

SBE

®

OPTI/SCAN

(MODEL SBE-12SM)



**DIGITAL MONITOR RECEIVER
EUROPEAN FREQUENCIES ONLY**

220 AIRPORT BLVD., WATSONVILLE, CA. 95076

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1.0 GENERAL DESCRIPTION

Your purchase of the SBE Optiscan Digital Scanner introduces you to a revolutionary new concept in the scanner field. By properly programming the Optiscan card, you will be able to program your unit for reception of any of the 20,000 frequencies listed in the frequency charts without having to purchase a single crystal.

The advantages of crystal-less operation for your scanner are numerous: If you move, you simply program a new Optiscan card for the frequencies in your new location; if you wish, you may purchase additional Optiscan cards thereby having available any number of frequencies with which you may program your scanner; if frequencies in your area change or new frequencies are added, you simply program a new Optiscan card. You can then reprogram your Optiscan instantly simply by changing cards...something easily done even while driving at night. The instant reprogramming of your scanner is an overwhelming advantage available with no other type of programable scanner.

The "heart" of your new SBE Optiscan Digital Scanner is the programable card and card reader. Since this is a new and revolutionary design concept, it is very important that you thoroughly read this instruction manual, particularly the sections dealing with programming of the Optiscan card, before you attempt operation of your unit.

2.0 SPECIFICATIONS

Frequency Range:	Low band VHF...30-50 MHz Mid band VHF...68-88 MHz UHF...450-470 MHz 140-160 MHz * 470-490 MHz *
Maximum Usable Channel Separation:	LF...20 MHz VHF...20 MHz UHF...20 MHz
Sensitivity:	0.5 uv for 12db SINAD
Squelch Sensitivity:	0.3 uv
Adjacent Channel Selectivity:	-50db @ 25 KHz
Modulation Acceptance:	±7 KHz
Audio Output:	3.0 watts into 4 ohms with less than 10% distortion.
Power Requirements:	117 VAC, 50/60 Hertz 13.8 Volts DC positive** or negative ground.
Power Consumption:	15 watts @ 117 VAC (full Audio) 0.8 ma @ 13.8 Volts DC (squelched)
Weight:	3.4 Kilograms
Dimensions:	196.8mm W, 69.8mm H, 254mm D
Accessories Supplied:	Mounting bracket, AC power cord, DC power cord, instruction manual, VHF high/low antenna and UHF antenna

* Special frequency coverage Optiscans available from the factory on special order.

** For installation in positive ground systems, the positive ground adapter kit must be used.

3.0 INSTALLATION

3.1 Mobile

In planning the installation of your SBE Optiscan Digital Scanner a location should be chosen which will provide easy access to the controls of the unit. Also, routing of the power and antenna cables should be taken into consideration. Avoid installing the Optiscan in the direct air stream of the vehicle's heater. Temperatures in this area measure up to 150°F and may cause component failure.

The Optiscan is supplied with a universal mounting bracket. We recommend that the unit be mounted in a horizontal plane, such as, underneath an automobile dashboard or truck roof.

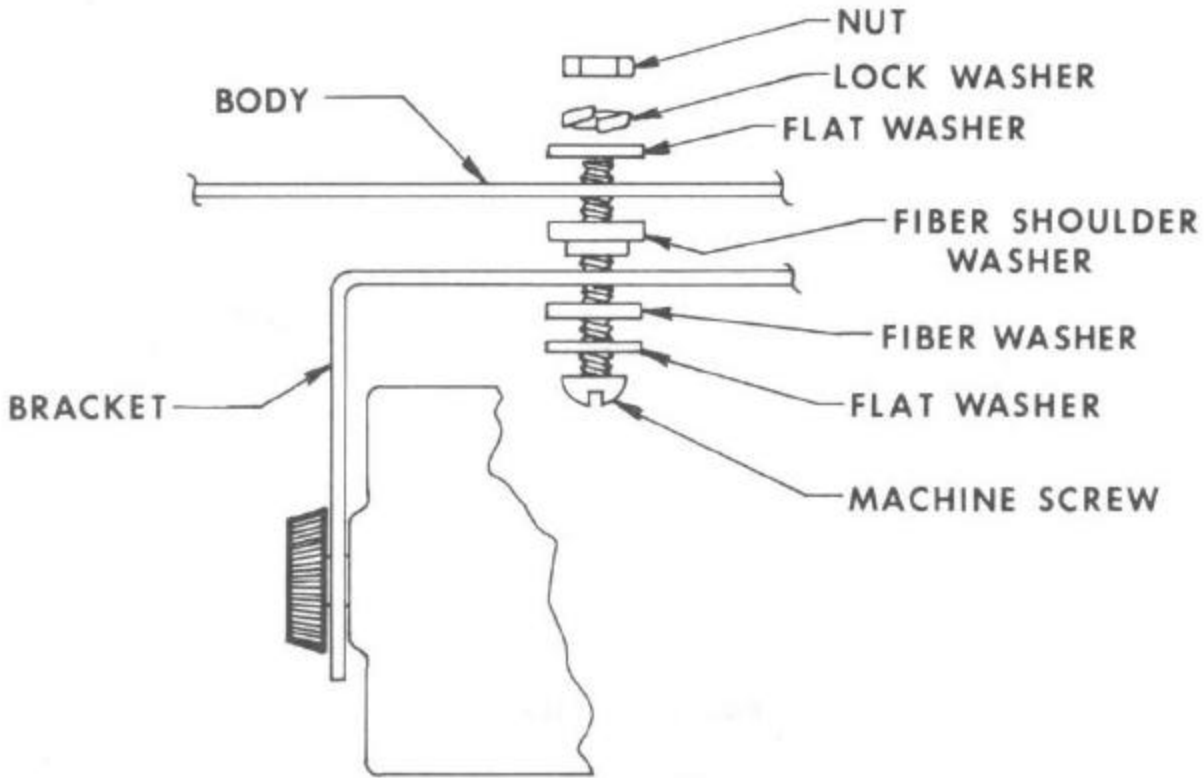


Figure 1

TYPICAL MOUNTING CONFIGURATION

3.2 Electrical Connections

The SBE Optiscan is designed for installation in NEGATIVE ground electrical systems. However, the Optiscan may be installed in a POSITIVE ground system by ordering the special positive ground adapter kit from the Factory Parts Department.

When installing the Optiscan in either a positive or negative ground electrical system, DC power should be derived directly from the vehicle's battery in order to minimize voltage losses and ignition interference. In either case, connect the red wire from the power cord to the positive (+) battery terminal, black wire to the negative (-) battery terminal. If the Optiscan's power lead must be lengthened, use #14 or larger wire.

3.3 Mobile Antennas

Any of the common 52 ohm VHF or UHF mobile monitor antennas should give excellent results with this unit. The dealer from which you purchased your Optiscan can advise you of the best antenna/mounting configuration for a particular installation.

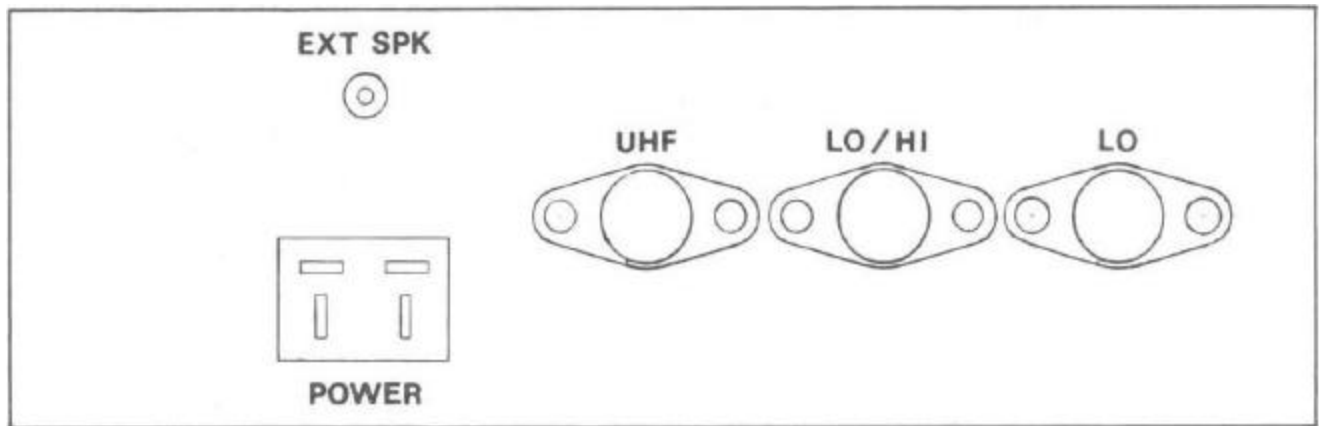


Figure 2

REAR PANEL VIEW

3.4 Base

For base operation of your Optiscan, simply connect the AC power cord to the rear panel and plug the AC cable into any 117 VAC, 50/60 Hertz receptacle. The Optiscan requires very little ventilation, however, it is good practice to avoid excessively warm locations such as near radiators or heating vents.

3.5 Base Antennas

For areas with moderate signal strengths, the VHF high/low, and UHF antennas provided with the Optiscan should prove adequate.

In areas where the signal strength is marginal, it may be necessary to use a better antenna system for good signal reception. Any of the commonly available monitor antennas, such as a ground plane type, mounted as high above the ground as practical, will greatly increase performance of the unit.

3.6 External Speaker

The external speaker jack on the rear panel of the Optiscan may be used to connect a remote speaker. The external speaker should have a 4 or 8 ohm impedance and be able to handle at least 3 watts of audio. When the external speaker is connected, the Optiscan's internal speaker will be disabled. A suitable accessory external speaker is SBE's model SBE-1SP or SBE-1SP/AMP Amplified Speaker.

3.7 Noise Suppression

The ability of the Optiscan to detect very weak signals will be enhanced if the electrical noise generated by the vehicle is minimized.

The following steps are recommended if excessive electrical noise is present:

Before installing suppression devices, check the condition of the vehicle's ignition wiring. Insure that the spark plug connections are clean and tight and that the wires are seated properly in the distributor cap. Check for wear of the distributor rotor and replace the rotor cap if traces of carbon or signs of arcing are evident.

Resistor type spark plugs should be used in place of regular spark plugs. Radio-resistant ignition wire is standard on most late model vehicles and should be installed in vehicles not equipped with it.

Installation of bonding straps in the engine compartment will further reduce ignition noise. Install short lengths of

metal strap or heavy shield braid between the engine and frame, engine and firewall, alternator and frame, exhaust pipe and frame and hood to frame. Keep in mind that extremely high ignition noise levels or noise levels that become worse after a period of time are indicative of deterioration of the vehicle's electrical system.

4.0 OPERATION

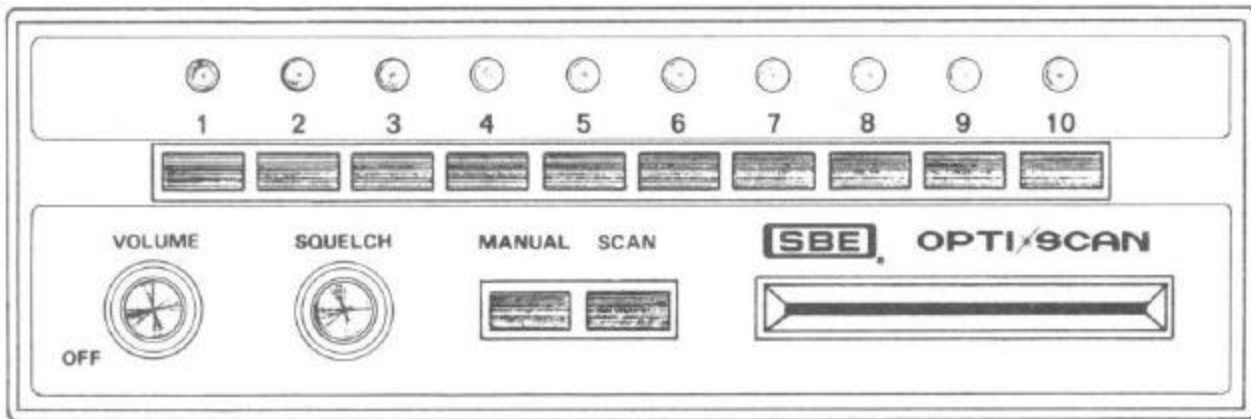
4.1 Controls

4.1.1 ON/OFF-Volume

Turn clockwise to apply power to the unit and to set the desired listening level.

4.1.2 Squelch

Blanks out unwanted noise when no signals are present. Turn fully counterclockwise and then slowly clockwise until receiver noise disappears. Any signal to be received must now be slightly stronger than the received noise. Further clockwise rotation will increase the threshold level that the signal must overcome in order to be heard. NOTE: The squelch must be set in order for the SBE Optiscan to "Scan" automatically.



4.1.3 Scan Mode

The Scan feature is operative only when the squelch control is set clockwise. When the Scan switch is depressed, the receiver will automatically scan all 10 channels and lock on any active channel.

4.1.4 Manual Mode

A channel may be selected manually by placing the "Scan" switch to the out position and by depressing the "Manual" switch until the desired channel lights.

4.1.5 Channel Lock-Out

The channel lock-out or bypass switches allow the operator to bypass or lock-out any of the 10 channels. By placing the lock-out switch in the out position, the Scanner automatically bypasses that channel.

4.1.6 Card Reader

A properly programmed Optiscan card must be inserted in the Card Reader in order for the Optiscan to properly function. If an Optiscan card is not installed in the Card Reader the unit will function normally without damage to itself, however, no conversations will be monitored.

5.0 TO OPERATE

In order to place the SBE Optiscan in operation, the following sequence of events should be followed:

- 5.1 Insure that a properly programmed Optiscan card has been inserted in the card reader.
- 5.2 Rotate the squelch control to it's maximum counterclockwise position.
- 5.3 Rotate the ON/OFF-Volume control clockwise to apply power to the unit and to set the desired listening level.
- 5.4 Insure that the channel lock-out or bypass switches are placed in their appropriate positions.
- 5.5 Depress the scan switch for automatic channel scanning. Once the scan switch is depressed, rotate the squelch control slowly clockwise until receiver noise disappears. Once the squelch control is properly set, the Optiscan will commence scanning those channels which have not been locked-out or bypassed.
- 5.6 For manual mode of operation, place the scan mode switch in the out position and depress the manual switch until your desired channel lights.

BEND CARD BACK TO WIDEN
SCORE LINES BETWEEN NUMBERS.
PEEL DESIRED NUMBER OFF WITH
THUMBNAIL.

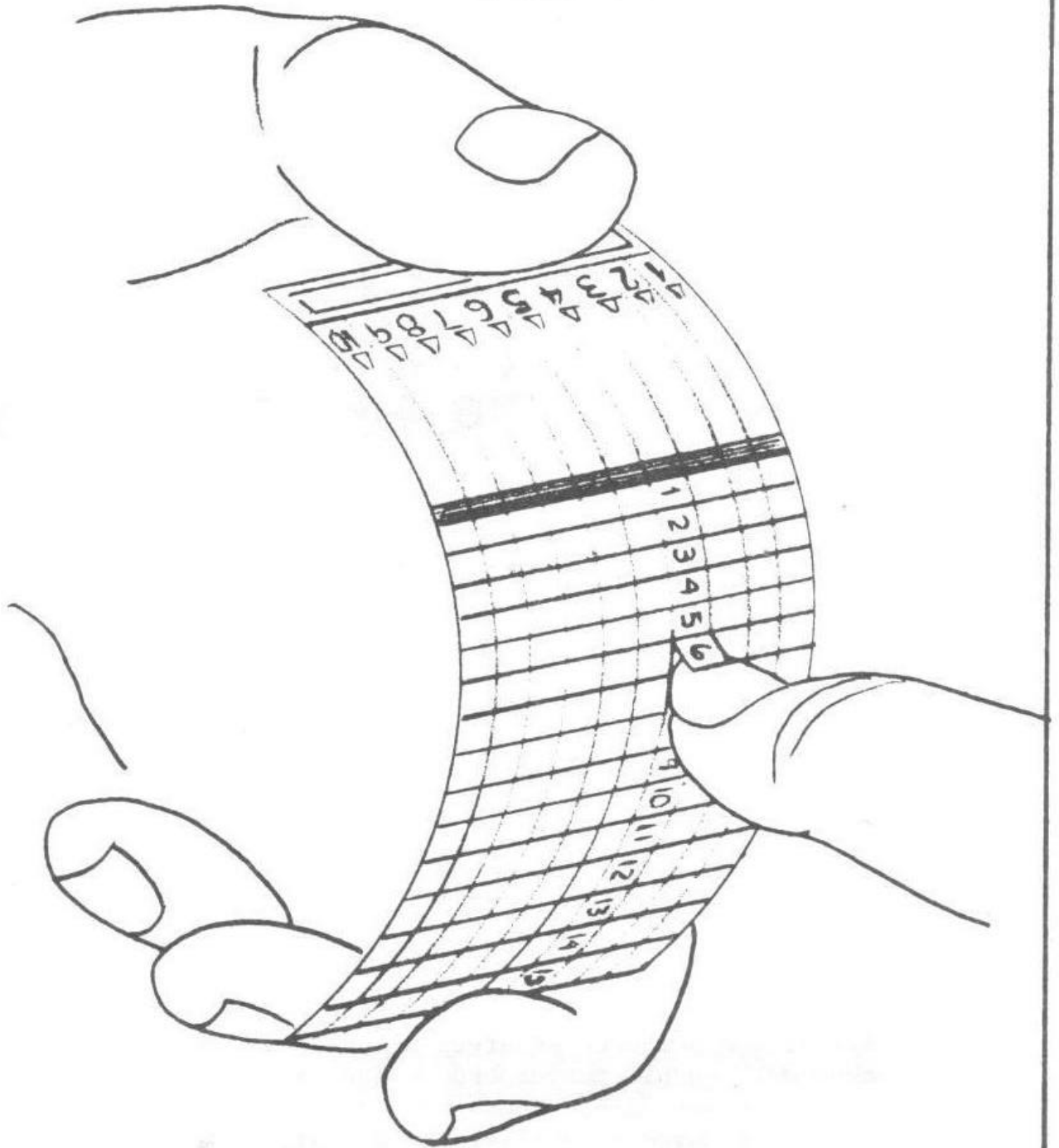


FIG. D

6. The card should now appear as shown in figure E and is now ready for insertion into the Optiscan card reader. Once the card is placed in the card reader, any conversations occurring on a frequency of 34.445 MHz will be monitored in the channel 3 position of the Optiscan.

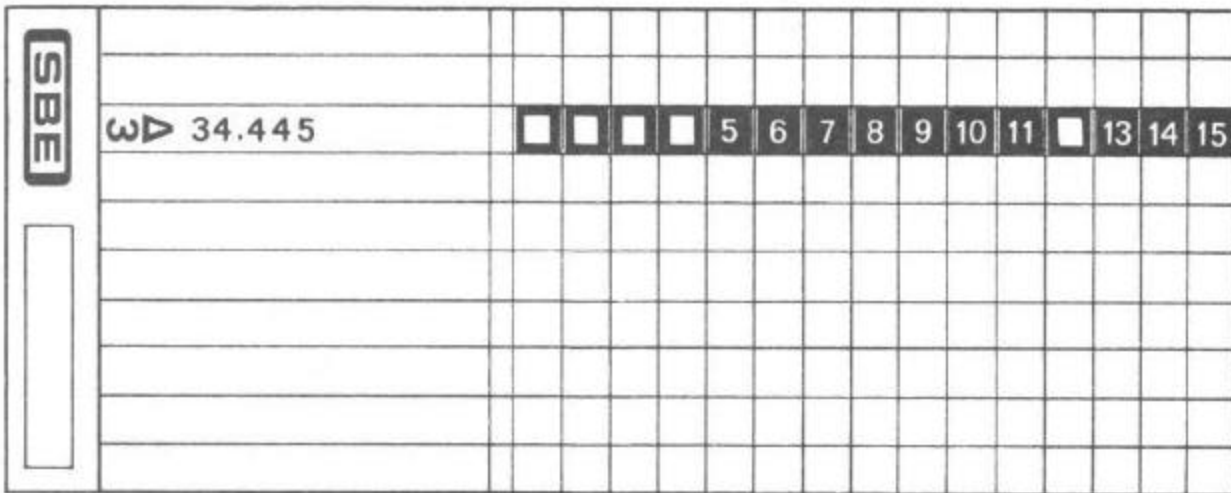


FIG. E

7. The above procedure should be followed for programming any additional channels for the Optiscan.

8. Should you find that you need additional Optiscan cards, we recommend that you contact your local SBE dealer or write directly to the Factory Replacement Parts Department in Watsonville, California.

7.0 SERVICE MAINTENANCE

Should your Optiscan Scanner fail to perform as stated in this manual, it is recommended that SBE be contacted in writing. Due to the complex nature of the Optiscan, SBE will authorize return of your unit to the factory for repair. Do not ship equipment without prior written authorization from SBE. Your letter to SBE must include the following particulars:

1. Model number and serial number of equipment.
2. Date of purchase of equipment.
3. Nature of trouble.
4. Cause of trouble if known.
5. Name of distributor from whom the equipment was purchased.
6. Your return address.
7. Method of shipment by which the equipment should be returned.

In addition, include any information that you feel will be helpful in locating or correcting the problem.

8.0 PARTS ORDERING INFORMATION

When ordering replacement parts, you should direct your order to a SBE distributor or SBE Replacement Parts Department, 220 Airport Boulevard, Watsonville, California 95076. Please furnish the following information:

1. Quantity required.
2. SBE part number and description.
3. Item or symbol number obtained from parts list, schematic, or component location drawing.
4. SBE model number and serial number.

LIMITED WARRANTY

SBE, Inc. warrants equipment manufactured by it to be free from defects in material or workmanship and agrees to repair or, at the option of manufacturer, to replace such equipment which, under normal use and service, develops defects arising from the fault of the manufacturer (and existing at the date of original purchase). Equipment must be returned to the manufacturer or to one of the Certified Service Stations, transportation prepaid, at the address set forth below, within one year from the date of original purchase. Unless the warranty card has been filled in and returned within ten days of original purchase, this warranty shall be void.

This warranty does not apply to equipment which (1) has been repaired or altered by anyone in any way so as, in our judgment, to injure its stability or reliability, (2) is subject to misuse, negligence, or accident, (3) has had the serial number altered, deleted, removed, or (4) has been connected, installed, adjusted other than in accordance with the written instructions.

The foregoing is in lieu of any other express warranty. ANY IMPLIED OR STATUTORY WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY, APPLICABLE TO EQUIPMENT MANUFACTURED BY SBE, INC. SHALL EXIST FOR THE LESSER OF ONE YEAR OR THE DURATION OF THE EXPRESS WARRANTY HEREIN. In no event shall SBE, Inc. be liable for incidental or consequential damages.

Some states do not allow either limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

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

SBE, Inc. neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with this equipment.

SBE, INC.
220 Airport Boulevard
Watsonville, California 95076
(408) 722-4177

We recommend that at the time that your Optiscan is purchased that the following information be recorded so that should your unit become damaged or lost, the information may be supplied to your insurance company and/or the local police department.

1. Model Number _____
2. Serial Number _____
3. Date Purchased _____
4. Dealers Name _____
5. City _____
6. State _____