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**Royce 1-612 Owner's Manual**  
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**Royce**   
ELECTRONICS CORPORATION

Model 1-612

# OWNER'S MANUAL

**"GYRO-LOCK"**

23-Channel AM Mobile  
Citizensband  
Transceiver



## GENERAL

Your new Royce 1-612 is a professional quality 23-Channel AM Citizens Band Transceiver. It features Royce's exclusive "Gyro-Lock®" Synthesizer. One of the latest state of the art advance in modern technology to assure on channel operation. In addition, you will find many user conveniences. Careful reading of the 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

A sensitive dual conversion superhetrodyne circuit is employed with a tuned RF stage. This delivers top range performance. Gyro-Lock® locks receiver on center channel eliminating the need for a Delta-Tune circuit. A ceramic filter provides a high degree of selectivity and rejection of unwanted adjacent channel signals. Additional receiver features include RF Gain, Variable Squelch, Noise Eliminator, Metering, Receive Light Indicator, Push-Pull Audio.

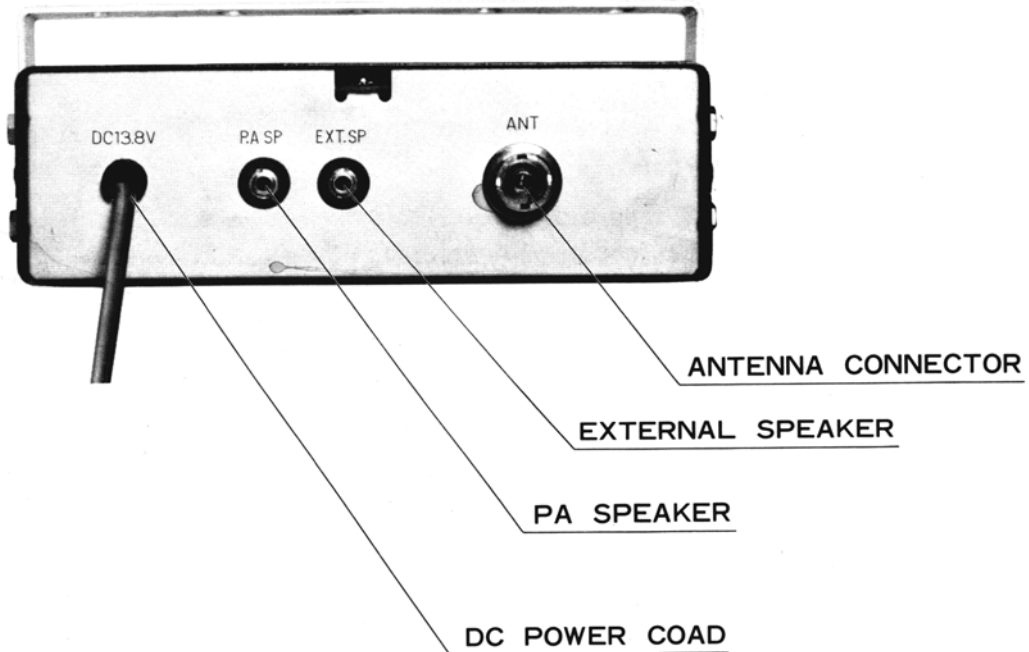
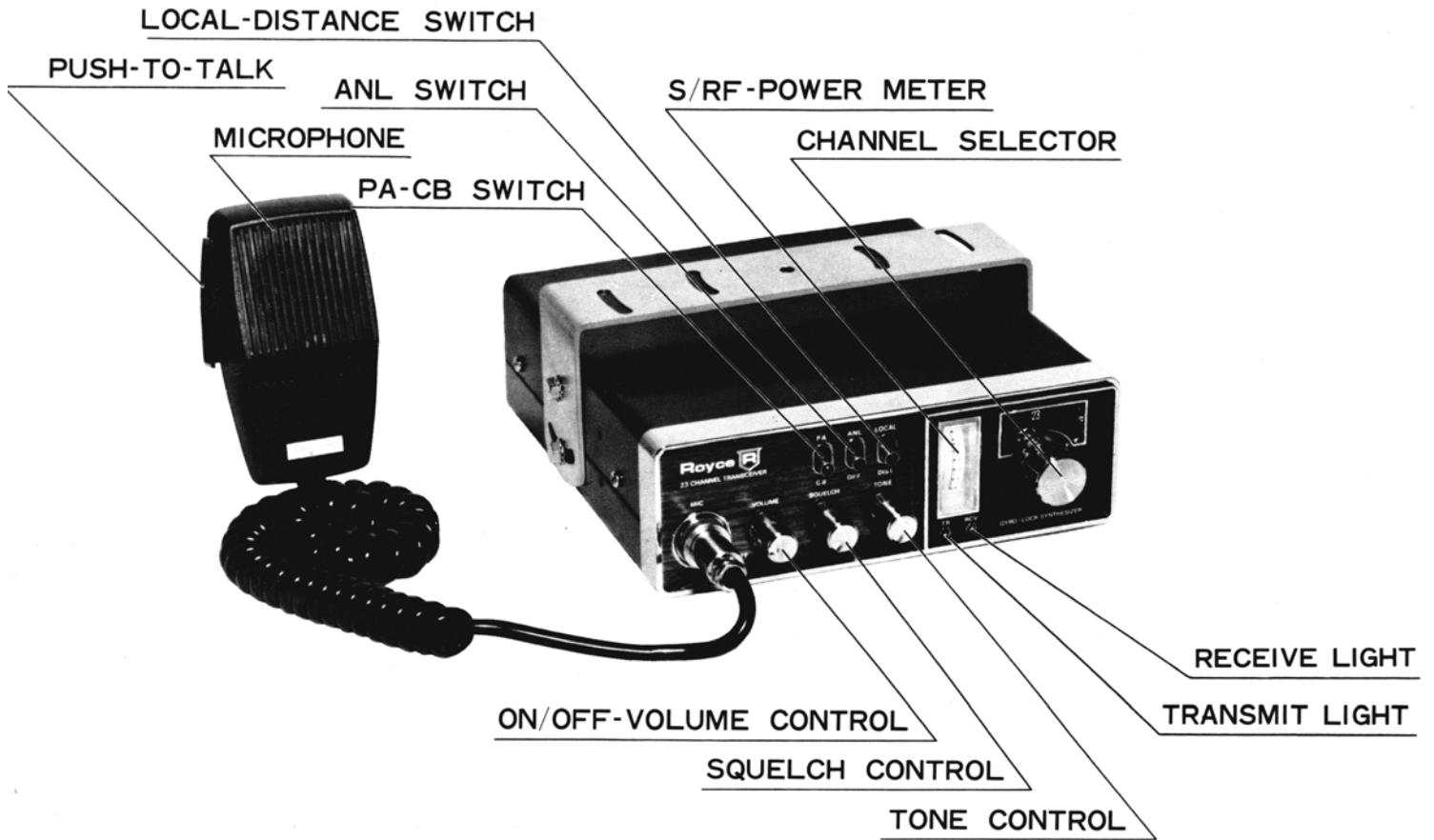
### TRANSMITTER

The all new Integrated Circuit Gryo-Lock system delivers on center channel operation. Automatically compensates for temperature and voltage changes. 14 integrated circuits "lock" electronically all channels. High efficiency output power is obtained through use of select components and the latest state of the art design. Royce's AMC circuit is employed to provide maximum "Talk Power". A separate transmit indicator light provides visual transmit mode function.

### POWER SUPPLY

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

# OPERATION OF CONTROLS



# FEATURES AND CONTROLS

## 1. RF GAIN (LOCAL-DIST)

**NOTE:** FOR NORMAL MAXIMUM RECEIVING RANGE THIS CONTROL MUST BE IN THE DIST POSITION.

The "RF Gain" control lets you adjust the sensitivity (receiving range) of your 1-612. For maximum range reception, the control should be turned to the "DIST" position.

In some cases, you may find yourself operating within a very close distance to another station. When extremely strong signals are present, they sometimes have a tendency to "overload" and distort. (Two mobiles within a half mile driving down the same highway or a mobile driving past a base station may generate this condition). While a wide range electronic AGC circuit is incorporated in your 1-612, it cannot cope with the wide variances that occur. This is the purpose of the RF Gain control. It lets you manually adjust the receive capability to prevent distortion and overload on strong signals. Should this condition occur, simply turn the RF Gain control to the "LOCAL" position.

**REMEMBER** – For maximum reception, always return the control to the distant 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. VOLUME/POWER ON-OFF

This combination control supplies power to your 1-612 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.

## 4. AUTOMATIC NOISE ELIMINATOR

Your 1-612 is equipped with a sophisticated electronic noise eliminator system to greatly reduce extraneous noise coming into the receiver. In effect, noise pulses are clipped from incoming signals before they reach the amplification stage of the receiver. This causes no loss in the signal receive level. The ANL circuit should normally be left on. A switch has been provided to eliminate this circuit if desired.

## 5. TONE

The variable tone control varies the audio level response of the receiver. In noisy areas, a high out (treble) audio response makes reception easier. For normal tone, keep the control in the counterclockwise position.

## **6. PA-CB**

In the "PA" position, your 1-612 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 1-612 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.

## **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. TRANSMIT LIGHT**

Indicates transmit mode. (Red)

## **10. RECEIVE LIGHT**

Indicates receive mode. (Green)

## **11. PA SPEAKER JACK**

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

## **12. EXTERNAL SPEAKER JACK**

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

## **13. ANTENNA CONNECTOR**

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

## **14. DC POWER CORD**

To attach to power source.

## **15. 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.

## 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 1-612 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 convenience 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 1-612 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 60 feet above an existing structure for a omnidirectional antenna and 20 feet for a beam). Generally a maximum of 26 feet of lead-in cable should be used due to line losses. However, a desirable antenna location may justify the loss in extra lead-in length. For best results, RG 8/4 Coaxial cable is recommended.

### 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 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.

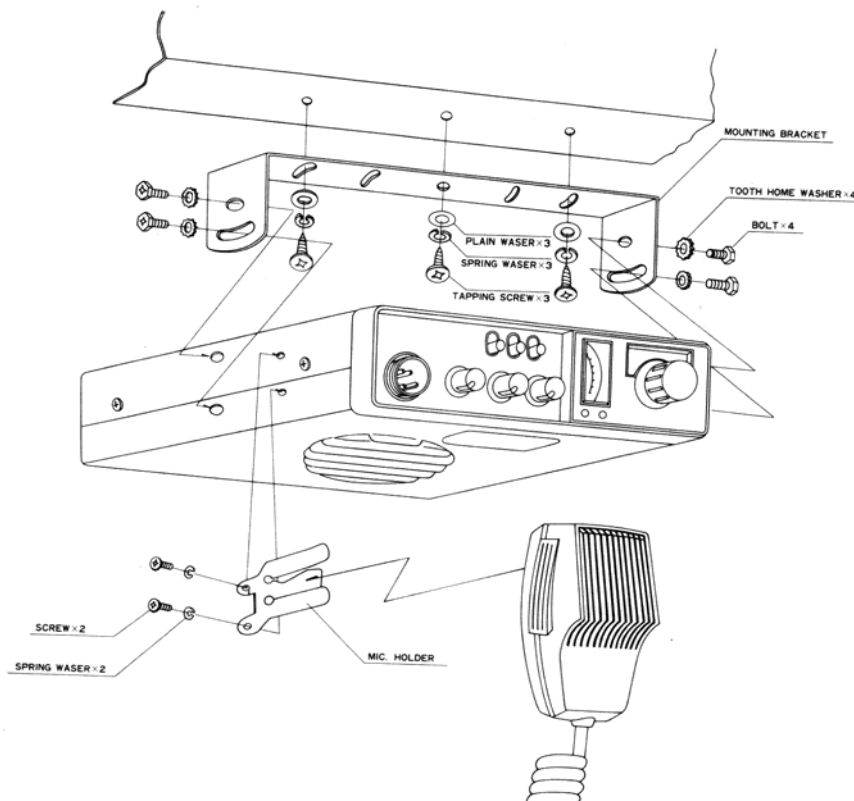
## MOBILE INSTALLATIONS

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 INSTALLATIONS

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 1-612. Do not attempt to operate this transceiver by connecting directly to 110 Volts AC.

## MOUNTING INSTRUCTIONS





# SPECIFICATIONS

## GENERAL

1. Semiconductors	: 14 Integrated Circuits, 24 Transistors and 39 Diodes
2. Frequency Range	: 26.965 MHz – 27.255 MHz
3. Mode of Operation	: AM
4. Controls	: Channel Selector Switch : Volume Control with Power On-Off Switch : Variable Squelch Control : Variable Tone Control : CB-PA Switch : ANL Switch : Local-Distance Switch
5. Connectors and Jacks	: Microphone Connector : Coaxial Type Antenna Connector (50 ohms) : Public Address Speaker Jack 3.5 m/m (8 ohms) : External Speaker Jack 3.5 m/m (8 ohms)
6. Speaker	: 3-inches, 8 ohms
7. Microphone	: Dynamic Microphone (500 ohms)
8. Power Supply	: 13.8 VDC Positive or Negative Ground
9. Dimensions	: 6-7/8" (W) x 2-1/4" (H) x 7-5/32" (D)
10. Weight	: 5 Lbs

## RECEIVER

1. Sensitivity at S/N 10 dB	: 0.7 $\mu$ V
2. Selectivity at $\pm$ 10 kHz	: 70 dB
3. AGC Figure of Range	: 80 dB
4. Squelch Range	: 0.7 $\mu$ V – 100 $\mu$ V
5. Audio Output Power	: 4 Watts
6. Distortion at input 100 $\mu$ V	: 6%
7. Audio Frequency Response	: 500 Hz – 2000 Hz
8. Supurious Response	: More than 50 dB
9. IF Frequency	: 1st . . . 10.695 MHz    2nd . . . 455 kHz
10. Current Drain No Audio	: 550 mA

## TRANSMITTER

1. RF Output Power	: 4 Watts
2. Modulation Capability	: More than 70%
3. Harmonic Suppression	: More than 50 dB
4. Current Drain Maximum	: 1600 mA

# 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 and antenna system. Plug the microphone in.

## 1. Receiver

- (a) Turn all rotary controls counter clockwise.
- (b) Put PA-CB switch to CB position.
- (c) Put ANL – Off switch to ANL position.
- (d) Put Local-Dist. switch to Dist. position.
- (e) Turn the On-Off switch (located on the volume control) to the “on” position. The channel dial, meter, and receive indicator lights should come on.
- (f) Select the desired operating channel (1 to 23).
- (g) Advance the Volume control to normal listening level.
- (h) With no signal present, adjust the Squelch control.
- (i) When a signal is heard, adjust the Tone Control to suit your performance or conditions.

## 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 OR LOAD AS DAMAGE MAY RESULT.

1. Select the desired channel.
2. Depress the Push-To-Talk switch on the microphone and talk in a normal voice level.
3. The transmit light will show the transceiver is in the transmit mode. The S-RF meter will visually indicate the RF power being supplied to your antenna.

**NOTE:** BE SURE PA-CB SWITCH IS IN CB POSITION.

## 3. Public Address

To use your 1-612 as a Public Address or Hailer, connect a paging speaker (Royce 2-060 or equivalent) to the set via the back panel jack. Put the PA-CB switch to the PA position. Depress the Push-To-Talk switch on the microphone and talk in a normal voice.

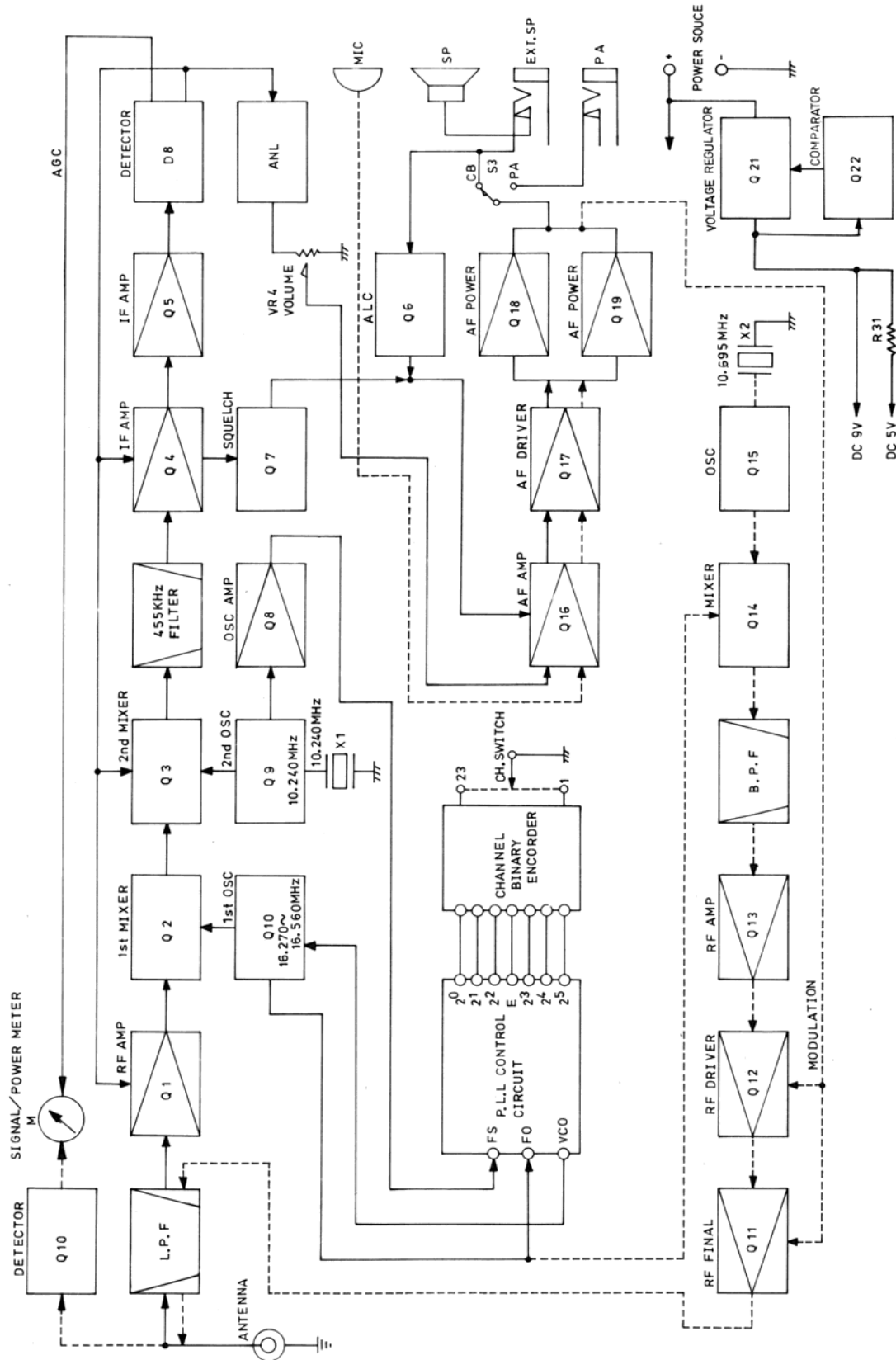
**NOTE:** Feedback (screeching or howling) can occur if your PA speaker is mounted too close or faces your microphone. Normal car installations should not have problems where the PA speaker is mounted under the hood of the car. If feedback occurs, orientation of the microphone may eliminate it. If not, the speaker should be moved further away.

## 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.

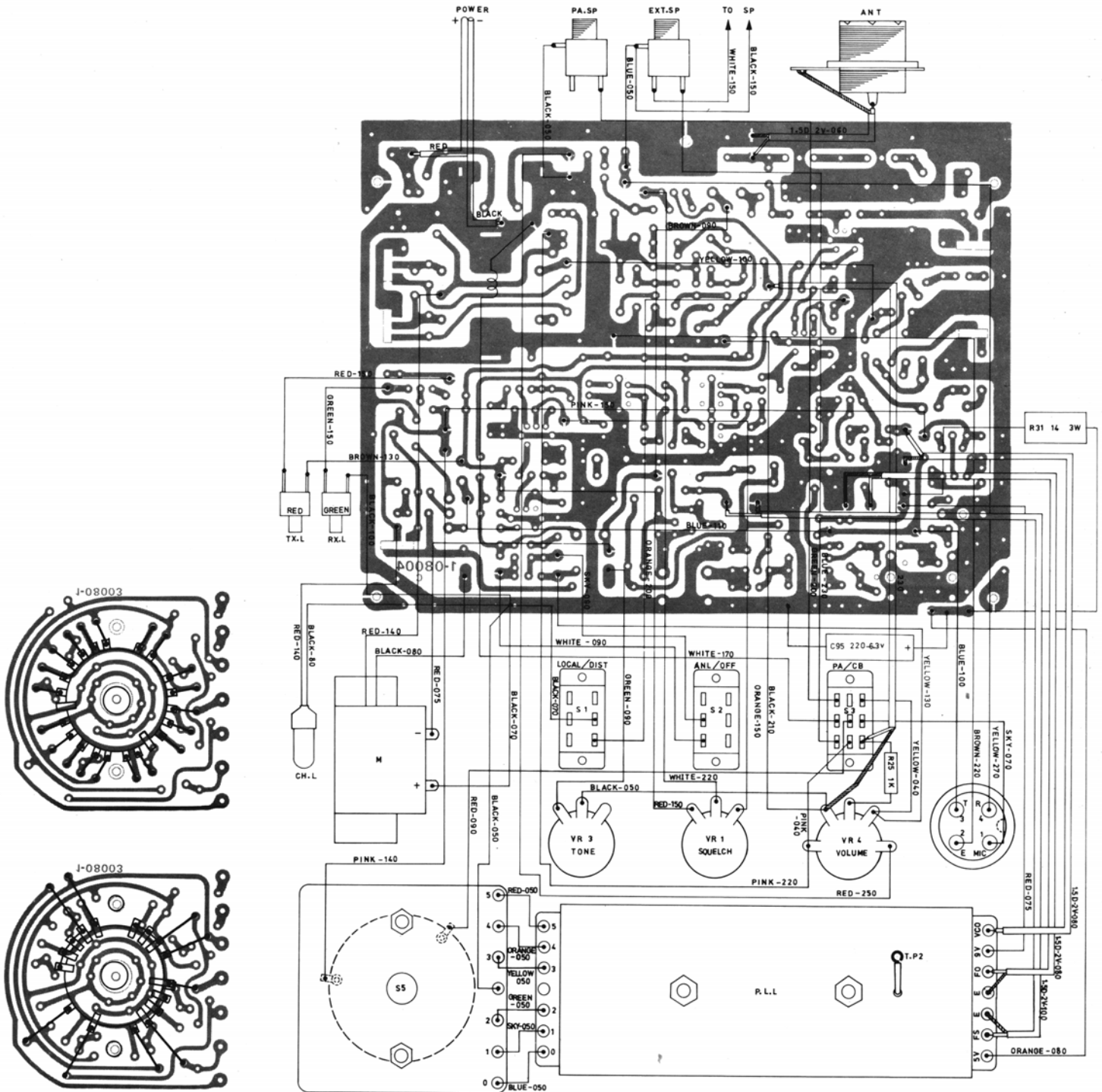
If you install your own transceiver, do not attempt to make any transmitter tuning adjustment. Adjustments are prohibited by the F.C.C. unless you hold or are in the presence and under the supervision of a first or second class radiotelephone licensed person. A Citizens Band or Amateur license is not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

# BLOCK DIAGRAMS





# WIRING DIAGRAM



## FEDERAL COMMUNICATIONS COMMISSIONS REQUIREMENTS

Your new Royce 1-612 is a combination receiver-transmitter designed and built for licensed Class D operation on any of the 23 frequencies designated as citizens band channels by the Federal Communications Commission. You are required to read and understand Part 95 of the F.C.C. rules and regulations prior to operation of this unit. Part 95 regulations are available for \$2.25 from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. You are also required to complete F.C.C. form 505 and submit it to the F.C.C. in order to receive your license to operate this unit. F.C.C. regulations will be violated if you transmit with this unit prior to receipt of your license.

**NOTE:** 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 or service your own transceiver, do not attempt to make any transmitter tuning adjustment. Transmitter adjustments are prohibited by the F.C.C. unless you hold a first or second class radiotelephone license or are in the presence of a person holding such a license. A Citizens Band or Amateur license is not sufficient.

**ROYCE ELECTRONICS CORPORATION HEREBY CERTIFIES THAT THIS EQUIPMENT HAS BEEN DESIGNED, MANUFACTURED AND FURNISHED IN ACCORDANCE WITH VOL, 6 PART 95 OF THE CURRENT FCC RULES AND REGULATIONS FOR CLASS D CITIZENS BAND OPERATION.**

## WARRANTY POLICY

Royce products are built to rigid specifications and are quality audited at several stages in their manufacturing. We warrant each new Royce product to be free from defects in material and craftsmanship for a period of 90 days under normal use. We will repair free of charge or replace at no charge any unit which our examination shall disclose to be defective and under warranty. This warranty shall be valid only where a purchaser has filled in and has on file at the factory a warranty registration card (supplied with all units). If no warranty card is on file, a sales receipt showing the date of purchase must accompany the article being returned.

This warranty is invalid to any Royce product which has been subject to misuse, neglect, accident, modifications in wiring not of our own installation, or to the use in violation of instructions furnished by us. It is also not applicable to units which have been modified or repaired outside our factory.

This warranty does not cover earphones, carrying cases, antennas, batteries, broken or cracked cabinets, or any accessory used in connection with the product.

Should in warranty repair be required, carefully pack the unit and ship it, insured prepaid, to the address listed below. Enclose \$4.00 to cover return postage and handling.

This warranty is in lieu of all other warranties expressed or implied, and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

**Royce**  **electronics** corporation

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