

- Units contaminated by chemical or radioactive materials must be disposed of or decontaminated in accordance with all applicable regulatory standards.
- Replace battery every 6 months or sooner if indicated by the low battery alarm.
- **Do not** mark or apply paint to case.

For MRA™M with the Temperature Sensing Option

Your unit is equipped with temperature sensing capability if the side and alarm buttons are red and the serial number ends in an H. The serial number is located in the battery chamber.

The MRA™M temperature alarm (three audio beep tones) should not be regarded as an absolute measure of existing temperatures. The temperature alarm may sound an alarm earlier or later with re-

gards to integrated time temperature sensing. The time variation is dependent upon where the unit is worn and the environmental conditions.

When the temperature alarm solid-state thermostat threshold has been exceeded by exposure to extreme environmental conditions the unit will sound the temperature alarm audio tone with a specific LED display. The temperature alarm sound signature is a loud, piercing rapid chirping tone accompanied by the slow pulsing of four red LEDs. The temperature alarm cannot be turned off. The unit must cool down below the temperature alarm threshold and the alarm will automatically reset.

Temp. Alarm Approx. Response Times:

350°F - 6 minutes	300°F - 8 minutes
250°F - 10 minutes	200°F - 12 minutes

WARRANTY

Grace Industries, Incorporated warrants your MRA™M to be free from defects in workmanship and materials for a period of one year from the date of purchase. This warranty is valid only when the returned MRA™M is accompanied by a sales slip or other proof of purchase that states the date and location of purchase. Grace Industries, Inc. will not repair or replace any merchandise that has been damaged because of accident, misuse or abuse of the MRA™M while in possession or control of the consumer. This warranty is void if any attempt to repair or replace parts were made or attempted by other than qualified Grace Industries, Inc. personnel. This warranty is void if any of the sealed compartments are opened or tampered with. Send all returned merchandise prepaid and accompanied by proof of purchase to: Grace Industries, Inc., Repair Division, 305 Bend Hill Road, Fredonia, PA 16124. Customer is responsible for return shipping. Grace Industries, Inc. shall not be liable for any direct, incidental or consequential loss or damage arising out of the failure of the device to operate.

The sole and exclusive remedy under all guarantees or warranties, expressed or implied is strictly limited to repair or replacement as herein provided. ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF FITNESS AND MERCHANTABILITY, ARE HEREBY LIMITED IN DURATION TO A PERIOD ENDING ONE (1) YEAR FROM THE DATE OF PURCHASE. The warranty and liability set forth in the prior paragraphs are in lieu of all other warranties, expressed or implied, in law or in fact, including implied warranties of merchantability and fitness for a particular purpose. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations 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.

NOTE: The information contained in this booklet is believed to be accurate and reliable. Grace Industries, Inc. provides this information as a guide only.

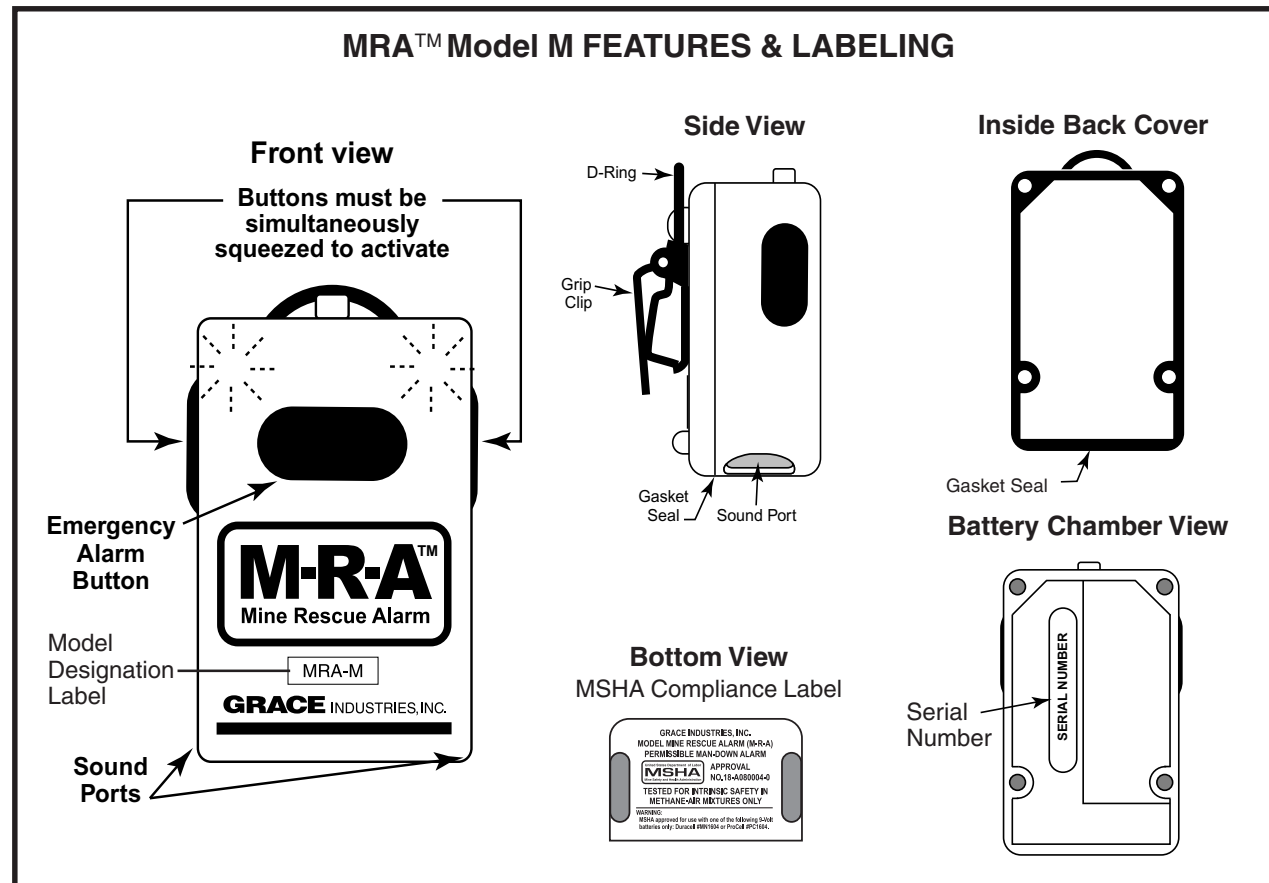


Mine Rescue Alarm™ Manual Operation Model M 60 Second Alarm USER'S INFORMATION

Only To Be Removed By End User



MRA™ Model M FEATURES & LABELING



MADE IN USA



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Mine Rescue Alarm™ Manual Operation Model M 60 sec. Alarm

The MRA™ Manual Operation Model M was specifically designed for Mining and Tunneling Operations for the wearer who needs to control the on/off status of the device manually. The MRA™ is a new generation **Mine Rescue Alarm™** that sounds a loud easily recognized signal approximately 60 seconds after the wearer becomes motionless. This unique device incorporates an innovative mechanical design with advanced data processing circuitry to bring you the most reliable and rugged Mine Rescue Alarm available. In units so equipped, a temperature sensor sounds three audio beep tones when excessively high temperatures are experienced. The MRA™ is also available in 90 and 120 second lack of motion alarm times.

Operating Instructions

Always test the unit prior to each use. To turn unit on and off, simultaneously press buttons located on sides of unit. This feature safeguards against accidental turn off. When activated, an acknowledgment click sound will be heard and MRA™ will display a bright yellow alternating type display. Unit is now in the **Sensing** mode.

When there is lack of motion for approximately 48 to 53 seconds, the unit will go into **Pre-Alert** and announce a **Pre-Alert Signal**. While in **Pre-Alert**, the yellow alternating display is interrupted by intermittent pulsing of four red LEDs accompanied by a progressively louder sweeping **Pre-Alert** audio signal. The longer the unit is in **Pre-Alert**, the louder the sweeping **Pre-Alert** signal becomes, signifying the unit is closer to going into **Alarm**. When there is lack of motion for approximately 60 to 65 seconds, the unit will go into the **Alarm Mode**. When in **Alarm**, the **Pre-Alert** display is replaced by a constant rapid pulsing of four red LEDs accompanied by a rapidly modulated, loud audio **Alarm Signal**.

When the MRA™ is in the **Sensing** mode, the emergency alarm can be manually activated by pressing the button located on the front surface of unit. The emergency alarm can also be manually activated when the unit is in the **off** mode by press-

ing the button located on the front surface of unit. **Note:** The alarm will continuously sound and can only be turned off by pressing both side buttons simultaneously.

Battery Installation / Replacement



To reduce the risk of ignition of a flammable atmosphere, battery must only be changed in an area known to be non-flammable. To change the battery, remove the four screws securing the back. Remove the back cover, disconnect and dispose of the spent battery and connect the new battery. Re-

place the back cover and gently tighten all four screws using a crisscross pattern for even gasket pressure, ensuring a good seal. **Do not over tighten screws.**

WARNING!! Always use the specified 9 volt alkaline battery. The Duracell MN1604 or PC1604 are recommended for optimum performance, as other batteries may not provide the same operating life. Replacing the battery twice per year is recommended unless indicated sooner by the Low Battery Alarm. To check for low battery MRA™ must be turned on for at least one minute to detect battery status. The Low Battery Alarm will sound when the battery has been exhausted to 20% of capacity (indicating approx. 1 hour operating time remains). Immediate replacement of the battery is necessary when the low battery alarm sounds. The low battery alarm is an easily recognized series of three audio beep tones enunciated every five seconds when the MRA™ is in the **Sensing** mode. Grace Industries, Inc. assumes no liability for mechanical, electrical or other types of battery failure. Substitution of components may impair MSHA Certification.

Failure to ensure that MRA™ is fully operational prior to use, may expose the user to serious injury or loss of life. Although the MRA™ is a durable product, there is no inherent guarantee against MRA™ failure. Even the best MRA™ cannot compensate for abuse or the lack of a MRA™ training and maintenance program.

Although the MRA™ can be checked for proper operation, most performance properties of the MRA™ cannot be tested by the end user in the field.

Safety Certifications

MRA™ design meets the requirements of Title 30 Code of Federal Regulations, Part 18 and is approved as permissible for use in gassy underground mines.

MSHA Approval No. 18-A080004-0

Specifications

Dimensions: 2-1/8" wide by 3-1/8" high by 1-5/8" deep

Weight: seven ounces with battery

Alarm Audio Output: 98+ dBA @ 10 feet

Visual / Audio Mode Display:

- OFF** - no LED display
 - a series of de-escalating, loud, attention getting audio tones
- ON** - yellow alternating LED display
 - a series of escalating, loud, attention getting audio tones

Pre-Alert

- no motion sensed for 48 – 53 seconds
- yellow alternating LED display is interrupted by the pulsing of 4 Red LEDs
- accompanied by a progressively louder, sweeping audio signal

Alarm

- no motion sensed for 60 - 65 sec.
 - yellow alternating LED display is replaced by the rapid pulsing of four red LEDs
 - accompanied by a rapidly modulated, loud (98+ dBA) audio signal
 - the alarm signal is between 1,000 and 2,000 Hertz and cycles at 5.2 seconds on and .75 seconds off as an aid for determining direction when personnel need assistance

Activation:

- all electronic switching

On

- unit may be turned **ON** by simultaneously pressing both side buttons when the unit is in the **OFF** mode

Alarm

- unit may be put into **Alarm** from the **Sensing** or **Off** mode at any time by pressing the button on front of unit

OFF

- unit may be turned **Off** from any mode by simultaneously pressing both side buttons

Case: rugged, high temp., impact resistant, translucent, Orange polycarbonate. Entire case glows during the **Sensing**, **Pre-Alert** and **Alarm** modes.

Methods of Attachment: rugged Grip Clip and D-ring for versatility in attaching to gear

Sound Discernability: 6 dBA against given background noise

Battery: 9 volt Duracell MN1604 or PC1604 recommended

Battery Life: estimated at 100 hrs in **Sensing** mode and 2 to 4 hours in the **Alarm** mode

Product Life: Approx. 3 to 7 years or longer depending on fitness for use. Fitness for use is best determined by the end user through a proper inspection and maintenance program. Product should be retired from service when damaged or determined unfit for use.

Maintenance

The MRA™ requires minimum maintenance and will provide years of service.

Please Observe The Following Guidelines

- At the end of each use, clean unit with a damp cloth and warm water. **Do not** use cleaning solvents.
- Inspect unit for signs of physical damage.
- Store the MRA™ in a dry, well-ventilated area consistent with battery manufacturer requirements. Duracell's recommended storage conditions are: 50°F (10°C) to 77°F (25°C) at no more than 65 percent relative humidity.

Maintenance Continued on back page.