AGM
GLOBAL
VISION

RMSAL

RIFLE-MOUNTED SQUAD AIMING LASER

USER MANUAL

If you have questions that are not covered in this manual, or need service, contact AGM Global Vision customer support for additional information prior to returning a product.

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2019.09.11

LIST OF CONTENTS

SAFETY SUMMARY

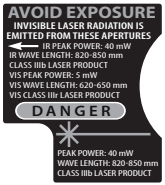
- Read and follow all instructions
- Read all warnings
- Only use the attachments/accessories specified by the manufacturer
- All service must be provided by the manufacturer

WARNING:

Always make sure your firearm is unloaded before you place the equipment on the firearm. Reconfirm that the chamber is empty if you stop the procedure then resume later. Safe handling rules should be followed at all times.

WARNING:

NEVER LOOK INTO THE LASER BEAM.



WARNING:

VISIBLE & INVISIBLE LASER RADIATION - AVOID DIRECT EXPOSURE TO THE BEAM.

- Do not stare into the near-IR beam of either the laser aimers or the laser illuminator.
- Do not look into the laser beams through magnified optics such as binoculars or telescopes.
- Do not point the lasers at mirrors or highly reflective surfaces.
- Do not point, direct, or shine the lasers into the eyes of other individuals.

CAUTION:

- Verify that the device is OFF before installing a battery.
- Do not dismantle the equipment.
- Keep the equipment clean. Protect it from moisture, dramatic temperature changes, and electric shocks.
- DO NOT drop or hit the equipment.
- DO NOT force the equipment controls past their stopping points.
- Do not store the equipment with the battery still installed.
- Thoroughly clean and dry each item before replacing them in the storage case.

NOTES:

- Remember to zero your weapon prior to installing the RMSAL or adjusting the boresight.

1 GENERAL INFORMATION

1.1 SYSTEM DESCRIPTION

The Mil-Spec RMSAL Rifle-Mounted Squad Aiming Laser is a CLASS IIIb laser that consists of a visible aiming laser, a near-infrared (near-IR) aiming laser, and a focusable near-IR illuminator. The function of the RMSAL is to provide an operator with highly collimated aiming lasers for precision aiming and targeting both with the unaided eye in low light conditions and with image intensified night vision devices in night-time applications. The focusable near-IR Illuminator provides the user with the ability to flood the area of interest with invisible near-infrared light.

The RMSAL can be operated in a variety of modes with single lasers or multiple lasers concurrently. The visible and near-IR aiming lasers are can be bore sighted to the weapon using unique ballistic differential adjustment ports using the on-board tool. The output power of the RMSAL can be adjusted from approximately 50 μW to 25 mW electronically across 256 discrete intervals. In addition, the aiming lasers can be operated via user selectable switch in either a constant wave or 4 Hz pulsed mode. The lasers can be activated either by remote switch assembly or through an integral "FIRE" button on the main housing. In the interest of safety for force-on-force training, the RMSAL can be outfitted with an included blue colored SAFETY remote cable that acts as an interlock to keep both the remote switch and the "FIRE" button limited to eye safe laser conditions emitting at less than 600 μW. A full feature black tactical remote switch assembly can be mated to the unit to provide access to the full power range of the unit. Additional safety features include: laser "ON" indicator when lasing, low battery indicator, and SAFETY indicator when the appropriate remote switch is installed.

The RMSAL can be used either with the unaided eye in low light conditions or with image intensified night vision devices in dark environments depending on the laser mode selection. The RMSAL can be used in either a handheld mode with the operator activating the "FIRE" button or in a weapon mounted configuration using the integrated MIL-STD-1913 rail grabber assembly on the unit.

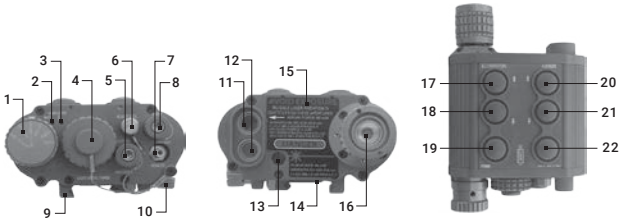


FIGURE 1-1. RMSAL

TABLE 1-1. SYSTEM DESCRIPTION

ITEM	DESCRIPTION
1	LASER MODE SELECTION KNOB – **OFF:** System Switched OFF – **VIS:** Visible Pointing Laser ONLY – **IR AIM:** near-IR Aiming Laser ONLY – **IR AIM IR ILLUM:** near-IR Aimer & Illuminator – **IR ILLUM:** near-IR Illuminator ONLY – **VIS IR ILLUM:** Visible Aimer & near-IR Illuminator
2	Low Battery Indicator LED
3	Active LASER "ON" Indicator LED
4	Battery Cap and Battery Compartment – One each 123A 3.0 VDC Lithium Battery
5	Ballistic Adjuster: Elevation – CW = MPI up / CCW = MPI down
6	Ballistic Adjuster Tool (threaded into backplate)
7	Wired Remote Cable Jack
8	Ballistic Adjuster: Azimuth – CW = MPI left / CCW = MPI right
9	MIL-STD-1913 Rail Grabber for mounting RMSAL
10	Rail Grabber Knob
11	Visible Laser Aiming Port
12	Near-IR Laser Aiming Port
13	N2 Purge Port
14	MIL-STD-1913 Rail Grabber (front view)

ITEM	DESCRIPTION
15	Laser Emitting Radiation Label
16	Near-IR Illuminator Port: Focusable
17	Near-IR Illuminator POWER BRIGHTER
18	Near-IR Illuminator POWER DIMMER
19	Pulse / Constant Wave Selection Button (4Hz)
20	Near-IR Aimer POWER BRIGHTER
21	Near-IR Aimer POWER DIMMER
22	RMSAL Power Activation Button (non-remote)

NOTES:

- The RMSAL is supplied with two (2) remote cable switches (NOT SHOWN).
- The black remote cable switch with BLACK button gives the operator MAXIMUM POWER access.
- The black remote cable switch with BLUE button gives the operator CLASS 1 EYESAFE POWER access ONLY limiting the POWER UP/DOWN functions of the Near-IR Aimer and Illuminator.
- Battery orientation is + terminal to battery cap.

1.2 STANDARD COMPONENTS

RMSAL standard components are shown in Figure 1-2 and listed in Table 1-2. The ITEM NO. column indicates the number used to identify items in Figure 1-2.

FIGURE 1-2. STANDARD COMPONENTS

TABLE 1-2. STANDARD COMPONENTS

ITEM	DESCRIPTION
1	RMSAL Unit Assembly
2	CR123A Lithium Battery
3	Operator Manual.
4	Soft Carrying Case
5	Remote Switch Assembly, Tactical Full Access – BLACK
6	Remote Switch Assembly, SAFETY INTERLOCK (Class 1) – BLUE
7	Lens Cleaning Cloth

1.3 KEY FEATURES

- Rapid active target acquisition
- True night vision compatible mode
- Adjustable output power
- User selectable constant wave or pulsed modes of aiming lasers
- Two tactical remote switches (including SAFETY remote switch)
- Aiming lasers are co-bore sighted
- Unique ballistic differential adjustment ports
- MIL-STD-810G compliant

2 OPERATING INSTRUCTIONS

2.1 GENERAL

This chapter contains a description of the basic operations and functional settings to include battery installation, remote switch installation, mode selection, "FIRE" button, power settings, laser wave mode selection, Illuminator focus, and ballistic adjusters.

DANGER:

Visible and invisible laser radiation - avoid direct exposure to the beam.

- Do not stare into the near-IR beam of either the laser aimers or the laser illuminator.
- Do not look into the laser beams through magnified optics such as binoculars or telescopes.
- Do not point the lasers at mirrors or highly reflective surfaces.
- Do not point, direct, or shine the lasers into the eyes of other individuals.

CAUTION:

Do not store the RMSAL with the battery installed.

2.2 INSTALLATION AND MOUNTING

2.2.1 BATTERY INSTALLATION

Unscrew the knurled battery cap located on the central rear bulkhead of the RMSAL. Install the 123A 3.0VDC Lithium battery with positive terminal facing forward in accordance with the battery orientation icon on the top of the RMSAL Assembly. Hand-tighten to fully secure the cap onto the housing to ensure that the battery cap O-ring is contact pressed. Batteries load from the aft so no need to remove RMSAL.

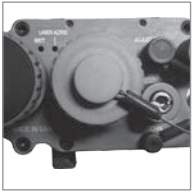


FIGURE 2-1. RMSAL BATTERY CAP LOCATION

FIGURE 2-2. RMSAL BATTERY INSERTION

2.2.2 MOUNTING THE RMSAL

WARNING:

Always make sure your firearm is unloaded before you place the equipment on the firearm. Reconfirm that the chamber is empty if you stop the procedure then resume later. Safe handling rules should be followed at all times.

The RMSAL is equipped with an integrated MIL-STD-1913 rail grabber jaw assembly. The jaws should be fully extended by rotating the knurled camshaft knob in the fully counterclockwise direction (CCW). Stop turning the cam CCW when it reaches the end of it travel and you meet resistance.

Wrap the fixed jaw over the weapon rail, center the recoil stop in a recoil groove, and then tighten the translating jaw by turning the knurled cam shaft knob clockwise (CW) until it is snug. The knurled cam knob has a slot machined into it so that a multi-tool, light screwdriver or cartridge can be used for added torque to tighten the rail grabber sufficiently. Do not over-tighten as damage may occur to the weapon rail or the RMSAL mount.

FIGURE 2-3. INTEGRAL RAIL GRABBER ASSEMBLY

FIGURE 2-4. MOUNTED ON WEAPON RAIL

2.2.3 INSTALLATION OF REMOTE SWITCH ASSEMBLIES

The RMSAL is equipped as part of the standard kit with two (2) remote switch assemblies. The one with the BLACK button provides the operator with access to the full range of functions and capabilities that the RMSAL has to offer. The one with the **BLUE** button has a laser SAFETY INTERLOCK incorporated into it. While the operator has access to the full functionality of the RMSAL, the output power of the near-IR aiming and illumination lasers is limited to less than 600µW in order to keep the system eye safe for force-on-force training and exercise applications. Note that when the **BLUE** SAFETY INTERLOCK remote switch assembly is installed in the RMSAL, it also regulates the power associated with the "FIRE" button. When the BLUE SAFETY INTERLOCK remote is removed, the "FIRE" button will remain in eye safe operational mode until such time as the **BLACK** Tactical remote switch is installed which then automatically resets the power circuits for full output power range access.

Engage the remote switch assemblies by inserting the gold-plated MCX plug into the mating gold-plated, waterproof connector located on the rear bulkhead on the right side of the RMSAL. Do not try to remove Remote Switch Assembly by pulling on the cable. Always grip the MCX connector in order to remove.

FIGURE 2-5. REMOTE SWITCH

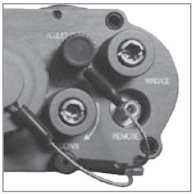


FIGURE 2-6. RMSAL WITH NO REMOTE SWITCH

FIGURE 2-7. RMSAL WITH REMOTE SWITCH INSTALLED

2.2.4 PROTECTIVE LENS CAPS

The RMSAL is supplied with protective lens caps for the dual port Visible and Near-IR Aiming Lasers as well as a separate lens cap for the focusable near-IR Illuminator. These caps are tethered to the RMSAL to prevent loss. These caps should be placed over the laser ports when not in service to protect the lenses from dirt, debris and scratches which may degrade laser performance and collimation.

FIGURE 2-8. RMSAL WITH LENS CAPS INSTALLED

FIGURE 2-9. RMSAL WITH LENS CAPS REMOVED

2.3 CONTROLS AND INDICATORS

2.3.1 LASER MODE SELECTION

The Mode Selection Switch is a rotational knob located on the rear bulkhead of the RMSAL to the left of the battery cap assembly. The mode selection switch allows the operator to choose which laser(s) emit when either a remote switch assembly is activated or the integral "FIRE" button located on the top of the RMSAL is pushed.

Note that when the RMSAL is positioned on the weapon rail at the 9 o'clock position, the stabilizing hand can activate the "FIRE" button with the left thumb. Double tapping the button switch will keep the aiming lasers in the "ON" position. This tool is useful during weapon bore sighting operations.

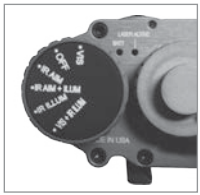


FIGURE 2-10. MODE SELECTION SWITCH

TABLE 2-1. MODE SELECTOR SWITCH FUNCTIONS

SELECTION KNOB POSITION	OPERATION	REMARKS
VISIBLE	Visible Aiming Laser ONLY	The visible aiming laser provides rapid target acquisition with the unaided eye in low light environments.
OFF	The RMSAL will not operate	The OFF position minimizes battery drain and should be used when diving to depth in order to prevent accidental activation due to water pressure. Note that from the OFF position, one turn CCW gives the visible aiming laser and one turn CW gives the near-IR aiming laser.
IR AIM	Near-IR Aiming Laser ONLY	The near-IR aiming laser provides targeting that is invisible to the unaided eye. NVDs are required to see laser.
IR AIM + IR ILLUM	Both Near-IR Aiming Laser and near-IR Illuminator emit together	The dual operation of the near-IR aiming laser and Illuminator permit the target to be flushed out while the aiming laser directs fire.
IR ILLUM	Near-IR Illuminator ONLY	Provides invisible, near-IR illumination to extend range of NVDs and to look into windows, cars, tree-lines, etc.
VIS+ IR ILLUM	Visible Aiming Laser and Near-IR Illuminator emit together	Provides for integration of NVD equipped and non-NVD equipped operators during a joint mission/evolution.

2.3.2 INTEGRAL "FIRE" BUTTON

The RMSAL is equipped with an integrated "FIRE" button that performs the same function as the remote cable switch and is located on the top of the RMSAL at the rear left corner where it is clearly marked. In the event of remote cable assembly damage or failure, the "FIRE" button can activate the RMSAL lasers.

FIGURE 2-11. INTEGRAL "FIRE" BUTTON

It should be noted that when the RMSAL is positioned on the weapon rail at the 9 o'clock position, the stabilizing hand can activate the "FIRE" button with the left thumb for right-handed shooters. Double tapping the button switch will keep the aiming lasers in the "ON" position. This tool is useful during weapon bore sighting, signaling, or marking applications.

2.3.3 BEAM PULSE SELECTION BUTTON

The RMSAL is equipped with an integral beam pulse selection button. This button allows the operator to change both the visible and near-IR aiming lasers from constant wave to 4 Hz pulse. The pulse selection button is labeled with the following icon: _____._____._____. Note that the pulse selection button does NOT cause the near-IR illuminator to pulse. This feature is particularly useful when working in two-man teams to help differentiate beams or for marking and signaling applications.

FIGURE 2-12. PULSE-CONSTANT WAVE BUTTON

2.3.4 LASER POWER CONTROL BUTTONS

The RMSAL has a discrete 256 step electronic power setting adjustment for both the near-IR aiming laser and the near-IR illuminator. Roughly aligned with each laser, there are output power "up" and output power "down" buttons demarked by the respective ↑ and ↓ icons. The power can be adjusted in incremental steps or by pressing and holding the button down, the power settings will scroll through the individual settings in the direction selected.

FIGURE 2-13. POWER CONTROL BUTTONS

2.3.5 FOCUSING THE NEAR-IR ILLUMINATOR

The near-IR illuminator on the RMSAL can be focused manually by turning the knurled bezel assembly. In the fully extended position, the beam divergence approximates 1 mRad. In the fully recessed position, the beam divergence of the near-IR illuminator approximates 108 mRad.

FIGURE 2-14. ILLUMINATOR LENS RECESSED (1 MRAD)

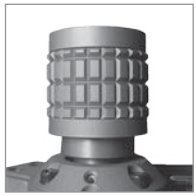


FIGURE 2-15. ILLUMINATOR LENS EXTENDED (108 MRAD)

2.3.6 INDICATOR LIGHTS

The RMSAL has a series of indicator lights that provide the operator with the functional status of the system as well as provide useful information to both the operator and laser safety monitors. There are two (2) light emitting diodes (LED) on the rear bulkhead of the RMSAL. The first is a bi-color LED, labeled BATT, that has two functions. The first is to warn the operator that the battery is low and will need to be replaced within the next 100 laser activations (where an activation is generally understood to be a 2 second laser emission). This warning light is RED.

FIGURE 2-16.
RED INDICATOR – LOW BATTERY
AMBER INDICATOR – EYE SAFE

FIGURE 2-17.
GREEN INDICATOR –
ACTIVE LASER

The second function of the BATT LED is to provide an indicator to the operator and laser range safety officer or exercise monitor that the RMSAL is configured

for eyesafe operation intended for training and force-on-force exercises. When the BLUE SAFETY INTERLOCK remote is installed the LED will activate in an amber color to indicate laser mode selection switch has been moved from the "OFF" position to one of the active laser functions and is in eyesafe mode.

The second LED on the rear bulkhead of the RMSAL is labeled LASER ACTIVE. This LED turns on and emits a green light each time that either the remote switch assembly or the "FIRE" button is pushed provided that the mode selection switch is not in the "OFF" position. This LED is intended to provide information to the operator that his laser is active and emitting the particular laser mode combination selected. When the Mode Select Switch is in the "OFF" position and the remote switch assembly or "FIRE" button are pushed, the LASER ACTIVE LED will not light up because there is no active laser emission in that mode.

2.3.7 BALLISTIC ADJUSTERS

Ballistic adjusters on the RMSAL employ a novel departure from the standard contemporary designs in creating a weapon bore sighted laser. First, the ballistic adjuster (both elevation and windage) are located on the rear bulkhead of the RMSAL so that the operator can make fine adjustments of the laser positions without reaching alongside or forward of the system or muzzle to effect corrections. Second, using an internal differential transfer mechanism, the operator can use the onboard lanyard captivated hex tool to make elevation and windage adjustments. In the event the tool is detached from the RMSAL, the user can still use a multi-tool, cartridge, or standard screwdriver to make the necessary adjustment via the slots machined into the head of the adjusters.

Movement of the laser aiming beams is clearly marked in directional terms of WINDAGE MPI (mean point of impact) left and ELEVATION MPI down. The onboard ballistic adjuster tool is labeled ADJUST TOOL.

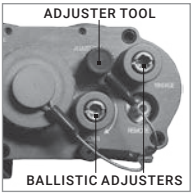


FIGURE 2-18. BALLISTIC ADJUSTERS AND TOOL

FIGURE 2-19. CLOSE-UP OF ADJUSTER WITH TOOL OUT

2.4 OPERATING PROCEDURES

NOTE:

When operating the RMSAL's IR channel(s), you must wear night vision devices in order to see the respective beams.

CAUTION:

DO NOT force the equipment controls past their stopping points.

2.4.1 BORESIGHT ADJUSTMENT PROCEDURE

WARNING:

Always make sure your firearm is unloaded before you place the equipment on the firearm. Reconfirm that the chamber is empty if you stop the procedure then resume later. Safe handling rules should be followed at all times.

NOTE:

Before adjusting the RMSAL boresight for the first time, fire approximately 10 shots from the weapon with the device installed, in order to stabilize the adjustment mechanisms under applied recoil shocks.

NOTE:

When adjusting the equipment in order to boresight, beware of reflections from optical surfaces.

To boresight the RMSAL:

1. Locate a target at the fire adjustment range (25 m).
2. Take aim at the center of the target using the weapon's iron sight and secure the weapon in the aiming rest.
3. Unscrew the onboard Ballistic Adjuster Tool.
4. Turn the switch to the VIS (visible laser) position and activate the RMSAL (double tap the FIRE button).
5. Using the Ballistic Adjuster Tool, adjust the visible aiming laser to co-align with the bore sighted iron sights.
6. Fire a series of three (3) shots in order to check grouping.
7. Shift range to 100m and recheck co-alignment of visible laser against bore sighted iron sights. Adjust as needed.
8. Fire a series of three (3) shots in order to check grouping.
9. Work out the values of the elevation and windage corrections required to compensate for the measured deviation of the mean point of impact (MPI) from the center of the target.

10. Adjust the equipment boresight by turning the adjustment screws.
11. Using the Ballistic Adjuster Tool:
    - To shift the MPI to the right, turn the windage adjustment screw CCW. To shift it to the left, turn the screw CW.
    - To shift the MPI up, turn the elevation adjustment screw CCW. To shift it down, turn the screw CW.
12. To check the equipment boresight, use the visible laser dot to take aim at the center of the target and fire a series of three (3) shots.
13. Double check the equipment boresight in the IR aiming mode by donning a night vision device, selecting IR AIM and using the laser dot to take aim at the center of the target and fire a series of three (3) shots.
14. After completing the boresight adjustment procedure, turn the device OFF and replace the Ballistic Adjuster Tool.

2.4.2 OPERATING PROCEDURE

To operate the RMSAL:

1. Ensure that the RMSAL rotary switch is positioned to "OFF". Install a new, fresh, high quality CR123 battery into the battery compartment paying attention to the battery orientation. Install battery cap.
2. If you are operating the device using limited laser output to <600µW (Class I) for eye safe applications such as initial operator or force-on-force exercises, use the **BLUE** SAFETY INTERLOCK remote switch. Note that the eye safe output power governor of the blue remote switch will not be over-ridden even when the remote cable is removed. Access to the full power spectrum of the RMSAL is not restored until the black button remote is installed.
3. Remove the cap(s) from the laser output aperture(s).
4. Turn the switch to the required position. Note that you will need to pull on the rotary switch in order to rotate it clockwise from the "OFF" position. To turn the rotary switch to the "VIS" aiming laser, it is not necessary to pull on the rotary switch while turning in order to overcome a mechanical lock-out feature.
5. Activate the RMSAL (push FIRE button or remote switch).
6. Double tapping the button switch will keep the aiming lasers in the "ON" position.
7. The two forward buttons on either side of the RMSAL will allow the operator to raise/lower the output power of the respective near-IR lasers. (NOTE: the visible laser is set for a constant output power approximating 4 mW). The full

output power range of the IR lasers consists of 256 increments that can be individually tapped. By depressing and holding either the power up or power down button, the power will increase or decrease in increments of eight (8) settings at a time allowing the operator to experience the full range from lowest to highest power setting (or vice-versa) within five (5) seconds.

WARNING:

DO NOT leave the RMSAL activated when it's not in use.

WARNING:

The IR light from the equipment's IR laser(s) is invisible to the naked eye. However, the light can be detected by all night vision devices. To reduce the risk of detection, avoid prolonged activation of the IR laser(s).

NOTE:

To switch the activated equipment to another operation mode, turn the switch to the desired position and reactivate the laser(s) by pushing FIRE button.

2.4.3 CONSTANT WAVE / PULSE WAVE APPLICATIONS

To change the pulse mode of the aiming laser:

1. When in the constant wave mode, push the aft button labeled (- - -) to change the aiming laser to 4Hz pulsing.
2. Press the aft button labeled (- - -) again to return to constant wave mode.

NOTE:

Proper laser protocol is to locate a target with your NVDs and then activate the laser for no more than two seconds at a time in order to prosecute the target.

2.4.4 RMSAL SHUT-DOWN

To shut down the RMSAL:

1. Turn the rotary switch to OFF.
2. Replace the cap(s) on the laser output aperture(s).
3. Remove the remote switch by pulling on the plug (not the cable).
4. Remove the equipment from the weapon rail.
5. Remove the battery.

CAUTION:

Do not store the equipment with the battery still installed.

6. Store the RMSAL and all accessories in the case.

3 MAINTENANCE INSTRUCTIONS

3.1 RMSAL PREVENTIVE MAINTENANCE

After each use, clean the RMSAL by flushing with fresh water and wiping away excess with a soft, dry cloth. Fresh water cleaning should be conducted on the RMSAL after each use and especially after exposure to saltwater, chemicals, and other foreign matter.

Use the supplied treated lens cloth to gently and carefully wipe down the laser aiming and illumination windows. If not available, then use a soft cloth dampened with clean water, alcohol, or general purpose window cleaner to gently remove any debris or foreign matter taking special care not to scratch the laser windows.

Prior to use in operations where immersion in water is required, inspect the O-ring seals in the battery cap to make sure that it is free of sand, dirt, or other foreign particles. Thoroughly clean the O-ring, battery cap, and the back of the battery compartment where the O-ring seals against the main body. If the O-ring becomes nicked or cut or is observed to be dried out, then the O-ring should be replaced. If the battery cap is bent or scratched/scarred in the O-ring seat area, then it should be replaced. Periodically lubricate all O-rings with fluorinated grease.

Perform an inspection after each use paying careful attention to rubber window caps. Replace missing or damaged covers. Also check the basic kit inventory to make sure that no parts or components are damaged or missing. Replacement should be a high priority. Inspect the rubber buttons (FIRE/Pulse/Power UP-DOWN) for cracks, wear, or drying out before and after each mission. Verify that all captivated parts are intact (battery cap, ballistic adjustment tool, lens caps) and repair or replace any damaged or missing lanyards and components.

Check labels to make sure that they are not missing or illegible due to use and routine damage.

Replace all expendables after each mission and inspect expendables prior to each mission. Typical items needed to be replaced as part of the standard kit are batteries, Velcro pile, straps, and lens cloths.

All user repair parts can be installed at the unit level. No special tools or equipment are required to service and maintain the RMSAL mission-ready status.

3.2 USER LEVEL TROUBLESHOOTING

The primary purpose of troubleshooting is to identify and diagnose the most frequent field level equipment malfunctions, investigate probable causes, and apply corrective actions where possible and required.

The table below lists the common malfunctions that an operator may experience during the operation or maintenance of the RMSAL and its standard kit accessories. Maximum success in diagnosing a problem and applying a corrective action is derived from performing the tests, inspections, and corrective actions in the order listed.

This manual cannot list all of the possible malfunctions that may occur, nor all tests, inspections, and corrective actions that may be available at a higher level of maintenance and logistics support. If a malfunction is not listed or is not corrected by the corrective actions listed below, it may require escalation to a higher authority within the unit or transfer to a more sophisticated maintenance and repair level.

TABLE 4-1. RMSAL USER LEVEL DIAGNOSES AND TROUBLESHOOTING

ITEM	MALFUNCTION	TEST/INSPECTION	CORRECTIVE ACTION
1	Aiming and/or Illumination beams fail to come on when a lasing mode is selected.	a.) Check to see if lens caps are removed. b.) Check to see if laser beam windows are obscured with mud, dirt or foreign debris. c.) Check battery Installation. d.) Check mode selection settings. e.) Check remote switches. f.) Internal failure.	Remove lens caps. Clean laser windows. Check battery orientation. Change to fresh batteries. Verify settings and reset. Verify if unit works on "FIRE" button mode. Replace damaged remote. Return to Unit Level Maintenance.
2	RMSAL does not operate when mounted on a weapon.	a.) Remove RMSAL from weapon and perform inspections and diagnoses in section 1 above. b.) Check rail grabber and weapon rails for damage. c.) Check remote cables. d.) Review installation procedures and re-install on weapon.	Return rail or RMSAL to Unit Maintenance for repair. Verify if unit works on "FIRE" button mode. Replace damaged remote. Re-install.

ITEM	MALFUNCTION	TEST/INSPECTION	CORRECTIVE ACTION
3	Aiming and/or Illumination beams are weak or poor quality.	a.) Check to see if lens caps are a.) Check to see if lens caps are removed. b.) Check to see if laser beam windows are obscured with mud, dirt or foreign debris. c.) Check battery Installation. d.) Check to see if lenses are scratched or pitted. e.) Check that SAFETY INTERLOCK has not been reset. (confirm Amber LED)	Remove lens caps. Clean laser windows. Check battery orientation. Change to fresh batteries. Return RMSAL to Unit Level Maintenance. Remove BLUE remote switch and substitute with BLACK remote switch, turn system back on and check power range adjustments.
4	Aiming beams do not move.	a.) Check adjusters.	If dirty, clean as needed. If damaged, return to Unit Level Maintenance.
5	Remote Switch Inoperable but "FIRE" mode switch works.	a.) Check to see that remote switch is well-seated in socket. b.) Check remote switch socket for mud and dirt. c.) Recheck function of remote switch assembly.	Reconnect the plug. Clean remote switch socket with water & cotton swab. Replace remote switch. Return RMSAL to Unit Level Maintenance.
6	Aiming beams cannot be zeroed to the weapon.	a.) Check and confirm that the RMSAL is properly seated on the MIL-STD-1913 rail system. b.) Check for damaged rail grabber or weapon rail. c.) Check for beam movement.	Properly position and secure firmly to rail. Return RMSAL or weapon rail to Unit Level Maintenance. Refer back to #4 above.

4 WARRANTY INFORMATION

4.1 WARRANTY INFORMATION

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of three (3) years from the date of purchase. In the event that a defect covered by the warranty below occurs during the applicable period stated above, AGM Global Vision, at its discretion, will either repair or replace the product; such action on the part of AGM Global Vision shall be the full extent of AGM Global Vision's liability, and the Customer's sole and exclusive reparation. This warranty does not cover a product if it has been (a) used in ways other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than AGM Global Vision without prior written consent of AGM Global Vision; (d) is the result of a special order or categorized as "close-out" merchandise or merchandise sold "as-is" by either AGM Global Vision or the AGM Global Vision dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of AGM Global Vision. AGM Global Vision shall not be responsible for any defects or damage that in AGM Global Vision's view are a result from the mishandling, abuse, misuse, improper storage or improper operation of the device, including use in conjunction with equipment that is electrically or mechanically incompatible with, or of inferior quality to, the product, as well as failure to maintain the environmental conditions specified by the manufacturer. This warranty is extended only to the original purchaser. Any breach of this warranty shall be enforced unless the customer notifies AGM Global Vision at the address noted below within the applicable warranty period.

The customer understands and agrees that except for the foregoing warranty, no other warranties written or oral, statutory, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, shall apply to the product. All such implied warranties are hereby and expressly disclaimed.

4.2 LIMITATION OF LIABILITY

AGM Global Vision will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages, or liabilities arising out of the use of this product. Operation and use of the product are the sole responsibility of the Customer. AGM Global Vision's sole undertaking is limited to providing the products and services outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by AGM Global Vision to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit of or creating any obligation toward any third party of legal entity outside AGM Global Vision and the Customer; AGM Global Vision's

obligations under this Agreement extend solely to the Customer. AGM Global Vision's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to AGM Global Vision by the customer or customer's dealer. AGM Global Vision shall not, in any event, be liable for special, indirect, incidental, or consequential damages, including, but not limited to, lost income, lost revenue, or lost profit, whether such damages were foreseeable or not at the time of purchase, and whether or not such damages arise out of a breach of warranty, a breach of agreement, negligence, strict liability, or any other theory of liability.

4.3 PRODUCT REGISTRATION

In order to validate the warranty on your product, the customer must complete and submit AGM Global Vision PRODUCT REGISTRATION FORM on our website (**www.agmglobalvision.com/customer-support**).

4.4 OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, the End-user (Customer) must notify the AGM Global Vision service department via e-mail. Send any requests to **support@agmglobalvision.com** to receive a Return Merchandise Authorization number (RMA). When returning any device, please take the product to your retailer, or send the product, postage paid and with a copy of your sales receipt, to AGM Global Vision Corporation's service center at the address listed above. All merchandise must be fully insured with the correct postage; AGM Global Vision will not be responsible for improper postage or merchandise that becomes lost or damaged during shipment. When sending product back, please clearly write the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, the Customer's Name, a Return Address, reason for the return, contact information (valid telephone numbers and/or an e-mail address), and proof of purchase that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA# listed may be refused, or a significant delay in processing may occur. Estimated Warranty service time is 10-20 business days. The End-user/Customer is responsible for postage to AGM Global Vision for warranty service. AGM Global Vision will cover return postage/shipping after warranty repair to the End-user/Customer only if the product is covered by the aforementioned warranty. AGM Global Vision will return the product after warranty service by domestic UPS Ground service and/or domestic mail. Should any other requested, required, or international shipping methods be necessary, the postage/shipping fee will be the responsibility of the End-user/Customer.

For service, repair or replacement, please contact:

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5 SPECIFICATIONS

5.1 SPECIFICATIONS

TABLE 5-1. IR AIMING LASER SPECIFICATION

ITEM	DATA
IR Aiming Laser Specification	
IR Class:	IIIb (near IR)
IR Output:	50 µW (Low) / 25 mW (High)
Operating Distance:	> 200 m (Low) / 2,000 m (High)
IR Beam Divergence:	0.5 mRad
IR Wavelength:	820 nm – 860 nm
Visible Aiming Laser Specification	
Visible Class:	IIIr
Visible Output:	<5.0 mW
Operating Distance:	> 25 m (in direct sunlight)
Visible Beam Divergence:	0.5 mRad
Visible Wavelength:	Red 605 nm–665 nm Green 500 nm–530 nm
IR Illuminator Specification	
IR Class:	IIIb (near-IR)
IR Output:	500 µW (Low) / 25 mW (High)
Operating Distance:	> 100 m (Low) / 2,000 m (High)
IR Beam Divergence:	1-108 mRad
IR Wavelength:	820 nm – 860 nm
System Specification	
Power:	One (1) CR123 3.0VDC Lithium Battery
Battery Life:	>10 hours in near-IR Aim Mode
Dimensions (LxWxH):	106 x 81 x 48 mm / 4.2 x 3.2 x 1.9 in
Weight (with 123A Battery):	0.2 kg / 0.44 lb
Immersion:	Waterproof 20 meters for one hour

APPENDIX

A. SPARE PARTS LIST

TABLE A-1. RMSAL SPARE PARTS

ITEM	DESCRIPTION
1	RMSAL Unit Assembly
2	Battery Cap Assembly
3	Dual-Lanyard Assembly (battery cap & adjuster tool)
4	Adjuster Tool
5	Battery Cap O-ring
6	Label, Mode Selection Knob
7	Lens Cap, Near-IR Illuminator
8	Lens Cap, Visible – near-IR Aiming Laser Port
9	Dual-Lanyard Assembly (illuminator & aiming laser port)
10	Remote Switch Assembly, Tactical Full Access – BLACK
11	Remote Switch Assembly, SAFETY INTERLOCK – BLUE
12	Pile, Hook/Loop for Remote Switch Assembly
13	Strap, Remote Switch Assembly
14	Battery, 123A 3.0 VDC Lithium
15	Case, Soft Carrying - Field
16	Lens Cloth
17	Operator Manual, RMSAL

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