	28.055
16	27.155	36	27.365	56	27.855	76	28.065
17	27.165	37	27.375	57	27.865	77	28.075
18	27.175	38	27.385	58	27.875	78	28.085
19	27.185	39	27.395	59	27.885	79	28.095
20	27.205	40	27.405	60	27.905	80	28.105

MOBILE INSTALLATION

IMPORTANT

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

MOUNTING

For ease of mobile installation, the mounting cradle is designed to serve as a means of mounting the transceiver in any convenient position in the vehicle. After you have determined the location, hold the unit with the bracket attached in the exact location desired. If nothing interferes with it, remove the bracket from the unit and use it as a template to mark the location for the mounting screws. Before drilling the holes, make certain nothing will interfere with the installation of the mounting bolts.

POWER CONNECTION

The transceiver 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 ensures the radio will be off when the ignition switch is turned off, and power will be supplied to the radio only when it is in the ON or ACCESSORY position. Determine whether your vehicle has a positive or negative grounded battery system before connecting the power cable.

ANTENNA

Your transceiver 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 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.

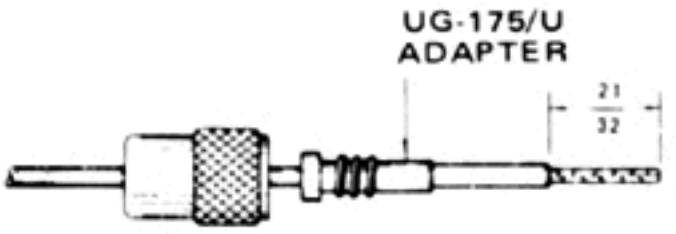
The most efficient and practical installation is a full quarter wave whip mounted on the left rear deck of fender top midway between the rear window and bumper.

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.

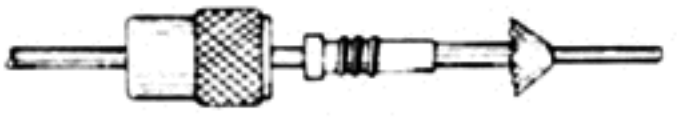
There are also newer mobile antennas on the market which are made to replace the entertainment radio antenna and are similar in appearance. These antennas serve three purposes: AM and FM entertainment broadcast reception and transceiver transmission and reception.

Your local dealer may be prepared to offer advice and will help you choose the most desirable antenna for your needs.

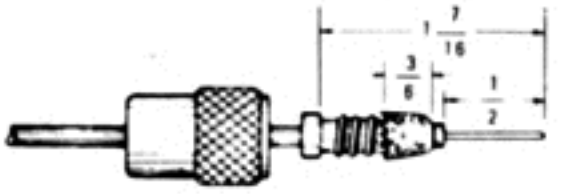
To connect an antenna to the transceiver, a 52-ohm coaxial transmission line is required.



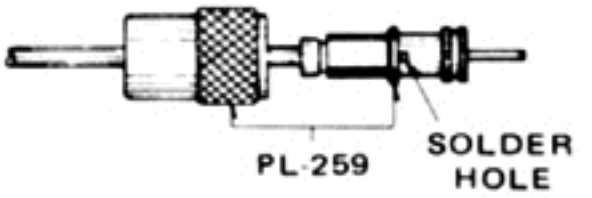
STEP 1



STEP 2



STEP 3



STEP 4

INSTALLATION ADJUSTMENTS

The output circuit of the 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 27 MHz 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.

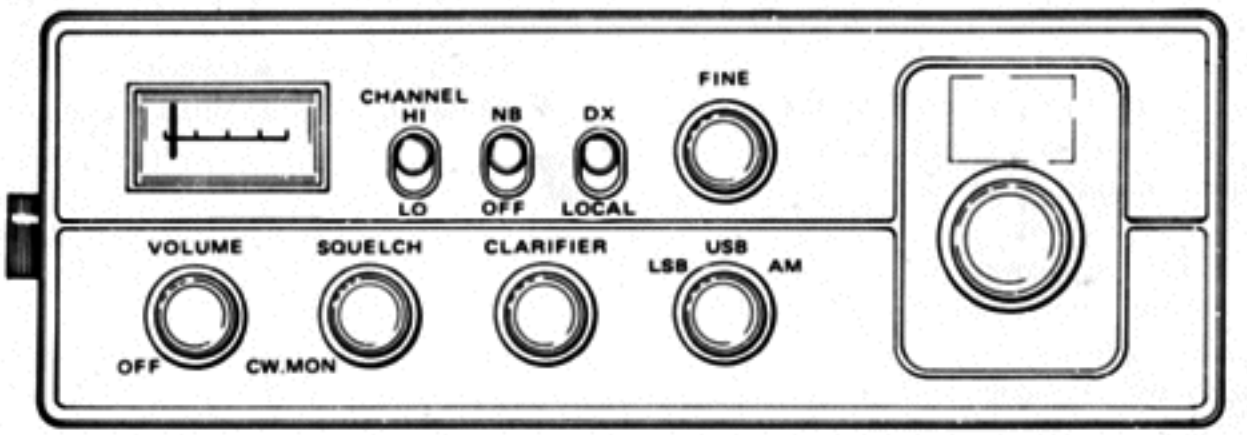
The unit will work into an antenna system having an SWR as high as 3 : 1. For best communications, you will want this figure as near 1 : 1 as possible so that the antenna will be operating at its best efficiency.

NOISE SUPPRESSION

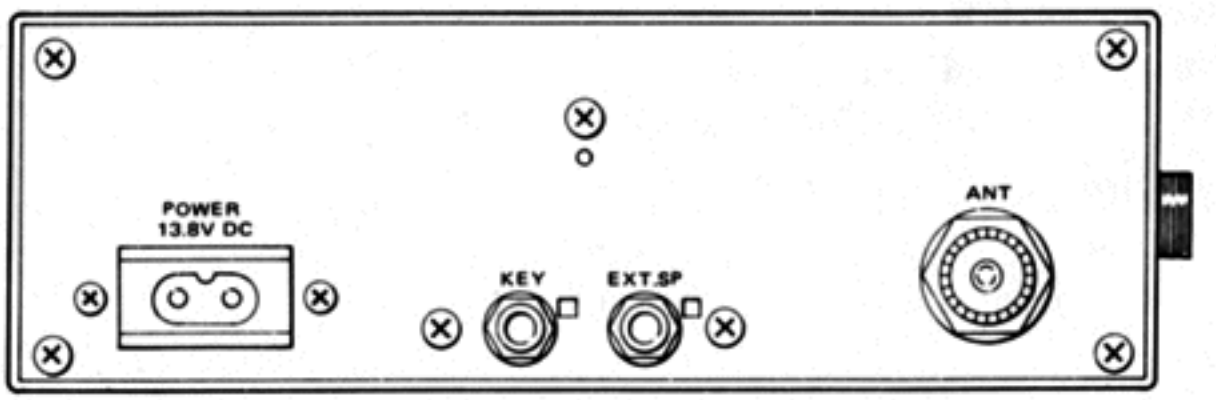
This transceiver contains automatic noise limiter, noise blanker and input power filtering. In most vehicular installations, the noise suppression for the entertainment radio will be sufficient. Vehicles not having this suppression may require that it be installed. In most cases, installation of distributor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

CONTROLS AND INDICATORS

FRONT PANEL



REAR PANEL



OFF/VOLUME CONTROL

This turns the power on or off. This also controls the sound output from the speaker. (The Volume control does not affect the transmitted output.)

SQUELCH CONTROL/CW MONITOR

Squelch Control: To quiet undesirable background noises when no signal is received, rotate the squelch control clockwise. It functions only in the receive mode and does not affect the receiving volume during receive mode. Adjust this control as follows:

1) Turn the power on and rotate the volume control until the background noise is heard.
2) Rotate the squelch control clockwise until the noise just disappears. Incoming signals will automatically release the squelch. (Take care not to rotate the squelch control too far as it decreases reception sensitivity.)

CW Monitor: Setting this control to the fully counterclockwise position will enable you to monitor the CW tones while keying. The CW circuit is automatically activated by the insertion of a plug from the CW key into the Key jack located on the rear panel. (Keying the CW key during reception will automatically convert the unit to the CW transmitting mode.)

CLARIFIER

Used to shift both the transmitting and receiving frequency 4.5 kHz above or below the assigned center frequency.

NB-OFF SWITCH

This reduces impulse noises such as ignition from vehicles, etc., without significantly affecting the basic sensitivity of the receiver.

DX-LOCAL SWITCH

Place this switch in DX position for normal reception, and in Local position to receive strong or nearby station.

CHANNEL/HI-LO SWITCH

This switch selects the higher 40 channels or lower 40 channels, in conjunction with the Channel Selector (80 in all).

FINE-TUNING CONTROL

This permits slight adjustment of receiver tuning for 300 Hz above or below the center frequency. Use it for clarity on SSB reception.

S/RF POWER METER

This gives the relative strength of incoming signals when receiving and RF power output when transmitting, for all modes.

CHANNEL SELECTOR

This selects one of the 40 channels for either high or low bands desired. The LED digital display will show the selected channel automatically.

MIC JACK

This accepts the plug from the microphone supplied with the unit.

LSB-USB-AM SWITCH

Place this switch in the AM position for standard AM transmitting and receiving operation. The LSB and USB positions are used to operate the unit in the SSB mode. It should be noted that the CW mode of transmission and reception can be acheived at all 3 positions of this switch.

OPERATING THE SUPER PANTHER DX

> **CAUTION:** Do not push the transmit switch without first connecting a 52-ohm antenna or dummy load.

AM OPERATION

1) Plug the microphone plug into the mic jack.
2) Turn power on and increase the volume.
3) Place the LSB-USB-AM switch in the AM position.
4) Adjust the Squelch control in the unoccupied channel.
5) Select a channel you want to operate on by means of the Channel/Hi-Lo switch and the Channel Selector.
6) You can use the Clarifier to shift the operating frequency in between the adjacent channels.
7) Use the Fine Tune control for the off-frequency stations. This allows you to vary the receiving frequency without affecting your transmitting frequency.
8) To transmit your message, depress the push-to-talk button on the microphone; to revert the unit to receiving mode, simply release the button.

SSB OPERATION

1) Place the LSB-USB-AM switch in the USB or LSB position. A station operating in the USB or LSB mode can only be communicated with a station operating in the same mode.
2) Select a channel you desire.
3) Use the Clarifier to shift the both transmitting and receiving frequency as you want, and use the Fine Tune control to vary the receiving frequency only.
4) To transmit, proceed as in AM operation.

CW OPERATION

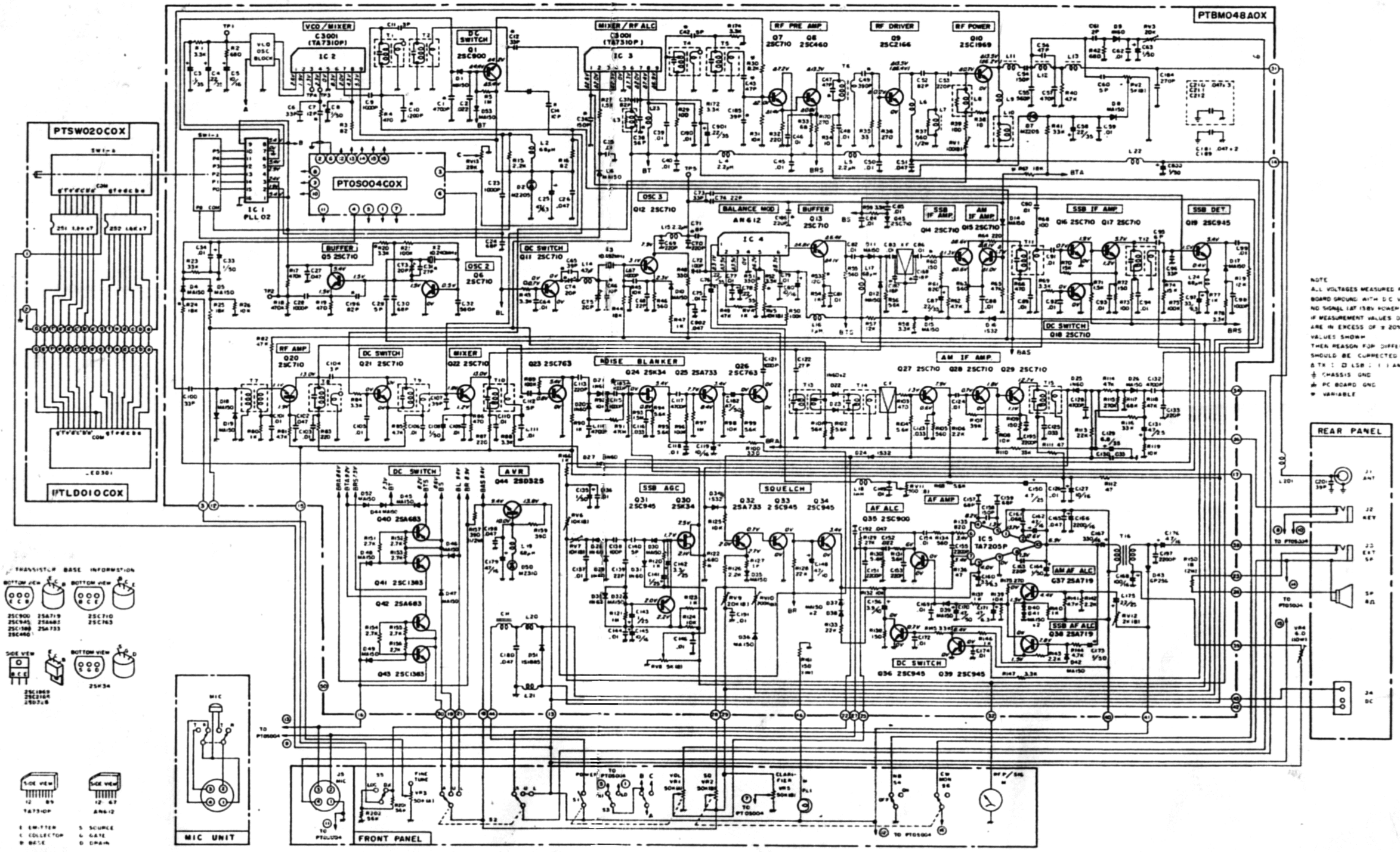
1) Plug the CW key into the Key jack on the rear panel. This will automatically disable the microphone audio circuit and convert the unit to the CW mode.
2) Select a channel as you desire.
3) To transmit, no switching or adjustment is necessary, simply operate the CW key.
4) Remove the CW key from the Key jack when operating the unit in AM or SSB mode.

NOTE: The CW mode of operation can be acheived at all 3 positions of the LSB-USB-AM switch.

MORSE CODES

A ·–	N –·	1 ·– – – –
B –···	O – – –	2 ··– – –
C –·–·	P ·– –·	3 ···– –
D –··	Q – –·–	4 ····–
E ·	R ·–·	5 ·····
F ··–·	S ···	6 –····
G – –·	T –·	7 – –···
H ····	U ··–	8 – – –··
I ··	V ···–	9 – – – –·
J ·– – –	W ·– –	0 – – – – –
K –·–	X –··–	
L ·–··	Y –·– –	
M – –	Z – –··	

SCHEMATIC DIAGRAM SUPERPANTHER DX



PEARCE-SIMPSON
DIVISION OF GLADDING CORP.