

LBI-38995



Mobile Communications



Monogram_{Series}

Low Band Portable Radio Unit
Model MGP 300

Operator's Manual

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OPERATING RULES AND REGULATIONS

Two-way FM radio systems must be operated in accordance with the rules and regulations of the Federal Communications Commission (FCC) or, in Canada, the Department of Communications (DOC). When operating in other countries or localities, observe the appropriate rules and regulations. As an operator of two-way radio equipment, the user must be thoroughly familiar with the rules that apply to the intended type of radio operation. Following these rules will help to eliminate confusion, assure the most efficient use of existing radio channels and result in a smoothly functioning radio network. Violations of these rules and regulations are punishable by fine, imprisonment, or both.

When using the radio, remember these rules:

1. Interruption or refusal to yield a channel or radio frequency for any distress or emergency message. Emergency calls have priority over all messages. Monitor the channel or frequency before sending any messages. If someone is sending an emergency message--such as reporting a fire or asking for help in an accident--**KEEP OFF THE AIR!**
2. Use of profane, indecent or obscene language.
3. Transmission of false call letters or false distress or emergency messages.

4. Willful or malicious interference with any other radio communications.
5. Repeat or otherwise make known anything overheard on the radio. Conversations between others sharing a communications channel must be regarded as confidential.
6. Identify by use of proper call letters at specific times. Refer to the rules that apply to the particular type of operation for the proper procedure.
7. Adjustment of the equipment by anyone other than a qualified, authorized or certified electronic technician.

OPERATING TIPS

Antenna orientation and surrounding conditions are important when using a portable radio unit. Operating in low areas of terrain, under power lines or bridges, inside of a vehicle or in a metal or steel framed building can severely reduce the range of the radio unit. Mountains and buildings can also reduce the effective range of the unit.

In areas where transmissions or reception is poor, some improvement may be obtained by ensuring that the antenna is vertical. Moving a few yards in another direction or moving to a higher elevation may also improve communications. In a marginal area, placing the radio unit on a metal surface such as a car hood will also help.

When operating with a repeater system utilizing Channel Guard, as much as 250 milliseconds may be required for tone recognition. Rapid operation of the PTT bar may cause the first syllables of words to be clipped.

Battery condition is another important factor in the trouble-free operation of the radio. Always use properly charged batteries.

The radio is designed for use under a variety of environmental conditions. However, a few precautions will ensure long life of this radio, and they should be heeded without fail.

- **HIGH HUMIDITY** Do not expose to continuous rain or submerge in water.
- **EXTREME HEAT** Avoid direct exposure to extreme heat. At very high temperatures, the nickel-cadmium battery tends to self-discharge and reduce operating time.
- **LOW TEMPERATURES** The radio can operate in temperatures down to -30° C (-22° F). However, in extreme cold, nickel-cadmium battery capacity is reduced. If using in a very cold environment for an extended period of time, keep the unit inside your coat.

MAINTENANCE

Your *Monogram Series* Model MGP 300 Portable Radio is designed to be maintenance free; however, a few suggestions are offered to keep your radio in top operating condition.

- Clean external surfaces of the radio with a mild solution of dishwater detergent diluted in water. Apply sparingly to avoid excessive moisture contact into cracks and crevices. **DO NOT** submerge the radio, but instead, use a nonmetallic brush to dislodge stubborn particles. Thoroughly dry the surfaces with a soft, lint free cloth.
- **DO NOT** use solvents or spirits for cleaning purposes as they may permanently damage the housing.
- Clean the battery contacts on the bottom of the radio with a lint free cloth to remove dirt, grease or other foreign material that may impede good electrical contact.
- Avoid physical abuse of the radio.
- **DO NOT** pound or drop the radio.
- **DO NOT** carry the radio by the antenna.
- **DO NOT** disassemble the radio for purposes other than changing the battery pack. There are **no** user serviceable adjustments inside.

- Check the battery and recharge, if necessary.
- Check that the antenna is properly installed and tuned for the frequency of the radio unit.
- In case of difficulty, contact a service technician for additional information.

INTRODUCTION

The Ericsson GE *Monogram Series* Model MGP 300 Low Band VHF Portable Radio is a lightweight, multichannel radio offering both simplex and semi-duplex operation with a wide range of options and accessories available.

This *Monogram Series* portable radios operate within any 2 MHz segment of the frequency band with 5 watts RF output power available. Up to 6 transmit/receive channels may be programmed for operation. With the optional Channel Guard tone module installed, individual channel CTCSS tones may be programmed in either the transmit or receive modes.

The radio is equipped with a 600 mAh nickel cadmium battery pack to provide adequate service time between recharging.

IMPORTANT

Under U.S. Law, operation of an unlicensed radio transmitter within the jurisdiction of the United States may be punishable by a fine up to \$10,000, imprisonment up to two years, or both.

For programming, service and repair needs, see your local Ericsson GE Service Representative. This radio must be programmed and then an alignment of the transmitter and receiver completed before using.

OPTIONS AND ACCESSORIES

MHNC3R.....	Antenna, 30-35 MHz
MHNC3S	Antenna, 35-42 MHz
MHNC3T	Antenna, 42-50 MHz
MHAE3J	Speaker/Microphone
MHCG1E	CTCSS Tone Module
MHCH3V	Dual Rate Desk Charger, 120 VAC
MHCH3W	Dual Rate Multi-Unit Charger Kit, 120 VAC
MHHC5W	Leather Case
MHPA5P.....	600 mAh Battery, Nickel-Cadmium
MHTS3R.....	Radio Programmer

PROGRAMMABLE FEATURES

The following features are programmable on a per channel basis:

- Transmit Channel Frequency
- Receive Channel Frequency
- Channel Guard (CTCSS) Frequencies - Tone only

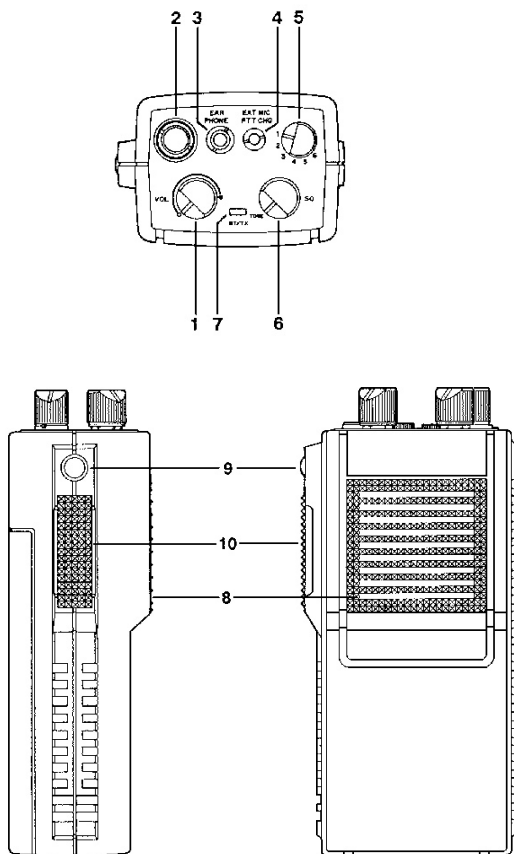


Figure 1 - Controls and Indicators

CONTROLS AND INDICATORS

- | | |
|--------------------------|---|
| (1) ON/OFF/VOLUME | Located on the top control panel, it is used to turn the radio on or off and to adjust the listening level. |
| (2) ANTENNA
CONNECTOR | Connector for antenna. |
| (3) EARPHONE JACK | For use with optional speaker/microphone. May also be used for an external 8 ohm speaker or earphone. |
| (4) EXT MIC/PTT/CHG | For use with optional speaker/microphone. This jack is also used for charging the battery pack, using the wall charger supplied with the radio. |
| (5) CHANNEL SELECT | Selects one of up to six preprogrammed and designated channels for operation. |
| (6) SQUELCH | Used to silence the receiver when no signal is received. When Channel Guard is used, rotate to TONE position. |

- (7) **BT/TX INDICATOR** Red LED on when the transmitter is keyed (normal transmission). The LED will go dim or goes out when the battery voltage is low. The battery must be replaced or recharged to restore optimum performance.
- (8) **MICROPHONE** To transmit clear messages, hold the portable radio so that the microphone is about two inches away from your mouth and speak in a normal voice.
- (9) **MONITOR BUTTON** Located just above the PTT bar. When pressed, it defeats the Channel Guard decode on the receiver and unsquelches the receiver to permit the user to monitor the channel frequency. Releasing the button returns the receiver channel to normal Channel Guard operation
- (10) **PTT BAR** Located on the side of the radio. Pressing the PTT bar keys the transmitter and, if installed and programmed, activates the Channel Guard encoder for the selected channel.

OPERATION

RADIO ON/OFF

1. Turn the radio **ON** by rotating the **VOL**ume control fully clockwise (to the right) until you hear a click.
2. Turn the radio **OFF** by rotating the **VOL**ume control fully counterclockwise (to the left) until you hear a click and feel the switch enter the detent position.

TO RECEIVE MESSAGES

1. Turn the radio **ON** and set the Channel Select switch to the desired channel.
2. Unsquench the radio by rotating the **SQ**uelch control counterclockwise until the receiver unsquelches (a rushing sound coming from the speaker). Adjust the **VOL**ume control to desired listening level. Rotate the **SQ**uelch control clockwise until the squelch noise just disappears (this is the threshold setting).

If the radio is equipped with the optional Channel Guard Encoder/Decoder, press the **MONITOR** button to defeat the Channel Guard Decoder and then adjust the **VOL**ume control for desired listening level. Release the **MONITOR** button to return the receiver channel to normal Channel Guard operation.

TO TRANSMIT A MESSAGE

WARNING

Operation of the transmitter without a proper antenna installed may result in permanent damage to the radio.

1. Hold the radio upright with the antenna in a vertical position and the microphone about 2 inches away from the mouth. Ensure that the antenna is away from the face and eyes.

NOTE

Monitor the selected channel prior to sending a message. TRANSMITTING ON AN ACTIVE CHANNEL MAY INTERFERE WITH OTHER USERS.

2. Select the desired channel with the CHANNEL select control. If the radio is equipped with the optional Channel Guard Encoder/Decoder, press the MONITOR button to defeat the Channel Guard decoder and listen for activity on the channel.
3. When the channel is clear, release the MONITOR button. Press and hold the PTT bar on the side of the radio, and speak slowly and clearly into the microphone. When you finish your transmission, release the PTT bar to receive. The red LED on the top

control panel will be on continuously while the PTT bar is pressed and the radio is transmitting.

NOTE

The radio is equipped with a red LED transmit/battery indicator (BT/TX). The LED will be lit continuously while the PTT bar is pressed and the radio is transmitting.

If the BT/TX LED is dimly lit or goes out completely, this indicates that the battery is weak and requires recharging. Operation of the radio will be affected and the battery must be replaced or recharged to restore optimum operation.

BATTERY CHARGING AND CARE

To ensure peak performance from your radio, the battery pack must be fully charged. Proper care and charging will allow maximum performance and life of the battery pack.

New batteries, or batteries that have been stored for a long period of time, should be fully charged prior to placing into service.

If the rechargeable battery is only sparingly or seldom used and is left on continuous charge for one or two months at a time, it could experience reduced capacity. This would severely reduce the life of the battery between charges.

Any rechargeable battery showing signs of reduced capacity should be taken to a qualified service technician to be carefully checked before being returned under warranty or scrapped.

To use the wall charger supplied with the radio, unplug the optional speaker/microphone from the EXT MIC/PTT/CHG jack and then connect the wall charger plug into this jack. Then connect the wall charger to a 120 VAC power source. Full charge should take about 14 hours. **BE SURE THE RADIO IS TURNED OFF BEFORE CHARGING.**

The MHCH3V Desk Charger and the MHCH3W Multi-Unit Charger Kit offer convenient desktop charging capabilities. Rapid charge takes approximately three (3) hours to reach approximately 85% of full discharge. Leaving the battery in the charger for an additional 3 hours will result in a 100% charged battery.

BATTERY PACK REMOVAL

To remove the battery pack the battery compartment cover must be remove. With a screwdriver or coin, turn the latch on the bottom of the radio in a counterclockwise direction until the back cover is loosen and can slide off the back of the unit. The battery pack can now be lifted out of the unit.

To install the new battery pack, position the battery contacts so that they align with the battery contact terminals in the battery slot, then snap the top of the battery into place. Replace the back cover and turn the

latch on the bottom of the radio in a clockwise direction until the cover is secured.

Rechargeable Battery Pack Disposal



The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal. Call Toll Free 1-800-822-9362 for information and/or procedures for returning rechargeable batteries in your state.

ANTENNA INSTALLATION

Install the antenna to the radio by screwing the antenna into the antenna receptacle on the top control panel of the radio.

WARNING

Operation of the portable radio unit without the proper antenna installed may result in permanent damage to the radio. Always make sure the correct antenna is connected for the frequency band of the radio.

The antennas are identified by a color coded tip or rings for the different low band frequency bands. The following antennas are to be used with the various low band radios:

COLOR CODE	FREQ. RANGE	PART NO.
Yellow	30-35 MHz	MHNC3R
Red	35-42 MHz	MHNC3S
Blue	42-50 MHz	MHNC3T

The antenna must be tuned after the portable radio has been aligned and programmed for its operating frequency(s). The antenna is factory tuned for the center frequency of each frequency band. Have a qualified service technician tune the antenna.

NICKEL-CADMIUM BATTERY WARRANTY

- A. *Ericsson GE Mobile Communications Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that nickel-cadmium batteries supplied by Seller shall be free from defects in material and workmanship, and shall conform to its published specifications for a period of twelve (12) months from the date of purchase.*
- B. *For purposes of this warranty, batteries shall be deemed defective if (1) the battery capacity is less than 80% of rated capacity, or (2) the battery develops leakage.*
- C. *If any battery fails to meet the foregoing warranty, Seller shall correct the failure by issuing a replacement battery upon receipt of the defective battery at an authorized General Electric Service Station (GESS). To obtain the name and address of a GESS, ask your salesperson, consult the Yellow Pages, or call the number printed at the bottom of this page.*
- D. *Replacement batteries shall be warranted only for the remaining unexpired warranty period of the original battery. This warranty becomes void if:*
- (1) The battery has been subjected to any kind of misuse, detrimental exposure, or has been in an accident.*
 - (2) The battery is used in equipment or service other than the .. radio equipment for which it is specified.*
- E. *The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based upon defects in or non-conformity of any battery, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise, and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. The foregoing warranties are exclusive and in lieu of all other warranties, whether oral, written, expressed, implied or statutory. NO IMPLIED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES.*

*This warranty applies only within the United States.
1-800-528-7711 (1-800-237-0138 in Virginia)*

ECX-841B

ALIGNMENT INSTRUCTIONS

Before the *Monogram Series* Model MGP 300 Low Band Portable Radio Unit is placed into service, the user's operating configuration must be programmed into the EEPROM and the transmit and receive sections of the radio adjusted for optimum performance. If the optional Channel Guard tone decoder/encoder is installed and the radio programmed for Channel Guard operation, the Channel Guard must be adjusted. Refer to Figure 2 for alignment locations referenced in the following procedures.

WARNING

Any repairs or adjustments should be made by a qualified service technician or an authorized service center.

Suggested Test Equipment

The following, or its equivalent, is required for proper alignment of the low band portable.

1. RF watt meter
2. Regulated power supply capable of 9 to 16 volts adjustable; at least 2-3 ampere capacity.
3. FM Communications Monitor
4. EEPROM Programmer (MHTS3R)
5. SINAD meter
6. Oscilloscope
7. AC/DC voltmeter with a minimum of 1 megohm input impedance

Pre-Alignment Notes

1. The transmit frequencies should be within a 2 MHz range.
2. The receive frequencies should be within a 2 MHz range.
3. There is no constraint on the relationship between the transmit frequencies and the receive frequencies except that they lie within the limits of the radio band (i.e., 30-35, 35-42 or 42-50 MHz).

EEPROM PROGRAMMING

Before alignment, the radio must be programmed to the user's transmit and receive frequencies as well as the optional Channel Guard tone frequencies. This programmed information is stored in a plug-in EEPROM inside the radio unit. Use the procedure for the EEPROM Programmer to program the EEPROM with the operating information. The following procedure is used for removing and re-installing the EEPROM in the radio unit.

1. Use a screwdriver or coin to unlatch the back cover screw, located on the bottom of the radio, to remove the battery cover. Rotate latch screw counterclockwise to release.

2. Remove the battery pack from the battery compartment.
3. Locate the six screws holding the case together and remove screws.

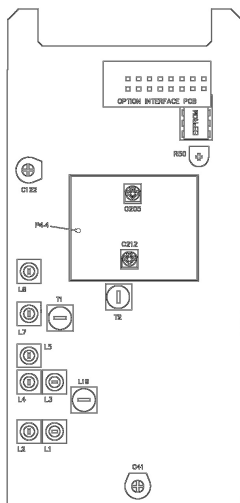
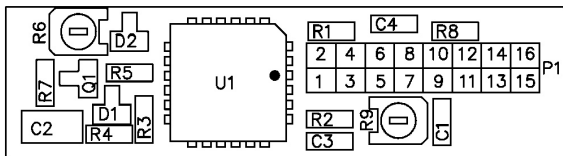


Figure 2 - Alignment Points

4. With the battery compartment facing up, snap the case halves apart.
5. Locate and carefully remove the optional Channel Guard printed circuit board (see Figure 2 for location).
6. Locate and carefully remove the EEPROM.
7. Program the EEPROM to the user's operating configuration.
8. Carefully re-install the EEPROM and reassemble radio in the reverse order of the preceding steps 5 and 4.

TRANSMITTER ALIGNMENT

1. Connect a regulated power supply to the battery terminals of the radio (battery removed). Set power supply voltage for 10.8 VDC as measured at radio battery terminals.
2. Connect an RF watt meter to the antenna jack.
3. Select the middle programmed transmit channel. Key the transmitter and adjust C212 on the VCO printed circuit board for 4.5 ± 0.1 VDC at the control voltage test point P4-4.
4. Select a programmed mid-frequency transmit channel. Key the transmitter and adjust C122 for the correct channel frequency ± 100 Hz.

5. Key the transmitter and adjust C41 for maximum RF power output. Switch the radio between the highest and lowest transmit frequencies and adjust C41 to obtain the least power output variation across the transmit frequency range.
6. Apply an audio frequency of 1 kHz at an output of 300 mVRMS (600 ohms source impedance) to the EXT MIC/PTT/CHG jack. Key the transmitter and adjust R50 for ± 4.5 kHz deviation. Maintain the level at 300 mV and sweep the audio frequency from 300 to 3000 Hz and readjust R50, if necessary, to ensure that the deviation never exceeds ± 5.0 kHz. Check all programmed transmit channels and readjust R50, if necessary, to ensure that the deviation does not exceed ± 5.0 kHz.
7. If the optional Channel Guard tone board is installed and any transmit channel is programmed for Channel Guard operation, the Channel Guard tone deviation must be set. Key the transmitter on the selected channel and adjust R9 on the Channel Guard board for ± 0.75 kHz deviation.

RECEIVER ALIGNMENT

1. Select the middle programmed receive channel and adjust C205 on the VCO printed circuit board for 4.5 ± 0.1 VDC at P4-4.
2. Turn the SQuelch control fully counterclockwise but do not turn into the detent (tone) position.

3. Connect oscilloscope (and distortion analyzer, if available) across the speaker terminals.
4. Select a programmed mid-frequency receive channel. Apply a 1000 Hz tone at 3 kHz deviation at 1 mV on the receive channel frequency to the antenna jack.
5. Adjust the discriminator coil L19 for maximum sine wave amplitude at the speaker terminals. Adjust VOLUME control, if necessary, to prevent clipping. If a sine wave is not visible (only noise), perform Step 8 then return to this step.
6. Adjust T1, T2 and L19 for lowest audio distortion at the speaker terminals.
7. Connect a SINAD meter across the speaker terminals. Adjust the VOLUME control to the proper level for the SINAD meter. Adjust the input from Step 4 until SINAD meter indicates 12 dB SINAD.
8. Adjust L1, L2, L3, L4, L5, L7, L8 and T1 for the best sensitivity while readjusting the input level to keep the SINAD meter reading near 12 dB SINAD.
9. Repeat Step 8 with the highest and lowest programmed receive channels, if necessary to give the best sensitivity across the receive band.
10. If the radio is equipped with the optional Channel Guard encode/decode board and the radio is programmed for receive Channel Guard, adjustments must be made to the Channel Guard circuitry.

11. Adjust input to receiver for a reading of 10 dB SINAD on the SINAD meter.
12. Rotate the SQuelch control fully counterclockwise until it goes into the detent (tone) position. This enables the tone decoder.
13. Monitor U1-13 and adjust R6 until the voltage just goes high (more than 2.5 VDC). Remove the RF signal input and verify that U1-13 goes low (less than 2.5 VDC). This sets the noise squelch threshold to 10 dB SINAD to prevent noise falsing.
14. Check tone decoder operation by modulating the RF input with the selected Channel Guard tone for the receive channel under test at 750 Hz deviation. The receiver should unsquelch and the 1000 Hz audio signal should be heard.

ANTENNA TUNING

Refer to Figure 3 for tuning capacitor setting for the various frequencies. To tune the antenna perform the following steps:

1. Remove slotted set-screw from coil cover of antenna to uncover the tuning capacitor.
2. Select the channel of the radio that represents the center of the frequencies programmed.
3. Hold the radio upright and press the PTT bar to key the transmitter on the selected channel.

4. With a field strength meter in the same polarization plane as the radio antenna, use a non-conductive tuning tool to adjust the tuning capacitor for maximum field strength.
5. After tuning, carefully re-install the set-screw into the coil cover until it is flush with the outside of the coil cover. **DO NOT OVER TIGHTEN.**

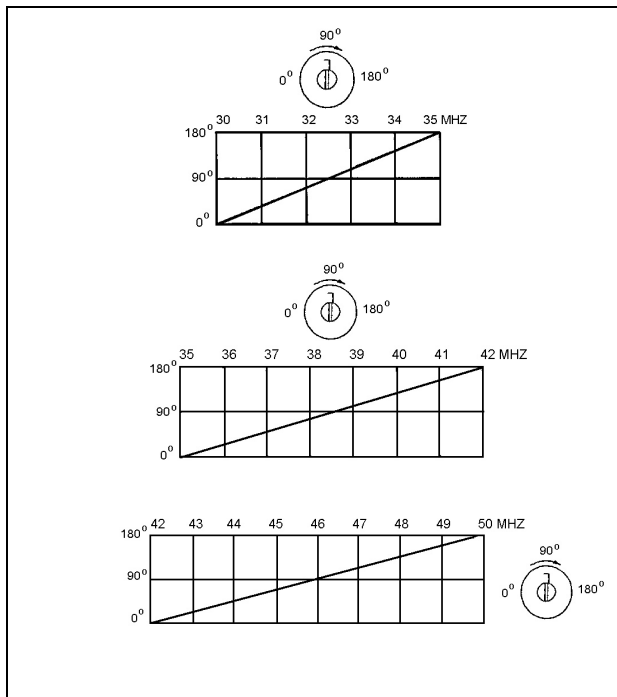


Figure 3 - Antenna Tuning Capacitor Settings Vs Frequencies

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MONOGRAM SERIES WARRANTY

- A. *Ericsson GE Mobile Communications Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that Equipment manufactured by Seller shall be free from defects in material, workmanship and title, and shall conform to its published specifications. With respect to any Equipment not manufactured by Seller (except for integral parts of Seller's Equipment to which the warranties set forth above shall apply). Seller gives no warranty, and only the warranty, if any, given by the manufacturer shall apply. Batteries are excluded from this warranty but are warranted under a separate Nickel-Cadmium Battery Warranty.*
- B. *Seller's obligations set forth in Paragraph C below shall apply only to failures to meet the above warranties (except as to title) occurring within the following periods of time from date of sale to the Buyer and are conditioned on Buyer's giving written notice to Seller within thirty (30) days of such occurrence:*
- 1. for fuses, incandescent lamps, vacuum tubes and non-rechargeable batteries, operable on arrival only.*
 - 2. for parts and accessories (except as noted in B.1) sold by Seller's Service Parts Operation, ninety (90) days/*
 - 3. for all other Equipment of Seller's manufacture, two (2) years.*
- C. *If any Equipment fails to meet the foregoing warranties, Seller shall correct the failure at its option (i) by repairing any defective or damaged part or parts thereof, or (ii) by making available at Seller's factory any necessary repaired or replacement parts. Any repaired or replacement part furnished hereunder shall be warranted for the remainder of the warranty period of the Equipment in which it is installed. Where such failure cannot be corrected by Seller's reasonable efforts, the parties will negotiate an equitable adjustment in price. Labor to perform warranty service will be provided at no charge only for the Equipment covered under Paragraph B.3, and only during the first twenty-four (24) months following the date of sale to the Buyer. Thereafter, labor will be charged at prevailing rates. To be eligible for no-charge labor, service must be performed by an authorized General Electric Service Station or other Servicer approved for these purposes either at its place of business during normal business hours, for mobile or personal equipment, or at the Buyer's location, for fixed location equipment. Service on fixed location equipment more than thirty (30) miles from the Service Station or other approved Servicer's place of business will include a charge for transportation. Equipment located off-shore is not eligible for no-charge labor.*
- D. *Seller's obligations under Paragraph C shall not apply to any Equipment, or part thereof, which (i) has been modified or otherwise altered other than pursuant to Seller's written instructions or written approval or, (ii) is normally consumed in operation or, (iii) has a normal life inherently shorter than the warranty periods specified in Paragraph B, or (iv) is not properly stored, installed, used, maintained or repaired, or, (v) has been subjected to any other kind of misuse or detrimental exposure, or has been involved in an accident.*
- E. *The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based upon defects in or nonconformity of the Equipment, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise, and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. The foregoing warranties are exclusive and in lieu of all other warranties, whether merchantability or fitness for particular purpose shall apply. In no event shall the seller be liable for any incidental, consequential, special, indirect or exemplary damages.*
- This warranty applies only within the United States.*

EMERGENCY NUMBERS

Police

State Police

Fire

Poison Control

Ambulance

Life Saving and
Rescue Squad



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Mountain View Road • Lynchburg, Virginia 24502

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