Cobra 25LTD
40-Channel Citizens Band
2-Way Mobile Radio
with Emergency Channel 9

Cobra Communications Product Group
DYNASCAN CORPORATION
6460 W. Cortland Street
Chicago, Illinois 60635

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Instruction Manual
for
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THE CB STORY

The Citizens Band lies between the shortwave broadcast and 10-meter amateur radio bands, and was established by law in 1949. The Class D two-way communications service was opened in 1959. (CB also includes a Class A business band and Class C remote control frequencies.) Acquiring the CB license requires no detailed technical or Morse-code knowledge that is required for a "Ham" license.

Although the FCC has eliminated the requirement for the $4.00 CB license fee, a license is still required. Filing procedure remains unchanged. One license can be good for any number of sets used by a given family or business. Once you receive your CB license for your equipment, anyone may use it.

For example, though the equipment must be licensed to someone over 18 years of age, a child can use the equipment to talk to another child, or an employee can use the equipment as part of his or her routine services. However, final responsibility of legal operation rests with the CB licensee.

NOTE

FCC regulations permit only "transmissions" (one party to another) rather than "broadcasts" (to a wide audience). Thus, advertising is not allowed on CB channels because it is broadcasting.

Section I
Introduction

FREQUENCY RANGE

Your COBRA radio provides high level, trouble-free performance in the Citizens Radio Service which is comprised of the following frequency assignments:

Channel	Channel Frequency in MHz	Channel	Channel Frequency in 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

These frequencies are generated and accurately controlled by a phase lock loop (PLL) circuit, comprised of the latest state-of-the-art integrated circuit technology, thereby ensuring high reliability and excellent frequency stability on the above channels.

To obtain maximum performance from your COBRA radio, please read this entire instruction manual carefully.

WARNING

1. Operation of this equipment requires a valid Station License issued by the Federal Communications Commission. Do not transmit with your equipment until you have received your License or complied with procedures explained on FCC temporary License Form 555-B. A copy of FCC Application Form 505, FCC Temporary License Form 555-B, and Part 95 of the FCC Plain English Rule, are packed with this combination transceiver for your convenience.

2. You are required to complete FCC License Application Form 505 and submit it to the FCC, Gettysburg, Pa., in order to receive your license.

3. You are required to read and understand Part 95 of the FCC Rules and Regulations, before operating your station. FCC Rules require you to always have on hand a current copy of Part 95 of the FCC Rules, as part of your Station Records.

4. All transmitter adjustments other than those supplied by the manufacturer as front panel operating controls, must be made by, or under the supervision of, the holder of an FCC-issued 1st or 2nd Class Radio Operator License.

5. Replacement or substitution of transistors, regular diodes or other parts of a unique nature, with parts other than those recommended by Dynascan, may cause violation of the technical regulations of Part 95 of the FCC Rules, or violation of Type Acceptance requirements of Part 2 of the Rules.

Section II
Specifications

GENERAL

Channels	40.
Frequency Range	26.965 to 27.405 MHz.
Frequency Control	Phase Lock Loop (PLL) synthesizer.
Frequency Tolerance	0.005%.
Operating Temperature Range	-30°C to +50°C.
Microphone	Plug-in type; dynamic.
Input Voltage	13.8 VDC nom. (positive or negative ground).
Current Drain	*Transmit:* AM full mod., 1.5A (maximum). *Receive:* Squelched, 0.25A; full audio output 1.0A (nominal).
Size	8-5/8″D x 6-3/8″W x 2-13/64″ H.
Weight	4 pounds.
Antenna Connector	UHF, SO-239.
Semiconductors	25 transistors, 19 diodes, 3 integrated circuits.
Meter	Illuminated; indicates relative power output and received signal strength.

TRANSMITTER

Power Output	4 watts.
Modulation	High- and low-level, Class B amplitude modulation.
Frequency Response	300 to 3000 Hz.
Output Impedance	50 ohms, unbalanced.

RECEIVER

Sensitivity	Less than 1 μV for 10 dB(S+N)/N.
Selectivity	6 dB @ 7 KHz, 60 dB @ 10 KHz.
Image Rejection	80 dB, typical.
Adjacent-Channel Rejection	60 dB, typical.
IF Frequencies	Double conversion, 1st: 10.695 MHz. 2nd: 455 KHz.

Automatic Gain Control (AGC)	Less than 10 dB change in audio output for inputs from 10 to 50,000 microvolts.
RF Gain Control	Adjustable for optimum signal reception.
Noise Blanker	RF type.
Squelch	Adjustable; threshold less than 1 μV.
Audio Output Power	4 watts.
Frequency Response	300 to 3000 Hz.
Distortion	Less than 7% @ 3 watts @ 1000 Hz.
Built-in Speaker	16 ohms, round.
External Speaker (Not Supplied)	8 ohms; disables internal speaker when connected.

PA SYSTEM

Power Output	4 watts into external speaker.
External Speaker for PA (Not Supplied)	8 ohms; when PA-CB switch is in PA, the PA speaker also monitors the receiver; separate jack provided.

Section III
Installation

LOCATION

Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passengers in the vehicle. In automobiles, the transceiver is usually mounted underneath the dash panel, with the microphone bracket beside it.

MOUNTING AND CONNECTION

Your COBRA CB radio is supplied with a universal mounting bracket. The transceiver is held in the bracket by two bolts, permitting adjustment at the most convenient angle.

The bracket must be mounted with the machine screws and nuts supplied. The mounting must be mechanically strong and also provide a good electrical connection to the chassis of the vehicle. Proceed as follows to mount the transceiver:

1. After you have determined the most convenient location in your vehicle, hold the COBRA transceiver with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position, remove the mounting bracket and use it as a template to mark the location for the mounting bolts. Before drilling the holes, make sure nothing will interfere with the installation of the mounting bolts.

2. Connect the antenna cable plug to the standard receptacle on the rear panel. Most CB antennas are terminated with a type PL-259 plug and mate with the receptacle.

3. Connect the red lead of the accessory power cable to +13.8 VDC. In automotive installation, +13.8 VDC (nominal 12 VDC) is usually obtained from the accessory contact on the ignition switch. This prevents the set from being left on accidentally when the driver leaves the car and also permits operating the unit without the engine running. Locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car.

NOTE

In positive ground automobiles the red wire goes to the chassis and the black wire is connected to the ignition switch.

4. Connect the black lead to -13.8 VDC. This is usually the chassis of the car. Any convenient location with good electrical contact (remove paint) may be used. Plug power cable into jack on back of transceiver.

5. Mount the microphone bracket on the right side of the transceiver or near the transceiver, using two screws supplied. When mounting in an automobile, place the bracket under the dash so the microphone is readily accessible.

IGNITION NOISE INTERFERENCE

Use of a mobile receiver at low signal levels is normally limited by the presence of electrical noise. The primary source of noise in automobile installation is from the generator and ignition system in the vehicle. Under most operating conditions, when signal level is adequate, the background noise does not present a serious problem. Also, when extremely low level signals are being received, the transceiver may be operated with vehicle engine turned off. The unit requires very little current and therefore will not significantly discharge the vehicle battery.

Even though your COBRA radio has an excellent automatic noise limiter, in some installations ignition interference may be high enough to make good communications impossible. The electrical noise may come from several sources. Many possibilities exist and variations between vehicles require different solutions to reduce the noise. Consult your COBRA dealer or a 2-way radio technician for help in locating and correcting the source of severe noise.

ANTENNA

Since the maximum allowable power output of the transmitter is limited by the FCC, the antenna is one important factor affecting transmission distance. Only a properly matched antenna system will allow maximum power transfer from the 50-ohm transmission line to the radiating element. In mobile installations (cars, trucks, boats, etc.), an antenna system that is non-directional should be used.

A vertically polarized quarter-wavelength whip antenna provides the most reliable operation and greatest range. The shorter loaded-type whip antennas are

more attractive, compact and adequate for applications where the maximum possible distance is not required. Also, the loaded whips do not present the problems of height imposed by the full quarter-wavelength whip.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted at a corner of the vehicle they are slightly directional, in the direction of the body of the vehicle. For all *practical* purposes, however, the radiation pattern is non-directional. The slight directional characteristic will be observed only at extreme distances. A standard antenna connector (Type SO-239) is provided on the transceiver for each connection to a standard PL-259 cable termination.

If the transceiver is not mounted on a metal surface, it is necessary to run a separate ground wire from the unit to a good metal electrical ground in the vehicle. When installed in a boat, the transceiver will not operate at maximum efficiency without a ground plane, unless the vessel has a steel hull. For boats with non-metallic hulls, we suggest using a half-wave antenna designed for marine use.

Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

BASE STATION OPERATION
(Operation from 120 VAC, House Current)

To operate your transceiver from your home or office, using the regular house current as the power source, you will require a a 12 VDC power pack that has been specially designed for the purpose. It is available as optional equipment from your COBRA dealer. It consists of a 120-volt, 60 Hz AC to 12-volt DC power converter that delivers the required power for the operation of the transceiver. Simply connect the red(+) and black (-) leads of the transceiver to the corresponding terminals of the power packs.

NOTE

Do not attempt to operate this transceiver by connecting directly to 120 VAC.

TEMPORARY MOBILE OPERATION

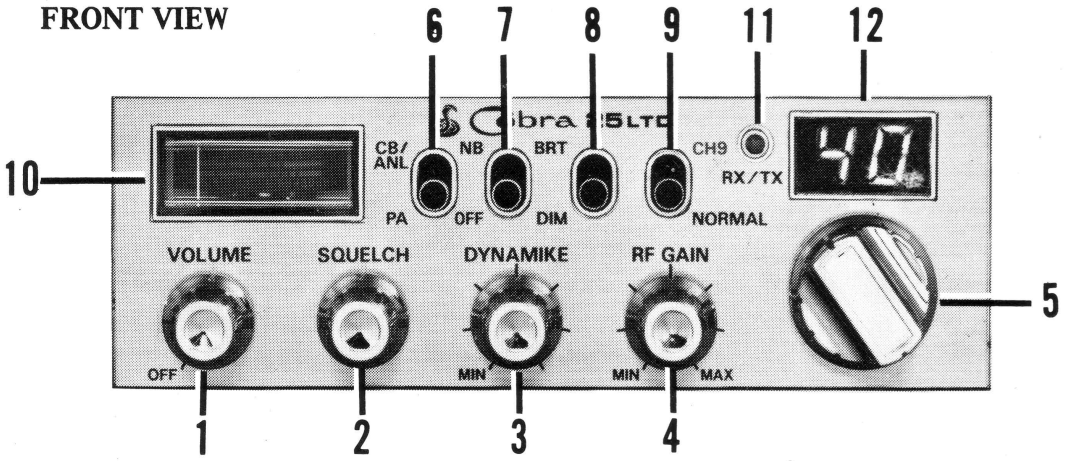
To operate your COBRA transceiver from a car on a temporary basis, you may want to purchase an optional cigar lighter adapter from your COBRA dealer. This adapter and a magnetic mount antenna allow you to quickly "install" your transceiver for temporary use.

Section IV
Operation

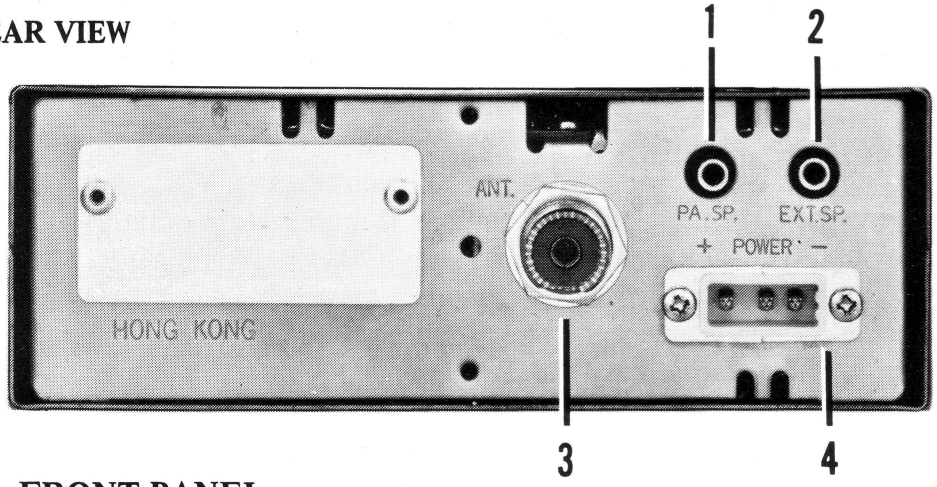
CONTROLS AND INDICATORS

Refer to controls, indicators and connectors as illustrated below:

FRONT VIEW



REAR VIEW



A. FRONT PANEL

1. **OFF/ON/VOLUME**: Turn clockwise to apply power to the unit and to set the desired listening level.

2. **SQUELCH**: This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiving range, it is desirable that the control be adjusted only to the point where the receiver background noise is eliminated. Turn

clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at the maximum clockwise setting.

3. **DYNAMIKE**: Adjusts the microphone gain in the transmit and PA modes. This controls the gain to the extent that full talk power is available several inches away from the microphone. In the Public Address (PA) mode, the control functions as the volume control.

4. **RF GAIN**: Adjust as required to optimize signal. This control is used primarily to optimize reception in strong signal areas. Gain is reduced by counterclockwise rotation of the control.

5. **CHANNEL SELECTOR Switch**: This switch selects any one of forty Citizens Band channels desired. The selected channel is indicated by the LED (12).

6. **PA/CB-ANL Switch**: Selects the mode of operation. In the CB-ANL position, the PA function is disabled and the unit will transmit and receive on the selected frequency. *The PA function should not be used unless a PA speaker is connected.* In the PA mode, incoming CB transmissions will be heard through the PA speaker. This allows you to monitor messages when you are not inside your vehicle.

NOTE: ANL (Automatic Noise Limiter) is permanently switched on in the CB-ANL position.

7. **NB Switch**: When the switch is placed in the NB position the RF noise blanker is activated. The RF noise blanker is very effective for repetitive impulse noise such as ignition interference.

8. **BRIGHT/DIM Switch**: Controls the brightness of the LED channel indicator for optimum intensity for day or nighttime driving.

9. **CH.9/NORMAL Switch**: Used for instant selection of emergency channel 9 (CH. 9 position). In NORMAL position, all 40 CB channels are selected by the Channel Selector Switch.

10. **S/RF PWR METER**: Shows relative transmitter RF output power when transmitting and received input signal strength when receiving. The meter is illuminated when power is on.

11. **RX/TX (Receive/Transmit) Indicator**: Red light indicates you are transmitting; green light indicates you are receiving.

12. **CB CHANNEL LED DISPLAY**: Displays CB channel you have selected.

PRESS-TO-TALK MICROPHONE: The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press the switch to activate the transmitter; release the switch to receive. When transmitting, hold the microphone two inches from your mouth and speak clearly in a normal voice. The microphone provided with your radio is a detachable low-impedance dynamic type.

B. REAR PANEL

1. **PA SPEAKER Jack**: An external 8-ohm, 4-watt speaker may be connected to the PA Speaker Jack when the transceiver is used as a public address system. The speaker should be directed away from the microphone to prevent acoustic feed-back. Physical separation or isolation of the microphone and speaker must be employed when operating the PA at high output levels.

2. **EXTERNAL SPEAKER**: The SPEAKER JACK is used to connect an optional external speaker. The external speaker should have 8 ohm impedance and be rated to handle at least 4 watts. When the external speaker is plugged in, the internal speaker is automatically disconnected.

3. **ANTENNA CONNECTOR**: This female connector permits connection of the transmission line cable male connector to the transceiver.

4. **DC POWER Jack.** Permits connection of DC power to the transceiver. A power cord with polarized plug is supplied with the radio. The polarized plug ensures that the power will always be connected properly.

OPERATING PROCEDURE TO RECEIVE

1. Be sure that the power source, antenna and microphone are connected to the proper connectors before going to the next steps.

2. Turn the unit ON by rotating the Volume Control clockwise, PA/CB-ANL switch in the CB-ANL position.

3. Set the Channel Selector Switch to the desired channel.

4. Set the RF GAIN control fully clockwise.

5. Set the Volume Control to a comfortable listening level.
6. Listen to the background noise from the speaker. Turn the Squelch Control slowly clockwise until the noise JUST disappears (no signal should be present). Leave the control at this setting. The SQUELCH is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far, or the weaker signals will not be heard.

OPERATING PROCEDURE TO TRANSMIT

1. Be sure the operator of the transmitter is a holder of a Citizens Band license issued by the F.C.C. or has applied for a license and has in his possession a completed temporary permit (F.C.C. Form 555-B).
2. Be sure the operator has read and understands part 95, F.C.C. Rules and Regulations prior to operating the transmitter.
3. Select the desired channel.

CAUTION

Be sure the antenna is properly connected to the transceiver before transmitting. Transmitting without an antenna or with a poorly matched antenna (high SWR; over 2) can cause damage to the transmitter.

4. Set the DYNAMIKE Control fully clockwise.
5. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.

OPERATING PROCEDURE FOR PUBLIC ADDRESS

1. Connect a remote speaker to the PA jack provided on the rear panel.
2. Place the PA/CB-ANL Switch in the PA position.
   NOTE: When the Volume control is rotated clockwise, activity on the CB channel will be heard through the PA speaker.
3. Depress the push-to-talk switch on the microphone and speak in a normal voice. Adjust the volume of the PA speaker using the DYNAMIKE control on the front panel.

NOTE

PA volume is controlled by adjusting the DYNAMIKE knob to the desired volume.

Section V
Maintenance and Adjustment

Your COBRA transceiver is specifically designed for the environment encountered in mobile installations. The use of all solid state circuitry and its light weight result in high reliability. Should a failure occur, however, replace parts *only* with identical parts. Do *not* substitute. Refer to the schematic diagram and parts list provided.

NOTE

If the performance described in the OPERATION and MAINTENANCE AND ADJUSTMENT sections is not obtained, review the operating instructions to insure that proper procedures were followed. If a problem still exists, refer to WARRANTY SERVICE INSTRUCTIONS on the last page of this manual.

FCC WARNING

Federal law requires that adjustment of the radio frequency section of this transceiver may not be made by a Citizens Band operator. Only a licensed First or Second Class U.S. commercial license holder may tune the transmitter section of this transceiver, per FCC Plain English CB Rule 41.

Section VI
Appendix

Citizens Band radio operators have largely adopted the "10-code" for standard questions and answers. Its use permits faster communications and better understanding in noisy areas. The following table lists some of the more common codes and their meanings.

10 CODE

Code	Meaning	Code	Meaning
10-1	Receiving poorly	10-29	Time is up for contact
10-2	Receiving well		
10-3	Stop transmitting	10-30	Does not conform to FCC rules
10-4	OK, message received		
10-5	Relay message	10-32	I will give you a radio check
10-6	Busy, stand by	10-33	EMERGENCY TRAFFIC
10-7	Out of service, leaving air	10-34	Trouble at this station
10-8	In service, subject to call	10-35	Confidential information
10-9	Repeat message	10-36	Correct time is
		10-37	Wrecker needed at
10-10	Transmission completed, standing by	10-38	Ambulance needed at
		10-39	Your message delivered
10-11	Talking too rapidly		
10-12	Visitors present	10-41	Please turn to channel
10-13	Advise Weather/Road conditions	10-42	Traffic accident at
		10-43	Traffic Tie up at
10-16	Make pick up at	10-44	I have a message for you
10-17	Urgent business	10-45	All units within range please report
10-18	Anything for us?		
10-19	Nothing for you, return to base	10-50	Break channel
10-20	My location is	10-60	What is next message number?
10-21	Call by telephone	10-62	Unable to copy, use phone
10-22	Report in person to	10-63	Net directed to
10-23	Stand by	10-64	Net clear
10-24	Completed last assignment	10-65	Awaiting your next message/assignment
10-25	Can you contact		
10-26	Disregard last information	10-67	All units comply
10-27	I am moving to channel		
10-28	Identify your station	10-70	Fire at

10 CODE (Continued)

Code	Meaning	Code	Meaning
10-71	Proceed with transmission in sequence	10-91	Talk closer to mike
10-77	Negative contact	10-93	Check my frequency on this channel
		10-94	Please give me a long count
10-81	Reserve hotel room for	10-99	Mission completed, all units secure
10-82	Reserve room for		
10-84	My telephone number is		
10-85	My address is	10-200	Police needed at

A FEW RULES THAT SHOULD BE OBEYED

1. You must identify your official licensed call sign at the beginning and end of every conversation.

2. You are not allowed to carry on a conversation with another station for more than five minutes at a time without taking a one-minute break, to give others a chance to use the channel.

3. You are not allowed to blast others off the air by over-powering them with illegally amplified transmitter power, or illegally high antennas.

4. You can't use CB to promote illegal activities.

5. You are not allowed to use profanity.

6. You may not play music in your CB.

7. You may not use your CB to sell merchandise or professional services.

HOW YOUR CB CAN SERVE YOU

- Warn of traffic tie ups ahead.
- Provide weather and road information.
- Provide help fast in event of emergency or breakdown.
- Suggest good spots to eat and sleep
- Make long trips more interesting, and help keep you awake.
- Provide direct contact with your office or home.
- Make friends for you as you travel.
- Provide "local information" to find your destination.
- Help law enforcement officers by reporting drunk and reckless drivers.

Colonel Samuel S. Smith of the Missouri Highway Patrol called the number of drunken drivers, wrong-way drivers and speeders reported by CBers as "amazing." He said, that even the "Smokey Bear" warnings don't shake their beliefs that "the potential benefits of CB radio to law enforcement are so great that they far outweigh the disadvantages." In regards to CB radar warnings to other CBers, Colonel Smith said cheerfully that "We've overheard warnings being relayed to truckers long after our operations have been discontinued . . . so we actuallv receive a residual benefit from these warnings."

USE CHANNEL 9 FOR EMERGENCY MESSAGES ONLY

FCC gives the following examples of permitted and prohibited types of communications for use on Channel 9. These are guidelines and are not intended to be all-inclusive.

Permitted	Example Message
Yes	"A tornado sighted six miles north of town."
No	"This is observation post number 10. No tornado sighted."
Yes	"I am out of gas on Interstate 95."
No	"I am out of gas in my driveway."
Yes	"There is a four-car collision at Exit 10 on the Beltway, send police and ambulance."
No	"Traffic is moving smoothly on the Beltway."
Yes	"Base to Unit 1, the Weather Bureau has just issued a thunderstorm warning. Bring the sailboat into port."
No	"Attention all motorists. The Weather Bureau advises that the snow tomorrow will accumulate 4 to 6 inches."
Yes	"There is a fire in the building on the corner of 6th and Main Streets."
No	"This is Halloween patrol unit number 3. Everything is quiet here."

WARRANTY SERVICE INSTRUCTIONS

1. Refer to the MAINTENANCE section of your COBRA instruction manual for adjustments that may be applicable.

2. If the above-mentioned procedures do not correct the problem you are experiencing with your unit, pack it securely (preferably in the original carton or double-packed). Enclose a letter describing the problem and include your name and address. Deliver to, or ship PREPAID (UPS preferred) to the nearest COBRA authorized service agency (see list enclosed with unit).

If your list of authorized COBRA service agencies has been misplaced, contact your local dealer for the name of your nearest service agency, or write to:

Service Department

Cobra Communications Product Group
DYNASCAN CORPORATION
6460 W. Cortland Street
Chicago, Illinois 60635

Cobra®

LIMITED ONE YEAR WARRANTY

DYNASCAN CORPORATION warrants to the original purchaser that its COBRA LTD Citizens Band Radios, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

DYNASCAN will, without charge, repair or replace at its option, defective radios or component parts upon delivery to an authorized COBRA service contractor or the factory service department, accompanied by proof of the date of purchase in the form of a sales receipt.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered, defaced or removed.

As indicated in your product instruction booklet, certain COBRA models are suitable for dashboard installation without modification of the dash. In other cases professional installation is recommended. In either event, DYNASCAN is not responsible for damages to the product or the automobile resulting from improper installation.

DYNASCAN shall not be liable for any consequential damages, including without limitation damages resulting from loss of use or cost of installation. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have other rights which vary from state to state.

For your convenience we suggest you contact your dealer, who may be authorized to make repairs or can refer you to the nearest service contractor. If warranty service cannot be obtained locally, please send the unit to Cobra Communications Service, 6460 West Cortland Street, Chicago, Illinois 60635, properly packaged to avoid damage in shipment.

NOTE

For future reference, jot down the serial number (shown on the FCC identification plate of your COBRA radio) below:

SERIAL NO. _____

Cobra Communications Product Group
DYNASCAN CORPORATION
6460 W. Cortland Street
Chicago, Illinois 60635

480-317-9-001

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