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# INSTALLATION AND OPERATION



APACHE/MOHAWK 23 CHANNEL  
CITIZENS BAND MOBILE TRANSCEIVERS

# **INSTALLATION AND OPERATION SILTRONIX APACHE AND MOHAWK 23 CHANNEL CITIZENS BAND MOBILE TRANSCEIVER**

## **GENERAL INSTRUCTIONS**

Your Siltronix *Apache/Mohawk* is a combination transmitter and receiver designed for use in Class "D" operation in the 27 Megahertz Citizens Radio Service. It is designed to meet Federal Communications Commission requirements applicable to equipment in this service under Class "D" emission and is not intended for any other purpose. You are required to read Part 95 of the FCC's Regulations and to obtain a station license prior to placing this transmitter in operation.

Copies of Volume VI (covering FCC regulation of the Citizens Band Radio Service) include Part 95 and are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. Application for a station license must be made by completing FCC Form 505, Station License Application, and submitting it to the FCC. It is unlawful to operate the transmitter section of the transceiver prior to obtaining a valid station license and call sign. Adjustments to the transmitter may be made only by holders of a first or second class radio telephone license.

## DESCRIPTION

The Siltronix *Apache/Mohawk* transceivers provide 23 crystal controlled channels for simplex operation (transmit and receive on the same frequency) in the 27 Megahertz Citizens Band (CB). It is all solid state employing one FET, 18 transistors and 16 diodes in a double conversion superheterodyne circuit. A crystal saver circuit employs only fourteen crystals to provide the 23 channel frequencies.

The *Apache* and *Mohawk* transceivers are identical except for two front panel controls. The *Mohawk* has a noise limiter ON-OFF switch and an RF Gain Control which are not present on the *Apache*.

Channel selection is by means of a single 24-position control mounted in the center of the panel. The channel positions are numbered 1 through 23 on the outer skirt of the channel selector control knob. The 24th position is between Channels 22 and 23 and marked with a dot. The transmitter and receiver are both disabled with the switch in that position.

A combined ON-OFF switch and volume control applies power to the transceiver circuits and controls the volume of the received signal output to the speaker. A squelch control allows the operator to adjust the received signal level threshold above which signals will be heard in the speaker. Noise and signals below the adjusted level will be rejected. The *Mohawk* has an anti-noise limiter switch, that when turned to the ON Position, will clip the peaks from atmospheric or locally generated noise that is greater than the average received signal strength. The *Mohawk* also has an RF Gain Control that can be used to reduce the received signal input level to the receiver and prevents overloading by a transmitter in close proximity.

A panel mounted meter is calibrated in relative signal strength from S0 to S9 and with markings at 10db and 20db above S9.

A four-pin microphone jack accepts the connector at the end of the microphone cord. The microphone is of the high impedance dynamic type with an integral push-to-talk switch.

The audio amplifier can be used as a public address (PA) amplifier by placing the CB-PA switch in the PA position. This connects the audio amplifier output to a rear panel jack to which an outside speaker can be connected. Depressing the push-to-talk switch on the microphone is, then, all that is required to operate the PA system. Normal radio communications capability is restored by moving the switch back to the CB position. The transceiver has an internal speaker which is disconnected when an external speaker is plugged into the rear panel EXT SPK jack.

Specifications for the Siltronix *Apache* and *Mohawk* CB Transceivers are shown in Table 1.

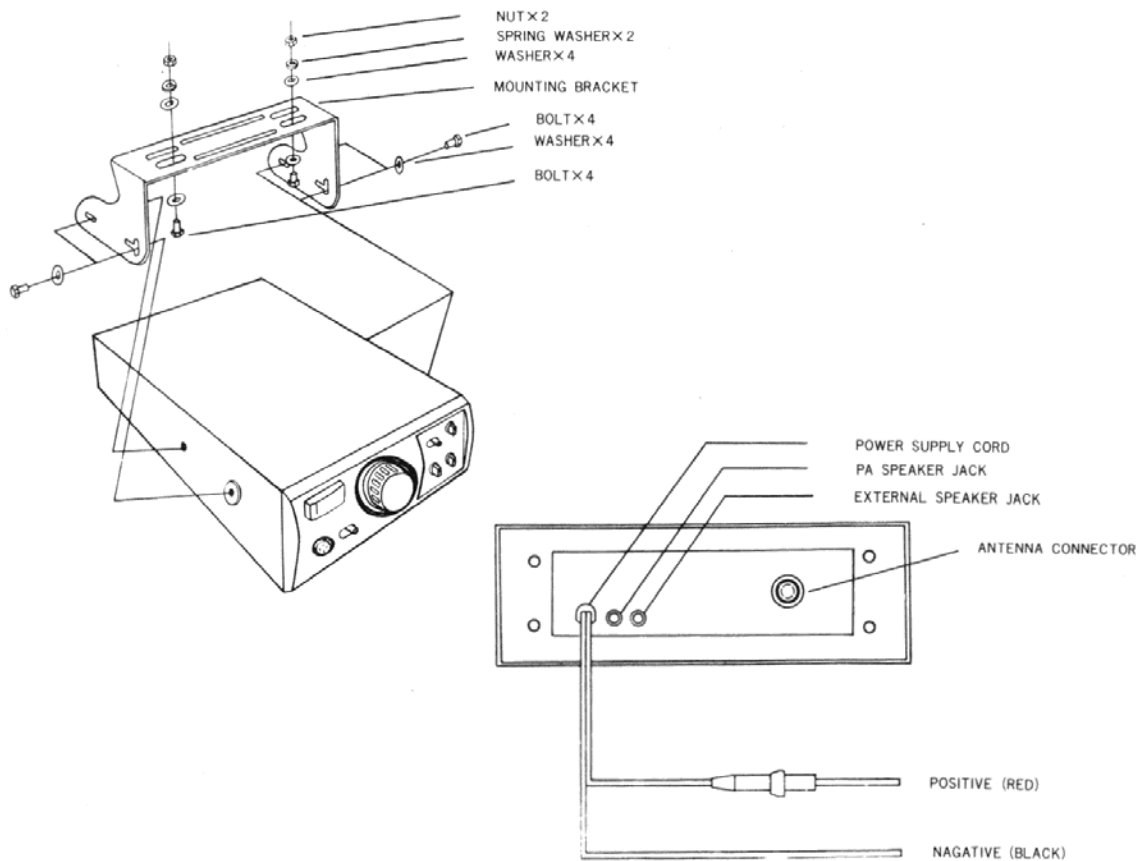
TABLE 1

**SPECIFICATIONS:**

Semiconductors	18 Transistors, 16 Diodes, 1 FET
Channel	23 Channel
Receiver System	Dual conversion superheterodyne with 455KHz ceramic filter and automatic noise limiter
Frequency Tolerance	$\pm$ 0.005%
Transmitter Circuit	Crystal controlled
Transmitter Power	5 Watts input power to final amplifier
Modulation System	AM Emitter modulation
Intermediate Frequency	1st 10.000/10.010/10.020/10.040MHz 2nd 455 KHz
Receiver Sensitivity	1 $\mu$ V for 10db S/N
Squelch Range	1-30 $\mu$ V adjustable
Speaker	3" PM Dynamic 8 ohm, internal
Antenna Impedance	50 ohm
Audio Power	3.5 Watts to external speaker
Dimensions	6½" (W) x 2-7/16" (H) x 9½" (D)
Weight	4.5 lbs.
Accessories	Microphone 1 pc. Microphone hanger 1 pc. Mobile mounting bracket 1 pc. DC power cord (wired into unit) 1 pc.
Power Supply	DC 13.8V, negative or positive ground

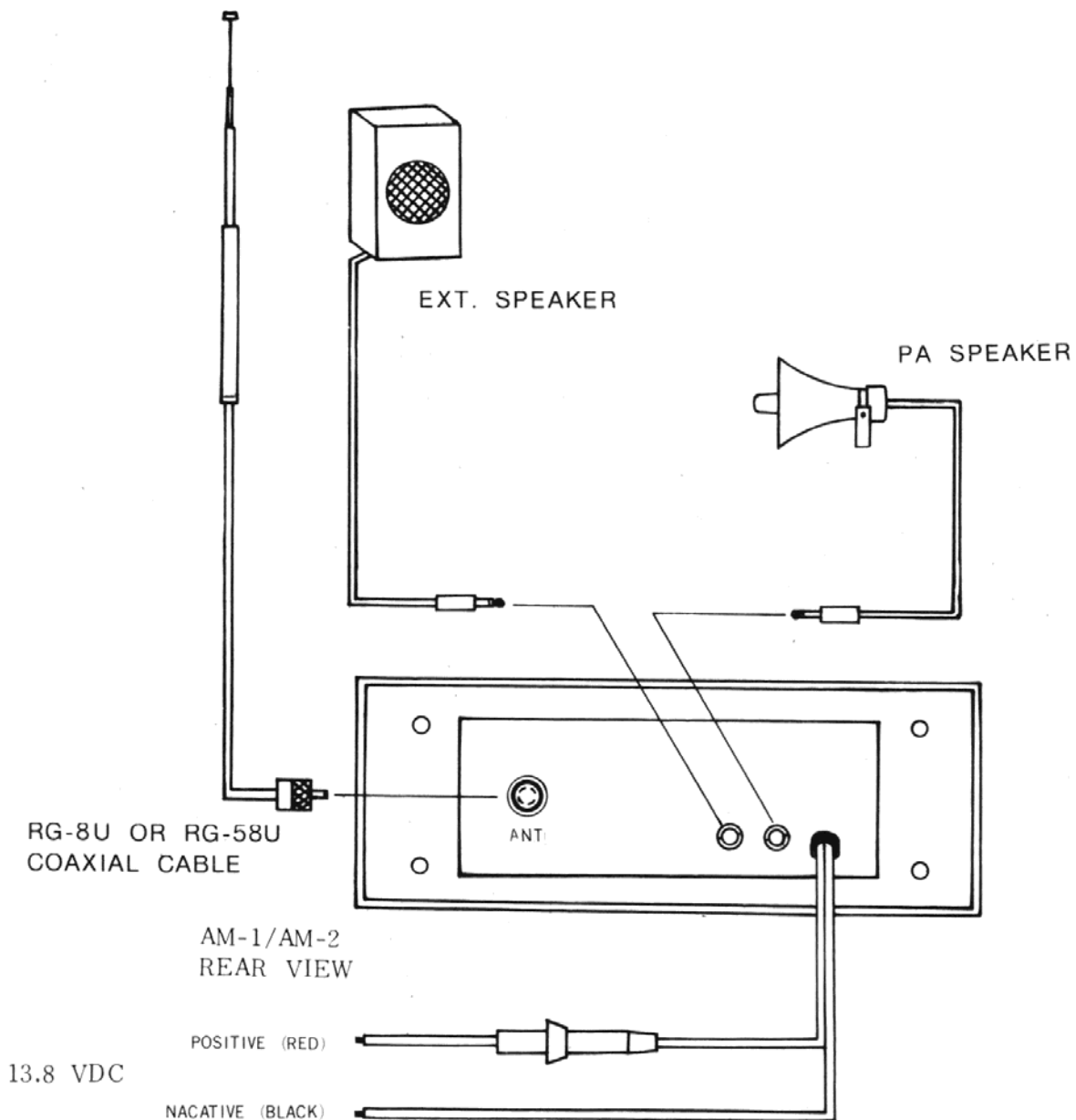
# INSTALLATION

The details of transceiver mounting for the *Apache* or *Mohawk* are shown in Figure 1. The mounting details are the same for vehicle or boat installation where the unit is mounted below an instrument panel. The bracket is reversible so the transceiver may be mounted above a horizontal surface as well. Self-tapping or machine screws, #8 or larger, should be used to secure the bracket to the mounting surface before installation.



## ELECTRICAL CONNECTIONS

The electrical connections for the transceiver are shown in Figure 2. The transceiver internal speaker will be disconnected if an external speaker is connected. Be certain that any external or PA speaker has an 8 ohm voice coil and that both wires to the speaker and both speaker connectors are insulated from the vehicle body. The *Apache* and *Mohawk* circuits are completely insulated from the chassis and case. Therefore, the units may be operated with negative or positive ground electrical systems. In either case, the case should be firmly connected to the vehicle body through a short length of wire to provide an RF shield for the receiver circuits if the surface to which the unit is mounted is not grounded.

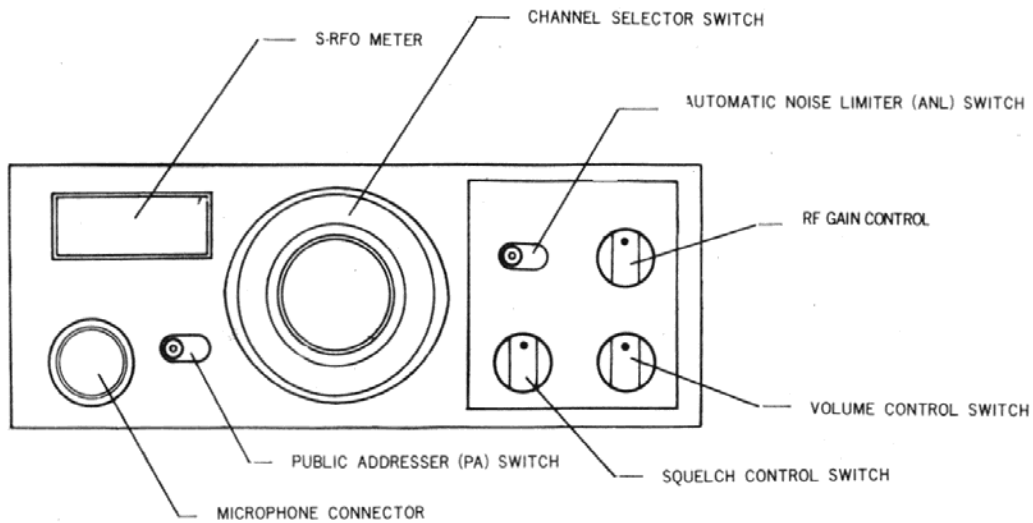


## ANTENNA INSTALLATION

A vertical base loaded whip antenna is best suited to the Siltronix *Apache* or *Mohawk* transceivers. The connection between the transceiver and antenna must be made with RG-8/U or RG-58/U, 50 ohm antenna cable. The cable shield should be connected to the vehicle body at the antenna end.

## OPERATING CONTROLS AND FUNCTIONS

Operating controls are shown in Figure 3.





### **Volume Control and ON-OFF Switch:**

The switch connects the primary power to the transceiver when it is rotated clockwise from its most counter-clockwise position. Further rotation of this control increases the level of the received signal from the internal or external speaker.

### **Channel Selector:**

The desired channel is selected by rotating the center control knob until the channel number is at the top of the dial. The channel number is illuminated in this position.

### **CB-PA Switch:**

In CB position, transmitter is keyed on when microphone press-to-talk switch is depressed. In PA position, microphone input is amplified and audio output connected to PA speaker when push-to-talk switch is depressed.

### **RF Gain Control:**

Adjusts receiver sensitivity to prevent overloading of receiver from nearby transmitter. Receiver sensitivity increases as control is rotated clockwise.

### **ANL Switch:**

Turns anti-noise limiter on and off.

### **'S'-RF Output Meter:**

'S' Meter indicates relative strength of received signal. (Will show weak signals even when squelch threshold is set high). During transmission, meter indicates output power in watts.

### **Squelch Control:**

Adjusts receiver threshold above which received signals will be heard. Continuously variable with receiver threshold decreasing (weaker stations being heard) as control is rotated counter-clockwise.

### **Transmitter Indicator Lamp:**

The S-RFO meter is illuminated by the transmitter indicator lamp when the microphone switch is depressed and the CB-PA switch is in the CB position showing that the transmitter has been keyed.

## OPERATION

1. After checking for correct connections to power source and antenna, turn the set on by rotating the Volume Control clockwise. The pilot light will illuminate the active channel number indicating the set is energized.
2. Turn the Squelch Control fully counter-clockwise.
3. Turn the RF Gain Control fully clockwise (Mohawk Only).
4. Turn the Volume Control clockwise until the receiver background noise is at a comfortable level.
5. Turn the Squelch Control clockwise until the receiver noise disappears.
6. Select the desired channel with the Channel Selector.
7. Place the ANL Switch in the OFF Position unless atmospheric or local noise is objectionable. In such case, place it in the ON Position (Mohawk Only).
8. Set the CB-PA Switch to the CB Position.
9. To transmit, press and hold down, the push-to-talk button on the microphone. Hold the microphone 2 or 3 inches from your lips and talk in a normal voice. Release the microphone when your message is completed. The unit will instantly return to the receiver mode.
10. If the receiver output is distorted when the answering station transmits, the receiver is probably being overloaded. Rotate the RF Gain Control counter-clockwise (Mohawk Only).
11. To use the PA feature (an external PA speaker must be connected to the PA SPK jack), place the CB-PA switch in the PA position. Press, and hold down, the push-to-talk switch on the microphone. Hold the microphone 2 or 3 inches from your lips and speak in a normal voice.