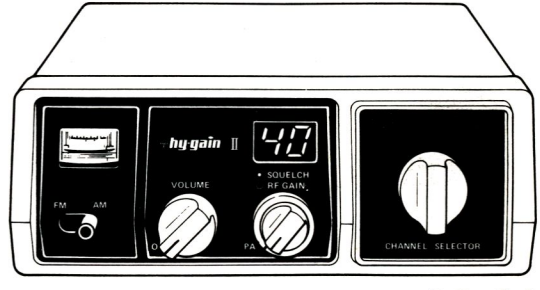
hy-gain

Operation Manual



Model

2702

Table of Contents

Specifications

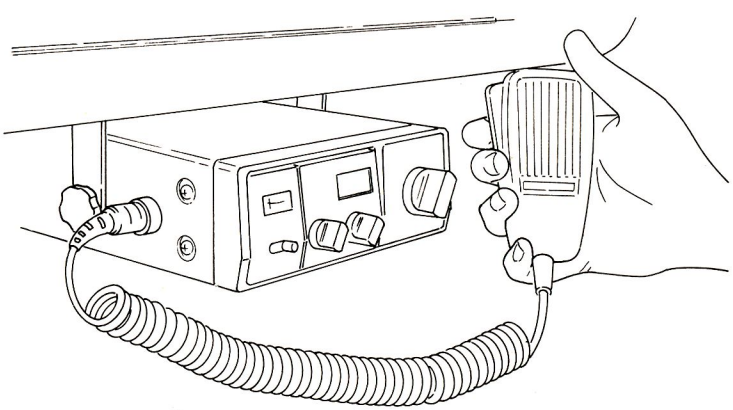
Channels	40 (26.965 to 27.405 MHz)
Antenna impedance	50 ohms nominal
Power requirements	11.5 VDC-14.5 VDC positive or negative ground
Audio output	3 watts maximum
Battery drain, receive	about 100 mA on standby (no signal)
RF power output	4 watts
Battery drain, transmit	less than 1.0 amp @ 12 VDC
AM Sensitivity	0.7 uV for 10 dB (S + N)/N ratio
FM Sensitivity	0.5 uV for 20 dB (S + N)/N ratio
Modulation	AM/FM
FM Deviation	±1.5 kHz @ 1,250 Hz/20 mV audio

General Description

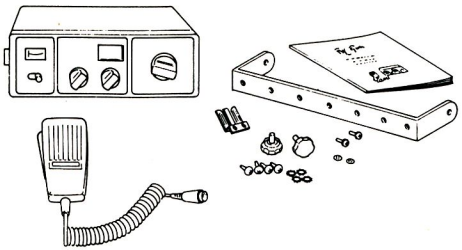
The Hy-Gain 2702 is a precisely engineered mobile solid state transceiver that operates totally on 40 channels of 27 MHz band in AM or FM mode.

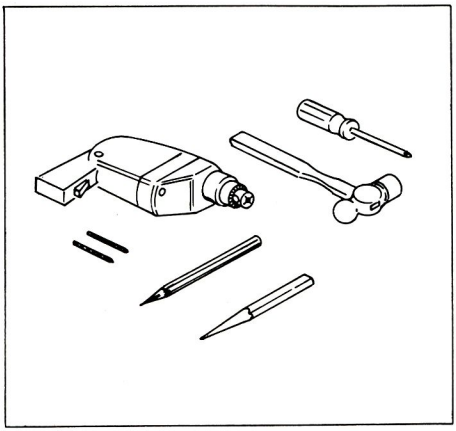
It is completely solid-state, compact unit with high reliability and low power consumption. The PLL system of frequency synthesization provides immediate operation on all 40 channels without additional crystals or adjustments. An automatic noise limiter (ANL) helps reduce atmospheric noise. The switching between AM and FM mode is instantaneous with a snap of switch. The unit can be used for public address with the addition of a PA speaker.

The Hy-Gain 2702 transceiver operates from 11.5 to 14.5 VDC (nominal), either negative or positive ground. For best results from your transceiver, please read all instructions before beginning your installation.



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. Take all the pieces out of the box.

Tools required for installation:

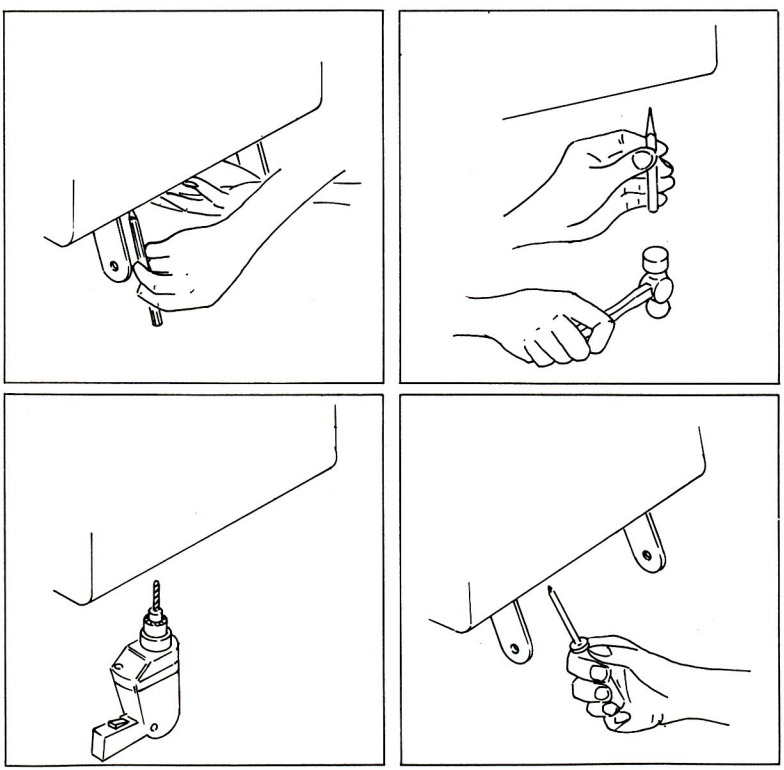
pencil	center punch
drill	hammer
drill bits (5/32" & 1/8")	pocket knife (optional)
tape measure	low heat soldering gun
phillips screwdriver	rosin core solder (not acid core)

Mounting Bracket

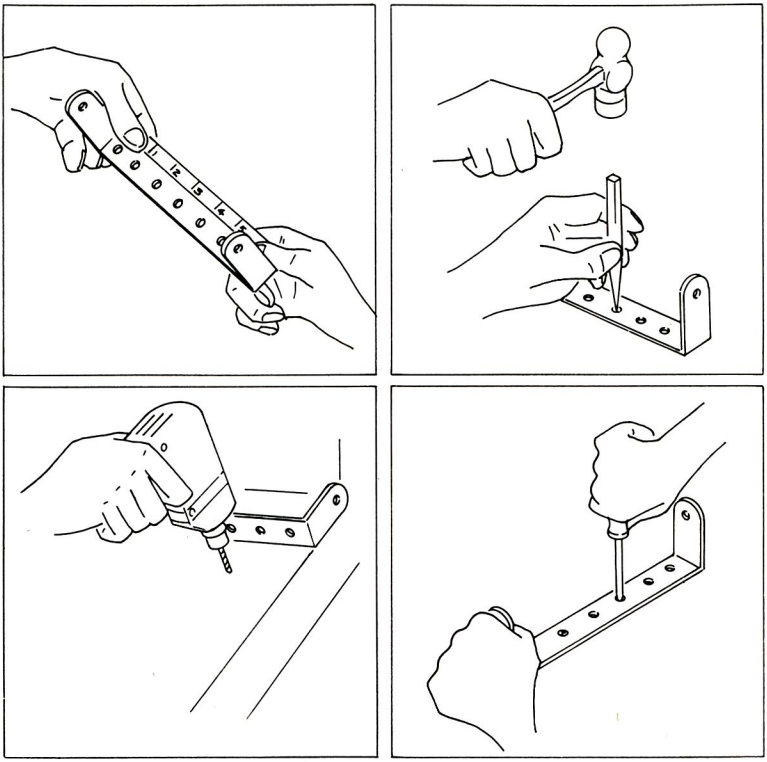
The mounting bracket may be used for base-type or gimble-type overhead mounting. Use the bracket as a template to mark where the mounting holes will be drilled. Measure carefully to be certain the installation will be straight.

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

Dash Mounted



Floor Mounted

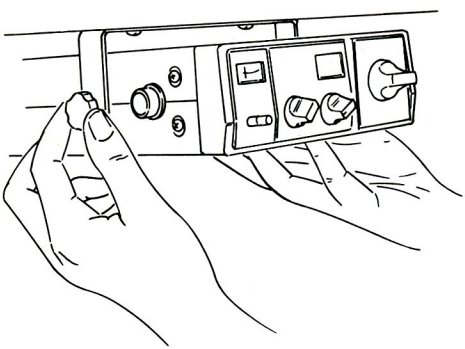


Note: Be sure to cut the carpet before drilling.

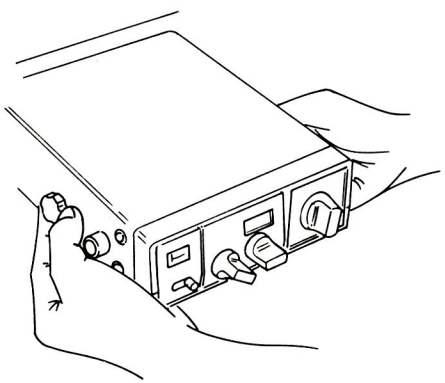
Attach the bracket with at least three screws for a sturdy installation. Use the large thumb screws to fasten to the bracket.

Mounting the Radio

Dash Mount



Floor Mount



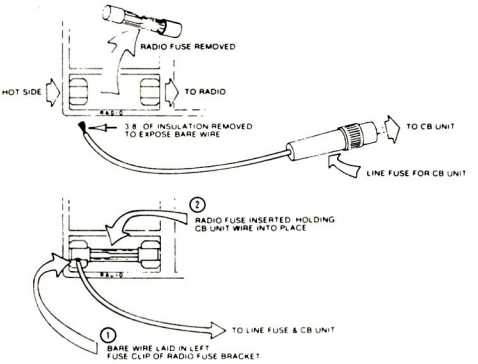
Power Connections

The unit may be operated from a 12-volt DC battery system, either negative or positive ground. Connect the red lead to a "+"(positive) area of the electrical system and the black lead to a "-" (negative) area of the electrical system.

Some common connection areas for the red lead are the accessory terminal on the ignition switch, the voltage regulator side of the ammeter, or the accessory side of the fuse block.

The black ground lead should be connected to the metal firewall or any other small screw that is connected to the vehicle chassis. For a more secure connection, use solder or electrician's tape wherever necessary.

Coil any excess power lead and secure it in a place where it will be kept up out of the way of your feet.



Don't Let Theft Happen to You.

Each month thousands of CB radios are stolen out of vehicles. These radios don't have to be gone forever. Before you install you transceiver, engrave some sort of identification number directly onto the metal outer case. You can use the serial number that is located on the plate on the back of the transceiver, or your social security number. The important thing is to keep a record of whichever number you use. If your CB radio should be stolen, the identification number can be traced back to you. This in itself often discourages would-be theives.

Antenna

Any of the following Hy-Gain antennas are suitable for use with the Hy-Gain transceiver. Mounting instructions and hardware are furnished with each antenna.

Antenna	Order No.	Height	Coax Supplied	Features
Hellcat 1	557	54"	yes	mini-spring, roof top mount
Hellcat 2	556	24"	yes	shorty, roof top mount
Hellcat 3	558	35"	yes	magnetic mount
Hellcat 4	559	54"	yes	trunk mount
Hellcat 5	575	54"	yes	no spring, roof top
Hellcat 6	561	54"	yes	camper-type w/foldover adapter
Hellcat 7	576	54"	yes	foldover adapter, roof top mount
Hellcat 10	506	54"	yes	powercat, mini-spring roof top mount
Hellcat X	590	49"	yes	trunk or hatchback mount
Mother Trucker II	515	6'3"	yes	mirror mount
Mother Trucker II	427	6'3"	yes	mirror mount pair
Gyspy 1	546	47"	yes	mirror mount, fiberglass
Gyspy 2	545	47"	yes	mirror mount, pair, fiberglass
Gyspy 3	430A	47"	yes	3/8"-24 stud mount
102" whip	413	102"	no	1/4"-wave, 3/8"-24 stud mount
Ten Pounder	425	80"	no	3/8"-24 stud mount
Power Cat	509	57"	yes	mini-spring, roof mount
Power Cat	510	57"	yes	trunk mount
Guttermount	539	36"	yes	gutter mounted
Guttermount	538	36"	yes	gutter mounted

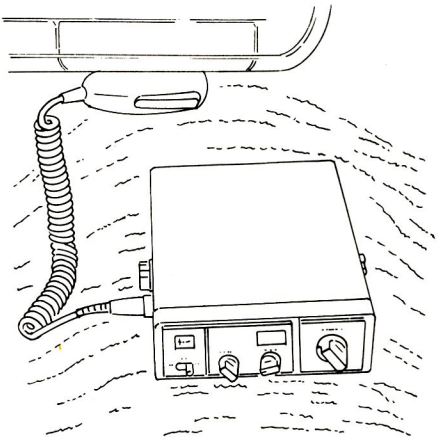
Microphone

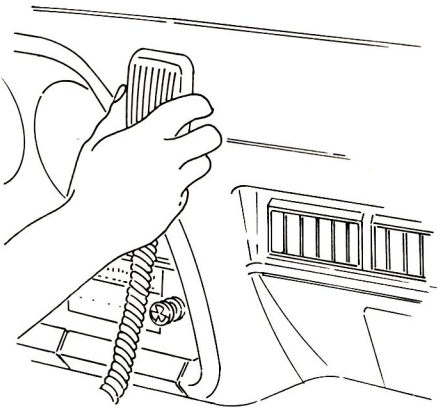
Install the mic-hanger bracket in an area which will allow the microphone and its cord to hang in a convenient position out of the way of your feet.

For example, mount the bracket high on the dash where it is within easy reach.

Don't hang the microphone in a position which will allow the cord to hang down and interfere with your access to the floor pedals of the car.

Plug the microphone into the mic jack on the side of the transceiver and you are ready to transmit.



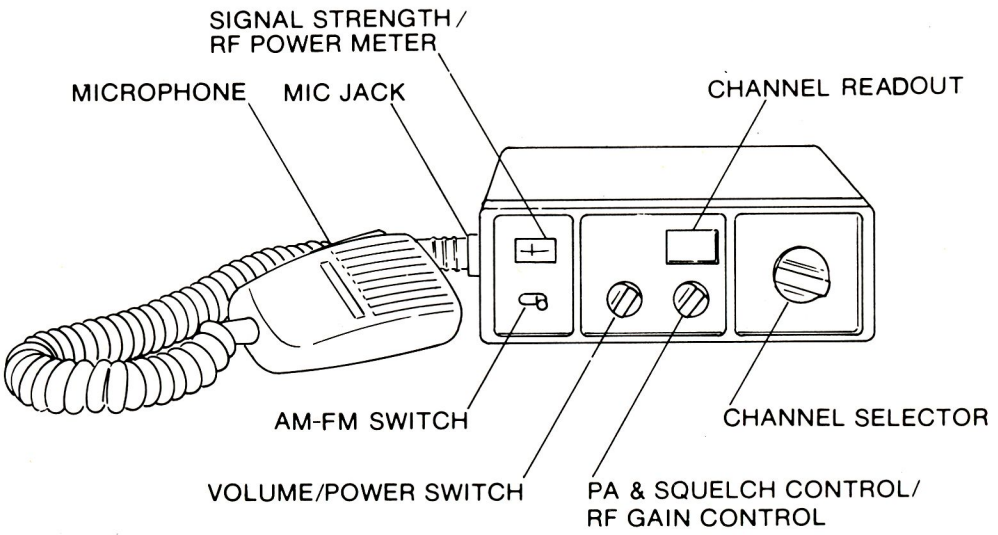


Accessories

A pair of optional speakers, Hy-Gain Models 612 and 613, are available for use with the external speaker jack.

Any 8-ohm, 4-watt speaker can also be used. Plug the speaker cable plug into the external speaker jack at the rear of the unit (a 3.5 mm plug is required)

Front Panel



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.

RF Gain Control

Controls RF gain when receiving. To increase gain (reception sensitivity), turn the knob clockwise. To decrease gain, turn the knob counterclockwise.

Microphone Jack

A connection for the microphone or the optional telephone handset.

AM-FM Switch

Selects the mode of operation—AM or FM.

Power Switch/Volume Control

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

PA/Squelch Control

PA Operation — Place the control in the PA position (counterclockwise) and connect a suitable 8-ohm PA speaker to the PA jack on tne rear panel. Press the push-to-talk button on the microphone and talk into it in a normal tone of voice. Your voice will be heard from the PA speaker. In the "PA" position, the unit will not act as a transceiver.

Squelch Operation — To adjust the squelch control properly, turn the knob counterclockwise until background noise is heard, then rotate the knob slowly clockwise until the background noise just disappears. At this point 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 clockwise until it stops just before clicking into the PA position.

Channel Selector

Rotate the switch to any one of the 40 channels.

Rear Panel Connections

Power Jack

See "Installation" Section

External Speaker Jack

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

Antenna SO-239 Connector

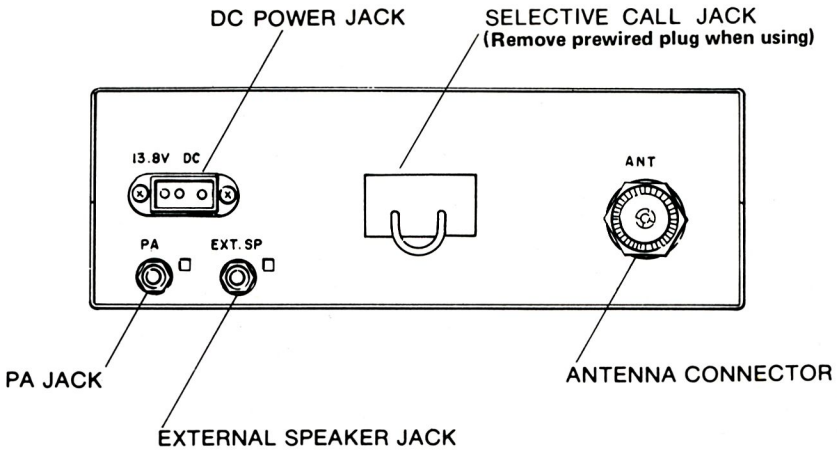
Mates with the PL-259 connector of the antenna coax.

PA (Public Address) Speaker Jack

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

Selective Call Jack

Accepts a plug from a Selective Call unit which can be available optionally from your dealer [See your dealer for definite information]. When using a Selective Call unit remove dummy plug presently inserted into the jack.



Operating Procedure

To Receive

1. Turn the volume control clockwise and adjust it to a comfortable listening level.
2. Select a mode of operation—AM or FM.
3. Set the channel selector on the desired channel and readjust the volume control as necessary.
4. Adjust the squelch control slowly clockwise to the point at which background noise is quieted. (For details, refer to PA/Squelch Control.)

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.

To Transmit

1. Select a channel and listen carefully to be sure it is not busy. Do not interrupt unless an emergency situation exists.
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, release the PTT button. At the end of the conversation, sign off and repeat the call letters of your station. (For PA operation, refer to PA/Squelch Control.)

Stand-By Pee

Special provision has been made to your transceiver to give your partner a sign by beep-note to tell you are turning to receive. In each time you release the push-to-talk button on the microphone, the beep-note is automatically transmitted.

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 with 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.

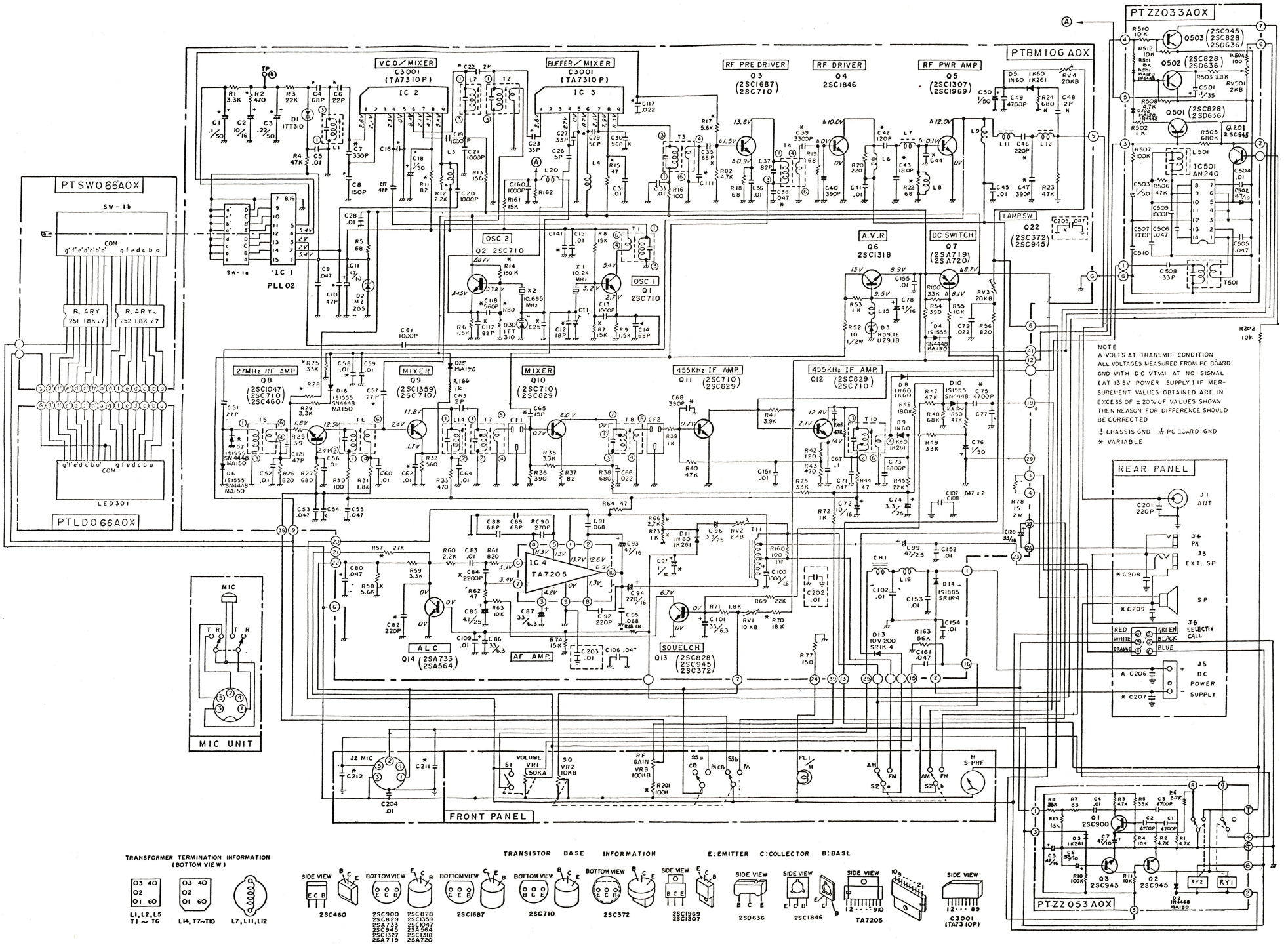
To reduce ignition noise, install resistor-type spark plugs. If non-resistance ignition wiring is used, install a 10 k-ohm suppressor resistor at each spark plug tower of the distributor. Install a coaxial capacitor as close as possible to the ignition coil primary.

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.

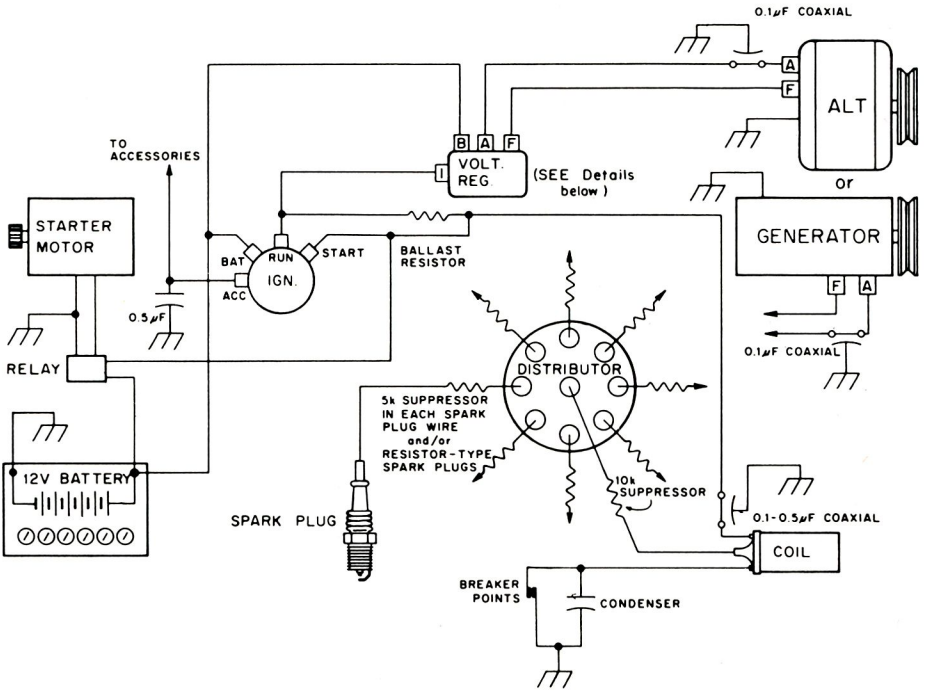
An irregular, clicking sound which disappears at a slow idle may be the voltage regulator. Install a 4-ohm carbon resistor as close to the field terminal of the regulator as possible, with a 0.002 *uf* capacitor in series and as close to the resistor as possible. Connect the capacitor to ground. See the detail drawings on next page.

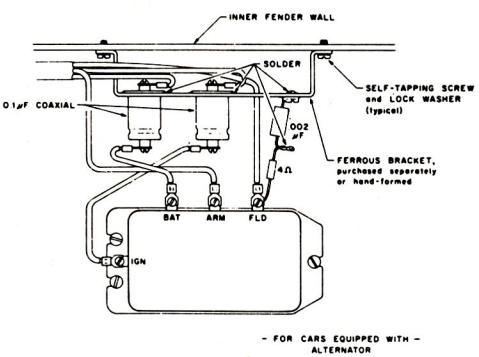
Irregular popping noises which vary with road surfaces indicate static discharge at any of several locations in the vehicle. Tighten loose nuts and bolts and bond large areas such as the fenders, exhaust pipe, firewall, etc. to the frame with lengths of heavy wire braid. Contact a local electronics parts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

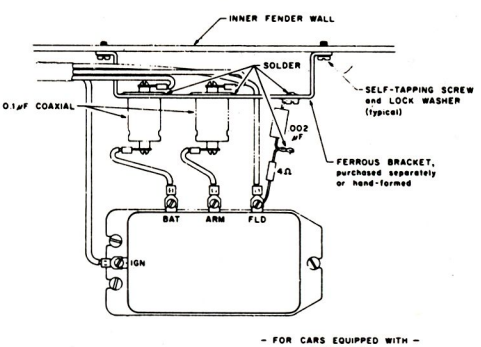
SCHEMATIC DIAGRAM



Noise Suppression Diagram







MOST FREQUENCY CALLS

Call Letters	Name & Address	"Handle"

REMEMBER:

1. Do not whistle into the mike.
2. Do not use abusive language.
3. Keep conversations short.
4. Always be courteous and respect the other person.
5. Make each trip a safe one.

10 CODE

General Station Operation

10-1 ..... Receiving Poorly.
10-2 ..... Receiving Well. (signal strength if requested)
10-3 ..... Stop transmitting. (off freq., over mod., etc.)
10-4 ..... OK — Affirmative — Acknowledged
10-5 ..... Relay message.
10-6 ..... Busy, stand by.
10-7 ..... Out of service — leaving the air.
10-8 ..... In service, subject to call.
10-9 ..... Repeat, reception bad.
10-10 ..... Transmission completed, subject to call.
10-11 ..... Talking too rapidly.
10-12 ..... Officials or visitors present.
10-13 ..... Advise weather and road conditions.
10-16 ..... Make pick up at _____.
10-17 ..... Urgent business.
10-18 ..... Anything for us?
10-19 ..... Nothing for you, return to base.
10-20 ..... What is your location?
10-21 ..... Call _____ by telephone.
10-22 ..... Report in person to _____.
10-23 ..... Stand by.
10-24 ..... Completed last assignment.
10-25 ..... Do you have contact with _____ ?
10-27 ..... I am moving to channel _____.
10-28 ..... Identify your station.
10-36 ..... Correct time.
10-41 ..... Please tune to channel.
10-71 ..... Proceed with transmission in sequence.
10-77 ..... Negative contact.

Emergency or Unusual

10-30 ..... Does not conform to rules and regulations.
10-33 ..... Emergency traffic this station.
10-34 ..... Trouble at this station, help needed.
10-35 ..... Confidential information.
10-50 ..... Break channel.
10-73 ..... Speed trap at _____.
10-200 ..... Police needed at _____.

Accident & Vehicle Handling

10-42 ..... Accident at _____
10-43 ..... Traffic tie-up at _____
10-54 ..... Accident.
10-55 ..... Wrecker or tow truck needed.
10-56 ..... Ambulance needed.
10-70 ..... Fire at _____.

Net Message Handling

10-39 ..... Your message delivered.
10-44 ..... I have message for you.
10-45 ..... All units within range, please report.
10-60 ..... What is next message number?
10-62 ..... Unable to copy, use land line.
10-63 ..... Net directed to _____.
10-64 ..... Net is clear.
10-65 ..... Clear for message.
10-66 ..... Cancellation.
10-67 ..... All units comply.
10-68 ..... Repeat message.
10-69 ..... Have you dispatched message?