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Tram 201 VOX Owner's Manual
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OWNER'S INSTRUCTION MANUAL



TRAM MODEL D201 SSB/AM CB BASE STATION

TRAM/DIAMOND CORPORATION • LOWER BAY ROAD • BOX 187, WINNISQUAM, NH 03289

LIMITED WARRANTY

TRAM/DIAMOND CORPORATION, hereinafter referred to as TRAM, warrants that, for a period of six (6) months (90 days for vacuum tubes) from the date of first sale to the original retail purchaser, this TRAM product will be free of defect in materials and workmanship. TRAM's obligation is limited to repairing or, at TRAM's option, replacing those parts or equipment which are returned, transportation and insurance prepaid, to the factory or to the point-of-purchase without alteration or further damage and in TRAM's judgment were originally defective or became defective in normal use.

TRAM/DIAMOND CORPORATION
Lower Bay Road
Winnisquam, NH 03289
U. S. A.

CAUTION

Before applying power to your D201, lift the top cover and insure that the following components have not shaken loose in shipping:

1. Check all tubes to make sure they are firmly seated in their sockets.
2. Check the balanced modulator board to make sure it is fully seated. The nylon latch on the V700 RF Drive end of the board (FIG. 7) should be in the locked position.
3. Check the synthesizer board to make sure all cables are properly seated.

You now have the very best piece of Citizens Band equipment available. It has been conceived and developed as an engineer's dream and has all of the controls and features that a serious CB'er would use and that a dedicated technology could provide.

You can be justly proud of your D201 and, since you are, you owe yourself and the equipment a careful study of **all** the installation and operating instructions. A preliminary scanning of the manual is not enough, because satisfactory operation depends on your fully understanding every function that we have built into this great set.

With best good wishes,

The engineers at
Tram/Diamond Corporation

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INTRODUCTION AND GENERAL INFORMATION

The D201 Citizens Band transceiver is a quality electronic instrument, the result of long months of careful engineering, exhaustive testing and long trial in the field. Yours has been fully tested to ascertain that it meets or exceeds all of the requirements of our exacting specifications.

In addition to the usual alignment and bench testing, each D201 is subjected to a physical SHOCK TEST while being monitored under actual receiving and full load transmitting conditions. Every D201 must also successfully pass a minimum of 40 hours of a dynamically cycled test sequence consisting of one hour "ON", while alternately being switched from full power receive to full power transmit, and one-half hour "OFF". The electronic monitoring system used during these tests is capable of detecting even momentary malfunctions of extremely short duration.

Before attempting to use the radio, you should become familiar with the installation and operation sections of this manual. Later you will find instructions to the effect that an owner should make only certain recommended adjustments; this is most important. Since adjustments, other than the ones included in this manual, can only be made by a qualified technician using well calibrated test equipment, an owner will only degrade the performance of his set and may even make it inoperative if he disturbs the factory settings.

Sets returned to the factory for repair that bear evidence of unauthorized adjustment or circuit revisions will not be serviced under the warranty. You must also bear in mind that, except for the adjustments recommended in this manual, transmitter circuit adjustments can only be done by technicians having FCC first or second class commercial radio telephone operator licenses.

LICENSE AND REGULATION INFORMATION

The Federal Communications Commission has made it possible for any citizen over 18 years of age to obtain a license to operate two way radios in the Citizens Band. It is not legal to operate this equipment without a license.

To obtain your license, you must first fill out the FCC application form #505. Read the application form carefully and fill out, sign and mail the application with application fee to: FEDERAL COMMUNICATIONS COMMISSION, GETTYSBURG, PENNSYLVANIA 17325. When approved, the FCC will issue your license. You will be assigned a number to be used as your station call letters.

Keep your license close to your equipment at all times. Fill out a transmitter identification card, FCC form #452-C, and attach it to the radio. **DO NOT MAKE TRANSMISSIONS WITH YOUR EQUIPMENT UNLESS YOU HAVE YOUR LICENSE.** Read Part 95 of the FCC Rules and Regulations thoroughly. Make your transmissions short and to the point. Listen to the channel before transmitting to see that it is not in use.

Operating and equipment requirements are covered in Part 95 of the Federal Communications Commission's Rules and Regulations. Note the proper use of **Channel 9** (27.065 MHz). This channel has been reserved for communications concerned with the **immediate safety of life** of individuals, the **immediate protection of property or the emergency assistance to a motorist**. No other use of this channel is authorized. For this reason, Channel 9 is uniquely marked on both the D201 dials. **All use of this equipment must conform to FCC requirements. TYPE ACCEPTANCE DATA IS ON FILE WITH THE FCC, LISTED AS FCC TYPE NUMBER "D201".**

EXTERNAL FEATURES AND CONTROLS

FRONT PANEL

PWR OFF, VOL	Turns power on to the set and controls the receive volume.
RTC	Receiver Tone Control. Varies the pitch of the receive audio from bass to treble.
RF GAIN CONTROL	Reduces the receiver sensitivity to eliminate noise or avoid local signal overload.
AM-LSB-USB SWITCH	Selects as desired: AM, Lower Side Band, or Upper Side Band.
SQUELCH CONTROL	Provides a means of quieting the receiver from background noise.
CRYSTAL MANUAL SWITCH	Used to select either crystal controlled or manually tuned receive.
MANUAL TUNING	Used to tune the receiver when the CRYSTAL MANUAL SWITCH is in the MANUAL position. Transmit frequency will be controlled by the CRYSTAL SELECTOR regardless of Manual Tuning Dial position.
CAL	Useful in MANUAL receive only. Activated when the button is pulled out. Provides a means of checking MANUAL dial calibration.
CRYSTAL SELECTOR	Selects the transmit channel at all times and the receive channel in the crystal receive mode. Selected channel is displayed in the window above selector knob.
CLARIFIER	Shifts the transmitter and crystal receive frequency above and below channel frequency for SSB operation. NOT functional in MANUAL receive.
LIMITER	Activates the AM noise limiter and RF Noise Blanker when pulled out. Some early production sets did not include a noise blanker; however, this device may be installed by the factory or your dealer. The noise blanker, if your set includes it, is a P.C. board 1½" x 3" raised ½" above the chassis and includes two I.F. cans. It may be further identified on Top Chassis View Fig. 4 foldout.
SSB LIGHT	Indicates SSB operation while in LSB or USB modes.
MIC	Microphone jack, mating plug is attached to the microphone cord (supplied).
MIC GAIN	Controls the sensitivity of the microphone.
TTC	Controls the transmitter modulating audio frequency response in a range from bass to treble.
MOD LIGHT	AM: Glows dimly with carrier and flashes in proportion to modulation. SSB: Glows dimly during transmit operation.

SWR SWITCH	<p>S/PWR Position: The meter indicates the receive signal and automatically switches to an RF power meter indication when transmitting.</p> <p>SWR CAL Position: See SWR CAL control.</p> <p>SWR Position: The meter indicates SWR on the antenna cable after following the SWR calibration procedure.</p>
SWR CAL CONTROL	Used in conjunction with the meter and the SWR switch to calibrate the SWR scale on the meter.
VOX SENS/OFF	Controls speaking level required to key the transmitter in the voice operated mode. In the "OFF" position, keying is controlled by the push-to-talk bar on the microphone as in ordinary CB sets.
VOX DELAY	Controls the length of time the transmitter stays keyed during pauses in your transmission.
TOP COVER	Hinged for easy access to replaceable internal components; complete with actuating lever for AC interlock switch to safely remove power whenever the cover is raised.
REAR PANEL	
FUSE POST	Contains primary fuse — use 3 amp slow blow ONLY.
AC CONNECTOR	AC Power cord connector.
EXT SPEAKER	Jack for external or remote 4 ohm speaker (not supplied).
TUNE	RF Power amplifier tuning adjustment.
LOAD	RF Power amplifier loading adjustment.
ANT CONNECTOR	SO-239, mates with PL-259 antenna connector.

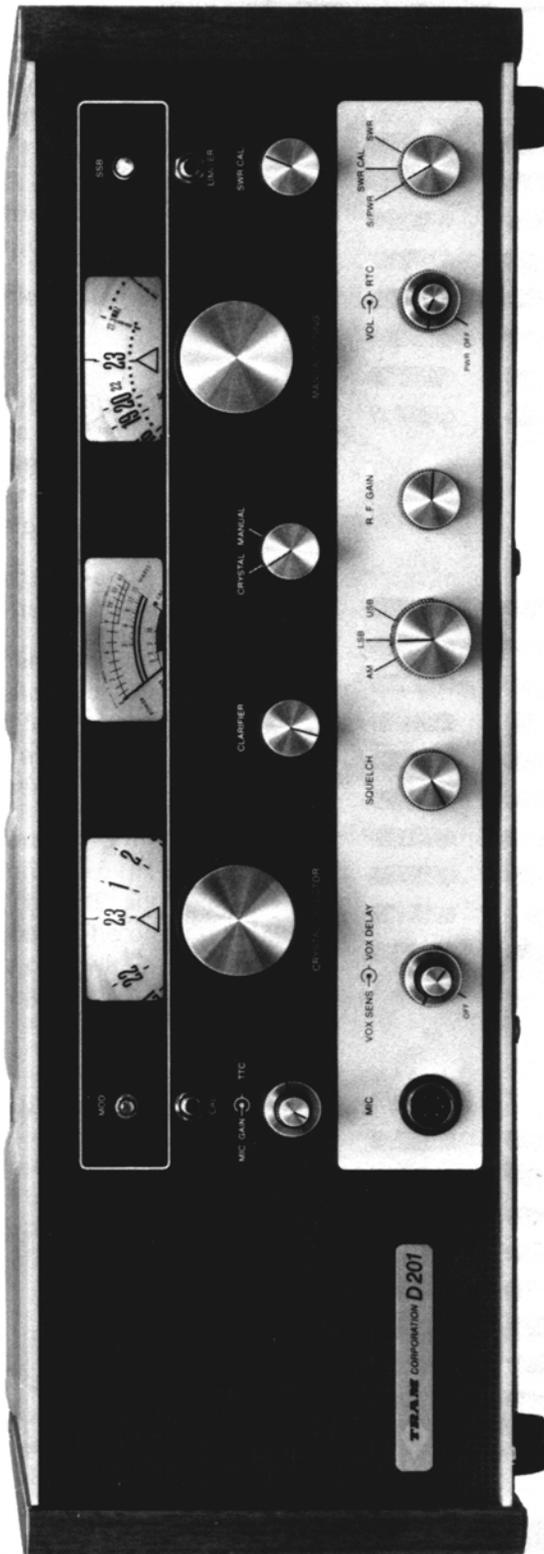


FIGURE 1.

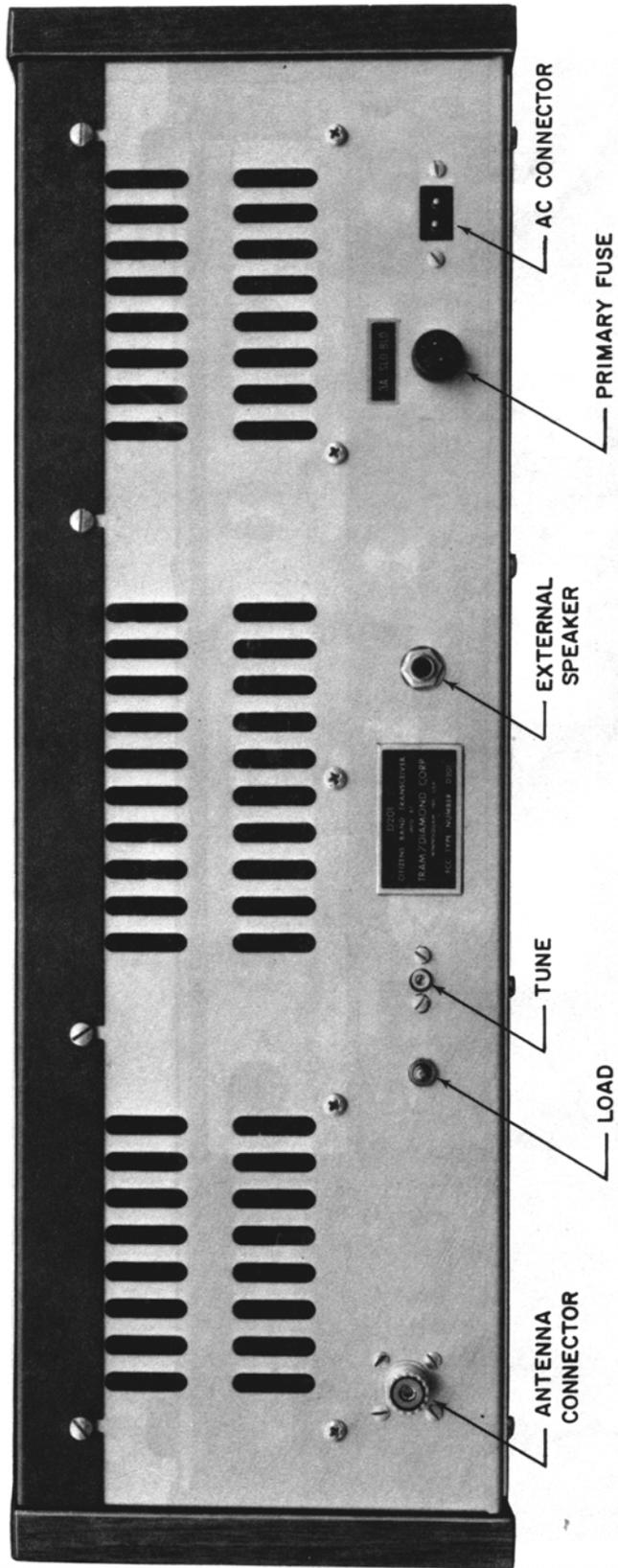


FIGURE 2.

INSTALLATION AND OPERATING INSTRUCTIONS

ANTENNAS

A quarter-wave vertical ground plane type antenna is suitable for base station use. Improved results will be obtained with commercially available half-wave vertical antennas that have matching sections to match 50 ohm coaxial cable. For directional coverage to greater distances, a vertical beam antenna is recommended. Many kinds of beams are available ranging from the single boom, three element type to a double stacked, ten element beam. In areas where there is a lot of activity, a beam antenna, because of its directional characteristics, will reduce interference from other CB stations not directly in the pattern of the beam's directivity.

In all cases where possible, install the antenna in the open, away from surrounding objects.

COAXIAL CABLE

Most commercially available antennas are designed for use with 50 ohm coaxial cable. Be sure to use the correct impedance as specified by the antenna manufacturer. The D201 Pi-network output will match a 50 ohm system, but will not correct for a mismatch between the antenna and the cable feeding it. The D201 power meter can be used to read SWR on your antenna system and is useful in correcting mismatch. (Refer to POWER METER OPERATION, Page 12.)

For feedline lengths under 50 feet, RG-58A/U for 50 ohm systems will be satisfactory. For less loss or longer runs, RG-8A/U is recommended.

Exercise **extreme** care when attaching coaxial fittings to the cable. Be sure that the center conductor is soldered. Remember that a cold soldered joint will result in a loss of power. Solder the braid carefully. Screw the fitting firmly on the antenna. Where the fitting is exposed to the weather, wrap it with vinyl tape. The use of a lightning arrestor is recommended. Most antenna difficulties result from lack of care in above assembly.

Connect your antenna feedline to the antenna connector on the rear of the D201. For safety, it is recommended that a ground wire (#14 or larger) or grounding braid be connected under a ground screw on the rear panel. (The 8-32 screw in the bottom cover, located below the antenna connector, is suggested for this purpose.) The other end of the ground wire (or braid) should be connected to a suitable ground, such as a cold water pipe (make sure it is grounded), a copper ground stake driven four or five feet into the earth, or the AC outlet box of a three wire polarized receptacle.

CAUTION The D201 is a complex piece of electronic equipment; proper ventilation is essential. The louvers and venting are functional. Do not obstruct the free flow of air through the cabinet by placing articles on the top, close to the rear panel, or around the sides or front. Do not install the set in a closed space.

Remove the microphone from its box and connect it to the MIC JACK on the left hand side of the front panel.

The D201 is equipped with a detachable line cord. Plug this cord into the recessed receptacle at the left rear of the chassis. Now plug the AC line cord into a wall socket (117 volts, 50-60 Hz) and your D201 is ready for operation.

Note, that the D201 is completely inoperative whenever the top cover is raised.

For basic AM operation, set the D201 controls as follows:

CONTROL	SETTING
1. MODE	AM
2. RF GAIN	Maximum CW (clockwise)
3. SQUELCH	Maximum CCW (counter clockwise)
4. CLARIFIER	12 o'clock (top center)
5. CRYSTAL-MANUAL	To CRYSTAL
6. CRYSTAL SELECTOR	To desired channel
7. VOX SENS	Click OFF at maximum CCW
8. MIC GAIN	Maximum CW
9. TTC	12 o'clock
10. CAL	Push in for OFF
11. LIMITER	Push in for OFF
12. METER SWITCH	To S/PWR
13. VOL, PWR OFF	Turn ON and adjust volume for desired listening level

The dials and S meter will light up when the power is on. Wait a few moments for the set to warm up, and you should hear background noise or signals if the selected channel is active. Locate an inactive channel and press the push-to-talk bar on the microphone. The MOD light will come on and flash, and the S meter will indicate carrier plus modulation as you talk. Be sure to announce your call sign anytime you turn on the transmitter, even just for short tests. Release the bar to turn off the transmitter.

USE OF CONTROLS

AM-LSB-USB SWITCH The use of this control is self-explanatory. If, in the AM mode, the received signal sounds garbled and the S meter is fluctuating, it is probably an SSB signal. Try LSB or USB. In an SSB mode, it is possible to receive either AM or SSB signals; but mistuning of an AM signal, while in an SSB mode, will result in an annoying beat note.

SQUELCH This control, if turned CW, will quiet the receiver audio. If it is set just beyond the point where the receiver background noise disappears, any signal greater in strength than the noise level will restore the receiver to operation. The control may also be advanced to higher settings so that only relatively strong signals will open the squelch. This can be particularly useful if the band is open with skip signals that are weaker than the stations in your local area. The squelch can then be set to open only on the strong local signals.

LIMITER There are two noise suppressing systems in the D201: A series gate automatic noise limiter in the AM section and an RF Noise Blanker functional in AM and SSB. Both circuits are activated by pulling the LIMITER switch out. These systems are designed to reduce impulse type noise such as auto ignitions and other sporadic high level pulses. Noise limiting effectiveness decreases for very high repetition rates, or continuous noises, since they cannot be distinguished from a desired signal. If operating in a quiet location, the noise limiter may be turned off most of the time.