Courier Conqueror 40D Owner's Manual

CONQUEROR 40D

PHASE LOCKED LOOP

40 CHANNEL

CITIZENS BAND TRANSCEIVER

FCC TYPE ACCEPTED

Courier

INSTRUCTION MANUAL

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SECTION I, INTRODUCTION

NOTICE

FCC Rules and Regulations, Part 95, requires that only those persons possessing a valid First or Second Class Radio Telephone Operator's license are permitted to make repairs or adjustments in the transmitter section of any Citizens Band Transceiver.

CERTIFICATION

FANON/COURIER Corporation, Pasadena, California, certifies that this Citizens Band Transceiver meets the applicable requirements of FCC Rules and Regulations, Parts 15 and 95 regarding frequency tolerance, stability, power output, modulation, and spurious suppression

This certification is void if crystals other than those recommended by the manufacturer are installed or if any modification is made to the transmitter circuits, not specified by FANON/COURIER Corporation.

STATION LICENSE REQUIREMENTS

Before placing the transmitter on the air, a valid permanent Class D Citizens Band Radio Station License or a Temporary Permit must be obtained, as follows:

1. Read and understand the enclosed copy of the FCC Rules and Regulations, Volume VI, Part 95, dealing with permissible communications for Class D Citizens Band Radio Stations.

2. Complete FCC Form 505, Application for Class D Station License and mail to Federal Communications Commission, Gettysburg, PA 17326.

3. Complete FCC Form 555-B, DO NOT MAIL the form to the FCC. The Temporary Permit is valid for 60 days from the date of application for a Permanent Station License.

Additional copies of Part 95 of the FCC Rules and Regulations may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

License applications may be obtained from the Federal Communications Commission, Washington, D.C. 20554 or from the nearest FCC Field Office Listed below.

FCC FIELD OFFICES

Mobile, AL 36602
Anchorage, AK 99501
Los Angeles, CA 90012
San Diego, CA 92101
San Francisco, CA 94111
San Pedro, CA 90731
Denver, CO 80202
Miami, FL 33130
Tampa, FL 33602
Atlanta, GA 30303
Savannah, GA 31402
Honolulu, HI 96808
Chicago, IL 60604
New Orleans, LA 70130
Baltimore, MD 21202
Boston, MA 02109
Detroit, MI 48226
St. Paul, MN 55101
Kansas City, MO 64106
Buffalo, NY 14203
New York, NY 10014
Portland, OR 97204
Philadelphia, PA 19106
San Juan, PR 00903
Beaumont, TX 77701
Dallas, TX 75202
Houston, TX 77002
Norfolk, VA 23510
Seattle, WA 98104

PLL FREQUENCY SYNTHESIZER

Most Citizens Band Transceivers in the past used Frequency Synthesizers utilizing 12 or more quartz crystals to generate the various radio signals for receiving and transmitting the assigned CB channels. The frequency stability of each channel, when receiving or transmitting, was dependent largely upon the crystals used to generate the frequencies for that channel. The frequency accuracy and stability of one channel was often better than another.

Citizens Band transceivers of recent design, such as the transceiver you have purchased, utilize the most advanced design of frequency synthesizers called Phase Locked Loop (PLL) Frequency Synthesizers. These synthesizers utilize a minimal number of crystals as reference frequencies from which transmitting and receiving frequencies are developed. The transmitting and receiving frequencies are stabilized by phase comparing to the reference frequency and thus providing a phase-locked loop.

There are several types of PLL circuits in use; the one your transceiver uses incorporates the best features of these designs. Your transceiver uses crystal controlled standards with digital type programmable frequency dividers for selection of the channel frequencies, which are always locked to the reference frequency. If for any reason the PLL is not "locked" the transmitter will not transmit.

SECTION II, INSTALLATION

READ ALL THE INSTALLATION INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO INSTALL OR OPERATE YOUR TRANSCEIVER. SAVE THE SHIPPING CONTAINER AND ALL THE PACKING MATERIALS FOR FUTURE USE.

A. Location

1. Install the transceiver in an area that is comparatively dry, dust free and near to a 117 VAC, 60 Hz power outlet. Position on a table, desk or shelf, preferably away from heavy traffic.

2. Microphone

Connect microphone plug into transceiver jack. A microphone hanger is provided which may be attached to the desk or table within easy reach from your position when operating your transceiver. The microphone is a fine precision instrument and should be handled with care.

B. Power Connections

The transceiver is designed to operate from 117 V, 60 Hz or from a DC power source capable of supplying 13.8 VDC and 3 or more Amperes.

1. AC Power Connections

Before inserting the AC power connector into the power outlet, turn the VOLUME ON/OFF switch on the front panel to the OFF position, and the AC/DC MODE switch on the rear panel to the AC position. Be sure voltage is 110 to 120 volts and that the frequency is 60 Hz. Circuit protection is provided by a 125 V, 1 ampere fuse which is located inside the transceiver cabinet. UNDER NO CIRCUMSTANCES SHOULD A FUSE OF GREATER AMPERAGE THAN 1 AMPERE BE USED TO REPLACE A BURNED OUT FUSE AS SEVERE DAMAGE MAY RESULT TO THE TRANSCEIVER AND VOID THE WARRANTY.

2. DC Power Connections (Figure 1)

a) Before you insert the DC power cable plug into the POWER connector on the rear panel, BE SURE THE TRANSCEIVER POWER SWITCH IS OFF AND THAT THE PROPER CONNECTIONS HAVE BEEN MADE TO THE DC POWER SOURCE. Switch the AC/DC Mode Switch to DC.

b) Connect the RED lead with the fuse holder to the POSITIVE terminal on the power source. Connect the other lead (BLACK) to the NEGATIVE terminal. CHECK CAREFULLY THE POLARITY OF THE POWER SOURCE BEFORE CONNECTING TO THE TRANSCEIVER.

c) Verify that the fuse holder in the wire contains a fuse not exceeding 3 amperes. UNDER NO CIRCUMSTANCES SHOULD A FUSE OF GREATER THAN 3 AMPERES BE USED TO REPLACE A BURNED OUT FUSE. ALSO, NEVER BYPASS THE FUSE WITH A JUMPER WIRE. IN EITHER CASE SEVERE DAMAGE MAY RESULT TO THE TRANSCEIVER AND VOID THE WARRANTY.

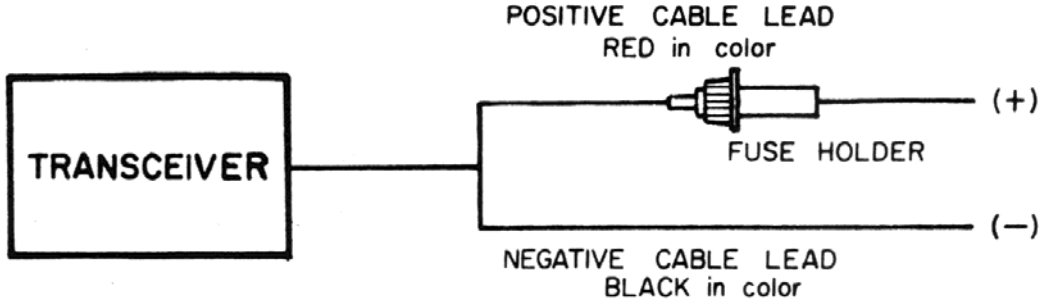


FIGURE I, D.C. POWER CABLE, LEAD IDENTIFICATION DIAGRAM

C. Antenna and Cable Information

1. The antenna is a very important part of your radio station, whether it is a mobile or base station. Antenna height is of prime importance. Refer to the FCC Rules and Regulations for the maximum height from the ground or building you are allowed. The higher the terrain or structure on which the antenna is mounted, the greater the range of communication will be.

2. The unit is designed to operate with any good quality Citizens Band mobile or base station antenna. The type of antenna you should use depends in large measure upon WHERE the antenna is to be mounted and the radiation pattern you require. All FANON/COURIER dealers are well qualified to assist you in selecting the proper type.

3. Transmission Cable Requirements

   In most cases, the coaxial cable supplied with mobile CB antennas are of the proper length for connecting directly to the antenna connector on the rear panel of the transceiver; however, if it is necessary to change the length, type RG58/U is recommended for lengths up to 50 feet.

4. Length Calculations

   The length of the transmission cable is very important, as the length will vary according to the transmission "velocity factor" of the cable. The length of cables with a velocity factor of 0.66 (regular type cable) should be in odd multiples of 6 feet for a frequency of 27 MHz.

   Cables with a velocity factor of 0.82 (foam type dielectric) should be in odd multiples of 7.5 feet for 27 MHz installations.

5. The formula for determining the length in feet of the cable you may use, is as follows:

$$\text{Cable length} = \frac{246\ V}{f}$$

Where V = Transmission Velocity Factor of the cable

f = Frequency in Megahertz

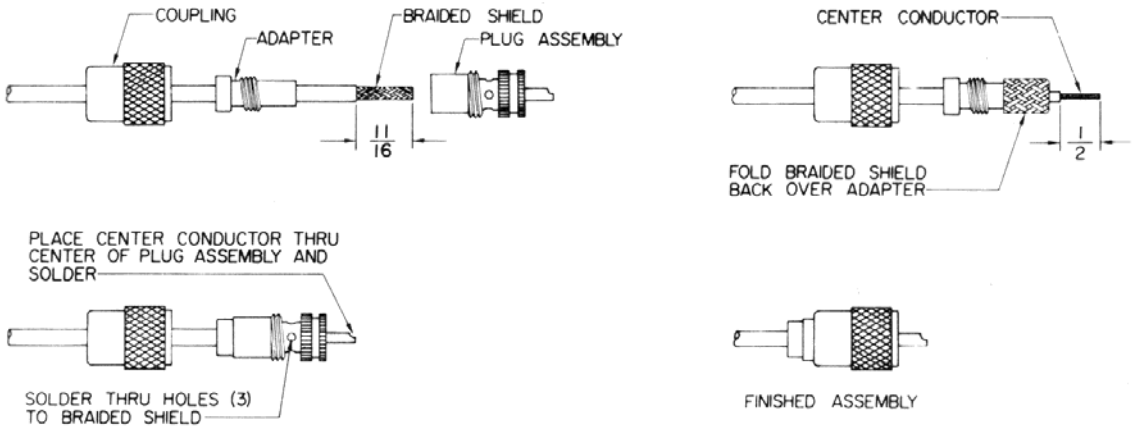


FIGURE 2, CABLE CONNECTOR ASSEMBLY DIAGRAM

D. Voltage Standing Wave Ratio (VSWR) Measurements

The VSWR of the antenna system should not be greater than 1.5 to 1. Use a COURIER Model Port-A-Lab 500 D Voltage Standing Wave Ration Meter, or equivalent instrument; follow the instructions given with the instrument.

E. PA Speaker Connection

Prepare an 8 ohm horn or speaker with an insulated cable and miniature phone plug, and connect to the PA SPEAKER jack. (Refer to figs. 3 and 4). TO AVOID DAMAGE, BE SURE CABLE DOES NOT SHORT TO TRANSCEIVER CASE. Set the PA/CB switch to PA and press the microphone switch. Adjust the volume control for the proper audio level at the PA speaker or horn. When the CB/PA switch is in the PA position, all other functions of the transceiver are turned off.

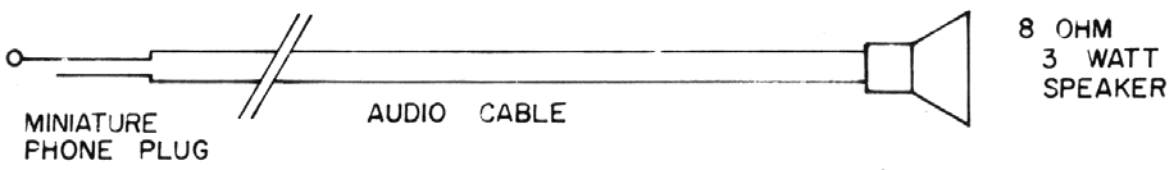


FIGURE 3, P.A. SPEAKER CABLE DIAGRAM

SECTION III, STATION OPERATION

After completing the installation in accordance with the previous instructions and posting your FCC Station License as required, you are ready to operate your transceiver. Before operating your transceiver, thoroughly familiarize yourself with the front panel layout (fig. 4) and study the following descriptions of the controls and indicators.

A. Function of Controls and Indicators

VOLUME ON/OFF SWITCH

The volume control functions as the Power ON/OFF switch and controls the audio level of the internal or external speaker. Rotate the control fully counterclockwise to turn the transceiver power OFF. A "click" will be heard when the power switch operates.

SQUELCH CONTROL

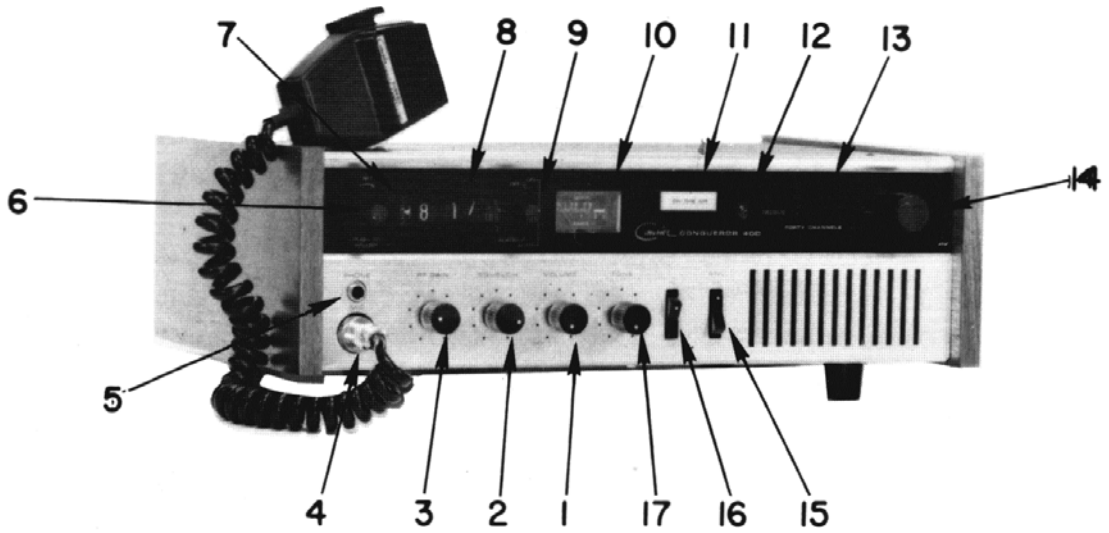
The word "squelch" means to silence; therefore, the function of the control is to silence the atmospheric noise (hash) usually present in all high frequency AM radio communication. The maximum squelch is obtained when the control is in full CLOCKWISE position, minimum squelch when in COUNTERCLOCKWISE position.

RF GAIN CONTROL

A change in receiver sensitivity is sometimes necessary when listening to very strong stations, sometimes local stations, and very weak or distant stations. Rotation of the control clockwise increases the sensitivity for distant stations and counterclockwise for less sensitivity, or for local stations.

MICROPHONE JACK

This jack accommodates the microphone plug, and is wired to provide transmit when microphone switch is keyed. The microphone should be plugged-in, or removed, from the jack only when the transceiver power is OFF. If a different type of dynamic microphone is to be used in



1	Volume ON/OFF Switch	12	Receiving Mode Indicator
2	Squelch Control	13	Channel Indicator
3	RF Gain Control	14	Channel Selector
4	Microphone Jack	15	Auto Noise Limiter
5	Phone Jack	16	PA/CB Switch
6	Clock and Timer Control	17	Tone Control
7	Timer	18	AC Power Cable
8	Clock	19	DC Power Connector
9	Automatic Clock Control	20	AC/DC Mode Switch
10	S/RF Power Meter	21	PA Speaker Jack
11	ON THE AIR Indicator	22	Antenna Connector

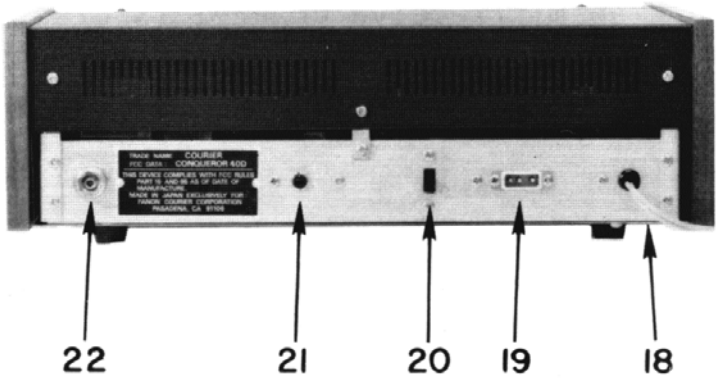


FIGURE 4, CONTROLS, INDICATORS AND CONNECTORS

place of the one supplied, be sure the connector is wired the same as the one provided with your unit.

PHONE JACK

This jack accommodates an earphone plug. When earphones are plugged in, the internal speaker is disconnected.

ON THE AIR INDICATOR

The ON THE AIR indicator illuminates when the microphone switch is operated to indicate that the transmitter is operating, and you are "on-the-air".

RECEIVING MODE INDICATOR

This indicator provides visual indication that the transceiver is in the RECEIVE MODE. Sound entering the mciro-phone will not be transmitted over the air when the indicator is illuminated.

S/RF POWER METER

Meter indicates relative strength of incoming signals from 1 through 9. A reading of 1 indicates a weak or distant station and a reading of 9 indicates a local or a higher power station. The RF power scale indicates the relative RF power in watts being transmitted by your transmitter.

CHANNEL INDICATOR

The selected transmit/receive channel is displayed digitally by light emitting diodes (LED) when transceiver is switched on.

CHANNEL SELECTOR

The Channel Selector sets the channel frequencies simultaneously for the receiving and transmitting modes. Refer to the FCC Rules and Regulations for complete information on the use of the various channels.

AUTOMATIC NOISE LIMITER

Excessive noise impulses will be reduced when this switch is in the ON position. When in the OFF position, the noise limiter circuit is not in operation.

PA/CB SWITCH

When set in the CB position, the transceiver will function as a Citizens Band Radio. When set in the PA position, and an EXTERNAL PA SPEAKER is connected to the PA jack on the rear panel, the unit operates as a public address amplifier.

TONE CONTROL

This control when rotated will change the tone of the incoming signal and should be positioned at the point which provides the clearest reception.

AC POWER CABLE

This cable may be plugged into a 117 VAC, 60 Hz power supply to provide for AC operation.

DC POWER CONNECTOR

A cable, plug and fuse holder containing a 3 ampere fuse is provided to connect to a 13.8 VDC power source for DC operation.

AC/DC MODE SWITCH

This switch must be in the DC position to operate the transceiver from a 13.8 VDC power source, and in the AC position when operating from a 117 VAC, 60 Hz power source.

PA SPEAKER JACK

A miniature phone plug fits this jack on the rear panel, and provides for connection of an external public address speaker.

ANTENNA CONNECTOR

A standard PL-259 coaxial connector fits this connector on the rear panel. The output impedance is 50 ohms.

CLOCK AND TIMER CONTROL

Push this control knob IN and rotate to reset the clock. With the control knob OUT, rotate the knob clockwise to set the desired "TURN-ON" time on the TIMER.

TIMER

The timer is used in conjunction with the automatic clock control to preset the desired "TURN-ON" time for a period of up to 12 hours.

CLOCK

The clock is an illuminated digital type registering hours, minutes and seconds. The clock will work when the transceiver is connected to an AC power supply, and is independent of the position of the POWER ON/OFF switch.

AUTOMATIC CLOCK CONTROL

With the POWER ON/OFF switch in the OFF position, the transceiver may be turned on automatically at a preset time by setting the control to the AUTO position and setting the TIMER to the desired "TURN-ON" time. When the control is set to ALARM, both the alarm and the transceiver will turn on at the preset time. To turn the alarm off, set the control to the AUTO or ON position, or if desired the transceiver may be turned off by moving the control to OFF.