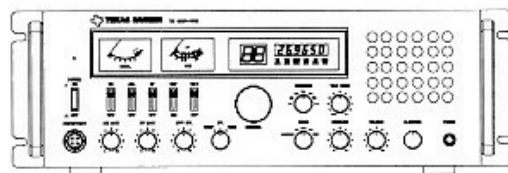




TR 696F-SSB



AM/SSB CITIZENS BAND BASE STATION
with NOAA Emergency Alert Tone
and 7 NOAA Weather Channels

OWNER'S MANUAL

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CHAPTER 1 SPECIFICATIONS**GENERAL**

Frequency Range	26.965 - 27.405 MHz
Emission	AM/USB/LSB
Frequency Control	Phase-Lock-Loop Synthesizer
Frequency Stability	0.001%
Temperature Range	-30°C to +50°C
Input Voltage	110 V AC

TRANSMITTER

RF Power Output	AM 4W ; USB/LSB 12W PEP
Frequency Response	300 to 2500 Hz
Frequency Tolerance	0.005%
Spurious Emission	Better than -55 dB
Unwanted Sideband	Better than -55 dB

RECEIVER

Sensitivity for 10 dB S+N/N	AM : 0.5 uV ; USB/LSB : 0.25 uV
Squelch Sensitivity	Less than 0.5 uV
Audio Power Output	2W @ 10% Distortion
Image Rejection Ratio	-65 dB
AGC Figure of Merit	100 mV for 10 dB Change in Audio Output
Audio Response	300 to 2500 Hz
Clarifier Range	1.5 KHz \pm 0.5

WEATHER

Frequency Range	162.400 to 162.550 MHz
Modulation	FM \pm 5 KHz Deviation
Sensitivity	Less than 1 uV for 12 dB Sinad
WX Emergency Warning	Phase Lock Loop, 1050 Hz
Audio Output Power	4 Watts
Type	Single Conversion Superhet, 455 KHz IF

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

CHAPTER 2 FREQUENCY LIST

Channel	Channel Frequency	Channel	Channel Frequency
1	26.965 MHz	21	27.215 MHz
2	26.975 MHz	22	27.225 MHz
3	26.985 MHz	23	27.255 MHz
4	27.005 MHz	24	27.235 MHz
5	27.015 MHz	25	27.245 MHz
6	27.025 MHz	26	27.265 MHz
7	27.035 MHz	27	27.275 MHz
8	27.055 MHz	28	27.285 MHz
9	27.065 MHz	29	27.295 MHz
10	27.075 MHz	30	27.305 MHz
11	27.085 MHz	31	27.315 MHz
12	27.105 MHz	32	27.325 MHz
13	27.115 MHz	33	27.335 MHz
14	27.125 MHz	34	27.345 MHz
15	27.135 MHz	35	27.355 MHz
16	27.155 MHz	36	27.365 MHz
17	27.165 MHz	37	27.375 MHz
18	27.175 MHz	38	27.385 MHz
19	27.185 MHz	39	27.395 MHz
20	27.205 MHz	40	27.405 MHz

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CHAPTER 3 WEATHER RADIO

This radio comes complete with the 7 NOAA weather channels for weather broadcast.

National Oceanic and Atmospheric Administration (NOAA) of the US Department of Commerce provides NOAA Weather Radio (NWR) service for the public. NWR broadcast the latest weather information continuously from the National Weather Service Offices. Three hundred eighty (380) NWR stations are in operation and it also provides direct warning to private homes for natural disaster.

The following seven frequencies have been specially reserved for NWR broadcast :

Weather Channel	Frequency
1	162.550 MHz
2	162.400 MHz
3	162.475 MHz
4	162.425 MHz
5	162.450 MHz
6	162.500 MHz
7	162.525 MHz

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CHAPTER 4 INSTALLATION

INSTALLING THE RADIO

Choose a location close to an AC power outlet and convenient for running the antenna lead-in cable. This transceiver is attached with the AC power cord set. Proceed as follows to complete all necessary connections to the transceiver :

1. Your transceiver has a standard antenna connector type, SO-239 located on the rear panel for easy connection to the standard PL-259 coax plugs. If the coax antenna cable must be made longer, use only enough coax cable to suit your needs with impedance of 50 ohms, frequency range from 26.965 to 27.405 MHz. This will insure proper impedance match and maximum power transfer from the transmitter to the antenna.
2. Use 110V (220V) AC power for the base station.

IGNITION NOISE INTERFERENCE

There are several kind of noise interference you may encounter in base station operation. Some of these noise come from fluorescent buzz, electrical appliance, lawnmower, nearby commercial broadcast etc. Commercial products are available to reduce interference from these sources. Consult your dealer or professional amateur radio supplier.

ANTENNA

For best transmission and reception, your transceiver should use an antenna especially designed for a frequency of 27 MHz. Antenna is to be purchased separately and it comes with the installation instructions. Numerous type of antennas are available. Some emphasize on ease of installation while other emphasize on performance. Often the difference in performance for these antennas is modest.

1. Vertical Ground Plane Antenna

This is an omnidirectional antenna that provide optimum performance for contacting other fixed stations using vertical type of antenna in addition to all mobile stations. For medium range of communication work. It is suitable for medium range of communications.

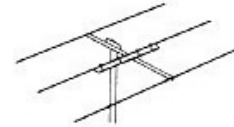
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Ground Plane

2. Directional Beam Antenna

This is a highly efficient and directional antenna, generally intended for fixed-to-fixed long range communications.



Directional Beam Antenna

EXTERNAL SPEAKER

This radio is equipped with a jack for an external speaker. This jack is in the rear of the radio and is labeled "EXT. SP.". Only use a speaker that can handle 4 watts, 8 ohms of impedance. The internal speaker will not work if an external speaker is connected to the radio.

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.

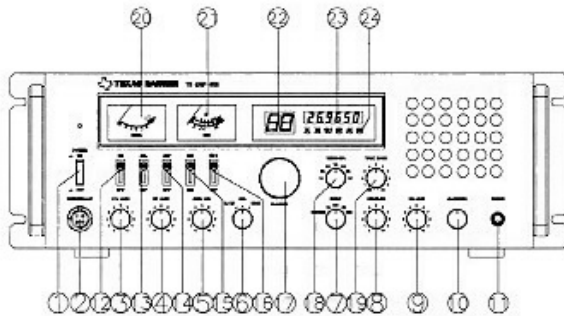
PUBLIC ADDRESS

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

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CHAPTER 5 OPERATION

FRONT PANEL



1. **POWER ON/OFF** : Push this switch to apply power to the radio.
2. **MICROPHONE JACK** : This jack accepts 4 pin microphone.
3. **MIC GAIN** : Adjusts the microphone gain in the transmit and PA modes. This controls the gain to the extent that full talk power is available several inches away from the microphone. In the Public Address (PA) mode, the control functions as the volume control.
4. **RF GAIN CONTROL** : A strong signal can overpower the RF amplifier. This control is used to reduce the gain from strong signals.
5. **SWR CAL CONTROL** : This control allows the user to calibrate the SWR meter, which is used to match the antenna to your radio.
6. **S-RF/CAL/SWR SWITCH** : This is a three function switch. In the S-RF position, the meter will indicate the strength of the signal being received, as well as the relative RF output of transmission. When calibrating the SWR meter, you need to put this switch in the CAL position. To use the meter to measure the standing wave ratio, turn the switch to the SWR position.
7. **MODE CONTROL** : This control allows you to select one of the following operating modes : WEATHER/PA/LSB/AM/USB.

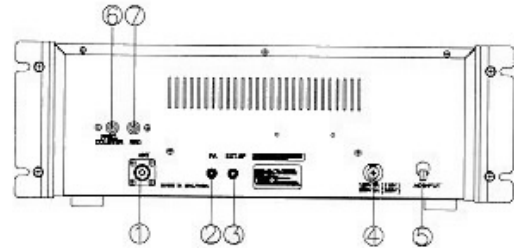
In the PA position, the radio acts as a public address amplifier. Your voice will come out of the speaker that is plugged into the PA. SP. jack on the rear panel. The radio does not operate when you are in the PA mode. In the CB position, the PA function is disabled and the unit will transmit and receive on the speaker that is connected to the radio.
8. **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 counter-clockwise, 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 signals will be heard at a maximum clockwise setting.
9. **VOLUME CONTROL** : This control allows the user to set the desired listening level.
10. **CLARIFIER CONTROL** : Allows tuning of the receive frequency above or below the channel frequency by up to 1.5 KHz. Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM signals.
11. **PHONE JACK** : This jack accepts headset (4 to 32 Ohms impedance). When the headset is plugged in, the built-in speaker and the external speaker connected will be disabled.

- 12.NB/OFF SWITCH** : In the NB position, the RF Noise Blanker is activated. The Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference.
- 13.ANL/OFF SWITCH** : In the ANL position, the Automatic Noise Limiter in the audio circuit is activated.
- 14.ANF/OFF SWITCH** : This special Advanced Noise Filter (ANF) de-emphasizes audio high frequency response in order to increase the signal-to-noise ratio of weak signals. While you will notice a dramatic reduction in the "rushing" sound when this filter is activated, it does not have much effect on the signal-to-noise ratio of strong signals.
- 15.BRT/DIM SWITCH** : This switch controls the level of brightness for the meter, frequency display and channel display LED.
- 16.CH 9 SWITCH** : Channel 9 switch is used for instant selection of an emergency channel.
- 17.CHANNEL SELECTOR** : This control is used to select a desired transmit and receive channel.
- 18.WEATHER CHANNEL SELECTOR** : This switch selects any one of the seven US NOAA Weatherband broadcast stations. The radio will not transmit or receive CB in Weather mode.
- 19.TALKBACK CONTROL** : This knob is used to adjust the desired volume of Talkback. This is used to monitor your own voice. For example, you could use this feature to compare different microphones.
- 20.SIGNAL METER** : This meter provides a relative indication of the signal strength of a received signal during reception. Note that SSB signals 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.

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- 21.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.
- 22.CHANNEL DISPLAY** : The channel display indicates the current selected channel.
- 23.FREQUENCY COUNTER** : This display indicates the frequency of the selected channel.
- 24.FUNCTION INDICATORS** : The lighted LED indicates the mode which the radio is currently engaged.

REAR PANEL



- 1. ANTENNA** : This jack accepts 50 ohms coaxial cable with a PL-259 type plug.
- 2. PA. SPEAKER** : This jack is for PA operation. Before operating, you must first connect a PA speaker (8 ohms, 4W) to this jack.

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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.

4. **FUSE** : Accommodates a fuse for AC input circuit protection. Use 125V 2A or 250V 1A fuse for replacement.

Note : Before replacing the fuse, see your dealer to find out why the fuse has blown out. Replacing without checking may only blow the fuse again.

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

6. **FREQ. COUNTER** : This RCA-type (pin) jack is for an external frequency counter (optional) which indicates the frequency of the selected channel.

7. **RECORDING OUTPUT** : The RCA-type (pin) jack is used to connect to the tape recorder for recording of received signals or your voice modulation.

PROCEDURE TO RECEIVE AND TRANSMIT

A. PROCEDURE TO RECEIVE

1. Before turning on the radio, make sure the antenna, power source and microphone have been connected. Make sure your antenna has been properly matched to your radio.

2. Turn unit on by pushing the ON/OFF POWER switch.

3. Make sure your radio is set to CB and not PA.

4. Adjust the squelch so that any background noise is eliminated. See prior section of this manual for information on how to properly adjust the squelch. Turn the RF gain control fully clockwise initially, and then adjust when a signal is received.

5. Adjust the Clarifier and set it to the 12 o'clock position.

6. Select a desired mode of operation (AM, LSB or USB) and adjust the Clarifier.

7. Select a channel you desire by the Band Selector switch. Turn the Channel Selector to the channel you wish to monitor.

B. PROCEDURE TO TRANSMIT

1. Select the desired channel and mode of transmission.

2. Make sure your radio is set to CB and not PA.

4. Set the MIC GAIN control to maximum gain.

5. To transmit over your radio, hold the microphone approximately two inches from your mouth. Depress the push-to-talk switch on the microphone and talk in a clear voice. When you release the push-to-talk switch, the radio will be in the receive mode.

PROCEDURE TO RECEIVE WEATHER BAND (WX)

1. Switch to the Weather (WX) mode to listen to weather broadcast.
2. Turn the Weather (WX) knob to select one of the seven NOAA weather channels.
3. National Weather Service Emergency Alert will broadcast a 10 second alert tone if the weather is threatening. You can hear this tone even if you are operating in the CB mode or the unit is turn off. When you hear the tone, switch to the Weather (WX) mode to hear the Weather Warning Broadcast.

RECEIVING SSB SIGNALS

Your radio is capable of transmitting and receiving on AM, USB or LSB. When receiving a signal in the AM mode, you can recognize an SSB signal by it's characteristic " Donald Duck " sound. In order to transmit on SSB, you must change the mode of your radio to either USB or LSB depending on which mode the other station is broadcasting in. You will not be able to effectively communicate on USB if the other station is using LSB.

Generally, it is preferable to use either the USB or LSB, if possible, when using your radio. This is because there usually is less noise with such a signal, then when the signal is broadcast on AM. However, if the station you wish to broadcast to is only capable of using AM, you should select AM on the mode selector switch. An AM signal received on SSB will also produce a steady carrier tone unless an adjustment is made with the CLARIFIER.

Once the proper SSB mode has been selected, you may need to adjust the CLARIFIER control to tune your radio to the exact frequency of the broadcasting station. You will know if the signal being received by your radio in the SSB mode needs to be tuned, as the voices will be either too high or low in pitch. Tuning the CLARIFIER will restore the normal voice pitch.

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MICROPHONE INSTALLATION AND SUBSTITUTES

This radio is designed for use with, and supplied with, a low impedance dynamic microphone. If you replace the microphone supplied with this radio, you should use either a low-impedance microphone, or a transistorized one.

Replacement microphones must have a four-lead cable to properly work with this radio. The microphone should be wired in accordance with the Microphone wiring table and schematic below.

4 WIRE MIC CABLE

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

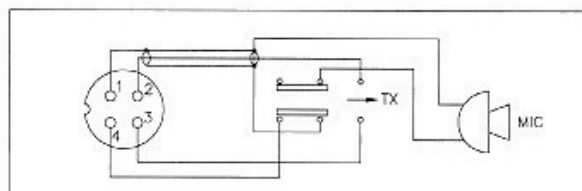


Fig. 1 Schematic of microphone

If the new microphone you are using has pre-cut leads, you must re-connect the leads in the following manner :

1. Cut leads so that they extend 7/16" beyond the insulating jacket of the cable. All leads should be approximately the same length.
2. Strip approximately 1/8" of the insulation. Tin all leads and connections before soldering.

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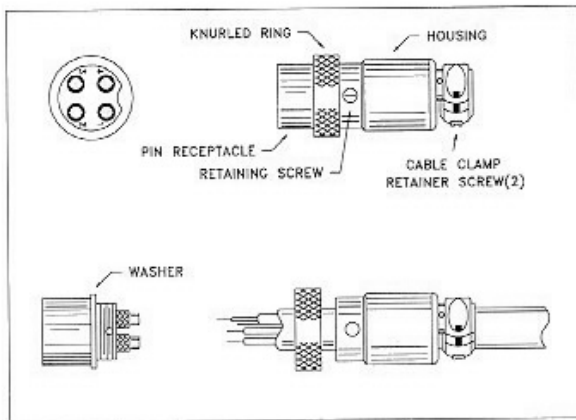


Fig. 2 Microphone plug wiring

Referring to Fig. 2 above,

3. Remove the retaining screw.
4. Unscrew the housing.
5. Loosen cable clamp screws.
6. Thread cable through the housing, knurled ring and washer.
7. Solder the wires to the pins in accordance with the microphone wiring table above and figure 3 below. Before soldering, the washer must be placed on the threaded portion of the pin receptacle body.

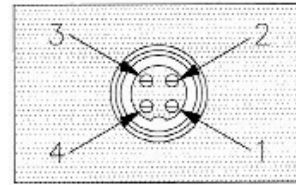


Fig. 3. Microphone pin numbers

8. Once all soldering is complete, you may re-assemble the unit. When assembling, make sure that the wires do not touch each other or any other metal parts. Check for excessive solder which could cause a short. To re-assemble, screw the housing onto the pin receptacle body. Make sure the screw hole and threaded hole line up, and then replace the retaining screws.

Your microphone should now be ready to use with your radio.

