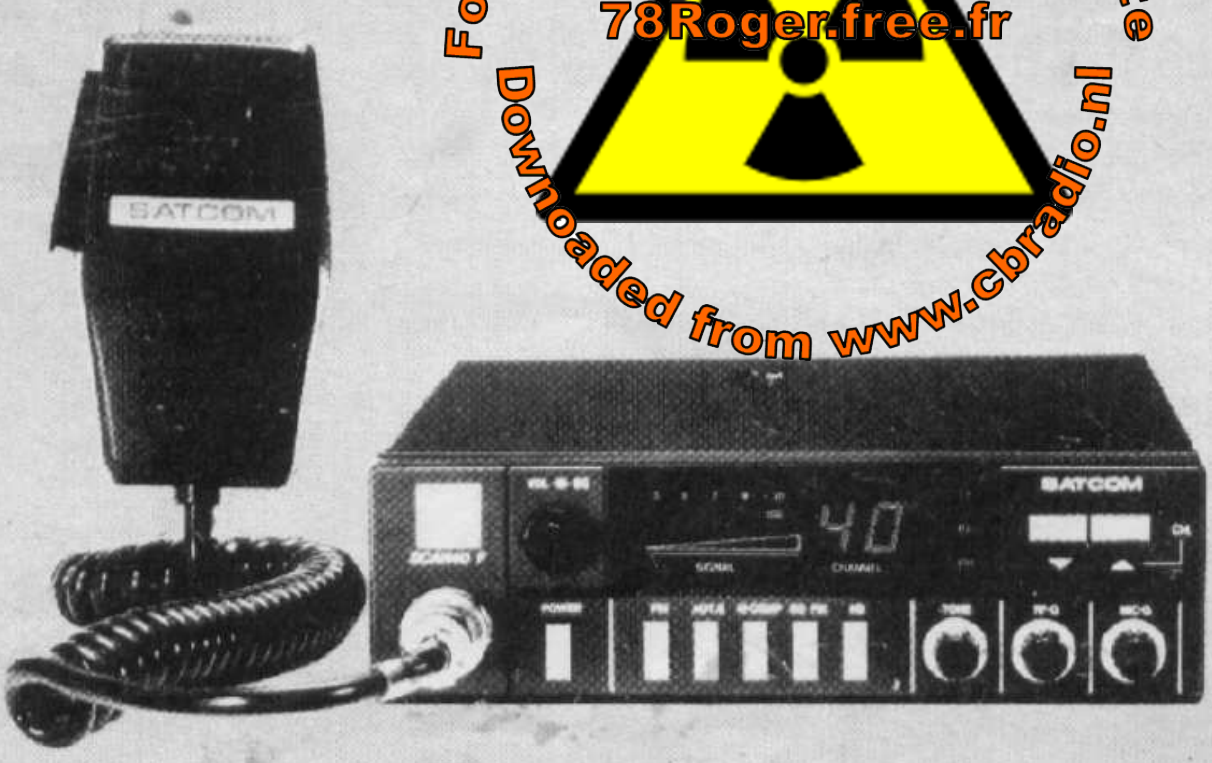
USER MANUAL

MODEL SCAN40 F **PR 27 GB**

40 CHANNEL-MOBILE CITIZENS BAND FM-TRANSCEIVER Model SCAN40 F



MODEL Satcom Scan 40F

RECORD SERIAL NO.
Per some country laws, and in the event service should be required, your may need both Model and Serial Numbers to identify your transceiver.
Record the Serial Number (located on back panel) in space below :

SERIAL NO. 631110

. . . a Citizen Band Transceiver (combination receiver-transmitter) for operation on all 40 channels. Phase lock loop (PLL) circuitry electronically synthesizes all 40 channels.
No additional crystals needed.

Please read all instruction thoroughly before installing or operating your CB Transceiver.

This USER MANUAL, in addition to providing installation and operating instruction, also includes general information and a brief section on what to expect from CB radio. The contents are listed in the following order :

I GENERAL INFORMATION

CB Radio is easy to understand and operate. There is really nothing technical you must know no more than what it takes to use a telephone or operate any standard AM or FM radio.

When communicating with your CB, always be brief, never use profanity (against the law and carries severe penalties).

Here are some of the many uses for CB Radio :

- **Personal or Family** - Keep in touch between your car, home, friends and neighbors.
- **Hunting, fishing or Camping** - Talk between campsites, to fhishing boat, boat-to-shore, hunting parties, or camper-to-camper.
- **Travel and Vacation** - Request directions when you are lost on the highway, need help to repair a flat tire or to report and emergency.
- **Security** - Some cities have established a Volunteer CB Patrol that provides concerned citizens with a communication line to local police for reporting suspicious or criminal activity.
- **Business Use** - Save time and extra trips, call you office for messages.
- **Sales and Service** - Save valuable time by using CB for those quick contacts or confirming appointments.
- **Truckers, Deliverymen, Farmers, Ranchers, or Construction Crews** - Whether you're calling for road and traffic conditions, farm tractor to house or coordinating work crew activity.

Licencing Conditions :

This model is designed to operate under Post office rules and regulations. Operation of this unit is not permitted until you have obtained the necessary licence to allow use on the permitted 27 MHz CB frequencies.

Operating Frequencies :

Channel	MHz	Channel	MHz
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

Description :

The SCAN40 F is an all transistor 2 way radio transceiver suitable for mobile operation.

A frequency synthesizer circuit provides 40 crystal controlled PLL transmit and receive channels in the 27 MHz band, engineered for trouble free performance.

Current drain on 12 volts D.C. is exceptionally low and operation over long periods is feasible even with your engine turned off.

Receiver :

The receiver is a sentive and highly selective dual-conversion superheterodyne type, proveding crystal controlled PLL operation on all 40 CB channels. The circuit incorporates a number of features designed to provide optimum reception. A ceramic filter provides sharp selectivity and high adjacent channel rejection. As a result, transmissions on adjacent channels cause minimum interference.

A variable squelch control is incorporated to silence the receiver when no signals are received.

Transmitter :

The transmitter offers crystal-controlled PLL circuit operation on all 40 CB channels, 4 watt of R.F. power is available which is the legal limit of power for the Citizens Band Service.

SPECIFICATIONS :

GENERAL

CHANNELS : 40 channels, PLL synthesized circuit
CHANNEL CONTROL : UP/DOWN Switch
FREQUENCY COVERAGE : 26.965 to 27.405 MHz
POWER SUPPLY : 12 volts D.C. nominal (positive or negative ground)
SEMICONDUCTORS : Integrated circuits, transistors, diodes
OPERATING TEMPERATURE : −10 to +55℃
MICROPHONE : Plug-in Dynamic with push-to-talkswitch, 500 ohm
INTERNAL SPEAKER : 8 ohm impedance, 77 mm
CONNECTORS : EXT. SP Jack 3.5 mm (8 ohm), antenna receptacle to match PL-259 coaxial plug (50 ohm), D.C. power jack

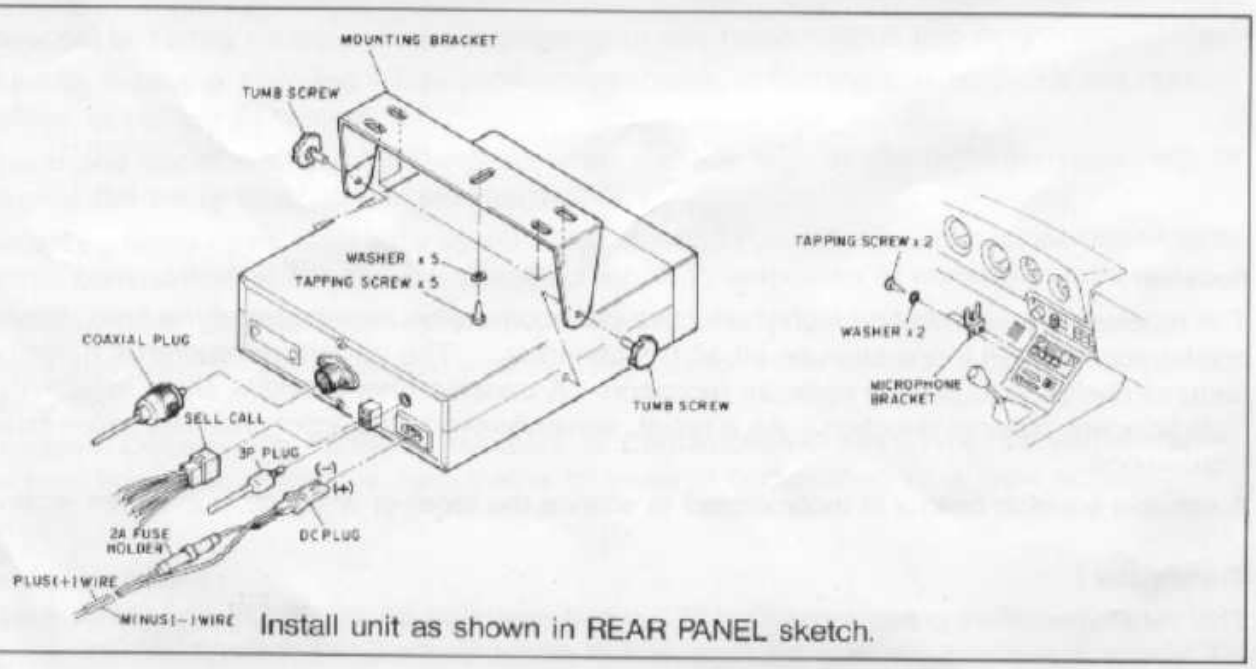
TRANSMITTER

RF OUTPUT POWER : 4 watts maximum, 13.2 volts D.C. nominal between 3.4 and 4
FREQUENCY TOLERANCE : ±0.002 % nominal
TYPE OF EMISSION : F3
FREQUENCY RESPONSE : 400 Hz to 2.5 kHz
SPURIOUS EMISSION : Less than 4 nW (Harmonics) /0.25 μW (Others)
ADJACENT CHANNEL POWER : Less than 20 μW
CURRENT DRAIN : 1.8 A (maximum) at 13.2 V DC

RECEIVER

SENSITIVITY : Less than 1.0 μV, 20 dB (S+N)/N
ADJACENT CHANNEL SELECTIVITY : Better than 60 dB
SPURIOUS REJECTION : Better than 60 dB
INTER MODULATION REJECTION : Better than 60 dB
IF FREQUENCIES : 455 kHz, 10.695 MHz
AUDIO OUTPUT POWER : 2 watts (10% DIST.)
SQUELCH RANGE : 0.5 to 500 μV

II INSTALLATION INSTRUCTIONS



Install unit as shown in REAR PANEL sketch.

1. Mount CB so all controls are conviniently available to you (the operator) **without interfering with movements for safe driving of your vehicle.**
2. **Be sure all cables are clear of brake, clutch and accelerator.**
3. Use MOUNTING BRACKET as template for drilling 1/8-inch holes. Mount bracket with self-TAPPING SCREWS.
4. Connect antenna plug to antenna jack on rear of unit (see ANTENNA section for further information).
5. Connect DC power plug to DC 12 V jack located on rear of unit (see POWER CONNECTION section for further information).
6. Loosely screw in THUMB SCREWS into CB and mount by placing thumb screws into BRACKET holes. Lift CB to position you choose and then firmly tighten thumb screws.

NOTE : If possible, avoid mounting transceiver in heater or air-conditioning air flow path.

Power Connections :

The transceiver is designed to operate from a battery source of 12 volts D.C. It may be installed in a vehicle employing a positive or negative earth system. The fused D.C. power cable supplied is used to make the necessary power connection to the transceiver.

The Red lead (with inline fuse holder) is connected to the positive (+) side of the electrical system.

The Black lead is connected to the negative (−) side of the system. In a negative earth vehicle connect the Red lead to a suitable terminal on the fuse box or the accessory wire on the ignition switch. Connect the Black lead to a suitable metal section of the car body. In a positive earth vehicle connect the Black lead to a suitable terminal on the fuse box or the accessory wire on the ignition switch. Connect the Red lead to a suitable metal section of the car body.

The transceiver draws a maximum current of 2 amps, thus connection is satisfactory to the accessory or radio terminal on the ignition switch Connection at theis point will ensure the power is automatically cut off to the transceiver when the ignition key is removed.

NEGATIVE GROUND WIRING CONNECTION

If your (−) battery terminal is connected to the car's motor block, then the vehicle is a negative ground system, Connect RED wire (with in-line 2 amp fuse holder) to POS. (+) side of battery, or any of the locations previously mentioned. Connect the " Black " (or " Brown ") wire to any grounded, NEG. (−) metal part of the vehicle.

CAUTION : Be sure " Black " (or " Brown ") wire is connected to metal, as many under dash and side paneled parts are made of non-conductive plastic. Good ground is essential for satisfactory operation.

WARNING : Do not operate unit before installing antenna. Besure CB is in the OFF position when making power and antenna connections.

III ANTENNAS

For best reception and transmission, your CB Transceiver should use an antenna especially designed for a frequency of 27 MHz. Antennas are purchased separately and include installation instructions.

Numerous types of CB antennas are available that range from emphases on ease of installation to emphases on performance. Often the difference in performance between many mobile antennas is modest.

Your Transceiver has a standard antenna connector, type SO-239 (located on rear panel), for easy connection to a standard PL-259 coax plug. If the coax antenna cable must be made longer, use coax cable with impedance and frequency rating for 27 MHz, and use only enough cable to suit your needs. This will insure a proper impedance match and maximum power from the transmitter to the antenna.

BASE STATION ANTENNAS

When using theis CB Transceiver as a **base station**, any Citizen Band ground plane, beam, dipole or vertical antenna may be used. **REMEMBER, THE RADIO WILL TRANSMIT ONLY AS GOOD AS ITS ANTENNA, SO CHOOSE THE BEST ANTENNA THAT WILL SUIT YOUR NEEDS.** The range of the transceiver depends basically on the height of the antenna. Whenever possible, select the highest location within the P.T.T limits.

The GROUND PLANE antenna provides greater coverage and is non-derectional. Ideal for base-to-mobile (or to base) operation. It is designed for medium-long range communication.

The BEAM antenna is a highly derectional type antenna and must be used with a rotor unless you are communicating with another Base Station. It is designed for long range selective communication, and not usually selected for mobile use. **Follow all safety instructions when installing base station antenna.**

Use coaxial cable rated for 50 ohm impedance when connecting your Base Station antenna to the transceiver. Use 50 ohm impedance connectors and terminate them well when installing the antenna system. Usually RG-58/u cable is adequate up to 50 ft. If installation requires over 50 ft. of cable, use RG-8u type to reduce any in-line signal loss. Antenna cable can also act as the antenna, so keeping length to minimum not only reduces signal loss from cable but also pick up of static signals.

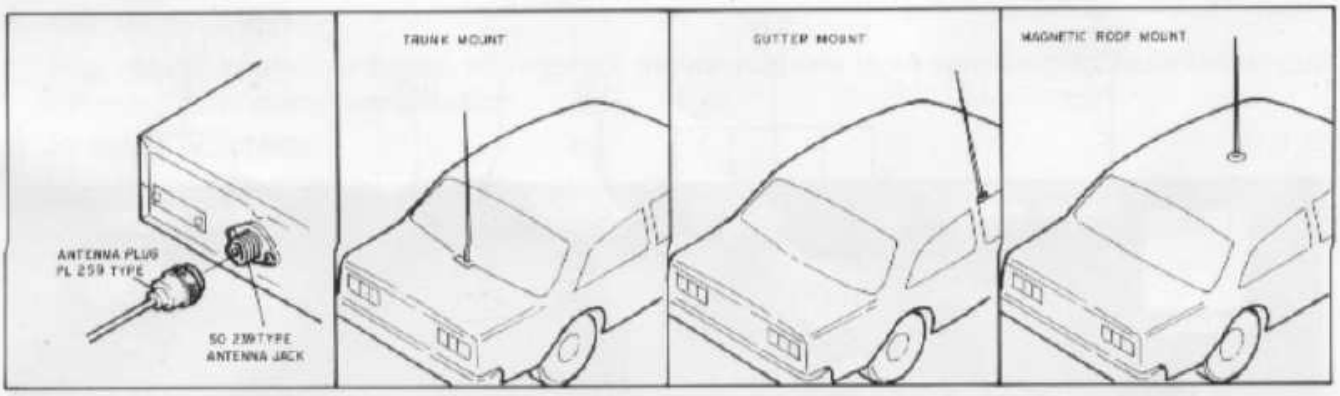
MOBILE ANTENNAS

Whatever type antenna you choose, a good ground is important. Be sure you have metal-to-metal contact at the point where antenna is mounted on car. Painted surfaces should be scraped (at least a small area) or use a "star" washer to assure metal-to-metal contact. This will provide protection to your system and reduce static interference.

some of the mobile antennas available are :

TYPE

- CB-AM-FM Combination with CB splitter ····· Some performance compromised, but use single antenna on vehicle.
- Magnetic mount ····· No installation required, some performance compromise.
- Gutter mount ····· Easy to install, somewhat directional and some performance compromise.
- Trunk/hood ····· Easy to install, location flexibility.
- Rooftop ····· Permanent installation, high antenna location.
- 108" (1/4 wave) ····· Performance oriented, but garage parking limitation.
- Twin antennas mirror or cab mount ····· Performance (specialized"application) and appearance appeal.
- No ground plane ····· For use on boats, snow-mobiles or motor bikes.



General rules for best mobile antenna performance :

1. Mount antenna on vehicle as high as possible.
2. The higher percentage of antenna length mounted above rooftop, the better performance.
3. Center antenna in middle of selected location (i.e., truck, gutter or roof).
4. Install antenna cable line away from noise sources (ignition system, gauges, etc.).
5. Be sure to mout antenna with a good metal-to-metal ground.
6. Prevent antenna cable damage :

   Trunk Mount - leave enough cable slack so trunk can be fully opened.

   Gutter Mount - route cable snugly to prevent cable flexing and allow closing of door or windows. Route cable between door & body of car, not through window of car.

   For quick release - to remove antenna, always pull on the PL-259 plug and not on the antenna cable.

Antenna performance may be peaked by slightly adjusting its length, (1/8 to 1/4 inch) using SWR (standing wave ratio) meter. This meter is purchased separately or the SWR can be checked by a local CB radio serviceman. Most antennas are factory-tuned, but this adjustment may improve transmitted power into the air. The rest is " reflected " back into your CB and dissipated as harmless heat. See chart below. An SWR of 2.1 or below is good, 2.5 or even 3 is usually not user noticeable of significant.

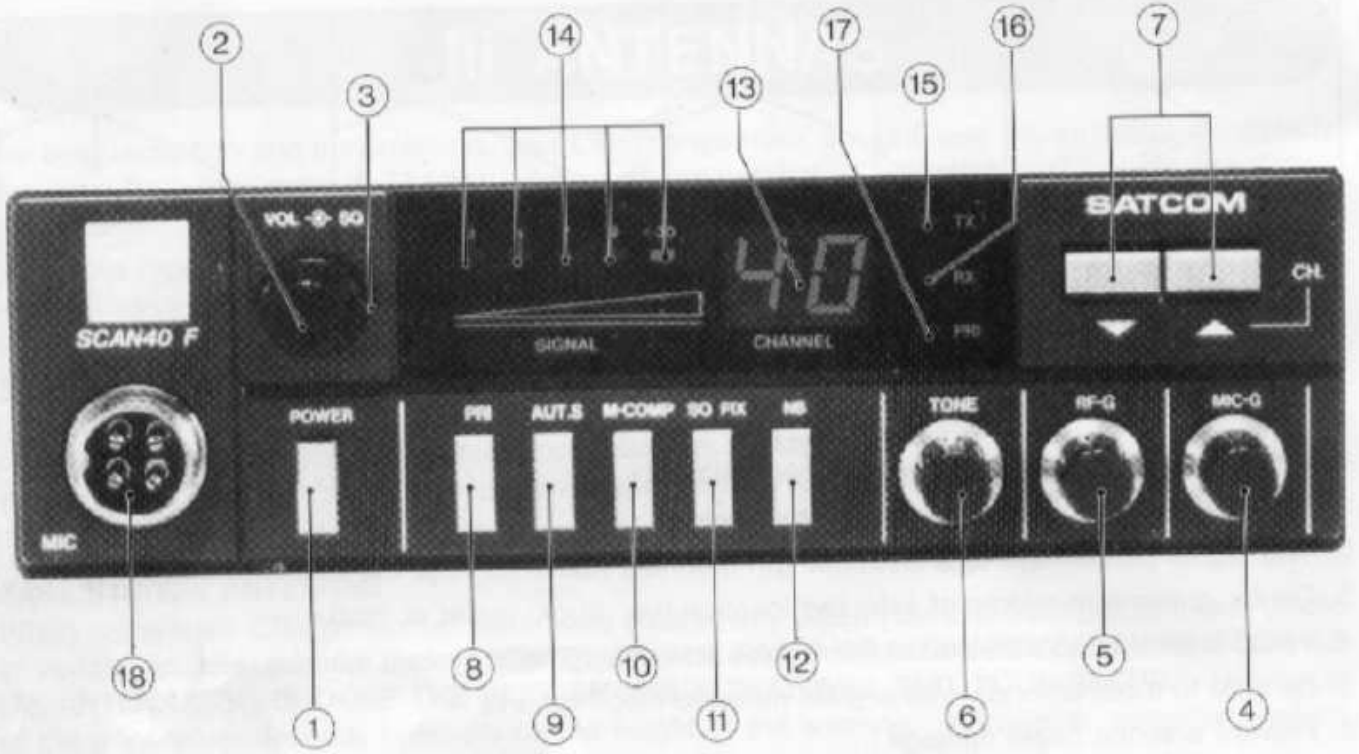
NOTE : Mounting the antenna in a non-metal boat will require a " ground " or special antenna.

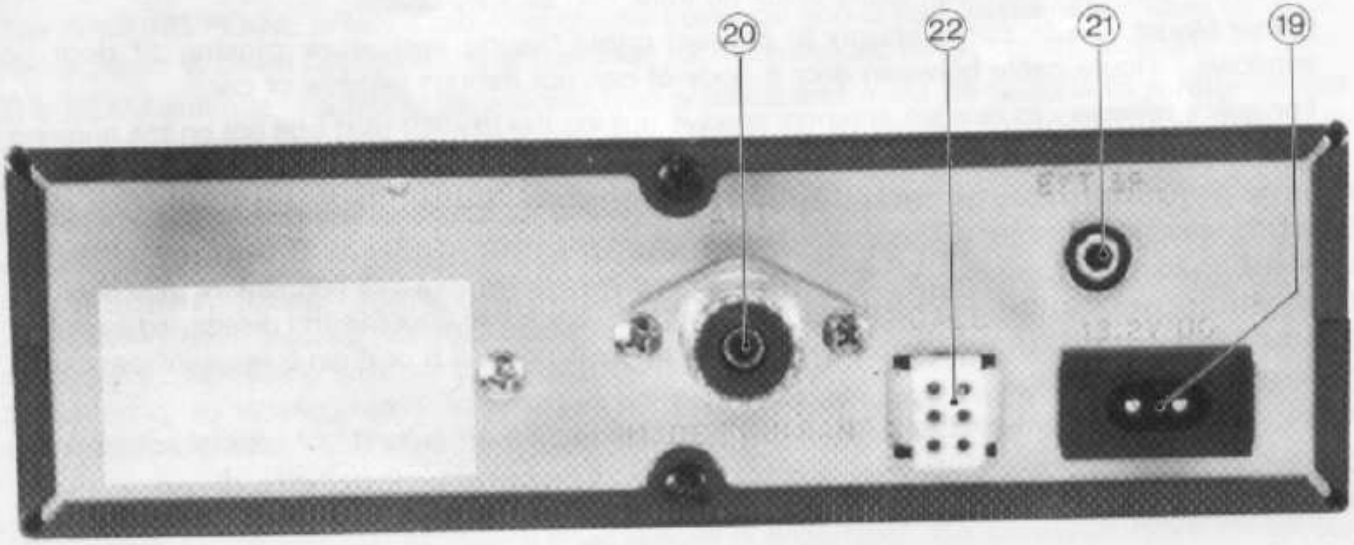
Grounding can either be a metal hull, a ground made of tin-foil or an installation of cooper sheeting, and cover an area of 12 spuare feet or more. The transceiver must also have an adequate ground.

WARNING : Operating unit without attaching antenna, or with a broken antenna cable, will result in low and possible no power output.

Select the antenna that best fits your use or installation needs. You may want to install your CB in more than one vehicle or location. For that purpose, additional bracket, power cord and antennas are available. See order detais on enclosed ACCESSSORY ORDER FROM.

SWR READING	OUTPUT POWER TRANSMITTED
1 : 1	100%
1.3 : 1	96.3%
1.5 : 1	96.0%
1.7 : 1	93.3%
2 : 1	89.0%
3 : 1	75.0%
4 : 1	64.0%
5 : 1	58.0%
6 : 1	49.0%
10 : 1	33.0%





IV OPERATING INSTRUCTIONS

IMPORTANT : Install unit as described under INSTALLATION INSTRUCTIONS. Make sure antenna and power source are properly connected before you attempt to operate.

TO RECEIVE : Connect MICROPHONE and turn unit " ON " by pressing POWER ON/OFF switch. You cannot receive or transmit if MICROPHONE is disconnected.

1. POWER ON/OFF SWITCH

Push the POWER ON/OFF SWITCH and the unit is turned on. Both LED channel display and RX indicator will light up.

2. VOLUME CONTROL

Adjusts the audio level for the right.

3. SQUELCH CONTROL

The SQUELCH control is used to eliminate background noise when there is no signal strong enough to overcome the noise. To adjust the SQUELCH control, select a channel where there is no signal then rotate the SQUELCH control clockwise until the background noise disappears.

4. MIC. GAIN CONTROL

This control is used to adjust, as required, the microphone input sensitivity for optimum amount for modulation during transmission.

5. RF GAIN CONTROL

The RF GAIN control is used to prevent from overload when receiving strong signal. When receiving strong local broadcasts merely reduce RF GAIN control setting. Increase RF gain (receiver sensitivity), when receiving weak or distant broadcasts.

6. TONE CONTROL

This changes tone quality in reception. Adjust for your preferences.

7. CHANNEL UP/DOWN SWITCH

This switch is used to select the channel and the same time this switch becomes channel scanner switch.

There are three scanning modes as follows :

*MANUAL SCAN : Each pressing the UP/DOWN, counting the channel up/down one by one.

*AUTO SCAN : Pressing the UP/DOWN for approx. over 1 second, counting the channel up/down by 6 Hz speed.

*AUTO SEARCH : Pressing both UP and DOWN at the same time, immediately counting up fast.

8. PRI ON/OFF SWITCH

Depress this switch and the unit is automatically set the PRIORITY CHANNEL (CH9). Release the switch (OFF position), the unit has normaly 40 channels (CH1 to CH40).

9. AUTO SCAN SWITCH

When using this function, adjust the squelch control clockwise until the background noise disappears, then push this switch and auto scanning will start immediately. The scanning is automatically stopped, when a busy channel is found.

NOTE : Be sure to set this switch to " OFF " position, when transmitting. If this switch is set to " ON " position, transmitting is not possible.

10. MIC COMPRESSOR SWITCH

To push this switch, the sensitivity of microphone can be increased. (up to 20db or more)

11. SQ FIX SWITCH

Makes the SQUELCH CONTROL fix in the " ON " position.

12. NOISE BLANKER (NB) SWITCH

Use the NB switch to reduce excessive noise from ignition, motor or other electrical interferences.

13. CHANNEL INDICATOR

Selects any one of the 40 CB channels by channel UP/DOWN switch as indicated on the Light Emitting Diode (LED) readout.

14. LED METER

(1) When receiving (RX), it indicates the relative incoming signal in " S " unit on the 5 LED's.

(2) In the transmit mode (TX), it indicates the relative XMIT power output from your transceiver on the 4 LED's (not 4th LED). This is normal operation.

NOTE : If in the transmit mode, comming light up on the 5th LED, make sure of SWR (Standing Wave Ratio) of ANTENNA.

15. TX INDICATOR

Red LED, which lights when VRS is in transmitting mode.

16. RX INDICATOR

Green LED, which lights when VRS is in receiving mode.

17. PRI (CH9) INDICATOR

LED which indicates the mode of operation. It indicates red for PRI switch " ON " position.

18. MICROPHONE SOCKET

Connection of the microphone is via the socket on the front panel of the transceiver. On the microphone, there is a pushbutton for switching between transmitting and receiving. This is called " Push-To-Talk ".

NOTE : The switch must not be operated if there is no suitable antenna connected to the socket (20). Push the PTT switch and speak in a normal voice into the mirophone, 5-10 cm (2-4 inches) in front of your lips. When the PTT button is released the transceiver goes back into receiving. In the transmitting mode, the TX LED (15) lights up.

19. POWER SOCKET

This transceiver can be connected to 12 V DC system with negative as well as positive ground. Most cars use negative ground, but it is easy to verify which one of the pole of the battery is connected to the chassis.

20. ANTENNA CONNECTOR

Attach Mobile Antenna to this jack with a PL-259 type connector. And its feeder cable should be of 50 ohms impedance.

21. EXTERNAL SPEAKER JACK

The External Speaker is used for remote receiver mounting. The External Speaker should have 8 ohms impedance and be rated to handle at least 4 watts. When the External Speaker is plugged in, the internal speaker is automatically disconnected.

22. SELECTIVE CALL

The transceiver is prepared for connection of a selective call unit. The selective call unit responds only to calls with its own special tone code and there is no need for listening to a lot of other traffic on the channel.

V WHAT TO EXPECT/NOISE/10 CODES

GENERAL CB INFORMATION

The following is what you may expect once your CB is properly connected.

- The effective range depends on several factors: the antenna used, its height, terrain (city with tall buildings or other obstructions, over water, flat land or hills), weather conditions, and the number of other CB'ers on the same channel at the same time.
- Tall buildings, such as found in major metropolitan areas, will reduce distance greatly.
- Weather and atmospheric conditions such as lightning, sun spots, and other electrical interference will result in strong static and limit TRANSMIT and RECEIVE range.
- Skip (long-distance communications) is possible when CB signal is reflected back from ionized atmosphere and should be avoided.
- Heavy channel congestion, like Ch. 19 in most large cities, decreases range.

The relative range, under normaland favorable conditions, is shown below. This should not be taken as a minimum range of performance, but rather what can be expected from Class "D" stations under favorable circumstances and proper antenna mounting.

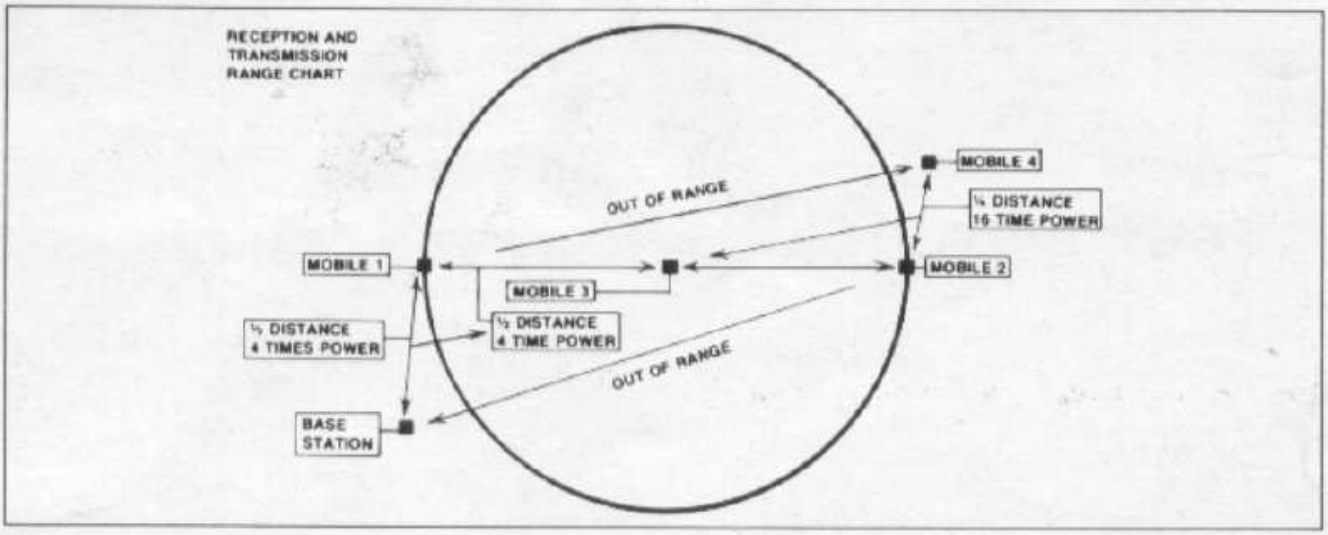
MOBILE TO MOBILE: 1 to 5 miles on land an up to 10 miles across water.
BASE TO MOBILE: 5 to 10 miles on land and up to 15 miles across water.
BASE TO BASE: Up to 20 miles, depending on type of antenna, height and terrain.

FADING

Fading occurs while driving away from another Mobile or Base CB while communicating. Fading sounds like you're picking up every other word, or background noise level increases while voice level decreases. Also, stronger signals will override your communications. A CB operating half-way between your two Mobiles (MOBILES 1 and 2) will have 4 times the signal power compared to your mobile. This is often referred to as "walking over you", as shown in RANGE CHART.

RECEIVES ONLY ONE SIDE OF CONVERSATION

This is not unusual in CB broadcasts — the distance between the two transmissions you are monitoring may put one out of your range (as shown in sketch), or signal strength may be different from a mobile station versus a Base Station.



NOISE

Some noise is to be expected and is normal. There will be a higher level of background noise when used as a mobile CB Transceiver and the car is running. If this noise becomes objectionable (which is caused by the vehicle's alternator, generator, spark plugs, windshield washer, and other electrical systems), a noise suppression kit may need to be installed. These are available from two-way radio stores, or you may have a servicer do the installation.

Noise from the alternator or generator will create a whining, high-pitched sound and will vary with engine speed. Spark plugs and ignition noise will show up as a popping sound and can also vary with engine speed.

To tell the difference between noise created by the ignition system and noise created by the generator, start the vehicle and race the engine. Now turn the engine off, and if the noise stops immediately, you have determined the ignition system is at fault.

Noise which stops a few seconds after the ignition is turned off is caused by the alternator or generator.

Noise can be caused by electrical interference from spark plugs and ignition cables. Most late model vehicles have resistance high-tension ignition cable and resistive spark plugs supplied as standard equipment. This eliminates the need for spark plug suppression. If not supplied, kits are available from automotive supply dealers.

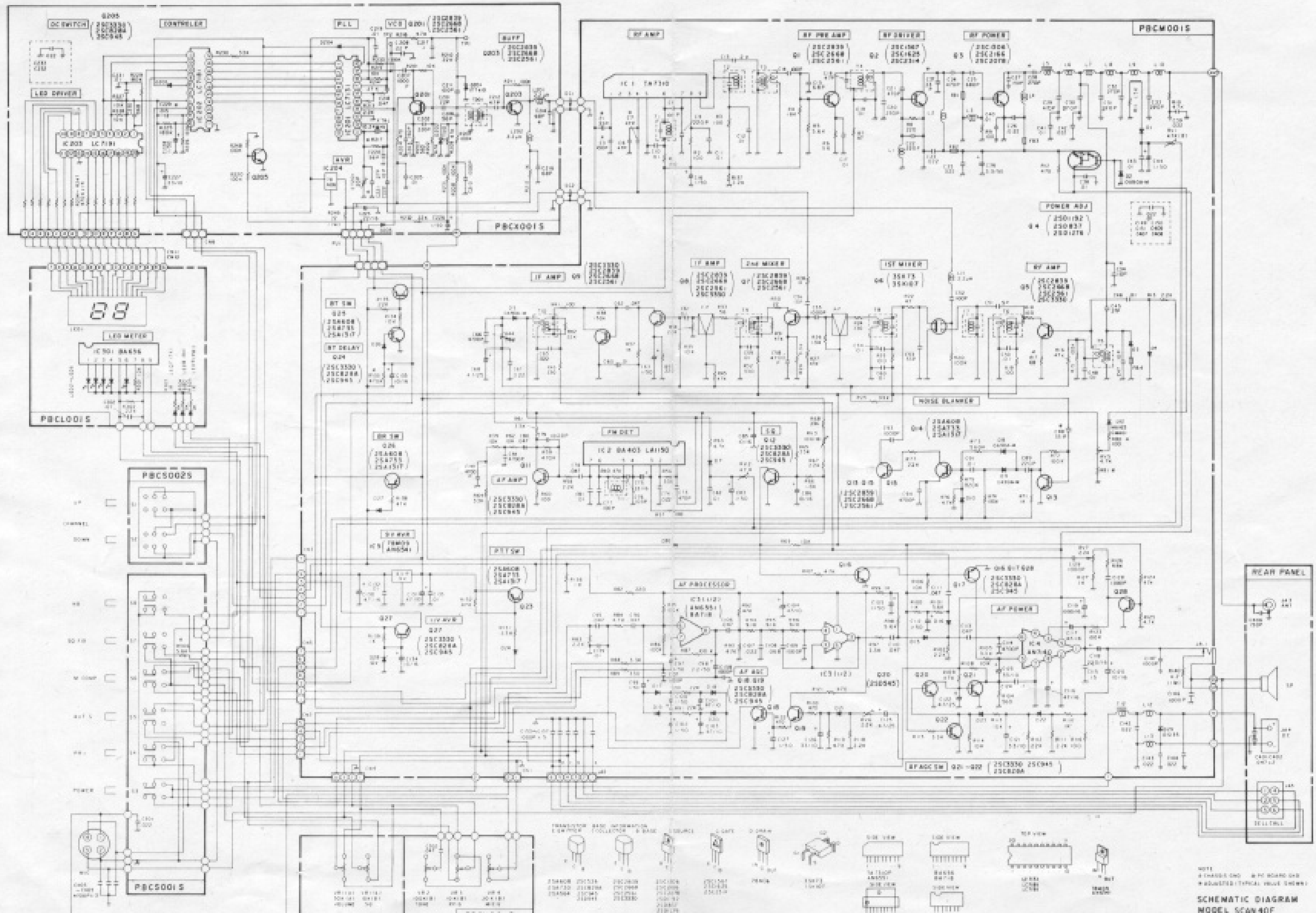
THE "10 CODE"

You will often hear 10 Code used in CB communications like 10-4 or 10-7. It is not necessary to use 10 Codes on CB; just talk as you would on the telephone. Some people enjoy using 10 Codes. To help you understand them, shown below are the Standard Condensed Radio Codes used by Associated Public Safety Communications Officers (APCO). Local uses may vary.

Many CB'ers also use 10 CODES which are different than APCO, and the most noticeable is that 10-36 is the code for "correct time." Use of 10 CODES is not recommended when using Channel 9 for emergencies.

"APCO 10 CODE"

10- 1 — Signal weak
10- 2 — Signal good
10- 3 — Stop transmitting
10- 4 — Affirmative (OK)
10- 5 — Relay (to) _____
10- 6 — Busy
10- 7 — Out of service
10- 8 — In service
10- 9 — Say again
10-10 — Negative
10-11 — On duty
10-12 — Stand by (stop)
10-13 — Existing conditions
10-14 — Message/Information
10-15 — Message delivered
10-16 — Reply to message
10-17 — Enroute
10-18 — Urgent
10-19 — (In) Contact
10-20 — Location
10-21 — Call _____ by phone
10-22 — Disregard
10-23 — Arrived at scene
10-24 — Assignment completed
10-25 — Report to (meet) _____
10-26 — Estimated time of arrival
10-27 — License/Permit information
10-28 — Ownership information
10-29 — Records check
10-30 — Danger/Caution
10-31 — Pick Up _____
10-32 — Units needed:
Specify: Number/Type
10-33 — Help me quick
10-34 — Time



SCHEMATIC DIAGRAM
MODEL SCAN40F

Kernow Trading Ltd.
50-54 Mina Road
St. Werburghs
Bristol U.K.

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