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Royce 1-636 Owner's Manual

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Model 1-636
OWNER'S MANUAL

SSB/AM
23-Channel Mobile
Citizensband Transceiver With
GYRO-LOCK Synthesizer



GENERAL

Your new Royce 1-636 is a professional quality Citizens Band Transceiver designed to operate on either AM, Lower Single Sideband (LSB) or Upper Single Sideband (USB). It has many innovative engineering and user functions. Among them, a Royce plus feature is an amplified AGC circuit, built in to your 1-636. This expands the range of a normal AGC circuit by many times, and is usually found only in the most expensive sets. Your amplified AGC will enable you to hear clearly, even a very weak distant signal, and still allow you to hear a unit parked next to you without distortion. Royce's Gyro-Lock synthesizer is also employed in your 1-636. This is a phase loop lock synthesizer, giving you all channel frequencies from only three crystals in conjunction with one LSI (large scale integrated circuit and an I.C. (integrated circuit). Royce's Gyro-Lock is self compensating for frequency drift, keeping your 1-636 on center channel, every channel. Careful reading of this instruction manual before operation is essential for proper operation and prevention of damage.

PACKING

This unit has been especially protected for shipment. Open the carton carefully to avoid damage. Examine the unit for any visible damage. If the transceiver has been damaged in shipment, save the box and packing material and notify the transportation company.

DESCRIPTION

RECEIVER

Sensitivity of less than a 1/2 of a microvolt on SSB and AM. A tuned RF stage pulls in even the weakest signals.

A deluxe mechanical filter on SSB provides the highest degree of selectivity and rejection of unwanted adjacent channel signals. Four Ceramic Filters for AM reception deliver over 70 db adjacent channel rejection. Additional receiver features include: variable squelch, clarifier control, integrated circuit audio preamplifier stage, metering automatic noise eliminator, PA-CB switch.

TRANSMITTER

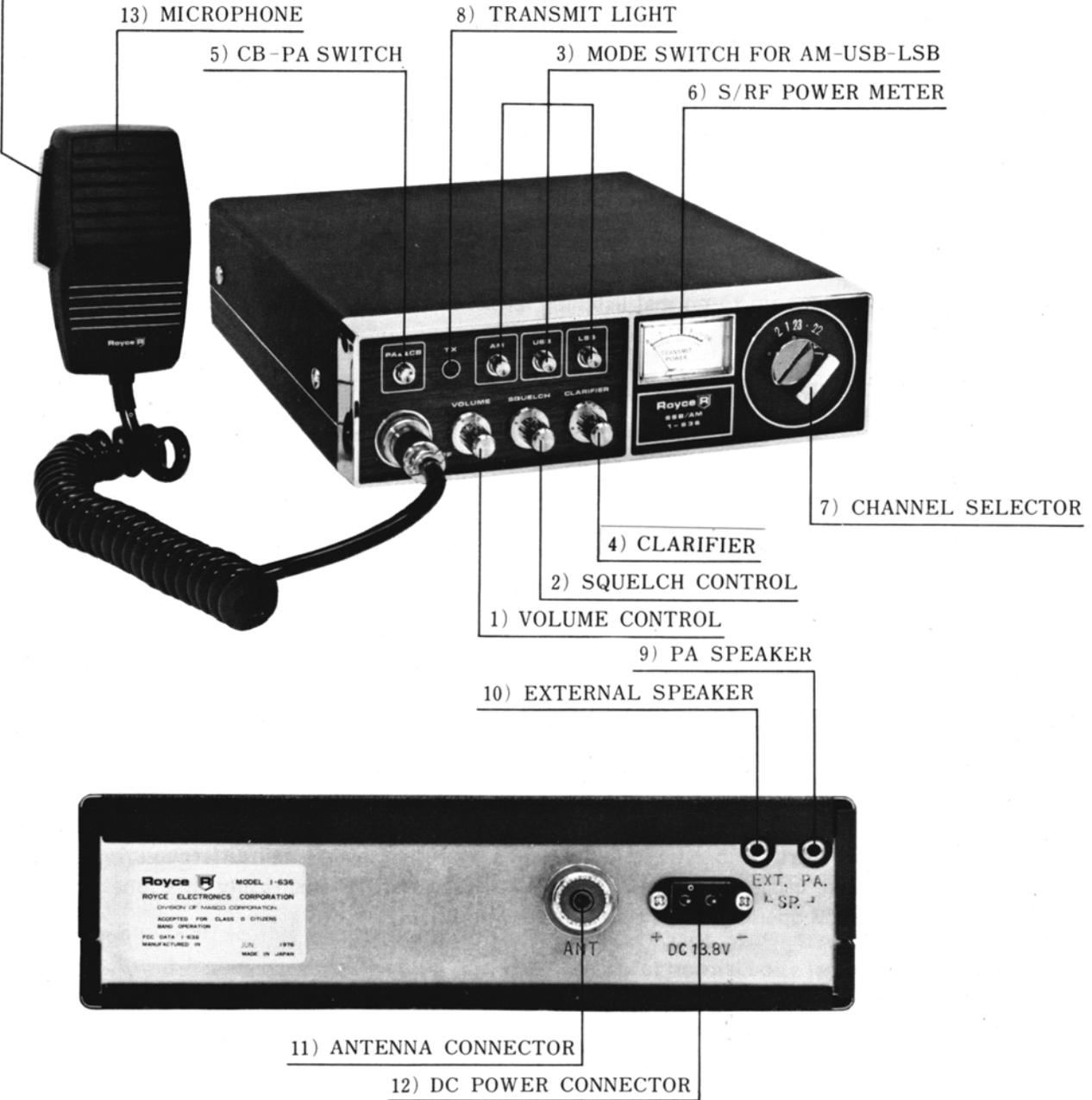
High efficiency is obtained through use of select components and sophisticated engineering design. An ALC circuit is employed in the SSB mode to provide maximum "Talk Power" without distortion. The SSB signal is generated by use of a integrated circuit balanced modulator and Royce's GYRO-LOCK synthesizer, to keep you on center channel, every channel. Relay switching is employed for dependability.

POWER SUPPLY

Either Positive or Negative ground 12 Volts DC (13.8 VDC EIA) is built in.

OPERATION OF CONTROLS

14) PUSH-TO-TALK



- Front View:
1. VOLUME CONTROL
 2. SQUELCH CONTROL
 3. MODE SWITCH FOR AM-USB-LSB
 4. CLARIFIER
 5. CB-PA SWITCH
 6. S/RF-POWER METER
 7. CHANNEL SELECTOR
 8. TRANSMIT LIGHT

- Rear View:
9. PA SPEAKER
 10. EXTERNAL SPEAKER
 11. ANTENNA CONNECTOR
 12. DC POWER CONNECTOR
- Microphone
13. MICROPHONE
 14. PUSH-TO-TALK

FEATURES AND CONTROLS

1. VOLUME/POWER ON-OFF

This combination control supplies power to your 1-636 and adjusts the receiver volume. The switch should be turned clockwise from the "Off" position. You will hear an audible "click". The channel dial and meter will light. To adjust the volume continue advancing the control in a clockwise position.

2. SQUELCH CONTROL

The squelch control is used to eliminate background noise when there are no signals present strong enough to overcome the noise. To adjust the squelch control, select a channel where there is no signal. Turn the volume up to normal listening levels. Rotate the squelch control clockwise until the background noise disappears.

3. PUSHBUTTON MODE SWITCHES FOR LSB-USB-AM

AM transmission is amplitude modulation of the radio frequency carrier with an audio signal (voice). The components of the transmitted signal include the carrier and its two sidebands, upper and lower. For 100% modulation, each sideband contains one-fourth as much power as the carrier. The information transmitted is in the sidebands.

USB transmission is the transmission of the upper sideband only of a single sideband signal. In single sideband transmission, the carrier and one sideband are removed from the transmitted signal. Thus, only one sideband is transmitted.

LSB transmission is the transmission of the lower sideband, only. Three pushbuttons provide selection of the mode of operation desired.

4. CLARIFIER

The clarifier is an electronic tuning circuit which allows you to shift the frequency of your receiver plus or minus 750 Hertz (1.5 KHz total). In SSB operation, even small differences in frequencies between stations can cause poor reception. In effect, the clarifier electrically fine tunes the station being received. In AM operation, this acts as a DELTA TUNE circuit.

5. TX INDICATOR

Your 1-636 is equipped with a LED (light emitting diode) transmit indicator light on the front panel. With the PTT switch on the mike is depressed, the LED will light, indicating you in the transmit mode.

6. PA-CB PUSHBUTTON SWITCH

In the "PA" position, your 1-636 is converted to a public address amplifier or hailer. The PA function should not be used unless an 8-16 ohm external speaker is connected to the "PA" Jack located on the back of the chassis. Once this optional speaker has been connected, simply put the PA-CB switch to the "PA" position and depress the microphone push-to-talk switch.

7. S/RF METER

The 1-636 is equipped with a large, easy-to-read combination meter.

In the receive position, the meter reads the level of the incoming signals.

In the transmit position, it indicates relative power output.

NOTE: (1) In the AM mode, the meter will read power at all times when the transmit button is depressed. On SSB, however, it will only indicate RF output power when you modulate the signal.

(2) In the SSB mode, no meter can follow the rapid voice peak power attained. Therefore, while the transmitter is developing much more power than on AM, this additional power will not be fully reflected on the meter.

8. CHANNEL SELECTOR

The channel selector switch is used to select the fixed center frequency. It automatically adjusts both the receive and transmit frequencies. Set the selector switch to the desired channel.

9. PA SPEAKER JACK

For attaching optional 8-16 ohm PA speaker. Use 3.5mm jack.

10. EXTERNAL SPEAKER JACK

You may add any 3-16 ohm external speaker. Simply plug your accessory speaker into the jack. Inserting the 3.5mm plug will automatically disconnect the internal speaker.

11. ANTENNA CONNECTOR

A standard SO-239 type connector is supplied for attaching either mobile or base antennas.

12. DC POWER CONNECTOR

A plug in DC connector is provided to easily remove your set from your vehicle.

13. MICROPHONE

The receiver and transmitter are controlled by the press-to-talk switch on the microphone. To transmit, simply press in this switch. Release the switch to receive. When transmitting, hold the microphone 3 to 4 inches from your mouth and speak clearly at normal voice levels. The 1-636 uses Royce's newly designed high level output microphone. It delivers maximum talk power.

SPECIFICATIONS

GENERAL

1. Semiconductors : 26 Transistors, 5 FET, 7 IC's, 40 Diodes and 1 LED
2. Frequency Range : 26.965MHZ – 27.255 MHZ
3. Modes of Operation : AM, Lower Sideband and Upper Sideband
4. Controls : Volume Control with power on-off switch
: Variable Squelch Control
: Mode Selector Switches (3)
: Clarifier Control
: Channel Selector Switch
: CB-PA Switch
5. Connectors and Jacks : Microphone Connector
: Coaxial type Antenna Connector
: Public Address Speaker Jack
: External Speaker Jack
: DC Power Jack
6. Speaker : 3-1/2 inches, 8 ohms
7. Microphone : Dynamic Microphone (500 Ohms)
8. Power Supply : 13.8VDC
9. Dimensions : 8-1/8" (W) x 2-3/8" (H) x 9-2/8" (D)
10. Weight : 4 LBS 14 OZS

RECEIVER

1. Sensitivity at S/N 10dB : AM 0.7uV SSB 0.2uV
2. Selectivity : AM 5KHZ SSB 2.2KHZ
3. AGC Figure of Range : 80dB
4. Squelch Range : 0.5uV – 500uV
5. Audio Output Power : 4 Watts
6. Distortion at input 100uV : 6%
7. Audio Frequency Response : 300 – 2200HZ
8. Supurious Response : More than 45dB supurious signal is required to produce the same amount of audio output as the desired receive signal.
9. IF Frequency : 1st IF 10.695MHZ and 2nd IF 455KHZ
10. Current Drain no audio : 500mA

SSB TRANSMITTER

1. RF Output Power : 12 Watts PEP
2. Carrier Suppression : More than 40dB
3. Unwanted Sideband Suppression : More than 50dB
4. Harmonic Suppression : More than 50dB
5. Current Drain : 850mA

AM TRANSMITTER

1. RF Output Power : 4 Watts
2. Modulation Capability : More than 75%
3. Harmonic Suppression : More than 50dB
4. Current Drain : 1400mA

POWER SUPPLY

Almost all cars and most trucks currently operating in the U.S. are negative ground. There are some large trucks and construction equipment which do operate on positive ground. Your Royce 1-636 will operate on either. In the negative ground systems the minus (–) pole of the battery is attached to the car body, engine block etc.

NEGATIVE GROUND HOOKUP:

Attach the red (fused) wire to the fuse block terminal or any convenient plus (+) lead. Devices operated by the ignition key such as the radio, light etc. are best since when you turn the ignition off, the unit will be turned off. Attach the black lead to the car body via any convenient method.

NOTE: Many newer cars use plastic dash pieces. Make sure the screw or contact you choose is attached to the metal framework of the car.

POSITIVE GROUND HOOKUP:

In the event that you do have a positive ground vehicle, the following hookup must be made. Attach the red (fused) lead to the car body via any convenient screw, bolt etc. Attach the black lead to the terminal block or any convenient wire which goes to the minus (–) pole of the battery.

FAILURE TO MAKE THE PROPER CONNECTION COULD RESULT IN UNIT DAMAGE.

ANTENNA REQUIREMENT

This transceiver will operate with any standard 52 ohm ground-plane, vertical, mobile whip, long wire or other CB antenna. A standard SO 239 type connector is provided on the back panel for use with popular PL 259 antenna plug. An adjustable loading network is provided to match antenna impedance exactly.

ANTENNA INSTALLATION

Base Station: When the 1-636 is used as a base station, any Citizens Band beam, dipole, ground plane or vertical antenna may be used. A ground plane type will provide greater coverage, and since it is essentially non-directional, it is ideal in base station to mobile operation. From base station to base station, or point to point operation, a directional beam will give greater distance even under adverse conditions. The range of the transceiver depends basically on the height of the antenna and, whenever possible, select the highest location within F.C.C. limits. (These regulations limit the antenna height to 20 feet above an existing structure or 60 feet above ground for a non-directional antenna and 20 feet above an existing structure for a beam). Generally 26 feet of lead-in cable should be used to minimize line losses. However, a desirable antenna location may justify the loss in extra lead-in length.

Mobile Antennas: A vertical whip antenna is best suited for mobile use. A non-directional antenna must be used for best results in any case. The base loaded whip antenna will normally provide effective communication. For greater range and more reliable operation, a full quater wavewhip should be used. Either of these antennas use the metal car body as a ground plane and the shield of the base lead as well as the metal case of the transceiver should be grounded. A standard antenna connector (type SO-239) is provided on the transceiver for easy connection to a standard PL-259 cable termination.

MOBILE INSTALLATION

A location in the car or truck should be chosen carefully for convenience of operation and non-interference with normal driving functions. Mounting may be under the dash or instrument panel or any place a secure installation can be made. The carrying handle again serves as the mounting bracket or additional perforated straps or brackets may be used as desired. The 12-volt cable may be connected to any convenient terminal but preferably to the ignition switch to prevent unauthorized persons from operation of your unit. With this method the unit will only operate when your key is turned on. Engine ignition interference should not be a problem and vehicles equipped with standard broadcast radios will have enough suppression to eliminate ignition interference. If interference is present, any skilled auto radio repairman should be able to eliminate it for you.

BASE STATION INSTALLATION

For base station use, the Royce model 2-050A power supply is recommended. When this power supply is used, simply connect the red (+) and black (–) terminals on the power supply to the (+) and (–) leads on your 1-636. Do not attempt to operate this transceiver by connecting directly to 117 Volts AC.

GENERAL OPERATING PROCEDURE

CAUTION: Before operating this transceiver, you are required by law to read and understand Part 95 of the FCC Rules and Regulations.

Check to see if the proper connections have been made on the power cable, antenna system and microphone.

1. RECEIVER

- (a) Turn all controls counter clockwise.
- (b) Turn the on/off switch (on the volume control) to the "ON" position. The channel dial and meter will light.
- (c) Select the desired operation channel.
- (d) Set PA-CB switch to "CB" position.
- (e) Advance the volume control to normal listening levels.

- (f) Set the pushbutton mode selector to either AM, lower sideband (LSB) or upper sideband (USB).
- (g) Adjust squelch control.
- (h) When a signal is heard adjust the CLARIFIER for maximum clarity.

2. TRANSMITTER

IT IS ILLEGAL TO OPERATE THE TRANSMITTER SECTION OF THIS TRANSCEIVER PRIOR TO RECEIVING A VALID STATION LICENSE AND CALL SIGN.

TO TRANSMIT:

CAUTION: Never operate this unit without an adequate antenna system as damage could result.

1. Select the desired channel.
2. Set the pushbutton Mode Selector for desired transmission.
3. Set Clarifier Control to the center position.
4. Depress the push-to-talk switch and talk in a normal level voice.

SERVICING YOUR TRANSCEIVER

The technical information, diagrams and charts provided in this manual are supplied for the use of a qualified holder of a first or second class radiotelephone license in servicing this transceiver. It is the users responsibility to see that this unit is operating at all times in accordance with the F.C.C. citizens radio service regulations.

If you install your own transceiver, do not attempt to make any transmitter tuning adjustment. Adjustments are prohibited by the F.C.C. unless you hold or are in the presence and under the supervision of a first or second class radiotelephone licensed person. A Citizens Band of Amateur license is not sufficient.