Project Manager Soldier Equipment

AN/PEQ-15
Advanced Target Pointer Illuminator Aiming Light (ATPIAL)

Presented By: PMSEQ

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Motivator

This system allows you faster target acquisition times in day and night time operations in order to kill the enemy.

Terminal Learning Objective

Action: Identify how to operate the ATPIAL, identify system functions and safety precautions.

Conditions: Given in a classroom environment with all required materials and equipment.

Standard: The student will have knowledge to operate the ATPIAL correctly; understand the various system functions, and safety precautions.

Administrative

Safety: General Applies

Risk Assessment:

Environmental: Dispose of batteries in accordance with proper hazmat protocols.

Evaluation: Practical Exercises and Oral Review.

Instructional Lead In

The ATPIAL is a rugged multifunction laser device that emits both visible and infrared (IR) light for precise weapon aiming and target/area illumination.

Enabling Learning Objective A

System Description and Safety

Action: Identify the system description and applicable safety precautions pertaining to the ATPIAL.

Conditions: Given in a classroom environment with all required materials and equipment.

Standard: The student will understand the system description and safety precautions pertaining to the ATPIAL.

Safety

Danger

Invisible Laser Radiation-Avoid Direct Exposure to the Beam

- Do not stare into the infrared laser beam.
- Do not look into the infrared laser beam through binoculars or telescopes.
- Do not point the infrared laser beam at mirror like surfaces.
- Do not shine the infrared laser beam into other individual's eyes.

Safety

WARNING

Make sure weapon is **CLEAR** and on **SAFE** before proceeding.

- Risk of detection by enemy-avoid prolonged activation.
- The infrared beam is more detectable when used in smoke, fog and rain conditions.

Safety

WARNING

- Do not store with batteries installed.
- High Power modes are not eye safe and are blocked with a (**Blue**) safety screw.
- All high power modes shall not be used for force-on-force training.

Safety

Laser/Mode	Laser Safety Classification	Min Eye Safe With Out Magnification	Min Eye Safe 7x magnification
Infrared (IR) Aim Low TRAINING	1	0	0
Visible Aim Laser TRAINING	3a	35	215
Infrared (IR) Illuminator Laser Low TRAINING	3a	25	160
Infrared (IR) Aim Laser High TACTICAL	3b	220	1300
Infrared (IR) Illuminator Laser High TACTICAL	3b	220	1300

System Description

The ATPIAL provides the following capabilities:

- Stand-Alone and Dual Modes to include:
  - Visible Aiming Laser
  - Infrared Aiming Laser
  - Infrared Illuminator
- Momentary or Constant ON Activation
- Remote Switch Activation
- Programmable Illuminator Pulse Rate
- Mounts to MIL-STD-1913 mounting rail of the host weapon.

System Description

The ATPIAL is designed for operation in battlefield environments for precise weapon aiming, target marking and illumination.

System Description

- The Advanced Target Pointer Illuminator Aiming Light is referred to by the following names in the Army Tech Manual ATP-TM-MFAL:

  - Advanced Target Pointer Illuminator Aiming Light
  - ATPIAL
  - AN/PEQ-15

Enabling Learning Objective A Summary

Covered system description and applicable safety precautions pertaining to the ATPIAL. Addressed the proper safety precautions dealing with laser classification and (NOHD) referred to as minimum eye safe distance and force on force training. Applicable names for the system in accordance with the ATP-TM-MFAL.

Enabling Learning Objective B

Action: Identify the major components and equipment description of the ATPIAL.

Conditions: Given in a classroom environment with all required materials and equipment.

Standard: The student will be able to identify each major component and identify the equipment description of the ATPIAL.

Major Components

Item	Description
1	Soft Carrying Case
2	Operator and Unit Maintenance Manual
3	Quick Reference Guide
4	ATPIAL Assembly
5	Pattern Generators (set of 5)
6	Remote Cable Switch
7	Tape Fastener (3)
8	Strap, Retaining (2)
9	Battery, 3-Volt Lithium

Equipment Description

Soft Carrying Case

Protects the ATPIAL and accessories while in a field environment.

Operator and Unit Maintenance Manual

Provides operating and maintenance procedures.

Quick Reference Guide

Provides a quick at-a-glance instruction for operation, mounting and boresighting.

Equipment Description

ATPIAL Assembly

Weight: 7.5 ounces (with one DL123A Battery installed)

Length: 4.6 inches

Width: 2.8 inches

Height: 1.6 inches

Equipment Description

Visible Aim Laser

•Range: >25m

IR Aim Laser

•Range: >600m (Low)

•Range: >2000m (High)

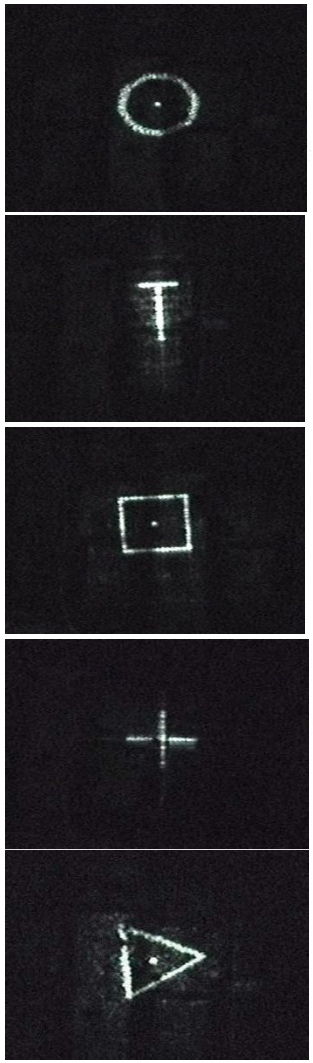
IR Illuminator

•Range: >600M (Low)

•Range: >2000M (High)

Equipment Description

Pattern Generators



- Allows the Squad / Platoon Leader to discriminate his commands from other leaders.
- Used for hand-held and weapon mounted command & control.
- 5 Patterns being fielded.
- Mounts over the Aiming Exit Port.
- Projects a 2.6 meter pattern at 300 meters.

Equipment Description

Remote Cable Switch

The Remote Cable Switch allows for remote activation of the ATPIAL in the selected mode of operation.

Equipment Description

Tape Fastener and Retaining Straps

Tape Fastener- Used to secure the Remote Cable Switch to the weapon to allow various configurations to prevent a snag hazard.

Retaining Straps- May be used alone or in conjunction with tape fastener as an alternate means of attaching the Remote Cable Switch to the weapon.

Equipment Description

DL123A 3-Volt Lithium Battery

Power and Performance

Batteries

One 3-volt DL 123A Lithium

Battery Life

>6 hours in Dual Hi

Waterproof

6m for 1 hour

Enabling Learning Objective B

Summary

We have identified the major components and equipment description of all the equipment contained in the soft carrying case when you receive the ATPIAL.

Enabling Learning Objective C

System Operation

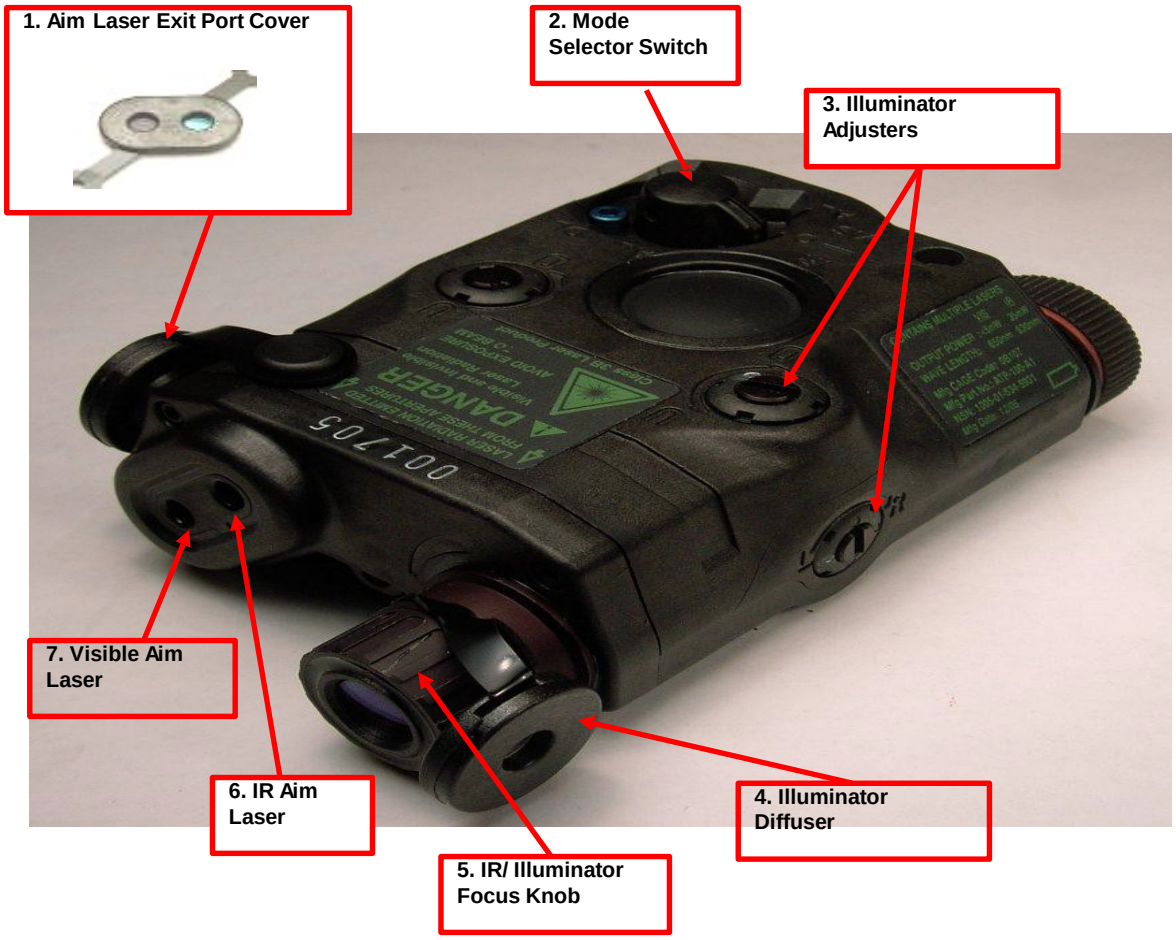
Action: Identify the operational modes and correctly perform operation of the ATPAL.

Conditions: Given in a classroom environment with all required materials and equipment.

Standard: The student will be able to correctly operate the ATPIAL.

System Operation

Function and Feature Overview



System Operation

Function and Feature Overview

1. **Aim Laser Exit Port Cover** Contains a neutral density lens that is used with the IR Aim Laser during zeroing. It eliminates blooming effects on the target seen during boresighting. Contains a solid or opaque filter over the Visible aiming laser to prevent unintentional lasing.

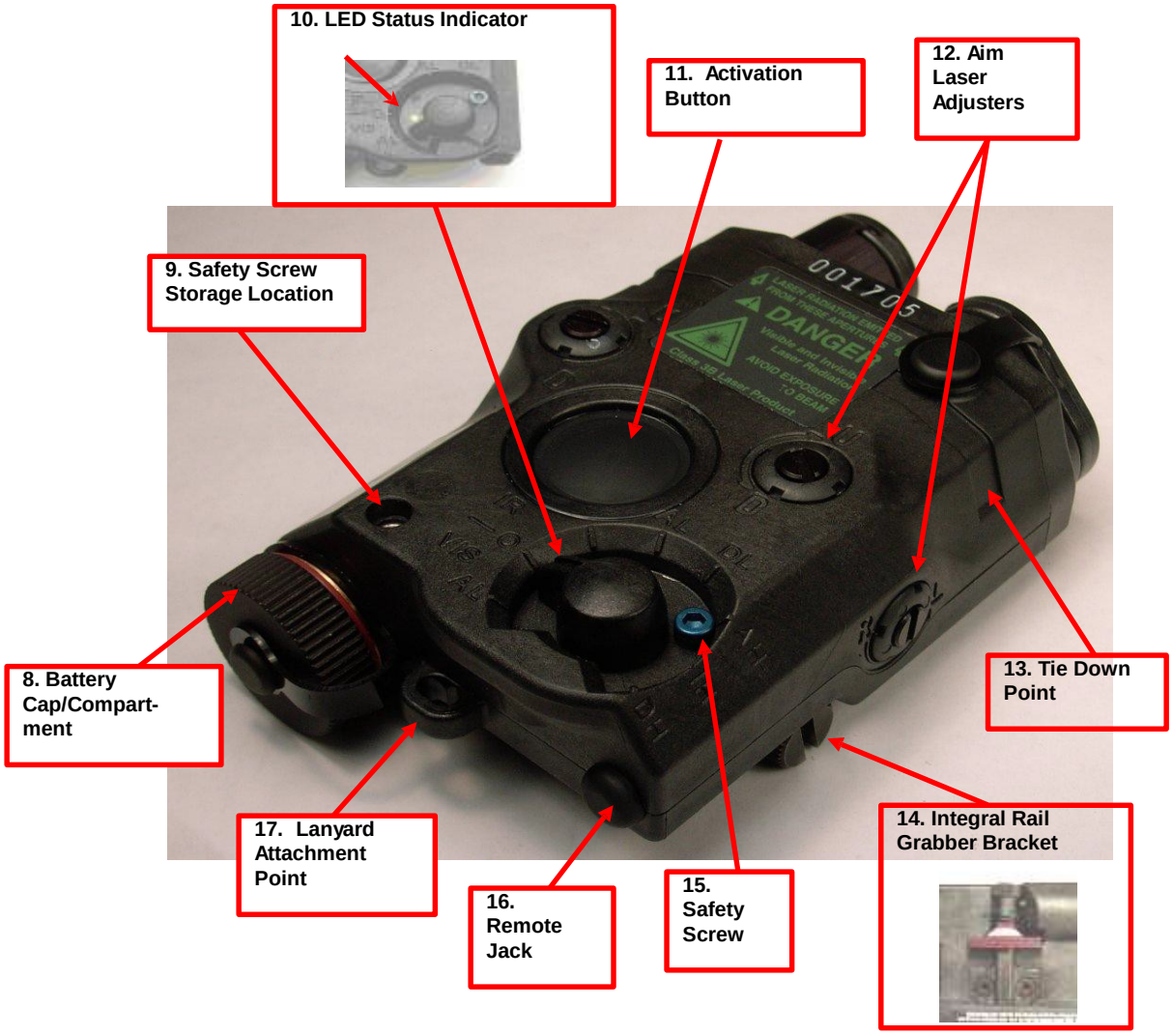
2. **Mode Selector Switch** Allows the user to select the desired mode of operation for the ATPIAL. When switched to O (OFF), the ATPIAL will not emit laser energy.

3. **Illuminator Adjusters** These adjusters can be rotated in windage and elevation to bring the illumination area over the aiming beam, and can be used to align the IR Illuminator with the barrel of
the weapon.

4. **Illuminator Diffuser** When installed over the IR Illuminator, the diffuser spreads the laser energy over an angle approaching 180 degrees (20x20x10 foot room), allowing for illumination of a wider area. This is useful for illuminating a small room and is most effective when used in conjunction with the IR Illuminator Focus Knob adjusted to the widest beam (flood) setting.

System Operation

Function and Feature Overview cont.



System Operation

Function and Feature Overview

5. Infrared Illuminator / Focus Knob

Used with night vision devices to provide variable focused IR illumination of the intended target area. The Illuminator Focus Knob is rotated to vary the illumination beam spread from flood to spot, based on the range and size of the area to be illuminated.

6. Infrared Aim Laser

Used with night vision devices to provide a precision aim point or to mark targets.

7. Visible Aim Laser

Primarily used for boresighting the ATPIAL during daylight hours. The Visible Aim Laser is also used to provide a precision aim point or to mark targets at close range during the day or night, without the need of night vision devices.

8. Battery Cap / Battery Compartment

Provides secure housing for the 3-volt DL123A battery that powers the ATPIAL.

System Operation

Function and Feature Overview

9. Safety Screw Storage Location

Allows for secure storage of the Safety Screw after it has been removed from the Lockout Position.

10. LED Status Indicator

A light emitting diode (LED) used to indicate when the ATPIAL is emitting laser energy, when the battery power is low, and displays the pulse rate during programming of the IR Illuminator.

11. Activation Button

When in P (PROGRAM) mode, the Activation Button allows for programming the IR Illuminator pulse rate. When in one of the six operational laser modes (i.e., VIS: AL, IR: AL, AH, DL, IH, DH), the Activation Button is used to actively emit laser radiation that corresponds with the position of the Mode Selector.

12. Aim Laser Adjusters

These adjusters can be rotated to simultaneously bring the co-aligned aim lasers; Visible and IR, into windage and elevation alignment with the barrel of the weapon.

System Operation

Function and Feature Overview

13. Tie-down Point

Allows the user to secure the ATPIAL to the weapon system using zip ties, safety wire, parachute cord, or other appropriate material.

14. Integral Rail Grabber Bracket

Secures the ATPIAL to a weapon equipped with a MIL-STD-1913 rail.

15. Safety Screw

When installed in the Lockout Position, the Safety Screw prevents the Mode Selector from being turned to the high power laser settings (i.e., AH, IH, DH). Removal of the Safety Screw allows for access to all modes of operation. All high power modes will not be used for force-on-force training.

16. Remote Jack

Provides an interface for the Remote Cable Switch. The ATPIAL comes with a Remote Jack Plug installed to protect the Remote Jack from debris and moisture.

17. Lanyard Attachment Point

The Lanyard Attachment Point allows the user to secure the ATPIAL.

System Operation

Battery Installation

The ATPIAL is powered by one 3-volt DL-123A Lithium battery.

To Install the battery

Unscrew the battery cap by rotating CCW.

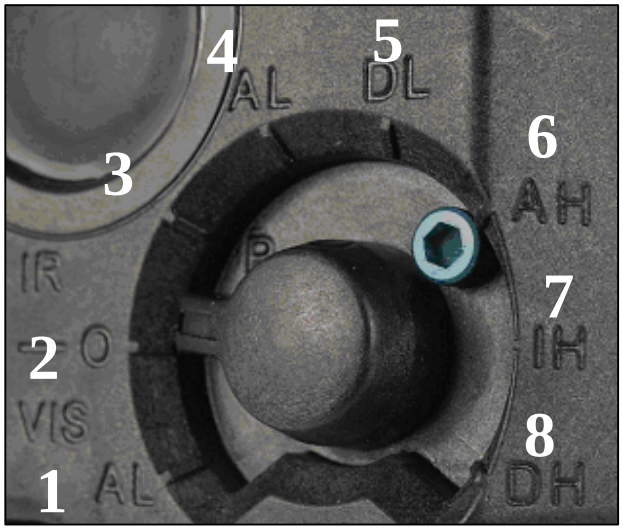
Orient the battery so that the positive end of the battery faces the battery cap.

Reinstall the battery cap by rotating CW until tightly secured to prevent water from entering the battery compartment.

System Operation

Mode Selector Switch

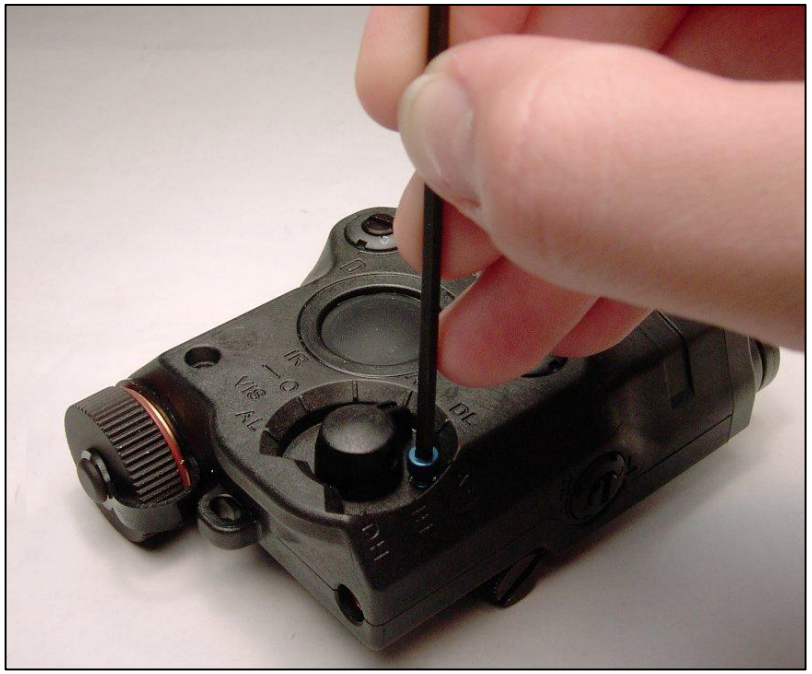
1. **Vis Aim Low (VIS-AL)** – The visible aiming beam operates at LOW power.
2. **Off (O)** – The ATPIAL will not operate
3. **Program (P)** – Program Mode
4. **IR Aim Low (IR- AL)** – The infrared aiming beam operates at LOW power.
5. **IR Dual Low (IR-DL)** – The infrared aiming beam and infrared illuminator operates at LOW Power.
6. **IR Aim High (IR-AH)** – The infrared aiming beam operates at HIGH power.
7. **IR Illum High (IR-IH)** – The infrared illuminator operates at HIGH power.
8. **IR Dual High (IR- DH)** – The infrared aiming beam and infrared illuminator operates at HIGH power.



System Operation

Safety Screw

For training, the screw is installed in the switch area by the Unit Maintainer, preventing the operator from accessing the non-eye safe modes.



- When installed in the storage position, tactical modes of operation are available.
- A 3/32-inch hex head wrench is needed to remove the safety screw.

System Operation

Activation Button

Momentary Operation:

Pressing and holding the Activation Button operates the ATPIAL in the operational mode set by the mode selector. When the button is released the ATPIAL turns off.

Continuous Operation:

Pressing the Activation Button twice in rapid succession (double-tap) latches ATPIAL laser(s) ON. The unit will remain ON until the push button is pressed a third time (single-tap).

System Operation

Remote Cable Switch

Momentary Operation:

Pressing and holding the Remote Cable Switch Pad operates the ATPIAL in the operational mode set by the mode selector. When the button is released the ATPIAL turns off.

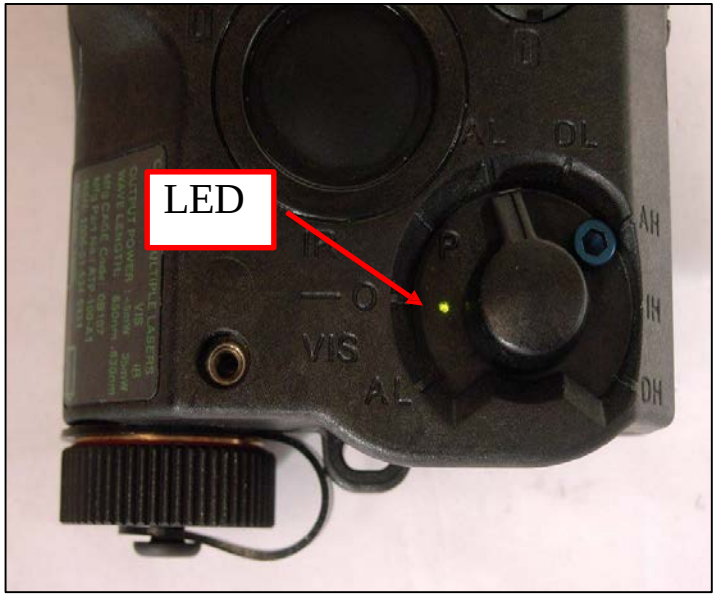
Continuous Operation:

Pressing the Remote Cable Switch Pad twice in rapid succession (double-tap) latches ATPIAL laser(s) ON. The unit will remain ON until the push button is pressed a third time (single-tap).

System Operation

LED Status Indicator

- Located adjacent to the Mode Selector Switch.
- Indicates when the ATPIAL is emitting laser energy.
- Provides a warning when the ATPIAL battery power is low.
- Displays the pulse rate of the infrared illuminator when a pulsing mode is selected.



System Operation

LED Status Indicator Cont.

Indicator Color	Indicator Rate	ATPIAL Status
GREEN	SOLID	Laser(s) activated or continuous
GREEN	1 Pulse per Second	1 Illuminator pulse per second
GREEN	2 Pulses per Second	2 Illuminator pulses per second
GREEN	4 Pulses per Second	4 Illuminator pulses per second
GREEN	8 Pulses per Second	8 Illuminator pulses per second
RED	SOLID	ATPIAL Low Battery (Mode Selector not in OFF Position, but lasers not activated.)
GREEN/RED	Solid Green with Red Pulse every 5 Seconds	Lasers activated, ATPIAL low battery power. Battery is down to 2.4 v and has 30 minutes of Dual High left before shutoff.
RED	Solid 2 Second Pulse	Near IR programming failed
ORANGE	3 Orange Pulses	Near IR programming successful

System Operation

Illuminator Pulse Rate

NOTE:

Used when multiple operators illuminate an area by setting pulse rates of 1, 2, 4, or 8 times per second.

Setting the Pulse Rate

- Rotate the Mode Selector Switch to **Program (P).**
- Press and hold the activation button.
- Rotate the Mode Selector Switch to set the Pulse Rate.

  AL - Continuous

  DL - 1 per second

  AH - 2 per second

  IH - 4 per second

  DH - 8 per second

System Operation

Illuminator Focus Knob

1. The Illuminator Focus Knob varies the illumination beam spread from flood to spot, based on the range and size of the area to be illuminated.

2. Use the guide on the housing to determine the direction of the beam size.

3. Turning the Illuminator Focus Knob CW, as shown on housing guide, adjusts the illuminator to a Flood position .

4. Turning the Illuminator Focus Knob CCW, as shown on housing guide, adjusts the beam to a Spot.

System Operation

Illuminator Diffuser

Enables the ATPIAL illuminator laser to approach an angle of 180 degrees (Illuminates a 20X20X10 foot room). It is used primarily for illuminating targets at close range.

To use:

Remove the Illuminator Diffuser Lens Cap from the stored location by stretching it out and place over the front of the illumination knob so that it is snug and firmly in place.

System Operation

Aim Laser Exit Port Cover

Contains a neutral density lens that is used with the IR Aim Laser during zeroing. It eliminates blooming effects on the target.

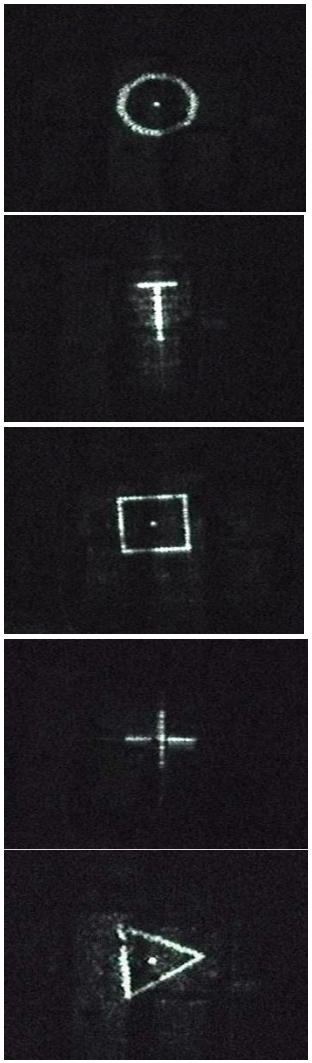
Contains a solid or opaque filter over the visible aiming laser to prevent unintentional lasing.

To use:

Remove the Aim Laser Exit Port Cover from the stored location by stretching it out and place over the front of the aiming laser exit ports so that it is snug and firmly in place.

System Operation

Pattern Generators



Projects a 2.6 meter pattern at 300 meters.

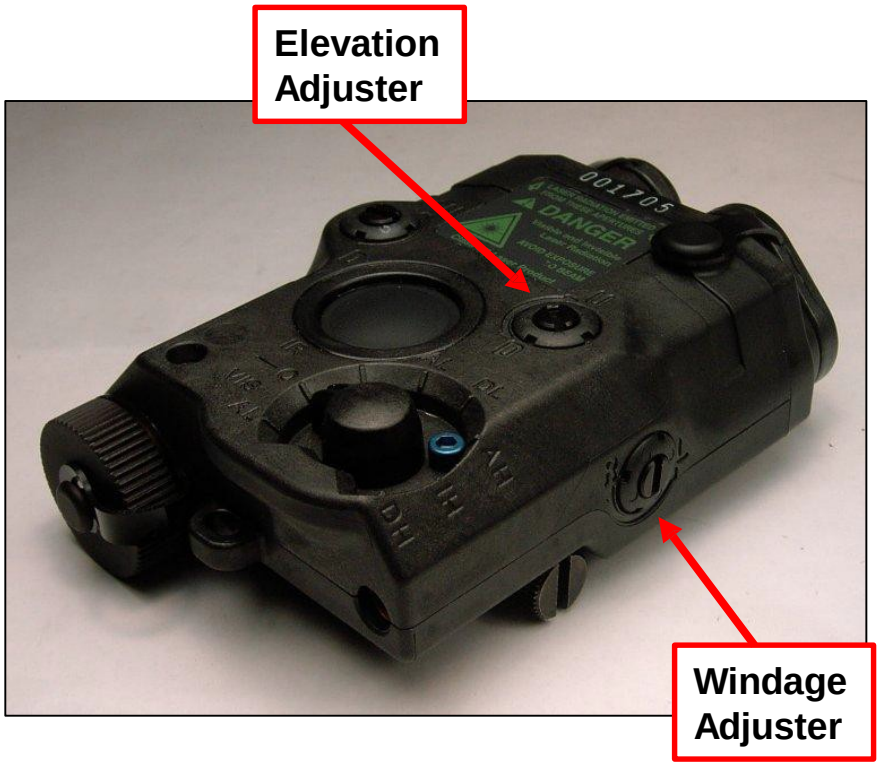
To use:

Remove the Aim Laser Exit Port Cover from the front of the aiming laser exit ports and replace with a pattern generator so that it is snug and firmly in place.

System Operation

Adjusters

- The ATPIAL is equipped with adjusters for independent adjustment of the aiming and illumination beams in both elevation and windage.
- Visible and infrared aiming lasers are co-aligned with respect to each other.
- Boresighting can be accomplished using either the visible or infrared aiming beam.
- Up, Down, Left, and Right markings on the housing represent strike of the round on boresight adjusters, but represent laser travel on illuminator adjusters.



Enabling Learning Objective C

Summary

We have identified the operational modes and correctly performed operation of the ATPAL to include programming the illuminator for pulse rate, momentary and constant on along with remote cable activation.

Enabling Learning Objective D

Mounting, Boresighting and Zeroing Procedures

Action: Learn the mounting and zeroing procedures applicable to ATPIAL.

Conditions: Given in a classroom environment with all required materials and equipment.

Standard: The student will be able to demonstrate the mounting and zeroing procedures applicable to ATPIAL.

Mounting Procedures

Mounting Configurations

The ATPIAL contains an integral Rail Grabber Mounting Bracket enabling the ATPIAL to mount directly to any MIL-STD-1913 Mounting Rail of the host weapon.

Weapon	Configurations
M16A4	**Top, Left, or Right Mount**
M4/M4A1	**Top, Left, or Right Mount**
M240B	**Feed Tray Cover Rail Mount** **Left or Right Side Mount on Forward Rails**
M249 SAW	**Feed Tray Cover Rail Mount** **Left or Right Side Mount on Forward Rails**

Mounting Procedures

Mounting to M4 MWS

1. Loosen the clamping knob on the ATPIAL Rail Grabber until it has sufficient space to fit over the rail.
2. Secure the recoil lug of the ATPIAL Rail Grabber to the rail by applying downward and forward pressure to take out the slack then turning the slotted knob CW finger tight.
3. Tighten the clamping knob with a coin or multipurpose tool ½ of a complete turn or 180 degrees to ensure proper seating.

Mounting Procedures

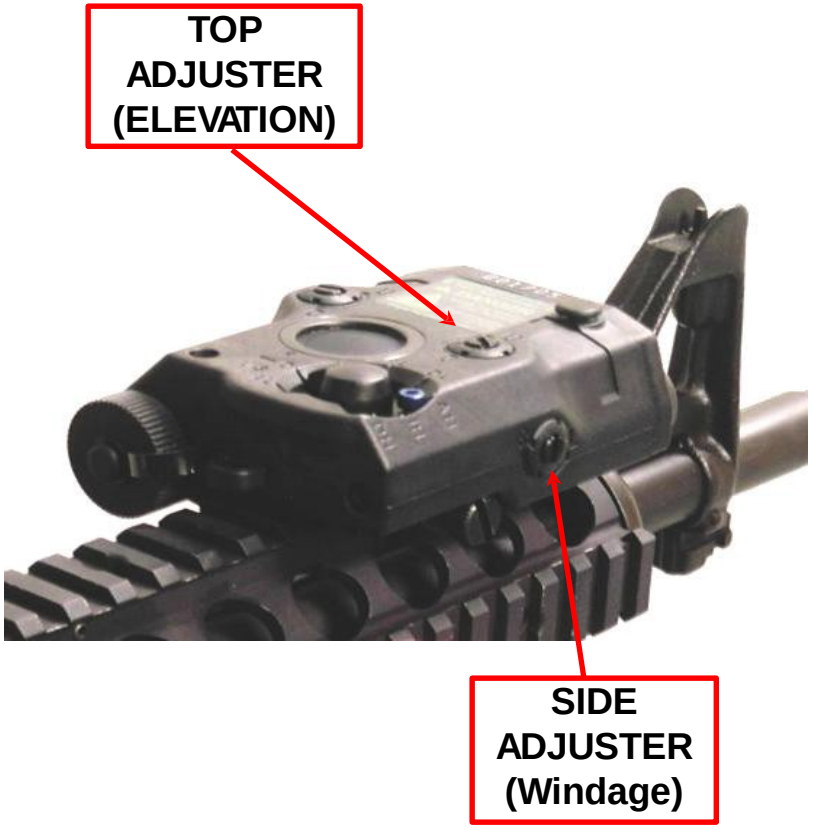
Mounting to M4 MWS

4. Install the Remote Cable Switch in a convenient location.

Zeroing Procedures

Boresight Adjusters

- Each click represents approximately .5 cm at 25 meters and 2 clicks = 1cm
- Directional indicators are adjusted to the strike of the round not the movement of the laser.
- For factory preset zero turn the adjuster CW to the mechanical stop then turn CCW 2.5 revolutions.

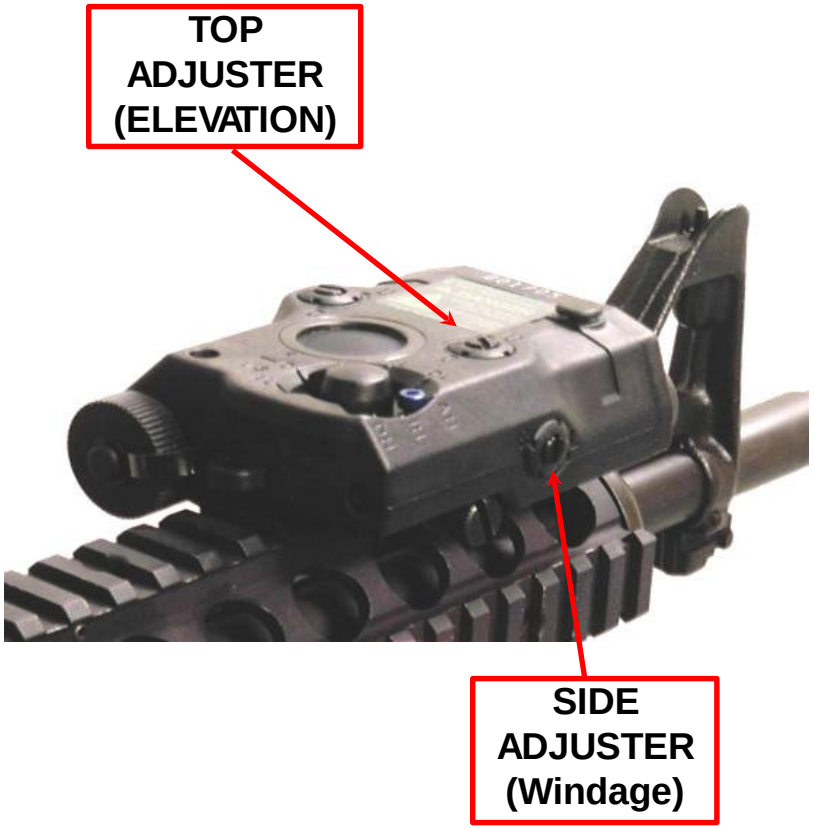


Zeroing Procedures

Adjuster Rotation Top Mount

AIMING BEAM MOVEMENT	ADJUSTER ROTATION	SHOT GROUP MOVEMENT
Top Adjuster Elevation	CW CCW	UP Down
Side Adjuster Windage	CW CCW	Right Left

ILLUMINATION BEAM MOVEMENT	ADJUSTER ROTATION	LASER MOVEMENT
Top Adjuster Elevation	CW CCW	Down UP
Side Adjuster Windage	CW CCW	Right Left

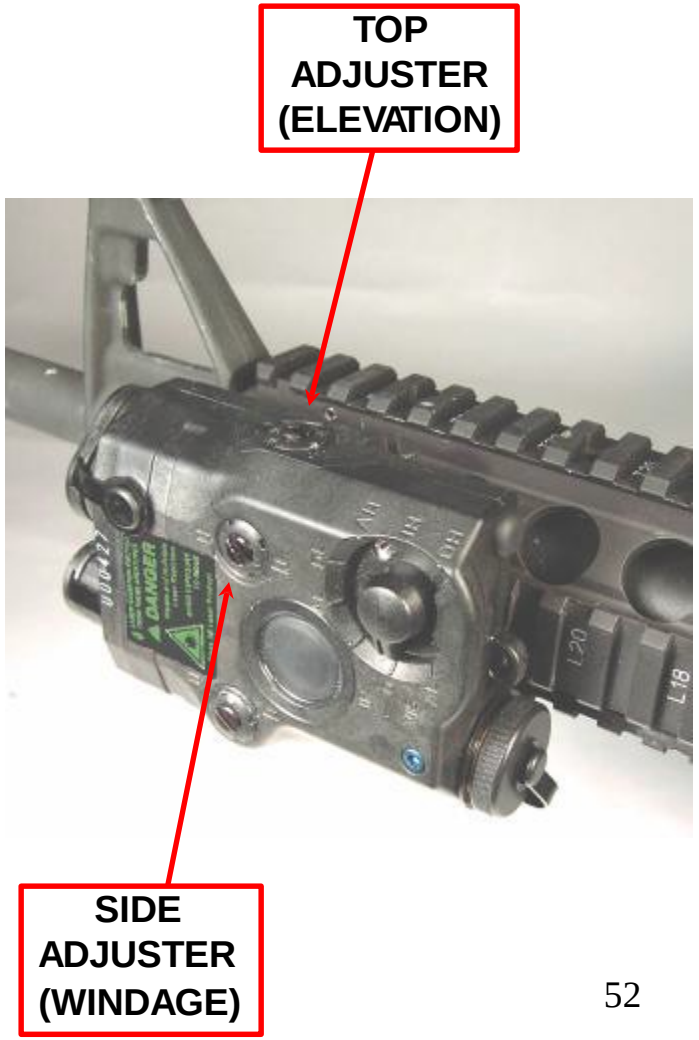


Zeroing Procedures

Adjuster Rotation Left Side Mount

AIMING BEAM MOVEMENT	ADJUSTER ROTATION	SHOT GROUP MOVEMENT
Top Adjuster Elevation	CW CCW	UP Down
Side Adjuster Windage	CW CCW	Left Right

ILLUMINATION BEAM MOVEMENT	ADJUSTER ROTATION	LASER MOVEMENT
Bottom Adjuster Elevation	CW CCW	UP Down
Side Adjuster Windage	CW CCW	Right Left

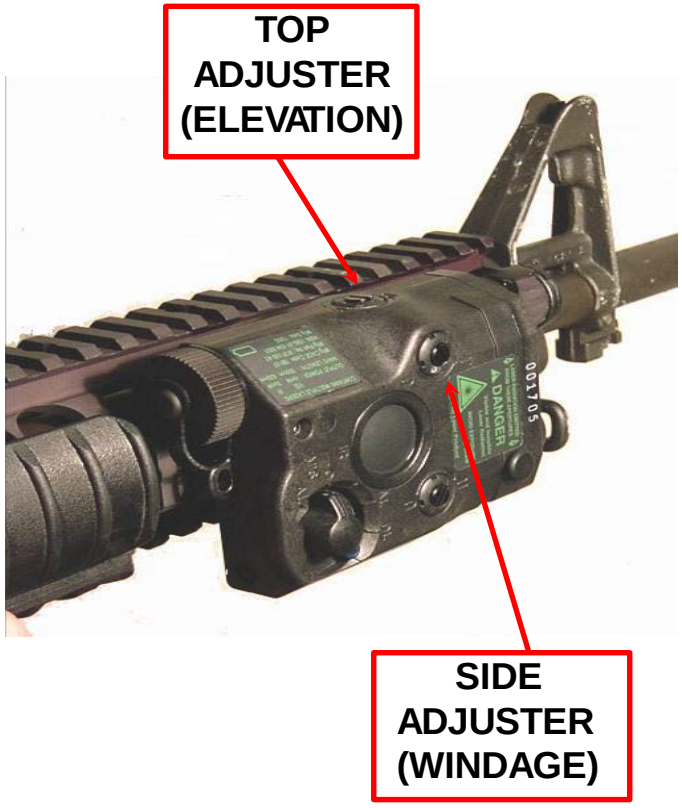


Zeroing Procedures

Adjuster Rotation Right Side Mount

AIMING BEAM MOVEMENT	ADJUSTER ROTATION	SHOT GROUP MOVEMENT
Bottom Adjuster Elevation	CW CCW	Down Up
Side Adjuster Windage	CW CCW	Right Left

ILLUMINATION BEAM MOVEMENT	ADJUSTER ROTATION	LASER MOVEMENT
Top Adjuster Elevation	CW CCW	Down Up
Side Adjuster Windage	CW CCW	Left Right



Zeroing Procedures

There are two methods for zeroing the ATPIAL to your weapon.

1. 10 Meter Laser Boresight (LBS) and Target Offset numbers

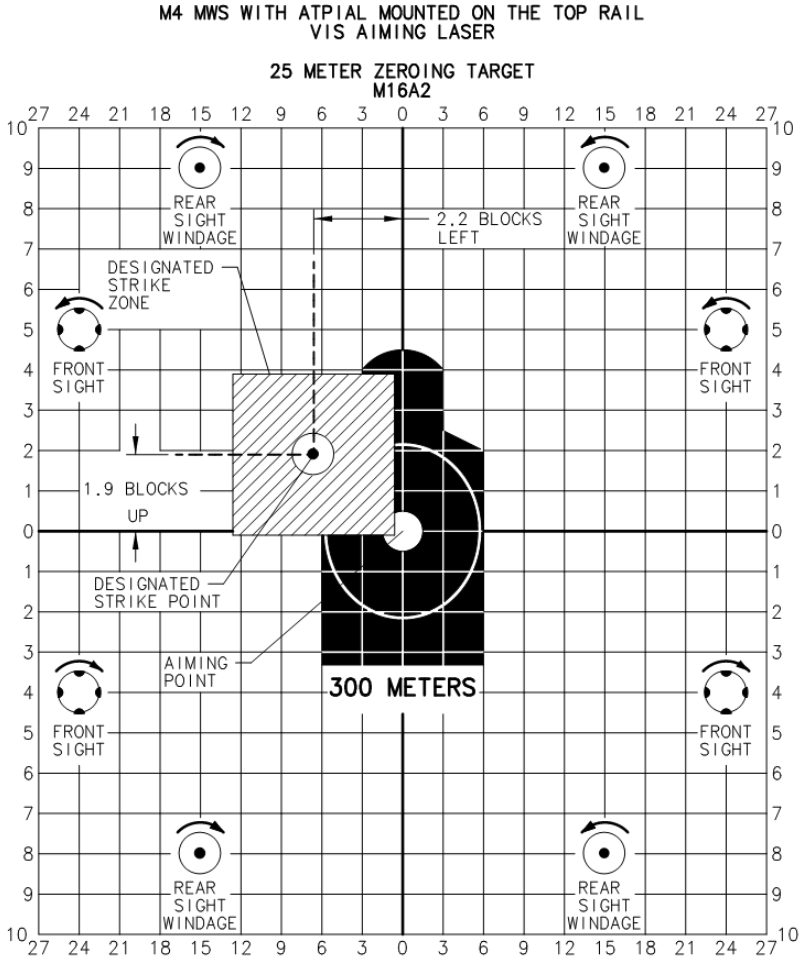
2. 25 Meter Range (Live Fire Zero)

NOTE: All Target offsets and 25 meter impact zone coordinates can be found in the TM 5855-1914-10 page 2-17

Zeroing Procedures

25 Meter Range

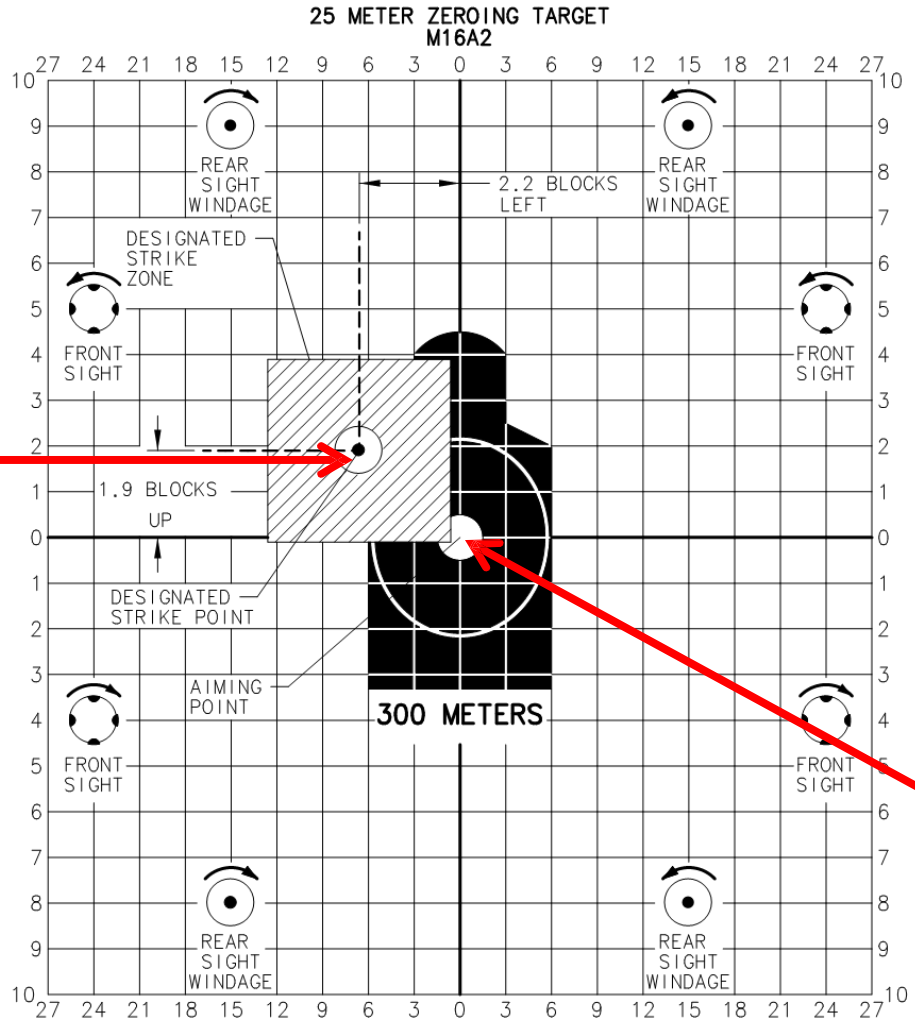
1. On a 25 meter M16A2 zeroing target, mark the designated strike point and designated strike zone based on the weapon you are using.
2. Mount the target on an “E” silhouette or other suitable surface at 25 meters.
3. Mount the ATPIAL to the host weapon.
4. Rotate the ATPIAL Mode Selector Switch to VIS Aim or IR Aim selection dependant upon day or night range.
5. Activate the laser using either the Activation Button or Remote Cable Switch and aim center of mass.



Zeroing Procedures

25 Meter Range

M4 MWS WITH ATPIAL MOUNTED ON THE TOP RAIL
VIS AIMING LASER



Designated Strike Point

Point of aim (Center Mass)

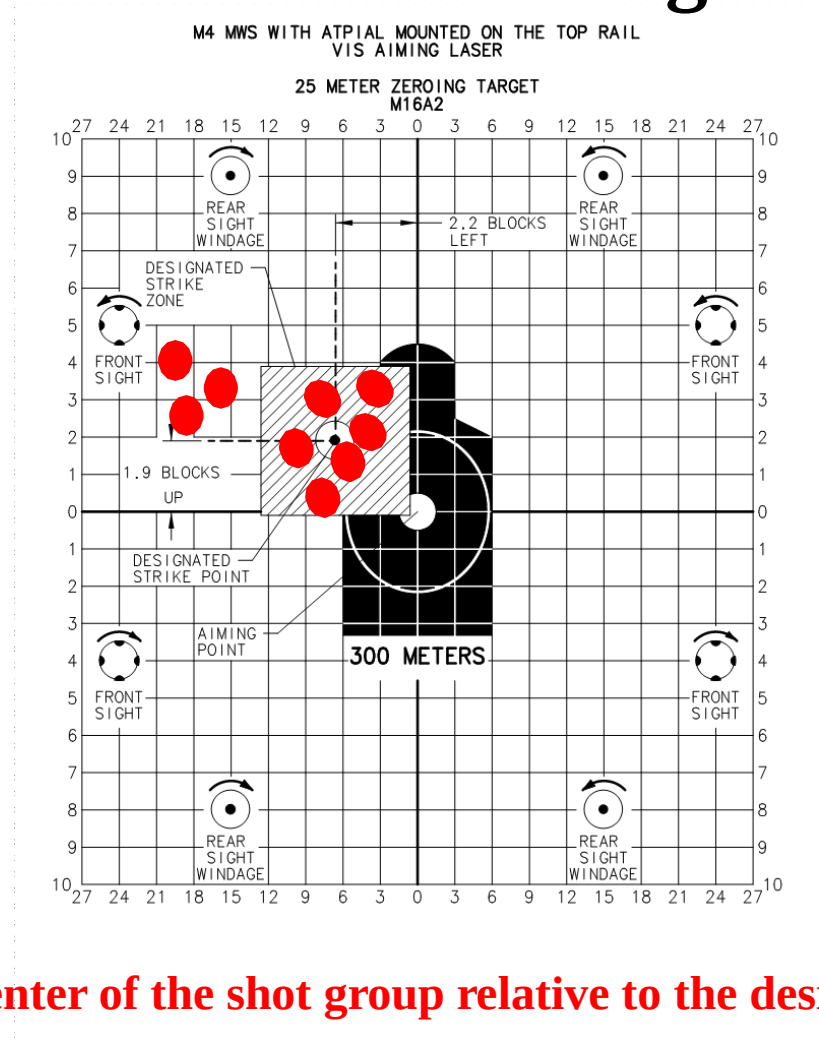
Zeroing Procedures

25 Meter Range

6. Fire a 3 round shot group and note the center of the shot group relative to the designated strike point. Re-tighten ATPIAL Rail Grabber.
7. Adjust the aiming beam adjusters to move the center of the shot group to the designated strike point.
8. Fire another 3 round shot group and again observe the center of the new shot group relative to the designated strike point repeat step #7 as necessary.
9. When 5 out of 6 rounds are in the designated strike zone you are zeroed.
10. Once the aiming beam is zeroed, rotate the Mode Selector to the DL (DUAL LOW) or DH (DUAL HIGH) position to observe both the IR aiming and illumination beams. Rotate the Illuminator Adjusters to center the illumination beam over the IR aiming beam.

Zeroing Procedures

25 Meter Range



NOTE: The center of the shot group relative to the designated strike point. Make your adjustments as indicated.

Zeroing Procedures

10 Meter Laser Borelight

Note:

You must first zero the Laser Bore Sight to the weapon. Ensure that you use the appropriate borelight mandrel for your individual weapon system.

Zeroing Procedures

10 Meter Laser Borelight

1.Stabilize the weapon. This can be accomplished by placing the weapon in a Gun Vise or holding device. If these items are not available, position weapon on a solid-stable surface such as a heavy table. Choose a weapon position where the weapon is most stable.

2.Wipe laser Borelight mandrel with a clean cloth and apply a light film of oil on the mandrel. Insert laser Borelight mandrel in weapon muzzle using a light steady force until the mandrel taper seats in the muzzle.

CAUTION: Do not apply an excessive inward force to the laser Borelight once the tapered end of the mandrel has seated in the muzzle.

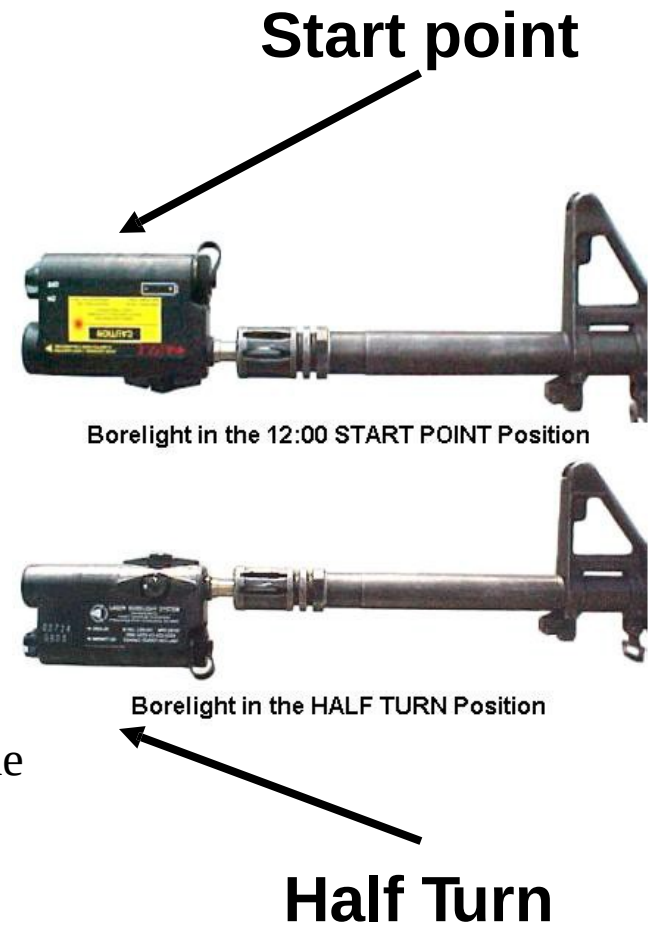
Zeroing Procedures

10 Meter Laser Borelight

3.With a plain white piece of paper at 10 meters from the weapon. (In classroom environment, distance can be simulated for training if actual classroom does not provide enough room).

4.For zeroing the Borelight laser, with the plain piece of paper draw a dot on it. Turn on the laser Borelight. With the help of an assistant, hold a target at 10 meters and place the piece of paper so that the dot you have drawn hits the center of the laser dot.

5.Rotate Borelight tool counter-clockwise from the gunners perspective, rotating laser Borelight housing clockwise may cause the Borelight to unscrew from mandrel. Slowly rotate the Borelight while watching the dot made by the laser on the target area. If the dot remains stationary the Borelight is aligned and boresighted to the weapon.



Zeroing Procedures

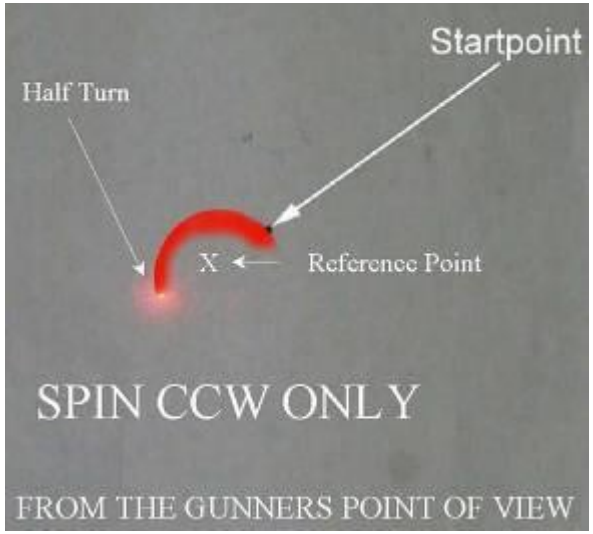
10 Meter Laser Borelight

6. If the laser dot rotates in a circular pattern away from the dot you have drawn on the piece of paper, the Borelight windage or elevation or both MUST be adjusted using the following procedures. This procedure is done at a 10-meter distance and you can measure this with the 10-meter line provided in the borelight case.

Borelight in the 12:00 START POINT Position

Borelight in the HALF TURN Position

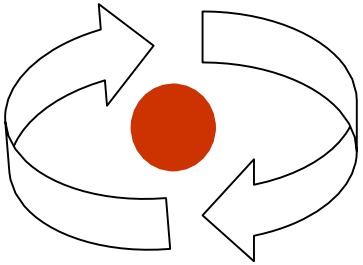
7. Slowly rotate the Borelight one-half turn. Note the new location of the laser dot (rotate position). Adjust the Borelight windage and elevation until the laser dot moves one-half the space from its Start Point and Half Turn (the middle mark between the 2 locations shown as Reference Point). After you have made your adjustment, return the laser to the Start position and repeat this process until the laser dot rotates with in 1cm of it's self.



Zeroing Procedures

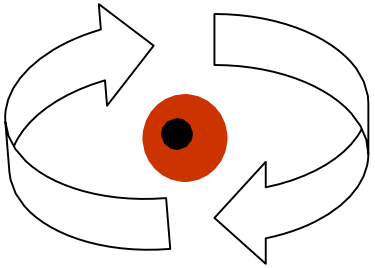
10 Meter Laser Borelight

Aligned



When rotated Start Position and Half Turn position remain in the same spot.

Not Aligned



1. Start Position

2. Half Turn Position

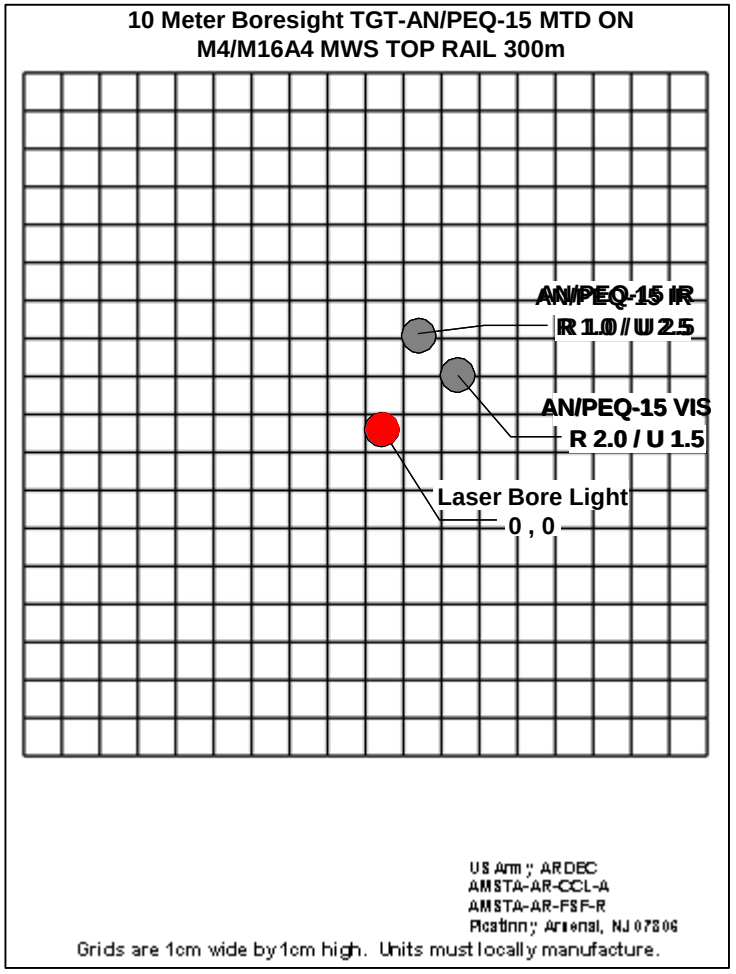
Zeroing Procedures

10 Meter Laser Borelight

1. Hang the Proper offset Target at a Distance of 10 Meters from the Weapon Barrel.
2. Adjust the Weapon or the Target so that the Borelight Laser Dot is centered on the Target Dot labeled BORELIGHT.

   Be sure that both the Target and the Weapon are Level.

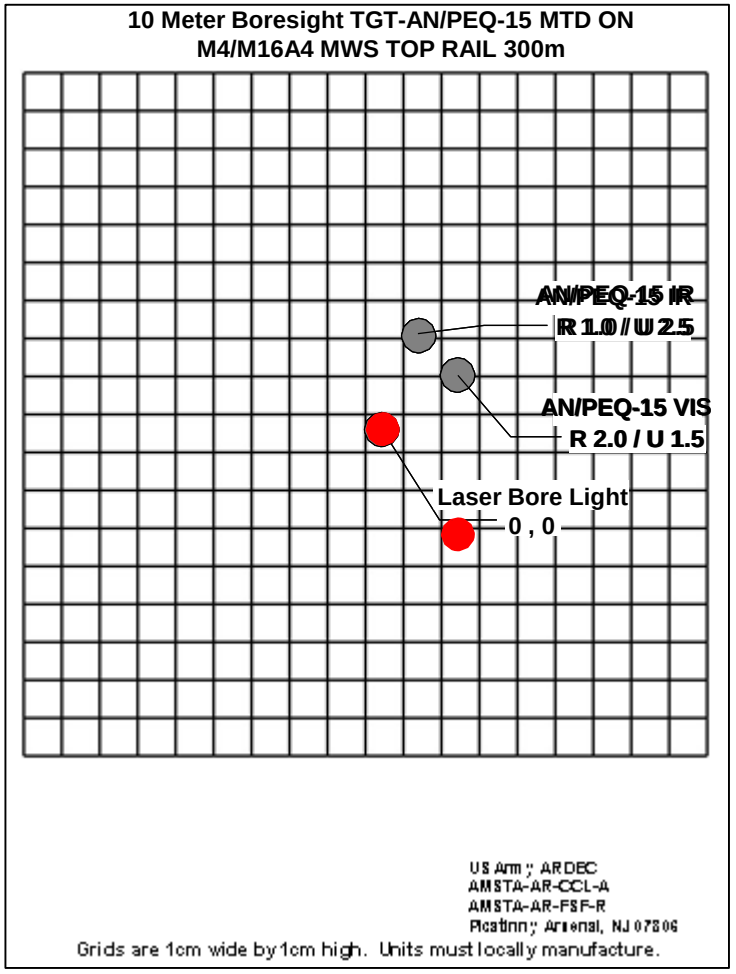
   Hold the Weapon steady in this Position.
3. Rotate the Mode Selector switch CCW to Visible Aim Low (VIS AL).



Zeroing Procedures

10 Meter Laser Borelight

4. Move the Aiming Neutral Density/Opaque Lens Cap to the store location.
5. Double Tap the Laser Activation Button for Steady-on.
6. Rotate the **AIM** Windage Adjuster on the side of the ATPIAL to move the Visible Laser beam to the proper Horizontal position on the Offset Target (labeled VIS AIM).
7. Rotate the **AIM** Elevation Adjuster on the top of the ATPIAL to move the Visible Laser Beam to the proper Vertical position on the offset Target (labeled VIS AIM).
8. Press the Laser Activation Button once to shut off the AIM Laser.
9. Move the Aiming Neutral Density/Opaque Lens Cap from the stored location by stretching it out and over the front of the aiming laser exit ports so that it is snug and firmly in place.



Zeroing Procedures

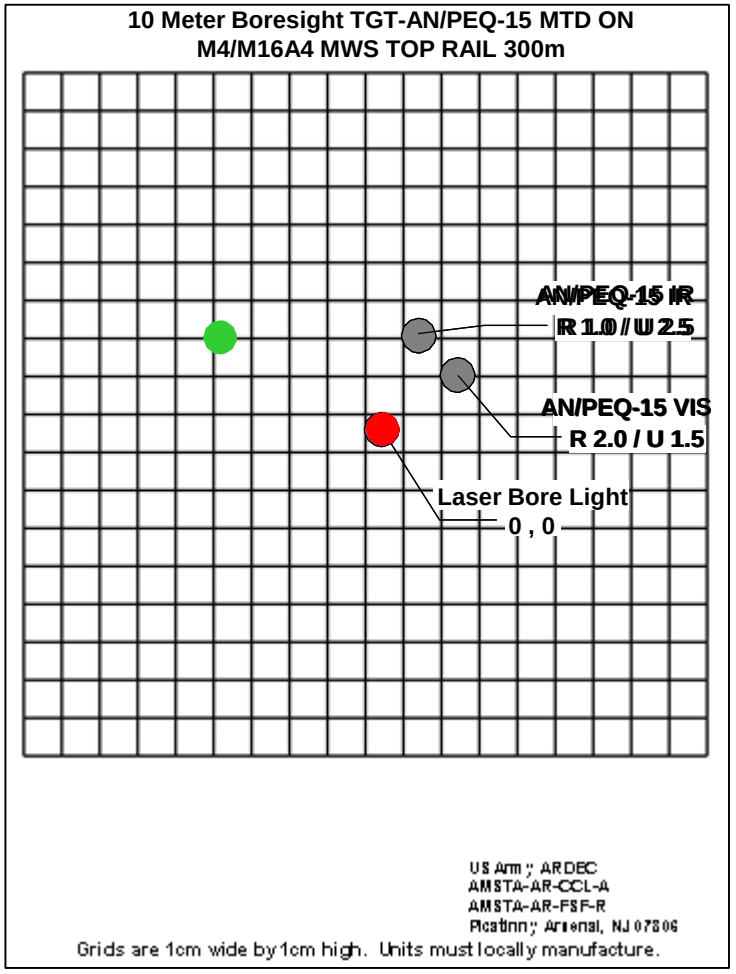
10 Meter Laser Borelight

10. Rotate the Mode Selector switch **CW** to Dual Low (DL).

11. Move the Illuminator Diffuser Cap to the store location and adjust the Illuminator to a spot or refined beam by rotating the Illuminator Focus Knob CCW to the mechanical stop.

12. Double Tap the Laser Activation Button for Steady-on.

13. Rotate the **<u>Illuminator</u>** Windage Adjuster on the side of the ATPIAL to move the Illuminator Laser beam to the proper Horizontal position as desired by the user.



Zeroing Procedures

10 Meter Laser Borelight

15. Press the Laser Activation Button once to shut off the AIM Laser.

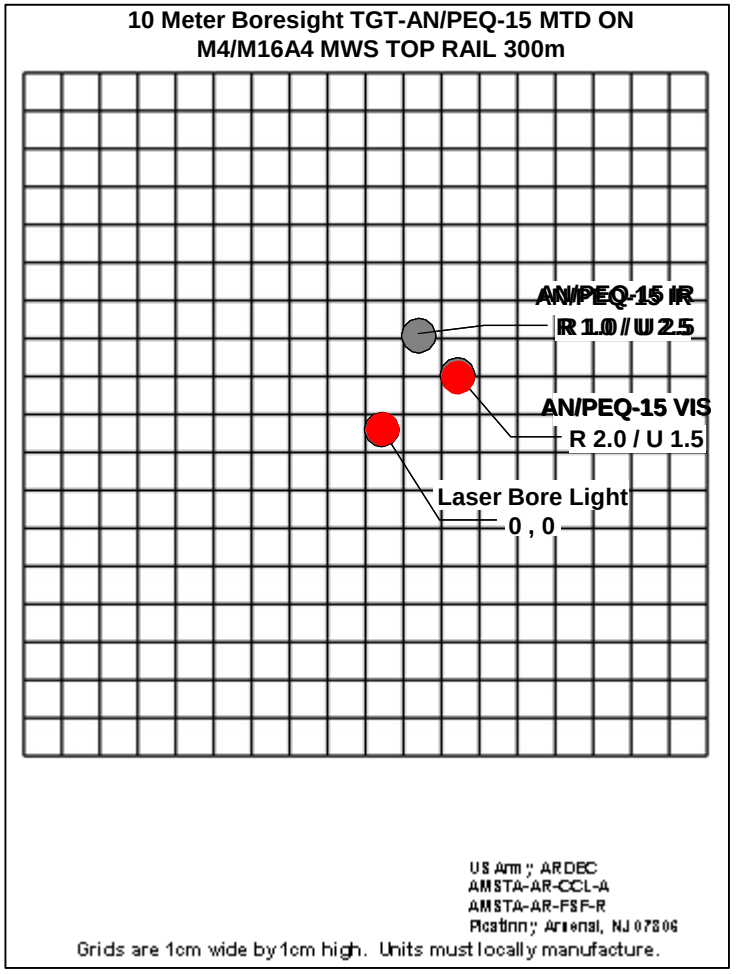
16. Move the Illuminator Diffuser Cap from the stored location by stretching it out and over the front of the illumination knob so that it is snug and firmly in place.

17. Rotate the Mode Selector switch **CCW** to OFF (O) position.

CAUTION:

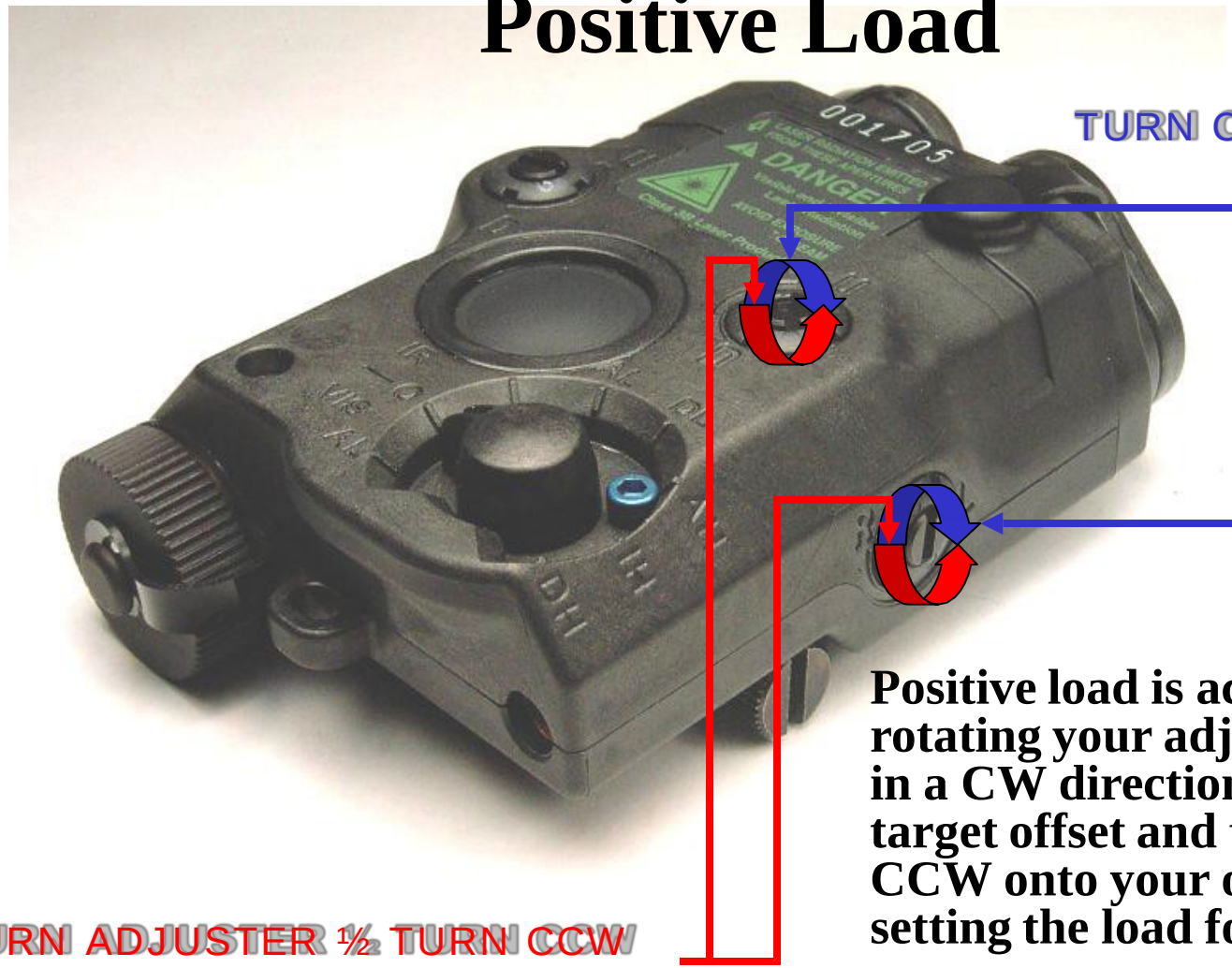
1. If Adjusters become Difficult to Turn, do not Force them. Stop & see your Armorer.

2. Turning, the Adjusters beyond the Limit of Operation or Forcing them will Break either the Adjuster or Internal Components.



Zeroing Procedures

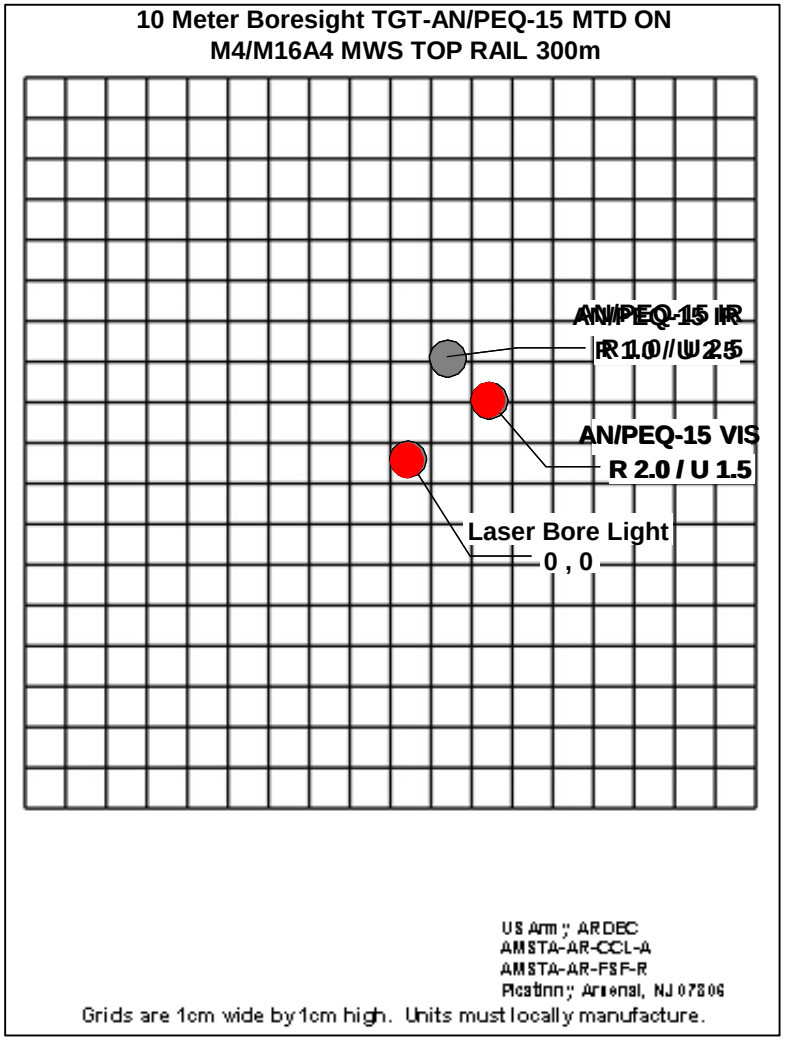
Positive Load



Positive load is accomplished by rotating your adjuster 8 clicks in a CW direction from your target offset and then back CCW onto your offset properly setting the load for the spring tension on the adjuster.

Zeroing Procedures

Positive Load



Enabling Learning Objective D

Summary

We have discussed and learned how to mounting procedures and zeroing the ATPIAL using 2 methods 25 meter live fire and 10 meter boresight to obtain a proper zero for this system to allow you to engage the enemy.

Enabling Learning Objective E

PMCS and Trouble shooting

Action: Identify the applicable PMCS and maintenance and troubleshooting procedures for ATPIAL.

Conditions: Given in a classroom environment with all required materials and equipment.

Standard: The student will be able to demonstrate field level maintenance and troubleshooting procedures for ATPIAL.

Maintenance

Operator Level

Always observe the **WARNINGS** and **CAUTIONS** appearing in a PMCS table.

WARNINGS and **CAUTIONS** appear before applicable procedures.

You must observe **WARNINGS** to prevent serious injury to yourself and/or others and **CAUTIONS** prevent the equipment from being damaged.

Maintenance
Operator Level

Operator Maintenance

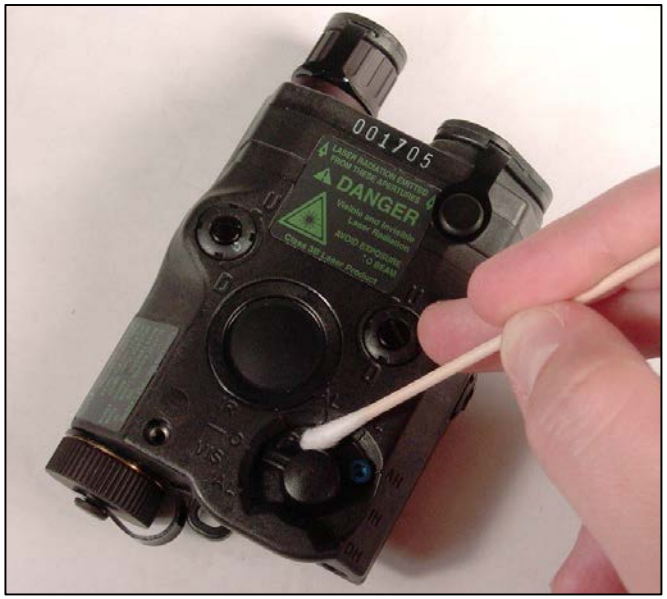
The ATPIAL is sealed device designed to operate in severe environments. All of the outer components are made of chemical resistant materials and will not normally be harmed by chemicals encountered during military operations.

Operator maintenance is limited to the inspection and cleaning of the ATPIAL external surfaces, replacement of batteries before each mission, and removal of batteries after each mission.

Maintenance

Operator Level

Item	Interval	Item to be Inspected	Procedure	Not Fully Mission Capable if:
1	B/A	ATPIAL Major Components	Verify that all major components are present, inspect for damage, and clean per TM paragraph 3.3.1	Any major components are damaged or missing.
2	B/A	ATPIAL Exterior	a. Clean housing and around buttons, switches, adjusters, and attachment points per TM paragraph 3.3.1	a. Mud/dirt/sand around buttons, switches, adjusters, or attachment points preclude proper operation of the ATPIAL
			b. Inspect and clean all lenses per TM paragraph 3.3.2	b. Lenses are cracked, pitted, scratched or cannot be cleaned
			c. Check for cracked housing	c. Housing is cracked
3	B/A	Battery Cap and o-ring	a. Inspect o-ring. Clean, lubricate and/or replace as necessary per TM paragraph 3.3.3	a. O-ring cannot be cleaned or replaced
			b. Inspect Battery Cap for damage	b. Battery Cap is bent or scratched in the o-ring seating area
4	B/A	Remote Jack	Remove Remote Jack Plug and inspect Jack for corrosion, dirt or damage	Dirt or damage prevents installation of the Remote Cable Switch.



Maintenance

Operator Level

Item	Interval	Item to be Inspected	Procedure	Not Fully Mission Capable if:
5	B/D/A	Integral Rail Grabber Bracket	a. Inspect for damage to Integral Rail Grabber Bracket	a. Integral Rail Grabber Bracket is damaged
			b. Ensure the Integral Rail Grabber is properly secured to the rail and tightened per TM paragraph 2.3.3	b. Integral Rail Grabber cannot be properly secured to the rail.
			c. Install ATPIAL on weapon per TM paragraph 2.3.3	c. ATPIAL cannot mount to weapon
Prior to performing PMCS Item 6, install ATPIAL battery per TM paragraph 2.2.2 **WARNING** Be sue the Mode Selector is in the O (OFF) position prior to installing battery.				
6	B/A	ATPIAL Operation	a. Select and activate each mode of operation per TM paragraphs 2.5.1 and 2.5.2	a. Visible Aim Laser not visible. Using NVGs, IR Aim Laser and/or IR Illuminator not visible
			b. Install and activate Remote Cable Switch per TM paragraph 2.5.3	b. Remote Cable Switch is not functioning properly or is damaged

Maintenance

Operator Level

1. External Cleaning

Clean the exterior of the ATPIAL by flushing with water and wiping with a soft cloth. Cleaning should be done whenever the ATPIAL becomes dirty or after exposure to salt water.

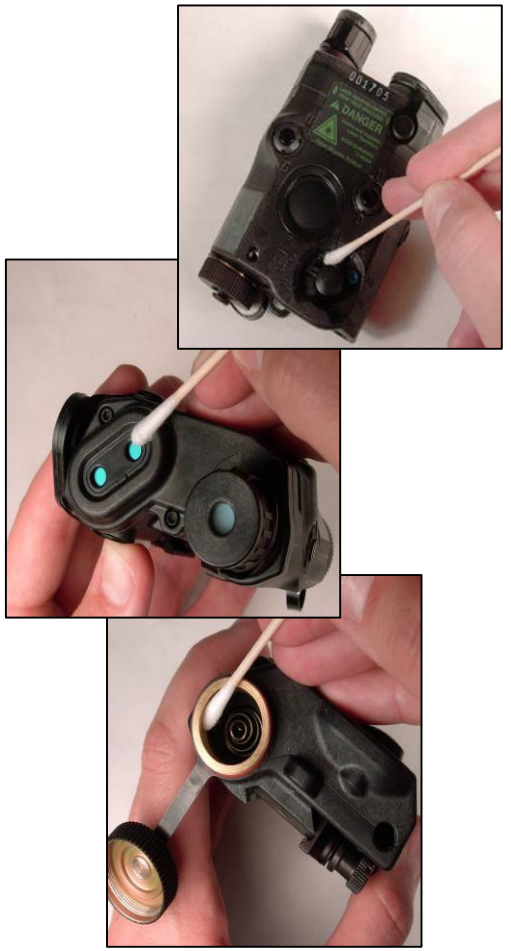
CAUTION: DO NOT USE CLEANING CHEMICALS THAT CONTAIN PERCHLOROETHYLENE, METHYL ETHYL KEYTONES (MEK), OR METHYLENE CHLORIDE AS SOME COMMERCIAL BREAK FREE PRODUCTS HAVE.

2. Window Cleaning

To clean the aiming and illumination beam windows, wipe using a soft cloth or cotton swab with clean water.

3. Battery Compartment

Before each use, inspect the battery and battery compartment for dirt, dust, or corrosion. Thoroughly clean each battery compartment by flushing with water and wiping with a soft cloth. Verify that o-ring is present at the base of the battery compartment threads.

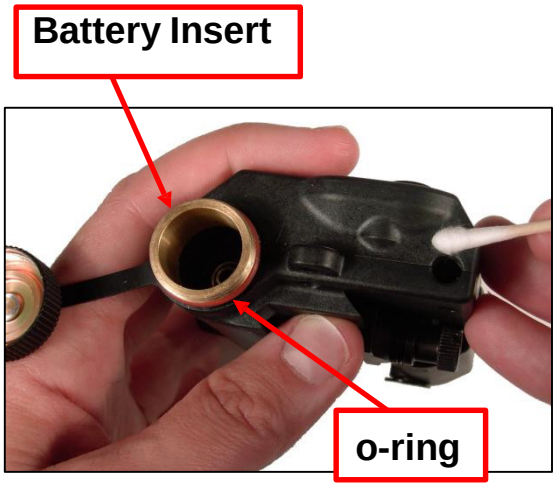


Maintenance

Operator Level

4. Battery Insert and Cap

Prior to use under water, inspect the o-ring seal on the battery compartment to make sure it is free of sand or dirt particles. If the o-ring becomes cut, nicked, or dried out, it should be replaced. If the battery cap is bent, or scratched in the o-ring seating area, it should be replaced.



5. Battery Replacement

No tools or equipment are required to replace the battery.

6. Remote Cable Jack

dirt, dust, or corrosion. Thoroughly clean the receptacle flushing with water and wiping with a soft cloth or cotton swab. Salt Fog environments accelerate corrosion on the contacts which could cause the Remote Cable Switch to malfunction.

Maintenance

Troubleshooting cont.

Malfunction	Test or Inspection	Corrective Action
1. Lasers not visible or fail to come on when activated	a. Ensure corrective actions in TM Table 3-2 were properly attempted	a. Perform corrective actions in TM Table 3-2
	b. Inspect Battery Compartment for battery contact corrosion	b. Clean Battery Compartment and contacts per TM paragraph 4.2.1
2. ATPIAL cannot be mounted to the weapon	a. Ensure corrective actions in TM Table 3-2 were properly attempted	a. Perform corrective actions in TM Table 3-2
	b. Inspect integral Rail Grabber Bracket for damage	b. Return Unit to manufacturer for repair if necessary.
	c. Check for dirt or debris on weapon rail.	c. Remove the dirt or debris from the weapon rail.

Maintenance

Troubleshooting

Malfunction	Test or Inspection	Corrective Action
3. Aim Lasers cannot be zeroed to the weapon	a. Ensure corrective actions in TM Table 3.2 were properly attempted	a. Perform corrective actions in TM Table 3-2
	b. Inspect integral Rail Grabber Bracket for damage	b. Return Unit to manufacturer for repair if necessary.
4. Remote Cable Switch inoperable, but Activation Button functions properly	a. Inspect Remote Jack for corrosion on contacts	a. Clean Remote Jack contacts per TM paragraph 4.2.3
	b. Inspect Remote Cable for damage	b. Replace Remote Cable Switch
	c. Test Remote Cable Switch with Light, Test, NSN 6625-00-618-6246	c. Replace Remote Cable Switch
5. Battery Cap Lanyard broken or damaged	a. Battery Cap Lanyard broken or damaged	a. Replace Battery Cap Lanyard per TM paragraph 4.2.3
6. Safety Screw missing	Verify Safety Screw is not in either the Lockout Position or Safety Screw Storage Location	Replace Safety Screw
7. Remote Jack Plug missing	Missing Remote Jack Plug	Replace Remote Jack Plug

Maintenance
Unit Level

Battery Compartment and Contacts Cleaning.

1. Remove Battery Cap. Inspect Battery Compartment for corrosion.
2. Clean Battery Compartment and contacts with Isopropyl Alcohol and Soft Cloth or Cotton Swabs.
3. Reinstall Battery Cap.

Maintenance
Unit Level

Remote Jack Contacts Cleaning

1. Remove Remote Cable Switch or Remote Jack Plug if installed.
2. Inspect Remote Jack contacts for corrosion.
3. Clean contacts with Isopropyl Alcohol
   and Cotton swabs.
4. Reinstall Remote Cable Switch or Remote Jack Plug.

Maintenance

Unit Level

Replacement of Illuminator Diffuser Lens Cap

1. Remove Illuminator Diffuser Lens Cap and lanyard from over the Illuminator Focus Knob.
2. Pull open end of replacement lanyard over the Illuminator Focus Knob.
3. Position in groove in the Illuminator Focus Knob.

Maintenance
Unit Level

Replacement of Aiming Neutral Density/Opaque Lens Cap or Pattern Generators

1. Remove either the Aiming Neutral Density/Opaque Lens Cap or the Pattern Generator by pulling the lanyard over the lanyard attachment pins.
2. Orient the Aiming Neutral Density/Opaque Lens Cap or the Pattern Generator by aligning the lenses and the lanyard attachment pins.
3. Attach the open ends of the lanyard to the lanyard attachment pins.

Maintenance

Unit Level

Replacement of Battery Cap Lanyard

1. Remove Battery Cap.
2. Pull lanyard over Battery compartment threads.
3. Separate lanyard from Battery Cap.
4. Pull large end of replacement lanyard over Battery Insert threads.
5. Position in groove between o-ring and ATPIAL housing.
6. Attach small end of replacement lanyard to the Battery Cap

Maintenance

Unit Level

Replacement of Lens Cap Pins

The Lens Cap Pins protrude from raised rings on the housing of the ATPIAL and are used to secure the Aiming Neutral Density/Opaque Lens Cap to the ATPIAL. To ensure the repair of these items will not damage the ATPIAL housing the following procedure must be used:

1. Use a craftsman's knife to carefully scrape out remaining adhesive within raised ring of housing being careful not to damage the housing or raised ring.

2. Clean area using Isopropyl Alcohol and Cotton Swab to prep the area for adhesive.

3. Use a jewelers file to lightly rough the base of the new lens cap pin.

4. Place one drop of methyl cyanoacrylate within the raised ring.

5. Place the new lens cap pin into place and apply pressure for one minute.

6. Set the device aside for 5 minutes before attaching Aiming Neutral Density/Opaque Lens Cap or a Pattern Generator.

Maintenance Troubleshooting

Malfunction	Test or Inspection	Corrective Action
Lasers not visible or fail to come on when activated	a. Check battery	a. Replace battery per TM paragraph 2.2.2
	b. Verify Mode Selector is not in O (Off) or P (Program) mode	b. Turn Mode Selector to the desired setting. Activate laser per TM paragraph 2.5.2
	c. Ensure watchdog timer hasn't activated after 5 minutes of continuous laser operation.	c. Reactivate activation button.
	d. If using remote cable, ensure there isn't any residue in jack.	d. Clean remote jack.
	e. Check battery contacts for dirt, debris or corrosion.	e. Clean dirt, debris, or corrosion off of battery contacts.
	f. Check opaque cover isn't over the aim lasers.	f. Move the opaque cover from laser path to the storage position.
Lasers appear weak or are not visible down range	a. Check battery	a. Replace battery per TM paragraph 2.2.2
	b. Check lenses for dirt, mud or debris	b. Clean lenses per TM paragraph 3.3.2
	c. Ensure Aiming Neutral Density/Opaque Lens Cap, Pattern Generator and/or Illuminator Diffuser are not installed in front of laser apertures	c. Remove Aiming Neutral Density/Opaque Lens Cap, Pattern Generator and/or Illuminator Diffuser

Maintenance

Troubleshooting cont.

Malfunction	Test or Inspection	Corrective Action
ATPIAL cannot be mounted to the weapon	a. Ensure weapon is equipped with a MIL-STD-1913 rail	a. Install ATPIAL on weapon with a MIL-STD-1913 rail
	b. Check for dirt or debris on weapon rail.	b. Remove the dirt or debris from the weapon rail.
	c. Check for dirt or debris on integral Rail Grabber Bracket	c. Remove dirt or debris from integral Rail Grabber Bracket
Aim Lasers cannot be zeroed to the weapon	a. Ensure Proper mounting procedures are being followed	a. Review mounting procedures in TM section 2.3
	b. Ensure proper establishment of zero preset	b. Review procedures for establishing zero preset per TM paragraph 2.4.3

Warranty

The ATPIAL is under warranty from defects in material and workmanship for one (1) year from the date of manufacture stated on the label. **This warranty does not protect against damage due to misuse or mishandling.**

ATPIAL RETURN INSTRUCTIONS

When returning the ATPIAL for service, repair, or replacement, first email returns@insight-tek.com or call toll-free 1-877-744-4803, and ask to speak with a Field Return Coordinator (FRC).

To assist the FRC with determining if the item is repairable, the following information shall be provided:

1. Serial number of the defective item.
2. Thorough description of the malfunction, defect, or damage.
3. An explanation, if known, as to how the malfunction, defect, or damage occurred.

If the FRC determines the item to be beyond economical repair, follow applicable replacement procedures through your Property Book Officer. If the FRC determines the item is under warranty, or should be returned for repair, a Return Material Authorization (RMA) number will be provided.

Warranty cont.

Currently the process and procedures for non-warranty items are being furnished. Things being defined are TAT's, economical to repair vs. discard, etc.

When returning the ATPIAL for service or repair, the following procedures should be followed to prevent any additional damage.

1.Be sure that the ATPIAL is free of all contaminations such as dirt or any other foreign material.

2. Remove battery.

3. Place the ATPIAL in the Soft Carry Case.

Place the item and a copy of the test report or detailed description of the failure in a suitable packing container.

Mark the package with "Field-Return" and the RMA Number. Ship via fastest, traceable, pre-paid means to Insight Technology, Incorporated, 9 Akira Way, Londonderry, NH 03053.

Quality Deficiency Reports

•Reports of Maintenance and Unsatisfactory Equipment:

If your equipment is performing unsatisfactorily or you are having maintenance problems, please contact the lead instructor or the contacts provided in the warranty section.

•Reporting of Items and Packaging Discrepancies:

Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/ DLR 4140.55/ SECNAVINST 4355.18/ AFR 400-54/ MCO 4430.3J.

Enabling Learning Objective E

Summary

We have Identified the applicable Preventative Maintenance Checks and Services (PMCS) and maintenance, troubleshooting and warranty information and procedures for the ATPIAL.

Terminal Learning Objective Summary

We have identified all equipment issued with the ATPIAL. How to operate the system in all modes to include program the illuminator for a pulse rate. Covered complete mounting procedures and borelighting the system to the individual weapon. Also covered how to conduct a proper PMCS and applicable maintenance procedures in accordance with the TM. Informed students about the manufacturers warranty applicable to the ATPIAL.

PM Soldier Equipment

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- **Websites:**
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  www.pmsoldierequipment.army.mil