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Royce 1-648 Owner's Ser. 1 Manual
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Royce 
ELECTRONICS CORPORATION

Model I-648

OWNER'S MANUAL

GYRO-LOCK
40-Channel Mobile
Citizensband
Transceiver



GENERAL

Your new Royce 1-648 is a professional quality 40 channel AM Citizens Band transceiver. The 1-648 incorporates Royce's unique Gyro-Lock oscillator system for accurate on-channel operation. Self-compensating for temperature variance, the integrated circuit design of Royce's Gyro-Lock oscillator keeps you dead center on channel, every channel. The 1-648 also incorporates several additional innovative engineering and user functions. Careful reading of the instruction manual before operation is essential for proper operation and prevention of damage to this unit.

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:

A sensitive dual conversion superheterodyne circuit is employed with a tuned RF stage for top range performance. A ceramic filter provides selectivity and rejection of unwanted adjacent channel interference. Royce's automatic amplified A.G.C. circuit greatly improves the receiver range without distortion. Whether the station is extremely close or far away, you'll hear him. And it's fully automatic. The 1-648 also employs an integrated circuit audio stage to deliver crisp, powerful sound.

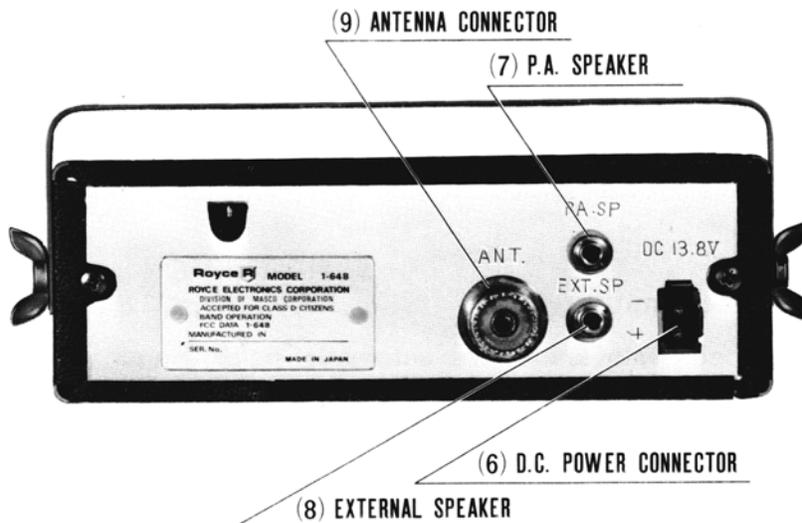
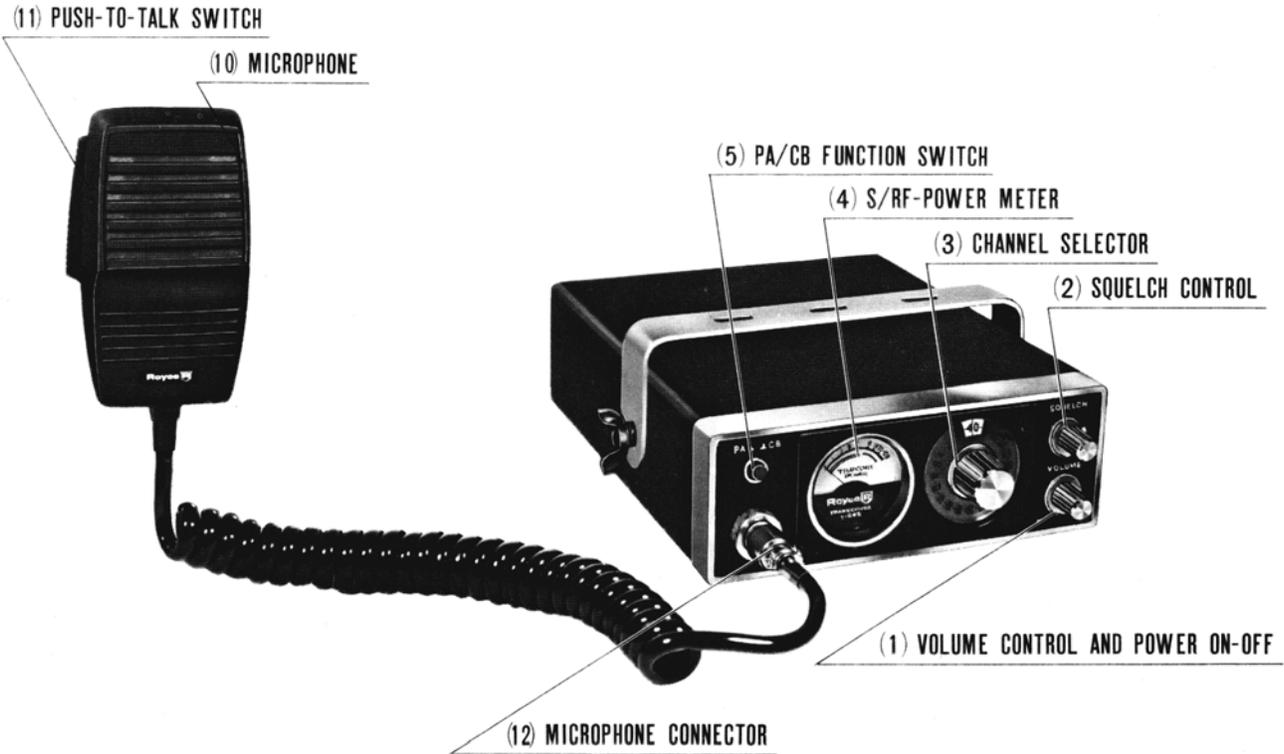
Transmitter:

The 1-648 delivers the maximum allowable output power authorized by the FCC. A highly efficient circuit is employed to deliver maximum talk power. The large meter monitors your RF output level.

The 1-648 also features a powerful Public Address Paging system, as well as operation from 12 Volts DC positive or negative ground.

The heart of your 1-648 is the Gyro-Lock oscillator. The extensive use of integrated circuits assure you of on-frequency operation on every channel. Gyro-Lock is the most accurate frequency system available for CB. The large combination S/RF meter monitors strength of incoming signals as well as RF output. A metal type RF final transistor is used for reliability. The high level integrated circuit audio stage, coupled with Royce's I.C. Speech processing circuit delivers maximum "talk power" without distortion or overmodulation.

OPERATION OF CONTROLS



- Front View:**
1. VOLUME CONTROL AND POWER ON-OFF
 2. SQUELCH CONTROL
 3. CHANNEL SELECTOR
 4. S/RF-POWER METER
 5. PA/CB FUNCTION SWITCH
- Rear View:**
6. D.C. POWER CONNECTOR

- Microphone:**
7. P.A. SPEAKER
 8. EXTERNAL SPEAKER
 9. ANTENNA CONNECTOR
 10. MICROPHONE
 11. PUSH-TO-TALK SWITCH
 12. MICROPHONE CONNECTOR

FEATURES AND CONTROLS

1. Volume/Power On-Off

This combination control supplies power to your 1-648 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. Channel Selector

The channel selector switch is used to select the channel frequency. It automatically adjusts both the transmitter and receiver frequencies.

3. 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.

4. S-RF Meter

The 1-648 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.

5. PA-CB SWITCH

In the "PA" position, your 1-648 is converted to a public address amplifier or halier. 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.

6. Automatic Noise Limiter

Your 1-648 is equipped with a full time automatic noise limiter. This greatly reduces extraneous noise coming into the receiver via the antenna. In effect, the noise pulses are clipped from the incoming signals before they reach the audio amplifier. This causes little or no loss in the signal receive level.

7. PA Speaker Jack

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

8. External Speaker Jack

You may add any 8-16 ohm external speaker. Simply plug your accessory speaker into the jack. Inserting the 3.5mm plug will automatically disconnect the internal speaker.

9. Antenna Connector

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

10. DC Power Cord

To attach to power source.

11. 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.

SPECIFICATIONS

GENERAL

- | | |
|--|---|
| 1. Semiconductors | : 23 transistors, 1 FET, 13 diodes, 3 integrated circuit |
| 2. Self-Contained Speaker | : 2-1/2 inch, 8 ohms voice coil |
| 3. Microphone | : Dynamic microphone with push-to-talk switch, 500 ohms |
| 4. Controls, Indicators and Connectors | : Volume control with power on-off switch
: Variable Squelch Control
: Channel Selector
: Illuminated channel indicator
: Illuminated S/RF power meter
: Push button PA/CB
: Coaxial type antenna connector
: Microphone connector
: DC power connector
: External Speaker Jack
: Public Address Speaker Jack |
| 5. Power Supply | : 13.8 Volts DC (positive or negative ground) |
| 6. Cabinet Description | : Plastic front with chrome plating |
| 7. Dimensions | : 7-15/16"(D)×6-5/16"(W)×2-7/32"(H) |

RECEIVER

- | | |
|--|----------------------------------|
| 1. Frequency Range (MHz) | : 26.965–27.405 |
| 2. Sensitivity | : 0.5 μ V for 10db S+N/N |
| 3. Selectivity | : 5KHz minimum at 6db down |
| 4. Adj. channel rejection | : More than 50 db |
| 5. Audio power output at 8 ohms | : More than 3W at 10% distortion |
| 6. Audio fidelity (1KHz=0db, 6db down) | : 400Hz–2000Hz |
| 7. AGC figure of merit | : More than 80db |
| 8. Squelch Sensitivity (Threshold) | : Less than 0.5 μ V |
| 9. Spurious Rejection | : More than 45db |

TRANSMITTER

- | | |
|--------------------------|------------------|
| 1. Frequency Range (MHz) | : 26.965–27.405 |
| 2. RF Power Output | : 4W |
| 3. Modulation Capability | : 100% |
| 4. Spurious Suppression | : More than 60db |
| 5. Frequency Tolerance | : \pm 0.005% |

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 1-648 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.

ANTENNA INSTALLATION

BASE STATION: When the 1-648 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 condition. 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 nondirectional 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 quarter-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 2-050 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 1-648. Do not attempt to operate this transceiver by connecting directly to 110 Volts AC.