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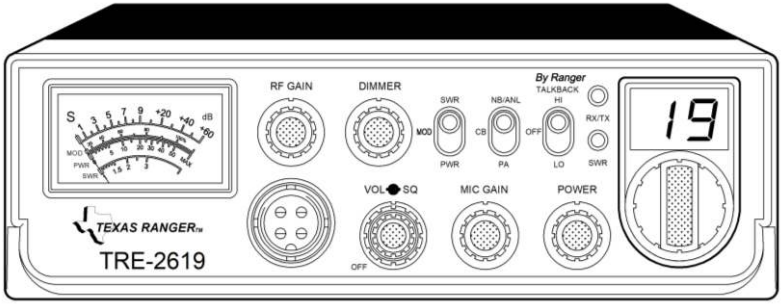
TEXAS RANGER™

TRE-2619



AM Two Way
Citizen Band Mobile Transceiver

OWNER'S MANUAL

TABLE OF CONTENTS

PAGE

CHAPTER 1

Specifications 2

CHAPTER 2

Installation 3

Installing The Radio 3

Ignition Noise Interference 4

Antenna 4

External Speaker 4

Public Address 4

CHAPTER 3

Operation 5

Front Panel 5

Rear Panel 8

Frequency Chart 9

Procedure to Receive and Transmit 10

Alternate Microphone and Installation 11

Maintenance And Adjustment 14

A Few Rules That Should Be Obeyed 15

How Your CB Can Serve You 15

Use Channel 9 For Emergency Message Only 16

CHAPTER 1 SPECIFICATIONS

GENERAL

Model	TRE-2619
Frequency Range	26.965 ~ 27.405 MHz
Emission	AM
Frequency Control	Phase-Lock-Loop (PLL) Synthesizer
Frequency Stability	0.001%
Temperature Range	-30°C to +50°C
Antenna Impedance	50 Ohms
Antenna Connectors	Standard SO-239 type
Input Voltage	13.8V DC
Size	7 1/4" (W) x 9" (D) x 2 1/4" (H)
Weight	3.4 lbs.

TRANSMITTER

RF Power Output	AM: 4W
Spurious Emission	> -60 dB
Audio Distortion	10%
Frequency Response	300 to 2500 Hz
Microphone	Dynamic

RECEIVER

Sensitivity for 10 dB (S+N)/N	AM: < 0.5 uV
Squelch Sensitivity	< 0.5 uV
Selectivity	> -50 dB
Image Rejection	> 60 dB
Hum & Noise	> -40 dB
AGC Figure of Merit	80 dB for 50 mV for 10 dB Change in Audio Output
Audio Power Output	2.5W @ 10% Distortion
Audio Response	300 to 2500 Hz

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

CHAPTER 2 INSTALLATION

INSTALLING THE RADIO

Choose a convenient location for operation that does not interfere with driver or passenger. This radio is supplied with a universal mounting bracket. When mounting the bracket and radio to your car, make sure it is mechanically strong. Also, provide a good electrical grounding connection to the chassis of vehicle. Proceed as follows to install the radio.

1. Locate a convenient area in your vehicle for the installation of the radio. Hold the mounting bracket with the radio in the location where the radio is to be installed. Make sure nothing will interfere with either the radio or the mounting bolts. Mark and then drill holes for the mounting bracket.

2. Most radio antennas come equipped with a PL-259 plug. Connect this plug to the ANT. Jack in the rear of the radio.

3. Extending from the rear of the radio is a fused red and black wire for the DC connections to the vehicle's electrical system. For best performance, it is strongly recommended that the red lead be taken directly to the positive terminal on the vehicle's battery and the black lead be connected to the nearest chassis ground. (Note: ***This radio is designed for vehicles with negative ground systems***.)

   Connections should be made using appropriate "crimp on" lugs of a size large enough to make good contact with the bolt used to fasten to the battery and the chassis ground. It is a good safety idea to install a second fuse that would provide protection in case the red wire was to "fray" or get pinched and short to the body of the vehicle, somewhere between the battery and the radio.

   High power radios such as this one require large DC current flow when in the TX mode. Poor power connections cause supply voltage drops that can substantially decrease the performance of your radio. A good DC connection is probably one of the most important things for getting the best transmitter performance and in some cases, least receiver noise.

4. Mount the microphone bracket near the radio in an easily accessible spot using the two screws provided.

IGNITION NOISE INTERFERENCE

With weak signals, you may experience interference of the signal by background noise. This radio has NB and ANL circuits which will help reduce background noise from sources such as your ignition system. However, background electrical noise may come from several sources and all noise may not be eliminated. With extremely weak signals, you can operate this radio with the engine turned off, which should improve reception. If the ignition noise level is too high to allow proper operation under most conditions, you should have your installation of the radio checked by a qualified technician.

ANTENNA

This radio has a jack in the rear for a standard PL-259 antenna plug. If you are looking for the most range for your transmission, use a vertically polarized, quarter-wave length antenna. If antenna height is a problem, you may use a shorter, loaded-type whip antenna although you can expect some loss of transmission range.

To improve performance, your antenna should be matched to your radio. Your antenna can be adjusted so that it matches your radio.

EXTERNAL SPEAKER

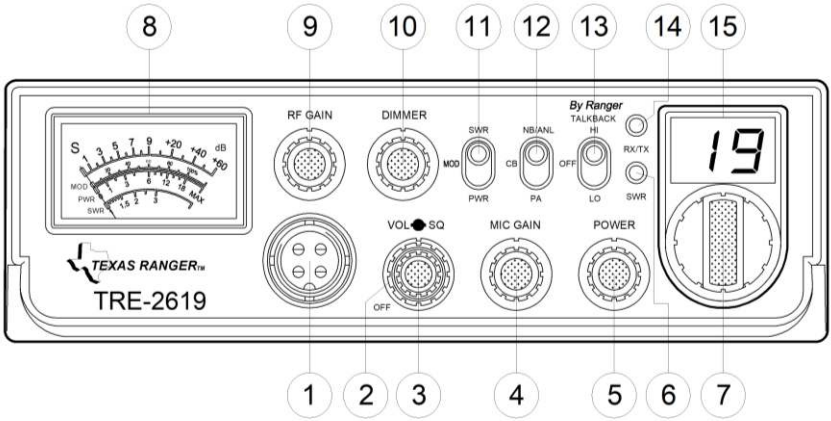
The external speaker jack (EXT SP.) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 4 watts. When the external speaker is plugged in, the internal speaker is disconnected.

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.

CHAPTER 3 OPERATION

CONTROL FUNCTIONS
FRONT PANEL



1. **MICROPHONE JACK:** Used to connect microphone for voice source.

2. **SQUELCH CONTROL:** This knob is used to eliminate background noise being heard through the receiver, which can be disturbing when no transmissions are being heard through the receiver. To use this feature, turn the knob fully counterclockwise and then turn clockwise slowly until the background noise is just eliminated. 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.

3. **ON/OFF VOLUME CONTROL:** This knob controls the volume and power to the radio. To turn radio on, rotate the knob clockwise. Turning the knob further will increase the volume of the receiver.

4. **MIC GAIN CONTROL:** 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.

5. **RF POWER CONTROL:** This control allows the user to adjust RF power output.

6. **SWR LED:** This LED lights red when your SWR is higher than about 3:1. This is not an exact indicator of 3:1 SWR, but it is an indication that you should check your SWR reading.

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

8. **FRONT PANEL METER:** The front panel meter allows the user to monitor signal strength, RF output power, SWR level and AM modulation level.

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

10. **DIMMER CONTROL:** This knob controls the level of brightness for the meter lamp and channel display.

11. **SWR/MOD/PWR SWITCH:** This switch controls the function of the meter during the transmit mode. In the "SWR" position, the meter indicates the Standing Wave Ratio (SWR) of your antenna. There are no adjustments because the SWR circuit in this radio calibrates itself automatically. When the switch is in the "MOD" position, the green scale on the meter indicates your percentage of modulation in the AM mode only. It is most accurate when testing at maximum power output. When this switch is in "PWR" position, the meter indicates your power output.

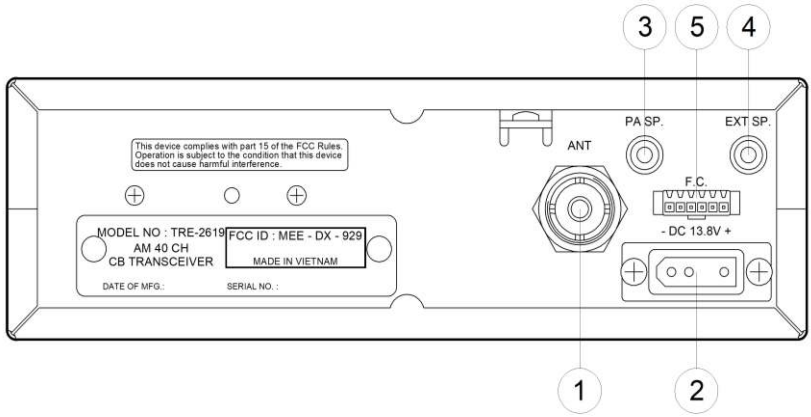
12. **NB-ANL/CB/PA SWITCH:** When the switch is in the NB/ANL position, the Noise Blanker (NB) and Automatic Noise Limiter (ANL) circuits are activated. The Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference. In the CB position, the PA function is disabled and the radio will transmit and receive on the speaker that is connected. In the PA position, the radio acts as 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.

13. **TALKBACK (TB) SWITCH:** Select this switch for desired volume of Talkback. This is used to monitor your own voice. For example, you could use this feature to compare different microphones. Hi is high volume, Low is low volume. The talkback circuit is off when the switch is in the OFF position.

14. **RX/TX LED:** The red LED indicates the unit is in the transmit mode. The green LED indicates the unit is in the receive mode.

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

REAR PANEL



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

2. **DC POWER:** This jack accepts the 13.8V DC power cable with built-in fuse. The power cord provided with the radio has a black and red wire. The black goes to negative and red goes to positive.

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

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

5. **F.C:** This connector is used for external frequency counter which indicates the frequency of the selected channel

FREQUENCY CHART

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

PROCEDURE TO RECEIVE AND TRANSMIT

A. MICROPHONE

The push-to-talk switch on the microphone controls the receiver and transmitter. Press the switch and the transmitter is activated, release switch to receive. When transmitting, hold the microphone two inches from your mouth and speak clearly in a normal voice. This transceiver comes complete with a low impedance dynamic microphone.

B. PROCEDURE TO RECEIVE

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

2. Turn **VOL** knob clockwise to apply power to the radio.

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

4. Set the **NB-ANL/CB/PA** switch to **CB** mode.

5. Listen to the background noise from the speaker. Turn the **SQ** knob slowly clockwise until the noise just disappears. The **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 the weaker signals will not be heard.

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

C. PROCEDURE TO TRANSMIT

1. Select the desired channel of operation.

2. Set the **MIC GAIN** control fully clockwise.

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

ALTERNATE MICROPHONES AND INSTALLATION

For best results, the user should select a low-impedance dynamic type microphone or a transistorized microphone. Transistorized type microphones have low output impedance characteristics. The microphones must be provided with a four-lead cable. The audio conductor and its shielded lead comprise two of the leads. The third lead is for transmit control and fourth is for receiving control.

The microphone should provide the functions shown in the schematic below.

4 WIRE MIC CABLE

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

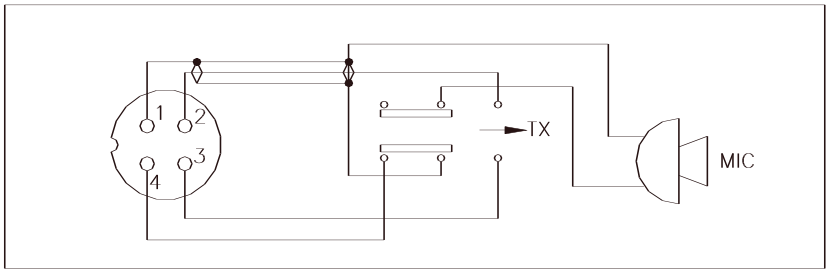


Fig. 1 Your transceiver microphone schematic.

If the microphone to be used is provided with pre-cut leads, they must be revised as follows.

1. Cut leads so that they extend 7/16" beyond the plastic insulating jacket of the microphone cable.

2. All leads should be cut to the same length. Strip the ends of each wire 1/8" and tin the exposed wire.

Before beginning the actual wiring, read carefully the circuit and wiring information provided with the microphone you select. Use the minimum heat required in soldering the connections. Keep the exposed wire lengths to a minimum to avoid shorting when the microphone plug is reassembled.

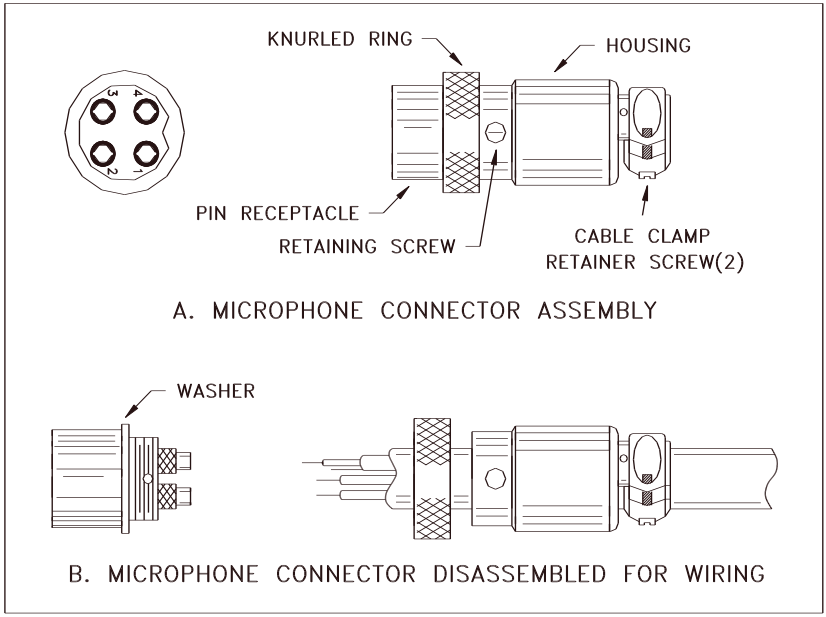


Fig. 2 Microphone plug wiring

To wire the microphone cable to the plug provided, proceed as follows:

1. Remove the retaining screw.
2. Unscrew the housing from the pin receptacle body.
3. Loosen the two cable clamp retainer screws.
4. Feed the microphone cable through the housing, knurled ring and washer as shown Figure 2.

5. The wires must now be soldered to the pins as indicated in the above wiring tables. If a vise or clamping tool is available it should be used to hold the pin receptacle body during the soldering operation, so that both hands are free to perform the soldering. If a vise or clamping tool is not available, the pin receptacle body can be held in a stationary position by inserting it into the microphone jack on the front panel. The numbers of the microphone plug are shown in Fig. 3, as viewed from the back of the plug. Before soldering the wire to the pins, pre-tin the wire receptacle of each pin of the plug.

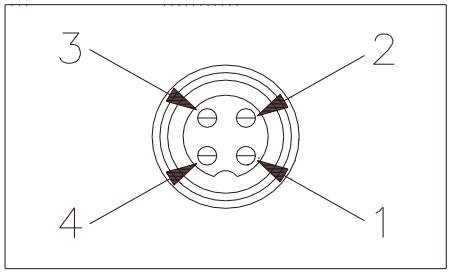


Fig. 3 Microphone plug pin numbers viewed from rear of pin receptacle.

6. Be sure that the housing and the knurled ring of Figure 2 are pushed back onto the microphone cable before starting to solder. If the washer is not captive to the pin receptacle body, make sure that it is placed on the threaded portion of the pin receptacle body before soldering.

7. If the microphone jack is used to hold the pin receptacle during soldering operation, best results are obtained when the connections to pin 1 and 3 are made first and then the connections to pins 2 and 4. Use a minimum amount of soldering and be careful to prevent excessive solder accumulation on pins, which could cause a short between the pin and the microphone plug housing.

8. When all soldering connections to the pins of the microphone are completed, push the knurled ring and the housing forward and screw the housing onto the threaded portion of the pin receptacle body. Note the location of the screw clearance hole in the plug housing with respect to the threaded hole in the pin receptacle body. When the housing is completely threaded into the pin receptacle body, a final fraction of a turn either clockwise or counterclockwise may be required to align the screw hole with the threaded hole in the pin receptacle body. When these are aligned, the retaining screw is then screwed into place to secure the housing to the pin receptacle body.

9. The two cable clamp retainer screws should now be tightened to secure the housing to the microphone cord. If the cutting directions have been carefully followed, the cable clamp should secure to the insulation jacket of the microphone cable.

10. Upon completion of the microphone plug wiring, connect and secure the microphone plug in the transceiver.

MAINTENANCE AND ADJUSTMENT

This transceiver is specifically designed for the environment encountered in base installations. The use of all solid state circuitry and its light weight result in high reliability. Should a failure occur, however, replace parts only with identical parts. Do not substitute.

NOTE

If the performance described in the OPERATION and MAINTENANCE AND ADJUSTMENT sections is not obtained, review the operating instructions to insure that proper procedures were followed.

FCC WARNING

All transmitter adjustments other than those provided on front panel by the manufacturer must be made by or under the supervision of the holder of an FCC – issued general radio telephone operator's license.

A FEW RULES THAT SHOULD BE OBEYED

1. You are not allowed to carry on a conversation with another station for more than five minutes at a time without taking a one-minute break, to give others a chance to use the channel.

2. You are not allowed to blast others off the air by over-powering them with illegally amplified transmitter power, or illegally high antennas.

3. You can't use the transceiver to promote illegal activities.

4. You are not allowed to use profanity.

5. You may not play music in your transceiver.

6. You may not use your transceiver to sell merchandised or professional service.

HOW YOUR CB CAN SERVE YOU

1. Warn of traffic tie ups ahead.

2. Provide weather and road information.

3. Provide help fast in event of emergency or breakdown.

4. Suggest good spots to eat and sleep.

5. Make long trips more interesting, and help keep you awake.

6. Provide direct contact with your office or home.

7. Make friends for you as you travel.

8. Provide "local information" to find your destination.

9. Help law enforcement officers by reporting drunk and reckless drivers.

USE CHANNEL 9 FOR EMERGENCY MESSAGES ONLY

The FCC gives the following examples of permitted and prohibited types of communications for use in an emergency. These are guidelines and are not intended to be all inclusive.

Permitted	Example Message
YES	"A tornado sighted six miles north of town.
NO	"This is observation post number 10. No tornado sighted.
YES	"I am out of gas on interstate 95"
NO	"I am out of gas in my driveway"
YES	"There is a four-car collusion at exit 10 on the Beltway, send police and ambulance."
NO	"traffic is moving smoothly on the Beltway"
YES	"Base to Unit 1, the weather Bureau has just issued a thunder storm warning. Bring the sailboat into port."
NO	"Attention all motorists. The weather Bureau advises that the snow tomorrow will accumulate 4 to 6 inches.
YES	"There is a fire in the building on the corner of 6th and Main Streets."
NO	"This is Halloween patrol unit number 3. Everything is quiet here."

MEMO

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