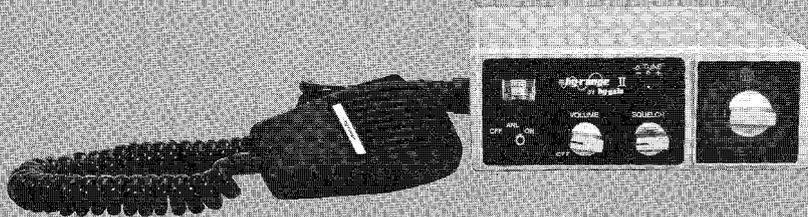


hy-range II

BY **hy-gain**

23-CHANNEL
SOLID STATE 5-WATT MOBILE
CITIZENS TWO-WAY RADIO



MODEL 671B-PR

OWNER'S MANUAL

Specifications

	page
General Description	1
You and the FCC	1
Licensing Your Citizens Two-Way Radio	1
Legal Requirements	1
Installation	2
Mounting Bracket	2
Power Connections	4
Antenna	4
Microphone Mounting Bracket	5
Accessories	5
Front Panel Controls and Connections	6
Rear Panel Connections	6
Operating Procedures	7
To Receive	7
To Transmit	7
PA (Public Address)	8
Noise Suppression	8
Tune-up	8
Corrective Steps	8
Service Information	10
Warranty Repair	10
How to Ship Returns	10
Purchase of Parts	10
Schematic	11

Specifications

General

Channels	all 23 in the citizens band (27 MHz)
Antenna impedance	50 ohms, nominal
Dimensions (HWD)	2¼" x 6¾" x 9⅝"
Shipping weight	4 lbs. 11 oz.
Power requirement	11.5 VDC - 14.5 VDC, negative or positive ground

Receiver

Sensitivity	0.7 μ V for 10 dB (S + N) N ratio
Audio output	3 watts, maximum
Current drain	about 100mA (no signal)

Transmitter

RF power output	4 watts
Modulation	AM, type 8A3
Current drain	less than 1 amp @ 13.8 VDC
Compliance	Type Accepted, under FCC Rules, Part 95

General Description

The Hy-Gain, Hy-Range II is a full 23-channel transceiver designed and type accepted for Class D Citizens Band operation as designated by the Federal Communications Commission (FCC). See the section on FCC Regulations for further information.

It is a completely solid-state, compact unit with high reliability and low power consumption. The system of frequency synthesization provides immediate operation on all 23 channels without additional crystals or adjustments. It features a delta tune control, which helps pick up stations that are slightly off-frequency. A switchable automatic noise limiter (ANL) is included to help reduce atmospheric noise. The unit can be used for public address with the addition of a PA speaker.

The Hy-Range II transceiver operates from 12 volts DC (nominal), either negative or positive ground. For best results from your transceiver, please read all the instructions before beginning your installation.



You and the FCC

Licensing Your Citizens Two-Way Radio

Before doing anything else, fill out FCC Form 505 (enclosed) and send it off in order to receive your Class D License as soon as possible. Mail the upper portion, along with \$4.00 to:

Federal Communications Commission
Gettysburg, Pennsylvania 17325

Mail the lower portion, along with \$5.35 to:

Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

You should receive your Class D station license and a copy of Volume VI of the FCC Rules and Regulations, which includes Part 95, within 60 days.

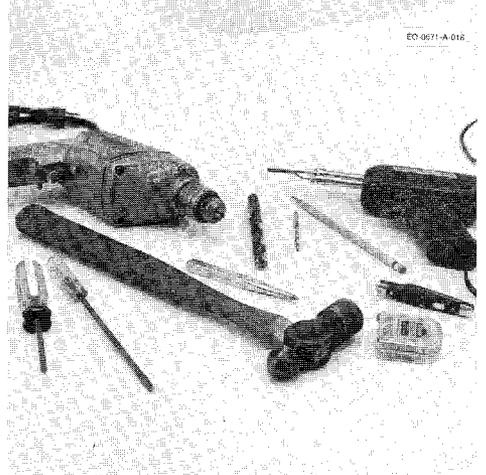
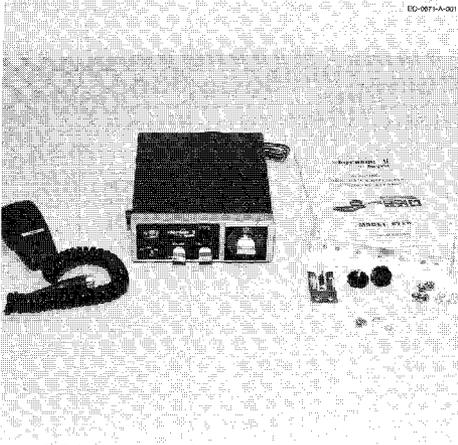
It is illegal to transmit without a station license, and the FCC requires you to keep a copy of Part 95.

Legal Requirements

It is your responsibility to see that your unit is always operated in accordance with FCC Rules and Regulations. Don't tamper with any internal adjustments; these adjustments can be done only by someone with a first- or second-class radiotelephone license. Especially, be sure that only factory-authorized crystals, transistors, and other components are used in this radio.

If your unit should need servicing, contact the nearest authorized Hy-Gain Warranty Service Station. There is a list of these centers included with the radio.

Installation



Choose a convenient location that is protected from moisture and heat, and be sure that the unit will not interfere with your driving. Decide in advance the best way to route the antenna coax.

Tools required for installation:

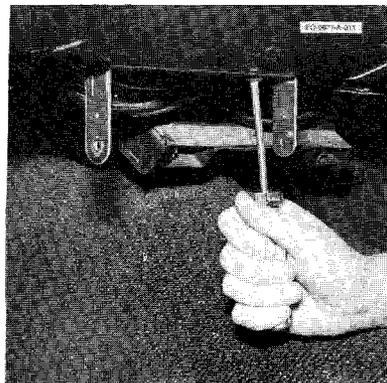
pencil	center punch
drill	pocket knife (optional)
drill bits (5/32" & 1/8")	electricians tape
tape measure	low heat soldering gun
phillips screwdriver	rosin core solder (not acid core)
hammer	

Mounting Bracket

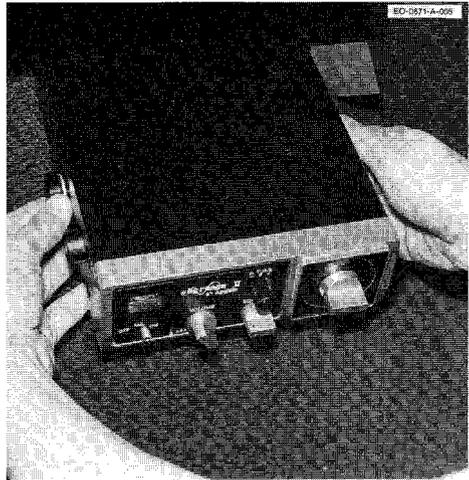
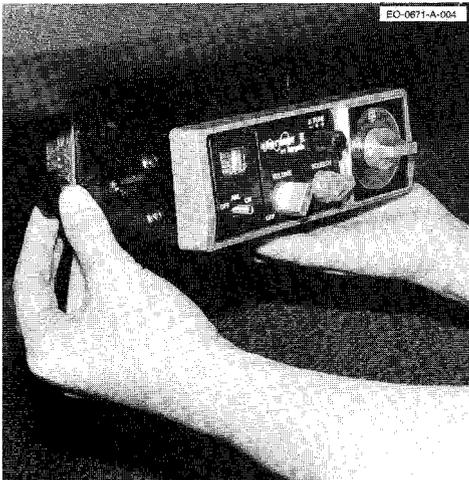
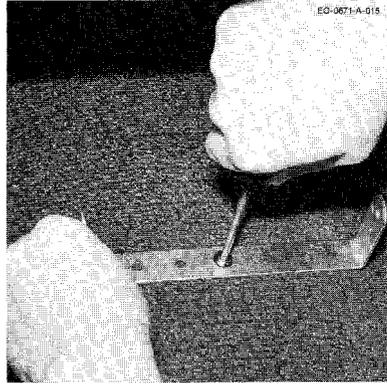
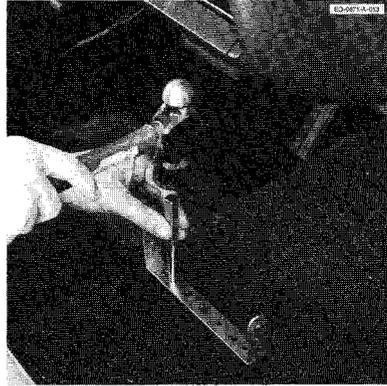
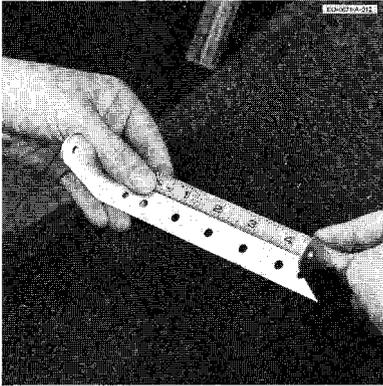
Use the bracket as a template to mark where the mounting holes will be drilled. Measure carefully to be certain the installation will be straight.

With a center punch, indent the marked areas. This will prevent the drill bit from skipping when the hole is drilled.

Dash Mounted



Floor Mounted



Attach the bracket with at least three screws for a sturdy installation. Use the large thumb screws to fasten the transceiver to the bracket.

Microphone Mounting Bracket

Install the mic-hanger bracket in an area which will allow the microphone and its cord to hang in a convenient position out of the way of your feet. For example, mount the bracket high on the dash where it is within easy reach.



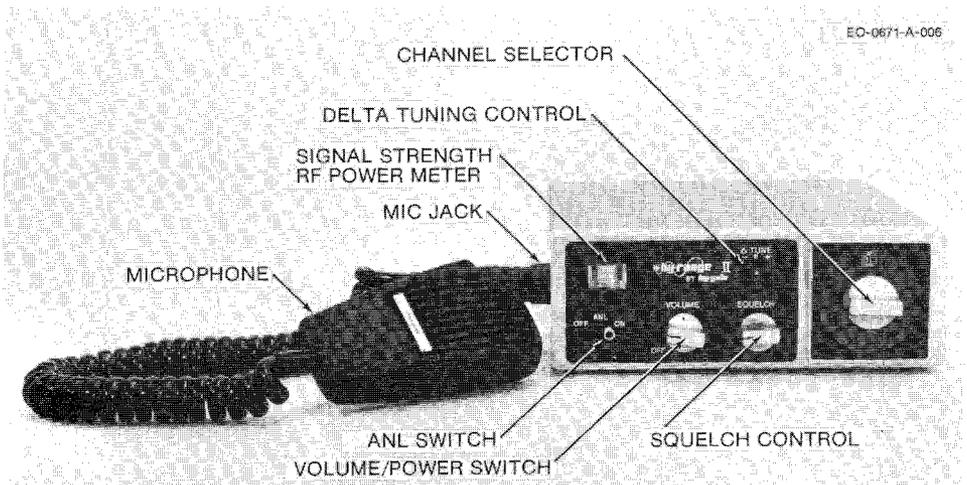
External Speaker

Two optional speakers, the Hy-Gain 612 and 613, can be used with the external speaker jack. Instructions on how to mount are included with them.

Any 8-ohm, 4-watt speaker could be used as well. Plug the speaker cable plug into the external speaker jack (3.5 mm plug required).

Optional Handset

Telephone Handset, model 676, is available for use with the Hy-Range radios. See the manual supplied with it for instructions on its use.



Turn page for definitions.

Front Panel Controls and Connections

Signal Strength/RF Power Meter

During reception, the built-in meter provides a relative indication of signal strength in "S" units (lower scale). This provides a comparison between one incoming signal and another.

During transmit, the meter provides an indication of your antenna rf power (upper scale). As you speak, the pointer should flicker slightly, indicating that you are modulating the rf carrier.

Microphone Jack

A power outlet for the microphone or the optional telephone handset.

Power Switch/Volume Control

This knob turns the power on and off and controls the volume.

Squelch Control

The squelch eliminates background noise. Turn the knob counterclockwise until a background noise is heard, then rotate the knob slowly clockwise until the background noise just disappears. The receiver will be relatively quiet under no signal conditions, but an incoming signal will overcome the squelch action and be heard. As the control is turned clockwise, the squelch action is progressively increased and stronger signals are needed to overcome it. To receive extremely weak signals or to disable the squelch circuit, turn the control fully counterclockwise.

Channel Selector

Rotate the switch to any one of the 23 channels, PA position.

Rear Panel Connections

Power Cord

See "Installation" Section

Fuse

Uses a 2-amp, 3AG fuse.

External Speaker Jack

The 3.5 mm jack accommodates any 8-ohm, 4-watt speaker.

Remote Speaker Jack

This jack is used with the optional Telephone Handset, Model 676.

Delta Tuning (Δ Tune) Control

Used to fine tune stations that are slightly off-frequency. Set it on the position that provides best reception.

ANL (Automatic Noise Limiter) Switch

When placed in the ON position, this switch reduces undesirable atmospheric-type noises.

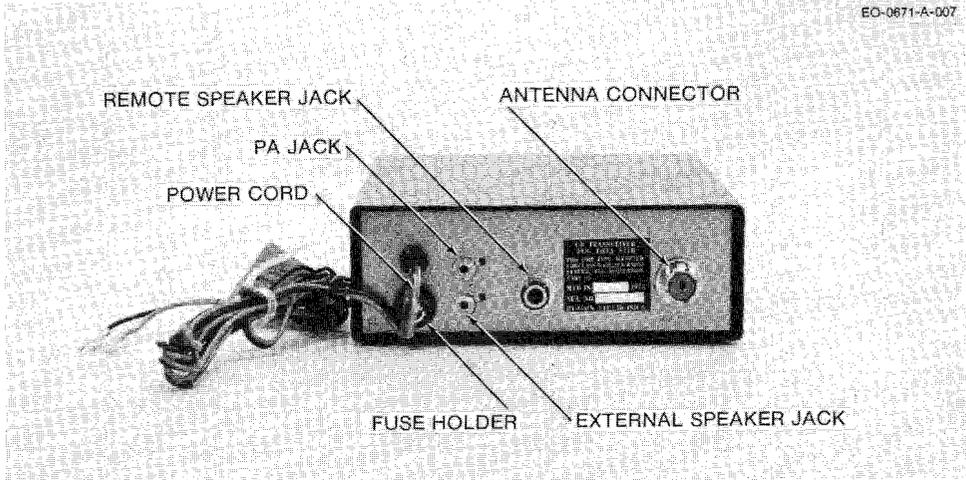
Antenna SO-239 Connector

Mates with the PL-239

PA (Public Address) Speaker Jack

This 3.5 mm jack may be used with any 8-ohm PA speaker.

EO-0671-A-007



Operating Procedures

To Receive

1. Turn the volume control clockwise and adjust it to a comfortable listening level.
2. Set the channel selector on the desired channel and readjust the volume control as necessary.
3. Adjust the squelch control slowly clockwise to the point at which background noise is quieted.

To Transmit

CAUTION

Do not try to transmit without a proper antenna connected to the antenna jack of the transceiver or you could seriously damage your transceiver.

A Reminder: Don't transmit until you have sent Form 505 to the FCC and have received your Class D License.

1. Select a channel and listen carefully to be sure it is not busy.
2. Press the push-to-talk (PTT) button on the microphone and hold it down. Hold the microphone four to six inches from your mouth and speak at a normal level. Announce the call letters of the station you are calling, followed by your call letters. Repeat if necessary. To receive a reply, sign off and repeat the call letters of your station.

PA (Public Address)

1. Connect an external PA speaker to the PA jack on the rear panel.
2. Set the CB channel selector in the "PA" position.
3. Press the push-to-talk button on the microphone and talk into the mic. Your voice will be heard from your external speaker.

NOTE: The volume control on the transceiver does not control the speaker output during PA speaker.

Noise Suppression

Tune-up

Before beginning any special noise suppression steps, be sure that the vehicle is well-tuned. Clean and tighten all connections, including alternator, battery, regulator, and coil connections. Perform the following maintenance steps as necessary: Solder any crimped spark plug or distributor leads; if you must use solid-wire leads, clean and regap or replace spark plugs and ignition points; and check and clean alternator rings or generator brushes. Retune the engine at the manufacturer's recommended intervals.

Corrective Steps

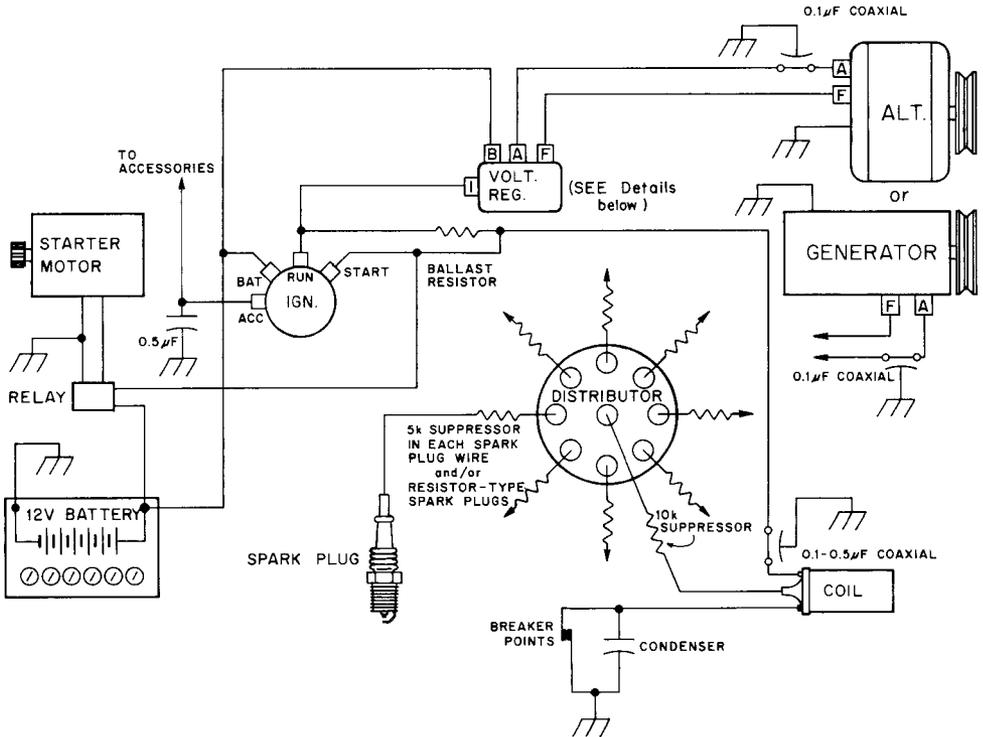
In order to find and eliminate the maximum number of noise sources that are present in any vehicle, start the strong sources, then work back. To be sure the noise comes from your vehicle and not outside it, drive to a location that is free of man-made electrical interference (such as noisy power lines, industrial noise, or other vehicles). Test for noise with a weak signal on the channel and the engine off. Then start the engine. Ignition noise will probably be present at all engine speeds. If it is severe, it will make a normally readable signal unreadable.

To reduce ignition noise, install resistor-type spark plugs. If non-resistance ignition wiring is used, install a 10 k-ohm suppressor resistor at each spark plug tower of the distributor. Install a coaxial capacitor as close as possible to the ignition coil primary.

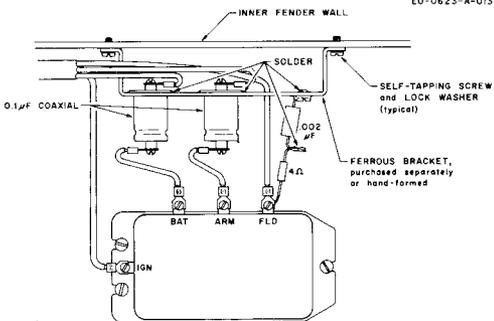
A "whining" noise which varies with engine speed and continues with the ignition turned off and the vehicle coasting in gear characterizes the alternator. Check and clean it and install an alternator filter.

An irregular, clicking sound which disappears at a slow idle may be the voltage regulator. Install a 4-ohm carbon resistor as close to the field terminal of the regulator as possible, then a .002 uF capacitor in series with and as close to the resistor as possible. Connect the capacitor to ground. See the detail drawings on next page.

Irregular popping noises which vary with road surfaces indicate static discharge at any of several locations in the vehicle. Tighten loose nuts and bolts and bond large areas such as the fenders, exhaust pipe, firewall, etc. to the frame with lengths of heavy wire braid. Contact a local electronics parts or automotive electrical service company to purchase the necessary items. Additional information is available in the **Radio Amateur's Handbook** published by the ARRL.

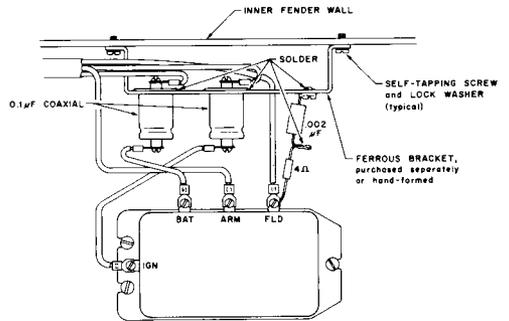


EO-0623-A-013



- FOR CARS EQUIPPED WITH -
GENERATOR

EO-0623-A-012



- FOR CARS EQUIPPED WITH -
ALTERNATOR

SERVICE INFORMATION

Warranty Repair

Please contact an authorized Hy-Gain Warranty Service Center before shipping your transceiver for repair. All equipment returned for warranty repair must be accompanied by your sales slip or invoice, or a copy of either. Units that have been modified cannot be accepted for repair.

How To Ship Returns

Include all information requested by the Service Center, then pack the unit as follows:

Check the unit to see that all parts and screws are in place, then wrap it in heavy paper or put it in a plastic bag. If the original carton is not available, place the unit in a strong carton that is at least six inches bigger in all three dimensions than the unit. Fill the carton equally around the unit with resilient packing material (shredded paper, excelsior, etc.). Seal it with gummed paper tape, tie it with a strong cord, and ship it by prepaid express, United Parcel Service, or insured parcel post to Hy-Gain Warranty Service Center.

It is essential that the shipment be **well-packed** and **fully insured**. Damage claims must be settled between you and the carrier, which can delay repair and return of the unit to you.

Purchase of Parts

Parts can be purchased from the Field Warranty Service Stations. All parts orders must be prepaid or COD. When ordering, please supply the following information:

1. model number of the unit
2. serial number of the unit
3. description of the part
4. part number (if available)

Address your letter to the nearest authorized Field Warranty Service Station in the enclosed booklet.

90-DAY LIMITED WARRANTY

Hy-Gain de Puerto Rico (HPR) warrants all products manufactured by it and bearing HPR model numbers to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use and service, discloses such defect within the ninety-day term of this warranty, dated from the date of purchase by the original owner. This warranty applies only to the original purchaser.

This warranty does not extend to any of our products which have been subjected to mis-use, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Upon receipt of equipment, the purchaser is responsible for checking the contents for damage. Any shipping damage should be referred to the carrier.

HPR reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation costs that may be incurred. HPR's sole liability is the remedy of any defect for the ninety-day period of this warranty. HPR is not responsible for personal injury or property damage resulting from improper or careless installation, or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

All claims of defect or shortage should be addressed to the attached authorized Field Warranty Service Station list.

You must furnish model number, date, place, and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so. No warranty card is furnished; you must supply the above information.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance and furnishing the necessary information.

SCHEMATIC

