

**Special Text - SAIB (ST SAIB)
Small Arms Integration Book
United States Army**



**HEADQUARTERS, UNITED STATES ARMY INFANTRY CENTER
January 2006**

Electronic copies of the Small Arms Integration Book (SAIB) (in Adobe PDF format) can be located on Army Knowledge Online (AKO)

Use the following link to access the Small Arms Integration Book File Folder in the Project Manager Soldier Weapons Knowledge Center. <https://www.us.army.mil/suite/folder/4718898>

You may select and download either a complete copy of the Small Arms Integration Book, or you may download one of its subsections. The complete Small Arms Integration Book is a large file, nearly 10MBs, so if you have a slow internet connection it is recommended that you download only those sections that you require to meet your immediate needs. The following subsections are available for download.

- Cover and Warnings
- Administrative Instructions & Integration Matrices
- Chapter 1 – Modular Weapon System
- Chapter 2 – M16A2 Rifle
- Chapter 3 – M4/M4A1 Carbine
- Chapter 4 – M24 Sniper Weapon System
- Chapter 5 – M107 Long Range Sniper Rifle
- Chapter 6 – M249 Squad Automatic Weapon/Light Machine Gun
- Chapter 7 – M60 Machine Gun
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Annex B – Sight/Accessory Operating Instructions
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Annex K—Advanced Combat Optical Gunsight (ACOG)
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The Small Arms Integration Book may also be accessed through the General Dennis J. Reimer Training and Doctrine Digital Library. Use the following link to locate the downloadable files:

<https://atiam.train.army.mil/soldierPortal/atia/adlsc/view/public/5581-1/st/saib/saib.htm>

WARNINGS

GENERAL WARNINGS

If devices are to be secured to the weapon by means other than those organic to the device (i.e. tape, rubber bands, etc.) insure that the device is fully secured in its final configuration prior to conducting zeroing of the device to the weapon. Failure to do so will result in an invalid zero and the firer's inability to successfully engage targets.

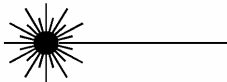
When handling any weapon always insure that the weapon has been cleared.

Periodically check the weapon mount to insure that it has not loosened during transportation or operation.

AN/PAQ-4C LIGHT, AIMING, INFRARED

WARNING

INVISIBLE LASER LIGHT



The AN/PAQ-4B and AN/PAQ-4C are military lasers, and have been exempted from FDA radiation safety performance standards prescribed in the Code of Federal Regulations, Title 21, Chapter I, Subchapter J, pursuant to exemption No. 76 EL-01 DOD issued on 7-26-76. These devices must be used IAW the precautions contained in TM 11-5855-301-12&P.

The infrared beam is considered eye safe based on military standards. Suitable precautions must be taken to avoid overexposure to the infrared beam.

- Do not stare into the infrared laser beam.
- Do not look into the infrared laser beam through binoculars or telescopes.
- Do not shine the infrared laser beam onto mirror surfaces.
- Do not shine the infrared laser beam into other individuals' eyes.

WARNING

RISK OF DETECTION BY ENEMY

To reduce the risk of detection by an enemy wearing NVGs (Night Vision Goggles), avoid prolonged activation of the IAL (Infrared Aiming Light) prior to firing.

WARNING

The infrared beam is more detectable to an enemy using NVGs when shining through smoke, fog and rain. Avoid prolonged activation of the Aiming Light in these conditions.

AN/PAS-13 THERMAL WEAPON SIGHT (TWS)

WARNING

Do not crush, puncture or otherwise mutilate battery. Avoid bringing lithium battery into contact with water. In the event of a venting of the BA-5347 lithium manganese dioxide (LiMnO₂) battery, flammable or noxious gas may be released that can cause a fire or injury to personnel. If this happens, clear the area until the (sweet) odor of ether is cleared. Handle leaking batteries with rubber or plastic gloves. Get medical attention for any skin or respiratory irritation. Turn battery in to unit maintenance for disposal in accordance with unit standard operating procedures (SOP).

WARNING

Ensure weapon is not loaded and safety is on before installing and removing bracket/Thermal Weapon Sight (TWS) to and from weapon. A loaded weapon may accidentally discharge, causing *injury or death.*

WARNING

If the TWS (plastic) cover material catches fire, do not inhale any fumes that may be generated. The fumes will be toxic, and could cause serious injury to personnel.

WARNING

Do not open battery, dispose of in fire, heat above 212°F, expose to water, recharge, or put in backwards. Battery may explode or leak and cause personnel injury.

WARNING

Ensure weapon safeties are in place before sight aligning weapon. Weapon may accidentally discharge, causing injury or death.

WARNING

Remove eye from eyecup before firing MK19 machine gun. Recoil of MK19 machine gun may cause injury to personnel.

WARNING

Install two inch eyecup before firing M107 Sniper Rifle. Recoil of M107 sniper rifle may cause injury to personnel.

WARNING

Do not touch, ingest or inhale particles of a broken lens. Lens contains germanium which is slightly toxic if ingested or inhaled. Glass may be sharp enough to cut personnel if touched.

WARNING

Operator must inform unit maintenance if the system has not been completely decontaminated because the rubber portion of the eyecup was not completely removed.

WARNING

Do NOT install a BA-5847 Lithium Sulfur Dioxide (LiSO₂) battery in the TWS battery compartment. In the event of a battery venting/explosion, the cover may rupture or fragment, causing serious injury. Use only BA-5347 Lithium Manganese Dioxide (LiMnO₂) or BB-2847 Lithium-Ion batteries to power the TWS.

WARNING

When using the BB-2847 rechargeable Lithium-Ion battery in the TWS, the LOW-battery indicator in the TWS display will not activate in time to provide a warning to change batteries. Operators may utilize the State-of-Charge indicator on the BB-2847 to determine the remaining battery life.

WARNING

Do NOT recharge BA-5347 LiMnO₂ battery. Do NOT short circuit the terminals. BA-5347 battery may explode or leak flammable or noxious gas, causing injury to personnel or damage to equipment. Refer to the PP-8444A/U or PP-8444/U Universal Battery Charger technical manual for directions on how to safely recharge the BB-2847 battery.

WARNING

Do not bring damaged lithium battery into contact with water. Flammable or noxious gas will be released that may cause a fire or injury to personnel.

WARNING

In the event of nuclear, biological, or chemical contamination, unit maintainer should turn the TWS into the decon lab. The procedures in the TWS -10 manual are not for total decontamination of the TWS. Protective mask and gloves should be worn when handling until total decontamination is completed by the decon lab.

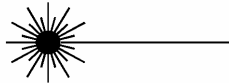
FIRST AID

For first aid or artificial respiration, see FM 21-11, First Aid for Soldiers.

AN/PEQ-2A LASER POINTERS/ILLUMINATORS

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 individuals' eyes.

WARNING

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

WARNING

RISK OF DETECTION BY ENEMY

To reduce the risk of detection by an enemy using Night Vision Devices, avoid prolonged activation of the AN/PEQ-2A.

WARNING

The infrared beam is more detectable to an enemy using Night Vision Devices when used in smoke, fog and rain. Avoid prolonged activation of the AN/PEQ-2A in these conditions.

WARNING

Do not store the AN/PEQ-2A with batteries installed.

CAUTION

Do not over adjust the adjusters.

Invisible Laser Radiation – Avoid Direct Exposure to the Beam

The AN/PEQ-2A makes use of a high power aiming laser and presents a serious eye hazard within 25 meters, when used in the training mode, and within 220 meters, when used in the tactical mode. A safety block installed in the training mode (Blue Side Up) prevents the operator from accessing the

non-eye safe modes (AIM HI, DUAL LO/HI, DUAL HI/HI). A .050 hex head allen wrench is needed to unscrew the block from the body and re-install it in the tactical mode (Black Side Up). Tactical mode should not be used unless authorized by the unit's commander.

Mode	Training	Tacticle
<u>Safety Class</u>	3a	3b
<u>Nominal Ocular Hazard Distance</u>	Dual LO	Aim HI
Unaided eye	25 meters	220 meters
Aided (7x50 binoculars)	160 meters	1300 meters
<u>Eye Protection Requirements</u>	Dual Lo	Aim Hi
Unaided eye		O.D. 1.7
Aided (7x50 binoculars)		O.D. 1.7

Note: AIM LO mode operates at a Class 1 level.

AN/PVS-4 NIGHT VISION SIGHT

WARNING

To avoid equipment damage and personnel injury when using the sight, carefully read and understand the following warnings:

- The sight effectiveness is impaired by rain, fog, sleet, snow, smoke, and other reflective matter.
- DO NOT use sight without eyeguard attached or weapon recoil may cause personal injury.
- Extreme care should be taken to see that no stray light is visible from sight when in operation (to prevent detection by the enemy).
- Make sure there is no ammunition in the weapon before attempting to install mounts. Weapon must be on SAFE.
- The batteries used in sight require special handling to avoid possible physical harm or equipment damage. Return all used or damaged batteries to Property Disposal.

WARNING

The BA-5567/U (lithium) battery contains sulfur dioxide gas under pressure and should be handled in the following manner:

- If the battery compartment becomes hot to touch and you hear a hissing sound (i.e., battery venting) or smell irritating sulfur dioxide gas, IMMEDIATELY turn off the equipment. Wait until battery has cooled before removing it.

- DO NOT heat, puncture, disassemble, test for capacity, short circuit, attempt to recharge, or otherwise tamper with battery.
- Batteries have a safety vent to prevent explosion. When they are venting gas, you will smell gas, your eyes may become irritated, or you may hear the sound of gas escaping. When safety vents have operated, batteries are fairly safe from bursting, but will be hot and must be handled with care.

WARNING

- DO NOT open plastic storage bag if card-board box inside bag is stained or there is liquid visible inside bag.
- You can tell the difference between Mercury battery, BA-1567/U, and lithium battery, BA-5567/U, by the plastic sleeve. The lithium battery has a black band around the top and bottom of plastic sleeve. The lithium battery may be disposed of only in a sanitary landfill.
- DO NOT use batteries which look bulged or have burst. Turn these batteries in to the Property Disposal Office. Contact your unit safety officer for help with large quantities of bulged or burst batteries.
- DO NOT use water to extinguish lithium battery fire if a shock hazard exists due to high voltage electrical equipment in the immediate vicinity (i.e., greater than 30 volts, alternating current (ac) or direct current (dc)).

WARNING

DO NOT use two lithium batteries in the sight at the same time.

NBC DECONTAMINATION

- If the sight is exposed to NBC (nuclear, biological, chemical) decontamination chemicals, replace those parts of the sight that absorb the chemicals, such as the eyeguard cushion, and carrying case insert. Decontamination chemicals absorbed into these items could irritate the skin.

TOXIC MATERIAL

- The image intensifier phosphor screen contains toxic materials.
- A broken image intensifier may be caused from damage to the sight, especially if the sight housing is cracked by force.
- If an image intensifier breaks, be extremely careful to avoid inhaling the phosphor screen material. Do not allow the material to come in contact with the mouth or open wounds on the skin.
- If the phosphor screen material contacts your skin, wash it off immediately with soap and water.
- If you inhale/swallow any phosphor screen material, drink a lot of water, induce vomiting, and seek medical attention as soon as possible.

FIRST AID

- For first aid or artificial respiration, see FM 21- 11, First Aid for Soldiers.

AN/PVS-10, SIGHT, NIGHT VISION SNIPER SCOPE (SNS)

WARNING

Failure to use the eyecup or leaving the lens cap open when the SNS is in use will cause detection by the enemy.

WARNING

Remove air pressure inside shipping/storage case by pressing pressure relief valve located near carrying handle before opening the case.

WARNING

Do not mix alkaline and lithium batteries. Failure to comply may result in injury or death.

Use only 1.5 Volt Batteries.

WARNING

Do not disassemble the SNS, or personal injury and equipment damage may result.

FIRST AID

First aid required should be administered in accordance with FM 21-11, First Aid for Soldiers.

AN/PVS-14 MONOCULAR NIGHT VISION DEVICE

WARNING

Do not carry batteries in pockets containing metal objects such as coins, keys, etc. Metal objects can cause the batteries to short circuit and become very hot.

WARNING

Toxic Material

The image intensifier's phosphor screen contains toxic materials.

- If an image intensifier breaks, be extremely careful to avoid inhaling the phosphor screen material. Do not allow the material to come in contact with the mouth or open wounds on the skin.
- If the phosphor screen material contacts your skin, wash it off immediately with soap and water.
- If you inhale/swallow any phosphor screen material, drink a lot of water, induce vomiting, and seek medical attention as soon as possible.

WARNING

- The IR source is a light that is invisible to the unaided eye for use during conditions of extreme darkness. However, the light from the IR source can be detected by the enemy using night vision devices.

WARNING

Personnel Injury

- Serious injury may result if the nitrogen tank valve breaks off due to tank upset. If the tank valve breaks, the tank can be propelled by the escaping gas and strike you or others.
- Always secure the tank to an upright support before removing the tank valve guard and attaching the regulator valve to the tank.

WARNING

EQUIPMENT LIMITATIONS

To avoid personal injury and property damage when using the MNVD carefully read and understand the following safety precautions.

- The MNVD requires some night light (moonlight, starlight, etc.) to operate. The level of performance depends on the level of light.
- Night light is reduced by passing cloud cover, while operating under trees, in building shadows, etc.
- The MNVD is less effective viewing into shadows and other darkened areas.
- The MNVD is less effective through rain, fog, sleet, snow, or smoke.
- The MNVD will not “see” through dense smoke.

WARNING

The monocular will not be turned off automatically when flipped up. The monocular must be turned off by the power switch.

WARNING

The compass illuminator can be seen by others using night vision devices.

WARNING

Do not use contaminated eyecup or eyeguard. They must be replaced.

WARNING

When installing the headmount over the protective mask, be careful not to break the protective mask seal around your face.

WARNING

Do not use contaminated eyecup or eyeguard. They must be replaced.

FIRST AID

For first aid or artificial respiration, see FM 21-11, First Aid for Soldiers.

AN/TVS-5, NIGHT VISION SIGHT

WARNING

- Do not press eyeguard except with eye area of face for operation of sight. Sight emits illumination which can be detected by enemy if eyeguard is used improperly.
- Do not use sight without eyeguard attached or personal injury from weapon recoil may result.
- The contents of the mercury batteries are extremely irritating to the eyes, oral, and nasal passages, therefore, be careful when discarding the batteries. To prevent explosion, batteries should not be disposed of by burning.
- Do not short circuit.
- Do not recharge.
- Do not store the night vision sight with the batteries in it.
- Always replace both Mercury batteries at the same time.

LITHIUM BATTERIES BA-5567

WARNING

A lithium-sulfur dioxide (Li-SO₂) battery used with the AN/TVS-5 contains pressurized sulfur dioxide (SO₂) gas. The gas is toxic, and the battery **MUST NOT** be abused in any way which may cause the battery to rupture.

WARNING

DO NOT heat, short circuit, crush, puncture, mutilate, or disassemble batteries.

WARNING

DO NOT USE any battery which shows signs of damage, such as bulging, swelling, disfigurement, brown liquid in the plastic wrap, a swollen plastic wrap, etc.

WARNING

DO NOT test Li-SO₂ batteries for capacity.

WARNING

DO NOT recharge Li-SO₂ batteries.

WARNING

DO NOT use water to extinguish Li-SO₂ battery fires if a Shock hazard exists due to high voltage electrical equipment in the immediate vicinity [i.e., greater than 30 volts, alternating current (ac) or direct current (dc)].

WARNING

If the battery compartment becomes hot to the touch, if you hear a hissing sound (i.e., battery venting), or smell irritating sulfur dioxide gas, IMMEDIATELY Turn Off the equipment. Remove the equipment to a well ventilated area or leave the area.

WARNING

DO NOT use a Halon type fire extinguisher on a lithium battery fire.

WARNING

In the event of a fire, near a lithium battery(ies), rapid cooling of the battery(ies) is important. Use a carbon dioxide (CO₂) extinguisher. Control of the equipment fire, and cooling, may prevent the battery from venting and potentially exposing lithium metal. In the event that lithium metal becomes involved in fire, the use of a graphite based Class D fire extinguisher is recommended, such as Lith-X or MET-L-X.

WARNING

DO NOT store lithium batteries with other hazardous materials and keep them away from open flame or heat.

CORROSIVE CHEMICAL FIRST AID

- In the event of contact with the eyes, immediately flush the eyes with water and continue to flush for 15 minutes.
 - The first few seconds after contact are critical and immediate flushing of the eyes may prevent permanent damage.
 - An eyewash fountain is preferred, but an eyewash hose or any other water source should be used in an emergency.
 - Alkali (base) burns are usually more serious than acid burns.
- Strong chemicals burn the skin rapidly. There is no time to waste. Flush the area with water immediately. Remove and discard clothing, socks and shoes (obtain other clothes and shoes). Continue to flood the area, while clothing is being removed.
- Consult warnings on the product label for full first-aid information. Give the label information to the attending physician.
- Neutralizers and solvents (alcohol, etc.) should not be used by the first aider. The spread of skin absorbing corrosive poison, like phenol, can cause death. Don't depend on spilled chemicals to evaporate from your clothes. Exposure of skin can kill you.

M68 CLOSE COMBAT OPTIC (CCO)

WARNING

At higher intensity settings, red dot is visible through front of sight. For night vision operations, close front lens cover before turning switch knob to position 1, 2, 3, or 4. Check light for proper intensity before opening front lens cover. Close front lens cover before turning switch knob counterclockwise to the OFF position. Failure to follow this warning could reveal your position to your enemy.

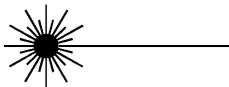
.FIRST AID

For further information on first aid, refer to FM 21-11, First Aid for Soldiers.

M145 TELESCOPE, MACHINE GUN OPTICS (MGO)

This warning summary includes general safety precautions and instructions that must be understood and applied during the operation and maintenance of the Telescope to ensure personnel against injury, death, or long term health hazards. A summary of safety and hazardous material warnings that should be heeded in conduct of operation and maintenance is provided below.

LASER LIGHT – laser light hazard symbol indicates extreme danger for eyes from laser beams and reflections.



- Use of the Telescope without laser filter is not eyesafe.
- Removal of the signature reduction device (SRD) could lead to your detection by the enemy.

FIRST AID

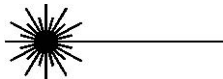
For first aid procedures, refer to FM 21-11, First Aid for Soldiers.

M203 DAY NIGHT SIGHT

SAFETY SUMMARY

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 individuals' eyes.

Table 1 Safety Data

SAFETY DATA			
Classification: ANSI Class 3b			
Mode	Unaided	7x Magnifying Optics	Eye Protection / Optical Density (OD)
Aim Lo	0 m	0 m	-
Dual Lo	40 cm	3 m	0.5
Dual High	32 m	190 m	1.5
Skin Hazard Distance	None	None	

Note: Distances indicated in meters (m), centimeters (cm)

WARNING

Be sure the M203 and host weapon are CLEAR and on SAFE before proceeding.

WARNING

Be sure to remove the Borelight and Mandrel Adapter from the weapon prior to firing 5.56mm or 40mm Grenade Rounds.

WARNING

If DNS unit contains tritium inserts in the front and rear iron sights, keep oil away from the tritium inserts!

WARNING

RISK OF DETECTION BY ENEMY

- To reduce the risk of detection by an enemy using night optical devices, avoid prolonged activation of the DNS.
- The infrared beam is more detectable to an enemy when used in fog, smoke, and rain. Avoid prolonged activation of the DNS in these conditions.

WARNING

Do not store the DNS with the batteries installed.

WARNING

Observe safe firing range of grenade launcher. Be sure to set the DNS range to at least 40 meters before sighting.

WARNING

- When operating in the DUAL LO laser setting, personnel within 3 meters of the laser must use laser eye protection with a minimum optical density (OD) of 0.5 at the laser wavelength of 820-850 nm.
- When operating in the DUAL HI laser setting, personnel within 32 meters (190 meters when using binoculars) of the laser must use laser eye protection with a minimum optical density (OD) of 1.5 at the laser wavelength of 820-850 nm.

WARNING

Each of the three Tritium lights on the M203 DNS will be checked for illumination or evidence of damage prior to removal from the storage area, twice during each exercise, and immediately prior to placement back into the storage area. If any Tritium light is not illuminated and/or if the Tritium source could have become broken or cracked during handling, inform personnel not to touch the sight. Anyone who may have handled a cracked or broken tritium sight will wash as soon as possible with non-abrasive soap and lukewarm water. Immediately notify the local Radiation Safety / Protection Officer (RSO / RPO) of the potential breakage, and if directed by the RPO carry out the following procedures:

- Personnel handling the broken / damaged device are to wear rubber or latex gloves.
- The device and gloves worn must be double-wrapped in plastic. The outside container must be labeled "BROKEN TRITIUM DEVICE: DO NOT OPEN."
- Turn in the broken source (device) to the RSO / RPO for disposition. Dispose of any radioactive material in accordance with AR 11-9.

- Personnel who may have handled a broken tritium device may be directed to submit a urine bioassay sample for medical evaluation of potential tritium uptake.

CAUTION

Do not over-adjust the boresight or range knob adjusters.

NOTES

- Operators are only authorized to replace batteries, inspect and clean the battery compartment, and clean the outer surfaces of the DNS and its external components.
- The Accuracy of the 5.56 targeting will depend on the quality of the M203 QD interface with the host weapon.

ADMINISTRATIVE INSTRUCTIONS

PREFACE

This document is intended as a Leader's Guide and quick reference for the soldier in the field. It is our intent to provide a clear, easy-to-use document that outlines interface requirements between weapons, their accessories and sights. **This is a reference book and not intended to replace Technical Manuals.** Detailed procedures and guidance on the operation and employment of devices is contained in the appropriate Technical Manual. (See Annex A – References)

This book has been prepared using the most up-to-date data available and in some instances varies from the information available in fielded Technical Manuals. When in doubt as to what configuration should be used contact the below listed point of contact for further guidance:

Commander
United States Army Infantry School
ATTN: ATZB-CDE
Fort Benning, GA 31905-5400
Telephone: DSN 835-4952 // COMM 706-545-4952

Questions pertaining to offset data should be forwarded to:

Project Manager Soldier Weapons
ATTN: SFAE-SDR-SW (Logistics and Integration Team)
Building 151
Picatinny Arsenal, NJ 07806-5000
Email: pica.pmsw.int@conus.army.mil

HOW TO USE THIS BOOKLET

Review Warnings and Caution Statements at the front of the Book.

Organization:

- The Small Arms Integration Book is organized into Weapon Chapters (Modular Weapon System, M16A2, M4/M4A1, M24, M107, M249, etc.), with sections for each of the components or sights contained in that chapter.
- Each chapter starts with an overview photo of the weapon with all applicable Sights and Accessories depicted. Lines indicate the general location that the items would be mounted on the weapon.
- Immediately behind the system photo you will find a graphic depicting the relative effective ranges of weapons and devices. This is intended to serve as a guide to the leader during planning as to what device to employ in various tactical scenarios.
- Next you will find sections for each of the components or accessories associated with that weapon (AN/PAQ-4C, AN/PAS-13, AN/PEQ-2A, AN/PVS-4, etc.).
- Within a given section you will find a diagram and instructions explaining how to mount or install the item on the weapon. Included at the end of the mounting instructions you will find the target offsets to be used in zeroing your device to your weapon. See Annex H for a summary of all target offsets.

WARNING

If devices are to be secured to the weapon by additional means (i.e. tape, rubber bands, etc.) insure that the device is fully secured in its final configuration prior to conducting zeroing of the device to the weapon. Failure to do so will result in an invalid zero and the firer's inability to successfully engage targets.

- Annexes contained at the rear of this booklet include:

Annex A – References

Annex B – Sight/Accessory Operating Instructions

Annex C – Battery Quick Reference Guide

Annex D – Machine Gun Mount Cross Reference Guide

Annex E – Infantry Platoon Equipment/Organization Guide

Annex F – Bore light Dry Zero Procedures

Annex G – Offset Target Preparation

Annex H – Offset Target Summary

Annex I – Device/Rail Grabber & Mount Cross Reference

Annex J –M203 Day/Night Sight

Annex K—Advanced Combat Optical Gunsight (ACOG)

Annex L— Acronyms & Abbreviations

Instructions:

1. Locate your weapon in the Table of Contents.
2. Locate the Sight or Accessory that you are attempting to mount or install below that weapon then turn to the designated page.
3. Follow the instructions provided to install the Sight or Accessory. Use the installation diagram and instructions to assist with your installation.
4. When preparing to qualify or familiarize with a Sight or Accessory refer to the appropriate 25-meter zero target or Boresight target for correct preparation/configuration of the target for that weapon/accessory combination.
5. If a confirmed boresight target is available the firer may omit the requirement to conduct a 25-meter live fire zero confirmation for the AN/PEQ-2A and the AN/PAQ-4C. If however the firer is zeroing an AN/PAS-13, Thermal Weapon Sight, or M68, Close Combat Optic, he must conduct a 25-meter live fire confirmation to ensure proper mounting and alignment of the weapon/sight.

INTEGRATION MATRICES

A checkmark indicates that the accessory or sight listed in the left-hand column is applicable to the weapon listed at the top of the table.

Integration Matrix (Individual Wpns)

Accessory	MWS (Note 1)	MWS M203	M16A2	M16/ M203	M4/A1	M4/ M203A1	M24	M107
AN/PAQ-4C 5855-01-398-4315 TM 11-5855-301-12&P	✓	✓	✓	✓ (Note 2)	✓	✓ (Note 2)		
AN/PAS-13B(V)1, LWTS 5855-01-464-3150 TM 11-5855-314-12&P	✓		✓		✓			
AN/PAS-13A(V)2, MWTS 5855-01-458-0210 TM 11-5855-309-12&P	✓		✓		✓			
AN/PAS-13B(V)2, MWTS 5855-01-464-3152 TM 11-5855-312-10	✓		✓		✓			

Accessory	MWS (Note 1)	MWS M203	M16A2	M16/ M203	M4/A1	M4/ M203A1	M24	M107
AN/PAS-13A(V)3, HWTS 5855-01-458-0211 TM 11-5855-309-12&P	✓						✓	✓
AN/PAS-13B(V)3, HWTS 5855-01-464-3151 TM 11-5855-312-10	✓						✓	✓
AN/PEQ-2A 5855-01-447-8992 TM 11-5855-308-12&P	✓		✓		✓			
AN/PVS-4(A) 5855-01-422-8782 TM 11-5855-213-10	✓	✓	✓	✓	✓	✓		
AN/PVS-10, SNS 5855-01-410-8979 TM 11-5855-303-12&P							✓	
AN/PVS-14 5855-01-432-0524 TM 11-5855-306-10	✓							

Accessory	MWS (Note 1)	MWS M203	M16A2	M16/ M203	M4/A1	M4/ M203A1	M24	M107
M68, CCO 1240-01-411-1265 TM 9-1240-413-12&P	✓	✓	✓	✓	✓	✓		
M3A Optical Sight TM 9-1005-306-10							✓	
M107 Day Optic Scope (DOS) Leupold Mark 4, 4.5-14x50mm LR/T M1 with Mil-Dot Reticle (Model 54560) TM 9-1005-239-10								✓
Back Up Iron Sight 1005-01-484-8000	✓	✓			✓	✓		
MILES	✓	✓	✓	✓	✓	✓	✓	

Note 1 – MWS-Modular Weapon System (MWS) is a generic term that is applied to either a M4 Carbine with the M4 Adapter Rail System installed, or a M16A4 Rifle with the M5 Adapter Rail System installed.

Note 2 - When mounting the AN/PAQ-4C to the M203 the Grenadier must first have the Quadrant Sight removed.

Integration Matrix (Crew Served Wpns)

Accessory	M249	M60	M240B	M2	MK19
AN/PAQ-4C 5855-01-398-4315 TM 11-5855-301-12&P	✓	✓	✓ (Note 1)	✓ (Note 1)	✓ (Note 1)
AN/PAS-13A(V)2, MWTS 5855-01-458-0210 TM 11-5855-309-12&P	✓	✓	✓		
AN/PAS-13B(V)2, MWTS 5855-01-464-3152 TM 11-5855-312-10	✓	✓	✓		
AN/PAS-13A(V)3, HWTS 5855-01-458-0211 TM 11-5855-309-12&P				✓	✓
AN/PAS-13B(V)3, HWTS 5855-01-464-3151 TM 11-5855-312-10				✓	✓
AN/PEQ-2A 5855-01-447-8992 TM 11-5855-308-12&P	✓	✓	✓	✓	✓
AN/PVS-4(A) 5855-01-422-8782 TM 11-5855-213-10	✓	✓	✓		

Accessory	M249	M60	M240B	M2	MK19
AN/TVS-5 5855-01-422-8777 TM11-5855-214-10				✓	✓
M145, MGO 1240-01-411-6350 TM 9-1240-415-13&P	✓ (Note 2)	✓	✓		
MILES	✓	✓	✓	✓	

Note 1 – Objective configuration would be with the AN/PEQ-2A, however, the AN/PAQ-4C may be used if the AN/PEQ-2A is unavailable.

Note 2 – The M145 MGO is primarily used on the M249 when the M249 is employed in the Light Machine Gun role. Units equipped through the Rapid Fielding Initiative (RFI) and the 75th Ranger Regiment have, however, received M145 MGOs for use with their M249 Automatic Rifles/SAWs.

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MODULAR WEAPON SYSTEM

A Modular Weapon System consists of a base weapon fitted with a set of Adapter Rails that provide for the mounting of a variety of accessories. Modular Weapon Systems come in one of two variants, either an M4/M4A1 Carbine with an M4 Adapter Rail System or M16A4 with an M5 Adapter Rail System applied, and the accessories necessary to successfully employ the “system”. Components include:

- Adapter Rail System (M4 or M5)
- M203 Quick Attach/Detach Bracket (M203A2)
- Backup Iron Sight (BUIS)
- Flashlight Mount
- M68 Close Combat Optic

Additional Accessories and Sights Include:

- AN/PAQ-4C
- AN/PAS-13A (V)1 (V)3 & AN/PAS-13B (V)1 (V)3
- AN/PEQ-2A
- AN/PVS-4
- AN/PVS-14

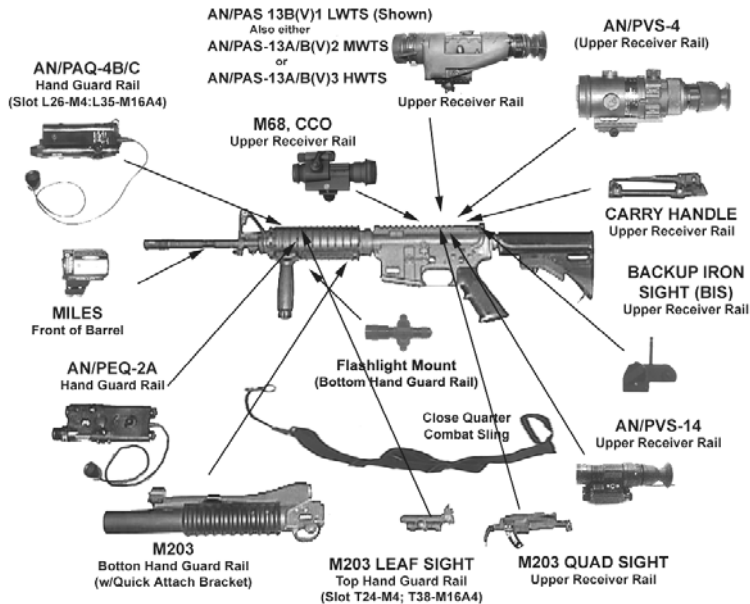
NOTE: 10m Boresight Target Offsets for the MWS Backup Iron Sight (BUIS)

M4/M16 MWS 0.0 cm Left/Right; 4.0 cm Up










M203 MWS: 0.0 cm Left/Right; 6.0 cm Up

M4 Modular Weapon System

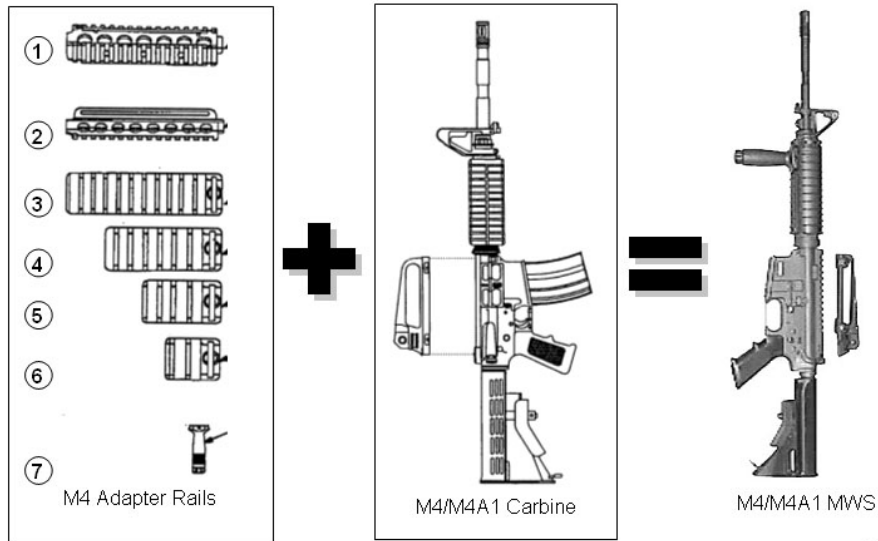
There is no Modular Weapons System Technical Manual.
See Individual System TMs.



M4 MWS Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	2100m	2200m	
 AN/PAQ-4C	Range: 600m																						
 AN/PAS-13B(V)1, LWTS	Personnel Recognition Range: 550m																						
 AN/PAS-13A/B(V)2, MWTS	Personnel Recognition Range: 1100m																						
 AN/PAS-13A/B(V)3, HWTS	Personnel Recognition Range: 2200m																						
 AN/PEQ-2A	Range: 600m (Low Power), 2,000m (High Power)																						
 AN/PVS-4	Range: 450m (Starlight), 900m (1/4 moon)																						
 AN/PVS-14					Range: 160m (Starlight), 375m (1/4 moon)																		
 M68	Range: 300m																						
 M4/M4A1	Max Eff Ring: PI-500m, Area-600m																						

M4 Carbine Version Modular Weapon System

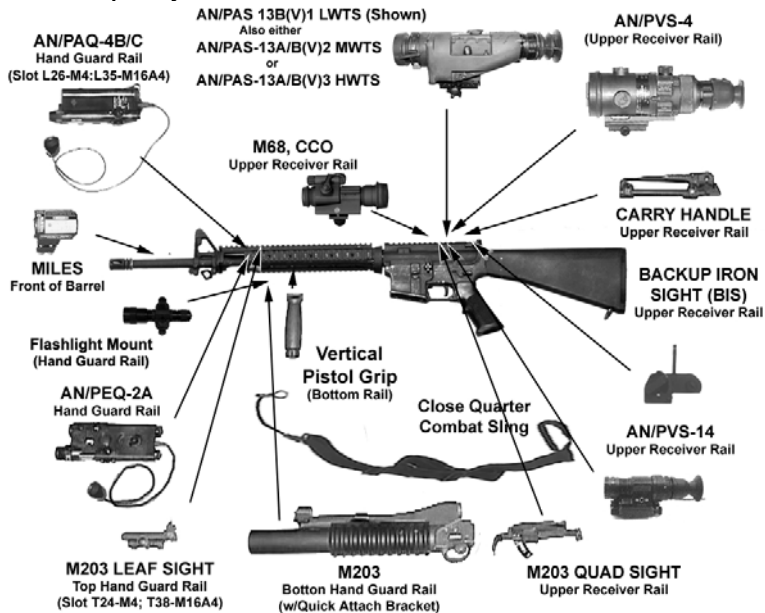


**M4 Adapter Rail System
(Component List)**










Item No	Nomenclature	Part No./NSN
1	Upper Handguard Assy	1005-01-453-4227
2	Lower Handguard	1005-01-453-1633
3	11 Rib Rail Cover Assy	1005-01-453-5386
4	6 Rib Rail Cover Assy	1005-01-453-4222
5	4 Rib Rail Cover Assy	1005-01-453-4223
6	2 Rib Rail Cover Assy	1005-01-453-4228
7	Vertical Pistol Grip	1005-01-453-6655

M16A4 Modular Weapon System

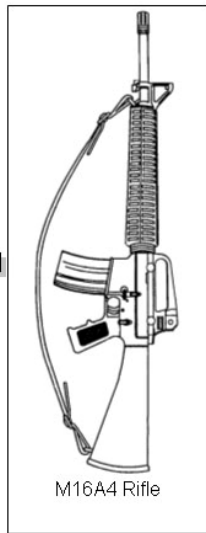
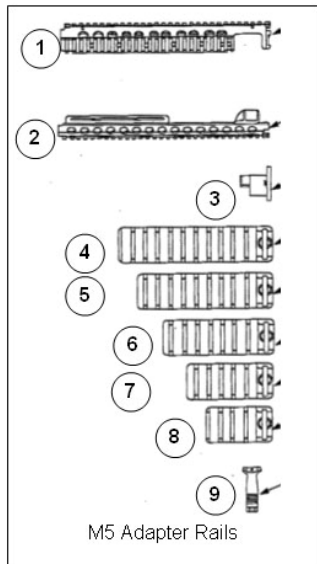
There is no Modular Weapons System Technical Manual.
See Individual System TMs.



M16 MWS Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	2100m	2200m																
 AN/PAQ-4C	Range: 600m																																					
 AN/PAS-13B(V)1, LWTS	Personnel Recognition Range: 550m																																					
 AN/PAS-13AB(V)2, MWTS	Personnel Recognition Range: 1100m																																					
 AN/PAS-13AB(V)3, HWTS	Personnel Recognition Range: 2200m																																					
 AN/PEQ-2A	Range: 600m (Low Power), 2,000m (High Power)																																					
 AN/PVS-4	Range: 450m (Starlight), 900m (1/4 moon)																																					
 AN/PVS-14	Range: 160m (Starlight), 375m (1/4 moon)																																					
 M68	Range: 300m																																					
 M16A2/M16A4	Max Eff Range: Point-550m, Area-800m									M16A2																												
	Max Eff Rng: Pt-550m, Area-600m										M16A4																											

M16 Version Modular Weapon System



**M5 Adapter Rail System
(Component List)**

Item No	Nomenclature	Part No./NSN
1	Upper Handguard Assy	1005-01-453-4225
2	Lower Handguard	1005-01-453-1635
3	Barrel Stop Assy	1005-01-453-4224
4	11 Rib Rail Cover Assy	1005-01-453-5386
5	9 Rib Rail Cover Assy	1005-01-453-5383
6	6 Rib Rail Cover Assy	1005-01-453-4222
7	5 Rib Rail Cover Assy	1005-01-453-4221
8	4 Rib Rail Cover Assy	1005-01-453-4223
9	Vertical Pistol Grip	1005-01-453-6655

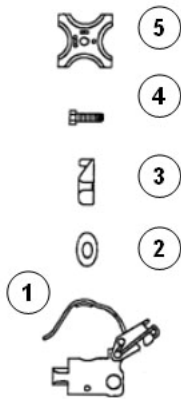
M203 Components-Modular Weapon System



M16A4 Modular Weapon with M203 Installed

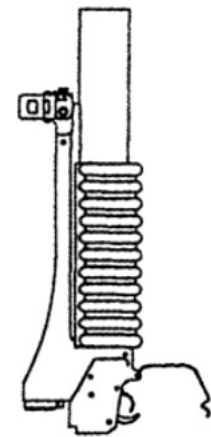
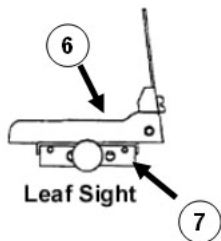


M4 Modular Weapon with M203 Installed



**Quick Attach
Bracket**

Drawing not to scale

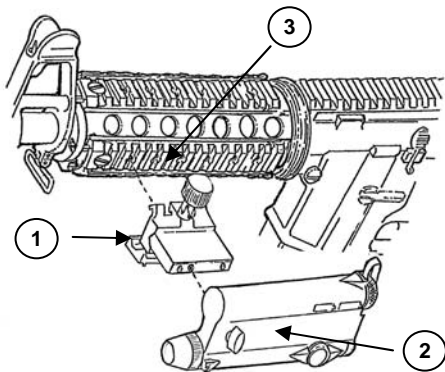


**M203 with QAB
Installed**

**M203, MWS Grenade Launcher
(Component List)**

Item No	Nomenclature	Part No./NSN
1	Assembly, Left Bracket	1005-01-452-8630
2	Washer, Spring	1005-01-452-9635
3	Base, Right Half	1005-01-453-1634
4	Screw, Cap Socket Head	5305-01-452-9639
5	Shim, Plate	5365-01-453-9287
6	Assembly, Leaf Sight	1005-01-453-5384
7	Assembly, Rail Grabber	19200 12598130

M4/M16A4 MWS—AN/PAQ-4C USING MOUNTING BRACKET/PICATINNY RAIL GRABBER



M4 MWS – AN/PAQ-4C Mounting Instructions

The AN/PAQ-4C may be mounted on the left, top or right side rails using the Mounting Bracket/Picatinny Rail Grabber (NSN 5340-01-458-0473) depicted in the diagram at left.

WARNING

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

1. Attach the Mounting Bracket/Picatinny Rail Grabber(1) to the AN/PAQ-4C (2) using the thumbscrew on the AN/PAQ-4C.
2. Loosen the clamping knob until the rail grabber/mount has sufficient space to fit over the left side rail (3). Tighten the clamping knob until two clicks are heard.
3. Install the remote switch in a convenient location using the provided cable hangers.

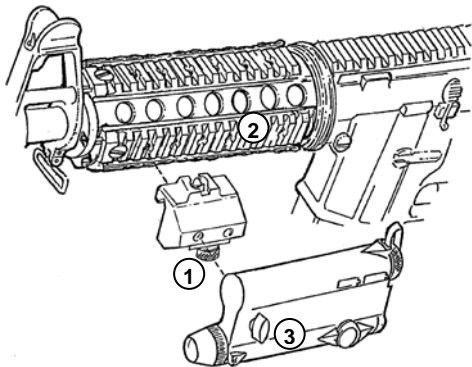
Note: The device may be placed on the top, left, or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at

which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets: (Zeroed to 300m)
 - Left Side Rail Mounting: 6.5 Squares Right, 8.0 Squares Up
 - Top Rail: 1.7 Squares Right, 0.7 Squares Down
 - Right Side Rail Mounting: 5.9 Squares Left, 3.5 Squares Up
- ⊙ 10m Boresight Offsets: (Zeroed to 300m)
 - Left Side Rail Mounting: 6.0 cm Left, 4.3 cm Down
 - Top: 1.8 cm Left, 3.9 cm Up
 - Right Side Rail Mounting: 6.0 cm Right, 0.9 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS—AN/PAQ-4C USING “INSIGHT” LOW PROFILE RAIL GRABBER



The Aiming Light is mounted on the front left-hand rail using the Insight rail grabber bracket (NSN 5340-01-458-0990) when it is desired to keep the Aiming Light as close as possible to the barrel.

WARNING

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

1. For ease of installation install the grabber on the rail first, then mount the device on the grabber.
2. Loosen the clamping knob (1) until the rail grabber has sufficient space to fit over the left side rail (2). Hand Tighten the clamping knob (1).
3. Turn the ON/OFF Switch CCW to the #1 OFF/STORAGE position.
4. Position the Aiming Light on the bracket mounting rail. Hand tighten the Thumbscrew (3) to secure the Aiming Light.

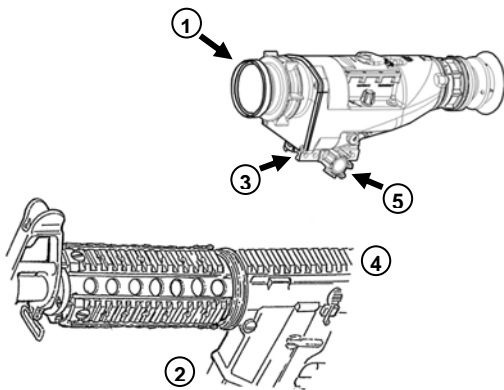
5. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

Note: The device may be placed on the top, left, or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows

- ⊙ 25m Fired Zero Offsets:
 - Left Side Rail Mounting: 4.2 Squares Right; 8.6 Squares Up
 - Top Rail Mounting: 1.7 Squares Right; 1.8 Squares Up
 - Right Side Rail Mounting: 4.3 Squares Left; 3.4 Squares Up
- ⊙ 10m Boresight Offsets:
 - Left Side Rail Mounting: 4.3 cm Left; 4.2cm Down
 - Top Rail Mounting: 1.8 cm Left; 2.2 cm Up
 - Right Side Rail Mounting: 4.3 cm Right; .7 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS—AN/PAS-13(V)1, 2 & 3 L/M/HWTS



MWS – AN/PAS-13(V)1 Mounting Instructions

(See Annex B for Target Prep Instructions)

Install the AN/PAS-13(V)1 on the Modular Weapon System (2) using the sight's rail grabber/mount (NSN 1240-01-490-0737, Part No. A3281312-1) (3).

NOTE

Procedures outlined below pertain to either M4 or M4A1 variants.

NOTE

Although the AN/PAS-13(v)1, LWTS is depicted both the AN/PAS-A/B(V)2 or (V)3 M/HWTS may also be mounted on the

weapon using the same methods described below. In order to mount the AN/PAS-A/B(V)2 or (V)3 M/HWTS the unit armorer must first install a Spacer Kit, M4 (NSN 5340-01-502-7971) to the TWS.

WARNING

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

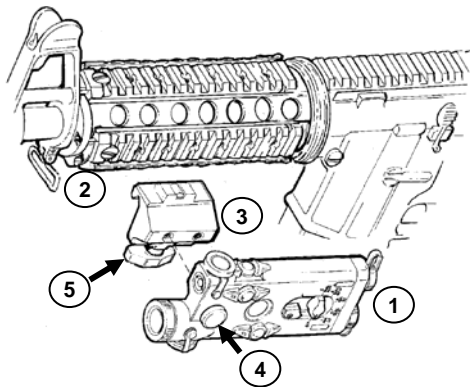
1. Remove carrying handle (not shown) from rail (4) of weapon. Retain carrying handle.

2. Loosen the clamping knob (5) until the jaws move far enough apart to fit over the rail (4).
3. Select a slot on rail. Any slot may be used as long as rail grabber/mount does not hang over edge of rail. If the TWS is removed from the rail the operator must note the position at which the device was zeroed, and return the device to that position in order to retain zero.
4. Place rail grabber/mount on rail and tighten clamping knob (5) until two clicks are heard.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets:
 - AN/PAS-13B(v)1 (LWTS): 0.0 Squares Left/Right; 4.5 Squares Down
 - AN/PAS-13A/B(V)3 (HWTS): 0.0 Squares Left/Right; 6.0 Squares Down
- ③ 10m Boresight Offsets:
 - AN/PAS-13B(v)1 (LWTS): 0.0 cm Left/Right; 7.9 cm Up
 - AN/PAS-13A/B(V)3 (HWTS): 0.0 cm Left/Right; 9.4 cm Up
- See Annex B—SIGHT/ACCESSORY OPERATING INSTRUCTIONS for instructions on preparation of AN/PAS-13 targets.
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS—AN/PEQ-2A USING “INSIGHT” LOW PROFILE RAIL GRABBER



The AN/PEQ-2A (1) is mounted on the front left rail (2) using the Insight Rail Grabber Bracket (ITP-090) (3).

WARNING

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

1. Mount the rail grabber to the AN/PEQ-2A using the thumbscrew (4) as shown.
2. Loosen the clamping knob (5) on the rail grabber until the rail grabber has sufficient space to fit over the left side rail.
3. Position and tighten the Rail Grabber by turning the knob clockwise.

Note: The device may be placed on the top, left, or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

③ 25m Fired Zero Offsets:

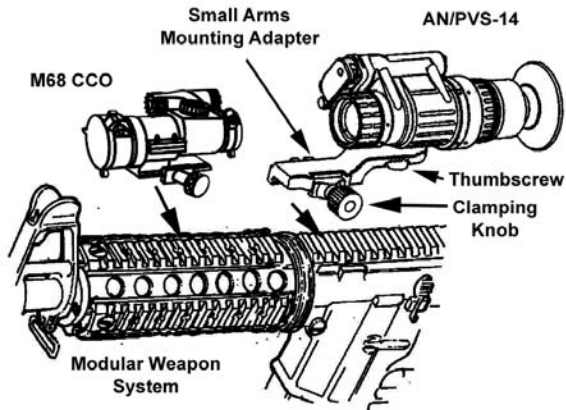
- Left Side Rail Mounting: 5.0 Squared Right; 4.0 Squares Up
- Top Rail Mounting: 2.0 Squares Left; 1.2 Squared Up
- Right Side Rail Mounting: 0.5 Squares Left; 8.5 Squares Up

③ 10m Boresight Offsets:

- Left Side Rail Mounting:
 - Aiming: 4.5 cm Left; 1.0 cm Down
 - Flood: 4.5 cm Left; 5.0 cm Down
- Top Rail Mounting:
 - Aiming: 2.0 cm Right; 2.3 cm Up
 - Flood: 2.0 cm Left; 2.3 cm Up
- Right Side Rail Mounting:
 - Aiming: 4.5 cm Right; 4.4 cm Down
 - Flood: 4.5 cm Right; 0.4 cm Down

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS—AN/PVS-14



Procedures may be found located in TM 11-5855-306-10.

1. Loosen knobs on carrying handle (not shown) and remove from the weapon. (Retain carrying handle for later use.)
2. Be sure the alignment boss on the adapter lines up with the groove in the AN/PVS-14. Tighten the thumbscrew to secure the AN/PVS-14 to the small arms mounting adapter.
3. Loosen the clamping knob on the Small Arms mounting adapter. Position the AN/PVS-14 and mounting adapter on the weapon's mounting rail. Tighten by turning the clamping knob until two clicks are heard.
4. Adjust the fore/aft position of the AN/PVS-14 as necessary by loosening the clamping knob and repositioning the Small Arms mounting adapter on the weapon's mounting rail.

5. The AN/PVS-14 **should only be mounted** on the weapon if there **is no laser designator**, or night vision device available for target identification & engagement. The system can be used for passive targeting when active IR cannot be used.

NOTE: To use the AN/PVS-14 as an aiming device the M68, CCO, must also be mounted on the weapon. CCO is mounted forward of the AN/PVS-14, on the top hand guard rail.

Target offsets required to properly zero the M68 CCO to the weapon are as follows.

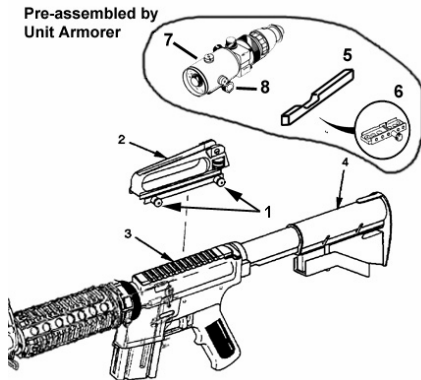
- ⊙ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 1.5 Squares Down
- ⊙ 10m Boresight Offsets: 0.0 cm Left/Right; 5.6 cm Up

NOTE

Since the AN/PVS-14 is not a targeting device there is no offset for the device.

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS—AN/PVS-4



MWS – AN/PVS-4 Mounting Instructions

To mount the AN/PVS-4 to the MWS the unit Armorer must install a spacer (NSN 5365-01-447-8991) and a rail grabber/mount (NSN 5340-01-449-8533).

1. Loosen two knobs (1) on carrying handle (2). Remove carrying handle from upper receiver rail (3). Retain carrying handle.
2. Install spacer (5) on AN/PVS-4 (7) using the two screws provided. Attach rail grabber/mount (6) to the spacer (5) using the two screws provided. (Pre-assembled by Unit Armorer.)
3. Loosen the clamping knob (8) until sufficient space exists to place the clamping jaws on either side of the mounting rail (3). Tighten clamping knob (8) until two clicks are heard.
4. The AN/PVS-4 may be placed on the upper receiver rail in the most convenient slot for the operator, as long as the rail grabber/mount does not extend beyond the rail.

5. If the AN/PVS-4 is removed the operator must take note of the position at which the device was zeroed, and return the device to that same position to insure zero is retained.

NOTE

Item (6) is depicted upside down in order to clearly show the bar which must fit into one of the slots on the rail.

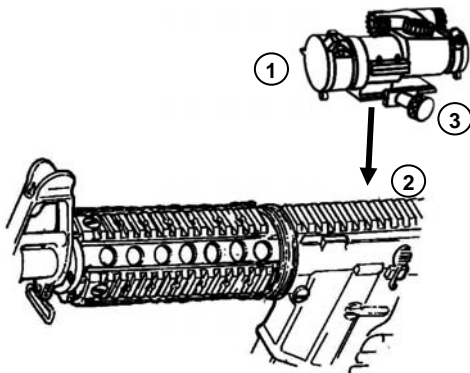
NOTE

The AN/PVS-4 may also be mounted on the M4 handle in the same manner as is used to mount on the handle of the M16A2. Items 5 & 6 will not be required when using this method. Insure that the mounting knob is inserted into the hole in the carrying handle at an angle, due to the smaller gap between the top and bottom of the handle (item 2 above).

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 4.4 Squares Down
- ③ 10m Boresight Offsets: 0.0 cm Left/Right; .7.6 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS—M68



CAUTION

Hand tighten mounting hardware only. Using tools to tighten mounting hardware could damage equipment.

NOTE

The sight assembly mounts directly to the upper receiver rail on top of the M4/M4A1 and M16A4. The mount is not required. Make sure the spacer has been installed before mounting M68 on M4/M4A1 or M16A4.

1. If the same sight (serial number is on battery compartment) is installed in the same position on the rail on the same weapon, re-zeroing is not required.

2. Install sight assembly (1) on the upper receiver rail (2). Sight may be installed in any position on the upper receiver rail. Make sure grabber edges area around mounting rail and torque bar is in slot. To ensure that sight assembly is secure, tighten torque knob (3) until it clicks two times. Hand tighten only.

Target offsets required to properly zero the device to the weapon are as follows
:

◎ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 1.5 Squares Down

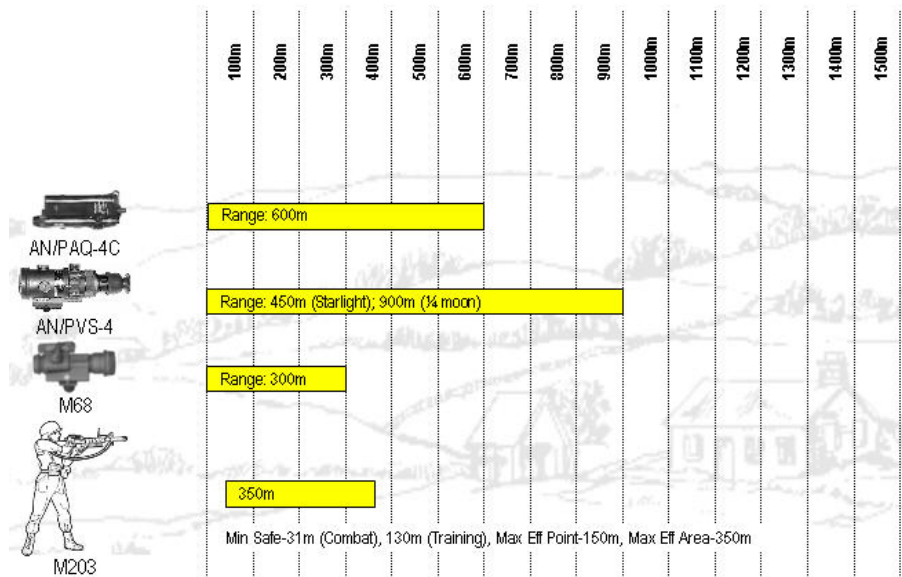
◎ 10m Boresight Offsets: 0.0 cm Left/Right; 5.6 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS M203 GRENADE LAUNCHER



M203 Range Reference Sheet



Mounting—M203 w/Quick Release Bracket to the M4 MWS

PRINCIPLE OF THE FIVE-POSITION SHIM PLATE

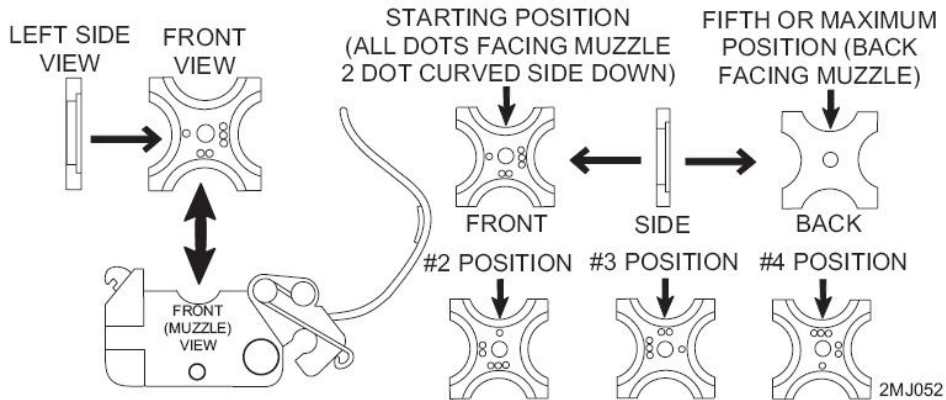
The basic overall length between the barrel nut roll pin at the rear of the M203 receiver, and the starting position shim plate cutout surface at the front, is approximately 11 inches. As noted in step 4, some sliding motion may be detectable between the carbine barrel shoulder and the front of the five-position shim plate at the starting, or minimum, overall length cutout position.

Subsequent re-insertion of the five-position shim plate to its #2, #3, #4, or maximum (fifth) length position (refer to step 1, page 10 of this change) will slightly increase the overall length of the assembly beyond the basic 11 inches, and therefore tend to minimize or eliminate any sliding motion between the barrel shoulder and the five-position shim plate.

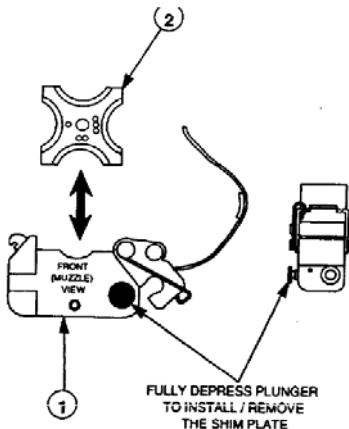
At some point, the unit armorer will note that the shim plate will not fit into the cutout of the carbine barrel shoulder (as indicated as INCORRECT in step 4). At this point, go back to the next lowest position and secure, close, and lock the bracket around the carbine.

The following steps describe checking for sliding motion with the next or #2 notch up, and against the carbine barrel shoulder. If the #2 position does not minimize the sliding motion, repeat the procedure with the #3 notch up and so on. If the fifth or maximum position is desired, note that the “back” or smooth face of the shim plate is oriented towards the muzzle. Do not be concerned if only a small amount of sliding motion is still detectable with the shim plate in its apparently optimum setting, because the latch arm will compensate for this when it is closed and locked.

1. Compare the illustration below with the quick release bracket (1) for the purpose of familiarization with all positions of the five-position shim plate (2):

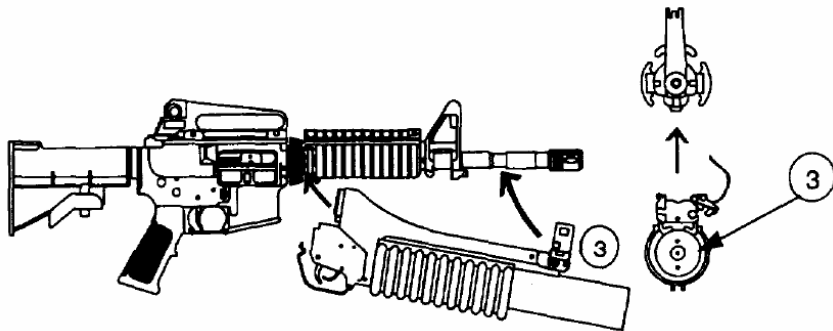


2. Set the five-position shim plate in the bracket to the minimum position as illustrated, with the 2 dots down and facing the muzzle.



3. If present, remove the lower handguard of the M4 adapter rail from the M4 carbine. Move the rear of the M203 receiver into position around the carbine barrel. Confirm that the latch arm (3) of the

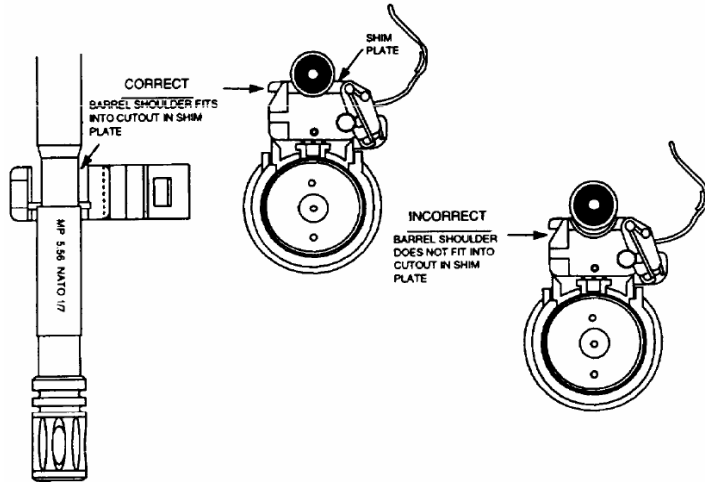
bracket is fully open. Rotate the muzzle end of the M203 towards the carbine barrel while sliding the M203 firmly to the rear. **Confirm that the roll pin in the rear of the M203 receiver engages the carbine barrel nut at the six o'clock position notch.**



4. Firmly hold the M203 in position/back against the barrel nut of the carbine, while also holding the muzzle end of the M203 against the carbine's barrel. Inspect the five-position shim plate, looking from the top of the carbine barrel, and also from the front, as illustrated below. The inner notch of the shim plate should rest behind the shoulder of the barrel. Now, try to slide the M203 back and forth if possible, and note the distance of any sliding motion. Some motion will be detectable with most carbine barrels **with the shim plate** in its starting position. **If during this step the cutout in the shim plate does not fit behind the barrel shoulder, it is most probably inserted at its maximum thickness (no dots facing the muzzle), or position #2, #3, or #4.**

NOTE

Endurance testing indicated that it may be necessary to switch to another shim plate (2) position after several thousand rounds have been fired. The unit armorer should check for excessive sliding motion each time the shim plate is removed for cleaning/ lubrication and the M203 re-mounted to the carbine.

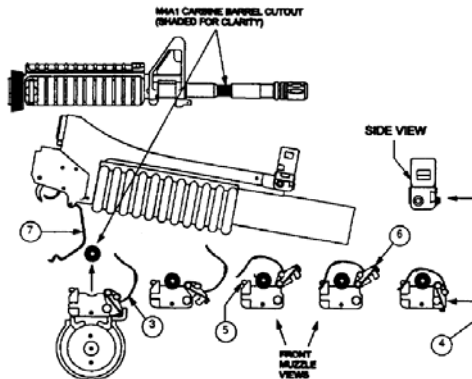


5. Remove the M203 w/quick release bracket from the carbine. Depress the plunger (4) withdraw the shim plate and re-insert it with the #2 position up (refer to step 1, of this section). **Note that the #2 position is indicated by a single dot stamped on its shim plate cutout, and that this side of the shim plate faces the muzzle.**

6. Re-mount the M203 w/quick release bracket to the carbine's barrel nut and barrel shoulder. Without unlatching the bracket, ensure the cutout in the shim plate's #2 position fits behind the carbine's barrel shoulder, and attempt to slide the M203 from front to rear.

7. If forward and back motion is detected, repeat step 6 with the #3 notch against the carbine barrel. If the assembly is now too long (it will not engage behind the barrel shoulder, but rides up onto the barrel's major diameter), go back to the last position tried with the shim plate, and complete the M203 attachment. When the optimum position of the shim plate is established:

- a. Rotate the latch arm (3) over the carbine barrel.
- b. Catch the hook (5) in the hole of the latch arm.
- c. Rotate the latch lever (6) down.



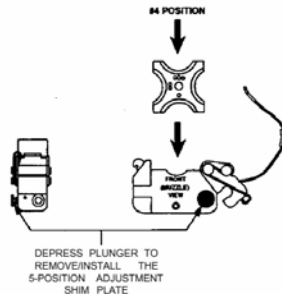
- d. Depress the plunger (4).
- e. Squeeze the latch lever fully closed (which allows the plunger to be released and snap forward). This will hold the latch lever in the fully closed/locked position.

NOTE

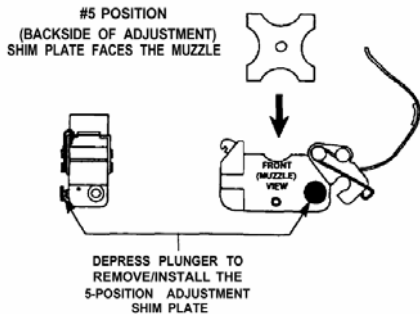
In its final motion, the latch lever may require very firm pressure against the bracket to allow the plunger to snap back into place, locking the latch lever closed. In some instances, finger pressure alone against the latch lever will not be sufficient to fully close it. When this occurs, use the side of the bayonet stud for extra leverage against the latch lever.

- (f) Rotate the M203 trigger guard (7) to engage the lip of the magazine well.

8. If forward and back motion is detected with the shim plate **set to its #3 notch**, remove the M203 from the carbine. Remove and re-insert the shim plated with its #4 position up. **Note that the #4 position is indicated by three dots stamped adjacent to its shim plate cutout, and that this side of the shim plate faces the muzzle.**



9. If the #5 or maximum position is required, insert the shim plate as illustrated below



CAUTION

When detaching the M203 for cleaning, inspection, or lubrication, check and note the position of the shim plate for ease of re-attachment.

Mounting—M203 w/Quick Release Bracket to the M16A4 MWS

PRINCIPLE OF THE FIVE-POSITION SHIM PLATE

The basic overall length between the barrel nut roll pin at the rear of the M203 receiver, and the starting position shim plate cutout surface at the front, is approximately 11 inches. As noted in step 4, some sliding motion may be detectable between the rifle barrel stop and the front of the five-position shim plate at the starting, or minimum, overall length cutout position.

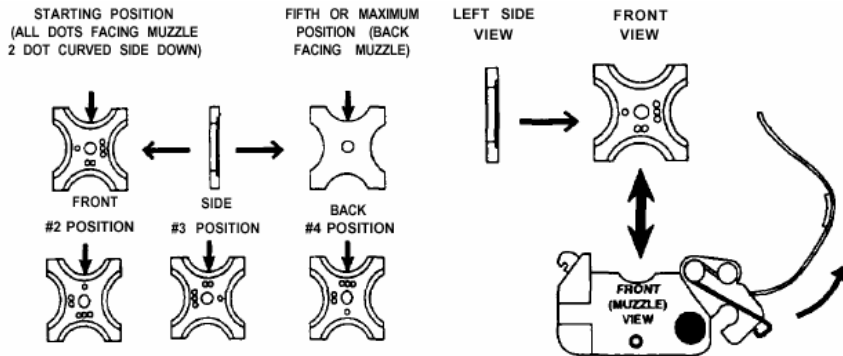
Subsequent re-insertion of the five-position shim plate to its #2, #3, #4, or maximum (fifth) length position will slightly increase the overall length of the assembly beyond the basic 11 inches, and therefore tend to minimize or eliminate any sliding motion between the barrel stop and the five-position shim plate.

The following steps describe checking for sliding motion with the next or #2 notch up, and against the rifle barrel stop. If the #2 position does not minimize the sliding motion, repeat the procedure with the #3 notch up and so on. If the fifth or maximum position is desired, note that the “back” or smooth face of the shim plate is oriented towards the muzzle. Do not be concerned if only a small amount of sliding motion is still detectable with the shim plate in its apparently optimum setting, because the latch arm will compensate for this when it is closed and locked.

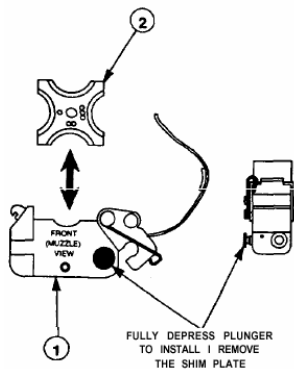
NOTE

Endurance testing indicated that it may be necessary to switch to another shim plate position after several thousand rounds have been fired. The unit armorer should check for excessive sliding motion each time the shim plate is removed for cleaning/lubrication and the M203 re-mounted to the carbine.

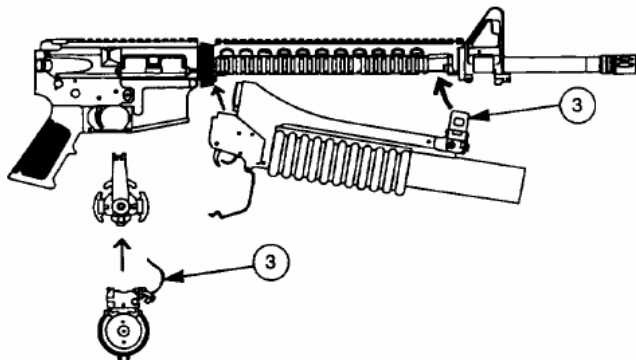
1. Compare the illustration below with the quick release bracket (1) for the purpose of familiarization with all positions of the five-position shim plate (2):



2. Set the five-position shim plate in the bracket to the minimum position as illustrated, with the 2 dots down and facing the muzzle.



3. If present, remove the lower handguard of the M5 adapter rail from the M16A4 rifle. Move the rear of the M203 receiver into position around the rifle barrel. Confirm that the latch arm (3) of the bracket is fully open. Rotate the muzzle end of the M203 towards the rifle barrel while sliding the M203 firmly to the rear. **Confirm that the roll pin in the rear of the M203 receiver engages the rifle barrel nut at the six o'clock position notch.**



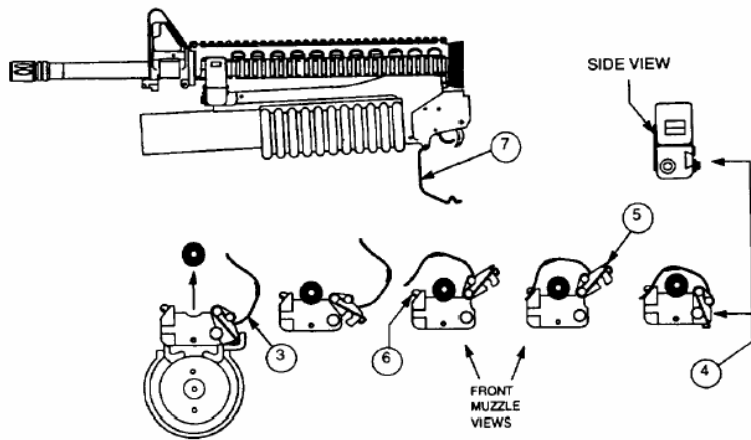
4. Firmly hold the M203 in position/back against the barrel nut of the rifle, while also holding the muzzle end of the M203 against the rifle's barrel stop. Now, try to slide the M203 back and forth if possible, and note the distance of any sliding motion. Some motion may be detectable with the shim plate in its starting position.

5. Remove the M203 w/quick release bracket from the rifle. Depress the plunger (4) withdraw the shim plate and re-insert it with the #2 position up. **Note that the #2 position is indicated by a single dot stamped on its shim plate cutout, and that this side of the shim plate faces the muzzle.**

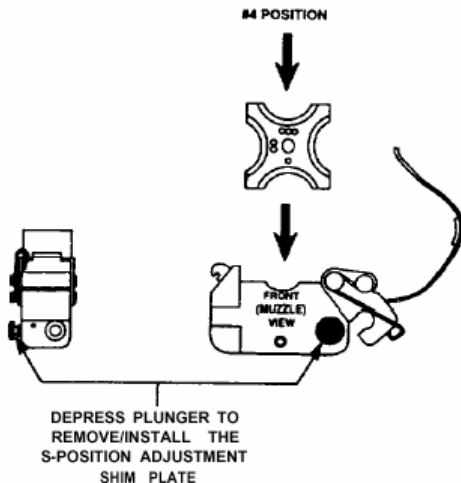
6. Re-mount the M203 w/quick release bracket to the rifle's barrel nut and barrel stop. Attempt to slide the M203 from front to rear.

7. If forward and back motion is detected, repeat step 6 with the #3 notch against the rifle barrel. If the assembly is now too long (it will not engage behind the barrel stop), go back to the last position tried with the shim plate, and complete the M203 attachment process as described next. When the optimum position of the shim plate is established:

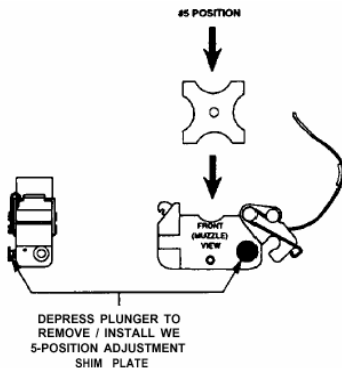
- a. Carefully work the latch arm (3) between the rifle barrel and the gas tube.
- b. Hold the retaining spring away from the plunger (4) and depress the plunger to unlock the latch lever (5).
- c. Catch the hook (6) in the hole of the latch arm.
- d. Rotate the latch lever (5) down.
- e. Depress the plunger (4). Make sure the retaining spring does not engage the plunger during this step.
- f. Squeeze the latch lever fully closed (which allows the plunger to be released and snap forward). This will hold the latch lever in the fully closed/locked position. In its final motion, the latch lever may require very firm pressure against the bracket to allow the plunger to snap back into place, locking the latch lever closed. In some instances, finger pressure alone against the latch lever will not be sufficient to fully close it. When this occurs, use the side of the bayonet stud for extra leverage against the latch lever.
- g. Rotate the M203 trigger guard (7) to engage the lip of the magazine well.



8. If forward and back motion is detected with the shim plate set to its #3 notch, remove the M203 from the rifle. Remove and re-insert the shim plate with its #4 position up. **Note that the #4 position is indicated by three dots stamped adjacent to its shim plate cutout, and that this side of the shim plate faces the muzzle.**



9. If the #5 maximum position is required, insert the shim plate as illustrated below.



CAUTION

When detaching the M203 for cleaning, inspection, or lubrication, check and note the position of the shim plate for ease of re-attachment.

M4/M16A4 MWS M203 —AN/PAQ-4C Utilizing Mounting Bracket/Picatinny Rail Grabber



MWS/M203 – AN/PAQ-4C Mounting Instructions

The AN/PAQ-4C may be mounted on the left, top or right side rails using the Mounting Bracket/Picatinny Rail Grabber (NSN 5340-01-458-0473) depicted in the diagram at left.

1. Attach the Mounting Bracket/Picatinny Rail Grabber to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.

NOTE

Knob on the rail grabber/mount should be pointing up when installation is complete.

2. Loosen the clamping knob (3) until the rail grabber/mount has sufficient space to fit over the left side rail (2). Tighten the clamping knob until two clicks are heard.
3. The AN/PAQ-4C may be placed at whichever position on the left side rail is most convenient for the operator. If however the AN/PAQ-4C is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

4. Install the remote switch (4) in a convenient location using the provided cable hangers.

NOTE

M203 Leaf Sight removed to provide a clearer picture of the installation of the AN/PAQ-4C

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets: (Zeroed to 300m)
 - Left Side Rail Mounting: 4.9 Squares Right, 6.1 Squares Up
 - Top Rail: 1.7 Squares Right, 0.5 Squares Down
 - Right Side Rail Mounting: 5.9 Squares Left, 3.5 Squares Up
 - ⊙ 10m Boresight Offsets: (Zeroed to 300m)
 - Left Side Rail Mounting: 6.0 cm Left, 4.0 cm Down
 - Top: 1.8 cm Left, 4.6 cm Up
 - Right Side Rail Mounting: 6.0 cm Right, 0.0 cm Up/Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

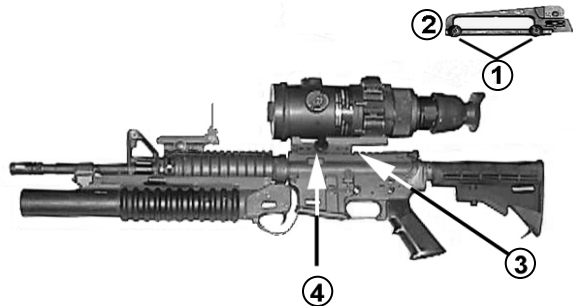
M4 MWS M203 —AN/PAQ-4C Using “Insight” Low Profile Rail Grabber

The “Insight” Low Profile Rail Grabber (NSN 5340-01-458-0990, ITP-090) equipped AN/PAQ-4C is mounted to the M4 MWS M203 Grenade Launcher in the same manner as the Mounting Bracket/Picatinny Rail Grabber equipped AN/PAQ-4C is mounted. Please see instructions in the previous section.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets:
 - Left Side Rail Mounting: 4.2 Squares Right; 8.5 Squares Up
 - Top Rail Mounting: 1.7 Squares Right; 1.7 Squares Up
 - Right Side Rail Mounting: 4.3 Squares Left; 3.3 Squares Up
- ◎ 10m Boresight Offsets:
 - Left Side Rail Mounting: 4.3 cm Left; 3.5 cm Down
 - Top Rail Mounting: 1.8 cm Left; 2.9 cm Up
 - Right Side Rail Mounting: 4.4 cm Right; 0.0 cm Up/Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M16A4 MWS/M203—AN/PVS-4



MWS – AN/PVS-4 Mounting Instructions

In order to properly mount the AN/PVS-4 to the MWS the unit Armorer must first install a spacer (NSN 5365-01-447-8991) and a rail grabber/mount (NSN 5340-01-449-8533) on the AN/PVS-4.

1. Loosen two knobs (1) on carrying handle (2). Remove carrying handle from upper receiver

rail (3). Retain carrying handle.

2. Loosen the clamping knob (4) until sufficient space exists to place the clamping jaws on either side of the upper receiver rail (3). Tighten torque-limiting knob (4) until two clicking sounds are heard.

3. The AN/PVS-4 may be placed at whichever rail-cross slot on the upper receiver rail is most convenient for the operator, as long as the rail grabber/mount does not extend beyond the rail.

NOTE

If the AN/PVS-4 is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

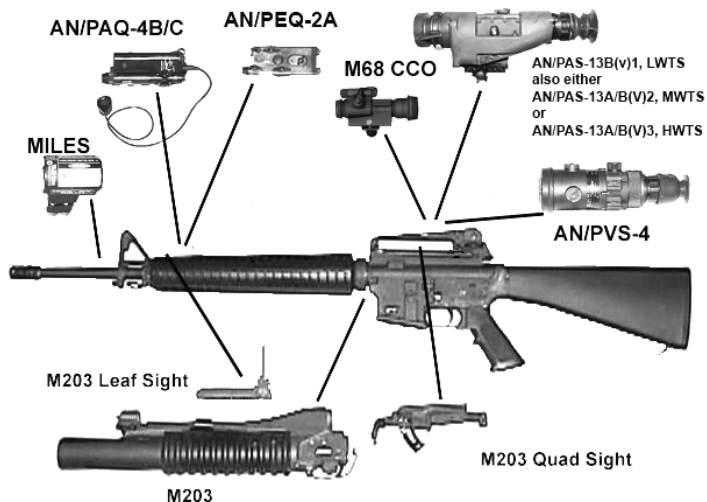
Target offsets required to properly zero the device to the weapon are as follows:

◎ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 3.4 Squares Down

◎ 10m Boresight Offsets: 0.0 cm Left/Right; 9.6 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16A2 RIFLE










M16A1 -- TM 9-1005-249-10

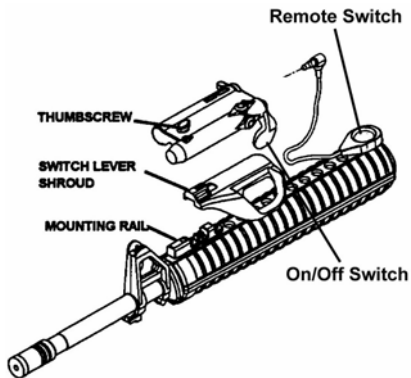
M16A2 -- TM 9-1005-319-10

NOTE: 10m Boresight Target Offset for the M16A2 Iron Sight is: 0.0 cm Left/Right; 4.2 cm Up

M16 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	
 AN/PAQ-4C	Range: 600m																				
 AN/PAS-13B(V)1, LWTS	Personnel Recognition Range: 550m																				
 AN/PAS-13A/B(V)2, MWTS	Personnel Recognition Range: 1100m																				
 AN/PEQ-2A	Range: 600m (Low Power); 2,000m (High Power)																				
 AN/PVS-4	Range: 450m (Starlight); 900m (1/4 moon)																				
 M68	Range: 300m																				
 M16A2/M16A4	Max Eff Range: Point-550m, Area-800m									M16A2											
	Max Eff Rng: Pt-550m, Area-600m						M16A4														

M16A2—AN/PAQ-4C



M16A2 – AN/PAQ-4C Mounting Instructions

The AN/PAQ-4C is mounted to the M16A2 using the M4/M16A2 Bracket Assembly, Part No. A3186958, NSN 5340-01-390-3812. Only a Small Arms Repairman MOS 45B may install the Bracket Assembly (comprising the bracket and bracket caps, hidden under hand guards, and the mounting rail).

1. Install mounting rail through top hand guard to barrel mounting bracket. (Note: Unit armorer installs mounting bracket.)
2. Place the switch lever shroud over the mounting rail.
3. Secure the AN/PAQ-4C to the rail with the thumbscrew.
4. Attach the remote switch, at a comfortable location, using the provided cable hangers

NOTE

When mounting the AN/PAQ-4C in conjunction with a MILES device a Training Extender (Part No. A3267739) must be attached to the mounting rail before attaching the AN/PAQ-4C. This allows the laser beam to clear the MILES device.

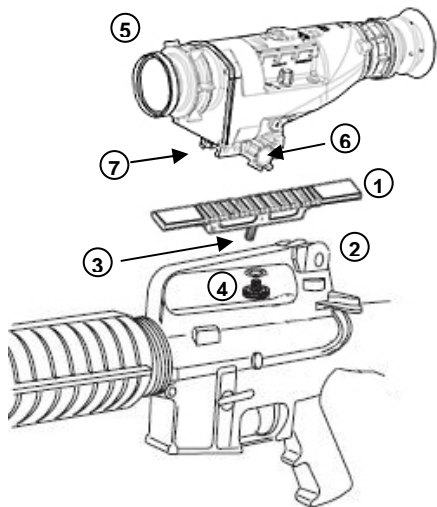
NOTE:

If the M16A2 is equipped with the M5 Adapter Rail System the AN/PAQ-4C may be mounted on the left, top, or right rails and zeroed in the same manner as is used for the M16A4 when equipped with the M5 Adapter Rail System. See pages 60 – 63.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 1.5 Squares Right, 0.5 Squares Up
- ◎ 10m Boresight Offsets: 1.9 cm Left; 2.5 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16A2—AN/PAS-13



through hole of weapon handle (2).

M16A2 – AN/PAS-13 Mounting Instructions (See Annex B for Target Prep Instructions)

The AN/PAS-13B(V)1 LWTS (depicted at left) and AN/PAS-13A/B(V)2 & 3 are mounted to the M16A2 using the M16A1/A2 Bracket Assembly (1) (NSN 5340-01-398-0086, Part No. A3170580) IAW TM 11-5855-302-12&P and TM 11-5855-312-10.

NOTE

For the M16A2 rifle, ensure rear sight is lowered (elevation knob turned fully counter-clockwise).

NOTE

In order to mount the AN/PAS-A/B(V)2 or (V)3 M/HWTS the unit armorer must first install a Spacer Kit, M4 (NSN 5340-01-502-7971) to the TWS.

1. Install M16A2 bracket (1) on weapon handle (2).
 - a. Place threaded rod (3) of bracket (1)

- b. Install thumbwheel (4) on threaded rod (3) and hand tighten.
 2. Install TWS (5) on bracket rail (1).
 - a. Loosen knob (6) until rail grabber/mount (7) jaws are wide enough to fit around the bracket rail (1)
 - b. Select slot on bracket rail (1) for mounting. Any slot may be used as long as the rail grabber/mount (7) does not hang over edge of rail.
 3. Hand tighten knob (6) on the rail grabber/mount (7) until two clicks are heard.

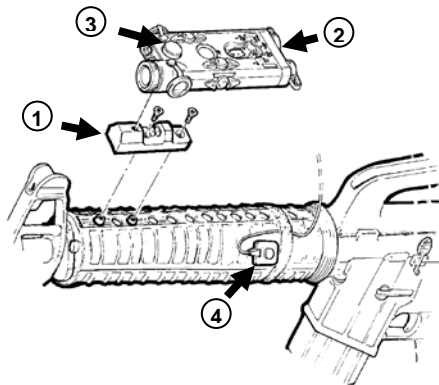
Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets:
 - AN/PAS-13B(v)1 (LWTS): 0.0 Squares Left/Right; 10.0 Squares Down
 - AN/PAS-13A/B(V)3 (HWTS): 0.0 Squares Left/Right; 8.1 Squares Down
- ⊙ 10m Boresight Offsets:
 - AN/PAS-13B(v)1 (LWTS): 0.0 cm Left/Right; 13.4 cm Up
 - AN/PAS-13A/B(V)3 (HWTS): 0.0 cm Left/Right; 11.0 cm Up
- See Annex B—SIGHT/ACCESSORY OPERATING INSTRUCTIONS for instructions on preparing AN/PAS-13 targets.
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16A2—AN/PEQ-2A

M16A2 – AN/PEQ-2A Mounting Instructions

The AN/PEQ-2A is mounted to the M16A2 using the M4/M16A2 Bracket Assembly, Part No. A3186958, NSN 5340-01-390-38112. The Bracket Assembly (comprising the bracket and bracket caps, hidden under hand guards, and the mounting rail) may only be installed by a Small Arms Repairman MOS 45B.



1. Install mounting rail (1) through top hand guard to barrel mounting bracket. (Note: Unit armorer installs mounting bracket.)
2. Secure the AN/PEQ-2A (2) to the rail with the thumbscrew (3). (Hand Tight)
3. Attach the remote switch (4), at a

comfortable location, using the provided cable hangers

NOTE

When mounting the AN/PEQ-2A in conjunction with a MILES device a Training Extender (Part No. A3267739) must be attached to the mounting rail before attaching the AN/PEQ-2A. This allows the laser beams to clear the MILES device.

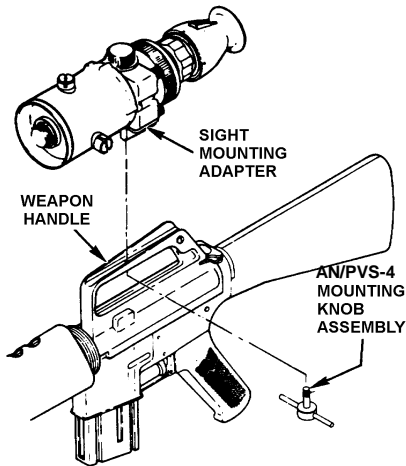
NOTE:

If the M16A2 is equipped with the M5 Adapter Rail System the AN/PEQ-2A may be mounted on the left, top, or right rails and zeroed in the same manner as is used for the M16A4 when equipped with the M5 Adapter Rail System. See pages 66 – 67.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 1.5 Squares Left; 0.5 Squares Up
- ◎ 10m Boresight Offsets:
 - Aiming Light: 1.8 cm Right; 2.4 cm Up
 - Flood Light: 2.2 cm Left; 2.4 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16A2—AN/PVS-4



M16A2 – AN/PVS-4 Mounting Instructions

The AN/PVS-4 is mounted to the M16A2 using Mounting Knob Assembly (NSN 5355-01-039-2834) per instructions contained in TM 11-5855-213-10.

1. Position the sight in the groove on top of the carrying handle and align the threaded hole in the base of the sight-mounting adapter over the hole in the handle.
2. Insert the mounting knob assembly in the hole in the handle and turn firmly clockwise into sight mounting adapter.
3. If difficulty is encountered, turn the sight and the rifle upside down. Place the rifle handle onto the sight-mounting adapter, lining up the hole in the handle onto the sight-mounting adapter. Place the mounting knob assembly through the hole in the handle and rotate clockwise.

NOTE

Continually check tightness of mounting knob during weapon firing.

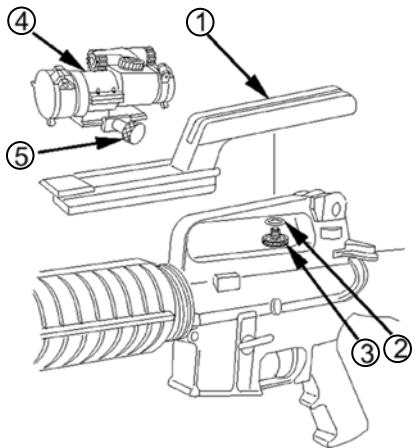
NOTE

Insure that you use the correct Mounting Knob Assembly for the M16, not the M60 Knob, which looks very similar.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 7.0 Squares Down
- ③ 10m Boresight Offsets: 0.0 cm Left/Right; 9.4 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16A2—M68 CLOSE COMBAT OPTIC



M16A2 – M68, CCO Mounting Instructions

The CCO is mounted to the M16 using sight mount (Components 1,2 and 3) (NSN 1240-01-410-7427) as outlined in TM 9-1240-413-12&P.

1. The Close Combat Optic is attached to the M16A2 by using the "Gooseneck" rail (1) depicted to the left.
2. Attach the gooseneck mounting bracket to the weapon's carrying handle using O-Ring (2) and mounting bolt (3).
3. Place the CCO (4) atop the mounting bracket.
4. Using the thumbscrew (5) on the CCO rail grabber/mount attach the CCO to the mounting bracket. Tighten thumbscrew until it snaps two times.

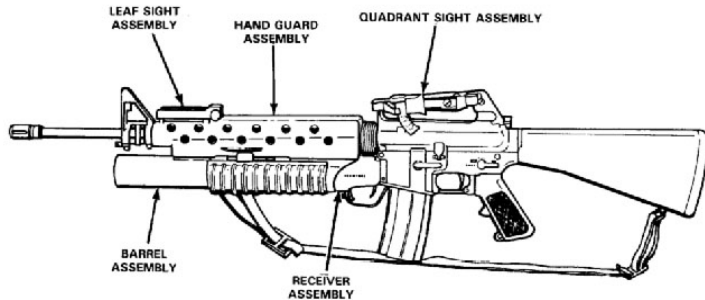
NOTE

The half-moon shaped spacer should not be installed when mounting the CCO to the M16A2.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets: Not Applicable
 - ③ 10m Boresight Offsets: 0.0 cm Left/Right; 5.2 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16/M203 GRENADE LAUNCHER

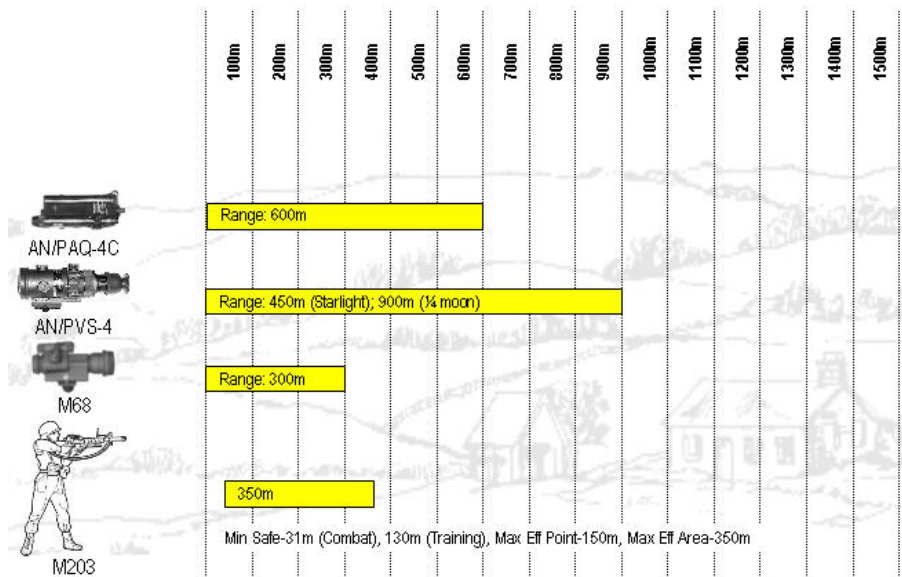


M16A2 Grenade Launcher Mounting Instructions

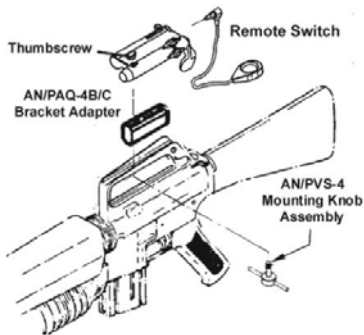
The M203 Grenade Launcher must be mounted to the M16A2 by Direct Support Maintenance IAW
TM 9-1010-221-23&P

Individual soldiers should not attempt to either mount or dismount the grenade launcher to the weapon.

M203 Range Reference Sheet



M16/M203—AN/PAQ-4C Mounting Instructions and Target Offsets



M203 – AN/PAQ-4C Mounting Instructions

Mounting of the AN/PAQ-4C to the M203 is accomplished by using the Mounting Knob Assembly from the AN/PVS-4 Sight (NSN 5355-01-039-2834) and the Bracket Adapter (plastic) from the AN/PAQ-4C (NSN 5340-01-362-9873).

1. Attach the AN/PAQ-4C Bracket Adapter to the M16A2 carrying handle of the M203 using the AN/PVS-4 Mounting Knob Assembly.
2. Secure the AN/PAQ-4C to the Bracket Adapter, using the thumbscrew on the AN/PAQ-4C.
3. Attach the remote switch to the AN/PAQ-4C and locate the switch at a convenient location.

Note

The laser designator and quadrant sights **cannot** be mounted at the same time.

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets: 1.9 Squares Right; 2.6 Squares Down
- ⊙ 10m Boresight Offsets: 1.9 cm Left; 8.6 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M16/M203—AN/PVS-4 Mounting Instructions and Target Offsets

M203 – AN/PVS-4 Mounting Instructions

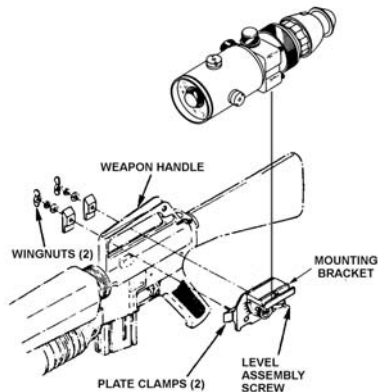
The AN/PVS-4 is mounted to the M203 using Mounting Bracket Assembly (NSN 5855-01-039-2835) IAW TM 11-5855-213-10.

NOTE

Wingnuts, flat washers and clamp plate cannot be removed.

1. Remove the grenade launcher quad sight, if installed (Refer to TM 9-1005-249-10).
2. Position the mounting bracket assembly on the left side of the rifle so that the two clamp plates project through the opening under the handle; wingnuts should be fully loosened.
3. Turn the clamp plates so that the pointed ends are in the up position and seated against the handle.

4. Tighten the wingnuts clockwise until the mounting bracket is secured firmly to the weapon.
5. Position the sight in the groove on top of the bracket and align the threaded hole in the base of the sight mounting adapter with the lever screw assembly. Tighten the screw firmly clockwise to secure the sight to the bracket.

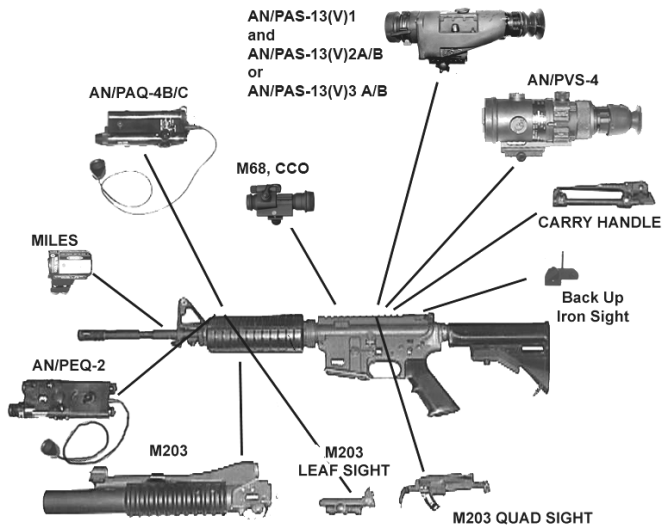


6. Set the bracket range to coincide with the target distance.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 4.2 Squares Right; 9.8 Squares Down
 - ◎ 10m Boresight Offsets: TBD
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.








M4/M4A1 CARBINE



M4/M4A1 -- TM 9-1005-319-10

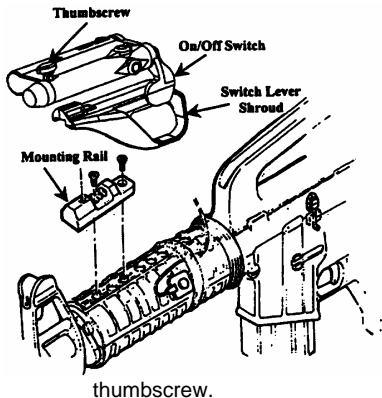
NOTE: 10m Boresight Target Offset for the M4s Back Up Iron Sight is: 0.0 cm Left/Right; 4.0 cm Up

M4/M4A1 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	
 AN/PAQ-4C	Range: 600m																				
 AN/PAS-13B(V)1, LWTS	Personnel Recognition Range: 550m																				
 AN/PAS-13A/B(V)2, MWTS	Personnel Recognition Range: 1100m																				
 AN/PEQ-2A	Range: 600m (Low Power), 2,000m (High Power)																				
 AN/PVS-4	Range: 450m (Starlight), 900m (1/4 moon)																				
 M68	Range: 300m																				
 M4/M4A1	Max Eff Rng: Pt-500m, Area-600m																				

M4/M4A1—AN/PAQ-4C MOUNTING INSTRUCTIONS AND TARGET OFFSETS

M4/M4A1 – AN/PAQ-4C Mounting Instructions



The AN/PAQ-4C is mounted to the M4 using the M4/M16A2 Bracket Assembly, Part No. A3186958, NSN 5340-01-390-3812. The Bracket Assembly (comprising the bracket and bracket caps, hidden under hand guards, and the mounting rail) may only be installed by a Small Arms Repairman MOS 45B.

1. Install mounting rail through top hand guard to barrel clamp. (Unit Armorer Installed.)
2. Place the switch lever shroud over the mounting rail.
3. Secure the AN/PAQ-4C to the rail with the thumbscrew.
4. Attach the remote switch, at a comfortable location, using the provided cable hangers

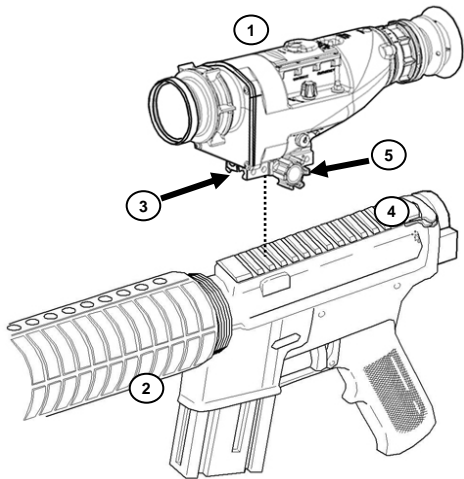
NOTE

When mounting the AN/PAQ-4C in conjunction with a MILES device a Training Extender (Part No. A3267739) must be attached to the mounting rail before attaching the AN/PAQ-4C. This allows the laser beams to clear the MILES device

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 1.5 Squares Right; 2.5 Squares Up
 - ◎ 10m Boresight Offsets: 1.9 cm Left; 2.5 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M4A1—AN/PAS-13B(V)1 (LWTS)



M4/M4A1 – AN/PAS-13, TWS Mounting Instructions

(See Annex B for Target Prep Instructions)

Install the AN/PAS-13(V)1, Light variant, on the M4 Carbine (2) using the sight's rail grabber/mount (NSN 1240-01-490-0737, Part No. A3281312-1) (3).

NOTE

Procedures outlined below pertain to either M4 or M4A1 variants.

NOTE

The AN/PAS-13A/B(V)2/3 M/HWTS will also both mount to the M4 Carbine. In order to mount the AN/PAS-A/B(V)2 or (V)3 M/HWTS the unit armorer must first install a Spacer Kit, M4 (NSN 5340-01-502-7971) to the TWS.

1. Remove carrying handle (not shown) from rail (4) of weapon. Retain carrying handle.
2. Loosen the clamping knob (5) until the jaws move far enough apart to fit over the rail (4).

3. Select a slot on rail. Any slot may be used as long as rail grabber/mount does not hang over edge of rail. If the TWS is removed from the rail the operator must note the position at which the device was zeroed, and return the device to that position in order to retain zero.
4. Place rail grabber/mount on rail and tighten clamping knob (5) until two clicks are heard.

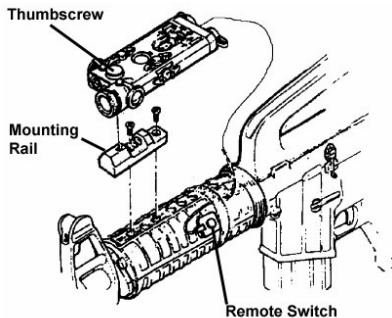
NOTE

Although a M4 Carbine is depicted in the picture mounting procedures are identical for the M4, M16A4, M4 MWS, and M16A4 MWS.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets:
 - AN/PAS-13B(v)1 (LWTS): 0.0 Squares Left/Right; 4.5 Squares Down
 - AN/PAS-13A/B(V)3 (HWTS): 0.0 Squares Left/Right; 6.0 Squares Down
- ③ 10m Boresight Offsets:
 - AN/PAS-13B(v)1 (LWTS): 0.0 cm Left/Right; 7.9 cm Up
 - AN/PAS-13A/B(V)3 (HWTS): 0.0 cm Left/Right; 9.4 cm Up
- See ANNEX B—SIGHT/ACCESSORY OPERATION INSTRUCTIONS for AN/PAS-13 target preparation instructions.
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M4A1—AN/PEQ-2A



AN/PEQ-2 Mounting to M4 with
M4/M16A2 Bracket Assembly

M4/M4A1 – AN/PEQ-2A Mounting Instructions

The AN/PAQ-4C is mounted to the M4 using the M4/M16A2 Bracket Assembly, Part No. A3186958, NSN 5340-01-390-3812. The Bracket Assembly (comprising the bracket and bracket caps, hidden under hand guards, and the mounting rail) may only be installed by the Small Arms Repairman MOS 45B.

1. Install mounting rail through top hand guard to barrel clamp. (Unit Armorer Installed.)
2. Secure the AN/PEQ-2A to the rail with the thumbscrew.
3. Attach the remote switch, at a comfortable location, using the provided cable hangers.

NOTE

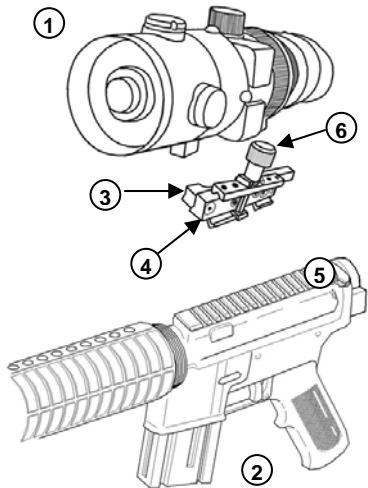
When mounting the AN/PEQ-2A in conjunction with a MILES device a Training Extender (Part No. A3267739) must be attached to the mounting rail before attaching the AN/PEQ-2A. This allows the laser beams to clear the MILES device.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 1.0 Squares Left; 0.3 Squares Up
- ◎ 10m Boresight Offsets:
 - Aiming: 1.8 cm Right; 2.4 cm Up
 - Flood: 2.2 cm Left; 2.4 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M4A1—AN/PVS-4

M4/M4A1 – AN/PVS-4 Mounting Instructions



In order to properly mount the AN/PVS-4 (1) to the M4 Carbine (2) the unit Armorer must first install a spacer (3) (NSN 5365-01-447-8991) and a rail grabber/mount (4) (NSN 5340-01-449-8533) to the AN/PVS-4.

1. Remove carrying handle (not shown) from upper receiver rail (5). Retain carrying handle.
2. Loosen the rail grabber/mount (4) clamping knob (6) until sufficient space exists to place the clamping jaws on either side of the mounting rail (5). Tighten clamping knob (6) until two clicks are heard.
3. The AN/PVS-4 may be placed wherever on the upper receiver rail is most convenient for the operator, as long as the rail grabber/mount does not extend beyond the rail.
4. If the AN/PVS-4 is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

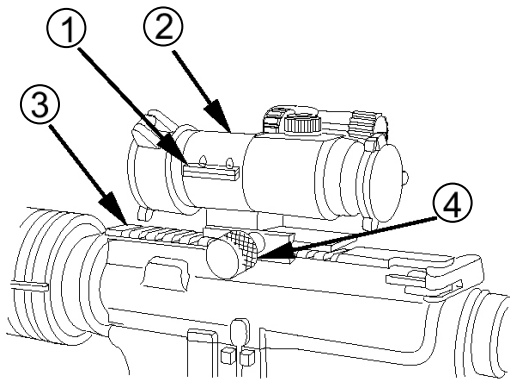
NOTE

The AN/PVS-4 may also be mounted on the M4 handle in the same manner as is used to mount on the handle of the M16A2. Items 3 & 4 will not be required when using this method. Insure that the mounting knob is inserted into the hole in the carrying handle at an angle, due to the smaller gap between the top and bottom of the handle. The AN/PVS-4 may already have a rail grabber/mount installed.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 3.4 Squares Down
- ◎ 10m Boresight Offsets: 0.0 cm Left/Right; 7.6 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M4A1—M68 CCO



exists to fit the jaws on either side of the rail (3).

b. Select slot on rail (3) for mounting. Any slot may be used as long as rail grabber/mount does not hang over edge of rail.

c. Place rail grabber/mount on rail and tighten knob (4) until two clicks are heard.

M4/M4A1 – M68, CCO Mounting Instructions

The sight assembly mounts directly to the accessory mounting rail on top of the M4/M4A1 and M16A4. The mount is not required. Make sure the spacer (1) has been installed before mounting M68 on the M4/M4A1 or M16A4.

1. Loosen two knobs on carrying handle item and remove it from the rail (3) of the M4 Carbine. Retain carrying handle.
2. Install CCO (2) on rail (3).
 - a. Loosen knob (4) on rail grabber/mount (2) until sufficient space

NOTE

When placing the CCO on the M4/M16A4 the unit Armorer must first install the half-moon shaped spacer on the CCO IAW TM 9-1240-413-12&P.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 1.5 Squares Down
- ③ 10m Boresight Offsets: 0.0 cm Left/Right; 5.6 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M203 GRENADE LAUNCHER

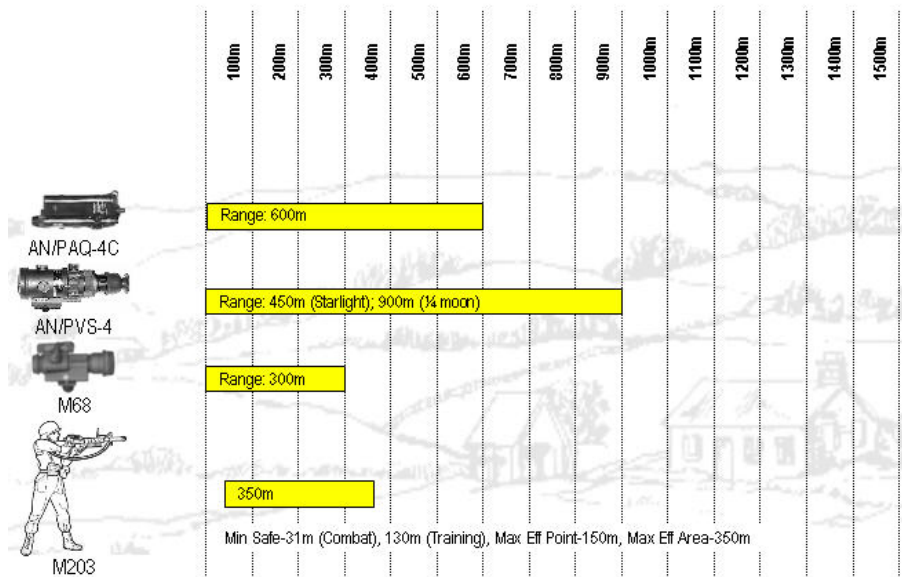


M4 Grenade Launcher Mounting Instructions

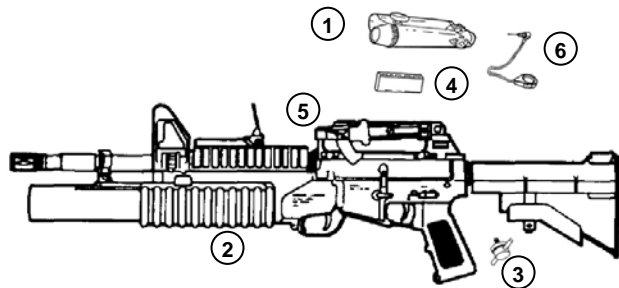
The M203A1 Grenade Launcher must be mounted to the M4 by the unit's supporting DS Maintenance Company IAW instructions contained in TM 9-1010-221-23&P.

10m Boresight Target Offset for the M4/M203A1 Iron Sight is 0.0 cm Left/Right; 6.0 cm Up.

M203A1 Range Reference Sheet



M4/M203—AN/PAQ-4C



M4/M203 – AN/PAQ-4C Mounting Instructions

Mounting of the AN/PAQ-4C (1) to the M203 (2) is accomplished by using the Mounting Knob Assembly (3) from the AN/PVS-4 Sight (NSN 5355-01-039-2834) and the Bracket Adapter (plastic) (4) from the AN/PAQ-4C (NSN 5340-01-362-9873).

1. Remove the M203A1 Quadrant Sight (5). (The Quadrant Sight and the AN/PAQ-4C cannot be mounted at the same time.)
2. Attach the AN/PAQ-4C Bracket Adapter to the M4 carrying handle of the M203 using the AN/PVS-4 Mounting Knob Assembly. Angle the Mounting Knob through the hole in the top of the Carrying Handle. Place the Bracket Adapter over the hole and attach it to the handle with the Mounting Knob Assembly.
3. Secure the AN/PAQ-4C to the Bracket Adapter, using the thumbscrew on the AN/PAQ-4C.
4. Attach the remote switch (6) to the AN/PAQ-4C and locate the switch at a convenient location.

NOTE

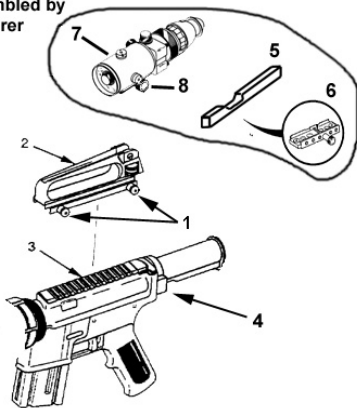
The AN/PAQ-4C will be oriented to designate targets for the Rifle, not the Grenade Launcher.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets: 1.3 Squares Right; 1.9 Squares Down
 - ③ 10m Boresight Offsets: 1.9 cm Left; 8.6 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M4/M203—AN/PVS-4

Pre-assembled by
Unit Armorer



receiver rail is most convenient for the operator, as long as the rail grabber/mount does not extend beyond the rail.

M4/M203 – AN/PVS-4 Mounting Instructions

1. Loosen two knobs (1) on carrying handle (2). Remove carrying handle from upper receiver rail (3). Retain carrying handle.

Note

Spacer (5) (NSN 5365-01-447-8991) and Grabber/Mount (6) (NSN 5340-01-449-8533) are pre-assembled to the Sight (7) by Unit Armorer.

2. Loosen the clamping knob (8) until sufficient space exists to place the clamping jaws on either side of the mounting rail (3). Tighten clamping knob (8) until two clicks are heard.
3. The AN/PVS-4 may be placed at whichever position on the upper

4. If the AN/PVS-4 is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.
5. You **can not** mount both the AN/PVS-4 and quadrant sights at the same time.

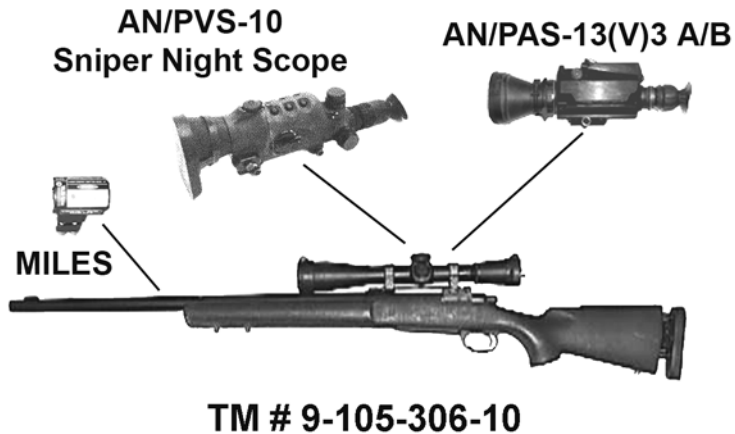
NOTE

Item (6) is depicted upside down in order to clearly show the bar, which must fit, into one of the slots on the rail.





Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 3.4 Squares Down
- ③ 10m Boresight Offsets: 0.0 cm Left/Right; 9.6 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

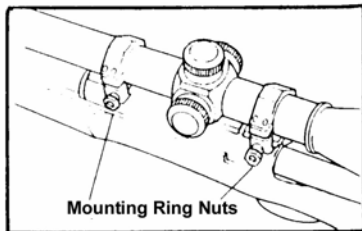
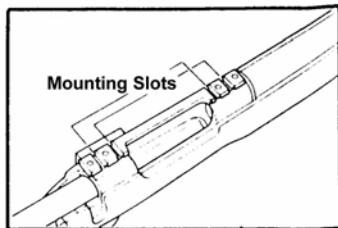
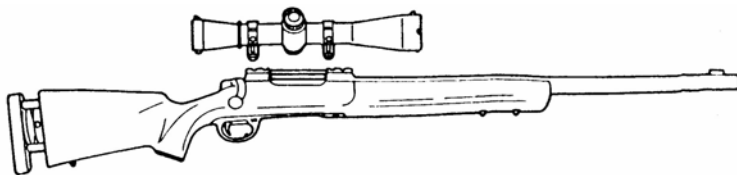
M24 SNIPER WEAPON SYSTEM



M24 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	2100m	2200m
 AN/PAS-13A/B(V)3, HWTS	Personnel Recognition Range: 2200m																					
 AN/PVS-10	Range: 300m (Day), 600m (Night)																					
 M3A	Min Range: 25m 1/4 moon illumination																					
 M24 Sniper Rifle	Range: 300m																					
	Max Eff Range: 300m																					

M24—SNIPER SYSTEM DAY OPTIC



M24--Day Optic Sight Mounting Instructions
(See TM 9-1005-306-10)

WARNING

Be sure the mounting base is fastened securely to the rifle. Loose mounting may cause the day optic sight and base mount assembly to come off the rifle when firing, possibly injuring the shooter.

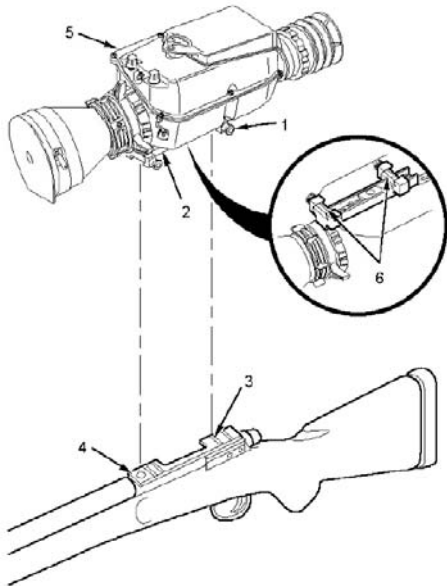
1. Before mounting the day optic sight, lubricate the threads of each mounting nut.
2. Insure smooth movement of each mounting nut and mount claw.
3. Inspect for burrs and foreign matter between each mounting ring nut and mount claw. Burrs or foreign matter must be removed prior to mounting.
4. Mount the day optic sight and rings to the base (See diagram)

NOTE

There are two sets of mounting slots. Select the set of slots that provide the proper eye relief. Once a set of slots is chosen, the same set should always be used in order for the system to retain zero.

Ensure mounting surface of base is free of dirt, oil or grease.

5. Set each ring bolt spline in the selected slot
6. Slide the rear mount claw against the base. Finger tighten the mounting ring nut.
7. Slide the front mount claw against the base. Finger tighten the mounting ring nut.



M24—AN/PAS-13A/B(V)3, HTWS

Mounting/Removal of HWTS on M24 Sniper Rifle. Refer to figure at left, for mounting HWTS on the M24 sniper rifle.

TOOLS:

- Socket, 3/8 in. drive, 1/2 in.
- Torque screwdriver, T-handle
- Wrench, 1/2 in.

WARNING

Ensure weapon is not loaded and safety is on before installing and removing bracket/ Thermal Weapon Sight (TWS) to and from weapon. A loaded weapon may accidentally discharge, causing injury or death.

CAUTION

Avoid handling or carrying TWS by the eyecup, objective lens cover or battery cover latch. Any one of these items may detach

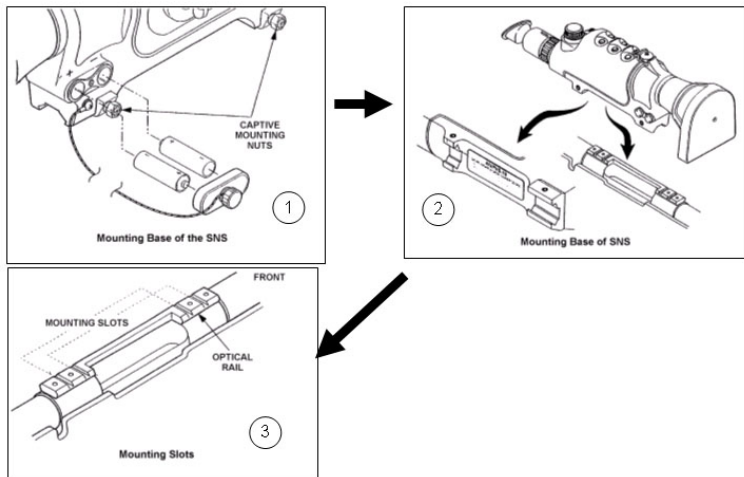
from the system, causing it to drop.

NOTE

In order to mount the AN/PAS-13A/B(V)3 HWTS to the M24 the unit armorer must first install a Mount Assembly, M24 (NSN 5340-01-502-7235) to the TWS.

1. Install HWTS on M24 sniper rifle.
 - a. Loosen two nuts (1) on mount (2).
 - b. Select either pair of slots (3) on rail (4) for mounting HWTS (5).
 - c. Place bars (6) of mount (2) in slots (3) of rail (4) and hand tighten two nuts (1). Torque two nuts.
2. Remove HWTS from M24 Sniper Rifle.
 - a. Loosen two nuts (1) on mount (2).
 - b. Remove HWTS (5) from rail (4).

M24—AN/PVS-10, SIGHT, NIGHT VISION SNIPER SCOPE



Installation of the SNS.

NOTE

All tools and materials used to mount the SNS to the rifle can be found in the M24 SWS Deployment Kit.

1. Before mounting the SNS, lubricate the threads of each captive mounting nut with Lubricant Preservative Cleaner (CLP) (NSN 9150-01-102-1473).
2. Ensure smooth movement of each captive nut and clamp.
3. Inspect for burrs and foreign matter between each nut and clamp. Burrs or foreign matter must be removed prior to mounting.

NOTE

There are two sets of mounting slots in the optical rail. (See Figure 2-11). Select the set of slots which provide you with the proper eye relief. Once a set of slots is chosen, the same set must always be used in order for the system to retain zero.

NOTE

Ensure all mounting surfaces of base are free of dirt, oil, or grease.

4. Mount the SNS to the optical rail of the M24.
5. Align the square spline in the mounting base of the SNS in one of the two corresponding cross slots of the optical rail.
6. Mount the front and rear clamps against the base. Finger tighten the captive mounting nuts.
7. Remove eyepiece protection cap and install eyeguard.
8. Check the eye relief. If the sight needs to be adjusted, loosen the mounting nuts and align the square spline with the other set of slots on the optical rail and repeat step 6.

CAUTION

Be sure that T-handle torque wrench, has been certified/calibrated in accordance with TB 43-0196.

9. Tighten the rear captive mounting nut to 65 inch-pounds using the T-handle torque wrench.
10. Tighten the front captive mounting nut to 65 inch-pounds using the T-handle torque wrench.
11. Repeat steps 9 and 10 for a total of three (3) cycles.

M24—AN/PVS-10 Zero Procedure: See Annex B.

Removal of SNS.

1. If eyeguard is installed, remove the eyeguard and place the eyepiece protective cap onto the eyepiece.
2. Using 1/2 inch combination wrench, loosen the front mounting nut.
3. Using 1/2 inch combination wrench, loosen the rear mounting nut.
4. Remove the SNS.
5. Place SNS with the eyepiece protective cap installed into carrying case.

M107 LONG RANGE SNIPER RIFLE



AN/PAS-13A/B(V)3
HWTS



Day Optic
Scope

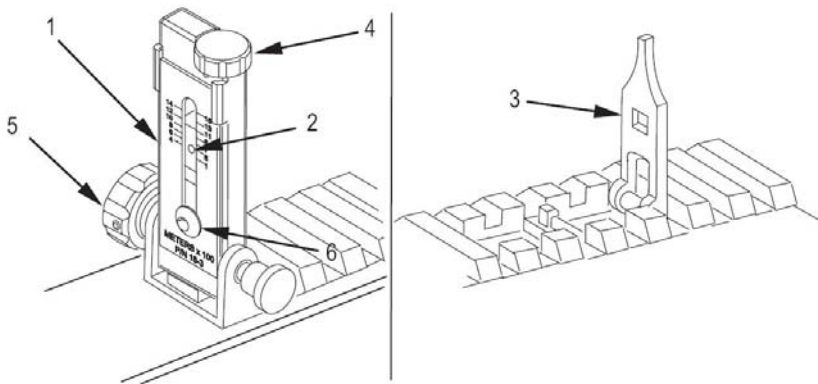
TM 9-1005-239-10 (M107 Technical Manual)

M107 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	2100m	2200m
 AN/PAS-13A/B(V)3, HWTS Personnel Recognition Range: 2200m																						
 M107 Day Optic Scope (DOS) Leupold Mark 4, 4.5-14x50mm LR/T M1 with Mil-Dot Reticle (Model 54560) Range: 2000m																						
 M107 LRSR Max Eff Range: 1,500m-Personnel; 2,000m-Vehicles																						

ZEROING THE IRON SIGHT OF THE M107

1. Assume a prone-supported firing position 100 meters from the zero target (NSN 6920-00-900-8205). Align index line with the 100-meter range line on the elevation scale (1).



2. Align windage index line with windage zero index line on base of iron sight. Align the rear peep sight (2) with the front sight post (3).

NOTE

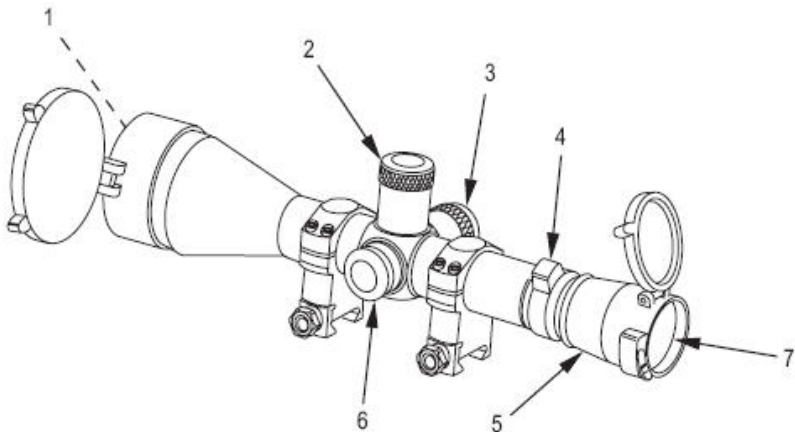
One click of elevation knob (4) moves the strike of the round 1.6 in. (4.06 cm) at 100 meters.

One click of windage knob (5) moves the strike of the round 0.75 in. (1.90 cm) at 100 meters.

3. Obtain the proper sight picture by aligning the rear peep sight (2) with front sight post (3). Fire a three round shot group at center mass of the zero target, maintaining the same aim point with each shot. Note the strike of the rounds and make windage and elevation adjustment accordingly.
4. Continue firing three round shot groups, making windage and elevation adjustments as necessary until the shot group is center mass on the zero target.
5. Once the shot group is center mass, loosen the screw (6) on the elevation scale (1). Slide the elevation scale until the 100 meter range index line is aligned with the index line on the rear peep sight (2), tighten the screw.
6. Confirm zero by setting the elevation scale (1) to the 500-meter line and fire a three round shot group at a 500-meter target.

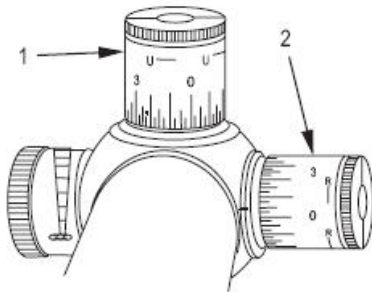
DAYLIGHT SCOPE MOUNTED TO THE M107

There are seven basic parts to the daylight scope, the objective lens (front lens) (1), the elevation adjustment turret (2), the windage adjustment turret (3), the power selector ring (4), the eyepiece lock ring (5), parallax adjustment turret (6), and the eyepiece lens (7).



Live Fire Zero

1. Zero the scope on a known-distance range on a zero target (NSN 6920-00-900-8205).
2. Assume a prone-supported firing position 100 meters from the target. Turn the elevation adjustment turret (1) clockwise until it bottoms out. Once at the bottom, turn the elevation adjustment turret counterclockwise 34 minutes or 136 clicks. Turn the windage adjustment turret (2) clockwise until it bottoms out. Once at the bottom, turn the windage adjustment turret counterclockwise 52 minutes or 208 clicks.



3. Fire three rounds at the center of the target, keeping the same aiming point each time and triangulate. Note the strike of the rounds and make windage and elevation adjustment accordingly.

Continue firing three round shot groups making windage and elevation adjustments as necessary until the shot group is center mass on the zero target.

NOTE

Each click of windage or elevation equals 1/4 minute of angle (MOA). Therefore at 100 meters, 1 MOA equals approximately 1 inch.

4. Once the shot group is centered, loosen the screws on the elevation (3) and windage adjustment dials (4). Turn the elevation adjustment turret (1) to the index line marked "1" and tighten screws. Turn the windage adjustment turret (2) until the "0" on the windage adjustment turret is lined up with the windage index line and tighten screws.
5. After zeroing at 100 meters, confirm by setting the elevation adjustment turret (1) to 500 meters and firing a three round shot group at a 500 meter target.

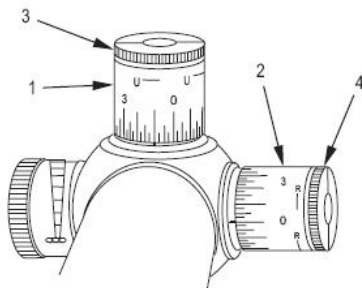


Table 1. Estimates for Zeroing the Scope.

Range	Clicks	Minute
100 (Zero)	136*	34*
200	26	6.5
300	7	1.75
400	7	1.75
500	6	1.5
600	9	2.25
700	12	3
800	16	4

Range	Clicks	Minute
900	18	4.5
1000	24	6
*From the bottom		

The above are estimates which may require individual situation changes.

Eye Relief

WARNING

If the scope is mounted too far to the rear, the eyepiece can injure the shooter's brow. Shooting at an uphill angle also increases this hazard.

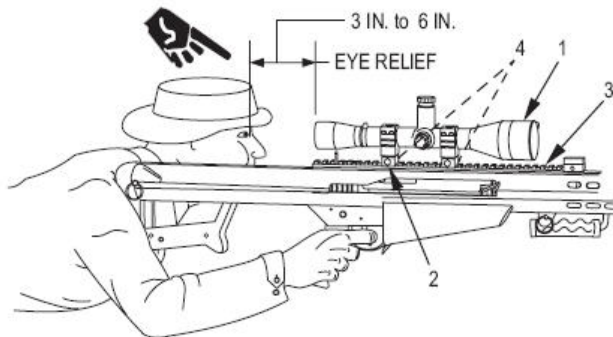
NOTE

The daylight scope is manufacturer-mounted with the rear ring mount on slot 4 of the rail, torqued to 65 in. lb. Always ensure the scope is mounted with a torque value of 65 in. lb. Remove the ring mount from the rail using a 1/2 in. wrench turning counterclockwise. Tighten the ring mount nuts using only the preset 65 in. lb. T-handle torque wrench.

Eye relief is always obtained from the prone position.

1. Mount the scope (1) with the rear ring mount (2) on slot 4 of the rail (3). Using T-handle torque wrench, torque ring mount nuts (4) to 65 in. lb. Hold the rifle in normal firing position. Set the scope to the highest possible magnification.

2. Slowly move the scope (1) forward or rearward on the rail (3) until a full field of view is seen (if necessary). Position scope here for rough eye relief. To achieve optimum eye relief, loosen the optic rings and slide the telescope tube forward or backward.



NOTE

Remember that aiming uphill reduces eye relief.

3. Without disturbing the eye relief position, rotate the scope until the elevation adjustment dial is on the top of the scope.

4. From a firing position, check to be sure that the vertical hair of the reticle aligns with the vertical axis of the firearm. Misalignment will not affect the accuracy at short to moderate distances but it can diminish long range accuracy.



**Incorrect
Right Cant**



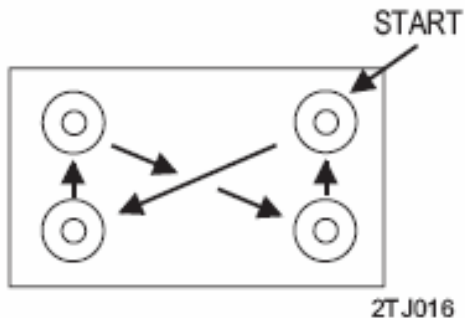
**Incorrect
Left Cant**



Correct

2TJ015

5. When satisfied with eye relief, tighten the ring screws evenly and securely. Start in one corner and tighten a small amount, then tighten the screw in the opposite corner, then the screw above/below then across corner. Continue the pattern until all screws are tightened. This ensures an even tightening and prevents twisting of the scope.



Focusing The Reticle

1. Point the scope at a light colored background object. With established eye relief, the reticle should appear sharp and crisp. If it does not, adjust the focus by means of the eyepiece.
2. Turn the eyepiece until the reticle appears very fuzzy then turn eyepiece until the reticle appears clear and sharp.
3. When satisfied with the image of the reticle, turn the lock ring so that it rests firmly against the eyepiece.

Parallax

CAUTION

Do NOT lubricate the power selector ring.

NOTE

Reticle should be focused before turning the side focus adjustment dial. If it is NOT, follow instructions for focusing the reticle.

Parallax is the apparent movement of the target relative to the reticle when eye is moved away from the center point of the eyepiece.

No numbers indicating distance appear on the dial as all adjustment is judged by the image itself.

To ensure reliable results, always fire from the prone position.

Look through the scope, concentrating on the center aiming point of the reticle. Move head slightly up and down. The aiming point should remain in exactly the same position against the target. If it moves, turn the focus adjustment dial until it becomes stable.

Windage And Elevation Adjustment

1. Set the scope to the highest power. Acquire the target. Fire one round.
2. Make appropriate adjustments to move center point of aim.

NOTE

Use center of bullet strike as a reference point for the final adjustments to windage and elevation. One click is equal to 1/4 minute of angle.

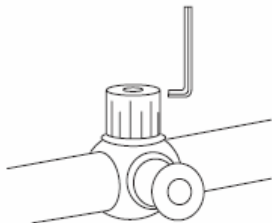
3. Fire a second round using the same point of aim, confirm bullet strike is the same as the point of aim. If not, continue adjustment until zeroed.

NOTE

All dials on the scope either numbered or with an indicator can be repositioned to align the marked zero of the dial with the position indicator without changing the adjustment setting of the scope that was achieved when zeroing. This allows the shooter to know the original zero of the rifle in the event that further adjustments are required in the field.

4. To reposition the dials, remove the turret caps.

5. Loosen the setscrews that surround the top of the knob until the cylinder turns freely. Perform this step for elevation and windage adjustment knobs.



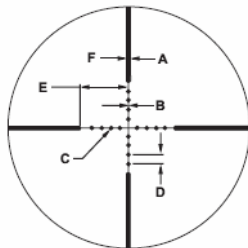
6. Loosen allen screws, zero line on the cylinder and zero line on the cap must be aligned.

7. The power selector ring is located in front of the eyepiece assembly. Turn the ring to align the number indicating the desired magnification with the gold dot on the body of the scope. Tighten setscrews.

Use Of Reticle To Estimate Range

The reticle for the M107 telescope can be used to estimate range when the size of the target is known. The following dimensions are related to Minutes of Angle (MOA) and can be used in range estimation. One mil = 3.438 MOA.

Dimension	MOA
A to F	1.0
B	0.1
C	0.7
D	3.6
E	18.0

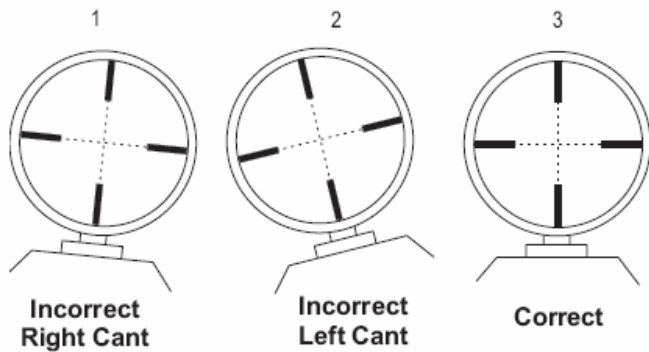


As a point of reference, the Mil-Dot "C" will cover a quarter at 100 meters. This means that at 200 meters, the quarter will be the size of 1/2 of the dot "C", at maximum power.

Level Adjustment

Each time the rifle is fired, the vertical crosshair should be held in the vertical position. Canting the rifle to the left will cause the rifle to shoot to the right. Conversely it will shoot left when the rifle is canted to the right. Obtain the correct shooting position.

Position (1) indicates the rifle is canted too far to the right, position (2) shows the rifle is canted too far to the left, and position (3) is the correct sight picture for the rifle held vertically.



M107 LONG RANGE SNIPER RIFLE—AN/PAS-13A/B(V)3, HTWS

NOTE

Ensure M107 Spacer Kit (NSN 5340-01-529-2604) has been installed by unit maintenance on HWTS before being mounted to M107 Sniper Rifle.

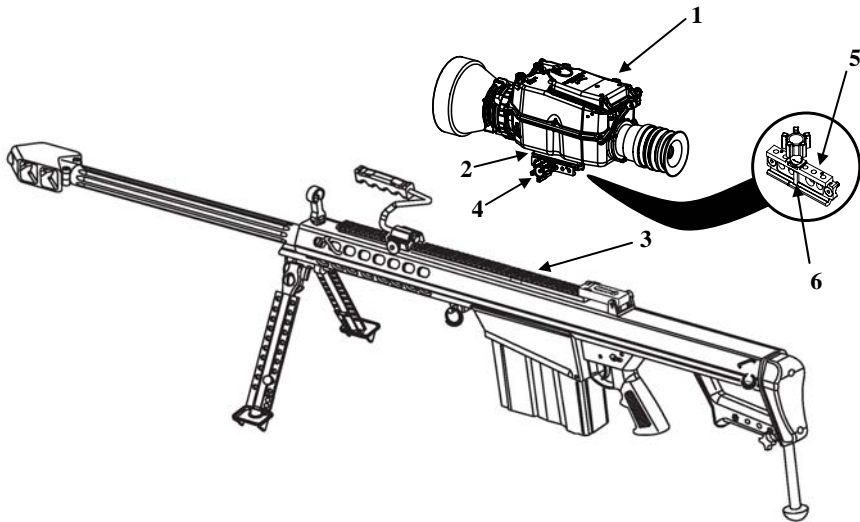
NOTE

When removing and reinstalling a zeroed HWTS onto the same weapon, install in same slot used for zeroing. Failure to do so may result in the HWTS no longer being zeroed to the weapon.

Installation

1. Install HWTS (1) with spacer (2) on rail (3).
 - a. Loosen knob (4) on mount (5).
 - b. Select a slot on rail (3) for mounting. Any slot may be used as long as mount (5) does not hang over edge of rail.
 - c. Place bar (6) of mount (5) in a slot on rail (3) so that the mount does not hang over the edge of the rail (3), and hand tighten knob (4) on mount until two clicks are heard.
2. Remove HWTS from M107 Sniper Rifle.
 - a. Remove HWTS (1) from rail (3) by loosening knob (4) on mount (5) by turning knob counterclockwise.

- b. Remove HTWS (1) from rail (3).



Mounting HWTS on M107 Sniper Rifle

Zeroing the M107 Sniper Rifle.

WARNING

Install two inch eyecup before firing M107 Sniper Rifle. Recoil of M107 sniper rifle may cause injury to personnel.

NOTE

When removing and reinstalling a zeroed HWTS onto the same weapon, install in same slot used for zeroing. Failure to do so may result in the HWTS no longer being zeroed to the weapon.

1. Place an E-type thermal silhouette at 100 meters.
2. Assume a good firing position.
3. Place TWS in operation (para. 2-9).
4. Set FOV ring to NARROW position.
5. Press and hold the RETICLE SELECT switch for 5 seconds, then press and release RETICLE SELECT switch until display shows M107 reticle.
6. Use the RETICLE ADJUST switch to set Azimuth and Elevation indicators to zero (000L and 000D).

NOTE

The zeroing aim point is the aim point located between the zeroing aim lines.

7. Aim at center mass of target and fire three rounds. Observe trace or locate impact of rounds.
8. Retighten torque knob until two clicks are heard.
9. Adjust reticle to move the round to the center of mass of target.

NOTE

At 100 meter range, each increment of the azimuth or elevation setting moves the strike of round 1 cm.

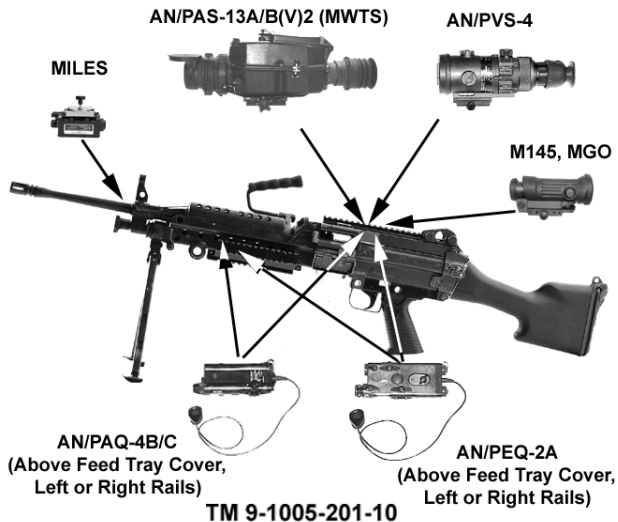
- a. If center of shot group is above the desired point of impact, use the RETICLE ADJUST switch to decrease the up (U) elevation setting or increase the down (D) elevation setting.
- b. If center of shot group is below the desired point of impact, use the RETICLE ADJUST switch to increase the up (U) elevation setting or decrease the down (D) elevation setting.
- c. If center of shot group is left of the desired point of impact, use the RETICLE ADJUST switch to decrease the left (L) azimuth setting or increase the right (R) azimuth setting.
- d. If center of shot group is right of the desired point of impact, use the RETICLE ADJUST switch to increase the left (L) azimuth setting or decrease the right (R) azimuth setting.

10. Repeat steps g and i until rounds hit center of mass.
11. Confirm zero at 500 meter range using 500 meter aim point by repeating steps g through j.
12. Record setting of bracket slot, Azimuth and Elevation indicators.

Target offsets required to properly zero the device to the weapon are as follows (See Annex G for Target Preparation Instructions):







- ③ 25m Fired Zero Offsets: NA
- ③ 10m Boresight Offsets: NA

M249 SQUAD AUTOMATIC WEAPON/MACHINE GUN

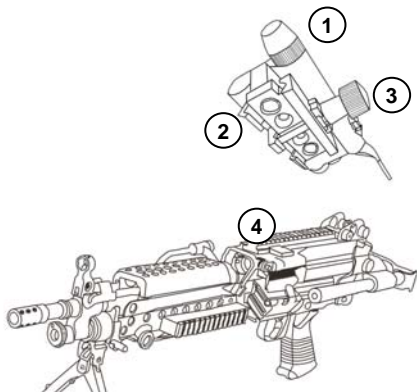


10m Boresight Offset for the M249 Iron Sight is: 0.0 cm Left/Right; 1.7 cm Up (At 400m)

M249 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	
 AN/PAQ-4C	Range: 600m																				
 AN/PAS-13A/B(V)2, MWTS	Personnel Recognition Range: 1100m																				
 AN/PEQ-2A	Range: 600m (Low Power); 2,000m (High Power)																				
 AN/PVS-4	Range: 450m (Starlight); 900m (1/4 moon)																				
 M145	Range: 1200m																				
 M249	Max Eff Range: 1,000m (Area)																				

M249—AN/PAQ-4C USING BRACKET/PICATINNY RAIL GRABBER ON FEED TRAY COVER RAIL



The AN/PAQ-4C (1) is mounted on the feed tray cover rail using the Mounting Bracket/Picatinny Rail Grabber (2) (NSN 5340-01-458-0473) depicted in the diagram at left.

1. Attach the Bracket Assembly (2) to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.

2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the top cover rail (4). Tighten the clamping knob until two clicks are heard.

3. Install the remote switch (not shown) using the provided cable hangers.

NOTE

The device may be placed on the rail wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

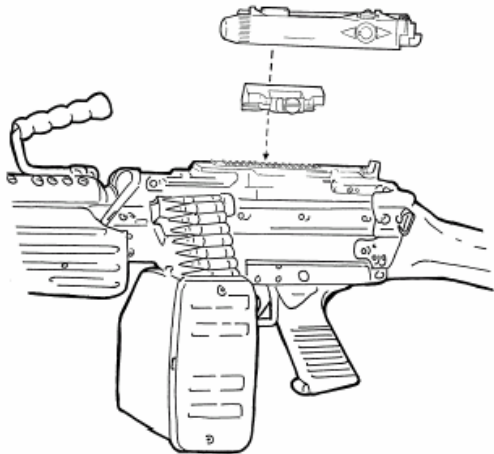
Target offsets required to properly zero the device to the weapon are as follows:

⊙ 25m Fired Zero Offsets: 1.8 Squares Right; 0.0 Squares Up/Down

⊙ 10m Boresight Offsets: 1.8 cm Left; 5.4 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—AN/PAQ-4C USING “INSIGHT” LOW PROFILE RAIL GRABBER ON FEED TRAY COVER RAIL



The Aiming Light mounts on the top of the mounting rail equipped M249 Squad Automatic Weapon (SAW) using the Insight Low Profile Rail Grabber (NSN 5340-01-458-0990).

1. Loosen the clamping knob until the rail grabber has sufficient space to fit over the top rail. Hand Tighten the clamping knob.
2. Turn the ON/OFF Switch CCW to the #1 OFF/Storage position.
3. Position the Aiming Light on the bracket mounting rail. Hand tighten the Thumbscrew to secure the Aiming Light.
4. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

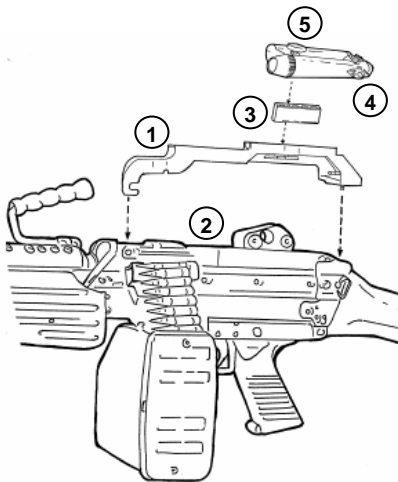
NOTE

The device may be placed on the rail wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 1.8 Squares Right; 2.0 Squares Up
 - ◎ 10m Boresight Offsets: 1.8 cm Left; 4.6 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—AN/PAQ-4C USING AN/PVS-4 MOUNTING BRACKET & PLASTIC AN/PAQ-4C BRACKET ADAPTER



M249 – AN/PAQ-4C Mounting Instructions Using an AN/PVS-4 Mounting Bracket

The AN/PAQ-4C may also be attached to the M249 using the mounting bracket (NSN 5340-01-387-0866) intended to mount the AN/PVS-4 onto the M249, as detailed below:

1. Install the AN/PVS-4 – M249 mounting bracket (1) to the M249 feed tray cover (2), per TM 11-5855-213-10
2. Attach Bracket Adapter (3) (NSN 5340-01-362-9873) to AN/PAQ-4C (4).
3. Attach AN/PAQ-4C, with bracket adapter attached, to the mounting bracket (1) using the AN/PVS-4 M16A1/A2 thumbscrew (NSN 5355-01-039-2834).
4. Attach the remote switch to the device and locate it on a convenient location on the weapon for the shooter.

NOTE

Bracket Adapter is part number A3186952 as shown in TM 11-5855-308-12&P

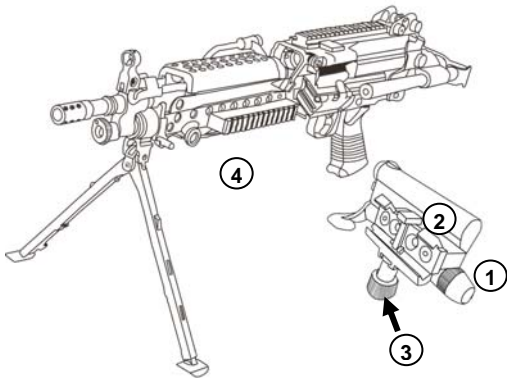
Target offsets required to properly zero the device to the weapon are as follows

:

- ③ 25m Fired Zero Offsets: 2.5 Squares Right; 1.5 Squares Down
- ③ 10m Boresight Offsets: 4.1 cm Left; 6.1 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249 —AN/PAQ-4C USING MOUNTING BRACKET/PICATINNY RAIL GRABBER ON FORWARD RAILS



The AN/PAQ-4C (1) may be mounted on either the left or right forward rails by using the Mounting Bracket/Picatinny Rail Grabber (NSN 5340-01-458-0473) (2) depicted in the diagram at left.

1. Attach the Mounting Bracket/Picatinny Rail Grabber to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.
2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the rail (4). Tighten the clamping knob until two clicks are heard.
3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

NOTE

The device may be placed on the left or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

③ 25m Fired Zero Offsets:

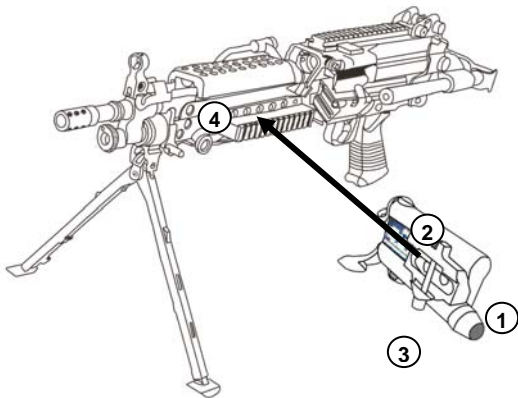
- Left Side Rail Mounting: 7.5 Squares Right; 14.0 Squares Down
- Right Side Rail Mounting: 7.6 Squares Left; 10.7 Squares Up

③ 10m Boresight Offsets:

- Left Side Rail Mounting: 7.6 cm Left; 8.3 cm Down
- Right Side Rail Mounting: 7.7 cm Right; 4.0 cm Down

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249 —AN/PAQ-4C USING “INSIGHT” LOW PROFILE RAIL GRABBER ON FORWARD RAILS



The AN/PAQ-4C (1) may be mounted on either the left or right forward rails by using the Insight Low Profile Rail Grabber (2) (NSN 540-01-458-0990) depicted in the diagram at left.

1. Attach the Insight Low Profile Rail Grabber to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.
2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the rail (4). Tighten the clamping knob until a snug fit is achieved.
3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

NOTE

The device may be placed on the left or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

⊙ 25m Fired Zero Offsets:

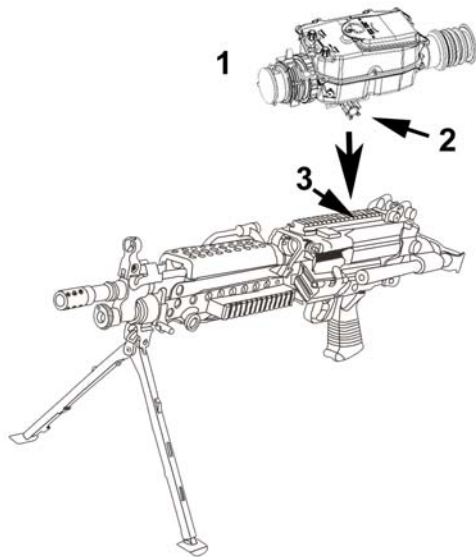
- Left Side Rail Mounting: 5.9 Squares Right; 14.0 Squares Down
- Right Side Rail Mounting: 5.8 Squares Left; 10.7 Squares Up

⊙ 10m Boresight Offsets:

- Left Side Rail Mounting: 6.0 cm Left; 8.3 cm Down
- Right Side Rail Mounting: 5.9 cm Right; 4.0 cm Down

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—AN/PAS-13A/B(V)2 MWTS MOUNT PROCEDURES, FEED TRAY COVER RAIL



M249 – AN/PAS-13A/B(V)2 MWTS Mounting Instructions (See Annex B for Target Prep Instructions)

The AN/PAS-13A/B(V)2 MWTS comes equipped with a spacer and torque limiting rail grabber that allow the device to be rapidly attached to a weapon rail.

1. To install the AN/PAS-13A/B(V)2 MWTS (1) loosen the clamping knob (2) until sufficient space exits to place the clamping jaws on either side of the mounting rail (3). Tighten clamping knob (2) until two clicks are heard.

2. The AN/PAS-13A/B(V)2 MWTS may be placed at position number 5 or back (counting from the back of the rail to the front) on the top feed tray cover rail, as long as the rail grabber does not extend beyond the rail. Should the device be installed forward of the number five slot the sight will interfere with the operator's ability to raise the barrel handle and the sight's objective lens will strike the weapon,

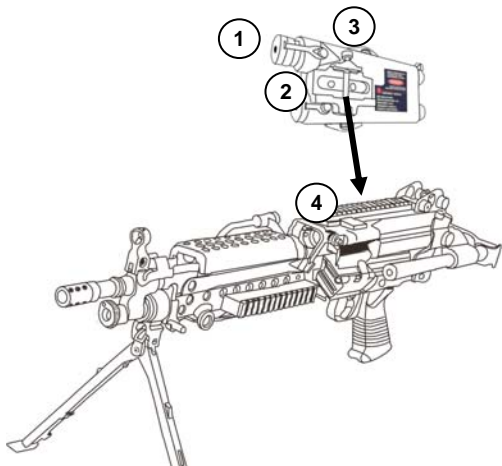
when the feed tray cover is opened.

3. If the AN/PAS-13A/B(V)2 MWTS is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device AN/PAS-13A/B(V)2 MWTS to the weapon are as follows:

- ◎ 25m Fired Zero Offsets: 0.0 Squares Left/Right; 2.8 Squares Down
 - ◎ 10m Boresight Offsets: 0.0 cm Left/Right; 8.6 cm Up
- See Annex B—SIGHT/ACCESSORY OPERATING INSTRUCTIONS for instructions on preparing AN/PAS-13 targets.
 - See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249 —AN/PEQ-2A USING - “INSIGHT” LOW PROFILE RAIL GRABBER ON FEED TRAY COVER RAIL



The AN/PEQ-2A (1) may be mounted on either the left or right forward rails by using the Insight Low Profile Rail Grabber (2) depicted in the diagram at left.

1. Attach the Insight Low Profile Rail Grabber to the AN/PEQ-2A (1) using the thumbscrew on the AN/PEQ-2A.
2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the rail (4). Tighten the clamping knob until the device fits snugly on the rail.
3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

NOTE

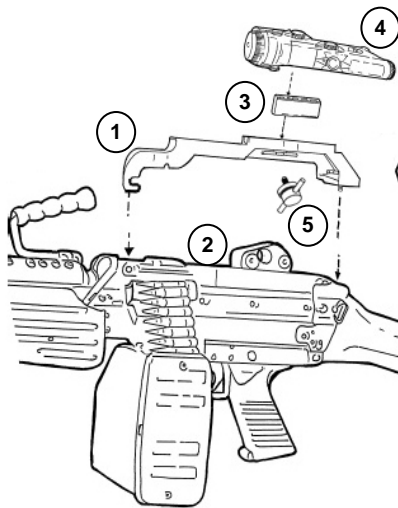
The device may be placed on the rail,

wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets (Zeroed to 400m): 2.0 Squares Left; 1.3 Squares Up
- ⊙ 10m Boresight Offsets (Zeroed to 400m):
 - Aiming Light: 2.0 cm Right; 4.8 cm Up
 - Flood Light: 2.0 cm Left; 4.8 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—AN/PEQ-2A Using AN/PVS-4—M249 MOUNTING BRACKET



Mounting Instructions

Install the AN/PVS-4 – M249 mounting bracket (1) to the M249 feed tray cover (2), per TM 11-5855-213-10

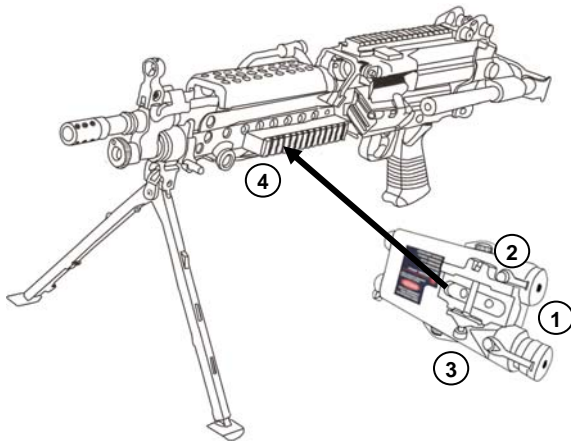
1. Attach Bracket Adapter (plastic) (3) to AN/PEQ-2A (4).
2. Attach AN/PEQ-2A, with bracket adapter attached, to the mounting bracket (1) using the AN/PVS-4 thumbscrew (5).
3. If desired, attach the remote switch (not shown) and fasten it at a convenient location with the provided cable hangers.

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets (Zeroed to 400m):
 - 5.0 Squares Right; 4.0 Squares Down
- ⊙ 10m Boresight Offsets (Zeroed to 400m):
 - Aiming Light: 0.5 cm Left; 6.5 cm Up
 - Flood Light: 4.5 cm Left; 6.5 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249 —AN/PEQ-2A USING “INSIGHT” LOW PROFILE RAIL GRABBER ON FORWARD RAILS



The AN/PEQ-2A (1) may be mounted on either the left or right forward rails by using the Insight Low Profile Rail Grabber (2) depicted in the diagram at left.

NOTE

Mounting the device on the right rail may result in interference when attempting to charge the weapon.

1. Attach the Insight Low Profile Rail Grabber to the AN/PEQ-2A (1) using the thumbscrew on the AN/PEQ-2A.
2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the rail (4). Tighten the clamping knob until the device fits snugly on the rail.
3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

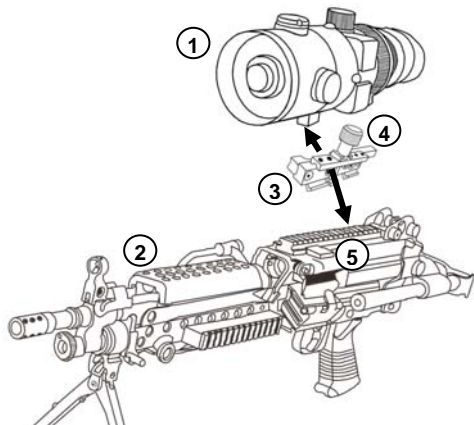
NOTE

The device may be placed on the left or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets (Zeroed to 400m):
 - Left Side Rail Mounting: 5.9 Squares Right; 10.0 Squares Down
 - Right Side Rail Mounting: 6.0 Squares Left; 14.0 Squares Up
- ⊙ 10m Boresight Offsets (Zeroed to 400m):
 - Left Side Rail Mounting:
 - Aiming: 6.0 cm Left; 4.4 cm Down
 - Flood: 6.0 cm Left; 8.4 cm Down
 - Right Side Rail Mounting:
 - Aiming: 6.1 cm Right; 7.6 cm Down
 - Flood: 6.1 cm Right; 3.6 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—AN/PVS-4 MOUNT PROCEDURES, INTEGRATED FEED TRAY COVER



does not extend beyond the rail. Installing forward of the number five slot the sight will interfere with the operators ability to raise the barrel handle, and the sight's objective lens will strike the weapon when the feed tray cover is opened.

M249—AN/PVS-4 Mounting Instructions

To properly mount the AN/PVS-4 (1) to the M249 (2) the unit Armorer must first install a spacer (NSN 5365-01-447-8991) and a rail grabber (NSN 5340-01-449-8533) on the AN/PVS-4. Item 3 is the combined spacer and grabber.

1. Loosen the clamping knob (4) until sufficient space exists to place the clamping jaws on either side of the mounting rail (5). Tighten clamping knob (4) until two clicks are heard.

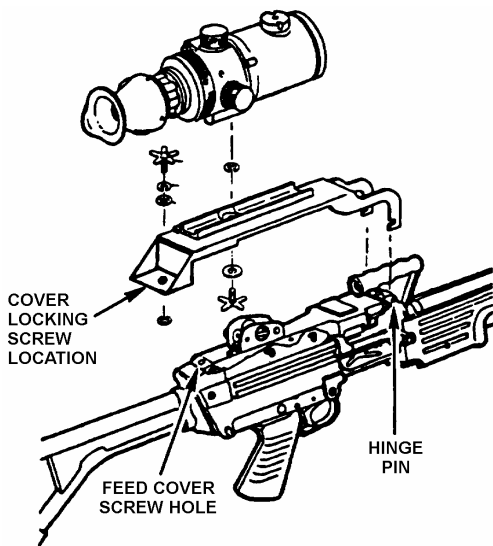
2. The AN/PVS-4 may be placed at position number 5 or back (counting from the back of the rail to the front) on the top feed tray cover rail, as long as the rail grabber

3. If the AN/PVS-4 is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed to 400m): 0.0 Squares Left/Right; 4.3 Squares Down
 - ③ 10m Boresight Offsets (Zeroed to 400m): 0.0 cm Left/Right; 10.0 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—AN/PVS-4 MOUNT PROCEDURES, UNITS WITHOUT AN/PAS-13 (V)2/3



M249 – AN/PVS-4 Mounting Instructions

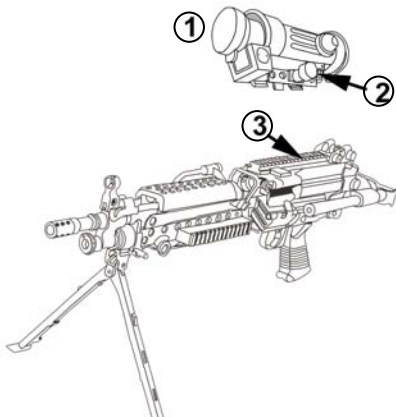
The AN/PVS-4 may also be mounted on the M249 by using the AN/PVS-4—M249 Mounting Bracket (NSN 3040-01-233-0352). Using this method precludes the need to attach a spacer and a rail grabber to the AN/PVS-4.

1. Hook the bracket feet around the feed cover pin and position the bracket on top of the weapon.
2. Turn bracket locking screw into the feed cover screw hole to secure bracket.
3. Place the sight on the bracket aligning the sight mounting bracket locking screw.
4. Tighten locking screw to secure night sight to bracket.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed to 400m): 2.5 Squares Right; 4.9 Squares Down
 - ③ 10m Boresight Offsets (Zeroed to 400m): 2.3 cm Left; 11.3 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M249—M145 MGO MOUNT PROCEDURES, INTEGRATED FEED TRAY COVER RAIL



The M145 MGO comes with an integrated rail grabber with torque limiting knob. This allows the MGO to be attached to the M249 with Integrated Feed Tray Cover Rail with a minimum of time and effort.

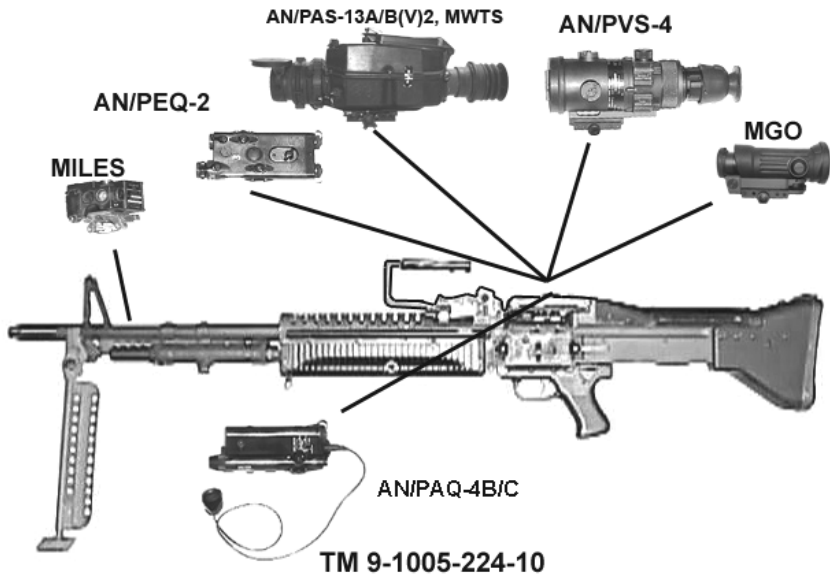
1. To install the MGO (1) loosen the clamping knob (2) until sufficient space exists to place the clamping jaws on either side of the mounting rail (3). Tighten clamping knob (2) until two clicks are heard.
2. Place the M145 approximately 70mm (2-3/4 inches) in front of the firing eye. Ensure that the M145 is securely attached to the feed tray cover rail and begin eye relief adjustment, IAW TM 9-1240-415-13&P.
3. If the MGO is removed from the rail the operator must return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:







- ⊙ 25m Fired Zero Offsets (Zeroed to 400): N/A
- ⊙ 10m Boresight Offsets (Use 10mZ Reticle): 0.0 cm Left/Right; 0.0 cm Up

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

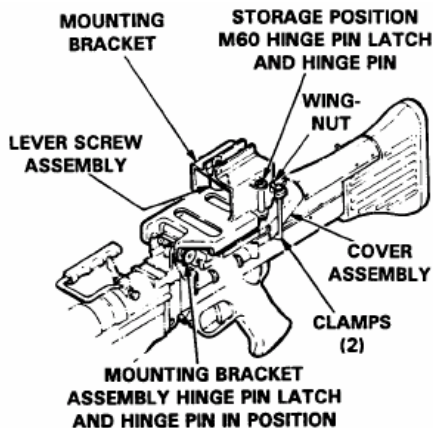
M60 MACHINE GUN



M60 Range Reference Sheet

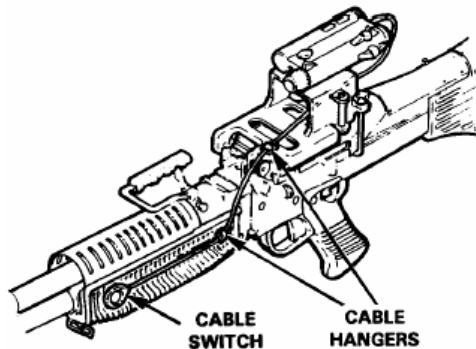
	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	
 AN/PAQ-4C																					
 AN/PAS-13A/B(V)2, MWTS																					
 AN/PEQ-2A																					
 AN/PVS-4																					
 M145																					
 M60																					

M60—AN/PAQ-4C MOUNT PROCEDURES



1. Install Bracket

2. Install AN/PAQ-4C



M60 – AN/PAQ-4C Mounting Instructions

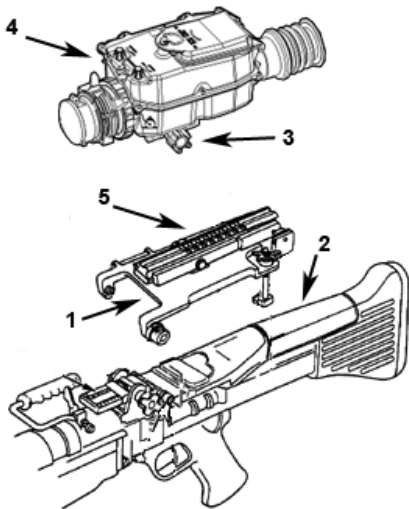
The AN/PAQ-4C mounts on the M60 Machine Gun using the M60 Mounting Bracket (NSN: 5855-01-046-7272) and the Bracket Adapter (NSN: 5340-01-362-9873) IAW TM 11-5855-308-12&P-DRAFT.

1. Remove the M60 hinge pin latch and hinge pin from the cover assembly. Place the pin latch in the aiming guides on the left side of the Mounting Bracket and press together (see Figure).
2. Place the Mounting Bracket on top of the machine gun cover so that the holes in the front of the bracket align with the cover assembly pin holes.
3. Insert the longer hinge pin supplied with the bracket through the bracket and cover assembly and secure by inserting the hinge pin latch.
4. Turning counter clockwise loosen the wing nuts on both leg clamps and position the leg clamps under the cover assembly. Secure the Mounting Bracket by tightening the wing nuts firmly. The split washer should be next to the wing nut and the flat washer next to the bracket.
5. Place the Bracket Adapter in the AN/PAQ-4C mounting groove flush with the front of the AN/PAQ-4C. Tighten the thumbscrew clockwise.
6. Position the AN/PAQ-4C with Bracket Adapter onto the M60 Mounting Bracket mounting groove. Align the front edge of the Bracket Adapter and front edge of the groove. Tighten the lever screw assembly.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed at 500m): 1.5 Squares Right; 8.0 Squares Down
- ③ 10m Boresight Offsets (Zeroed at 500m): 4.0 cm Left; 14.0 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M60—AN/PAS-13A/B(V)2 (MWTS) MOUNT PROCEDURES



M60 – AN/PAS-13A/B(V)2, MWTS Mounting Instructions (See Annex B for Target Prep Instructions)

The AN/PAS-13A/B(V)2, MWTS, is mounted by installing the AN/PAS-13A/B(V)2's M60 Mounting Bracket (P/N 80063A3170620) IAW TM 11-5855-302-12&P.

1. Install the AN/PAS-13A/B(V)2's M60 Mounting Bracket (1) on the M60 Machine Gun (2) IAW instructions contained in TM 11-5855.302-12 &P.
2. Loosen the clamping knob (3) on the AN/PAS-13A/B(V)2 (4) until there is sufficient space between the jaws of the rail grabber to fit on either side of the rail.
3. Select a slot on the rail (5) that provides a convenient location for the AN/PAS-13A/B(V)2 to be mounted (i.e. allows the operator to access the controls and to view the target through the eye cup).

CAUTION

Insure the AN/PAS-13A/B(V)2 lens does not strike the weapon when the feed tray cover is opened.

4. Tighten the torque limiting clamping knob (3) until two clicks are heard.

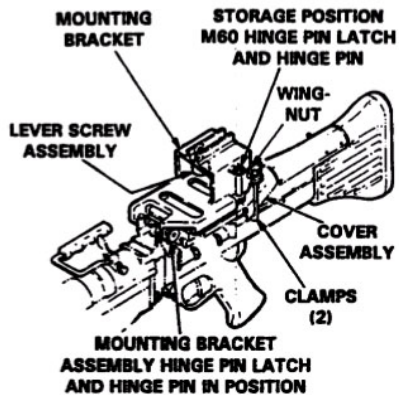
5. If the operator must remove the sight from the rail he must insure that he returns the device to the same rail slot in order to retain zero.

Target offsets required to properly zero the device to the weapon are as follows:

- ⊙ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 8.1 Squares Down
- ⊙ 10m Boresight Offsets (Zeroed for 500m): 0.0 cm Left/Right; 9.0 cm Up

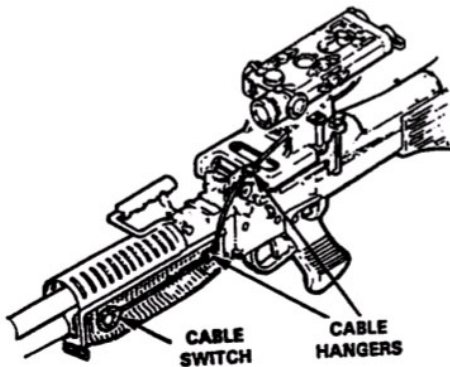
- See Annex B—SIGHT/ACCESSORY OPERATING INSTRUCTIONS for instructions on preparing AN/PAS-13A/B(V)2 targets
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M60—AN/PEQ-2A MOUNT PROCEDURES



1. Install Bracket

2. Install AN/PEQ-2A



M60 – AN/PEQ-2A Mounting Instructions

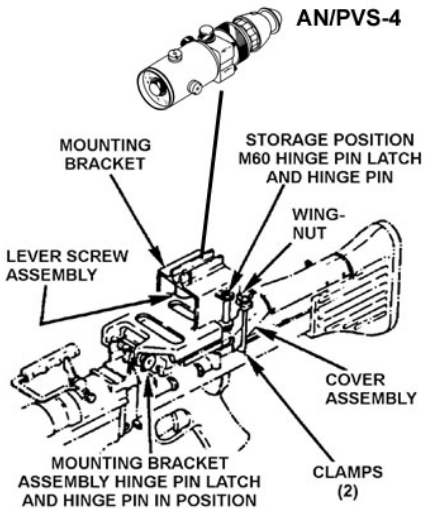
The AN/PEQ-2A mounts on the M60 Machine Gun using the M60 Mounting Bracket (NSN: 5855-01-046-7272) and the Bracket Adapter (NSN: 5340-01-362-9873) IAW TM 11-5855-308-12&P-DRAFT.

1. Remove the M60 hinge pin latch and hinge pin from the cover assembly. Place the pin latch in the aiming guides on the left side of the Mounting Bracket and press together (see Figure).
2. Place the Mounting Bracket on top of the machine gun cover so that the holes in the front of the bracket align with the cover assembly pin holes.
3. Insert the longer hinge pin supplied with the bracket through the bracket and cover assembly and secure by inserting the hinge pin latch.
4. Turning counter clockwise loosen the wing nuts on both leg clamps and position the leg clamps under the cover assembly. Secure the Mounting Bracket by tightening the wing nuts firmly. The split washer should be next to the wing nut and the flat washer next to the bracket.
5. Place the Bracket Adapter in the AN/PEQ-2A mounting groove flush with the front of the AN/PEQ-2A. Tighten the thumbscrew clockwise.
6. Position the AN/PEQ-2A with Bracket Adapter onto the M60 Mounting Bracket mounting groove. Align the front edge of the Bracket Adapter and front edge of the groove. Tighten the lever screw assembly.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets (Zeroed for 500m): 1.5 Squares Left; 8.0 Squares Down
- ◎ 10m Boresight Offsets (Zeroed for 500m)
 - Aiming Light: 4.0 cm Right; 14.0 cm Up:
 - Flood Light: 0.0 cm Left/Right; 14.0 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M60—AN/PVS-4 MOUNT PROCEDURES



Mounting Instructions

The AN/PVS-4 mounts on the M60 Machine Gun using the M60 Mounting Bracket (NSN: 5855-01-046-7272).

1. Pull the M60 bolt to the rear and put the weapon on SAFE.
2. Raise the M60 feed cover and remove the hinge pin from the cover assembly by removing the latch inside the hinge pin first. Place the hinge pin in the storage position on the left side of the mounting bracket then insert the latch into the hinge pin to secure.
3. Position the mounting bracket assembly on top of the feed cover so that the holes in the front of the bracket align with cover assembly hinge pin holes.
4. Insert the longer hinge pin supplied with the bracket from the right side through the bracket and cover assembly and secure by inserting the

hinge pin latch into the left side of the pin.

5. Loosen the wing nuts on both leg clamps and position the clamp under the cover assembly. Secure the mounting bracket by tightening the wing nuts firmly. Close feed cover.

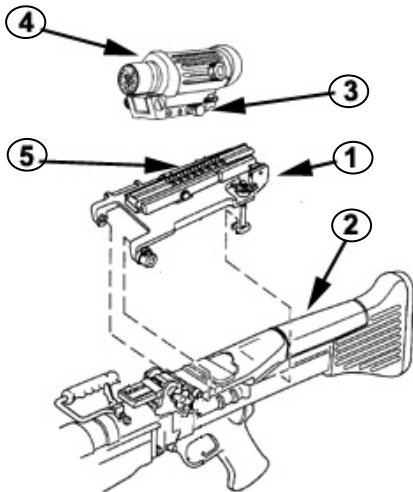
6. Mount the sight to the bracket by aligning the scribe line on the sight and the bracket. Tighten the screw to secure the sight to the bracket.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 13.0 Squares Down
 - ③ 10m Boresight Offsets (Zeroed for 500m): 0.5 cm Right; 14.5 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M60—M145, MACHINE GUN OPTIC, MOUNT PROCEDURES

M60 – M145, MGO Mounting Instructions



The M145, MGO, is mounted by installing the AN/PAS-13's M60 Mounting Bracket (P/N 80063A3170620). See TM 11-5855-302-12&P for detailed installation instructions.

1. Install the AN/PAS-13's M60 Mounting Bracket (1) on the M60 Machine Gun (2) IAW instructions contained in TM 11-5855.302-12 &P.

2. Loosen the clamping knob (3) on the M145, MGO (4) until there is sufficient space between the jaws of the rail grabber to fit on either side of the rail.

3. Place the M145 approximately 70mm (2-3/4 inches) in front of the firing eye. Tighten the Torque Limiting Knob on the rail grabber until two clicks are heard.

4. Ensure the mount is fastened, begin eye relief adjustment, IAW TM 9-1240-415-13&P.

CAUTION

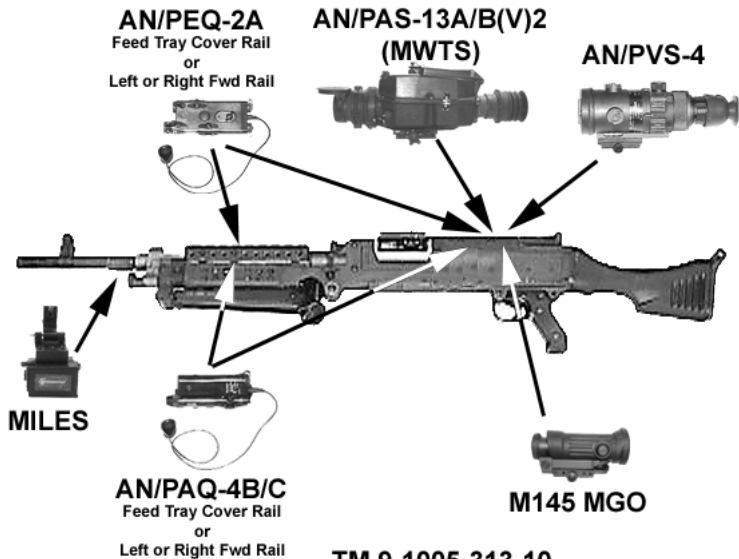
Insure that the objective lens of the M145 does not strike the weapon when the feed tray cover is raised.

5. If the operator must remove the sight from the rail he must take note of the slot and insure that he return the device to the same rail slot in order to retain zero.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): N/A
- ③ 10m Boresight Offsets (Zeroed for 500m): TBD
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B MACHINE GUN









TM 9-1005-313-10

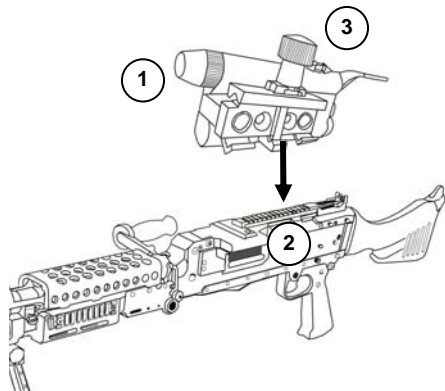
M240B Iron Sight Offsets:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 9.2 Squares Up
- ③ 10m Boresight Offsets (Zeroed for 500m): 0.0 cm Left/Right; 2.5 cm Up

M240B Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	
 AN/PVS-4	Range: 450m (Starlight), 900m (1/4 moon)																				
 AN/PAQ-4C	Range: 600m																				
 AN/PAS-13A/B(V)2, MWTS	Personnel Recognition Range: 1100m																				
 AN/PEQ-2A	Range: 600m (Low Power), 2,000m (High Power)																				
 M145	Range: 1200m																				
 M240B	Max Eff Range: Point-800m, Area-1800m																				

M240B—AN/PAQ-4C USING MOUNTING BRACKET/PICATINNY RAIL GRABBER ON FEED TRAY COVER RAIL



M240B – AN/PAQ-4C Mounting Instructions

The AN/PAQ-4C (1) is mounted on the top cover rail (2) (see arrow) using the AN/PAQ-4C Bracket Assembly) (NSN 5340-01-458-0473).

1. Mount the bracket assembly to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.

2. Loosen the clamping knob (3) until the rail grabber/mount has sufficient space to fit over the top cover rail (2). Tighten the clamping knob until two clicks are heard.

3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

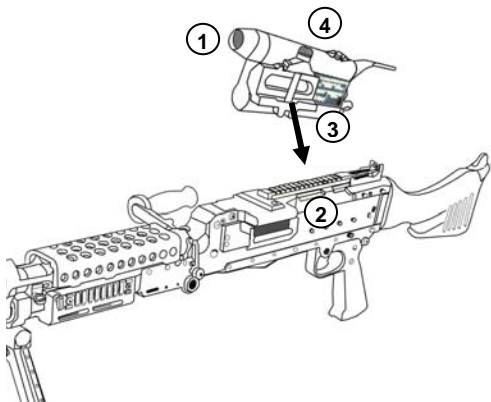
NOTE

The device may be placed on the rail wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 1.8 Squares Right; 2.2 Squares Down
 - ③ 10m Boresight Offsets (Zeroed for 500m): 1.5 cm Left; 3.5 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—AN/PAQ-4C USING “INSIGHT” LOW PROFILE RAIL GRABBER ON FEED TRAY COVER RAIL



The AN/PAQ-4C (1) may be mounted on the top cover rail (2) (see arrow) by using the Insight Low Profile Rail Grabber (3) (NSN 5340-01-458-0990) depicted in the diagram at left.

1. Attach the Insight Low Profile Rail Grabber to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.
2. Loosen the clamping knob (4) until the rail grabber has sufficient space to fit over the rail (2). Tighten the clamping knob until a snug fit is achieved.
3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

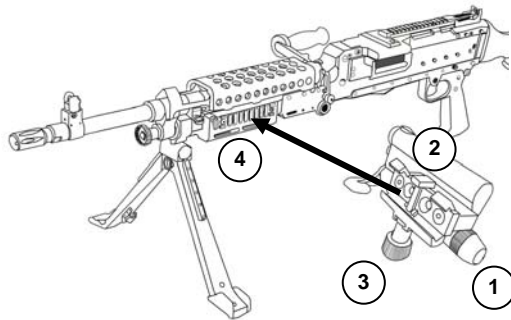
NOTE

The device may be placed on the rail wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 1.8 Squares Right; 8.3 Squares Up
- ③ 10m Boresight Offsets (Zeroed for 500m): 1.8 cm Left; 0.8 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—AN/PAQ-4C USING MOUNTING BRACKET/PICATINNY RAIL GRABBER ON FORWARD RAILS



The AN/PAQ-4C (1) may be mounted on the left or right side rails using the Mounting Bracket/Picatinny Rail Grabber (NSN 5340-01-458-0473) depicted in the diagram at left.

1. Attach the Mounting Bracket/Picatinny Rail Grabber(2) to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.
2. Loosen the clamping knob (3) until the rail grabber/ mount has sufficient space to fit over the forward rail (4). Tighten the clamping knob until two clicks are heard.

3. Install the remote switch (not shown) in a convenient location using the provided cable hangers.

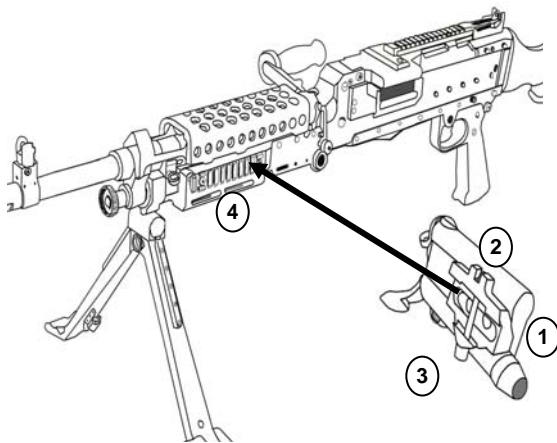
NOTE

The device may be placed on the left or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets (Zeroed for 500m):
 - Left Side Rail Mounting: 7.8 Squares Right; 17.7 Squares Up
 - Right Side Rail Mounting: 7.8 Squares Left; 13.5 Squares Up
- ◎ 10m Boresight Offsets (Zeroed for 500m):
 - Left Side Rail Mounting: 7.9 cm Left; 8.1 cm Down
 - Right Side Rail Mounting: 7.5 cm Right; 4.4 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B —AN/PAQ-4C USING “INSIGHT” LOW PROFILE RAIL GRABBER ON FORWARD RAILS



The AN/PAQ-4C (1) may be mounted on either the left or right forward rails by using the Insight Low Profile Rail Grabber (2) depicted in the diagram at left.

1. Attach the Insight Low Profile Rail Grabber to the AN/PAQ-4C (1) using the thumbscrew on the AN/PAQ-4C.
2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the rail (4). Tighten the clamping until a snug fit is achieved.
3. Install the remote switch in a convenient location using the provided cable hangers.

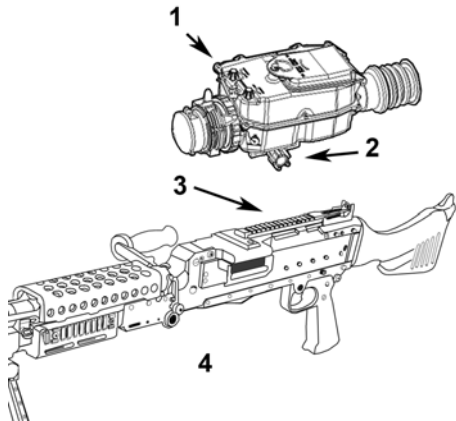
NOTE

The device may be placed on the left or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets (Zeroed for 500m):
 - Left Side Rail Mounting: 6.2 Squares Right; 17.7 Squares Up
 - Right Side Rail Mounting: 5.9 Squares Left; 13.5 Squares Up
 - ◎ 10m Boresight Offsets (Zeroed for 500m):
 - Left Side Rail Mounting: 6.2 cm Left; 8.1 cm Down
 - Right Side Rail Mounting: 6.0 cm Right; 4.4 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—AN/PAS-13A/B(V)2 (MWTS) MOUNT PROCEDURES



M240B – AN/PAS-13A/B(V)2, TWS Mounting Instructions (See Annex B for Target Prep Instructions)

The AN/PAS-13A/B(V)2 comes with an integrated rail grabber with torque limiting knob. This allows the AN/PAS-13 to be attached to the M240B Feed Tray Cover Rail with a minimum of time and effort.

1. In order to install the AN/PAS-13A/B(V)2 (1) loosen the clamping knob (2) until sufficient space exists to place the clamping jaws on either side of the mounting rail (3). Tighten clamping knob (2) until two clicks are heard.

2. The AN/PAS-13A/B(V)2 may be placed at position number 5 or back (counting from the back of the rail to the front) on the top feed tray cover rail, as long as the rail grabber/mount does

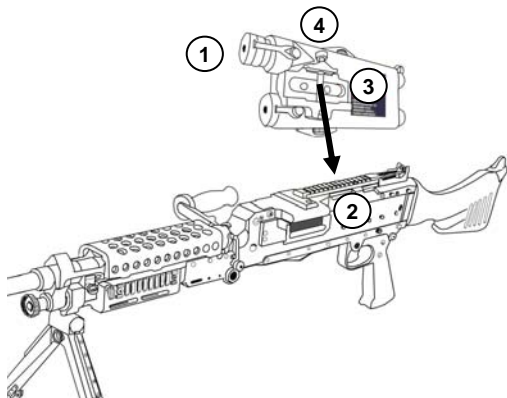
not extend beyond the rail. Should the device be installed forward of the number five slot the sight will interfere with the operator's ability to raise the barrel handle and the sight's objective lens will strike the weapon, when the feed tray cover is opened.

3. If the AN/PAS-13A/B(V)2 is removed from the rail the operator must return the device to the same position it was zeroed at in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 2.3 Squares Up
 - ③ 10m Boresight Offsets (Zeroed for 500m): 0.0 cm Left/Right; 8.0 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—AN/PEQ-2A USING “INSIGHT” LOW PROFILE RAIL GRABBER MOUNT ON FEED TRAY COVER RAIL



The AN/PEQ-2A (1) is mounted on the top cover rail (2) (see arrow) by using the Insight Low Profile Rail Grabber (3) depicted in the diagram at left.

1. Attach the Insight Low Profile Rail Grabber to the AN/PEQ-2A (1) using the thumbscrew on the AN/PEQ-2A.
2. Loosen the clamping knob (4) until the rail grabber has sufficient space to fit over the rail (2). Place the grabber onto the rail. Tighten the clamping until a snug fit is achieved.
3. Install the remote switch in a convenient location using the provided cable hangers.

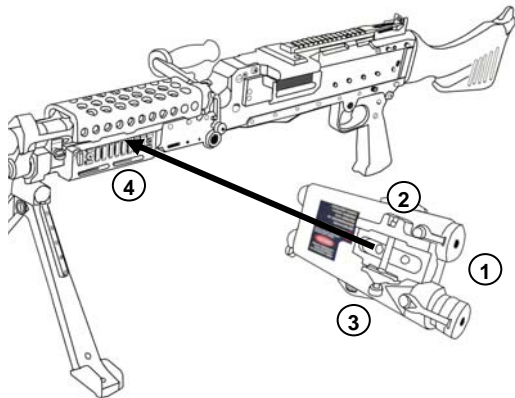
NOTE

The device may be placed on the rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 1.7 Squares Left; 6.0 Squares Up
- ③ 10m Boresight Offsets (Zeroed for 500m):
 - Aiming Light: 1.7 cm Right; 2.2 cm Up
 - Flood Light: 2.3 cm Left; 2.2 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—AN/PEQ-2A USING “INSIGHT” LOW PROFILE RAIL GRABBER ON FORWARD RAILS



The AN/PEQ-2A (1) may be mounted on either the left or right forward rails by using the Insight Low Profile Rail Grabber (2) depicted in the diagram at left.

1. Attach the Insight Low Profile Rail Grabber to the AN/PEQ-2A (1) using the thumbscrew on the AN/PEQ-2A.
2. Loosen the clamping knob (3) until the rail grabber has sufficient space to fit over the rail (4). Place the rail grabber over the rail. Tighten the clamping knob until the device fits snugly on the rail.
3. Install the remote switch in a convenient location using the provided cable hangers.

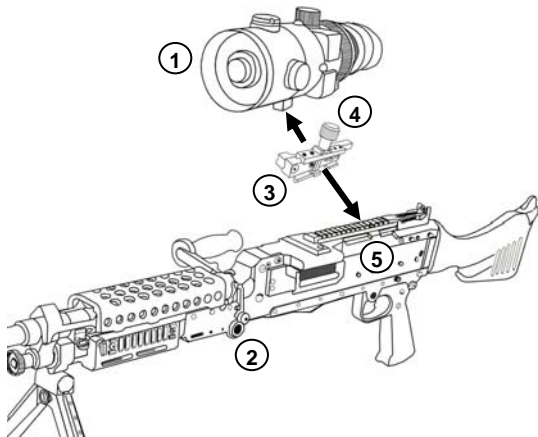
NOTE

The device may be placed on the left or right rail, wherever is most convenient for the operator. If however the device is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m):
 - Left Side Rail Mounting: 6.2 Squares Right; 13.5 Squares Up
 - Right Side Rail Mounting: 6.1 Squares Left; 17.7 Squares Up
- ③ 10m Boresight Offsets (Zeroed for 500m):
 - Left Side Rail Mounting:
 - Aiming Light: 6.2 cm Left; 4.1 cm Down
 - Flood Light: 6.2 cm Left; 8.1 cm Down
 - Right Side Rail Mounting:
 - Aiming Light: 6.2 cm Right; 7.9 cm Down
 - Flood Light: 6.2 cm Right; 3.9 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—AN/PVS-4 MOUNT PROCEDURES



M240B – AN/PVS-4 Mounting Instructions

In order to properly mount the AN/PVS-4 (1) to the M240B (2) the unit Armorer must first install a spacer (NSN 5365-01-447-8991) and a rail grabber/mount (NSN 5340-01-449-8533) (3) on the AN/PVS-4.

1. Loosen the clamping knob (4) until sufficient space exists to place the clamping jaws on either side of the mounting rail (5). Tighten clamping knob (4) until two clicks are heard.

2. The AN/PVS-4 may be placed at position 5 or back (counting from the back of the rail to the front) on the top feed tray cover rail, as long as the rail grabber/mount does not extend beyond

the rail. Should the device be installed forward of the number five slot the sight will interfere with the operator's ability to raise the barrel handle, and the sights objective lens will strike the weapon when the feed tray cover is opened.

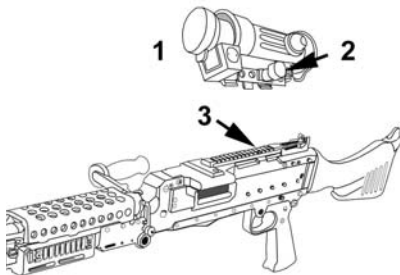
3. If the AN/PVS-4 is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 6.2 Squares Down
 - ③ 10m Boresight Offsets (Zeroed for 500m): 0.0 cm Left/Right; 6.0 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M240B—M145, MACHINE GUN OPTIC, MOUNT PROCEDURES

M240B – M145 MGO Mounting Instructions



The M145 MGO comes with an integrated rail grabber with torque limiting knob. This allows the MGO to be attached to the M240B with Integrated Feed Tray Cover Rail with a minimum of time and effort.

1. In order to install the MGO (1) loosen the clamping knob (2) until sufficient space exists to place the clamping jaws on either side of the mounting rail (3). Tighten clamping knob (2) until two clicks are heard.

2. Place the M145 approximately 70mm (2-3/4 inches) in front of the firing eye. Ensure that the M145 is securely attached to the feed tray cover rail and

begin eye relief adjustment, IAW TM 9-1240-415-13&P.

3. If the MGO is removed from the rail the operator must take note of the position at which the device was zeroed, and return the device to that same position in order to insure that zero is retained.

Target offsets required to properly zero the device to the weapon are as follows:

© 25m Fired Zero Offsets (Zeroed for 500m): N/A

© 10m Boresight Offsets (All Ranges, Use 10mZ Reticule): 0.0 cm Left/Right; 0.0 cm Up/Down

- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M2 MACHINE GUN

**MILES Emitter
w/ Bracket**



AN/PEQ-2A



**AN/PAS-13A/B(V)3
(HWTS)**







AN/TVS-5



TM 9-1005-213-10

M2 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	2100m	2200m
 AN/PAS-13A/B(V)3, HWTS	Personnel Recognition Range: 2200m																					
 AN/PEQ-2A	Range: 600m (Low Power); 2,000m (High Power)																					
 AN/TVS-5 600m	Range: 650m (Starlight), 1,380m (4 moon)																					
 M2	Max Eff Range: 1,829m																					

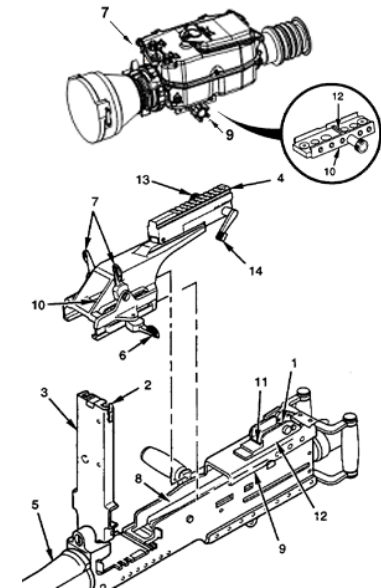
M2—AN/PAS-13 (HTWS) MOUNT PROCEDURES

M2 – AN/PAS-13, TWS Mounting Instructions

(See Annex B for Target Prep Instructions)

Mounting HTWS on M2 Machine Gun. Refer to Figure for mounting HTWS on M2 machine gun.

1. Fold rear sight (1) forward to storage position.
2. Release cover latch (2) at side of cover (3) and fully raise cover.
3. Mount M2 bracket (Part No. A3170570) (4) on M2 machine gun (5).
 - a. Release three locking cams (6 and 7) on bracket (4).
 - b. Place bracket (4) over breech (8) of M2 machine gun (5).
 - c. Slide bracket (4) over ledge (9) of M2 machine gun (5) until inside edge (10) of bracket touches front edge (11) of rear sight base (12).
 - d. Swing side locking cam (6) towards rear of M2 machine gun (5).

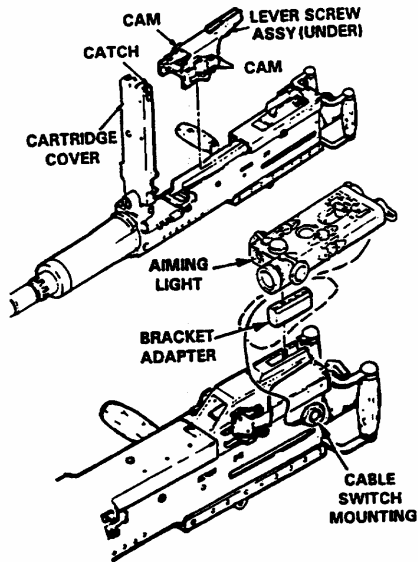


- e. Swing two top locking cams (7) towards rear of M2 machine gun (5). Lower cover (3) until cover latch (2) engages.
4. Loosen locking knob (13) and swing range lever (14) to NEAR position. Hand tighten knob.
5. Install HTWS (15) on bracket rail.
 - a. Loosen knob (16) on rail grabber until there is sufficient space to fit the jaws on either side of the rail.
 - b. Select slot a on rail for mounting. Any slot may be used as long as rail grabber/mount does not hang over edge of rail.
 - c. Place bar (17) of mount in slot of rail and hand tighten knob on rail grabber/mount until two clicks are heard.

Target offsets required to properly zero the device to the weapon are as follows

- ⊙ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 12.8 Squares Down
 - ⊙ 10m Boresight Offsets (Zeroed for 500m): 0.0 cm Left/Right; 16.3 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M2—AN/PEQ-2A MOUNT PROCEDURES



M2 – AN/PEQ-2A Mounting Instructions

The AN/PEQ-2A is attached to the M2 Machine Gun using a Bracket Adapter (NSN: 5340-01-362-9873) and an M2 Mounting Bracket (NSN: 5855-01-045-5482).

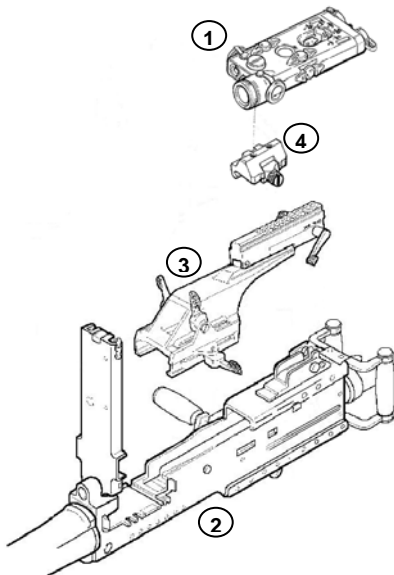
1. Release the catch at the left side of the top cover and raise the cover to the UP position.
2. Position the M2 Mounting Bracket assembly over the breech of the Machine Gun and slide it to the rear until it stops beyond the rear edge of the breech (see Figure).
3. Swing the three locking cams to the rear to secure the bracket to the weapon (side cam first, followed by two top locking cams).
4. Close the top cover and secure with the catch.
5. Secure the Bracket Adapter to the underside of the AN/PEQ-2A.
6. Place the Bracket Adapter into the M2 bracket mounting groove with the rear of the adapter flush

with the rear of the bracket. Tighten the bracket's lever screw into the Bracket Adapter hole.

Target offsets required to properly zero the device to the weapon are as follows:

- ◎ 25m Fired Zero Offsets (Zeroed for 500m): 1.5 Squares Left; 9.5 Squares down
- ◎ 10m Boresight Offsets (Zeroed for 500m):
 - Aiming: 2.0 cm Right; 9.2 cm Up
 - Flood: 2.0 cm Left; 9.2 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M2—AN/PEQ-2A MOUNTED WITH THE AN/PAS-13 BRACKET ASSEMBLY, M2



The AN/PEQ-2A (1) may be mounted to the M2 Machine Gun (2) by use of the AN/PAS-13's Bracket Assembly-M2 (3) and the AN/PEQ-2A's Rail Grabber Mounting Bracket (4).

1. Fold M2's rear sight forward to storage position.
2. Release cover latch at side of cover and fully raise cover.
3. Mount AN/PAS-13's Bracket Assembly-M2 (3) on M2 machine gun (2).
4. Release locking cams on bracket (3).
 - a. Place bracket (3) over breech of M2 machine gun (2).
 - b. Slide bracket (3) over ledge of M2 machine gun (2) until inside edge of bracket touches front edge of rear sight base.
 - c. Swing side locking cam towards rear of M2 machine gun (2).
 - d. Swing two top locking cams towards

rear of M2 machine gun (2). Lower cover until cover latch engages.

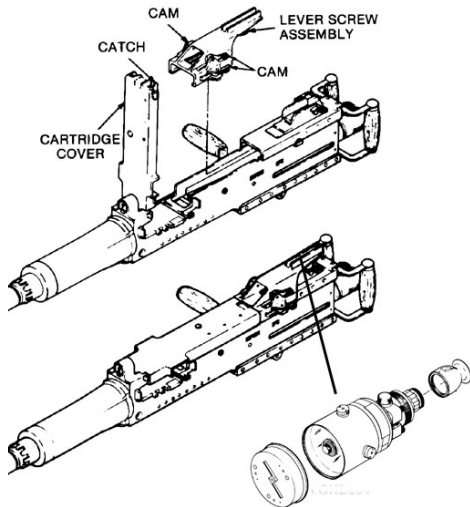
5. Loosen locking knob and swing range lever to NEAR position. Hand tighten knob.
6. Secure the Rail Grabber Mounting Bracket "Insight" (4) to the underside of the AN/PEQ-2A (1).
7. Place the Rail Grabber Mounting Bracket (4) onto the Bracket Assembly, M2 (3), ensuring sufficient space exists between the Rail Grabber's jaws to fit over the rail. Tighten the Rail Grabber knob until the rail grabber fits snugly around the rails.

NOTE: Check the rail grabber frequently during weapon operation to ensure the device is still properly secured to the weapon.

Target offsets required to properly zero the device to the weapon are as follows

- ⊙ 25m Fired Zero Offsets (Zeroed for 500m): 2.0 Squares Right; 8 Squares Up
 - ⊙ 10m Boresight Offsets (Zeroed for 500m): 2.0 cm Right; 12.0 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

M2—AN/TVS-5 MOUNT PROCEDURES



M2 – AN/TVS-5 Mounting Instructions

Install the AN/TVS-5 Mounting Bracket (NSN 5855-01-045-5482) per instructions contained in TM 11-5855-214-10.

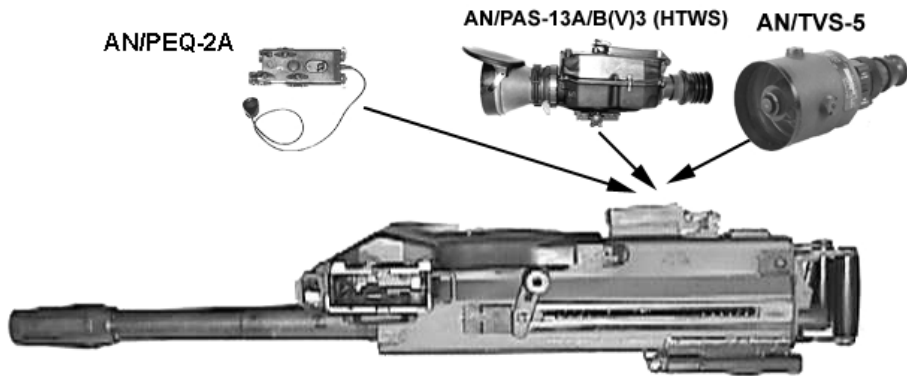
1. Release the catch at the left side of top cover and raise cover to the UP position.
2. Position the M2 mounting bracket assembly over the breech of the machinegun and slide it to the rear until it stops.
3. Swing the three locking cams to the rear to secure the bracket to the weapon (side cam first, followed by two top locking cams).
4. Close the top cover and secure it with the catch.
5. Install the sight on the M2 mounting bracket assembly by positioning it in the groove at the top rear of the bracket so that the scribe line in the sight on the bracket is aligned with the scribe line in the sight-mounting adapter. Tighten

the lever screw to secure the sight to the bracket. It will be easier to tighten the lever screw if you will place an empty cartridge case over the lever arm to increase the amount of leverage applied.

Target offsets required to properly zero the device to the weapon are as follows:

- ③ 25m Fired Zero Offsets (Zeroed for 500m): 0.0 Squares Left/Right; 10.6 Squares Down
 - ③ 10m Boresight Offsets (Zeroed for 500m): 0.0 cm Left/Right; 13.8 cm Up
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.





MK19 GRENADE MACHINE GUN



TM 9-1010-230-10

10m Boresight Target Offset for the MK19 Iron Sight is 2.4 cm Right; 33.9 cm Down

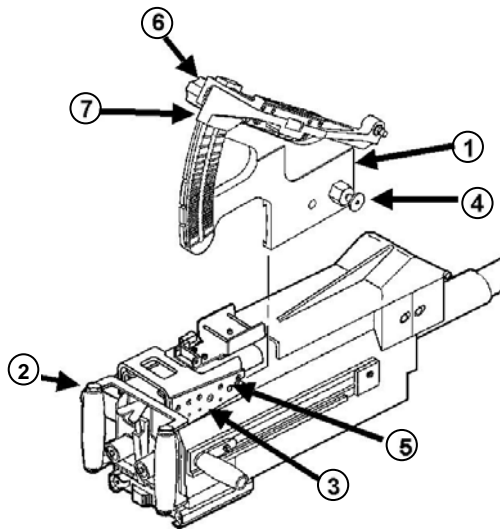
MK19 Range Reference Sheet

	100m	200m	300m	400m	500m	600m	700m	800m	900m	1000m	1100m	1200m	1300m	1400m	1500m	1600m	1700m	1800m	1900m	2000m	2100m	2200m
 AN/PAS-13A/B(V)3, HWTS	Personnel Recognition Range: 2200m																					
 AN/PEQ-2A	Range: 600m (Low Power), 2,000m (High Power)																					
 AN/TVS-5	Range: 650m (Starlight), 1,380m (¼ moon)																					
 MK19	Max Eff Range: 1,500 (Point)-2,212 (Area)																					

MK19—AN/PEQ-2A MOUNT PROCEDURE, USING AN/PAS-13(V)3 MK19 BRACKET

MK19—AN/PAS-13A/B(V)3 Mounting Instructions

(See Annex B for Target Prep Instructions)



1. Install MK19 bracket (1) (NSN 5340-01-434-2231) on MK19 machine gun (2) IAW TM 11-5855-302-12&P.

2. Slide MK19 bracket (1) onto mount (3) until locking pin (4) engages in hole (5) of mount.

a. Confirm locking pin (4) is fully engaged.

b. Raise arm (6) of bracket (1).

c. Loosen locking knob (7).

d. Push in locking knob (7) and raise arm (6) to up most position (2057 meters).

e. Hand tighten locking knob (7).

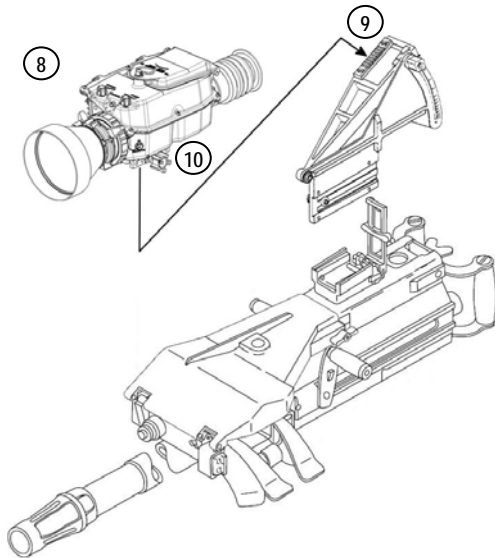
3. Install HTWS (8) on rail (9).
 - a. Loosen TWS grabber knob(10).
 - b. Select slot on rail for mounting. Any slot may be used as long as mount does not hang over edge of rail.
 - c. Place bar of mount in slot of rail and hand tighten knob on mount until two clicks are heard.

Note

Mount (3) previously installed by supporting direct support maintenance unit.

Target offsets required to properly zero the device to the weapon are as follows

- ③ 25m Fired Zero Offsets (Zeroed for 500m): NA
 - ③ 10m Boresight Offsets (Zeroed for 500m): 17.7 cm Right; 24.5 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.



MK19—AN/PAS-13A/B(V)3 Zero Procedure

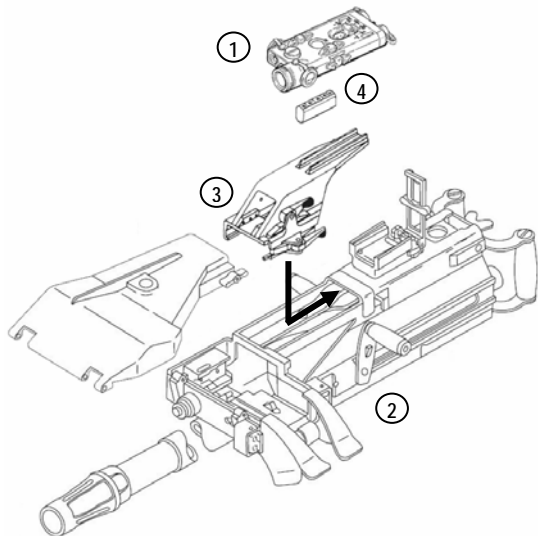
1. Select a fixed target at 400 to 600 meters.
2. Set range on MK19 bracket to range of target.
3. Place TWS in operation.
4. Set FOV ring to NARROW position.
5. Press and release RETICLE SELECT switch until display shows reticle for MK19 machine gun.
6. Use the RETICLE ADJUST switch to set Azimuth and Elevation indicators to zero.
7. Place reticle aim point on center of mass of target by moving Traverse and Elevation mechanism (T and E) of gun. Fire one round and observe impact of round.
8. Adjust reticle to move impact of round to center of mass of target.
 - a. If impact of round is behind target, use the RETICLE ADJUST switch to decrease the up elevation setting or increase the down elevation setting.
 - b. If impact of round is in front of target, use the RETICLE ADJUST switch to increase the up elevation setting or decrease the down elevation setting.
 - c. If impact of the round is left of target, use the RETICLE ADJUST switch decrease the left azimuth setting or increase the right azimuth setting.

d. If impact of round is right of target, use the RETICLE ADJUST switch to increase the left azimuth setting or decrease the right azimuth setting.

9. Repeat steps 7 and 8 until round impacts target.

10. Record setting of Azimuth and Elevation indications.

MK19—AN/PEQ-2A MOUNT PROCEDURES, USING AN/TVS-5 BRACKET ASSY-M2



MK19 – AN/PEQ-2A Mounting Instructions

The AN/PEQ-2A (1) is mounted to the MK19 (2) in the same manner that the AN/PEQ-2A is mounted to the M2 machine gun, using the same mounting bracket (3) (NSN 5855-01-045-5482) per instructions contained in TM 11-5855-214-10.

1. Release the catch at the left side of top cover and raise cover to the UP position. (Cover shown removed for clarity's sake.)

2. Position the AN/TVS-5 Bracket Assy, M2 (3) over the breech of the machinegun and slide it to the rear until it stops.

3. Swing the three locking cams to the rear to secure the bracket to the weapon (side cam first, followed by two

top locking cams).

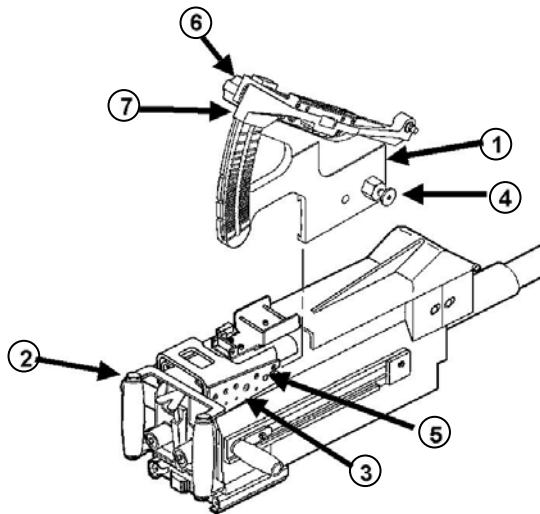
4. Close the cover and secure it with the catch.
5. Attach the AN/PEQ-2A (1) to the bracket adapter (4) by using the thumbscrew.

6. Install the AN/PEQ-2A (attached to the bracket adapter (4)) on the M2 mounting bracket assembly by positioning it in the groove at the top rear of the bracket. Tighten the lever screw, on the underside of the bracket's groove, to secure the sight to the bracket. It will be easier to tighten the lever screw if you will place an empty cartridge case over the lever arm to increase the amount of leverage applied.

Target offsets required to properly zero the device to the weapon are as follows

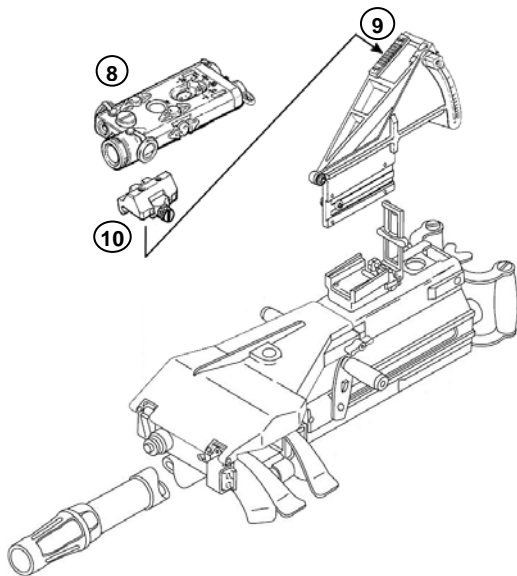
- ⊙ 25m Fired Zero Offsets (Zeroed for 500m): NA
- ⊙ 10m Boresight Offsets (Zeroed for 500m):
 - Aiming: 4.4 cm Right; 23.4 cm Down
 - Flood: 0.4 cm Right; 23.4 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

MK19—AN/PEQ-2A MOUNT PROCEDURES, USING TWS TWO RAIL ADJUSTABLE SIGHT BRACKET



The AN/PEQ-2A can be mounted to the MK19 by using the AN/PAS-13's two rail Adjustable Sight Bracket.

1. Install MK19 bracket (1) (Part No. A3260830) on MK19 machine gun (2) IAW TM 11-5855-302-12&P.
2. Slide MK19 bracket (1) onto mount (3) until locking pin (4) engages in hole (5) of mount.
 - a. Confirm locking pin (4) is fully engaged.
 - b. Raise arm (6) of bracket (1).
 - c. Loosen locking knob (7).
 - d. Push in locking knob (7) and raise arm (6) to up most position (2057 meters).



3. Install AN/PEQ-2A (8) on rail (9).

a. First install the Rail Grabber Mounting Bracket (10) on the AN/PEQ-2A (8) using the thumbscrew.

b. Select slot on rail for mounting. Any slot may be used as long as mount does not hang over edge of rail.

c. Place bar of mount in slot of rail and hand tighten knob on mount until two clicks are heard.

4. The AN/PEQ-2A may be placed on either the top rail or the side rail. Offsets supporting both locations can be found below.

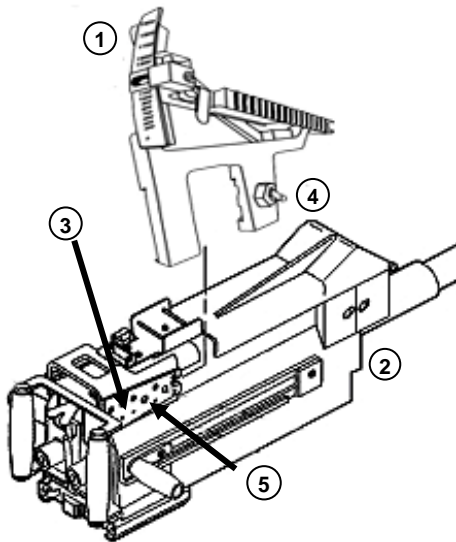
NOTE

Mount (3) previously installed by supporting direct support maintenance unit.

Target offsets required to properly zero the device to the weapon are as follows

- ◎ 25m Fired Zero Offsets (Zeroed for 500m): NA
- ◎ 10m Boresight Offsets (Zeroed for 500m):
 - Top Rail: Aiming: 19.0 cm Right; 27.0 cm Down
 - Side Rail: Aiming: 23.0 cm Right; 35.5 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

MK19—AN/PEQ-2A USING AN/PEQ-2A ADJUSTABLE SIGHT BRACKET-MK19 WITH AN/PEQ-2A RAIL GRABBER MOUNTING BRACKET



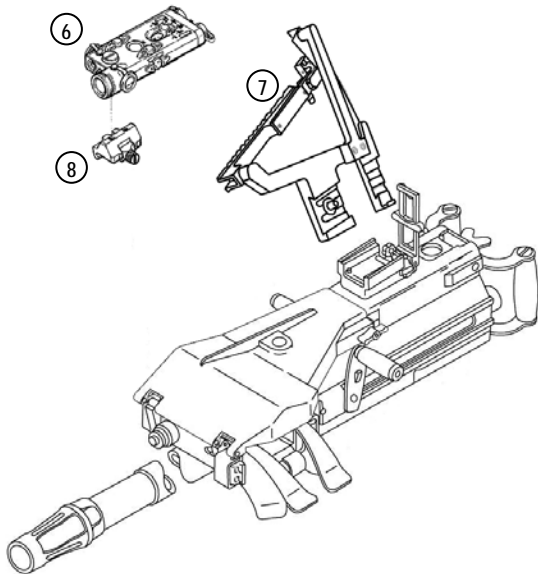
The AN/PEQ-2A can be mounted to the MK19 by using the “Picatinny” AN/PEQ-2/AN/PAQ-4 Adjustable Sight Bracket.

1. Install MK19 Adjustable Sight Bracket-MK19 (1) (NSN 1240-01-515-3767) onto MK19 Grenade Machine Gun (2).

2. Slide MK19 bracket (1) onto mount (3) until locking pin (4) engages in hole (5) of mount. Confirm locking pin (4) is fully engaged.

Note

Mount (3) previously installed by supporting direct support maintenance unit.



3. Install AN/PEQ-2A (6) on rail (7).

a. First install the Rail Grabber Mounting Bracket (8) on the AN/PEQ-2A (6) using the thumbscrew..

b. Select slot on rail for mounting. Any slot may be used as long as mount does not hang over edge of rail.

c. Rotate the AN/PEQ-2A Rail Grabber until it is sideways and parallel to the rail.

d. Place bar of mount in slot of rail and hand tighten knob on mount until the rail grabber fits snugly around the rail.

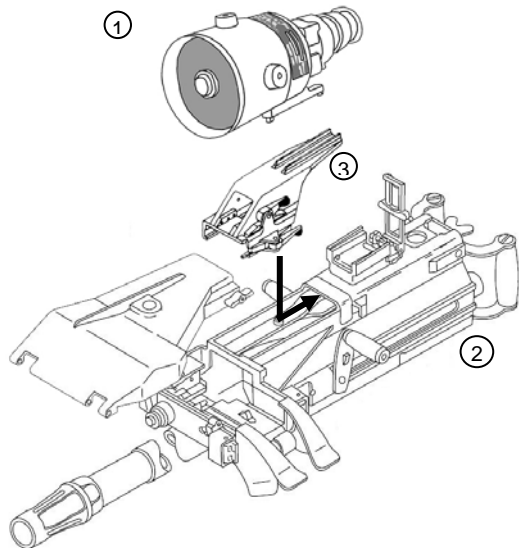
Note:

During operation remember to periodically check the tightness of the mount to insure the device is still securely attached.

Target offsets required to properly zero the device to the weapon are as follows

- ③ 25m Fired Zero Offsets (Zeroed for 500m): NA
- ③ 10m Boresight Offsets (Zeroed for 500m): Aiming: 13.5 cm Right; 33.0 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
- See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

MK19—AN/TVS-5 MOUNT PROCEDURES



The AN/TVS-5 (1) is mounted to the MK19 (2) in the same manner that it is mounted to the M2 machine gun, and uses the same mounting bracket (3) (NSN 5855-01-045-5482) per instructions contained in TM 11-5855-214-10.

1. Release the catch at the left side of top cover and raise cover to the UP position. (Cover removed for clarity sake.)
2. Position the M2 mounting bracket assembly (3) over the breech of the machinegun and slide it to the rear until it stops.
3. Swing the three locking cams to the rear to secure the bracket to the weapon (side cam first, followed by two top locking cams).
4. Close the top cover and secure it with the catch.

5. Install the sight on the M2 mounting bracket assembly by positioning it in the groove at the top rear of the bracket so that the scribe line in the sight on the bracket is aligned with the scribe line in the sight-mounting adapter. Tighten the lever screw to secure the sight.

Target offsets required to properly zero the device to the weapon are as follows

- ③ 25m Fired Zero Offsets (Zeroed for 500m): NA
 - ③ 10m Boresight Offsets (Zeroed for 500m): 2.4 cm Right; 14.5 cm Down
- See Annex G—OFFSET TARGET PREPARATION for instructions on how to prepare targets.
 - See Annex H—OFFSET TARGET SUMMARY for a complete table of all device offsets.

ANNEX A—REFERENCES

- TM 9-1005-201-10 Machine Gun, 5.56mm, M249 W/Equip, dtd July 1991
- TM 9-1005-213-10 Machine Gun, caliber 50, Browning, M2 Heavy Barrel, June 2001
- TM 9-1005-224-10 Machine Gun, 7.62-MM, M60 W/E (1005-00-605-7710), April 1998
- TM 9-1005-239-10 Long Range Sniper Rifle (LRSR), Caliber .50, M107, with Change 1
- TM 9-1005-245-13&P Ground Mounts; Machine Gun Mounts; And Combinations For Tactical/Armored Vehicles
- TM 9-1005-306-10 7.62mm M24 Sniper Weapon System (SWS), dtd June 1989
- TM 9-1005-313-10 Machine Gun, 7.62mm, M240, M240B, M240C, M240E1, M240G, w/ change 2 dtd 1 Nov 2002
- TM 9-1005-319-10 M16A2/M16A3/M16A4 Rifles and M4/M4A1 Carbines, dtd October 1998
- TM 9-1010-221-10 Grenade Launcher, 40mm-M203 and Grenade Launcher, 40mm-M203A1 dtd 1 Aug 2001

TM 9-1010-230-10	Machine Gun, 40MM, MK19, MOD 3, dtd 30 May 2001
TM 9-1240-413-12&P	M68 Sight, Reflex, W/Quick Release Mount And Sight Mount, dtd 25 July 2004
TM 9-1240-415-13&P	M145 Telescope (Machine Gun Optic), dtd 28 Feb 2000
TM 11-5855-213-10	AN/PVS-4 (Night Vision Sight, Individual Served Weapon), dtd 1 February 1993
TM 11-5855-214-10	Night Vision Sight, Crew Served Weapon, AN/TVS-5, dtd 15 February 1989
TM 11-5855-301-12&P	Light, Aiming, Infrared, AN/PAQ-4C, dtd 15 May 2000
TM 11-5855-302-12&P	Sight-Thermal, AN/PAS-13 (V) 2&3, dtd 1 January 1997 (Superseded)
TM 11-5855-309-12&P	Operator's and Unit Maintenance Manual, Sight, Thermal, AN/PAS 13A(V)2 & 3, dtd 15 May 2002.
TM 11-5855-312-10	Operator's Manual, Sight, Thermal, AN/PAS 13B(V)2 & 3, 15 Feb 2005
TM 11-5855-314-12&P	Operator's and Unit Maintenance Manual, Sight, Thermal, AN/PAS 13B(V)1, dtd 1 Nov 2004.

TM 11-5855-303-12&P	Sight, Night Vision Sniper Scope AN/PVS-10, dtd 1 March, 2003
TM 11-5855-306-10	Monocular Night Vision Device (AN/PVS-14), dtd 1 Jun 2000
TM 11-5855-308-12&P	Target Illuminator/Aiming Light (TPIAL) AN/PEQ-2A, dtd 15 May 2000
https://www.logsa.army.mil/etms/online.htm	The Logistics Support Activity (LOGSA) Web Site (Where, among other things, copies of ETMs can be located.)

ANNEX B—SIGHT/ACCESSORY OPERATING INSTRUCTIONS

AN/PAQ-4C

Operating Instructions
(TM 11-5855-301-12&P, 15 May 00)

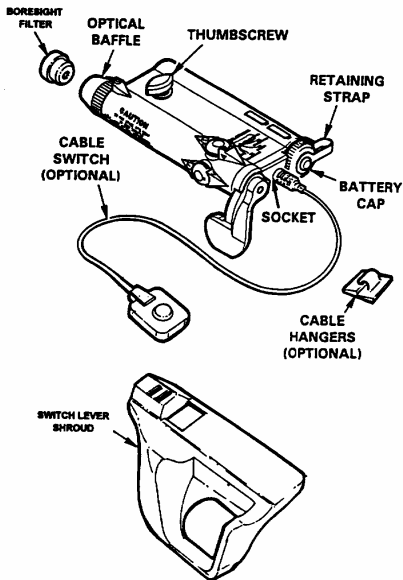
Batteries: BA-3058/U (x2)

General Functional Description

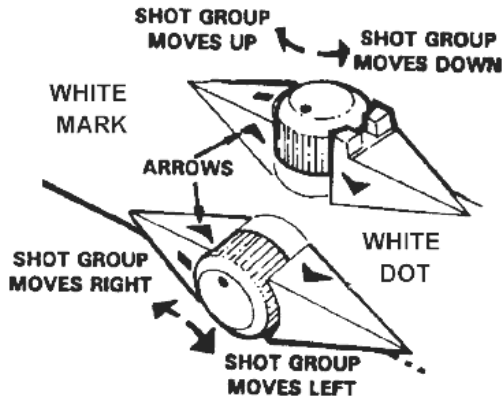
The Aiming Light projects an infrared laser beam which cannot be seen with the eye but can be seen with NVG's. The Aiming Light mounts on various weapons with Mounting Brackets and adapters.

The Aiming Light is activated by pressing on either the ON/OFF Switch lever, or the button on the optional Cable Switch. Either switch connects power from two AA Batteries to an internal electronic circuit, which produces the infrared laser. Internal lenses focus the infrared light into a narrow beam.

The direction of the beam is controlled by rotating the mechanical Adjusters with click detents. These adjusters are used to zero the Aiming Light to the weapon. Once zeroed to the weapon, the Aiming Light projects the beam along the line of fire of the



weapon. The Optical Baffle prevents off-axis viewing of the Aiming Light beam by the enemy.

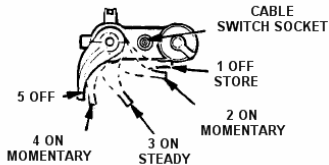


AIMING LIGHT CONTROLS AND INDICATORS

Adjusters. Adjusters enable the Aiming Light to be zeroed to the weapon. Adjuster movement has audible and tactile clicks. When mounted on the weapon, each click moves the shot group 0.4 Inches at 25 meters (0.4 mrad). This equals one square on a M16A2 25-meter zeroing target.

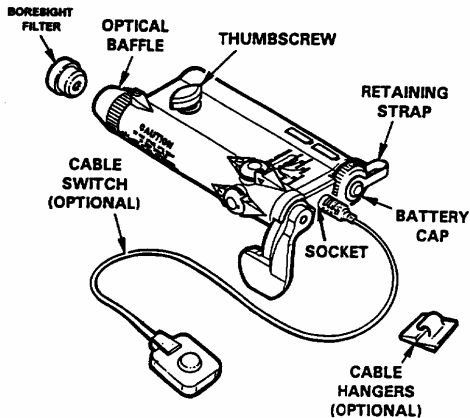
- The arrow printed on the flange on either side of the adjuster knobs indicates the direction of shot group movement.
- To move the shot group in the direction of the arrow place a finger on the side of the adjuster knob between the arrows and rotate the knob in the direction which moves the finger towards the arrow.
- At the full clockwise end of travel of either adjuster, the adjuster becomes harder to turn and the white dot on the adjuster knob will align within 2 clicks of the white mark on the knob's front flange.

Position	Function	Used for Weapons
1	OFF/ STORAGE	M2, M4, M60, M249, M16/M203, M136
2	ON MOMENTARY	M249, M4, M16/M203
3	ON STEADY	M2, M60, M136.
4	ON MOMENTARY	M16A1/A2
5	OFF	M16A1/A2



b. ON/OFF Switch

The ON/OFF switch has five positions (see table). The label printed on top of the Aiming Light only shows the switch function location, not the position number.



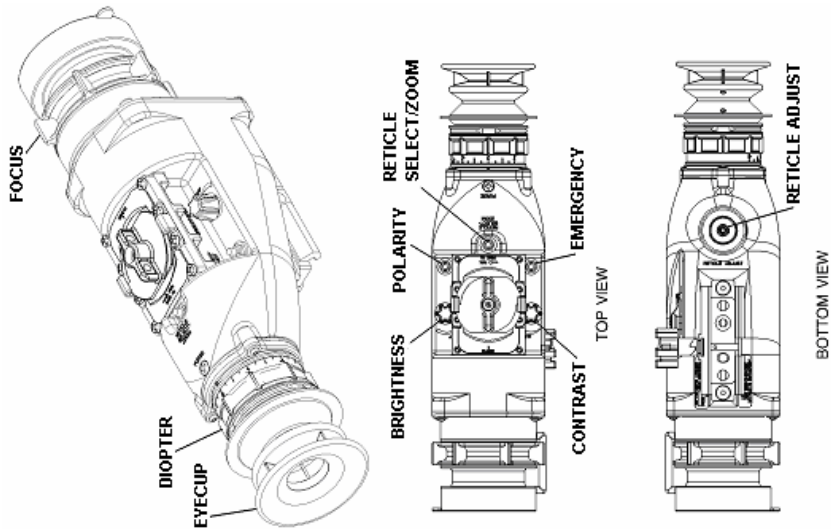
The Cable Switch provides momentary "Operation for the Aiming Light when mounted on selected weapons. The ON/OFF Switch must be in the OFF (#1 or #5) position for the button on the Cable Switch to properly activate the Aiming Light. Optional cable hangers are provided for securing the cable to the weapon.

"If environmental conditions are such that the soldier's ability to conduct a 25m zeroing of the device and weapon is being hindered due to "IR Blooming" one to the following methods should be used to reduce the blooming effect:

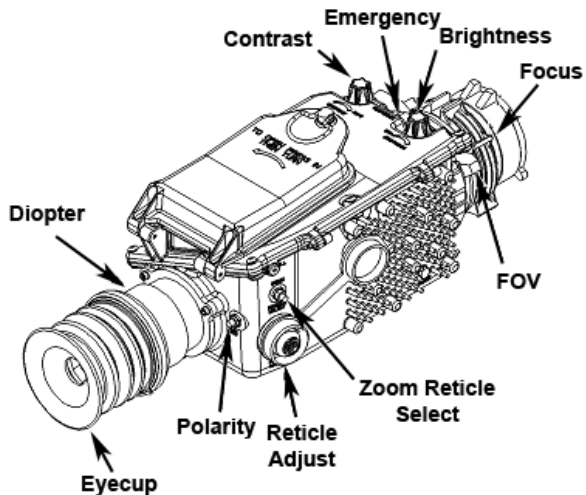
1. Install the Borelight Filter that was issued with the device. If it is not dark enough for this method to work effectively use method 2, as outlined below.
2. Cut a 2 by 2 square block out of the center of the target. The laser will bloom on the zero target until the aiming laser is emitting through the 2 x 2 hole. Once the laser is properly centered on the hole the blooming is reduced and zeroing may continue with a higher assurance of completing a successful zero."

AN/PAS-13

AN/PAS-13B(V)1



AN/PAS-13A/B(V)2 & 3



**Batteries: BA-5347A/U (x1) or
BB-2847/U (x1)**

AN/PAS-13 Variant Compatibilities

Thermal Weapon Sight (TWS) Version	TWS NSN	M16 Series	M4 Series	M136	M240B	M249	Squad Ldr's Weapon	M2 HB	MK19 GMG	M24 SWS	M107 LRSR
AN/PAS-13A(V)2	5855-01-458-0210	X	X	X	X	X					
AN/PAS-13A(V)3	5855-01-458-0211						X	X	X	X	X
AN/PAS-13B(V)2	5855-01-464-3152	X	X		X	X					
AN/PAS-13B(V)3	5855-01-464-3151						X	X	X	X	X
AN/PAS-13B(V)1	5855-01-464-3150	X	X	X							

AN/PAS-13 Operating Instructions

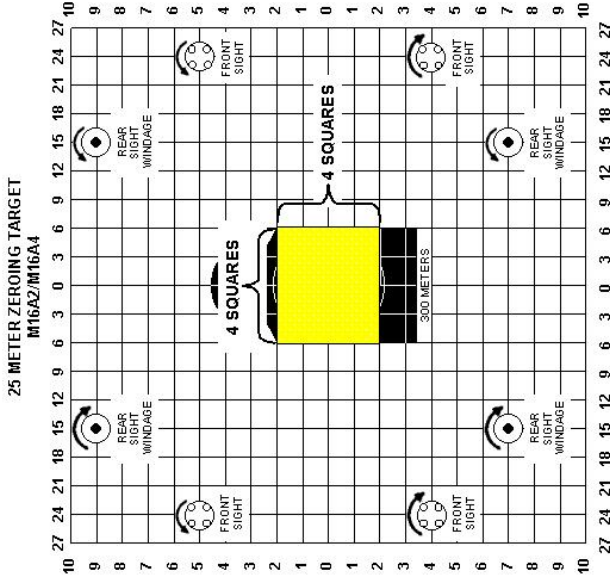
1. Pushing in the BRIGHTNESS knob turn the knob clockwise to mid-range position to turn on TWS power. (One click will do.)
2. Place eye to eyecup and push until flaps inside eyecup open.
3. Looking at indicators, adjust diopter on eyepiece for best focus.
4. Remove eye from eyecup and wait for cool-down period to complete.
5. Open objective lens cover on telescope.
6. Place eye to eyecup and push until flaps inside eyecup open.
7. Set CONTRAST knob to AUTO or adjust for best scene.
8. Adjust FOCUS on telescope for best picture.
9. Adjust BRIGHTNESS knob for best picture.
10. Using BLK/WHT switch, select polarity as desired.
11. Rotate FOV ring to select WIDE or NARROW field of view as desired.
12. Repeat steps 1 through 11 as needed to accomplish mission.
13. Following operation, turn off power by pushing in and turning BRIGHTNESS knob fully counterclockwise to OFF detent position.

AN/PAS-13 Zero and Boresight Targets Preparation Procedures

1. Modify an M16A2 25-meter target.
 - a. Cut a square hole 4 squares wide by 4 squares high in a M16A2 25-meter zeroing target
 - b. Cut out a rectangle from a cardboard box, the same size as the M16A2 25-meter zeroing target (8.5" x 11")
 - c. Estimate 1 inch in from each side of cardboard rectangle and cut out a rectangular hole as shown in Figure 2-31.
 - d. Tape cardboard frame to back of modified M16A2 25-meter zeroing target.

2. Affix target to standard E-type silhouette or E-Type thermal silhouette

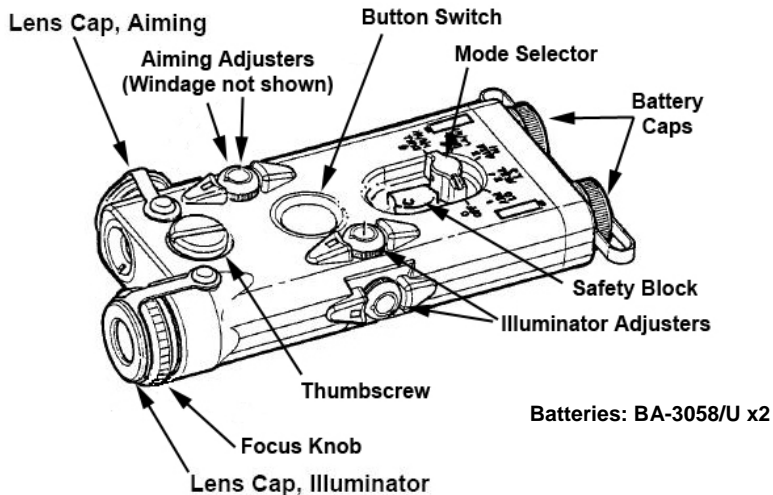
AN/PAS-13, TWS Target Preparation



ZERO TARGET DATA FOR M16A2/M16A4 RIFLE

- FOR ZEROING AT 25 METERS, ROTATE THE REAR SIGHT ELEVATION KNOB TO THE 300 METER SETTING. THEN CLOCKWISE (UP) ONE CLICK, PAST THE 300 METER SETTING FOR M16A2 RIFLE, CLOCKWISE (UP) TWO CLICKS PAST THE 300 METER SETTING FOR THE M16A4 RIFLE.
- AIM AT TARGET CENTER. ADJUST SIGHTS TO MOVE SHOT GROUP CENTER AS CLOSE AS POSSIBLE TO THE WHITE DOT IN THE CENTER OF TARGET.
- AFTER COMPLETING THE 25 METER ZERO, ROTATE THE REAR SIGHT ELEVATION KNOB COUNTER-CLOCKWISE (DOWN) ONE CLICK TO THE 300 METER SETTING FOR THE M16A2 RIFLE, DOWN TWO CLICKS TO THE 300 METER SETTING FOR THE M16A4 RIFLE. THE WEAPON WILL BE ZEROED FOR 300 METERS.

AN/PEQ-2A, TARGET POINTER ILLUMINATOR/AIMING LIGHT (TPIAL)



The AN/PEQ-2A is a Class IIIb laser that emits a highly collimated beam of infrared light for precise aiming of the weapon as well as a separate infrared illumination beam with adjustable focus. A safety block is provided for training purposes which limits the operator from selecting the high power modes.

Both beams can be zeroed to the weapon and each other. The beams can be operated individually or in combination.

The AN/PEQ-2A is for use with Night Vision Devices and can be used as either a handheld illuminator/pointer or can be weapon mounted with included brackets and accessory mounts. In weapon mounted mode, the AN/PEQ-2A can be used to accurately direct fire as well as illuminate and designate targets.

Operation Summary

1. Battery Installation. Unscrew the battery caps and install 2 AA batteries. Orient the batteries as indicated by the markings on the AN/PEQ-2A body.
2. The safety block can be installed in the **Training Mode (blue side up)** or **Tactical Mode (black side up)**. The Mode Selector is used to set the mode in which the TPIAL will operate and has 6 positions. Positions 3, 4 & 5 can only be accessed in the Tactical Mode. See table, below, for Mode Selector Switch Functions.
3. Mode Selector. The mode selector is used to set the mode in which the AN/PEQ-2A will operate when the cable switch button or push button are depressed. The mode selector positions are:

KNOB POSITION	OPERATION	REMARKS
0 OFF	The AN/PEQ-2A will not operate	When underwater, the mode switch should be OFF to preclude water pressure on the button switch from inadvertently turning ON the unit.
1 AIM LO	The aiming beam operates at low power.	Low power is useful to reduce night vision device blooming of the aiming spot on close targets. It is also useful for training because the beam power meets the criteria of an eye-safe laser.
2 DUAL LO	The aiming beam operates at low power and the illuminating beam operates at low power	Low power aiming and illuminating is useful to reduce the effects of blooming when engaging targets at close range. It is also useful for training because the beam power meets the criteria of an eye-safe laser.
3	The aiming beam operates	Hi power is useful for aiming or pointing at distant

KNOB POSITION	OPERATION	REMARKS
AIM HI 4	at high power. The aiming beam operates	targets. The DUAL mode enables a target to be illuminated
DUAL LO/HI	at low power and the illumination beam operates at full power.	and fired upon using an aiming beam. The illuminator operates at full power in all dual modes of operation.
5 DUAL HI/HI	The aiming beam operates at high power and the illumination beam operates at full power.	The DUAL mode enables a target to be illuminated and fired upon using an aiming beam. The illuminator operates at full power in all dual modes of operation.

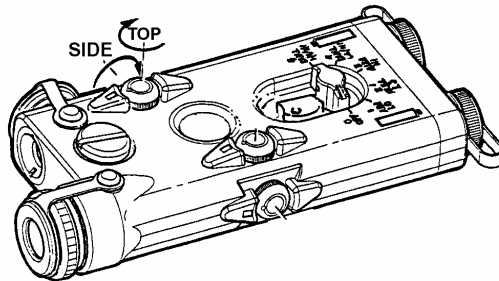
4. **Button Switch Operation:** Press the button to operate the TPIAL in hand held or mounted mode. When the button is released the TPIAL turns off. Press the button twice quickly to latch on for continuous operation. Press it once again to turn off. Whenever TPIAL is activated the green LED will light and will stay lit until the unit is turned OFF.

5. **Cable Switch:** Plug the cable in the back of the TPIAL. Operation of the Cable Switch is the same as the Button Switch.

6. **Focus Knob:** Varies the illumination beam spread (Flood/Spot) based on range/size of area to be illuminated.

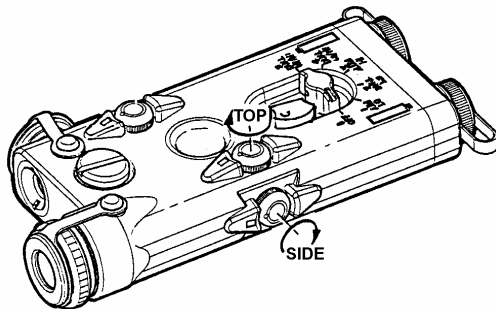
7. **Lens Caps:** Illuminator Lens Cap is a diffuser used to emit a 45 degree cone (10'x10'). Aiming Lens Cap is used in low power and zeroing. Black Lens Cap blocks the laser when accidentally activated.

8. **Adjusters:** TPIAL is equipped with boresight adjusters for zeroing Aiming and Illumination Beams.



Adjuster Rotation and Shot Group Movement for the Aiming Beam.

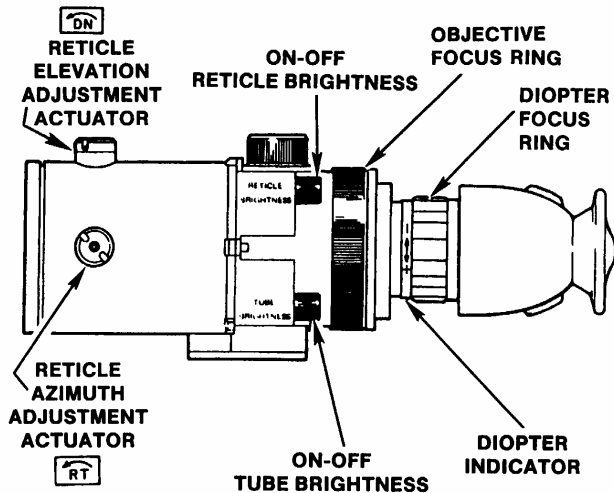
ZEROING THE AIMING SPOT	Adjuster Movement	Shot Group Movement
Top Adjuster Elevation	CW CCW	Up Down
Side Adjuster Azimuth (Windage)	CW CCW	Right Left



Adjuster Rotation and Illumination Area Movement for the Illumination Beam.

ZEROING THE ILLUMINATION BEAM	Adjuster Movement	Beam Movement
Top Adjuster Elevation	CW CCW	Down Up
Side Adjuster Azimuth (Windage)	CW CCW	Right Left

AN/PVS-4, NIGHT VISION SIGHT, INDIVIDUAL SERVED WEAPON



Batteries: BA-5567/U (x1) or BA-3058/U (x2)

AN/PVS-4, Night Vision Sight, Individual Served Weapon

(TM 11-5855-213-10w/c1, 1 Feb 93)

General Functional Description

The AN/PVS-4 is a passive battery-operated night sight used for observation and accurate firing of individual served weapons during night time conditions (moonlight, starlight, skyglow) against targets out to 450 meters. This sight is less effective when viewing into rain, fog, sleet, snow, smoke, shadow and other obscurants.

1. Turn the ON-OFF/TUBE BRIGHTNESS control and ON—OFF/TUBE BRIGHTNESS switch and ON—OFF/RETICLE BRIGHTNESS control counterclockwise to OFF before installing batteries.
2. Install batteries.
3. Press your eye against the eyeguard to open the rubber leaves that prevent emission of stray light.
4. Turn the ON-OFF/TUBE BRIGHTNESS control as shown, clockwise to turn on the sight.
5. Adjust the ON-OFF/TUBE BRIGHTNESS control to the setting that provides the best target-to-background contrast at a minimum distance of 25 meters.
6. Turn the ON-OFF/RETICLE BRIGHTNESS control clock-wise to turn on the light emitting diode. Adjust the reticle light intensity so that the reticle is just visible against the background.
7. Turn the Diopter Focus Ring until you get the clearest image of the reticle pattern.
8. Turn the Objective Focus Ring until the target in the field of view is sharply defined at aiming distance of 25 meters.
9. The sight may be zeroed during daylight (w/daylight cover on) or darkness with appropriate reticle adjustment actuators.

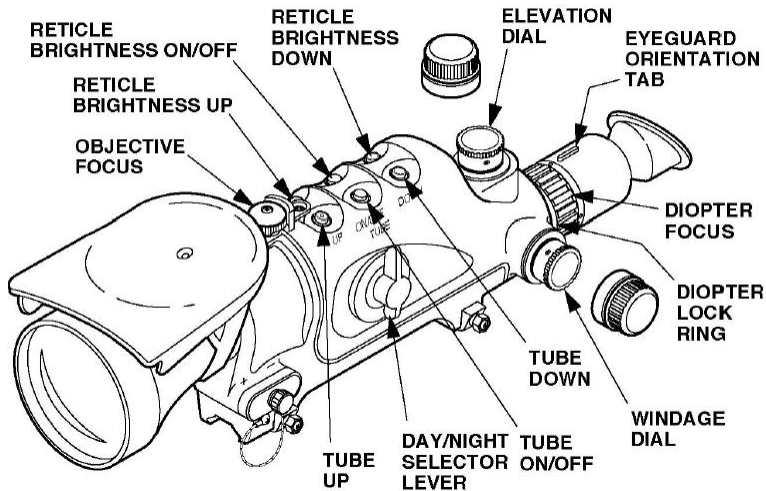
10. Turn the ON-OFF/RETICLE BRIGHTNESS and ON/OFF/TUBE BRIGHTNESS control fully counterclockwise to off position when you are through using the sight. Remove battery or battery adapter.

AN/PVS-10, SIGHT, NIGHT VISION SNIPER SCOPE (SNS)

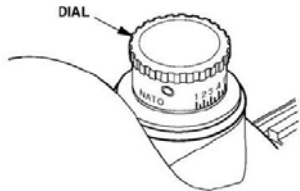
General Description

The SNS System is used with the M24 Sniper Weapon System. The SNS System is an integrated day/night weapon system providing both day and night firing capability in a single sight.

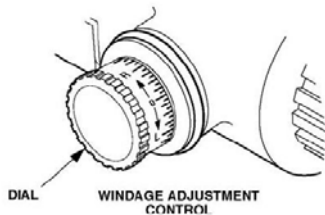
Weight:	4.7 pounds
Field of View:	3 degrees
Magnification:	8.5X
Minimum Range:	25 meters
Effective Range:	
Day:	800 meters
Night:	600 meters



Batteries: AA Alkaline (x2) or AA Lithium (x2)



ELEVATION ADJUSTMENT CONTROL



OBJECTIVE FOCUS KNOB

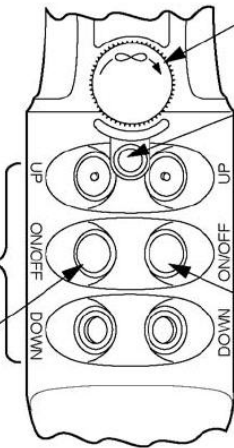
HIGHLIGHT CUTOFF SENSOR

TUBE CONTROL LABELS

TUBE ON/OFF

RETICLE BRIGHTNESS CONTROL LABELS

RETICLE BRIGHTNESS ON/OFF



Description	Function
DAY/NIGHT SELECTOR LEVER	Selects either DAY or NIGHT mode.
TUBE ON/OFF (NIGHT only)	When the day/night lever is in the NIGHT position, pressing this control turns the TUBE ON or OFF. Tube ON and tube OFF uses the same button.
TUBE UP/DOWN (NIGHT only)	Pressing these controls slowly increases or decreases tube brightness (gain).
RETICLE BRIGHTNESS ON/OFF (NIGHT only)	When the day/night lever is in the NIGHT position and the TUBE has been turned ON, pressing this control turns the reticle brightness ON or OFF. Reticle Brightness ON and Reticle Brightness OFF uses the same button.
RETICLE BRIGHTNESS UP/DOWN (NIGHT only)	Pressing these controls slowly increases or decreases the illumination of the reticle.
WINDAGE DIAL	Controls reticle adjustment right or left. Each click of adjustment equals one-half minute of angle (MOA). Dial has a raised pin on the index line marked "0" to help locate Battlesight Zero at night.
ELEVATION DIAL	Controls reticle adjustment up or down. Each click of adjustment equals 1 MOA. Dial has a raised pin on the index line marked "5" to help locate Battlesight Zero at night.

Description	Function
DIOPTER FOCUS RING (EYEPIECE FOCUS)	Used to obtain sharp focus of reticle.
DIOPTER LOCKING RING	Secures the eyepiece adjustment.
OBJECTIVE FOCUS KNOB	Adjusts system focus from 25 meters to infinity.
RETICLE	A mil dot reticle is provided. During NIGHT mode operation, reticle illumination is provided.
BATTERY POLARITY INDICATOR	This feature, molded into SNS housing, shows the proper orientation of the AA batteries.
LOW BATTERY INDICATOR	When illuminated in the eyepiece, it provides the operator a warning when the battery has less than 2 hours life remaining. The indicator will blink initially. As the voltage drops further, the indicator will go to continuous on (it will no longer blink). You must replace the batteries as soon as possible.
EYE GUARD ORIENTATION TAB	Indicates the top of the eyeguard.
EYEGUARD	To obtain the proper eye relief and correct Field of View (FOV), push in on eyeguard.
INFINITY (OBJECTIVE FOCUS)	Shows direction (CW) to adjust sight for infinity focus.
HIGHLIGHT CUTOFF SENSOR	This feature protects the tube from damage in the event the sight is left in the NIGHT mode and in the

Description	Function
	ON position during daytime light levels.

DAY Mode.

1. Install the SNS
2. Install batteries
3. Turn reticle brightness ON
4. Adjust diopter focus
5. High Light Cutoff
6. Install LIF, when required
7. Install Sunshade, when required
8. Adjust objective focus
9. Zero your weapon when required.
10. Adjust elevation.
11. Adjust windage.

NIGHT Mode.

1. Install the SNS
2. Install batteries
3. Turn reticle brightness ON
4. Adjust diopter focus
5. High Light Cutoff
6. Install LIF, when required
7. Turn mode selector to NIGHT mode and turn tube ON.
8. Adjust objective focus
9. Adjust tube gain
10. Zero your weapon, when required.
11. Adjust elevation.
12. Adjust windage.

WARNING

Use only 1.5 Volt batteries.

WARNING

Do not mix alkaline and lithium batteries. Failure to comply may result in injury or death.

CAUTION

Remove batteries when the sight is not in use to prevent accidental turn-on of the sight.

1. Remove battery cap by turning the thumbscrew counterclockwise.
2. Insert two "AA" batteries in battery compartment..
3. Replace battery cap.

Turn Reticle Brightness ON.

NOTE

Installed eyeguard for NIGHT operation and remove eyeguard for DAY operation. It is recommended to use the eyepiece protective cap when eyeguard is not installed.

1. Place the objective lens cap on the objective lens.
2. Turn mode selector to NIGHT mode.
3. Turn tube ON by pressing the TUBE ON/OFF button.
4. Turn reticle brightness ON by pressing the RETICLE BRIGHTNESS ON/OFF button.
5. Using the RETICLE BRIGHTNESS UP/DOWN buttons, adjust the reticle brightness to your preference.

Adjust Diopter Focus.

NOTE

The procedure given below is an eyepiece adjustment.

1. Place the objective lens cap over the objective lens.
2. Loosen diopter locking ring by turning counterclockwise.

NOTE

As you finalize your diopter adjustments, be sure to maintain some space between the locking ring and the diopter focus knob to ensure you do not accidentally change the diopter setting when tightening the locking ring.

3. Adjust the diopter focus for the sharpest image of the reticle.
4. Secure eyepiece by turning the diopter locking ring clockwise.
5. Turn tube OFF by pressing TUBE ON/OFF button.
6. Turn mode selector to DAY mode.

High Light Cutoff.

CAUTION

Conduct the high light cutoff test with the lens cap in place. Exposing the tube to bright light while in NIGHT mode could cause equipment damage. The high light cutoff feature protects the tube from

*damage if the sight is left in the NIGHT mode and in the ON position during daytime light levels.
Every 180 days, verify the sensor functions as follows:*

Place the SNS in the NIGHT mode, turn the tube ON and expose the sensor to sunlight or a flashlight indoors. After approximately 70 seconds, the tube will shutoff and remain OFF until the TUBE ON/OFF button is pushed once to turn the tube back ON. This feature also helps to conserve battery life.

Adjust Objective Focus.

NOTE

The objective can be focused on objects from 25 meters to infinity.

1. If sunshade is not used, push objective lens cap up and on back of objective lens.
2. If eyeguard is not installed, remove the eyepiece protective cap.
3. View an object located in the region of interest.
4. Adjust the Objective Focus to obtain the sharpest image of the object.

Adjust Tube Gain.

1. View image.
2. Locate target.
3. Adjust TUBE UP\DOWN controls to obtain best image of the target.

Zeroing Procedures.

NOTE

There is a slight deviation between DAY and NIGHT zero point of .5 MOA.

1. Assume a good prone supported position 100 meters away from the target.
2. Verify SNS is in DAY mode, uncover the objective lens and if eyeguard is not installed, remove the eyepiece protective cap.

NOTE

If the dials on windage or elevation dials are left untightened, or are totally misadjusted you may find it necessary to locate the Mechanical Center of Reticle Travel.

3. Adjust the windage and elevation dials as needed to precisely zero the rifle for optimum performance on the target.
4. Fire three rounds maintaining the same aim point each time.
5. After placement of the rounds has been noted, turn the elevation and windage dials to make the needed adjustments to the sight.
6. Repeat this process until a 3-round group is centered on the aim point.
7. Once the shot group is centered, loosen the setscrews on the elevation dial. Slip the elevation dial to the index line marked "1". Retighten the setscrews.
8. Loosen the setscrews on the windage dial. Slip the windage dial to the index line marked "0". Retighten the setscrews.
9. After zeroing at 100 meters, confirm this zero out to 300 meters at 100-meter increments.

Preparation For Turn-Off.

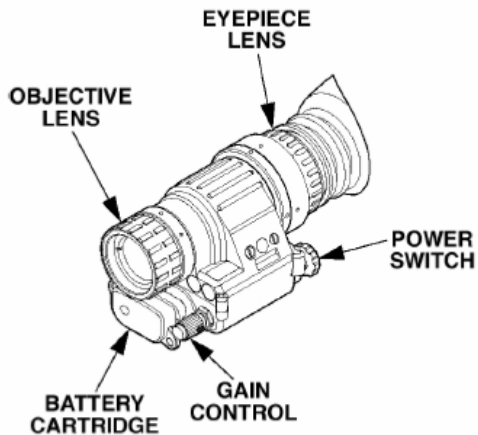
1. Turn reticle brightness OFF, if necessary.
2. Turn tube OFF, if necessary.

CAUTION

Remove batteries when the sight is not in use to prevent accidental turn-on of the sight.

3. Replace objective lens cap over objective lens.
4. If eyeguard is not installed, place eyepiece protective cap onto the eyepiece.
5. Remove and store batteries.

AN/PVS-14, MONOCULAR NIGHT VISION DEVICE



Batteries: BA-3058/U (x2) or
AA 1.5Vdc Lithium L91 (x2)

AN/PVS-14 Operating Instructions

(TM 11-5855-10, 1 June 00)

General Functional Description

The MNVD is a hand-held, head mounted, helmet mounted, or weapon mounted night vision system that enables walking, weapon firing, short range surveillance, map reading, vehicle maintenance and administering first aid in both moonlight and starlight. Each unit allows for vertical adjustment (by using head strap), fore and aft adjustment, objective lens focus and eyepiece focus. The monocular is also equipped with an IR source, a low-battery indicator and a gain control. Accessories include Demist Shield, Light Interface Filter (LIF), Sacrificial Window, Compass and Tether Cord. A 3X Magnifier is an Additional Authorized Item.

NOTE

The AN/PVS-14 can be used in conjunction with a collimated dot aiming device mounted on the forward mounting rail. The brightness control for the aiming device should be set at or near its minimum setting.

Perform the following procedures for weapon mounted operation:

1. Ensure that the batteries are installed per paragraph 2-6, TM 11-5855-306-10.
2. Assemble the small arms mounting adapter to the monocular per paragraph 2-15, step 1 and 2, TM 11-5855-306-10.
3. Mount the monocular with adapter onto the M16/M4 receiver rail per paragraph 2-15, step 3 and 4, TM 11-5855-306-10.
4. Turn the power switch ON.

5. Rotate the diopter adjustment ring for the clearest view of the image intensifier screen.
6. Adjust the objective lens focus while observing an object until the sharpest image is obtained.
7. Turn power switch OFF and remove batteries.

INFRARED (IR) ILLUMINATOR OPERATIONS

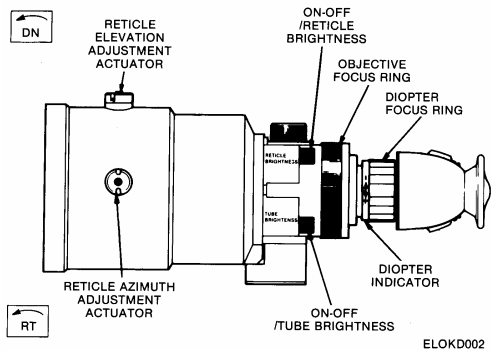
The IR illuminator is a light that is invisible to the unaided eye for use during conditions of extreme darkness. However, the light from the illuminator can be detected by the enemy using night vision devices.

NOTE

The purpose of the IR illuminator is for viewing at close distances up to 3 meters when additional illumination is needed.

1. Pull the *RESET/OFF-ON-IR/PULL* switch knob out and rotate clockwise to the IR position. With the monocular held to the eye, observe that a red light appears in the eyepiece. This indicates that the IR illuminator is operating.
2. For momentary IR, turn the *RESET/OFF-ON-IR/PULL* switch clockwise (without pulling) past the ON position. Observe that a red light appears in the eyepiece.

AN/TVS-5, NIGHT VISION SIGHT, CREW SERVED WEAPON



Batteries: BA-5567/U (x2) or BA-3058/U (x2)

AN/TVS-5 Operating Instructions
(TM 11-5855-214-10, 15 Feb 89)

General Functional Description

The AN/TVS-5 is a portable, battery operated electro-optical instrument used for observation and aimed fire of weapons at night. It amplifies reflected light such as moonlight, starlight, and skyglow so that the viewed scene becomes clearly visible to the operator.

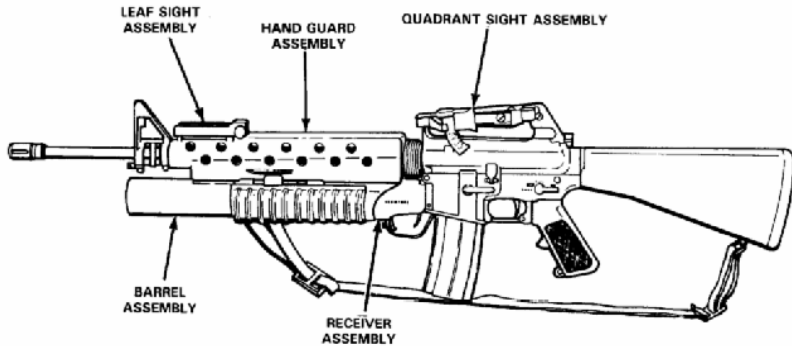
The sight does not emit visible or infrared light (except from the eye-piece) that can be detected by the enemy. See following table for operating instructions.

1. Turn the ON-OFF TUBE BRIGHTNESS control and ON-OFF/RETICLE BRIGHTNESS control counter clockwise to OFF before installing batteries.
2. Install Batteries
3. Press your eye against the eyeguard to open the rubber leaves that prevent emission of stray light.
4. Turn the ON-OFF/TUBE BRIGHTNESS control clockwise to turn ON the sight.
5. Adjust the ON-OFF/TUBE BRIGHTNESS control to the lowest setting that will provide good target-to-background contrast at a minimum distance of 25 meters.
6. Turn the ON-OFF/RETICLE BRIGHTNESS control clockwise to turn on the light emitting diode. Adjust the light intensity so that the reticle is just visible against the background.
7. Turn the Diopter Focus Ring until you get the clearest image of the reticle pattern.
8. Turn the Object Focus Ring until the target in the field of view is sharply defined.
9. The sight may be zeroed during daylight (w/Daylight Cover on) or darkness with the appropriate reticle adjustment actuators and patterns.

10. Turn the RETICLE BRIGHTNESS/TUBE BRIGHTNESS controls to OFF when you are through using the sight. Remove the batteries.

Name	Function
ON-OFF/TUBE BRIGHTNESS	Applies power to sight. Enable ON_OFF RETICLE BRIGHTNESS control to function.
ON-OFF/RETICLE BRIGHTNESS	Controls brightness of image intensifier tube.
OBJECTIVE FOCUS RING	Applies power to reticle. Controls brightness of reticle.
DIOPTER FOCUS RING	Adjusts system focus from 25 meters to infinity.
DIOPTER INDICATOR	Adjusts focus of eyepiece
RETICLE ELEVATION ADJUSTMENT ACTUATOR	Indicates direction of rotation of diopter focus ring for + or – diopter
RETICLE AZIMUTH ADJUSTMENT ACTUATOR	Controls reticle adjustment up or down. Each click of adjustment moves strike of round fired 1.0 inch at 100 meters.
RETICLE PATTERNS	Controls reticle adjustment right or left. Each click of adjustment moves strike of round fired 1.0 inch at 100 meters.
	Indicate aiming points of weapons and provide ranging information.

M203 GRENADE LAUNCHER



Grenade Launcher Instructions

(TM 9-1010-221-10)

1. The M203 Grenade Launcher attaches to either the M16 series Rifle or the M4 series Carbine.
2. The M203 launches a 40mm grenade within the following range limitations.
 - Maximum Range: 400 meters
 - Maximum Effective Range:
 - Area target: 350 meters
 - Point target: 150 meters
 - Minimum Safe Range:
 - Combat: 31 meters
 - Training: 130 meters

WARNING

When you fire high explosive (HE) grenades at targets within 130 meters be in a protected position. When training, do not fire at targets within 130 meters. When in combat, do not fire at targets closer than 31 meters.

3. The M203 is mounted on the M4 Carbine and the M16 Rifle by the unit's Direct Support Maintenance Company. Unit personnel are not authorized to, and should not attempt to, install the M203 on the weapon.

M203
M16/M203 Grenade Launcher
SLIN: L44595, NSN is 1010-00-179-6447



The M203 Grenade Launcher must be mounted to the M16A2 by the unit's armorer IAW TM 9-1010-221-23&P. Individual soldiers should not attempt to either mount or dismount the grenade launcher to the weapon.

The M203 Grenade Launcher was type classified in August 1969. It is a single-shot weapon designed for use with the M16 series rifles and fires a 40mm grenade. The M203 is equipped with both a quadrant sight and a leaf sight. The Quadrant Sight allows engagement of targets from 50 to 400m in 25m increments. The Leaf Sight allows engagement of targets from 50m to 250m in 50m increments.

M203A1
M4/M203 Grenade Launcher
SLIN: L46007, NSN is 1010-01-434-9028



The M203A1 Grenade Launcher must be mounted to the M4 by the unit's supporting DS Maintenance Company IAW instructions contained in TM 9-1010-221-23&P.

The M203A1 Grenade Launcher is the existing M203 Grenade Launcher with a new adapter kit that allows installation on the M4/M4A1 Carbine without the M4 Adapter Rail System (ARS). The M203A1 will be applied in all units where M203s are used in conjunction with the M4 Carbine without the M4 ARS. The M203A1 is equipped with both a quadrant sight and a leaf sight. The Quadrant Sight allows engagement of targets from 50 to 400m in 25m increments. The Leaf Sight allows engagement of targets from 50m to 250m in 50m increments. The M203A1 is being applied as a Modification Work Order (MWO).

M203A2
M4/M16A4 MWS M203 Grenade Launcher
SLIN: L69012, NSN is 1010-01-495-8511



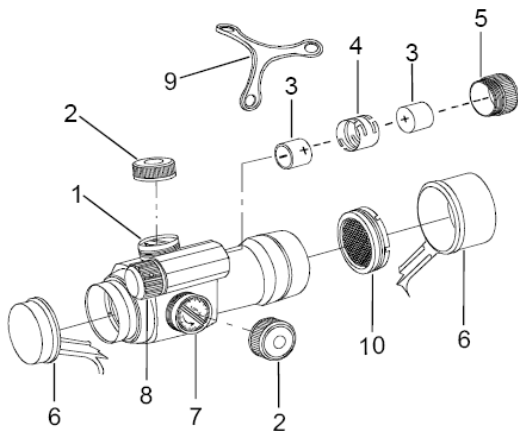
The M203A2 Grenade Launcher may be mounted to either the M4 or M16 variants of the Modular Weapon System by the individual soldier IAW instructions contained in TM 9-1010-221-10.

The M203A2 is being fielded as a part of the Modular Weapons System. The system provides mounting hardware to quickly attach/detach the M203 Grenade Launcher to either M4 Carbines or M16A4 rifles equipped with Adapter Rail Systems. The QAB provides Commanders with the capability to switch the M203 from one weapon to another, to include switching from a modular Carbine to a modular Rifle. The M203A2 is equipped with both a quadrant sight and a leaf sight.

The Quadrant Sight allows engagement of targets from 50 to 400m in 25m increments. The Leaf Sight allows engagement of targets from 50m to 250m in 50m increments.

M68-CLOSE COMBAT OPTIC

- (1) Elevation adjustment screw
- (2) Adjustment cap
- (3) Battery and spare battery
- (4) Battery cylinder
- (5) Battery cap
- (6) Front and rear lens cover
- (7) Windage adjustment screw
- (8) Rotary switch
- (9) Rubber strap
- (10) Anti-Reflection Device (ARD)
(BII)



CAUTION

Hand tighten adjustment caps only. Using tools to tighten adjustment caps could damage equipment.

WARNING

At higher intensity settings, red dot is visible through front of sight. For night vision operations, close front lens cover before turning rotary switch counterclockwise to OFF position. Failure to follow this warning could reveal your position to your enemy.

General Functional Description

The M68 Reflex Sight is a robust precision electronic optical red dot sight. The construction parameters are based on the actual performance of the gun and sight during the moment of firing. The sight mount allows the M68 Reflex Sight to be used with an M16A2 rifle. Without the sight mount, the M68 Reflex Sight W/Quick Release Mount can be used on the M16A4 rifle and the M4/M4A1 Carbine.

Removal of the Anti-Reflection Device (ARD) could lead to your detection by the enemy. The front objective lens is an anti-reflective coated lens system with an Anti-Reflection Device (ARD).

These parts are removed by rotation in the counterclockwise direction.

NOTE

Keep Both Eyes Open. With both eyes open you will be more aware of your surroundings.

The M68 Reflex Sight must remain matched with the same weapon, attached at the same slot in the rail system, or be re-zeroed. Since the M68 must be removed when the weapon is stored, note the serial number and the rail slot to enable return of same sight to the same rail slot on the same weapon. The serial number is located on the battery compartment for the old configuration and for the new configuration the serial number is located on the bottom of the sight. Zero weapon if same sight is not returned to the same slot.

CAUTION

Hand tighten mounting hardware only. Using tools to tighten mounting hardware could damage equipment.

NOTE

The sight w/quick release mounts directly to the accessory mounting rail on top of the M16A4 rifle and the M4/M4A1 carbine. The sight mount is not required. Make sure the special shaped spacer has been installed before mounting the M68 on the M16A4 rifle and the M4/M4A1 carbine.

ZEROING

NOTE

Elevation adjustment screw is located on top of sight. Windage adjustment screw is located on the right side of sight.

The M30 Boresight (TM 9-4933-273-12&P) may be used to transfer zero to weapon/sight combinations identically configured to a master weapon. The offset for the M68 at 25 meter zero is 1.5 blocks below point of aim/25m Zero Target Center of Mass.

Adjustment is centered at the factory. To provide maximum adjustment, do not adjust screws until sight is mounted.

ELEVATION ADJUSTMENT SCREW

Used when zeroing weapon. Turning elevation adjustment screw clockwise one click moves the point of impact down 4mm at 25 meters (1/2 minute of angle (MOA)). Turning elevation adjustment screw counterclockwise one click moves the point of impact up 4mm at 25 meters (1/2 MOA).

WINDAGE ADJUSTMENT SCREW

Used when zeroing weapon. Turning windage adjustment screw clockwise one click moves the point of impact left 4mm at 25 meters (1/2 MOA). Turning windage adjustment screw counterclockwise one click moves the point of impact right 4mm at 25 meters (1/2 MOA).

Sight has a circular sized adjustment area with a diameter of 6 ft at 100 yds (2.0m at 100m).

OPERATING PROCEDURES

1. In order to use iron sights for initial zeroing of the M68 sight, zero weapon using established procedures in TM 9-1005-319-10. If not using iron sights for initial zeroing, go directly to step 8.

2. Open rear lens cover.

3. Turn switch knob clockwise until red dot appears. Open front cover, adjust intensity with target background.

4. Look through the M68 and note the location of the red dot and the front sight post. Make necessary windage and elevation adjustment to the M68 until the red dot is positioned on top of the front sight post. This procedure is for rough alignment to ensure rounds on paper for final zeroing. Following this rough alignment, red dot has no use with iron sights.

5. If adjustment is required, remove adjustment screw caps from adjustment screws by turning counterclockwise.

NOTE

Each click of the adjustment screw makes a 4mm movement of the point of impact at 25m (1/2 MOA).

6. Insert adjustment tool (coin, screwdriver) in adjustment screw slot. Turn adjustment screw as follows:

- a. To move the point of impact to the right, turn windage adjustment screw counterclockwise.
- b. To move the point of impact to the left, turn windage adjustment screw clockwise.
- c. To move point of impact up, turn elevation adjustment screw counterclockwise.
- d. To move the point of impact down, turn elevation adjustment screw clockwise.

7. Repeat steps 4 and 6 until sight is roughly zeroed.

NOTE

An offset is used on the M16A2 zero target with a point of impact 1.5 blocks below the center of mass of the target/target aim point with a 4 block square box outlined around that point and shaded for a designated strike zone.

8. Confirm zeroing by firing at least three shots at a zeroing target. Check impact points on zeroing target to confirm accuracy.

NOTE

After initial firing, check to ensure that mount and sight (M16A2 rifle) or sight (M16A4 rifle and M4/M4A1 carbine) are secure. On M16A2 rifle, hand tighten mounting bolt on sight mount then hand tighten torque knob on sight until it snaps twice. On M16A4 rifle and the M4/M4A1 carbine, hand tighten torque knob on sight until it snaps twice.

9. If zeroing is accurate, fire three more shots to confirm. If zeroing is not accurate, repeat steps 6 and 8 until zeroing is complete. Upon completion of zeroing you now have a battle sight zero of 300 meters.

NOTE

No correlation to iron sights; for example, red dot does not have to be centered or need not be aligned with front sight post when zeroed.

NOTE

On M16A4 rifle and the M4/M4A1 carbine, reconfirm zero if M68 sight is moved to a different slot on the rail.

10. Turn switch knob to OFF position (counterclockwise).

11. Close front lens cover and rear lens cover.

NOTE

Before installing adjustment caps, inspect threads and adjustment caps to ensure that they are free of damage, moisture and dirt, and that the O-rings are installed.

CAUTION

Hand tighten adjustment caps only. Using tools to tighten adjustments caps will damage threads.

12. Install adjustment caps by rotating clockwise and hand tighten.

LIGHT ADJUSTMENT

WARNING

At higher intensity settings, red dot is visible through front of sight. For night vision operations, close front lens cover before turning switch knob clockwise to position 1, 2, 3, or 4. Check light for proper intensity before opening front lens cover. Close front lens cover before turning switch knob counterclockwise to OFF position. Failure to follow this warning could reveal your position to your enemy.

NOTE

Sight is equipped with 10 positions for different dot intensity settings. The "OFF" position is the same as the lowest night vision setting.

NOTE

See Field Manual 3-22.9 for Rifle Marksmanship M16A1, M16A2/3, M16A4, and M4 Carbine.

1. To make light adjustments, turn switch knob clockwise. The first four positions are low intensity for night vision operations. The fifth position is the lowest daytime settings. The last position is the extra high intensity setting.
2. Close front and rear lens covers and turn switch knob counterclockwise to OFF position when the sight is not being used.

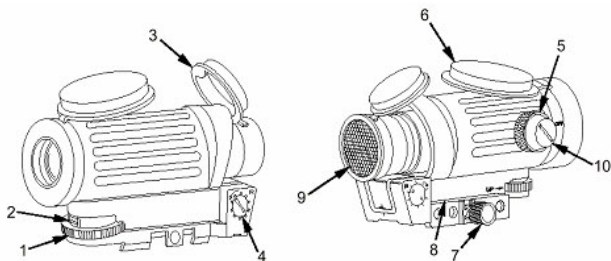
SIGHTING

Place red dot on target. Red dot does not have to be centered in sight

NOTE

Duracell (OE890) lithium-manganese dioxide batteries are the "preferred" battery. Eveready 2L76, Kodak K58L, Varta CR 1/3N, and Maxell Gold 2L76 are suitable replacements. Least preferred non-lithium alternatives: 2 each energizer A76 batteries in series or 2 each energizer 357 batteries in series.

M145 MACHINE GUN OPTIC

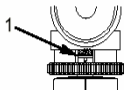
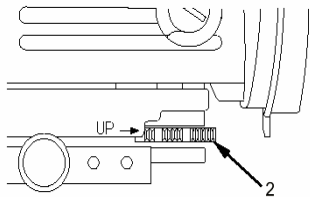


1. Elevation Adjustment Dial
2. Silver Lock
3. Front Lens Cover
4. Windage Adjustment Dial
5. Rotary Switch
6. Rear Lens Cover
7. Torque Limiting Knob
8. Mount
9. Signature Reduction Device (SRD)
10. Battery Cap

**Batteries OE890(x1)
MGO Operating Instructions**

General Functional Description

The MGO is a fixed 3.4 power, 28mm optical sight that has been designated to engage targets accurately out to 1200m range. The MGO weights 24 oz and is extremely rugged for field conditions. It has an 8.2mm diameter exit pupil, which provides excellent vision in low light levels, i.e. dawn and dusk, and also allows for rapid target acquisition. The MGO is designed to fit to the Picatinny rail. It has an eye relief of approximately 3 in. (70mm). Eye relief is the distance between the eye and the sight's rear eyepiece lens. The reticle pattern has a built-in trajectory companion from 300m to 1200m range and can be illuminated.



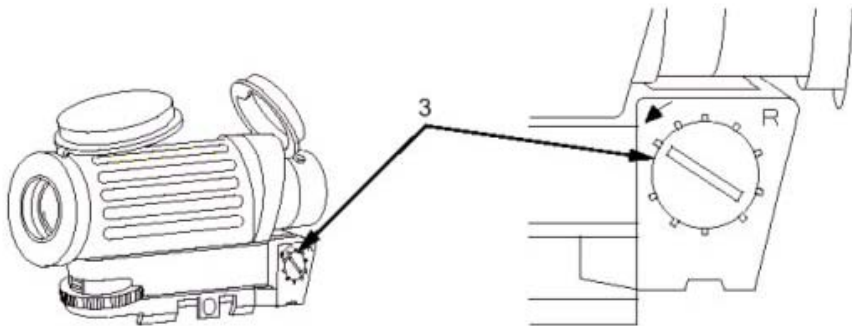
Elevation Adjustment Dial

Used for zeroing the telescope to the weapon. The dial can only be rotated when the silver lock (1) is moved to the UP position. Turning the elevation adjustment dial (2) counterclockwise (in the direction of the arrow) one click moves the point of impact up 2.5mm at 10 meters.

Turning the elevation adjustment dial (2) clockwise (opposite direction to the arrow) one click moves the point of impact down 2.5mm at 10 meters. Ensure that the silver lock (1) is moved down to prevent any further movement of the elevation adjustment dial.

Windage Adjustment Dial

Used when zeroing weapon. Turning windage adjustment dial (3) clockwise one click moves the point of impact left 2.5mm at 10 meters. Turning windage adjustment dial (3) counterclockwise one click moves the point of impact right 2.5mm at 10 meters.



M145, MGO Zero Procedures

Mechanical Zero

1. Adjust the Straight Telescope so that the weapon's barrel and optical sighting axis are in approximate alignment. The sighting axis will be approximately 2-3 inches above the machine gun barrel and therefore the strike of the bullet at 10m range will also be approximately 2-3 inches low without further zeroing adjustment.
2. To bring the strike of the bullet up to meet the line of sight through the M145, lift the silver lock and rotate the elevation adjustment dial clockwise (to the left) approximately one full turn.
3. Adjust the windage adjustment dial to center markings on the front of the telescope.

NOTE:

Each click of the zeroing adjustments makes a 2.5 mm movement of the point of impact at 10m.

4. Make final adjustments as follows:
 - a. To move the point of impact to the right, turn windage adjustment screw counterclockwise.
 - b. To move the point of impact to the left turn the windage adjustment screw clockwise.
 - c. To move point of impact up, turn elevation adjustment screw counterclockwise.
 - d. To move point of impact down, turn elevation adjustment screw clockwise.

10m Range Zeroing

In the zeroing process, groups of three single shot rounds are fired at a target. After each three rounds, the center of the group has to be determined.

1. Look through the telescope and align the reticle's 800m mark on the center base of the aiming points on the basic machine gun marksmanship target.
2. Fire three single rounds loaded individually without making any sight adjustments.
3. The three shot group should be within a 4 cm circle to establish the center of the shot group in relation to the center base of the aiming paster.
4. Measure the amount of movement required left or right (windage) and either up or down (elevation) to move the three shot group onto the center of the aiming paster.
5. Windage correction: upon completion, return to the firing line to make corrections to the weapon and re-fire a three shot group to confirm zero.

Repeat the above steps 1-5 until the strike of the round is coincident with the center of the target. Close the silver lock down to prevent any further movement of the elevation zeroing adjustment dial.

The M145 Straight Telescope is now 10m zeroed.

500m Range Zeroing

This procedure follows zeroing at 10 meters, as previously described. Zeroing at 10 meters will provide an M145 weapon zero, which will require re-adjustment at 500m range.

1. Look through the telescope and align the reticle's **500m** mark on the center of mass of the double “E” silhouette target.
 - a. M240B weapon = Fire a 6 to 9 round burst.
 - b. M249 weapon = Fire a 5 to 7 round burst.
2. Determine strike of the round through the telescope or inspect the target to determine center of shot group.
3. Determine direction of impact movement required (up or down, left or right).
4. Estimate or measure the amount of movement required to move the strike of the round to the center of the target (at 500 meters; five inches equals one click of adjustment in both windage and elevations).

Repeat the above steps 1-5 until the strike of the round is coincident with the center of the target. Close the silver lock down to prevent any further movement of the elevation zeroing adjustment dial.

The M145 Straight Telescope is now zeroed and ready for operational shooting.

MILES – MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM



MILES Operating Instructions

A wide variety of MILES equipment is available for employment on different weapons systems. MILES equipment, installation and operating instructions are available from most installation Training and Audiovisual Support Center. The MILES provides for:

- Tactical engagement simulation for direct fire force-on-force training using eye safe laser "bullets".
- Each individual and vehicle in the training exercise has a detection system to sense hits and perform casualty assessment.
- Laser transmitters are attached to each individual and vehicle weapon system and accurately replicate actual ranges and lethality of the specific weapon systems.
- MILES training has been proven to dramatically increase the combat readiness and fighting effectiveness of military forces.

Various types of MILES transmitters are depicted on previous page.



MILES 2000 Transmitter positioned on an M4 Carbine, with M203 attached.
(Consult your local TASC for detailed mounting instructions and supporting offset target data)



MILES 2000 Transmitter positioned on an M249 SAW/LMG.
(Consult your local TASC for detailed mounting instructions and supporting offset target data)



MILES 2000 Transmitter positioned on an M240B Medium Machine Gun.
(Consult your local TASC for detailed mounting instructions and supporting offset target data)

ANNEX C—BATTERY QUICK REFERENCE GUIDE

Accessory	Type Battery					
	AA 1.5Vdc Lithium L91 (NSN 6135-01-333-6101)	Non-Rechargeable, Alkaline AA BA-3058/U (NSN 6135-00-985-7845)	BA-5567/U (NSN 6135-01-090-5365)	BA-5347/U (NSN 6135-01-455-7946)	BB-2847/U (NSN 6140-01-419-8194)	OE890 DL 1/3N (NSN 6135-01-398-5922)
AN/PAQ-4C		2				
AN/PAS-13				1	1	
AN/PEQ-2A		2				
AN/PVS-4 ⁽¹⁾		2	1			
AN/PVS-10 ⁽²⁾	2	2				
AN/PVS-14 ⁽³⁾	2	2				
AN/TVS-5 ⁽⁴⁾		2	2			
M68-CCO						1
M145 MGO						1

(1) Use either one BA-5567/U or two BA-3085/Us (with adapter installed).

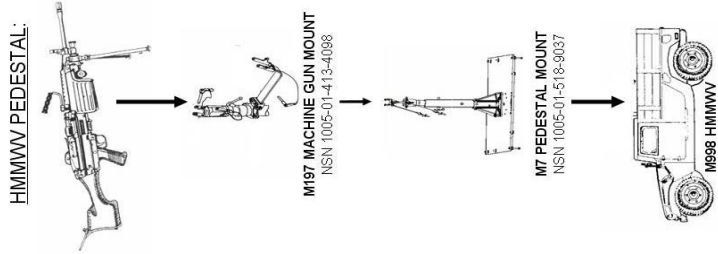
(2) Use either two AA Lithium or two BA 3058/Us. Do not mix types.

(3) Use either two AA 1.5Vdc Lithium or two non-specific AA batteries. Do not mix types. DO NOT use two 3.0Vdc batteries as this may result in injury or damage to the equipment.

(4) Use either two BA-5567/U or two BA-3085/Us (with adapter installed).

ANNEX D—MACHINE GUN/MOUNT CROSS REFERENCE

M249 SQUAD AUTOMATIC WEAPON



VEHICLE RING MOUNT:



M197 MACHINE GUN MOUNT
NSN 1005-01-413-4098



M1025/M1026/M1114 HMMVV PINTLE ADAPTOR
NSN 3120-01-188-5082



M66 MACHINE GUN MOUNT RING

NSN 1005-00-701-2810



800 SERIES 5-TON MOUNTING KIT
NSN 1005-01-226-4589
(Used on 800 Series 5-Ton and M35A2 and M35A3 2.5-Ton)



LMTV & FMTV MOUNTING KIT
NSN 1005-01-381-5431



HEMMT MOUNTING KIT
NSN 1005-01-519-2126



PLS MOUNTING KIT
NSN 1005-01-523-6549

OR



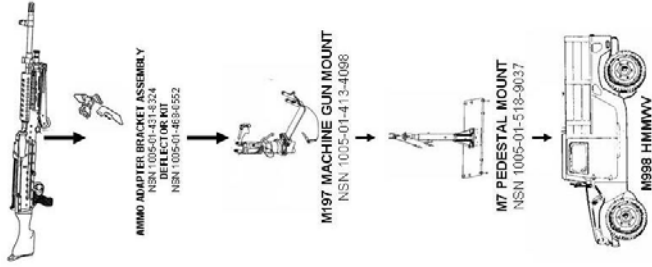
LIGHT WEIGHT RING MOUNT

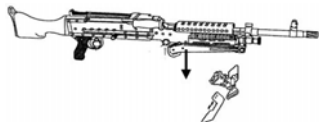


900 SERIES 5-TON MOUNTING KIT (RING INCLUDED)
NSN 1005-01-432-3339
CAB REINFORCEMENT KIT
NSN 2590-01-436-9144

CAB REINFORCEMENT KIT
NSN 2590-01-322-2694
(Used on M35A2 ONLY)

M240B MACHINE GUN





AMMO ADAPTER BRACKET ASSEMBLY
 NSN 1005-01-431-8324
DEFLECTOR KIT
 NSN 1005-01-468-0552



M197 MACHINE GUN MOUNT
 NSN 1005-01-413-4098

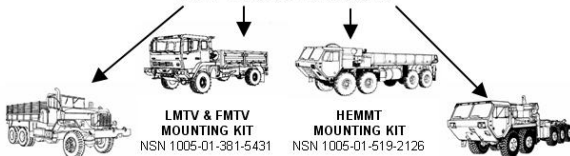


M1025/M1026/M1114 HMMWV PINTLE ADAPTOR
 NSN 3120-01-188-5082



M66 MACHINE GUN MOUNT RING

NSN 1005-00-701-2810



800 SERIES 5-TON MOUNTING KIT

NSN 1005-01-226-4589
 (Used on 800 Series 5-Ton and M35A2 and M35A3 2.5-Ton)

OR

PLS MOUNTING KIT
 NSN 1005-01-523-6549



LIGHT WEIGHT RING MOUNT

CAB REINFORCEMENT KIT
 NSN 2590-01-322-2694
 (Used on M35A2 ONLY)

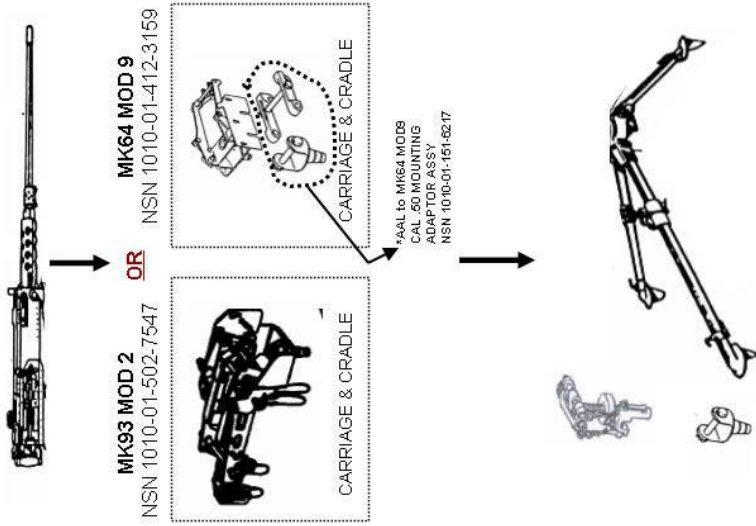


900 SERIES 5-TON MOUNTING KIT (RING INCLUDED)

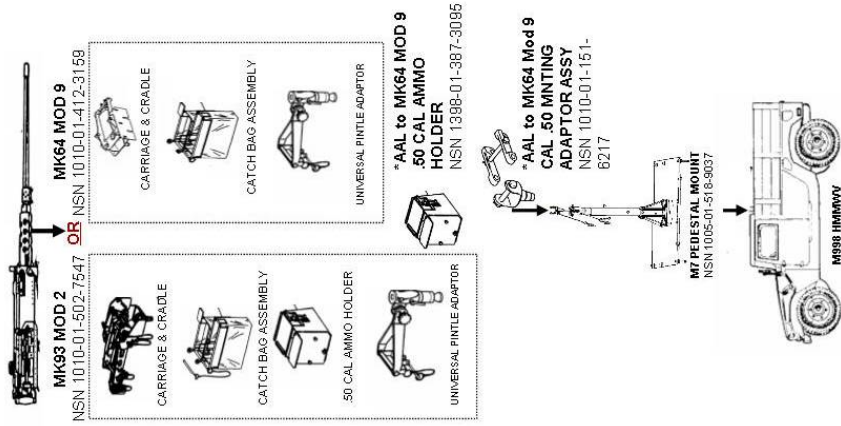
NSN 1005-01-432-3339
CAB REINFORCEMENT KIT
 NSN 2590-01-436-9144

M2 MACHINE GUN

TRIPOD:



HMMWV PEDESTAL:



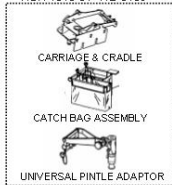
VEHICLE RING MOUNT:



MK93 MOD 2
NSN 1010-01-502-7547

OR

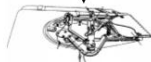
MK64 MOD 9
NSN 1010-01-412-3159



*AAL to MK64 MOD 9
.**50 CAL AMMO HOLDER**
NSN 1398-01-387-3095

OR

6650 MACHINE GUN MOUNT
NSN 1005-00-704-6650



M1025M1026M1114 HMMVV PINTLE ADAPTOR
NSN 3120-01-188-5082

OR



M66 MACHINE GUN MOUNT RING
NSN 1005-00-701-2810



LMTV & FMTV MOUNTING KIT
NSN 1005-01-381-5431



HEMMT MOUNTING KIT
NSN 1005-01-519-2126



PLS MOUNTING KIT
NSN 1005-01-523-6549

800 SERIES 5-TON MOUNTING KIT
NSN 1005-01-226-4589
(Used on 800 Series 5-Ton and M35A2 and M35A3 2.5-Ton)
CAB REINFORCEMENT KIT
NSN 2590-01-322-2694
(Used on M35A2 ONLY)

OR



LIGHT WEIGHT RING MOUNT



900 SERIES 5-TON MOUNTING KIT (RING INCLUDED)
NSN 1005-01-432-3339
CAB REINFORCEMENT KIT
NSN 2590-01-436-9144

MK19 GRENADE MACHINE GUN

TRIPOD:

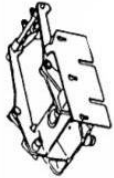


MK93 MOD 2
NSN 1010-01-502-7547



CARRIAGE & CRADLE

MK64 MOD 9
NSN 1010-01-412-3159



CARRIAGE & CRADLE

OR



M3 MACHINE GUN TRIPOD MOUNT

NSN 1005-00-322-9716

HMMWV PEDESTAL:



MK93 MOD 2
NSN 1010-01-502-7547

QB

MK64 MOD 9
NSN 1010-01-412-3159



CARRIAGE & CRADLE



CATCH BAG ASSEMBLY



40MM MOUNTING BRACKET



UNIVERSAL PINTLE ADAPTOR



CARRIAGE & CRADLE



CATCH BAG ASSEMBLY



40MM MOUNTING BRACKET



UNIVERSAL PINTLE ADAPTOR

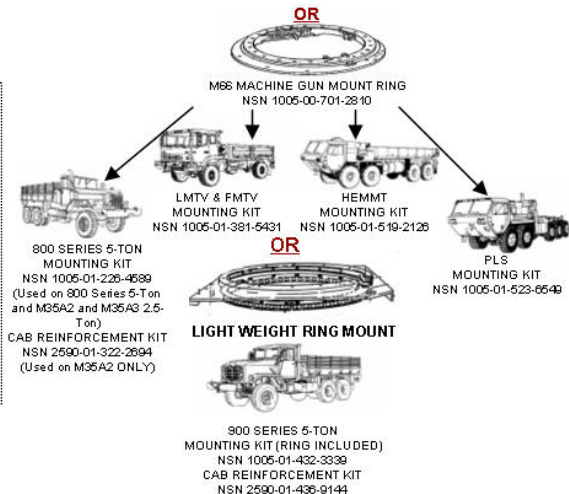
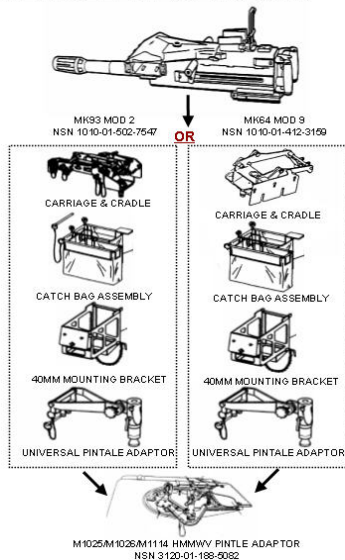


M7 PEDESTAL MOUNT
NSN 1005-01-518-9037



M998 HMMWV

VEHICLE RING MOUNT:



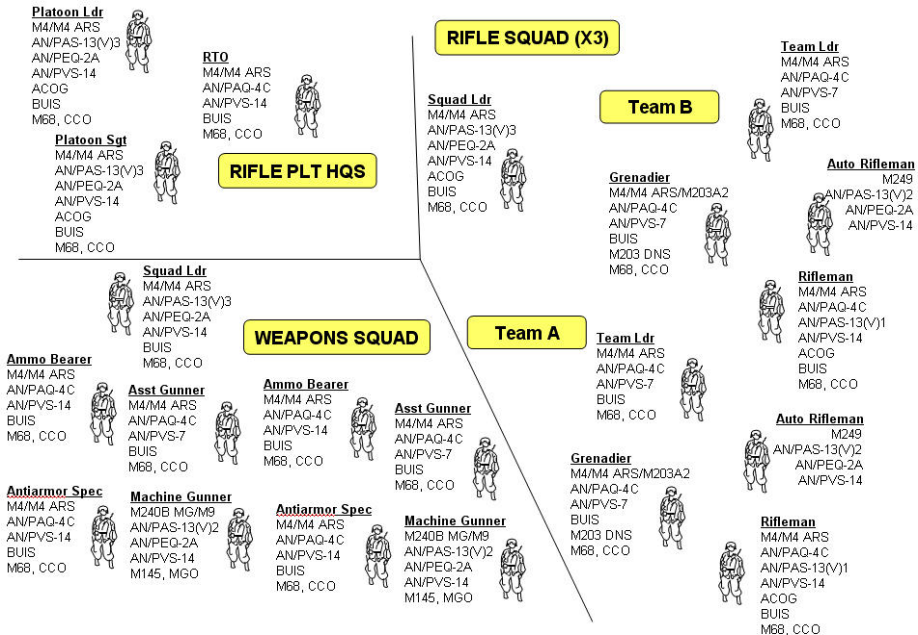
ANNEX E—INFANTRY PLATOON EQUIPMENT/ORGANIZATION GUIDE

RIFLE PLATOON, RIFLE COMPANY, INFANTRY BATTALION (AIRBORNE/AIR ASSAULT)

Weapon/ Device	PII Ldr	PII Sgt	RTO	SL	TL	AR	Gren	R	Wpn SL	MG	AMG	Ammo	AA Spec
M9										X			
M4	X	X	X	X	X		X	X	X		X	X	X
M4 ARS	X	X	X	X	X		X	X	X		X	X	X
M203A2							X						
M240B										X			
M249						X							
AN/PAQ-4C			X		X		X	X			X	X	X
AN/PAS-13	(V)3	(V)3		(V)3		(V)2		(V)1	(V)3	(V)2			
AN/PEQ-2A	X	X		X		X			X	X			
AN/PVS-14	X	X	X	X		X		X	X	X		X	X
AN/PVS-7					X		X				X		
M68	X	X	X	X	X		X	X	X		X	X	X
M145										X			

Weapon/ Device	Plt Ldr	Plt Sgt	RTO	SL	TL	AR	Gren	R	Wpn SL	MG	AMG	Ammo	AA Spec
ACOG	X	X		X				X					
BUIS	X	X	X	X	X		X	X	X		X	X	X
DNS, M203							X						

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant



RIFLE PLATOON, RIFLE COMPANY, INFANTRY BATTALION (INFANTRY UA)

Weapon/ Device	Plt Ldr	Plt Sgt	RTO	SL	TL	AR	Gren	R	Wpn SL	MG	AMG	AA Spec	Ammo
M9										X			
M4	X	X	X	X	X		X	X	X		X	X	X
M4 ARS	X	X	X	X	X		X	X	X		X	X	X
M203A2							X						
M240B										X			
M249						X							
AN/PAQ-4C			X			X	X	X			X	X	X
AN/PAS-13	(V)3			(V)3		(V)2		(V)1	(V)3	(V)2			
AN/PEQ-2A	X	X		X	X				X	X			
AN/PVS-14	X	X	X	X	X		X						
AN/PVS-7						X		X	X	X	X	X	X
M68	X	X	X	X	X		X	X	X		X	X	X
M145										X			
ACOG	X	X		X				X					
BUIS	X	X	X	X	X		X	X	X		X	X	X

Weapon/ Device	Plt Ldr	Plt Sgt	RTO	SL	TL	AR	Gren	R	Wpnr SL	MG	AMG	AA Spec	Ammo
DNS, M203							X						

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant

Platoon Ldr

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO


RTO

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68, CCO


RIFLE SQUAD (X3)**Squad Ldr**

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO


Team Ldr

M4/M4 ARS
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO


RIFLE PLT HQS**Platoon Sgt**

M4/M4 ARS
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO


Team B**Grenadier**

M4/M4 ARS/M203A2
AN/PAQ-4C
AN/PVS-14
BUIS
M203 DNS
M68, CCO


Auto Rifleman

M249
AN/PAS-13(V)2
AN/PAQ-4C
AN/PVS-7


Squad Ldr


M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO


WEAPONS SQUAD**Team A****Team Ldr**

M4/M4 ARS
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO


Rifleman

M4/M4 ARS
AN/PAQ-4C
AN/PAS-13(V)1
AN/PVS-7
ACOG
BUIS
M68, CCO


Ammo Bearer

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO


Asst Gunner

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO


Ammo Bearer

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO


Asst Gunner

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO


Grenadier

M4/M4 ARS/M203A2
AN/PAQ-4C
AN/PVS-14
BUIS
M203 DNS
M68, CCO


Auto Rifleman

M249
AN/PAS-13(V)2
AN/PAQ-4C
AN/PVS-7


Antiarmor Spec

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO


Machine Gunner


M240B MG/M9
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-7
M145, MGO


Antiarmor Spec

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO


Machine Gunner

M240B MG/M9
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-7
M145, MGO


Rifleman

M4/M4 ARS
AN/PAQ-4C
AN/PAS-13(V)1
AN/PVS-7
ACOG
BUIS
M68, CCO

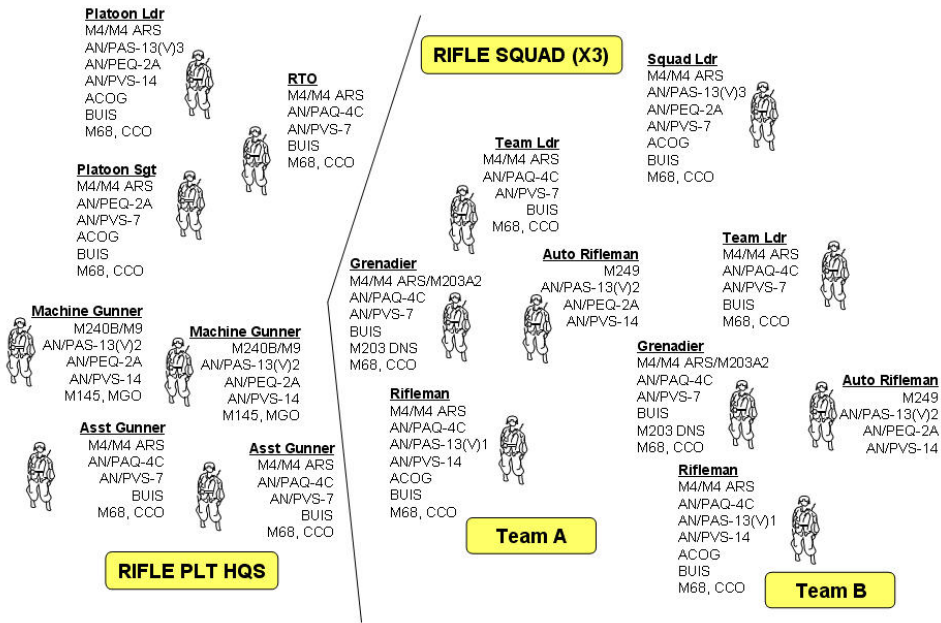


RIFLE PLATOON, RIFLE COMPANY, INFANTRY BATTALION (LIGHT)

Weapon/ Device	Plt Ldr	Plt Sgt	RTO	MG	AMG	SL	TL	AR	Gren	R
M9				X						
M4	X	X	X		X	X	X		X	X
M4 ARS	X	X	X		X	X	X		X	X
M203A2									X	
M240B				X						
M249								X		
AN/PAQ-4C			X		X		X		X	X
AN/PAS-13	(V)3			(V)2		(V)3		(V)2		(V)1
AN/PEQ-2A	X	X		X		X		X		
AN/PVS-14	X			X				X		X
AN/PVS-7		X	X		X	X	X		X	
M68	X	X	X		X	X	X		X	X
M145				X						
ACOG	X	X				X				X

Weapon/ Device	PII Ldr	PII Sgt	RTO	MG	AMG	SL	TL	AR	Gren	R
BUIS	X	X	X		X	X	X		X	X
DNS, M203									X	

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant



RIFLE PLATOON, RIFLE COMPANY, MANEUVER BATTALION (MANEUVER UA)

Weapon/ Device	Plt Ldr	RTO	SL	TL	AR	Gren	AA Spec	R	Plt Sgt	Sec Ldr	Gunner	Driver
M9												
M4	X	X	X	X		X	X	X	X	X	X	X
M4 ARS	X	X	X	X		X	X	X	X	X	X	X
M16A2/A4												
M5 ARS												
M203A2						X						
M240B												
M249					X							
AN/PAQ-4C		X		X		X	X	X			X	X
AN/PAS-13	(V)3		(V)3		(V)2		(V)2	(V)1	(V)3			
AN/PEQ-2A	X		X		X				X	X		
AN/PVS-14	X	X	X		X			X				
AN/PVS-7				X		X	X		X	X	X	X
M68	X	X	X	X		X	X	X	X			
M145												

Weapon/ Device	Plt Ldr	RTO	SL	TL	AR	Gren	AA Spec	R	Plt Sgt	Sec Ldr	Gunner	Driver
ACOG	X		X				X	X	X			
BUIS	X	X	X	X		X	X	X	X	X	X	X
DNS, M203						X						

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant

Vehicle Section

Platoon Sgt

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-7
ACOG
BUIS
M68, CCO



Sec Ldr

M16A44/M5 ARS
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO



Gunner

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



Driver

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



BFV 1

Gunner

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



Driver

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



BFV 2

Gunner

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



Driver

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



BFV 3

Gunner

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



Driver

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



BFV 4

Sec Ldr

M16A44/M5 ARS
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO



Plt Hqs

Platoon Ldr

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO



RTO

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68, CCO



One RTO per
Platoon

Rifle Squad (x3)

Squad Ldr

M16A44/M5 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO



Auto Rifle

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14



Tm Ldr

M16A44/M5 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



Team A

Grenadier

M16A44/M5 ARS/M203
AN/PAQ-4C
AN/PVS-7
BUIS
M203 DNS
M68, CCO



Rifleman

M16A44/M5 ARS
AN/PAQ-4C
AN/PAS-13(V)1
AN/PVS-14
ACOG
BUIS
M68, CCO



Tm Ldr

M16A44/M5 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO



Auto Rifle

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14



Team B

AA Specialist

M16A44/M5 ARS
AN/PAQ-4C
AN/PAS-13(V)2
AN/PVS-7
ACOG
BUIS
M68, CCO



Grenadier

M16A44/M5 ARS/M203
AN/PAQ-4C
AN/PVS-7
BUIS
M203 DNS
M68, CCO



RIFLE PLATOON, RIFLE COMPANY, INFANTRY BATTALION (MECH 3X9)

Weapon/ Device	Plt Ldr	RTO	SL	TL	AR	Gren	R	AA Spec	Plt Sgt	Sec ldr	Gunner	IFV Dvr
M16A4			X	X		X	X	X		X	X	X
M5 ARS			X	X		X	X	X		X	X	X
M4	X	X							X			
M4 ARS	X	X							X			
M203A2						X						
M249					X							
AN/PAQ-4C		X		X		X	X	X			X	X
AN/PAS-13	(V)3		(V)3		(V)2		(V)1	(V)2	(V)3			
AN/PEQ-2A	X		X		X				X	X		
AN/PVS-14	X	X	X		X		X		X			
AN/PVS-7				X		X		X		X	X	X
M68	X	X	X	X		X	X	X	X	X	X	X
M145												
ACOG	X		X				X	X	X			
BUIS	X	X	X	X		X	X	X	X	X	X	X
DNS, M203						X						

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant

Platoon Sgt

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
BUIS
M68, CCO

**Sec Ldr**

M16A44/M5 ARS
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO

**Vehicle Section****Sec Ldr**

M16A44/M5 ARS
AN/PEQ-2A
AN/PVS-7
BUIS
M68, CCO

**Gunner**

M16A44/M5
ARS
AN/PAQ-4C
BUIS
M68, CCO

**Driver**

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO

**BFV 1****Gunner**

M16A44/M5
ARS
AN/PAQ-4C
BUIS
M68, CCO

**Driver**

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO

**BFV 2****Gunner**

M16A44/M5
ARS
AN/PAQ-4C
BUIS
M68, CCO

**Driver**

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO

**BFV 3****Gunner**

M16A44/M5
ARS
AN/PAQ-4C
BUIS
M68, CCO

**Driver**

M16A44/M5
ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO

**BFV 4****Rifle Squad (x3)****Squad Ldr**

M16A44/M5 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO

**Tm Ldr**

M16A44/M5 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO

**Auto Rifle**

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14

**Team B****AA Specialist**

M16A44/M5 ARS
AN/PAQ-4C
AN/PAS-13(V)2
AN/PVS-7
ACOG
BUIS
M68, CCO

**Plt Hqs****Platoon Ldr**

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68, CCO

**RTO**

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68, CCO



One RTO per
Platoon

Tm Ldr

M16A44/M5 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68, CCO

**Auto Rifle**

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14

**Rifleman**

M16A44/M5 ARS
AN/PAQ-4C
AN/PAS-13(V)1
AN/PVS-14
ACOG
BUIS
M68, CCO

**Team A****Grenadier**

M16A44/M5 ARS/M203
AN/PAQ-4C
AN/PVS-7
BUIS
M203 DNS
M68, CCO



- PSG is BC for one of the BFVs
- M240B and Javelin CLU are Plt Organization Equip and employed based on METT

RIFLE PLATOON, RIFLE COMPANY, INFANTRY BATTALION (RANGER)

Weapon/ Device	Plt Ldr	Plt Sgt	RTO	SL	TL	AR	Gren	R	Wpn SL	MG	AMG	Ammo
M9										X		
M4	X	X	X	X	X		X	X	X		X	X
M4 ARS	X	X	X	X	X		X	X	X		X	X
M203A2					X		X					
M240B										X		
M249						X						
AN/PAS-13	(V)3			(V)3		(V)2		(V)1		(V)2		
AN/PEQ-2A	X	X	X	X	X	X	X	X	X	X	X	X
AN/PVS-14	X	X	X	X	X	X	X	X	X	X	X	X
M68	X	X	X	X	X		X	X	X		X	X
M145						X				X		
ACOG	X	X		X				X				
BUIS	X	X	X	X	X		X	X	X		X	X
DNS, M203					X		X					

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant

Platoon Ldr

M4A1/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



RTO

M4A1/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



Team A

Grenadier

M4A1/M4
ARS/M203A2
AN/PEQ-2A
AN/PVS-14
BUIS
M203 DNS
M68



Team Ldr

M4A1/M4 ARS/M203A2
AN/PEQ-2A
AN/PVS-14
BUIS
M203 DNS
M68



Auto Rifleman

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14
M145 MGO



Rifleman

M4A1/M4 ARS
AN/PAS-13(V)1
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



Squad Ldr

M4A1/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



RIFLE PLT HQS

MACHINE GUN SQUAD

Machine Gunner

M240B MG/M9
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14
M145 MGO



X3

Squad Ldr

M4A1/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



Asst Gunner

M4A1/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



X3

Ammo Bearer

M4A1/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



X3

Grenadier

M4A1/M4
ARS/M203A2
AN/PEQ-2A
AN/PVS-14
BUIS
M203 DNS
M68



Team Ldr

M4A1/M4 ARS/M203A2
AN/PEQ-2A
AN/PVS-14
BUIS
M203 DNS
M68



Auto Rifleman

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14
M145, MGO



Rifleman

M4A1/M4 ARS
AN/PAS-13(V)1
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



RIFLE SQUAD (X3)

Team B

RIFLE PLATOON, RIFLE COMPANY, INFANTRY BATTALION (SBCT)

Weapon/ Device	Plt Ldr	Plt Sgt	Fwd Obs	RTO	SL	TL	AR	Gren	R	Wpn SL	MG	AMG	Ammo	Veh Cdr	Drvr
M9											X				
M4	X	X	X	X	X	X		X	X	X		X	X	X	X
M4 ARS	X	X	X	X	X	X		X	X	X		X	X	X	X
M203A2								X							
M240B											X				
M249							X								
AN/PAQ-4C			X					X	X			X	X	X	X
AN/PAS-13	(V)3				(V)3		(V)2		(V)1	(V)3	(V)2				
AN/PEQ-2A	X	X		X	X	X	X			X	X				
AN/PVS-14	X	X		X	X	X	X		X	X	X			X	
AN/PVS-7			X					X				X	X		X
M68	X	X	X	X	X	X		X	X	X		X	X	X	X
M145											X				

Weapon/ Device	Plt Ldr	Plt Sgt	Fwd Obs	RTO	SL	TL	AR	Gren	R	Wpn SL	MG	AMG	Ammo	Veh Cdr	Drvr
ACOG	X	X			X				X						
BUIS	X	X	X	X	X	X		X	X	X		X	X	X	X
DNS, M203								X							

Note: AN/PAS-13(V)1=Light Variant; (V)2=Medium Variant; (V)3=Heavy Variant

Mounted Element

Veh Cdr

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68



Driver

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68



Veh Cdr

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68



Driver

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68



Veh Cdr

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68



Driver

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68



Veh Cdr

M4/M4 ARS
AN/PAQ-4C
AN/PVS-14
BUIS
M68



Driver

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68



Plt Hqs

Platoon Ldr

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



Platoon Sgt

M4/M4 ARS
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



Fwd Obs

M4/M4 ARS
AN/PAQ-4C
AN/PVS-7
BUIS
M68



RTO

M4/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



**One RTO per
Platoon**

Team A

Grenadier

M4/M4 ARS/M203A2
AN/PAQ-4C
AN/PVS-7
BUIS
M203 DNS
M68



Squad Ldr

M4/M4 ARS
AN/PAS-13(V)3
AN/PEQ-2A
AN/PVS-14
ACOG
BUIS
M68



Auto Rifle

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14



Tm Ldr

M4/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



Rifleman

M4/M4 ARS
AN/PAQ-4C
AN/PAS-13(V)1
AN/PVS-14
ACOG
BUIS
M68



Tm Ldr

M4/M4 ARS
AN/PEQ-2A
AN/PVS-14
BUIS
M68



Auto Rifle

M249
AN/PAS-13(V)2
AN/PEQ-2A
AN/PVS-14



Team B

Rifleman

M4/M4 ARS
AN/PAQ-4C
AN/PAS-13(V)1
AN/PVS-14
ACOG
BUIS
M68



Grenadier

M4/M4 ARS/M203A2
AN/PAQ-4C
AN/PVS-7
BUIS
M203 DNS
M68



Rifle Squad (x3)

ANNEX F—BORELIGHT DRY ZERO PROCEDURES

Prepared By
US ARMY

Armament Research, Development and Engineering Center (ARDEC)
Small Caliber Weapon Systems Team (AMSTA-AR-CCL-A)

And

Fire Control Development Team (AMSTA-AR-FSF-R)
Picatinny Arsenal, New Jersey 07806

Borelight Dry Zero Procedure for M4 MWS

Use of Borelight

NOTE: Completely familiarize yourself with the use and operation of the Borelight by reading the Borelight Operators Manual. A Borelight manual is supplied with each borelight kit.

WARNING: VISIBLE LASER RADIATION - To reduce the risk of injury AVOID DIRECT EXPOSURE TO THE BEAM - Use Ballistic Laser Eye Protection (BLEPS) when handling/operating the Borelight.

CAUTION: Do not look at laser Borelight through the BLEPS.

Arms Room Borelight Dry Zero Procedure

1. **WARNING** - Before inserting Borelight into weapon, perform Preventative Maintenance Checks and Service (PMCS), clear weapon and visually inspect the chamber to insure that it is empty and no ammunition is in position to be chambered. Additionally, inspect rifle bore and muzzle to assure there are no obstructions. Clean if necessary.
2. Check/Inspect screw on top of rail, rail cross slot T-14, to assure that it is tight
3. Attach fire control device(s) to the weapon and assure device(s) are in their correct location - left rail, right rail, and top rail. (**Note:** rails are labeled T - Top, R - Right and L - Left). Check to confirm that all device(s) are firmly attached.

4. Stabilize the weapon. This can be accomplished by placing the weapon in a rifle box rest, Gun Vise, or rifle holding device (see FM 23-9, dated July 1989, figure C-6, page C-60). If these items are not available, go to step 5. If available, go to step 6.
5. Lay or position weapon on a solid-stable surface such as a heavy table. Choose a weapon position where the weapon is most stable. Ignore weapon cant at this time.
(**Note:** Weapon can be stabilized by using a carpenter's wood clamp set or EZ Hold/ Quick Grip clamps. If these types of items are not available, apply moderate hand pressure on the weapon.) An unobstructed line of sight of 10 meters is required. A 10-meter length of cord is included with the laser Borelight kit. 10 meters is measured from top rail cross-slot labeled "T-14".
6. **WARNING:** **DO NOT TURN ON THE LASER BORELIGHT AT THIS TIME.** 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.
7. **ZEROING THE BORELIGHT:** This procedure is for zeroing the Borelight to the weapon. This procedure requires a minimum of **TWO** people. One person to stabilize weapon and rotate and adjust the Borelight and a second person at the target board to call out adjustments. **WARNING:** Both individuals **MUST** wear Ballistic Laser Eye Protection (BLEPS). **CAUTION:** Do not look at laser through the BLEPS.
 - **DANGER:** DO NOT LOOK DIRECTLY INTO LASER BEAM - DO NOT LOOK INTO LASER THROUGH BINOCULARS OR TELESCOPES OR BLEPS - DO NOT POINT LASER AT MIRROR SURFACES - DO NOT SHINE LASER INTO OTHER INDIVIDUALS' EYES.
 - Select/Place the proper 10 meter dry-zeroing target at a 10-meter distance from the top rail screw - rail cross slot T-14.
 - For zeroing the Borelight laser, the target board **MUST** be kept level. Ignore weapon orientation at this time.

- Turn on the laser Borelight. With the help of an assistant, hold a target at 10 meters and place the target board so that the laser dot strikes the center of the laser Borelight dot on the selected target board.

Note

Rotate Borelight tool clockwise, rotating laser Borelight housing counter-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. Go to step 8.

- If the laser dot rotates in a circular pattern, the Borelight windage or elevation or both **MUST** be adjusted using the following procedures. This procedure can be done at the 10-meter distance or you can move the target in as close as 2 meters.
 - Slowly rotate the Borelight one-half turn. Note the new location of the laser dot .
 - Adjust the Borelight windage and elevation until the laser dot moves one-half the space from its original location.
 - Continue the procedure until the laser dot remains stationary when the Borelight is rotated. If target board was moved closer to the Borelight, move target back to a distance of 10 meters and re-check boresight. If boresight is correct the weapon is ready to be dry-zeroed.
8. ZEROING THE WEAPON: (**Note**: Do Not Touch or Bump Borelight) This procedure is for boresighting the weapon for 300 meter dry-zero.

DANGER

Do not stare at or shine visible laser beam into other individuals eyes.

Use this procedure for the 300 meter Back Up Iron Sight, M68 CCO Reflex Sight and the AN/PAS-13 Thermal Weapon Sight (TWS):

- Remove weapon from box rest, Gun Vise, rifle holding device or flat stable surface.

- From the same 10 meter location place weapon over a sand bag, rucksack or bench rest type stand.
- Manually stabilize the weapon without cant and orient the selected target board in a level-vertical position. (**Note:** Proper positioning of the target is CRITICAL for accurate boresighting results).
- For specific weapon and sight combinations, follow the instructions on the target boards.
- Aim the weapon fire control device(s) at the proper figure on the chart and adjust WEAPON sighting device(s) windage and elevation controls until the laser Borelight is centered on its labeled spot.
- (Optional) Rotate the Borelight one half turn and again aim at the proper device(s) target. If properly boresighted, the laser Borelight spot should still be centered on its spot even after a half turn rotation. If not centered, repeat steps 7.

Use this procedure for the AN/PAQ-4 B/C and the AN/PEQ-2 InfraRed Aiming Lights (**Note:** Night Vision equipment is required):

- Lay weapon flat on a table, over sandbags, or rucksack and manually stabilize the weapon by applying moderate hand pressure down to center of weapon.
- Select proper 10-meter dry-zero target board.
 - Orient target board to match orientation of weapon

(**Note:** Proper positioning of the target is CRITICAL for accurate boresighting results).

- Adjust the target board until the laser Borelight is centered on its labeled spot.
- Adjust the windage and elevation controls on the IR Aiming Lights until they are centered on their labeled spot(s).

9. Turn off the laser Borelight tool and REMOVE from weapon. Weapon is now dry zeroed for 300 meters. 300 meter dry-zero should be confirmed by live fire.

10. Repeat steps 1 through 9 for each weapon to be boresighted.

Field Location Borelight Dry Zero Procedure

1. **WARNING** - Before inserting Borelight into weapon perform Preventative Maintenance Checks and Service (PMCS), clear weapon and visually inspect the chamber to insure that it is empty and no ammunition is in position to be chambered. Additionally, inspect rifle bore and muzzle to assure there are no obstructions. Clean if necessary.

2. Check/Inspect screw on top of rail, rail cross slot T-14, to assure that it is tight.

3. Attach fire control device(s) to the weapon and assure device(s) are in their correct location - left rail, right rail, and top rail. (**Note:** rails are labeled T - Top, R - Right and L - Left). Check to confirm that all device(s) are firmly attached.

4. Stabilize the weapon. The recommended/preferred field method is to place/secure the weapon to a rifle holder similar to what is shown in FM 23-9, Figure C-7, and page C-7, dated July 1989. Other alternatives to stabilizing the weapon can be accomplished by placing the weapon over sand bags, rucksack, securing weapon to a sand bagged tripod, placing the weapon over two fallen trees or ammunition cans and stabilizing with sand bags or rucksack. If the preferred method or the alternatives are not possible and if vehicles are available go to Step 5, If not go to step 6.

5. Lay or position weapon on a solid-stable surface such as the tailgate or hood of a vehicle or flat surfaces on tracked vehicles. Choose a weapon position where the weapon is most stable. Ignore weapon cant at this time. (**Note:** Weapon can be stabilized by using combinations of sandbags, rucksacks, with ammunition cans or tie down straps from vehicles). An unobstructed line of sight of 10 meters is required. A 10-meter length of cord is included with the laser Borelight kit. 10 meters is measured from top rail cross-slot labeled "T-14".

6. **WARNING:** DO NOT TURN ON THE LASER BORELIGHT AT THIS TIME. 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

7. **ZEROING THE BORELIGHT:** This procedure is for zeroing the Borelight to the weapon. This procedure requires a minimum of **THREE** people. One person to stabilize weapon, a second person to rotate and adjust the Borelight and the third person at the target board to call out adjustments.

WARNING: All individuals **MUST** wear Ballistic Laser Eye Protection (BLEPS). **CAUTION:** Do not look at laser through the BLEPS.

DANGER

DO NOT LOOK DIRECTLY INTO LASER BEAM - DO NOT LOOK INTO LASER THROUGH BINOCULARS OR TELESCOPES OR BLEPS - DO NOT POINT LASER AT MIRROR SURFACES - DO NOT SHINE LASER INTO OTHER INDIVIDUALS' EYES.

- Select/Place the proper 10 meter dry-zeroing target at a 10 meter distance from the top rail screw - rail cross slot T-14.
- For zeroing the Borelight laser, the target board **MUST** be kept level. Ignore weapon orientation at this time.
- Turn on the laser Borelight. With the help of an assistant, hold a target at 10 meters and place the target board so that the laser dot strikes the center of the laser Borelight dot on the selected target board.

Note

Rotate Borelight tool clockwise, rotating laser Borelight housing counter-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. Go to step 8.

- If the laser dot rotates in a circular pattern, the Borelight windage or elevation or both **MUST** be adjusted using the following procedures. This procedure can be done at the 10 meter distance or you can move the target in as close as 2 meters.
 - Slowly rotate the Borelight one-half turn. Note the new location of the laser dot.”
 - Adjust the Borelight windage and elevation until the laser dot moves one-half the space from its original location.
 - Continue the procedure until the laser dot remains stationary when the Borelight is rotated. If target board was moved closer to the Borelight, move target back to a distance of 10 meters and re-check boresight. If boresight is correct the weapon is ready to be dry-zeroed.
8. ZEROING THE WEAPON: (**Note**: Do Not Touch or Bump Borelight) This procedure is for boresighting the weapon for 300 meter dry-zero.

DANGER:

Do not stare at or shine visible laser beam into other individuals eyes.

Use this procedure for the 300 meter Back Up Iron Sight, M68 CCO Reflex Sight and the AN/PAS-13 Thermal Weapon Sight (TWS):

- If using the recommended rifle holder, maintain weapon in its place. If using a flat stable surface, place weapon over a sand bag, rucksack or other recommended alternatives, and stabilize the weapon so that it has no cant.
- Maintaining 10 meter distance from the top rail screw (rail cross slot T-14) to the selected target board, orient the selected target board in a level-vertical position. (Note: Proper positioning of the target is **CRITICAL** for accurate boresighting results)
- For specific weapon and sight combinations, follow the instructions on the target boards.

- Aim the weapon fire control device(s) at the proper figure on the chart and adjust WEAPON sighting device(s) windage and elevation controls until the laser Borelight is centered on its labeled spot.
- (Optional) Rotate the Borelight one half turn and again aim at the proper device(s) target. If properly boresighted, the laser Borelight spot should still be centered on its spot even after a half turn rotation. If not centered, repeat steps 7.

Use this procedure for the AN/PAQ-4 B/C and the AN/PEQ-2 Infra-Red Aiming Lights (Note: Night Vision equipment is required):

- Place weapon on flat surface, over sand bags, or rucksack and manually stabilize the weapon by applying moderate hand pressure down to center of weapon.
 - Select proper 10-meter dry-zero target board.
 - Orient target board to match orientation of weapon (Note: Proper positioning of the target is CRITICAL for accurate boresighting results).
 - Adjust the target board until the laser Borelight is centered on its labeled spot.
 - Adjust the windage and elevation controls on the IR Aiming Lights until they are centered on their labeled spot(s).
9. Turn off the laser Borelight tool and REMOVE from weapon. Weapon is now dry zeroed for 300 meters. 300 meter dry-zero should be confirmed by live fire.
10. Repeat steps 1 through 9 for each weapon to be boresighted.

**Borelight Dry Zero Procedure for M240B MG and M249 SAW with AN/PEQ-2
MachineGun (MG) Borelight Dry Zero Procedure**

1. **WARNING** - Before inserting Borelight into weapon, clear Machine Gun (MG), perform Preventative Maintenance Checks and Service (PMCS), and visually inspect the chamber to insure that it is empty and no ammunition is in position to be chambered. Additionally, inspect bore and muzzle to assure there are no obstructions. Clean if necessary.
2. Attach/Mount AN/PEQ-2 IR Pointer to the MG and assure device is tightly secure. On the M240B, the AN/PEQ-2 is attached to the rail on top of the feed cover. On the M249 SAW, the AN/PEQ-2 is attached to the rail on top of the M249 TWS bracket.
3. Stabilize the MG. This can be accomplished by placing the MG on a tripod. If no tripod is available stabilize MG with bipod open and with sand bags or rucksacks.
4. An unobstructed line of sight of 10 meters is required. A 10-meter length of cord is included with the laser Borelight kit. 10 meters is measured from the barrel carrying handle.
5. **WARNING**: DO NOT TURN ON THE LASER BORELIGHT AT THIS TIME. Wipe laser Borelight mandrel with a clean cloth and apply a light film of oil on the mandrel. Insert laser Borelight mandrel in MG 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.
6. **ZEROING THE BORELIGHT**: This procedure is for zeroing the Borelight to the MG. This procedure requires a minimum of **Three** people. One person to stabilize weapon by applying firm pressure downward with two hands on the MG barrel, a second person to rotate and adjust the Borelight and a third person at the target board to call out adjustments. **WARNING**: All individuals **MUST** wear Ballistic Laser Eye Protection (BLEPS). **CAUTION**: Do not look at laser through the BLEPS.

DANGER

DO NOT LOOK DIRECTLY INTO LASER BEAM - DO NOT LOOK INTO LASER THROUGH BINOCULARS OR TELESCOPES OR BLEPS - DO NOT POINT LASER AT MIRROR SURFACES
- DO NOT SHINE LASER INTO OTHER INDIVIDUALS' EYES.

Select/Place the proper 10 meter dry-zeroing target at a 10 meter distance from the carrying handle of the MG barrel.

For zeroing the Borelight laser, the target board MUST be kept level. Ignore MG orientation at this time.

Turn on the laser Borelight. With the help of an assistant, hold a target at 10 meters and place the target board so that the laser dot strikes the center of the laser Borelight dot on the selected target board.

Note

Rotate Borelight tool clockwise, rotating laser Borelight housing counter-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. Go to step 7.

If the laser dot rotates in a circular pattern, the Borelight windage or elevation or both MUST be adjusted using the following procedures. This procedure can be done at the 10 meter distance or you can move the target in as close as 2 meters.

Slowly rotate the Borelight one-half turn. Note the new location of the laser dot .

Adjust the Borelight windage and elevation until the laser dot moves one-half the space from its original location.

Continue the procedure until the laser dot remains stationary when the Borelight is rotated. If target board was moved closer to the Borelight, move target back to a distance of 10 meters and re-check boresight. If boresight is correct, the weapon is ready to be dry-zeroed.

7. ZEROING THE MACHINEGUN: (**Note**: Do Not Touch or Bump Borelight) This procedure is for boresighting the weapon for 300 meter dry-zero.

DANGER

Do not stare at or shine visible laser beam into other individuals eyes.

Use this procedure for the AN/PEQ-2 InfraRed Aiming/Illumination Lights (Note: Night Vision equipment is required).

Zeroing from Bipod: Remove MG from Tripod or from sandbags or rucksacks. From the same 10 meter location, shoulder the MG in a prone firing position with bipod legs contacting the ground, manually stabilize the weapon without cant and orient the selected target board in a level-vertical position. (**Note**: Proper positioning of the target is CRITICAL for accurate boresighting results).

Zeroing from Tripod: From the same 10 meter location, stabilize the weapon without cant and orient the selected target board in a level-vertical position. (**Note**: Proper positioning of the target is CRITICAL for accurate boresighting results).

NOTE: If MG is zeroed from tripod and fired off the bipod, the center of the cone of fire will be “approximately” 18 inches **high** (+2 MILs) at 300 meters from the center of the target. If the MG is zeroed from the bipod and fired from the tripod, the center of the cone of fire will be “approximately” 18 inches **low** (-2 MILs) at 300 meters from the center of the target.

Read and follow the instructions on the target boards.

Aim/Place the borelight at the proper figure on the chart and adjust the windage and elevation controls on the AN/PEQ-2 IR Aiming Lights until they are centered on their labeled spot(s).

(Optional) Rotate the Borelight one half turn and again aim at the proper device(s) target. If properly boresighted, the laser Borelight spot should still be centered on its spot even after a half turn rotation. If not centered, repeat steps 6.

8. Turn off the laser Borelight tool and REMOVE from MG. MG is now dry zeroed for 300 meters. 300 meter dry-zero should be confirmed by live fire.

ANNEX G—OFFSET TARGET PREPARATION

To create 25 Meter Live Fire Zeroing Targets:

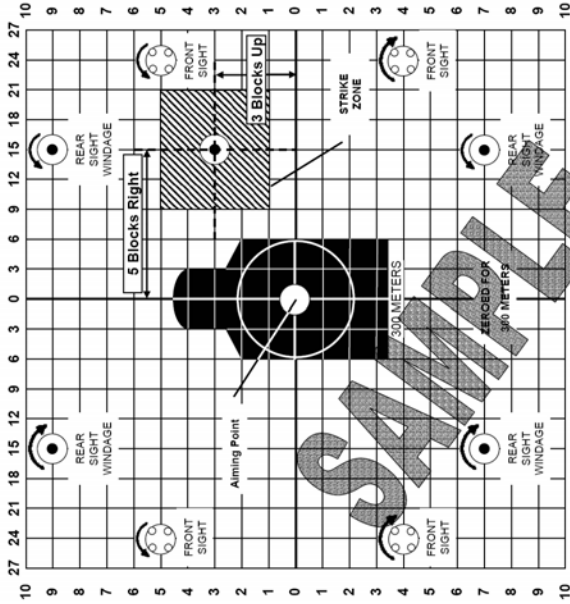
1. Obtain an **M16A2/M16A4** 25 Meter Zeroing Target. (**DO NOT USE M4 CARBINE SIDE**)
2. Locate the **25m M16A2/A4 Tgt Zero Offset** data for your weapon configuration in the current SMALL ARMS INTEGRATION BOOK.
3. All offsets are represented in BLOCKS from the CENTER of the target.
(Each offset is two numbers. The first number represents the number of blocks **Left** or **Right** of center and the second number represents the number of blocks **Up** or **Down** from the center.)
4. Using the offset numbers draw a point on the Zeroing Target.
5. Draw a box, four (4) blocks by four (4) blocks centered AROUND the point in step 4.
(See sample on next page)

To use 25 Meter Live Fire Zeroing Targets:

1. Place target 25 Meters from the weapon.
2. Aim weapon at center of target.
3. Fire three (3) rounds at target.
4. Determine where rounds hit the target.
5. If all three (3) rounds are inside the four (4) by four (4) box then the gun is correctly zeroed.
If the shot group is ABOVE the box then adjust the sight UP.
If the shot group is BELOW the box then adjust the sight DOWN.
If the shot group is LEFT of the box then adjust the sight LEFT.
If the shot group is RIGHT of the box then adjust the sight RIGHT.
6. Continue to fire three (3) round groups at the target until all three (3) rounds are inside the four (4) by four (4) box.

SAMPLE (OFFSET = 5R, 3U)

25 METER ZEROING TARGET M16A2/M16A4



ZERO TARGET DATA

- 1- FOR ZEROING AT 25 METERS, ROTATE THE REAR SIGHT ELEVATION KNOB TO THE 300 METER SETTING. THEN CLOCKWISE (UP) ONE CLICK PAST THE 300 METER SETTING FOR M16A2 RIFLE, CLOCKWISE (UP) TWO CLICKS PAST THE 300 METER SETTING FOR THE M16A4 RIFLE.
- 2- AIM AT TARGET CENTER. ADJUST SIGHTS TO MOVE SHOT GROUP CENTER AS CLOSE AS POSSIBLE TO THE WHITE DOT IN THE CENTER OF TARGET.
- 3- AFTER COMPLETING THE 25 METER ZERO, ROTATE THE REAR SIGHT ELEVATION KNOB COUNTER-CLOCKWISE (DOWN) ONE CLICK TO THE 300 METER SETTING FOR THE M16A2 RIFLE, DOWN TWO CLICKS TO THE 300 METER SETTING FOR THE M16A4 RIFLE. THE WEAPON WILL BE ZEROED FOR 300 METERS.

Sample 25 Meter Live Fire Zeroing Target

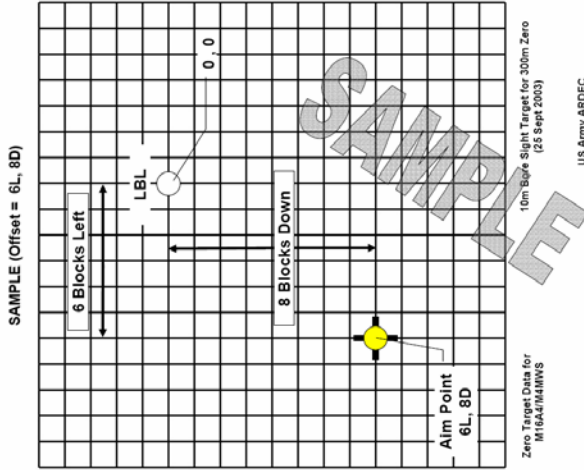
To create 10 Meter Laser Bore Sight Targets:

1. Targets are created using a **10m Bore Sight Target for 300m Zero**. Each block on the 10m Bore Sight Target is 1cm x 1cm. Blanks can be downloaded from:
<https://www.us.army.mil/suite/folder/4718898>
2. Locate the **10m Boresight Tgt Offset** data for your weapon configuration in the current SMALL ARMS INTEGRATION BOOK.
3. All offsets are represented in BLOCKS, from the LASER BORE LIGHT (0, 0) point on the target. (Each offset is two numbers. The first number is the number of blocks **Left** or **Right** of LASER BORE LIGHT point and the second number is the number of blocks **Up** or **Down** from the LASER BORE LIGHT point.)
4. Place a small circle on the target for the LASER BORE LIGHT. Place the circle so the aim point will also fit on the target. Label this point LBL.
5. Starting at the LBL point use the offset numbers to place another small circle on the target. Label this point Aim Point or AP. (See sample on next page)

To use 10 Meter Laser Bore Sight Targets:

1. Secure weapon.
2. Place target ten (10) Meters from the weapon.
3. Insert Laser Bore Light into the barrel. (See Annex F for more detail.)
4. Spin balance the Laser Bore Light. (See Annex F for more detail.)
5. Line up the Laser Bore Light with the LBL (0, 0) circle on the target.
6. Adjust the aiming device so it is located at the Aim Point on the target.

Sample 10m Laser Bore Sight Target



US Army ARDEC
AMSTA-AR-CCL-A
AMSTA-AR-FSE-R
Picatinny Arsenal, NJ 07606

Grids are 1cm wide by 1cm high. Units must locally manufacture.

ANNEX H—TARGET OFFSET SUMMARY

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M16A4 MWS	Back Up Iron Sight	Mounted on upper receiver	300m	0.0	0.0 4.0U
M4/M16A4 MWS	AN/PAQ-4C Left Rail	Mounting Bracket/ Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	300m	6.5R 8.0U	6.0L 4.3D
M4/M16A4 MWS	AN/PAQ-4C Top Rail	Mounting Bracket/ Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	300m	1.7R 0.7D	1.8L 3.9U
M4/M16A4 MWS	AN/PAQ-4C Right Rail	Mounting Bracket/ Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	300m	5.9L 3.5U	6.0R 0.9D

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M16A4 MWS	AN/PAQ-4C Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	4.2R 8.6U	4.3L 4.2D
M4/M16A4 MWS	AN/PAQ-4C Top Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	1.7R 1.8U	1.8L 2.2U
M4/M16A4 MWS	AN/PAQ-4C Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	4.3L 3.4U	4.3R 0.7D
M4/M16A4 MWS	AN/PAS-13B(V)1 (LWTS) Receiver Rail	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1	300m	0.0 4.7D	TBD

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M16A4 MWS	AN/PAS-13A/B(V)3 (HWTS) Receiver Rail	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1 And Spacer Kit, M4 NSN: 5340-01-502-7971 Part No: A3268346 (For M/HWTS Only)	300m	0.0 6.0D	0.0 9.4U
M4/M16A4 MWS	AN/PEQ-2A Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	5.0R 4.0U	Aiming 4.5L / 1D Flood 4.5L / 5D
M4/M16A4 MWS	AN/PEQ-2A Top Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	2.0L 1.2U	Aiming 2.0R / 2.3U Flood 2.0L / 2.3U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M16A4 MWS	AN/PEQ-2A Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	4.5L 8.5U	Aiming 4.5R / 4.4D Flood 4.5R / 0.4D
M4/M16A4 MWS	AN/PVS-14 on upper receiver rail & M68 CCO on upper fwd rail	Bracket, Mounting NSN: 5340-01-446-8588 Part No: A3256348	300m	0.0 1.5D (M68 Offset)	0.0 5.6U (M68 Offset)
M4/M16A4 MWS	AN/PVS-4 on upper receiver rail	Adapter AN/PVS-4 (Spacer) NSN: 5365-01-447-8991 Part No: 12598098 And Bracket Mnting (Rail grabber) NSN: 5340-01-449-8533 Part No: 12598120	300m	0.0 4.5D	0.0 7.6U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M16A4 MWS	M68, CCO on upper receiver rail	Mount, Quick Release NSN: 014397265 Part No: 0568059 And Spacer, Special Shaped NSN: 5365-01-448-8912 Part No: 0568108	300m	0.0 1.5D	0.0 5.6U
M4-M16A4/ M203 MWS	Back Up Iron Sight	Mounted on upper receiver	300m	0.0	0.0 6.0U
M4-M16A4/ M203 MWS	AN/PAQ-4C Left Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	300m	4.9R 6.1U	6.0L 4.0D
M4-M16A4/ M203 MWS	AN/PAQ-4C Top Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109.	300m	1.7R 0.5D	1.8L 4.6U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4-M16A4/ M203 MWS	AN/PAQ-4C Right Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	300m	5.9L 3.5U	6.0R 0.0
M4-M16A4/ M203 MWS	AN/PAQ-4C Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	4.2R 8.5U	4.3L 3.5D
M4-M16A4/ M203 MWS	AN/PAQ-4C Top Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	1.7R 1.7U	1.8L 2.9U
M4-M16A4/ M203 MWS	AN/PAQ-4C Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	300m	4.3L 3.3U	4.4R 0.0

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4-M16A4/ M203 MWS	AN/PVS-4 Upper Receiver Rail	Adapter AN/PVS-4 (Spacer) NSN: 5365-01-447-8991 Part No: 12598098 And Bracket Mnting (Rail grabber) NSN: 5340-01-449-8533 Part No: 12598120	300m	0.0 3.4D	0.0 9.6U
M4-M16A4/ M203 MWS	M68, CCO on upper receiver rail	Mount, Quick Release NSN: 014397265 Part No: 0568059 And Spacer, Special Shaped NSN: 5365-01-448-8912 Part No: 0568108	300m	0.0 1.5D	0.0 7.5U
M16A2	Iron sight	NA	300m	0.0 0.0	0.0 4.2U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M16A2	AN/PAQ-4C Mounted to Barrel	M4/M16A2 Bracket Assy NSN: 5340-01-390-3812 Part No: A3186958	300m	1.5R 0.5U	1.9L 2.5U
M16A2	AN/PAS-13B(V)1 (LWTS) Attached to Carrying Handle	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1 And Bracket Assembly, M16A1/A2 NSN: 5340-01-368-0086 Part No: A3170580	300m	0.0 10.2D	TBD

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M16A2	AN/PAS-13A/B(V)3 (HWTS) Attached to Carrying Handle	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1 And Bracket Assembly, M16A1/A2 NSN: 5340-01-368-0086 Part No: A3170580	300m	0.0 8.1D	0.0 11.0U
M16A2	AN/PEQ-2A Mounted to Barrel	M4/M16A2 Bracket Assy NSN: 5340-01-390-3812 Part No: A3186958	300m	1.5L 0.5U	Aiming 1.8R / 2.4U Flood 2.2L / 2.4U
M16A2	AN/PVS-4 Attached to Carrying Handle	Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	300m	0.0 7.0D	0.0 9.4U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M16A2	M68, CCO Attached to Carrying Handle	Mount, Quick Release NSN: 1240-01-439-7265 Part No: 0568059 Mounted On Mount, Sight NSN: 1240-01-410-7427 Part No: 0568065	300m	N/A	0.0 5.2U
M16/M203	AN/PAQ-4C Attached to Carrying Handle	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	300m	1.9R 2.6D	1.9L 8.6U
M16/M203	AN/PVS-4 Attached to Side of Carrying Handle	Mounting Bracket Assy M203 NSN: 5855-01-039-2835 Part No: SM-D-850330-1	300m	4.2R 9.8D	<u>TBD</u>

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M4A1	Back Up Iron Sight	Mounted on upper receiver	300m	0.0	0.0 4.0U
M4/M4A1	AN/PAQ-4C Mounted to Barrel	M4/M16A2 Bracket Assy NSN: 5340-01-390-3812 Part No: A3186958	300m	1.5R 2.5U	1.9L 2.5U
M4/M4A1	AN/PAS-13B(V)1 (LWTS) Receiver Rail	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1	300m	0.0 4.7D	TBD
M4/M4A1	AN/PAS-13A/B(V)3 (HWTS) Receiver Rail	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1 And Spacer Kit, M4 NSN: 5340-01-502-7971 Part No: A3268346 (For M/HWTS Only)	300m	0.0 6.0D	0.0 9.4U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M4A1	AN/PEQ-2A Mounted to Barrel	M4/M16A2 Bracket Assy NSN: 5340-01-390-3812 Part No: A3186958	300m	1.0L 0.3U	Aiming 1.8R / 2.4U Flood 2.2L / 2.4U
M4/M4A1	AN/PVS-4 Attached to Carrying Handle	Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	300m	0.0 3.4D	0.0 7.6U
M4/M4A1	M68, CCO Receiver Rail	Mount, Quick Release NSN: 1240-01-439-7265 Part No: 0568059 And Spacer, Special Shaped NSN: 5365-01-448-8912 Part No: 0568108	300m	0.0 1.5D	0.0 5.6U
M4/M203	Back Up Iron Sight	Mounted on upper receiver	300m	0.0	0.0 6.0U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M4/M203	AN/PAQ-4C Attached to Carrying Handle	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	300m	1.3R 1.9D	1.9L 8.6U
M4/M203	AN/PVS-4 Attached to Side of Carrying Handle	Mounting Bracket Assy M203 NSN: 5855-01-039-2835 Part No: SM-D-850330-1	300m	0.0 3.4D	0.0 9.6U
M24 Sniper Sys	AN/PVS-10	Use Integral Mounting Base of the SNS. No special bracket or mount required.	N/A	N/A	N/A
M24 Sniper Sys	M3 Day Optic Sight	Mtd on top of optical rail on the M24	N/A	N/A	N/A

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M107	AN/PAS-13A/B(V)3 (HWTS)	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1 And Spacer Kit, M107 NSN: 5340-01-529-2604 Part No: A3301516 (HWTS ONLY)		TBD	TBD
M107	Day Optic Sight	Use Integral Mounting Base of the DOS. No special bracket or mount required.	N/A	N/A	N/A
M249	Iron Sight	N/A	400M	0.0 5.1U	0.0 1.7U
M249	AN/PAQ-4C	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	400m	1.8R 0.0	1.8L 5.4U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M249	AN/PAQ-4C	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	400m	1.8R 2.0U	1.8L 4.7U
M249	AN/PAQ-4C No Feed Tray Cover Rail or forward rails	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 With Mounting Bracket Assy, M249 NSN: 5340-01-387-0866 Part No: A3187016 And Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	400m	2.5R 1.5D	4.1L 6.1U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M249	AN/PAQ-4C Left Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	400m	7.5R 14.0D	7.6L 8.3D
M249	AN/PAQ-4C Right Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	400m	7.6L 10.7U	7.7R 4.0D
M249	AN/PAQ-4C Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	400m	5.9R 14.0D	6.0L 8.3D
M249	AN/PAQ-4C Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	400m	5.8L 10.7U	5.9R 4.0D

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M249	AN/PAS13A/B(V)2 (MWTS)	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1	400m	0.0 2.8D	0.0 8.6U
M249	AN/PEQ-2A on Feed Tray Cover Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	400m	2.0L 1.3U	Aiming 2.0R / 4.8U 2.0L / 4.8U
M249	AN/PEQ-2A Feed Tray Cover with no Rail	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting Bracket Assy, M249 NSN: 5340-01-387-0866 Part No: A3187016	400m	5.0R 4.0D	Aiming .5L / 6.5U Flood 4.5L / 6.5U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M249	AN/PEQ-2A on Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP – 090	400m	5.9R 10.0D	Aiming 6.0L / 4.4D Flood 6.0L / 8.4D
M249	AN/PEQ-2A on Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP – 090	400m	6.0L 14.0U	Aiming 6.1R / 7.6D Flood 6.1R / 3.6D
M249	AN/PVS-4 on Feed Tray Cover Rail	Adapter AN/PVS-4 (Spacer) NSN: 5365-01-447-8991 Part No: 12598098 And Bracket Mnting (Rail grabber) NSN: 5340-01-449-8533 Part No: 12598120	400M	0.0 4.3D	0.0 10.0U
M249	AN/PVS-4 Feed Tray Cover with no Rail	Mounting Bracket, M249 NSN: 3040-01-233-0352 Part No: A3079160	400M	2.5R 4.9D	2.3L 11.3U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M249	M145 on Feed Tray Cover Rail	Uses integral M145 Rail Grabber. No special bracket or mount required.	All Ranges Use 10mZ Reticle	N/A	0.0 0.0
M60	AN/PAQ-4C	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting Bracket ASSY, M60 NSN: 5855-01-046-7272 Part No: SM-D-850340-1	500m	1.5R 8.0D	4.0L 14.0U
M60	AN/PAS-13, TWS (Medium)	Bracket Assembly, M60 NSN 5340-01-434-6072 Part No: A3170620	500m	0.0 8.1D	0.0 9.0U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M60	AN/PEQ-2A	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting Bracket ASSY, M60 NSN: 5855-01-046-7272 Part No: SM-D-850340-1	500m	1.5L 8.0D	Aiming 4.0R/14.0U Flood 0.0/14.0U
M60	AN/PVS-4	Mounting Bracket ASSY, M60 NSN: 5855-01-046-7272 Part No: SM-D-850340-1	500m	0.0 13.0D	0.5R 14.5U
M60	M145, MGO	Bracket Assembly, M60 NSN: 5340-01-434-6072 Part No: A3170620	500m	N/A	TBD
M240B	IRON SIGHTS	N/A	500m	0.0 9.2U	0.0 2.5U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M240B	AN/PAQ-4C on Feed Tray Cover Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	500m	1.8R 2.2D	1.5L 3.5U
M240B	AN/PAQ-4C on Feed Tray Cover Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	500m	1.8R 8.3U	1.8L 0.8U
M240B	AN/PAQ-4C on Left Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	500M	7.8R 17.7U	7.9L 8.1D
M240B	AN/PAQ-4C on Right Rail	Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109	500M	7.8L 13.5U	7.5R 4.4D

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M240B	AN/PAQ-4C on Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	500M	6.2R 17.7U	6.2L 8.1D
M240B	AN/PAQ-4C on Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	500M	5.9L 13.5U	6.0R 4.4D
M240B	AN/PAS13A/B(V)2 (MWTS)	Mount Assembly, Rail Grabber NSN: 1240-01-490-0737 Part No: A3281312-1	500M	0.0 2.3U	0.0 8.0U
M240B	AN/PEQ-2A on Feed Tray Cover Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090	500M	1.7L 6.0U	Aiming 1.7R / 2.2U Flood 2.3L / 2.2U

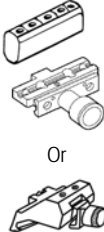
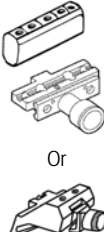
Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M240B	AN/PEQ-2A on Left Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP – 090	500M	6.2R 13.5U	Aiming 6.2L / 4.1D Flood 6.2L / 8.1D
M240B	AN/PEQ-2A on Right Rail	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP – 090	500M	6.1L 17.7U	Aiming 6.2R / 7.9D Flood 6.2R / 3.9D
M240B	AN/PVS-4 on Feed Tray Cover Rail	Adapter AN/PVS-4 (Spacer) NSN: 5365-01-447-8991 Part No: 12598098 And Bracket Mnting (Rail grabber) NSN: 5340-01-449-8533 Part No: 12598120	500M	0.0 6.2D	0.0 6.0U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M240B	M145 MGO on Feed Tray Cover Rail	Uses integral M145 Rail Grabber. No special bracket or mount required.	All Ranges Use 10mZ Reticle	N/A	0.0 0.0
M2	Iron Sight	N/A	500m	TBD	TBD
M2	AN/PAS-13A/B(V)3 (HWTS)	Bracket Assembly, M2 NSN: 5340-01-502-7233 Part No: A3170570	500m	0.0 12.8D	0.0 16.3U
M2	AN/PEQ-2A	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting Bracket Assy, M2 NSN: 5855-01-045-5482 Part No: SM-D-850220-1	500m	1.5L 9.5D	Aiming 2.0R/9.2U Flood 2.0L/9.2U
M2	AN/TVS-5	Mounting Bracket Assy, M2 NSN: 5855-01-045-5482 Part No: SM-D-850220-1	500m	0.0 10.6D	0.0 13.8U

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
M2	AN/PEQ-2A	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090 And Bracket Assembly, M2 NSN: 5340-01-502-7233 Part No: A3170570	500m	2.0R 8.0U	2.0R 12.0 U
Mk19	Iron Sight	N/A	500m	N/A	2.4 R 33.9 D
Mk19	AN/PAS-13A/B(V)3 (HWTS)	Bracket Assembly, MK19 NSN: 5340-01-434-2231 Part No: A3260830	500m	N/A	17.7 R 24.5 D
Mk19	AN/PEQ-2A on Top Rail	Bracket Assembly, MK19 NSN: 5340-01-434-2231 Part No: A3260830	500m	N/A	19.0R 27.0D

Weapon	Accessory	Mount	Range Zeroed To	25m M16A2/A4 Tgt Zero Offset Squares	10m Boresight Tgt Offset cm
Mk19	AN/PEQ-2A	Adapter Bracket NSN: 5340-01-362-9873 Part No: A3186952 And Mounting Bracket Assy, M2 NSN: 5855-01-045-5482 Part No: SM-D-850220-1	500m	N/A	Aiming 4.4R/23.4D Flood 0.4R / 23.4D
Mk19	AN/PEQ-2A on Side Rail	Bracket Assembly, MK19 NSN: 5340-01-434-2231 Part No: A3260830	500m	N/A	23.0R 35.5D
Mk19	AN/PEQ-2A	Adjustable Sight Bracket NSN: 1240-01-515-3767 Part No: 12997464	500m	N/A	13.5R 33.0D
Mk19	AN/TVS-5	Mounting Bracket Assy, M2 NSN: 5855-01-045-5482 Part No: SM-D-850220-1	500m	N/A	2.4R 14.5D

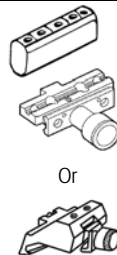
ANNEX I – DEVICE/RAIL GRABBER & MOUNT CROSS REFERENCE

AN/PAQ-4C 5855-01-398-4315 TM 11-5855-301-12&P		
<p>M4 Carbine with M4 Adapter Rail System:</p>	<p>Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109 Or Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090</p>	 <p style="text-align: center;">Or</p>
<p>M16A4 Rifle with M5 Adapter Rail System</p>	<p>Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer NSN: 5340-01-458-0473 Part No: 12598109 Or Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP - 090</p>	 <p style="text-align: center;">Or</p>

AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

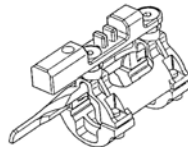
M203A2

Mounting Bracket/Picatinny Rail
Grabber & AN/PAQ-4C Spacer
NSN: 5340-01-458-0473
Part No: 12598109
Or
Rail Grabber Mounting Bracket "Insight"
NSN: 5340-01-458-0990
Part No: ITP - 090



M16A2 Rifle

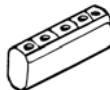
M4/M16A2 Bracket Assy
NSN: 5340-01-390-3812
Part No: A3186958



AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

M203

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting knob assembly, M16A1/A2
NSN: 5355-01-039-2834
Part No: SM-D-850500-1

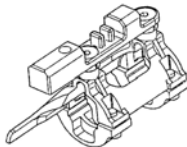


And



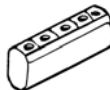
M4 Carbine

M4/M16A2 Bracket Assy
NSN: 5340-01-390-3812
Part No: A3186958



M203A1

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting knob assembly, M16A1/A2
NSN: 5355-01-039-2834
Part No: SM-D-850500-1



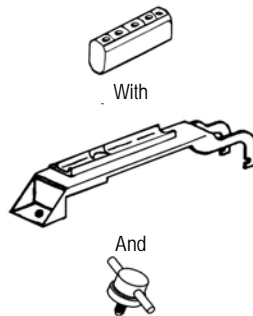
And



AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

M249 (Without
Rails)

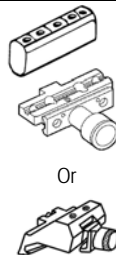
Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
With
Mounting Bracket Assy, M249
NSN: 5340-01-387-0866
Part No: A3187016
And
Mounting knob assembly, M16A1/A2
NSN: 5355-01-039-2834
Part No: SM-D-850500-1



AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

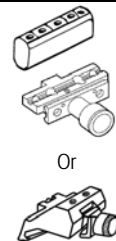
M249 (With Feed
Tray Cover Rail)

Mounting Bracket/Picatinny Rail
Grabber & AN/PAQ-4C Spacer
NSN: 5340-01-458-0473
Part No: 12598109
Or
Rail Grabber Mounting Bracket "Insight"
NSN: 5340-01-458-0990
Part No: ITP - 090



M249 (Forward
Rails)

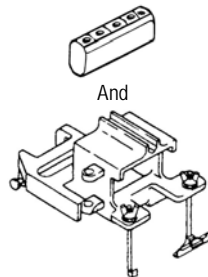
Mounting Bracket/Picatinny Rail
Grabber & AN/PAQ-4C Spacer
NSN: 5340-01-458-0473
Part No: 12598109
Or
Rail Grabber Mounting Bracket "Insight"
NSN: 5340-01-458-0990
Part No: ITP - 090



AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

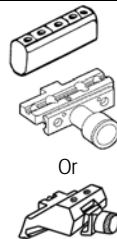
M60

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting Bracket ASSY, M60
NSN: 5855-01-046-7272
Part No: SM-D-850340-1



M240B (On either Feed Tray Cover Rail or Forward Rails) (AN/PAQ-4C is not recommended for use on the M240B)

Mounting Bracket/Picatinny Rail Grabber & AN/PAQ-4C Spacer
NSN: 5340-01-458-0473
Part No: 12598109
Or
Rail Grabber Mounting Bracket "Insight"
NSN: 5340-01-458-0990
Part No: ITP - 090



AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

M2 (AN/PAQ-4C
is not
recommended
for use on the
M2)

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952

And

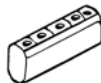
Mounting Bracket Assy, M2
NSN: 5855-01-045-5482
Part No: SM-D-850220-1

Or

Rail Grabber Mounting Bracket "Insight"
NSN: 5340-01-458-0990
Part No: ITP - 090

And

Bracket Assembly, M2
NSN: 5340-01-502-7233
Part No: A3170570



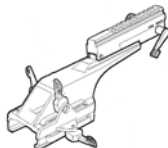
And



Or



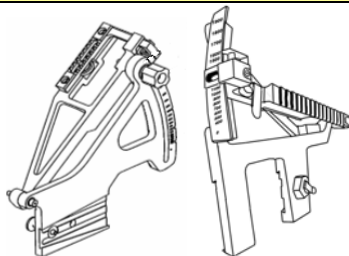
And



AN/PAQ-4C
5855-01-398-4315
TM 11-5855-301-12&P

MK19 (AN/PAQ-4C is not recommended for use on the MK19)

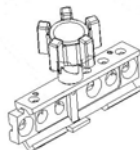
Bracket Assembly, MK19
NSN: 5340-01-434-2231
Part No: A3260830
Or
Adjustable Sight Bracket
NSN: 1240-01-515-3767
Part No: 12997464



AN/PAS-13B(V)1, LWTS, 5855-01-464-3150
AN/PAS-13A(V)2, MWTS, 5855-01-458-0210
AN/PAS-13B(V)2, MWTS, 5855-01-464-3152
AN/PAS-13A(V)3, HWTS, 5855-01-458-0211
AN/PAS-13B(V)3, HWTS, 5855-01-464-3151
TM 11-5855-312-10, TM 11-5855-309-12&P, TM 11-5855-314-12&P

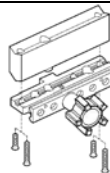
Weapon Thermal Sight
Universal/ Integrated
Rail Grabber

Mount Assembly, Rail Grabber
NSN: 1240-01-490-0737
Part No: A3281312-1



M4 Carbine with M4
Adapter Rail System
(No Bracket or Mount
needed for LWTS)

Spacer Kit, M4
NSN: 5340-01-502-7971
Part No: A3268346
(For M/HWTS Only)

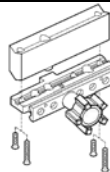


Spacer attached to Mount Assembly,
Rail Grabber by Unit Armorer and
attached to M/HWTS

AN/PAS-13B(V)1, LWTS, 5855-01-464-3150
AN/PAS-13A(V)2, MWTS, 5855-01-458-0210
AN/PAS-13B(V)2, MWTS, 5855-01-464-3152
AN/PAS-13A(V)3, HWTS, 5855-01-458-0211
AN/PAS-13B(V)3, HWTS, 5855-01-464-3151
TM 11-5855-312-10, TM 11-5855-309-12&P, TM 11-5855-314-12&P

M16A4 Rifle with M5
Adapter Rail System
(No Bracket or Mount
needed for LWTS)

Spacer Kit, M4
NSN: 5340-01-502-7971
Part No: A3268346
(For M/HWTS Only)



Spacer attached to Mount Assembly,
Rail Grabber by Unit Armorer and
attached to M/HWTS

M16A2 Rifle

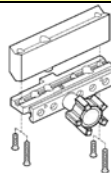
Bracket Assembly, M16A1/A2
NSN: 5340-01-398-0086
Part No: A3170580



AN/PAS-13B(V)1, LWTS, 5855-01-464-3150
AN/PAS-13A(V)2, MWTS, 5855-01-458-0210
AN/PAS-13B(V)2, MWTS, 5855-01-464-3152
AN/PAS-13A(V)3, HWTS, 5855-01-458-0211
AN/PAS-13B(V)3, HWTS, 5855-01-464-3151
TM 11-5855-312-10, TM 11-5855-309-12&P, TM 11-5855-314-12&P

M4 Carbine
(No Bracket or Mount
needed for LWTS)

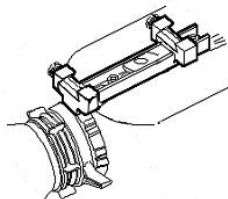
Spacer Kit, M4
NSN: 5340-01-502-7971
Part No: A3268346
(For M/HWTS Only)



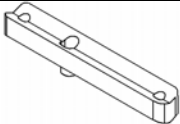
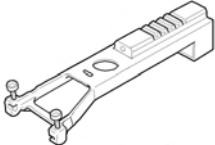
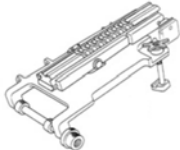
Spacer attached to Mount Assembly,
Rail Grabber by Unit Armorer and
attached to M/HWTS

M24

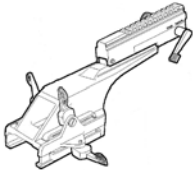

Mount Assembly, M24
NSN: 5340-01-502-7235
Part No: A3170565
(HWTS Only)



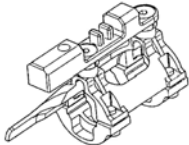
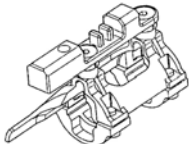


AN/PAS-13B(V)1, LWTS, 5855-01-464-3150
 AN/PAS-13A(V)2, MWTS, 5855-01-458-0210
 AN/PAS-13B(V)2, MWTS, 5855-01-464-3152
 AN/PAS-13A(V)3, HWTS, 5855-01-458-0211
 AN/PAS-13B(V)3, HWTS, 5855-01-464-3151
 TM 11-5855-312-10, TM 11-5855-309-12&P, TM 11-5855-314-12&P

M107	Spacer Kit, M107 NSN: 5340-01-529-2604 Part No: A3301516 (HWTS ONLY)	
M249 (Without Feed Tray Cover Rail)	Bracket Assembly NSN: 5340-01-434-6073 Part No: A3170615	
M249 (With Feed Tray Cover Rail)	MWTS only: no special bracket or mount required.	
M60	Bracket Assembly, M60 NSN 5340-01-434-6072 Part No: A3170620	

AN/PAS-13B(V)1, LWTS, 5855-01-464-3150
AN/PAS-13A(V)2, MWTS, 5855-01-458-0210
AN/PAS-13B(V)2, MWTS, 5855-01-464-3152
AN/PAS-13A(V)3, HWTS, 5855-01-458-0211
AN/PAS-13B(V)3, HWTS, 5855-01-464-3151
TM 11-5855-312-10, TM 11-5855-309-12&P, TM 11-5855-314-12&P

M240B	MWTS only: no special bracket or mount required.	
M2	Bracket Assembly, M2 NSN: 5340-01-502-7233 Part No: A3170570	
MK19	Bracket Assembly, MK19 NSN: 5340-01-434-2231 Part No: A3260830	

AN/PEQ-2A 5855-01-447-8992 TM 11-5855-308-12&P		
M4 Carbine with M4 Adapter Rail System:	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP – 090	
M16A4 Rifle with M5 Adapter Rail System	Rail Grabber Mounting Bracket "Insight" NSN: 5340-01-458-0990 Part No: ITP – 090	
M16A2 Rifle	M4/M16A2 Bracket Assy NSN: 5340-01-390-3812 Part No: A3186958	
M4 Carbine	M4/M16A2 Bracket Assy NSN: 5340-01-390-3812 Part No: A3186958	

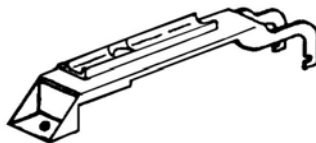
AN/PEQ-2A
5855-01-447-8992
TM 11-5855-308-12&P

M249 (No Rails)

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting Bracket Assy, M249
NSN: 5340-01-387-0866
Part No: A3187016



And



M249 (Feed Tray
Cover Rails)

Rail Grabber Mounting Bracket
"Insight"
NSN: 5340-01-458-0990
Part No: ITP – 090



M249 (Forward
Rails)

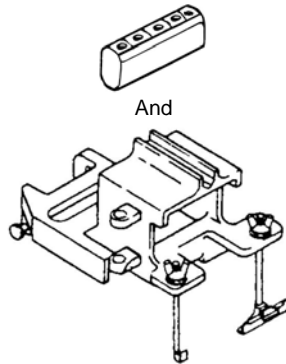
Rail Grabber Mounting Bracket
"Insight"
NSN: 5340-01-458-0990
Part No: ITP – 090



AN/PEQ-2A
5855-01-447-8992
TM 11-5855-308-12&P

M60

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting Bracket ASSY, M60
NSN: 5855-01-046-7272
Part No: SM-D-850340-1



M240B (On either
Feed Tray Cover
Rail or Forward
Rails)

Rail Grabber Mounting Bracket
"Insight"
NSN: 5340-01-458-0990
Part No: ITP – 090



AN/PEQ-2A
5855-01-447-8992
TM 11-5855-308-12&P

M2

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting Bracket Assy, M2
NSN: 5855-01-045-5482
Part No: SM-D-850220-1

Or

Rail Grabber Mounting Bracket
"Insight"
NSN: 5340-01-458-0990
Part No: ITP - 090
And
Bracket Assembly, M2
NSN: 5340-01-502-7233
Part No: A3170570



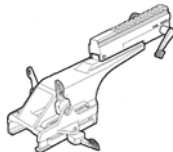
And



Or



And



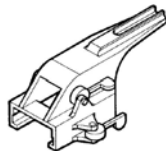
AN/PEQ-2A
5855-01-447-8992
TM 11-5855-308-12&P

MK19

Adapter Bracket
NSN: 5340-01-362-9873
Part No: A3186952
And
Mounting Bracket Assy, M2
NSN: 5855-01-045-5482
Part No: SM-D-850220-1

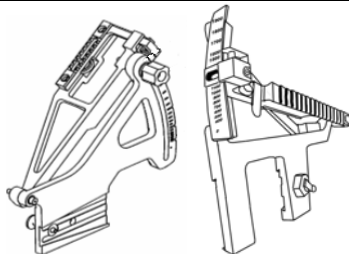


And



MK19

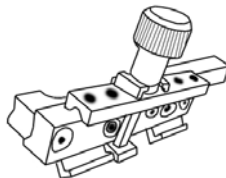
Bracket Assembly, MK19
NSN: 5340-01-434-2231
Part No: A3260830
Or
Adjustable Sight Bracket
NSN: 1240-01-515-3767
Part No: 12997464



AN/PVS-4(A)
5855-01-422-8782
TM 11-5855-213-10

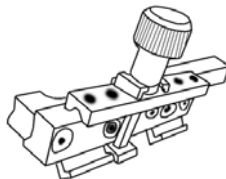
M4 Carbine with M4
Adapter Rail System:

Adapter AN/PVS-4 (Spacer)
NSN: 5365-01-447-8991
Part No: 12598098
And
Bracket Mntng (Rail grabber)
NSN: 5340-01-449-8533
Part No: 12598120



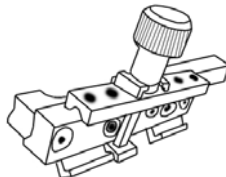
M16A4 Rifle with M5
Adapter Rail System

Adapter AN/PVS-4 (Spacer)
NSN: 5365-01-447-8991
Part No: 12598098
And
Bracket Mntng (Rail grabber)
NSN: 5340-01-449-8533
Part No: 12598120


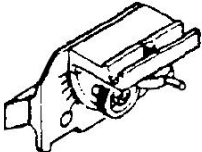

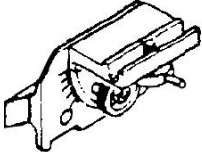


M203A2

Adapter AN/PVS-4 (Spacer)
NSN: 5365-01-447-8991
Part No: 12598098
And
Bracket Mntng (Rail grabber)
NSN: 5340-01-449-8533
Part No: 12598120



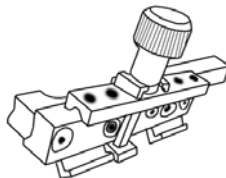
AN/PVS-4(A)
5855-01-422-8782
TM 11-5855-213-10

M16A2 Rifle	Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	
M203	Mounting Bracket Assy M203 NSN: 5855-01-039-2835 Part No: SM-D-850330-1	
M4 Carbine	Mounting knob assembly, M16A1/A2 NSN: 5355-01-039-2834 Part No: SM-D-850500-1	
M203A1	Mounting Bracket Assy M203 NSN: 5855-01-039-2835 Part No: SM-D-850330-1	

AN/PVS-4(A)
5855-01-422-8782
TM 11-5855-213-10

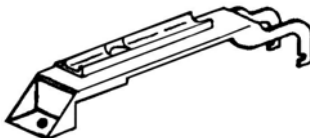
M249 (With Feed
Tray Cover Rail)

Adapter AN/PVS-4 (Spacer)
NSN: 5365-01-447-8991
Part No: 12598098
And
Bracket Mntng (Rail grabber)
NSN: 5340-01-449-8533
Part No: 12598120



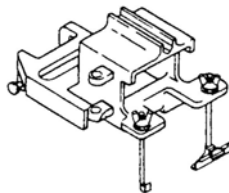
M249 (Without Feed
Tray Cover Rail)

Mounting Bracket, M249
NSN: 3040-01-233-0352
Part No: A3079160



M60

Mounting Bracket ASSY, M60
NSN: 5855-01-046-7272
Part No: SM-D-850340-1



AN/PVS-4(A) 5855-01-422-8782 TM 11-5855-213-10		
M240B	Adapter AN/PVS-4 (Spacer) NSN: 5365-01-447-8991 Part No: 12598098 And Bracket Mntng (Rail grabber) NSN: 5340-01-449-8533 Part No: 12598120	

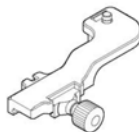
AN/PVS-10, SNS 5855-01-410-8979 TM 11-5855-303-12&P		
M24	Use Integral Mounting Base of the SNS. No special bracket or mount required.	

AN/PVS-14 5855-01-432-0524 TM 11-5855-306-10		
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AN/PVS-14
5855-01-432-0524
TM 11-5855-306-10

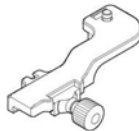
M4 Carbine with M4
Adapter Rail System:

Bracket, Mounting
NSN: 5340-01-446-8588
Part No: A3256348



M16A4 Rifle with M5
Adapter Rail System

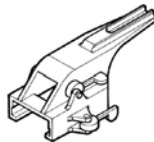
Bracket, Mounting
NSN: 5340-01-446-8588
Part No: A3256348

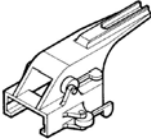


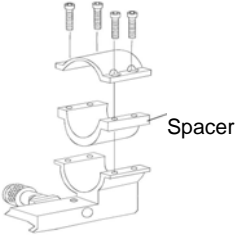
AN/TVS-5
5855-01-422-8777
TM11-5855-214-10

M2

Mounting Bracket Assy, M2
NSN: 5855-01-045-5482
Part No: SM-D-850220-1



AN/TVS-5 5855-01-422-8777 TM11-5855-214-10		
MK19	Mounting Bracket Assy, M2 NSN: 5855-01-045-5482 Part No: SM-D-850220-1	

M68, CCO 1240-01-411-1265 TM 9-1240-413-12&P		
M4 Carbine with M4 Adapter Rail System:	Mount, Quick Release NSN: 014397265 Part No: 0568059 And Spacer, Special Shaped NSN: 5365-01-448-8912 Part No: 0568108	

M68, CCO
1240-01-411-1265
TM 9-1240-413-12&P

M16A4 Rifle with M5
Adapter Rail System

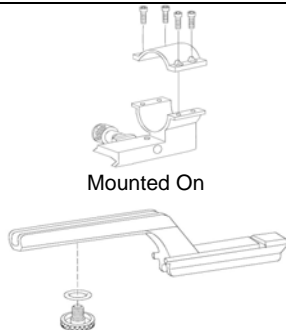
Mount, Quick Release
NSN: 1240-01-439-7265
Part No: 0568059
And
Spacer, Special Shaped
NSN: 5365-01-448-8912
Part No: 0568108



Spacer

M16A2 Rifle

Mount, Quick Release
NSN: 1240-01-439-7265
Part No: 0568059
Mounted On
Mount, Sight
NSN: 1240-01-410-7427
Part No: 0568065

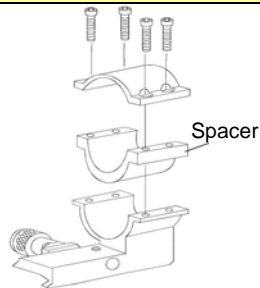


Mounted On

M68, CCO
1240-01-411-1265
TM 9-1240-413-12&P

M4 Carbine

Mount, Quick Release
NSN: 1240-01-439-7265
Part No: 0568059
And
Spacer, Special Shaped
NSN: 5365-01-448-8912
Part No: 0568108



M145, MGO
1240-01-411-6350
TM 9-1240-415-13&P

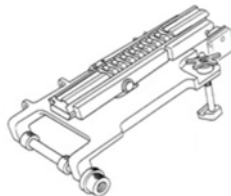
M249 (With Feed Tray
Cover Rail)

Uses integral M145 Rail Grabber.
No special bracket or mount
required.

M145, MGO
1240-01-411-6350
TM 9-1240-415-13&P

M60

Bracket Assembly, M60
NSN: 5340-01-434-6072
Part No: A3170620



M240B

Uses integral M145 Rail Grabber.
No special bracket or mount
required.

ANNEX J—M203 DAY NIGHT SIGHT

WARRANTY INFORMATION

This item shall conform to design, manufacturing, and performance requirements and be free from defects in material and workmanship for a period of one year, or for a period three (3) years from the date of acceptance with purchase of the optional extended warranty. If item is defective, notify your Service Command Technical point of contact.

SYSTEM DESCRIPTION

- The M203 Day Night Sight (DNS) provides both day and night aiming capability for the individual combat soldier involved in offensive and defensive military operations, and Military Operations in Urban Terrain (MOUT). The DNS provides increased firing accuracy over the current quadrant and leaf sight systems for both point and area targets from 0 meters to 400 meters.
- The DNS is a Class IIIb laser that emits a highly collimated beam of infrared light for precise aiming of the weapon as well as a separate infrared illumination beam for target identification. A safety block is provided for training purposes that limits the operator from selecting the high power or non-eye safe modes. In the AIM LO mode, the DNS is a Class I laser device
- The DNS is equipped with it's own iron sights for effective aiming of the M203 in daylight and in moderate lighting conditions. The front sight is adjustable for elevation while the rear sight is adjustable in azimuth.
- The DNS is equipped with an LCD display that provides the soldier with critical information such as distance in meters, cant/no-cant, and low battery information. In addition, a back-up mechanical range scale with 20-meter increments is provided for firing without a battery or in a backup mode.

WEIGHT, DIMENSIONS, AND PERFORMANCE

WEIGHT AND DIMENSIONS

Weight (With AA Battery)	17.7 ounces
Length	6.5 inches
Width	4.5 inches
Height	4.0 inches

PERFORMANCE

Range	0 to 400 meters
LCD Display Resolution	+/- 5 meters
Accuracy	5 meters

Peak Output Power

AIM LASER:

Low Power	500 – 700 microwatts
High Power	2.7 – 3.3 mW

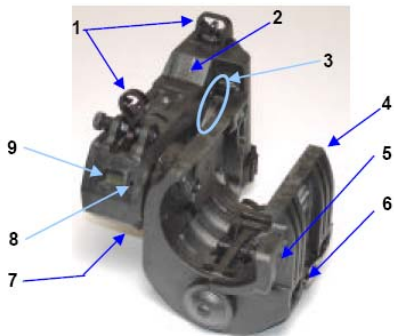
ILLUMINATOR:

Low Power	2.9 – 3.4 mW
High Power	22.5 – 27.5 mW

Beam Divergence

Aim	0.8 mrad (max)
Illuminator	53.0 mrad (max)

Description Of Major Components



1. Iron Sights. For daytime use or night use with adequate illumination. Optional Tritium powered sights are available.

2. Anti-Cant Indicator. Illuminates green when launcher is properly oriented. Flashes red when launcher is canted.

3. Mechanical Range Scale. Provides a manual range scale with 20-meter increments for firing without a battery or in backup mode.

4. Mounting Bracket. Slides over the M203 Barrel and engages the plastic hand guard. The ribbing provides the same secure grip as the M203 Barrel hand guard. Mounting is achieved without the use of tools.

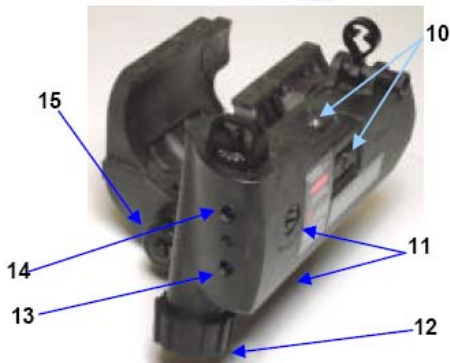
5. Laser Activation Switch. Activates the IR lasers based upon the position of the mode selector switch.

6. Mounting Knob. Allows for mounting of DNS Assembly to the M203 Barrel without the use of tools. The mounting knob can be tightened by hand or by using a coin or a screwdriver.

7. Mode Select Switch. 5 position switch for turning the unit ON and selecting one of the operational modes. (OFF, DAY, AIM LO, DUAL LO, DUAL HI)

8. Laser ON LED. Illuminates when laser is active.

9. Data Display. Displays distance in meters, canting information, and battery status in a real-time LCD display. The LCD backlight turns on to illuminate display when adjusting range and remains lit for a period of 6 seconds after adjustment.



10. Mounting Rail Attachment Points . The unit is equipped with a removable MIL-STD-1913 Mounting rail which can be attached to either the top or side of the unit.

11. Windage and Elevation Adjusters. Boresight adjusters used for zeroing the integral Infrared Laser Aiming and Illumination Beams. Windage and Elevation adjustments can be made using the rear end of a 5.56mm or 7.62mm round, a coin, or a screwdriver.

12. Range Adjustment Knob. Incorporates advanced worm gear technology coupled to a real-time data display to allow for quick and accurate adjustment of range in 5-meter increments.

13. IR Aiming Beam. Emits a highly collimated beam of infrared light for precise aiming of the M203 Grenade Launcher at night for soldiers wearing Night Vision Devices. IR Aiming Beam pulsates when launcher is canted.

14. IR Illuminator. Emits a 48-mrad cone of infrared light (approximately 10 meters wide at 200 meters) to illuminate targets from 50 to 400 meters.

15. Battery Compartment . A single standard 1.5-volt AA lithium or AA alkaline battery powers the unit.

ZEROING PROCEDURES

Three procedures are provided for zeroing the DNS to the M203 Grenade Launcher. The first procedure describes zeroing with 40mm training practice grenades. The second procedure describes dry zeroing using a standard U.S. Military Laser Borelight (US Army AN/PEM-1, NSN: 586001-471-2091) at 10 meters. The third procedure describes zeroing on a 25-meter range using a standard M16A2 Zeroing Target, NSN: 6920-01-395-2949 with a predetermined offset.

Zeroing by firing 40mm Grenades.

This procedure can be the most accurate but requires an extended range. For maximum accuracy, this procedure should be carried out with a target at 200 meters in atmospheric conditions as closely representative of actual mission conditions as possible.

- 1 Place a target down range at a known distance.
- 2 Mount The DNS to your weapon and set the DNS Range Adjustment Knob so that the display indicates the known range to target.
- 3 Put on Night Vision Goggles, AN/PVS-7, or Night Vision Monocular Device, AN/PVS-14 and adjust focus and diopter settings for best image.
- 4 Turn the DNS Mode Selector to activate the integral laser aiming light. Activate the aiming laser and aim center mass at the target.
- 5 Fire a 40mm M781 training practice round grenade and note where it strikes the ground relative to the target.
- 6 Adjust the DNS windage and elevation adjusters, see following windage and elevation adjustment tables, to adjust the grenade strike point to the DNS laser aiming point.

Adjuster Rotation and Relative Beam/Shot
Group Movement

Zeroing the Aiming Spot	Adjuster Movement	Beam Movement	Shot Group Movement
Bottom Adjuster Elevation	CCW CW	Down Up	Up Down
Left Side Adjuster Windage (Azimuth)	CCW CW	Left Right	Right Left

Beam / Shot Group Movement per Adjuster Click

Range (m)	Distance Change Per Click (cm)
10	0.7
25	1.8
200	14.0

- 7 Fire another 40mm grenade and again observe the strike point relative to the target.
- 8 When 2 rounds in a row hit the target, or land within 2 meters of the target, the DNS is zeroed.
- 9 Turn the laser OFF by pressing the activation button, rotate Mode Selector to OFF.
- 10 To zero the integral iron sights, follow steps 5 through 8 while adjusting elevation with the front sight post and windage with the rear sight.

11 To zero the ACOG or M68 CCO, follow steps 5 through 8 while adjusting the elevation and windage of the ACOG or M68 CCO.

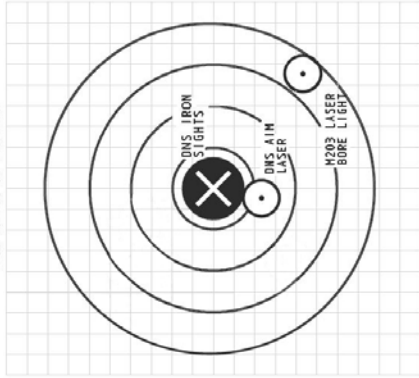
Zeroing with the Laser Borelight.

This procedure is used to zero the DNS to the M203 using a Military Standard Laser Borelight System with 40mm Mandrel Adapter and Boresighting Target with a predetermined offset.

- 1 Mount the DNS to your weapon and set the DNS Range Adjustment Knob to 0 meters.
- 2 Position the target (See sample following) at 10 meters oriented in a vertical position.

**TARGET SHOWN BELOW IS FOR REFERENCE ONLY:
ACTUAL TARGET IS PROVIDED WITH ITI 40MM MANDREL.**

10 Meter Bore-sight Tgt-DNS-1700A/B Mt'd on
M203 Barrel of M16/M4A2

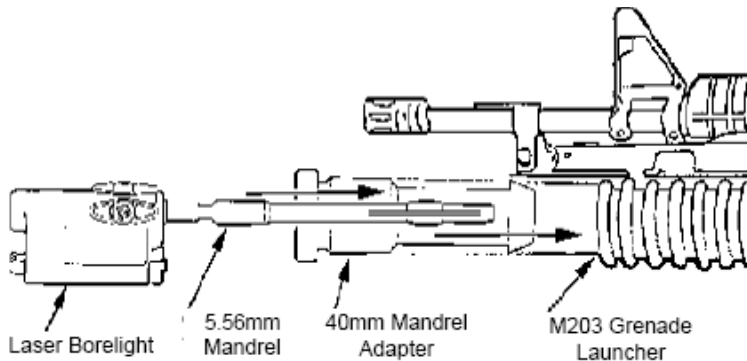


Zero Target For 4031

1. Stabilize Weapon, Iron-sight Bore-sight/aim.
Measure to 4031 Tube (Iron-sight Bore-sight Zero)
2. Align Laser Bore-sight on 4031 Dot.
3. Adjust DNS Laser(s), or other Optic, until
covered on their respective Dots.

Circle are 10m Wide by 10m High

3 Insert the 40mm Mandrel Adapter into the M203 barrel. Attach the 5.56mm Mandrel to the Laser Borelight and insert it into the 40mm Mandrel Adapter (see below).



4 Rotate the Borelight and adjust the Borelight's beam adjusters until the Borelight beam appears stationary as the Borelight is rotated. See Laser Borelight Operator's Manual for a detailed description of this procedure.

5 Brace the weapon so that it is aimed in the direction of the Laser Borelight Target. Orient the weapon so that it is not canted.

6 Position the target as required to place the Borelight laser dot on the designated M203 target location, see target above, paragraph 2. Secure target to flat surface.

7 While wearing NVG's, rotate the DNS mode selector AIM LO and activate the laser. Note: Double-tapping the laser activation switch will allow for continuous, hands-free operation of the laser.

8 Adjust the DNS windage and elevation adjusters until the DNS laser dot is centered on the DNS target designation in the center of the target (see paragraph 3 above). (see tables contained in paragraph 6 of the Zeroing by firing 40mm Grenades section)

9 If an M68 CCO or ACOG Reflex Sight is being used with the optional MIL-STD-1913 rail, adjust the CCO's or ACOG's red dot so it is centered on the corresponding target designation near the top of the target (see sample target, paragraph 2, above.).

10 If an AN/PEQ-5, Carbine Visible Laser (CVL), is being used, adjust its beam so it is centered on the target designation marked "CVL."

11 Zero the DNS integral iron sights by centering the sight picture on the target designation marked "Iron Sights."

12 Turn the DNS or other aiming device OFF.

13 Turn the Borelight Laser OFF.

14 Remove the Borelight and 40mm Mandrel Adapter from the barrel of the M203 Grenade Launcher.

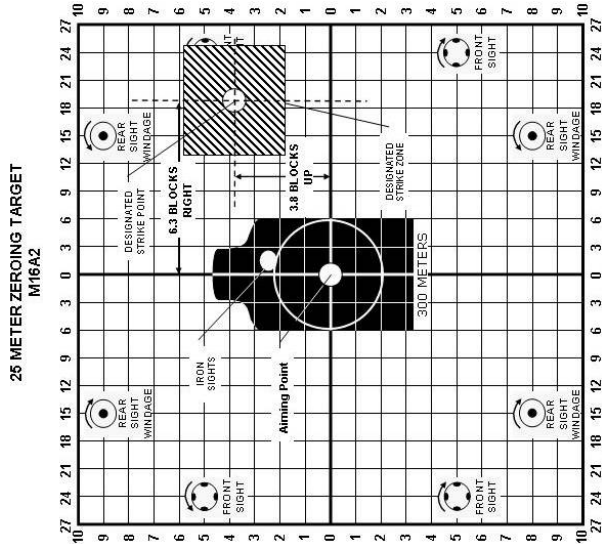
WARNING

Be sure to remove the Borelight and Mandrel Adapter from the weapon prior to firing 5.56mm or 40mm Grenade Rounds.

Zeroing on a 25 Meter Range

This procedure is used to zero the DNS to the M203 using a predetermined offset and firing 5.56 rounds. Because of the play between the M203 and the 5.56mm barrel, this is the least accurate of the three methods.

- 1 On a 25 Meter M16A2 Zeroing Target, mark the designated strike point and designated strike zone as shown below:



- 2 Mount the target on an "E" silhouette or other suitable surface at 25 meters.

- 3 Mount the DNS to the weapon and set the DNS Range Adjustment Knob to 0 meters.
- 4 While wearing NVG's, rotate the DNS Mode Selector Switch to select the integral aiming laser. Press the laser activation switch to activate the DNS aiming beam and aim for center of mass.
- 5 Fire a 3 round shot group (5.56mm) and note the center of the shot group relative to the designated strike point.
- 6 Adjust the DNS aiming beam adjusters to move the center of the shot group to the designated strike point. (Note: see tables contained in paragraph 6 of the Zeroing by firing 40mm Grenades section)
- 7 Fire another 3 round shot group and again observe the center of the new shot group relative to the designated strike point.
- 8 When 2 out of 3 rounds are in the designated strike zone, the DNS laser-aiming beam is zeroed for directing fire of M203 rounds.
- 9 For zeroing the iron sights, repeat steps 6 through 9 using the iron sights aim point and adjusting elevation with the front sight post and windage with the rear sight.

ANNEX K—ADVANCE COMBAT OPTICAL GUNSIGHT (ACOG)

ST 23-31-1

As supplemented by TACOM, 22 July 2004, for TA31F ACOG

INSTALLATION, OPERATION, AND MAINTENANCE OF KIT COMPONENTS

(ACOG without ARD-MCN: 1240-01-M98-0416 is used with Ballistic Laser Eye Protection System-
(BLEPS))

(ACOG Kit with ARD - MCN: 1240-01-M98-0430)

THE TA31F ACOG OPTICAL SCOPE

Description

The TA31F ACOG Optical Scope is designed to provide enhanced target identification and hit probability for the M16A4/M4 Rifle/Carbine out to 800 meters. Although it is designed primarily for use during the day, it has a tritium-illuminated reticle for night and low-light use. The TA31F ACOG Optical Scope is a lightweight, rugged, fast and accurate 4-power optical scope. The body is machined from aluminum forgings, both the material and finish are identical to that of the M16A4/M4 Rifle/Carbine. The scope is internally adjustable to allow the shock from rough handling to be carried by the scope body and not the adjustment mechanism. A Killflash AGF1-ARD Laser Filter/Anti-Reflection Device (ARD) Combo Unit may be included with the TA31F ACOG Optical Scope. The Killflash Combo Unit is constructed of a glass-composite material of identical finish to the M16A4/M4 Rifle/Carbine. The Killflash Combo Unit is fixed to the scope using an included rubber strap.

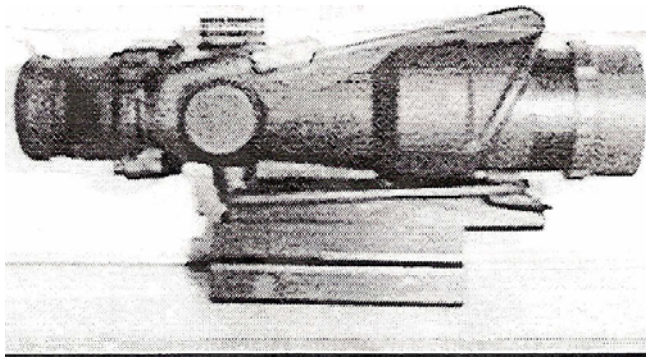


Figure 1-1
TA31F ACOG OPTICAL SCOPE

Characteristics - 4 X 32mm Optical Scopes

Objective Lens	32mm
Magnification	4 power
Eye Relief	1.5 in
Exit Pupil	8mm
Field of View	7 degrees
Field of View	36.8 feet at 100 meters.
Length	5.8 in
Weight	15.1 oz (with mount)

Waterproof	66 feet for 8 hrs
Radioactive Tritium	0.1 curies

Components

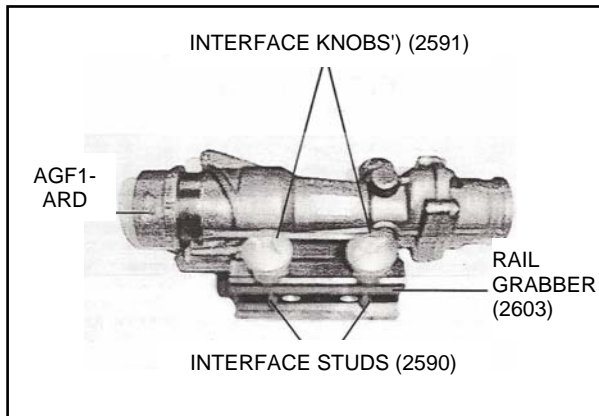


Figure 1-2
TA31F ACOG Optical Scope

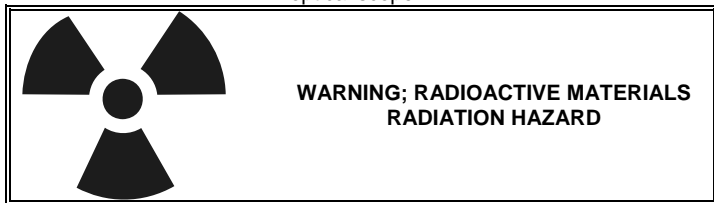
SAFETY

WARNING

Clear the carbine prior to mounting the scope - point carbine in safe direction, remove magazine, pull charging handle fully to the rear, inspect the chamber, insure it is empty, release charging handle, and place the selector on safe.

WARNING

The ACOG scopes are provided with Laser Eye Protection only when used with the included Killflash AGF1-ARD Laser Filter/ARD Combo Unit. The AGF1-ARD must be attached to the ACOG scope at all times of use. Use of optics without the AGF1-ARD will result in eye damage if exposed to a laser beam. For personnel not issued a Killflash, SPECS-3 wavelength (Class 4)/ Ballistic Laser Eyewear Protection System (BLEPS) goggles will be issued, and are to be worn at all times when utilizing the optical scope. Use of optical scope without the BLEPS or Killflash, will result in eye damage if exposed to a laser beam. Personnel are required to utilize BLEPS or Killflash protection with this optical scope.



- Tritium is a low energy beta emitter. This low energy beta particle cannot penetrate the intact Pyrex tube/vial. However, if the tube is broken, the tritium gas will dissipate, and outer surfaces of the device and surfaces in the near vicinity of the break may become contaminated. Because of the weak beta radiation, tritium is NOT measurable by the Geiger-Mueller counter used with most fielded radiac instruments and requires wipe testing to determine the level of contamination.
- Tritium gas (used to fill the Pyrex tubes) is not absorbed by the skin to any significant degree. Tritium water vapor on the other hand is readily absorbed through the skin. A small amount of tritium water vapor (1-2%) is also contained in the gas stream used to fill those Pyrex tubes. Unlike tritium gas, tritium water vapor is readily absorbed by the body, both through inhalation and absorption through the skin. Tritiated water that enter the body is chemically identical to ordinary water and is distributed through the body, if absorbed. The most likely route of entry would be direct hand contact with the surface of a tritium contaminated surface (i.e. ACOG Optical Scope containing a broken Pyrex tube/vial).
- When a tritium source breaks or is no longer illuminated, the local Radiation Safety Officer (RSO) must be notified, and the following actions must be taken under the direction of the RSO:
- Anyone who may have touched or handled the broken Pyrex tube, ACOG Optical Scope itself, or other potentially contaminated item, should wash as soon as possible with non-abrasive soap and lukewarm water.
- Personnel handling the broken device should wear rubber or latex gloves.
- The device and gloves worn must be immediately double wrapped in plastic. The outside container must be labeled "BROKEN TRITIUM DEVICE – DO NOT OPEN".
- Turn-in the broken source (device) to the RSO for disposition/disposal.
- Personnel who may have handled the broken tritium device may be directed to submit a tritium bioassay (urine) sample to the health clinic. The optimum bioassay sample time is

approximately four hours after the potential tritium exposure. A minimum of four hours is necessary for tritium to reach equilibrium in the human body.

- Broken tritium devices in contact with other adjacent surfaces (i.e. table, countertop) could cross contaminate those surfaces. The local RSO may take wipe tests of the area in question to assess extent of contamination.

Installation Of The TA31F ACOG Optical Scope:

Before attaching the TA31F ACOG Optical Scope to the M16A4/M4 Rifle/Carbine, inspect the unit for external damage that may have occurred during shipment. Also check the tritium lamps for failure.

1. The TA31F ACOG Optical Scope can be attached to the M16A4/M4 Rifle/Carbine easily using the rail grabber that comes from the factory. If it should be necessary to remove and re-attach the rail grabber to the ACOG Optical Scope, refer to paragraph 1-8, Operator and Organizational Maintenance of the ACOG Optical Scope, page 6.

2. Attach the TA31F ACOG Optical Scope and rail grabber to the MIL-STD-1913 on the M16A4/M4 Rifle/Carbine.

CAUTION

The interface knobs (2591), figure 1-2, must be tightened using fingers only. The interface knobs (2591) are designed to remain tight if installed firmly with fingers only. Then add an additional $\frac{1}{4}$ turn with a coin or bladed screwdriver. Do not tighten further or use pliers. Do not apply thread locking compound to the interface knobs (2591) or permanent damage to the mount base and interface knobs (2591) will result.

ALWAYS INSTALL THE ACOG SCOPE THE EXACT SAME WAY TO ENSURE ZERO RETENTION.

3. Loosen interface knobs (2591) (figure 1-2), and pull the rail grabber (2603) back against the interface knobs (2591).
4. Place the TA31F ACOG Optical Scope onto the M16A4/M4 Rifle/Carbine rail surface. Be sure to engage the interface studs (2590) into the grooves on the top mounting surface of the rifle/carbine. The TA31F ACOG Optical Scope can be placed in any of the slots on top of the weapon to allow; for eye relief adjustment. If the same sight is installed in the same position on the rail on the same weapon, then re-zeroing is not required.
5. Tighten the interface knobs (2591) firmly using fingers only and then add another ¼ turn using a coin or a bladed screwdriver. When removing the TA31F ACOG Optical Scope from the weapon it may be necessary to use a coin or bladed screwdriver to loosen the interface knobs (2591).
6. If this is the first time the TA31F ACOG Optical Scope has been installed on the weapon adjust the ACOG Scope using the zeroing procedure in paragraph 1-7, Zeroing the TA31F ACOG Optical Scope, page 5.

Operation

ADJUSTMENT CAUTION

The TA31F ACOG Optical Scope contains an internal adjustment mechanism to allow zeroing on the M16A4/M4/Rifle/Carbine. Adjustment to the extreme ends of the range can result in damage to the internal prism assembly. Do not continue to adjust windage and elevation mechanisms if you encounter resistance.

- a. The TA31F Optical Scope is internally adjustable. Adjustment is made using the adjuster mechanisms located inside the adjuster caps on the top and right-hand side of the ACOG Scope. This adjustment can be made with a small bladed screwdriver or with a coin. The caps are very tight

to ensure a waterproof seal with the O-rings inside. The caps should only be off the ACOG Scope when adjustments are being made.

b. The TA31F ACOG Optical Scope is shipped with a pre-centered setting. Normally this means that only small adjustments are necessary. Do not adjust the ACOG Scope to the extremes. It is possible that over-adjustment will damage the precise alignment of the prism assembly inside the ACOG Scope.

(1) As the limits of the windage and elevation adjustments are reached, the adjustment mechanism will become more and more difficult to adjust. Adjust further only with caution. If the adjustment mechanism is adjusted past this point, it may break.

(2) Adjustment beyond the center of the windage and elevation adjustment range should not be necessary. If it seems that you need more adjustment than is available, please consult with your Service Command Technical Point of Contact.

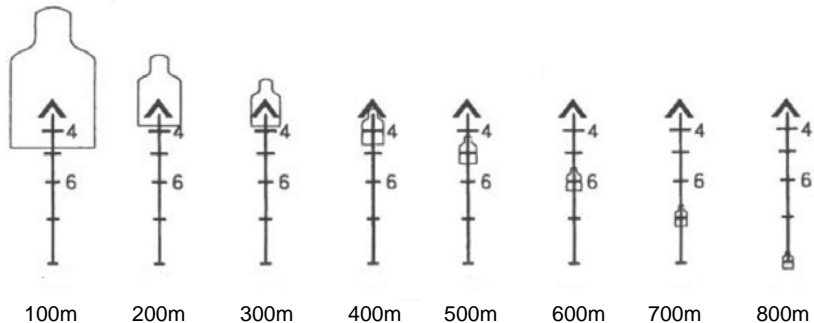


Figure 1-3
Operation of the ACOG Optical Scope Optic Ranging Reticle

c. The TA31F ACOG Optical Scope is carefully adjusted at the factory so that there is no parallax at the center of the field or in the aiming areas. This results in some vertical parallax away from the center. This in no way affects the accuracy of the ACOG Scope.

d. The reticle pattern in the TA31F ACOG Optical Scope has been carefully designed to provide many features while retaining simplicity of operation. The user does not need to make any manual adjustments between shots at different ranges. Ranging capability is built into the reticle pattern, which is parallax free along its vertical axis.

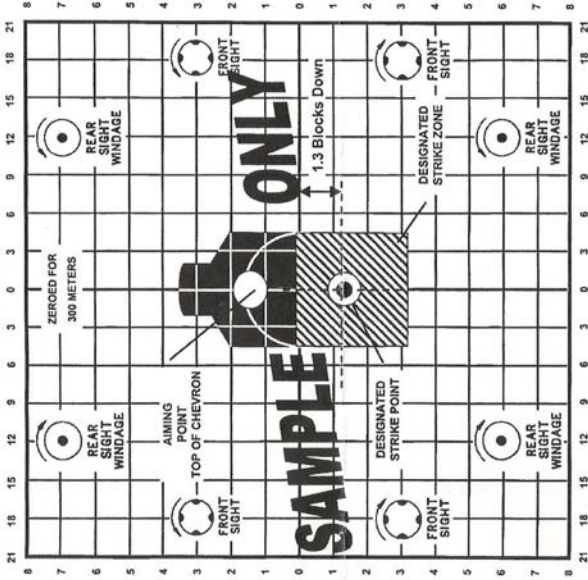
e. The widths of the horizontal hash marks correspond to the width of a 0.5 meters (19 inches) silhouette (man-size) at that range. The Chevron Reticle for the 100 to 300 meter (108 to 324 yds) ranges are illuminated at night.

ZEROING THE ACOG OPTICAL SCOPE:

Refer to the M4/M16A4 with ACOG Mounted on the Upper Receiver Rail Using Trijicon Supplied Rail Grabber, 25 Meter Zeroing Target, which follows.

**M4/M16A4 with ACOG Mounted on Upper Receiver Rail
using Trijicon supplied Rail Grabber**

25 METER ZEROING TARGET
M16A2/M16A4



ZERO TARGET DATA

- 1- ROTATE REAR SIGHT ELEVATION KNOB TO THE 6/3 SETTING FOR ZEROING AT 25 METERS.
- 2- AIM AT TARGET CENTER. ADJUST SIGHTS TO MOVE SHOT GROUP CENTER AS CLOSE AS POSSIBLE TO THE WHITE DOT IN THE CENTER OF THE TARGET.
- 3- AFTER COMPLETION OF THE 25 METER ZERO THE WEAPON WILL BE ZEROED FOR 300 METERS.

CAUTION

The ACOG Optical Scope is waterproof only when the elevation and windage caps are firmly screwed onto the ACOG Scope. Take care not to apply undue pressure when installing the adjustment caps, as they may become difficult to remove if tightened excessively. Be sure the O-rings are in place and undamaged.

ANNEX L—ACRONYMS AND ABBREVIATIONS

- A -	
ACOG	Advance Combat Optical Gunsight
AKO	Army Knowledge Online
AR	Automatic Rifleman
AR	Army Regulation
ARD	Anti-Reflection Device
ARS	Adapter Rail System
ARTBASS	Army Training Battle Simulation System
ASL	Authorized Stockage List
ATG	Anti-Tank Gunner
ATGA	Anti-Tank Gunner, Assistant
- B -	
BII	Basic Issue Items
BIS	Backup Iron Sight
BLEPS	Ballistic Laser Eye Protection System
BN	Battalion
BUIS	Backup Iron Sight
- C -	
C	Celsius(Centigrade)
C3	Command, Control and Communications
CCO	Close Combat Optic
CCW	Counter-clockwise
CLP	Cleaner, Lubricant and Preservative

Cm	Centimeters
CO	Company
CVL	Carbine Visible Laser
CW	Clockwise
- D -	
Decon	Decontamination
DNS	Day/Night Sight
DoD	Department of Defense
DS	Direct Support
- E -	
EW	Electronic Warfare
- F -	
F	Fahrenheit
FoV	Field Of View
- G -	
GREN	Grenadier
- H -	
HB	Heavy Barrel
HTWS	Heavy Thermal Weapon Sight
HWTS	Heavy Weapon Thermal Sight
- I -	
IAL	Infra-red Aiming Light
IAW	In Accordance With
ID	Identification

In	Inches
IPR	In-Process Review
IR	Infra-red
- L -	
LIF	Light Interface Filter
LMG	Light Machine Gun
LW	Land Warrior
LWTS	Light Weapon Thermal Sight
- M -	
Max	Maximum
METT-T	Mission, Enemy, Terrain, Troops and Time Available
MFR	Manufacturer
MGO	Machine Gun Optic
MILES	Multiple Integrated Laser Engagement System
Min	Minimum
MM or mm	Millimeter
MNVD	Monocular Night Vision Device
MoA	Minute of Angle
MOS	Military Occupational Specialty
MOUT	Military Operations in Urban Terrain
mrad	Milliradians
MTWS	Medium Thermal Weapon Sight
mW	Milliwatts
MWS	Modular Weapon System

MWTS	Medium Weapon Thermal Sight
- N -	
NCO	Noncommissioned Officer
No.	Number
NSN	National Stock Number
NVD's	Night Vision Devices
NVG's	Night Vision Goggles
NVS	Night Vision Scope
- O -	
OCIE	Organizational Clothing and Individual Equipment
- P -	
Para.	Paragraph
PLL	Prescribed Load List
PLT	Platoon
PMCS	Preventive Maintenance Checks and Services
- Q -	
QAB	Quick Attach Bracket
QRB	Quick Release Bracket
- R -	
R	Rifleman
RAS	Rail Adapter System
RIS	Rail Interface System
RPO	Radiation Protection Officer
RSO	Radiation Safety Officer

RTO	Radio-Telephone Operator
- S -	
SAIB	Small Arms Integration Book
SAW	Squad Automatic Weapon
SL	Squad Leader
SNS	Sniper Night Vision Sight
SOP	Standing/Standard Operating Procedure
SRD	Signature Reduction Device
ST	Special Text
SWS	Sniper Weapon System
- T -	
T&E	Traversing and Elevation Mechanism
TACSOP	Tactical Standing Operating Procedures
TASC	Training and Audiovisual Support Center
TBD	To Be Determined
TF	Task Force
TL	Team Leader
TM	Technical Manual
TPIAL	Target Pointer Illuminator/Aiming Light
TWS	Thermal Weapon Sight
- U -	
UBL	Unit Basic Load
- Y -	
Yds	Yards

Printing Notes

The Small Arms Integration Book (SAIB) is formatted to be printed as a “pocket sized” publication. It is recommended that organizations forward print requests to their supporting Defense Logistics Agency Document Automation and Production Service Center directing reproduction as 6 inches wide and 4 inches tall.

The SAIB, which was originally prepared using Microsoft Word, is intended to be translated into Adobe pdf format. When translated in pdf format, changing page dimensions as follows provides for a pocket sized product 6 inches wide by 4 inches tall. In Adobe Acrobat crop the full size pages as follows:

- Odd pages; Top-3.5", Bottom-3.5", Left-1.125", Right 1.375".
- Even pages: Top-3.5", Bottom-3.5", Left-1.375", Right 1.125"

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>	<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
In	Cm	2.540	Cms	In	0.394
Feet	Meters	0.305	Meters	Feet	3.280
Yards	Meters	0.914	Meters	Yards	1.094
Miles	Kms	1.609	Kms	Miles	0.621
Sq In	Sq Cms	6.451	Sq Cms	Sq In	0.155
Sq Feet	Sq Meters	0.093	Sq Meters	Sq Feet	10.764
Sq Yards	Sq Meters	0.835	Sq Meters	Sq Yards	1.196
Sq Miles	Sq Kms	2.590	Sq Kms	Sq Miles	0.386
Acres	Sq Hectometers	0.405	Sq Hectometers	Acres	2.471
Cubic Feet	Cubic Meters	0.028	Cubic Meters	Cubic Feet	35.315
Cubic Yards	Cubic Meters	0.765	Cubic Meters	Cubic Yards	1.308
Fluid Ounces	Milliliters	29.573	Milliliters	Fluid Ounces	0.034
Pints	Liters	0.473	Liters	Pints	2.113
Quarts	Liters	0.946	Liters	Quarts	1.057
Gallons	Liters	3.785	Liters	Gallons	0.254
Ounces	Grams	28.349	Grams	Ounces	0.035
Pounds	Kilograms	0.454	Kilograms	Pounds	2.205
Short Tons	Metric Tons	0.907	Metric Tons	Short Tons	1.102
Miles per Gal	Km per Liter	0.425	Kms per liter	Miles per Gal	2.354
Miles per Hour	Kms per Hour	1.609	Kms per Hour	Miles per Hour	0.621

Small Arms Integration Book



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