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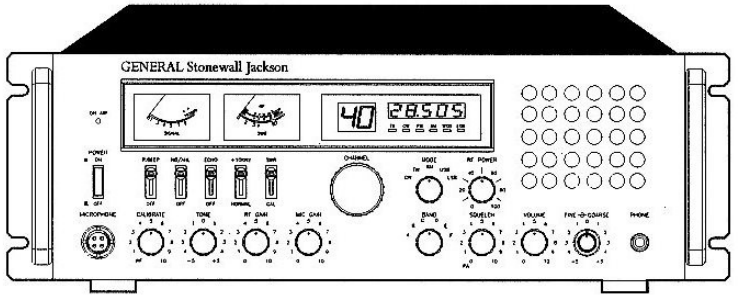
General
Stonewall Jackson



Full Channel AM/FM/SSB/CW
Amateur 2-Way Base Station Transceiver

OWNER'S MANUAL

TABLE OF CONTENTS

SPECIFICATIONS

GENERAL

Model	Stonewall Jackson
Frequency Range	28.005 - 29.655 MHz
Modes	CW/FM/AM/SSB
Frequency Control	Phase-Locked-Loop Synthesizer
Frequency Stability	0.001%
Temperature Range	0°C to +50°C
AC Input Voltage	110V 60Hz (220V 50Hz Optional)
Antenna Impedance	50 Ohms
TRANSMITTER	
RF Power Output	AM/FM/CW : 50W SSB : 150W (PEP)
Spurious Emission	-50dB
Audio Distortion	10%
Frequency Response	300 to 2500Hz
Microphone	Dynamic
RECEIVER	
Sensitivity	CW/AM 0.5 uV for 10dB S+N/N
	FM 0.25 uV for 12dB S+N/N
	SSB 0.15 uV for 10dB S+N/N
Squelch Sensitivity	0.5uV
Selectivity	-55dB
Image Rejection	-50dB
Hum & Noise	40dB
Audio Output Power	2.5W at 10% THD

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

INSTALLATION

LOCATION

The Base Station Transceiver should be placed in a convenient operating location close to an AC power outlet and the antenna lead in cable(s).

The Base Station is attached with the AC power cord set. Proceed as follows to complete all necessary connections to the Base Station Transceiver.

1. Your Base Station Transceiver has standard antenna connector of type S0-239 both located on rear panel; for easy connection to standard PL-259 coax plugs. If the coax antenna cable must be made longer, use coax cable with impedance of 50 ohms and use only enough cable to suit your needs. This will insure a proper impedance match and maximum power transfer from the transmitter to the antenna

2. AC POWER OPERATION : Use 110 volts AC power for the Base Station. (for 220 volts AC operation, consult your dealer).

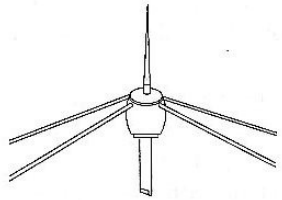
NOISE INTERFERENCE

There are several kinds of noise interference you may encounter in Base Station operation. Some of these noise sources are; fluorescent buzz, nearby commercial broadcast, electrical appliance, lawnmower, and electrical storms. etc. Commercial products are available to reduce interference from these source. Consult your dealer or professional amateur radio supply shops.

ANTENNA

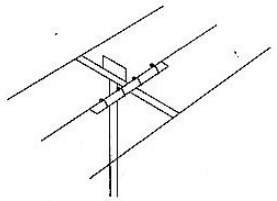
For best transmission and reception, your transceiver should use an antenna especially designed for a frequency of 28-30 MHz. Antennas are purchased separately and include installation instructions. Numerous type of antenna are available that range from emphasis on ease of installation to emphasis on performance. Often the difference in performance between many of the antennas is modest.

1. **Vertical Ground Plane Antenna :** There are omnidirectional antenna that provide optimum performance for contacting other fixed stations using vertical type antenna in addition to all mobile stations. For medium long range communications work.



Ground Plane

2. **Directional Beam Antenna :** Highly efficient and directional antennas generally intended for fixed-to-fixed long range communications.



Directional Beam Antenna

EXTERNAL SPEAKER

The external speaker jack (EXT. SPK) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 4 watts. When the external speaker is plugged in, the internal speaker is disconnected.

PHONE JACK

This PHONE jack accepts headphone of 4 to 32 ohms impedance. When a headphone is plugged into this jack, both internal and external speakers are silenced simultaneously.

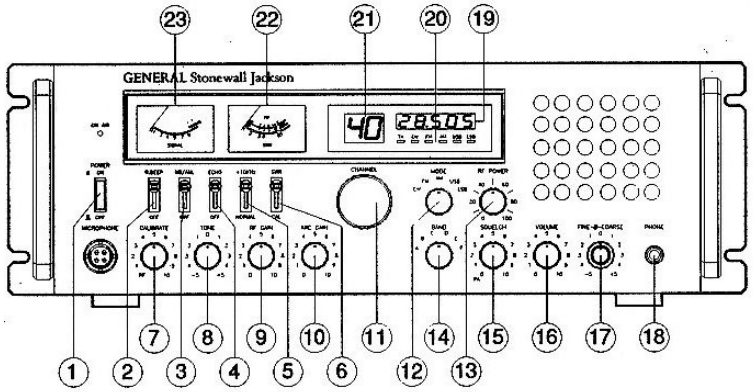
PUBLIC ADDRESS

To use the Public Address (PA) function, first connect an external speaker to the PA. SP. jack on the rear of the Base Station. See the above specifications for a proper external speaker. Keep the speaker away from the microphone to avoid acoustic feedback.

OPERATION

CONTROLS AND INDICATORS

Front Panel



1. **POWER ON/OFF CONTROL :** Push ON to apply power to the unit.

2. **ROGER BEEP/OFF SWITCH :** When this switch is placed in the ROGER BEEP position, the radio automatically transmit an audio tone at the end of your transmission. This indicates the end of your transmission so that people who are having trouble hearing you will know that you are done speaking. As a courtesy to others, use the Roger Beep only when necessary.

3. **NB/ANL/OFF SWITCH :** In the NB/ANL position, the RF Noise Blanker and the Automatic Noise Limiter in the Audio circuits are also activated. The Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference.

4. **ECHO/OFF SWITCH :** This control is used for echo effect.

5. **+10KHz/OFF SWITCH :** In the +10KHz position, the transmit and receive frequency is shifted 10KHz up.

6. **SWR/CAL SWITCH :** When in the CAL position, the SWR meter can be calibrated by adjusting the CALIBRATE control. When in the SWR position, the standing wave Ratio is measured.

7. **CALIBRATE CONTROL :** This control is used for calibrating the SWR meter for accurate SWR readout in conjunction with the SWR/CAL switch.

8. **TONE CONTROL :** This changes tonal sound quality when receiving. Clockwise rotation will emphasize the high tone.

9. **RF GAIN CONTROL :** This control is used to reduce the gain of the RF amplifier under strong signal conditions.

10. **MIC GAIN CONTROL :** Adjust the microphone gain in the transmit mode. This control is used to set the audio level of the microphone for maximum performance and clarify.

11. **CHANNEL SELECTOR :** This control is used to select a desired transmit and receive channel.

12. **MODE CONTROL :** This control allows you to select one of the following operating modes: CW/FM/AM/USB/LSB.

13. **RF PWR CONTROL :** This control enables adjustment of RF power output continuously up to the rated output power.

14. **BAND SELECTOR :** This band selector allows the user to select the desired band.

15. **SQUELCH CONTROL :** This control is used to control or eliminate receiver background noise in the absence of incoming signal. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background noise is eliminated. Turn fully counterclockwise, then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signal will be heard at a maximum clockwise setting.

16. **VOLUME CONTROL :** Permits you to adjust the listening level when receiving.

17. **FINE/COARSE CONTROL :** Allows variation of the receiver operating frequencies above and below the assigned frequency. Although this control is intended primarily to tune in SSB/CW signals, it may be used to optimize AM/FM signals. Coarse operates both TX/RX but Fine only in RX.

18. **PHONE JACK :** Accepts a plug from a headset of 4 to 32 Ohm impedance. Insertion of the plug will silence the built-in speaker (and external speaker connected to External Speaker jack).

19. **FREQUENCY DISPLAY :** The frequency display indicates the frequency of selected channel you wish to operates on.

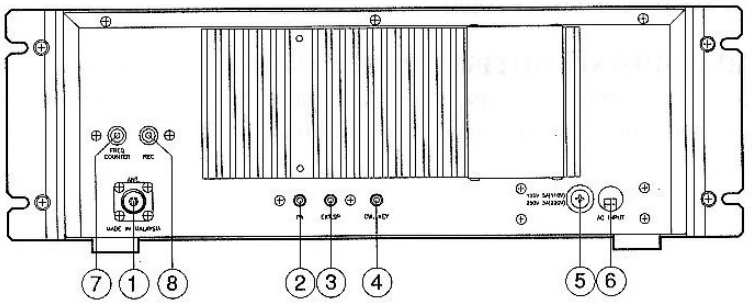
20. **FUNCTION INDICATORS :** The lighted LED indicates the mode which the radio is currently engaged.

21. **CHANNEL DISPLAY :** The channel display indicates the current selected channel.

22. **RF/SWR METER :** This meter has two purposes. It indicates the relative transmitter power when transmitting and to indicate the Standing Wave Ratio (SWR) of the antenna. The power meter has a separate scale for AM and SSB transmission respectively.

23. **SIGNAL METER :** This meter provides a relative indication of the signal strength of a received signal during reception. Note that SSB signal will respond to this meter only during voice modulation. This is due to the fact that SSB transmissions do not contain a continuous RF carrier as found on AM.

Rear Panel Connectors



1. **ANTENNA :** This jack accepts 50 ohms coaxial cable with a PL- 259 type plug.

2. **PA. SP. :** Used to connect a PA speaker (8 ohms 4W) for PA operation. Before operating PA you must first connect a PA speaker to this jack.

3. **EXT. SP. :** This jack accepts 4 to 8 ohms, 5 watts external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

. **CW KEY :** The CW key is used for Morse Code operation. To operate this mode, connect a CW key to this jack, and place the MODE switch in the CW position.

. **FUSE :** Accommodates a fuse for AC input circuit protection. Use 125V/5A (for 220 VAC operation, use 250V/3A fuse) fuse for replacement.

. **AC POWER CORD :** Connect to AC power outlet for AC main supply.

. **FREQUENCY COUNTER OUTPUT JACK :** The RCA type (pin) jack provides output for connecting an optical frequency counter so that you can watch transmit frequency on an external frequency counter.

. **RECORDING OUTPUT JACK :** The RCA type (pin) jack provides output for connection to a tape recorder to permit recording of received signals or transmitter modulation.

Operation

A. Microphone

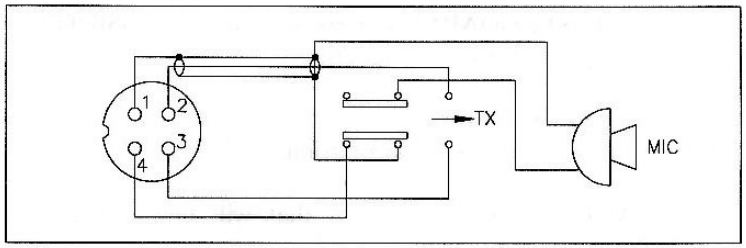
The receiver and transmitter are controlled by the push-to-talk switch on the microphone. Press the switch and the transmitter is activated, release switch to receive. When transmitting hold the microphone two inch from the mouth and speak clearly in a normal "voice". The Base Station Transceiver come complete with low-impedance dynamic microphone.

For best result, the user should select a low-impedance dynamic type microphone or a transistorized microphone.

The microphone should provide the functions shown in schematic below.

4 WIRE MIC CABLE

Pin Number	Mic Cable Lead
1	Audio Shield
2	Audio Lead
3	Transmit Control
4	Receive Control



Microphone Schematic Diagram

1. Procedure to Receive

. Be sure that power source, microphone and antenna are connected to the proper connectors before going to the next step.

. Turn unit on by setting the **POWER SWITCH** to **ON** position. Now the Meters, Channel Indicators and Function Indicators will be illuminated.

. Set the **VOL** for a comfortable listening level.

. Set the **MODE** switch to the desire mode.

. Listen to the background noise from the speaker. Turn the **SQ** knob slowly clockwise until the noise just disappear. This **SQ** is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or some of weaker signal will not be heard.

. Set the **CHANNEL** selector switch to the desired channel.

. Set the **RF GAIN** control fully clockwise for maximum **RF** gain.

. Adjust the **FINE/COARSE** control to clarify the SSB/CW signals or to optimize AM/FM signals.

2. Procedure to Transmit

. Select the desired channel of transmission.

. Set the **MIC GAIN** to the level that will best suit your individual use.

. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.