

ATN PVS-14 ATN 6015

NIGHT VISION MULTI-PURPOSE SYSTEMS



OPERATOR'S MANUAL (PVS-14/6015) REVISION 2 - APRIL 2011

operator's manual

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SAFETY SUMMARY

CAUTIONS

- The ATN PVS-14 and ATN 6015 are precision optical instruments and must be handled carefully at all times to prevent damage.
- Do not scratch the external lens surfaces or touch them with your fingers.
- Wiping demisting shield with lens paper while wet or with wet lens paper can damage the coating.
- To protect the image intensifier, keep the lens cap on the objective lens when the monocular is not in use or when checked out in daylight conditions.
- The IR illuminator is the 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 others when using night vision devices.
- If you use the rubber eyecaps for a long period of time, you may suffer skin inflammation. If you develop any symptoms, consult a doctor immediately.

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.

CAUTION:

THIS PRODUCT CONTAINS NATURAL RUBBER LATEX WHICH MAY CAUSE ALLERGIC REACTIONS.

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 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.

EQUIPMENT LIMITATIONS

To avoid physical and equipment damage when using the ATN PVS-14 and ATN 6015, carefully read and understand the following safety precautions.

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

NOTES

- **At operating temperatures below -20°C (-4°F), alkaline batteries are not recommended, as operating life will be severely reduced. Lithium-iron disulfide 1.5V AA batteries or equivalent should be used below -20°C (-4°F).**
- **The purpose of the illuminator is to view at close distance up to 3 meters when additional illumination is needed.**

CAUTION

- **The ATN PVS-14 and ATN 6015 are a precision optical instrument and must be handled carefully at all times to prevent damage.**
- **Be careful when leaving the helmet mount in the flipped up position or removing the helmet mount from the helmet, damage can result.**

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HOW TO USE THIS MANUAL

• Usage

You must familiarize yourself with the entire manual before operating the equipment. Read and follow all warning notices.

• Manual Overview

The table of contents includes the paragraph number, paragraph title, and page number. An index provides additional references to the subject contents.

CHAPTER 1

INTRODUCTION

1.1. GENERAL INFORMATION

1.1.1. SCOPE

This manual provides operation and maintenance instructions for the Multi-Use Night Vision Monocular (MUNVM) ATN PVS-14 and ATN 6015 hereinafter referred to as the MUNVM. The MUNVM is a self-contained night vision device that enables improved night vision using ambient light from the night sky (moon, stars, skyglow, etc.).

Model Number and basic description

ATN NVM-14 and ATN 6015 – Multi-Use Night Vision Monocular

Supplier

American Technologies Network Corp.

1341 San Mateo Avenue

South San Francisco, CA 94080 USA

1.1.2. 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 two (2) years from the date of acceptance. If item is defective, notify ATN or point of purchase contact.

1.1.3. TECHNICAL INFORMATION

For technical information contact ATN Corp. directly at **(650) 989-5100**, or **info@atncorp.com** or your point of purchase contact.

1.1.4. NOMENCLATURE CROSS-REFERENCE LIST

Table 1.1. provides a cross reference of common names and official terms. Except in the Appendices, the common names will be used. The official names are used in the Appendices because they reflect the provisioning nomenclature.

TABLE 1.1. NOMENCLATURE CROSS-REFERENCE LIST

COMMON NAME	OFFICIAL NOMENCLATURE
Battery	Battery Nonrechargeable
Battery Cap	Cover Battery Retainer
Carrying Case	Case, Infrared Equipment
Carrying Case Strap	Strapping
Compass	Compass Assembly
Demist Shield	Lens, Infrared Receiver
Eyeguard	Eyeguard, Optical
Eyepiece Lens Cap	Cap, Protective, Dust
Headmount	Headset Assembly
Headmount/Helmet Mount Adapter	Adapter, Headset
Helmet Mount	Mount, Viewer
LIF	Filter, Infrared Light
Medium Browpad	Browpad Assy, Medium
Monocular	Monocular Assy
Neck Cord	Cord, Fibrous
Objective Lens Cap	Cap, Protective, Dust
Sacrificial Window	Window, Sacrificial
Shipping and Storage Case	Case, Shipping/Storage
Tethering Cord	Clip, Retaining
Thick Browpad	Browpad Assy, Thick
Thin Browpad	Browpad Assy, Thin
3X Magnifier	Magnifier Lens Assembly
Weapon Mount	Bracket, Mounting

1.1.5. LIST OF ABBREVIATIONS AND ACRONYMS

AAL	Additional Authorization List
BII	Basic Issue Items
CAGEC	Commercial and Government Entity Code
cm	Centimeters
COEI	Components of End Item
CPC	Corrosion Prevention and Control-
CTA	Common Table of Allowances-
DA	Department of the Army
EIC	End Item Code
EIR	Equipment Improvement Recommendation
FM	Field Manual
Hrs	Hours
IR	Infrared
JTA	Joint Table of Allowances
lbs	Pounds
LED	Light Emitting Diode
LIF	Light Interference Filter
MUNVM	Multi-Use Night Vision Monocular
NVMPS	Night Vision Multi-Purpose System
MTOE	Modified Table of Organization and Equipment-
N/A	Not Applicable
NBC	Nuclear, Biological, and Chemical
NSN	National Stock Number
Pam	Pamphlet
PASGT	Personal Armor System Ground Troops
PMCS	Preventive Maintenance Checks and Services
Qty	Quantity
Recm	Recommended
Rqr	Required

SF	Standard Form
TDA	Table of Distribution and Allowances-
TM	Technical Manual
TOE	Table of Organization and Equipment-
U/M	Unit of Measure
Vdc	Volts, direct current

1.1.6. GLOSSARY

BLACK SPOTS. These are cosmetic blemishes in the image intensifier of the MUNVM or dirt or debris between the lenses.

BRIGHT SPOTS. These defects can appear in the image area of the MUNVM. This condition is caused by a flaw in the film on the microchannel plate. A bright spot is a small, nonuniform, bright area that may flicker or appear constant. Bright spots usually go away when the light is blocked out and are cosmetic blemishes that are signal induced.

BROWPADS. Three hook-and-pile browpads are provided to adjust the headmount to fit different head sizes. The thin browpad (large head) comes attached to the headmount and the thick (small head) or medium browpads are stored in the carrying case.

CAUTION. Condition, practices, or procedures that must be observed to avoid damage to equipment, destruction of equipment, or a long-term health hazard.

CHICKEN WIRE. An irregular pattern of dark thin lines in the field-of-view either throughout the image area or in parts of the image area. Under the worst case condition, these lines will form hexagonal or square-wave shaped lines.

DARK (OR DARK AREA). A place in which there is very little light. It does not mean total darkness. Generally, this means conditions similar to a quarter-moon or starlit night.

DARK-ADAPTED. Having ones eye adjusted to the monocular's output under low light conditions.

DIOPTER. A unit of measure used to define eye correction. Adjustments to the diopter adjustment will provide a clearer image in each eye.

EDGE GLOW. This is a defect in the image area of the monocular. Edge glow is a bright area (sometimes sparkling) in the outer portion of the viewing area.

EMISSION POINT. A steady or fluctuating pinpoint of bright light in the image area and does not go away when all light is blocked from the objective lens of the monocular. The position of an emission point within the image area of the monocular does not move. An emission point should not be confused with a point light source in the distance.

FIXED-PATTERN NOISE. This is a cosmetic blemish in the image area characterized by a faint hexagonal (honeycomb) pattern throughout the viewing area that most often occurs at high light levels or when viewing very bright lights. Fixed-pattern noise is inherent in the structure of the fiber optics and can be seen in every image intensifier if the light level is high enough.

FLASHING. This is a defect in the image area of the monocular. The image appears to flicker or flash.

FLICKERING. See “flashing.”

GAIN. This is the number of times a night vision device amplifies light input.

IMAGE INTENSIFIER. An electro-optical device that detects and amplifies ambient light to produce a visual image.

INFINITY FOCUS. Adjustment of the objective lens so that a distant object, such as a star or the point light on a distant tower, forms the sharpest image.

INTERMITTENT OPERATION. This is a defect in the image area of the monocular. See “flashing”.

IR SOURCE. This is an IR Light Emitting Diode (LED). When turned on, the IR source provides additional illumination to enhance existing light conditions used only for performing nearby tasks.

LIGHT INTERFERENCE FILTER (LIF). This is a light protection filter for the monocular. Use of this filter will result in a slight reduction in system gain.

MICROCHANNEL PLATE. A current-multiplying optical disk that intensifies the electron image produced by the photocathode.

NOTE. Essential information of special importance, interest, or aid in job performance.

PHOTOCATHODE. The input optic of an image intensifier that absorbs light energy and in turn releases electrical energy in the form of an electron image.

SCINTILLATION. A faint, random, sparkling effect throughout the image area. Scintillation is a normal characteristic of the image intensifier and should not be confused with emission points. Scintillation is more pronounced under low light conditions. Also called “video noise”.

SHADING. The viewed image should be a full circle. If shading is present, you will not see a fully circular image. Shading is indicative of a dying photocathode and is caused by a defective vacuum seal of the image intensifier. Shading is very dark and you cannot see an image through it.

WARNING. Conditions, practices, or procedures that must be observed to avoid personal injury or loss of life.

1.2 EQUIPMENT DESCRIPTION

1.2.1. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The MUNVM is a hand-held, headmounted, 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 and a low battery indicator. The PVS-14 model equipped with a manual gain control.

1.2.2. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The NVMP5 includes the items shown in Figures 1.1., 1.2., 1.3. The major components are the headmount, helmet mount, monocular, carrying case, and the shipping and storage case.

a. Monocular

The monocular (see Figure 1.4.) consists of various components such as an objective lens, an image intensifier (not shown), an eyepiece lens and a battery cap.

The monocular also uses the accessories listed below:

Demist Shield – The demist shield (Figure 1.1.) is used to prevent the eyepiece lenses from becoming fogged.

Light Interference Filter (LIF) – The LIF (Figure 1.1.) is to be used at all times. For replacing the filter the container is also the wrench. The container/wrench is used to remove and replace the LIF from the objective lens.

Sacrificial Window – A replaceable sacrificial window (Figure 1.1.) is supplied to protect the objective lens during operation in adverse conditions.

Compass – The compass (Figure 1.2.) enables the operator to see azimuth readings in the monocular.

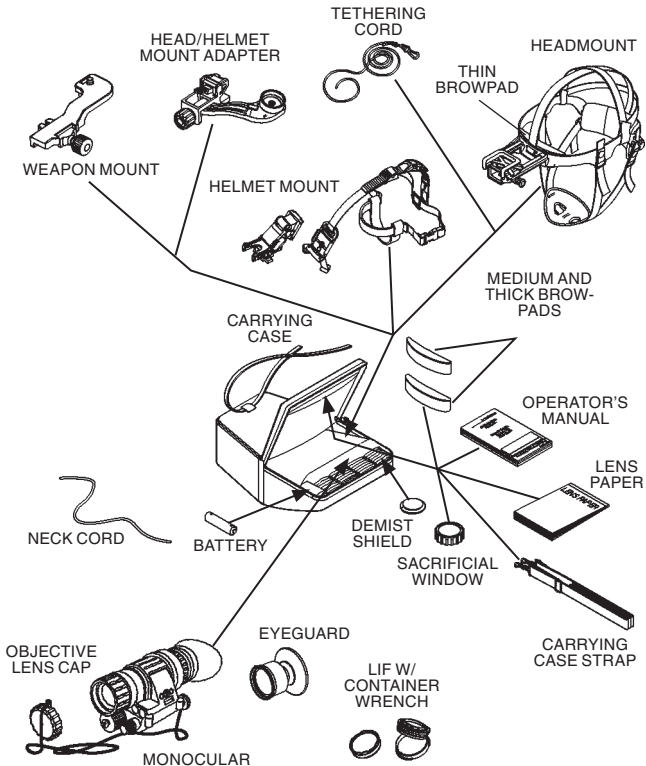


FIGURE 1.1. COMPONENTS OF NVGMS

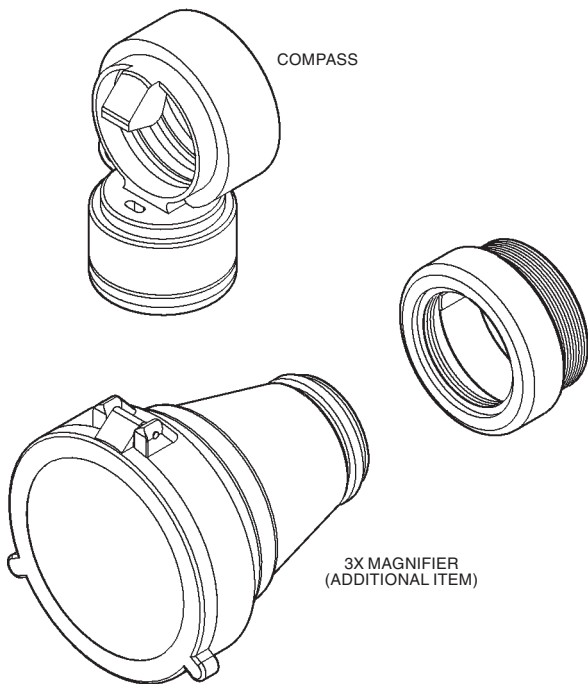


FIGURE 1.2. 3X MAGNIFIER AND COMPASS FOR PVS-14/6015

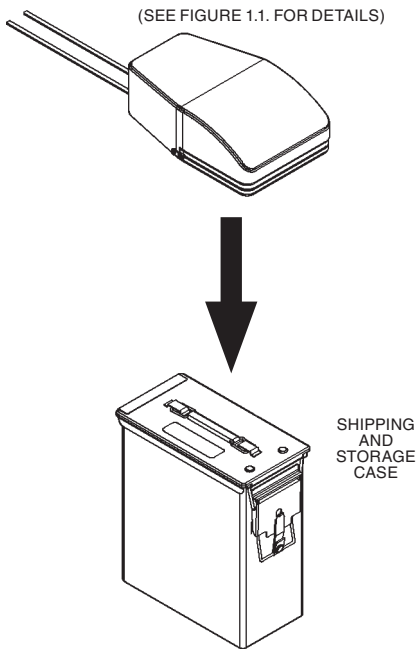


FIGURE 1.3. SHIPPING AND STORAGE CASES FOR PVS-14/6015

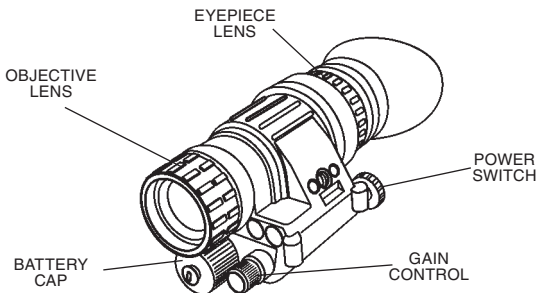


FIGURE 1.4. MULTI-USE NIGHT VISION MONOCULAR

Tethering Cord – The tethering cord (Figure 1.1.) enables the user to attach the compass or 3X magnifier to a button hole or belt loop to guard against dropping or losing these items.

3X Magnifier – (Additional Authorized Item) The 3X magnifier (Figure 1.2.) is a lens assembly which can be added to the monocular to extend the operator's observation ranges.

b. Headmount

The headmount (Figure 1.1.) secures the monocular to the operator's head for night viewing and provides freehand support for use with a weapon, protective mask or other purposes. It is adjustable and cushioned. The thin browpad used for large heads, comes attached to the headmount; the thick and medium browpads, used for smaller heads are stored in the carrying case.

c. Helmet Mount

This item (Figure 1.1.), secures the monocular to the Personal Armor System Ground Troops (PASGT) helmet allowing freehand support for use with a weapon, protective mask and/or other purposes. The new helmet mount is made of a ruggedized metal. The old one is made of plastic.

d. Headmount/Helmet Mount Adapter

This item (Figure 1.1.) is attached to the monocular to allow its use with the headmount or helmet mount. It allows mounting in front of the left or right eye.

e. Weapon Mount

The weapon mount (Figure 1.1.) adapts the monocular to the receiver rail as configured for the modular weapon system kit.

f. Carrying Case

The carrying case (Figure 1.3.) is provided for transportation and protection of the monocular, headmount, battery and accessories. Two slide keepers are provided for belt attachment and three D-rings for shoulder and leg strap attachment. A carrying case strap is also provided which can be attached to the two D-rings on the back of the carrying case.

g. Shipping and Storage Case

The NVMP5 is supplied in a shipping and storage case (Figure 1.3.).

1.2.3. EQUIPMENT DATA

The following tables provide information pertaining to the operational, electrical, mechanical, optical, and environmental characteristics for the monocular.

TABLE 1.2. OPERATOR ADJUSTMENT LIMITS

ITEM	LIMITS
Diopter Focus	+2 to -6 diopters
Objective Focus	25 cm to infinity

TABLE 1.3. ELECTRICAL DATA

ITEM	DATA
Power Source	Battery (1.5 Vdc max ea.)
Battery Requirements	1 AA Alkaline or 1 AA 1.5 Vdc Lithium L91

TABLE 1.4. MECHANICAL DATA

ITEM	CHARACTERISTICS
Shipping and Storage Case	Size: Approx. 14" X 9.5" X 8" Weight: 2.4 lbs.
Carrying Case	Size: Approx. 14" X 8"
Monocular (see Note)	Weight: 14 ounce

NOTE

Weight of the monocular does not include accessories.

TABLE 1.5. OPTICAL DATA

ITEM	DATA
Magnification	1.0X (3X with 3X magnifier)
Field-of-View	40 (13 with 3X magnifier)
Diopter Focus	+2 to - 6 diopters
Objective Focus	25 cm (9.8") to infinity

TABLE 1.6. ENVIRONMENTAL DATA

ITEM	DATA
Monocular Operating Temperature	-51°C to +49°C
Monocular Storage Temperature	-51°C to +85°C
Illumination Required	Overcast starlight to moonlight

1.3. PRINCIPLES OF OPERATION

1.3.1. MECHANICAL FUNCTIONS

The mechanical functions of the NVMPs allow for differences in the physical features of individual operators and provide for operating the system. These functions include the power switch, eye relief adjustment, diopter adjustment, gain control, and objective focus. The mechanical controls are identified in Figure 1.5.

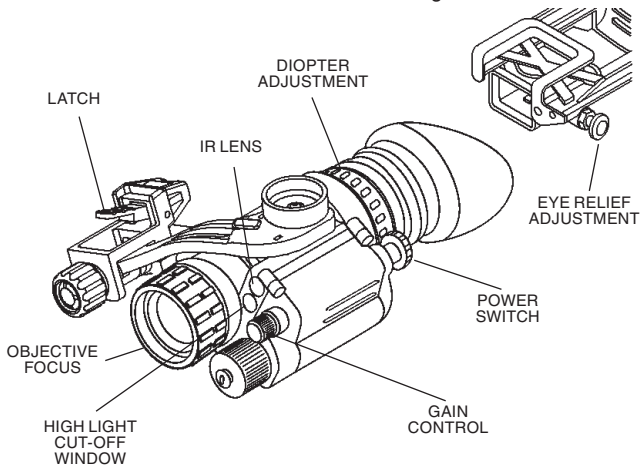


FIGURE 1.5. MECHANICAL FUNCTIONS FOR THE NVMPs

NOTE

The gain control is not present in 6015 or PVS-14NG model.

1.3.2 OPTICAL FUNCTIONS

The optical functions include an objective lens, image intensifier and eyepiece lens (Figure 1.6). The objective lens collects light reflected from the night scene by the moon, stars, or night sky, inverts the image and focuses that image on the image intensifier. The image intensifier converts the captured light into a visible image and reinverts the image which can then be viewed through the eyepiece lens.

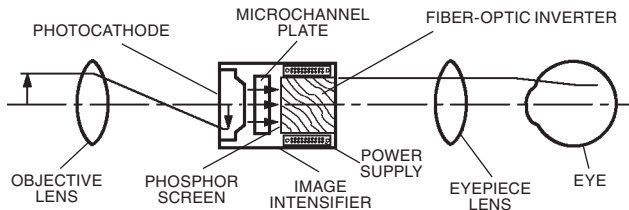


FIGURE 1.6. OPTICAL FUNCTION DIAGRAM

1.3.3. ELECTRONIC CIRCUIT FUNCTION

The electronic circuit regulates the direct current voltage from the battery to the image intensifier and IR source as required. It also monitors the output voltage of the battery and turns on a low-battery indicator when the available battery voltage is 1.9 – 2.1Vdc.

a. Power Source

The electronic circuit is powered by one battery.

b. High Light Cut-Off

The monocular will automatically cut off after 70 ± 30 seconds of operation in daylight or bright room light. Individual bright lights (headlights, flashlights, or other concentrated light sources) will not actuate the high light detector located on the front of the monocular. To turn the monocular back ON, turn the power switch to RESET/OFF position and then to ON again.

CHAPTER 2

OPERATING INSTRUCTIONS

2.1. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

NOTE

The MUNVM is a precision electro-optical instrument, so handle it carefully. If the equipment fails to operate, refer to the Troubleshooting Procedures in Chapter 3.

2.1.1. OPERATOR CONTROLS AND INDICATORS

The MUNVM is designed to adjust for different users and corrects for most differences in eyesight. The controls and indicators for the MUNVM are shown in Figure 2.1., which are described in Table 2.1.

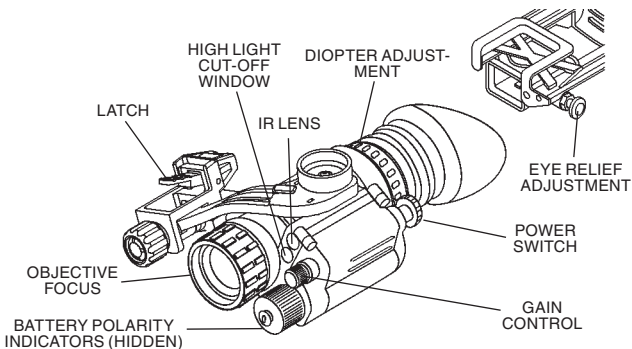


Figure 2.1. Monocular Controls and Indicators

NOTE

The gain control is not present in 6015 or PVS-14NG model.

NOTE

Low battery indicator and IR source "ON" indicator are visible in eyepiece lens.

TABLE 2.1. MONOCULAR CONTROLS AND INDICATORS

CONTROLS AND INDICATORS		FUNCTIONS
Power Switch	Controls monocular and IR source, ON or OFF.	
	RESET/ OFF	Same as system OFF. Also resets monocular after high light cut-off.
	ON	Monocular activated.
	IR/ PULL	Turn the knob clockwise to momentarily activate the IR source. Pull and turn the knob clockwise from the ON position to continuously activate the IR source.
CAUTION		
Do not use excessive force to place the power switch into the momentary IR position.		
Low Battery Indicator	When blinking it indicates a low battery condition with less than 30 minutes of battery life remaining. It is visible through the eyepiece just outside the intensified field-of-view.	
IR Source On Indicator	When blinking it indicates a low battery condition with less than 30 minutes of battery life remaining. It is visible through the eyepiece just outside the intensified field-of-view.	
Gain Control (PVS-14 only)	Adjusts the system gain from a minimum value of approximately 25 to a maximum value greater than 3,000.	
Objective Focus	Focuses objective lens. Adjusts for sharpest image of viewed object.	
Diopter Adjustment	Focuses eyepiece lens for use without the need for glasses. Adjust for sharpest image of intensifier screen.	
Eye Relief Adjustment	Adjusts the distance between your eye and the monocular.	
Latch	Latch used for separation of monocular from head-mount/helmet mount adapter.	
Battery Polarity Indicators	This feature, molded into the battery housing, shows the proper orientation of the battery. Some versions have a bubble molded into the top of the battery house, to show the + for proper orientation.	

2.2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2.2.1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES TABLE

a. General

To ensure the readiness of the MUNVM, perform the preventive maintenance procedures in accordance with Table 2.2., prior to each mission. Preventive maintenance procedures include inspection, cleaning, and performance of the checkout procedures.

b. Warnings and Cautions

Always observe the WARNINGS and CAUTIONS appearing in the table. Warnings and cautions appear before applicable procedures. You must observe the warnings and cautions to prevent serious injury to yourself and others, or to prevent your equipment from being damaged.

c. Explanation of Table Entries

(1) Item Number Column. Numbers in this column are for reference. When completing Equipment Inspection and Maintenance Worksheet, include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.

(2) Interval Column. This column tells you when you must do the procedure in the procedure column. BEFORE procedures must be done before you operate or use the equipment for its intended mission. DURING procedures must be done during the time you are operating or using the equipment for its intended mission. AFTER procedures must be done immediately after you have operated or used the equipment.

(3) Location, Check/Service Column. This column provides the location and the item to be checked or serviced. The item location is underlined.

(4) Procedure Column. This column gives the procedure you must do to check or service the item listed in the Check/Service column

to know if the equipment is ready or available for its intended mission or operation. You must do the procedure at the time stated in the interval column.

(5) Not Fully Mission Capable If: Column. Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

NOTE

Damaged accessory items (sacrificial window, demist shield, compass) do not cause the entire end item to be “not fully mission capable”. However, the damaged item should be replaced as soon as practical to restore full capability of the system.

d. Other Table Entries

Be sure to observe all special information and notes that appear in your table.

TABLE 2.2. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR THE MUNVM.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
1	Before		Open carrying case and check the inventory items	
2	Before/ After	<u>MONOCULAR</u> Optical Surfaces	Inspect all lenses (objective, eyepiece, IR lens and high light cut-off window) for dirt, fingerprint residue, chips, or cracks. If necessary, clean and dry lenses with water and lens tissue.	Scratches or heavy scratches that hinder vision with monocular turned ON, or if cracks are present.
3	Before/ After	Battery Cap Housing	Inspect external surfaces for cracks or damage. Scratches, cracks, and gouges are OK if operation is not affected. Inspect battery compartment. Check to make sure battery cap is present. Remove battery cap and inspect for moisture, cracks, corroded or defective spring contacts, and o-ring present in cap.	Cracks or damage in the battery housing. Cap is missing, contacts damaged, or corroded, o-ring is missing.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3. Cont.	Before/ After	Battery Cap/ Housing Cont.	<p>Remove battery and turn the power switch from RESET/OFF to ON to IR/PULL. Each position should have a definite stopping point. Inspect for broken or missing knob.</p> <p>Install battery per paragraph 2.6. and check IR source (and momentary IR source, if so equipped) functions by following the operating instructions in paragraph 2.22.</p> <p>Check the high light cut-off with daylight or bright room light (not fluorescent light) by placing the lens cap on the objective lens. Turn monocular ON and observe that the system cuts OFF within 70 ±30 seconds.</p>	<p>Power switch has no definite stopping points or knob is broken or missing.</p> <p>IR source does not work.</p> <p>If damaged, refer to higher level of maintenance.</p>

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3. Cont.	Before/ After	Battery Cap/ Housing Cont.	<p>Turn monocular OFF and then ON to reenergize monocular.</p> <p>NOTE If the monocular fails this highlight cut-off test, it does not cause the end item to be nonmission capable. However, it should be sent to higher level of maintenance as soon as possible.</p> <p>Check gain control for free movement and operation per paragraph 2.25.</p>	
4	Before/ After	Monocular	Inspect for cracks or damage. Scratches, cracks, chips and gouges are OK if operation is not affected.	Knob is not free moving or does not vary gain. Cracks or damage in the monocular.
5	Before/ After	Eyepiece Lens	Rotate diopter adjustment to make sure the eyepiece lens moves freely and is not loose. Range is approximately ½ turn.	Binding, not moving freely or too loose.
6	Before/ After	Eyecup	Inspect for dirt, dust, cracked or torn eyecup. Inspect for bent, broken, or improperly fitting eyepiece lens. If necessary, clean with water.	Chips and cracks are permitted on the eyecup retaining rings as long as they do not interfere with installation of eyecup.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
7	Before/ After	Eyeguard	Inspect for dirt, dust, cracked or torn eyeguard. Inspect for bent, broken, or improperly fitting eyeguard. If necessary, clean with water.	Chips and cracks are permitted on the eyeguard retaining rings as long as they do not interfere with installation of eyeguard.
8	Before/ After	Objective Lens	Rotate focus ring to ensure free movement (range is approximately 1/3 turn). Check objective lens for chips, cracks and dents. Check the infinity focus locking ring for tightness. Check for cracks.	Focus ring is binding or not able to move. Chips, cracks, or dents prevent full field-of-view, installation of LIF or the ability to focus. Cracked or loose.
9	Before/ After	Neck Cord and Objective Lens Cap	Inspect for cracked, torn, or missing objective lens cap. Inspect neck cord for cut, damage, or loose ends. Re-tie ends if necessary.	Damaged.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
10	Before/ After	Viewed Image	<p><u>NOTE</u> Operator may use the TS-4348/UV to check resolution (paragraph 2.2.2).</p> <p>Refer to paragraph 2.2.3. to inspect for operational defects.</p>	Flickering, flashing, edge glow, or shading is observed.
11	Before/ After	<u>HEADMOUNT</u> Straps/Pads	<p><u>NOTE</u> If any of the following items are damaged it does not cause the entire end item to be "not fully mission capable". However, the damaged item should be replaced as soon as practical to restore full capability of the system.</p> <p>Inspect for cuts, tears, fraying, holes, cracks, or defective fasteners.</p>	Damage causes straps or pads to be unserviceable.
12	Before/ After	Socket	Inspect for dirt, dust, or corrosion. Insert monocular latch into socket to verify secure attachment of monocular to headmount. If necessary, clean socket with water.	Damaged, latch won't lock or is too loose.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
13	Before/ After	Eye Relief Adjustment	Press the eye relief adjustment and check for free motion. Inspect for damage.	Binding, damaged or non-operational slide mechanism.
14	Before/ After	<u>HELMET MOUNT</u> Straps	Inspect for cuts, tears, fraying, holes, cracks, or defective fasteners.	Damage causes straps to be unserviceable.
15	Before/ After	Socket	Inspect for dirt, dust, or corrosion. Insert monocular latch into socket to verify secure attachment of monocular to helmet mount. If necessary, clean socket with water.	Damaged, latch won't lock or is too loose.
16	Before/ After	Fore-and-Aft Adjustment	Press the 2 side buttons on plastic mount or depress side lever on metal mount and check for free motion. Inspect for damage.	Binding, damaged or non-operational slide mechanism.
17	Before/ After	<u>MOUNTING ADAPTERS</u> Headmount/ Helmet Mount Adapter	Inspect for dirt, dust or corrosion. Insert into headmount or helmet mount socket to verify secure attachment.	Damaged, will not latch securely.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
18	Before/ After	Weapon Mount	Inspect for dust, dirt or corrosion.	Damaged, will not mount to monocular or will not mount to rail.
19	Before/ After	<u>ACCESSORIES</u>	<p style="text-align: center;">CAUTION</p> <p>The coating on the demist shield can be damaged if cleaned while wet or if cleaned with wet lens paper. Clean only when the demist shield is dry and only with dry paper.</p> <p>Inspect for dirt, dust, scratches or damage. If necessary, clean when shield is dry and with dry lens tissue only.</p>	Damage or scratches hinder vision with monocular on.
20	Before/ After	LIF	Inspect for dirt, dust, scratches or damage. If necessary, clean per paragraph 3.2.	Damage or scratches hinder vision with monocular on.
21	Before/ After	Sacrificial Window	Inspect for dirt, dust, scratches or damage. If necessary, clean per paragraph 3.2.	Damage or scratches hinder vision with monocular on.

ITEM NO.	INTER-VAL	LOCATION CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
22	Before/ After	Compass	<p>Inspect for dirt, dust, scratches, or damage. If necessary, clean with water and dry with lens tissue.</p> <p>Install compass and turn on monocular. When the illumination button is depressed, compass should be visible.</p>	Damaged or compass is not visible.
23	Before/ After	3X Magnifier (Additional Authorized Item)	Inspect optical surface for dirt, dust, scratches or cracks.	Damage or scratches hinder vision.
24	Before/ After	<u>CARRYING CASE</u> Case	Remove all items and shake out loose dirt or foreign material. Inspect for tears, cuts, excess wear, or damage to mounting clips.	
25	Before/ After	Shoulder Strap	Inspect for cuts, tears, or excess wear or damaged clips.	

2.2.2. RESOLUTION CHECK USING THE TS-4348/UV TEST SET

NOTE

The TS-4348/UV Test Set can be used by the operator to check the resolution of a monocular at any time.

NOTE

The TS-4348/UV Test Set can be used by Direct Support/Intermediate Level to perform the resolution testing 180 Day Service. If a system fails it must be tested on the TS-3895A/UV Test Set.

NOTE

Verify the resolution of the monocular using the TS-4348/UV Test Set at every opportunity. The resolution cannot be accurately measured without the test set.

The following procedures are designed to check the performance of the image intensifier.

a. Setup

Before using the TS-4348/UV Test Set to set up and familiarize yourself with its operation and the warnings and cautions associated with that test equipment.

NOTE

- The resolution test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test. Review the following test procedure before entering the dark area.
- Expect cosmetic blemishes, such as chicken wire, black spots, and fixed-pattern noise, to stand out while viewing through the TS-4348/UV Test Set when it is on the high light level. This is acceptable.
- The rejection of any MUNVM for cosmetic defects must be based on an outdoor evaluation and not the TS-4348/UV Test Set.

b. Low Light and High Light Resolution Test Procedure

Test the monocular for low light and high light resolution performance according to the following steps.

- (1) Place the HIGH/LOW switch on the test set to the LOW position.

- (2) Install the LIF per paragraph 2.3.6.
- (3) Turn off the room light and let your eyes adjust to the dark.
- (4) Turn on the test set by setting the “II/OFF/III” switch to the “III” position.
- (5) Turn on the the monocular and insert it into the test port on the test set.
- (6) Look through the monocular and view the projected pattern (see Figure 2.2.). If necessary, focus the eyepiece lens and then the objective lens to obtain the sharpest image.
- (7) The MUNVM monocular must be able to resolve Group 2, Element 2, under low light conditions to pass the test. If the MUNVM does not pass the test, return it to maintenance for repair. The operator must document resolution failures on the maintenance record.

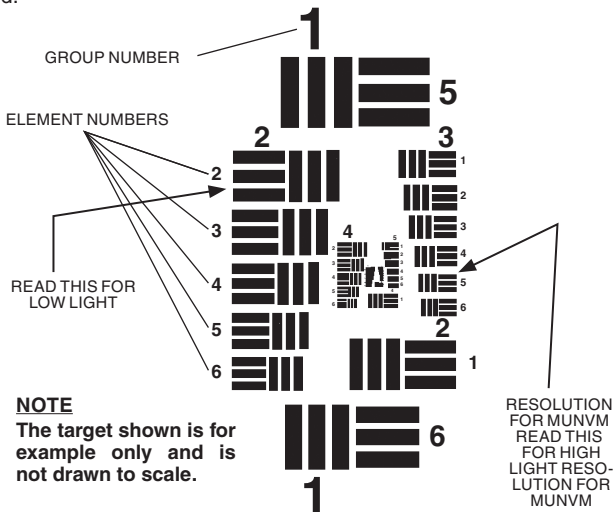


FIGURE 2.2. TS-4348/UV TEST SET PATTERN

NOTE

For a pattern to be resolvable, three vertical bars and three horizontal bars must be visible.

- (8) Flip the HIGH/LOW switch to the HIGH position.
- (9) Again, look through the monocular and view the projected pattern (see Figure 2.2.). If necessary, refocus the objective lens and then the eyepiece lens to obtain the sharpest image.
- (10) The MUNVM must be able to resolve Group 3, Element 5, under high light conditions to pass the test. If the monocular does not pass the test, send it to a higher level of maintenance for repair.

NOTE

When using the TS-4348/UV Test Set, you are not viewing the entire image intensifier. Therefore, operational and cosmetic inspections must be done without the test set as specified in paragraph 2.2.3.

- (11) Look for flashing, flickering, or other nonstable behavior of the image intensifier. Also check the image intensifier for other operational defects described in paragraph 2.2.3. To view the image intensifier under low light conditions, flip the HIGH/LOW switch to the LOW position and allow your eyes to become accustomed to the dark. If any unacceptable conditions are noted, send to a higher level of maintenance for repair.

2.2.3. INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION

a. General

As directed in the Preventive Maintenance Checks and Services table, image intensifier operation must be checked before each mission. This section provides information for the operator concerning what to look for, how to look for it, and how to determine if the MUNVM should be returned to the maintainer.

CAUTION

Perform the following inspection in the dark.

To perform this inspection, attach the monocular to the headmount as described in paragraph 2.3.8. and turn the power switch to the ON position. Look through the monocular and view the image.

There are two groups of “defects” you may encounter – operational defects and cosmetic blemishes. Operational defects are an immediate cause to reject the MUNVM. Cosmetic blemishes are not a cause for rejection unless they become severe enough to interfere with the ability to perform the mission. **The rejection of any MUNVM for cosmetic defects must be based on an outdoor evaluation and not the TS-4348/UV Test Set.**

b. Operational Defects

These defects relate to the reliability of the image intensifier and are an indication of instability. If identified, they are an immediate cause for rejecting the MUNVM. They include shading, edge glow, flashing, flickering, and intermittent operation.

(1) Shading. If shading is present, you will not see a fully circular image (see Figure 2.3). Shading is very dark and you cannot see an image through it. Shading always begins on the edge and migrates inward eventually across the entire image area. Shading is a high contrast area with a distinct line of demarcation. Return the MUNVM to the maintainer.

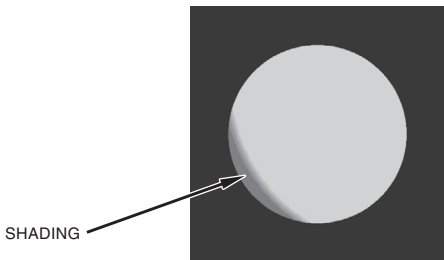


FIGURE 2.3. SHADING

NOTE

Make sure the shading is not the result of improper eye-relief adjustment (refer to paragraph 2.4.2).

(2) Edge Glow. Edge glow is a bright area (sometimes sparkling) in the outer portion of the viewing area (see Figure 2.4).

To check for edge glow, block out all light by cupping a hand over the objective lens. If the image intensifier is displaying edge glow the bright area will still show up. Return the MUNVM to the maintainer.

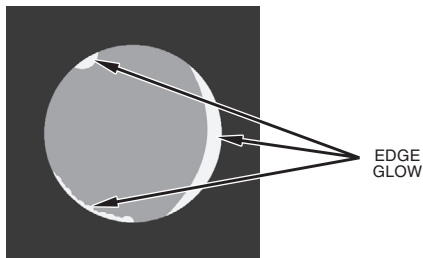


FIGURE 2.4. EDGE GLOW

(3) Flashing, Flickering, or Intermittent Operation. The image may appear to flicker or flash. If there is more than one flicker, check for loose battery cap or weak battery. If weak or loose batteries are not the problem return the MUNVM to the maintainer.

c. Cosmetic Blemishes

These are usually the result of manufacturing imperfections that do not affect intensifier reliability and are not normally a cause for rejecting an MUNVM. However, some types of blemishes can get worse over time and interfere with the ability to perform the mission. If you believe a blemish is cause for rejection, record the specific nature of the problem on the maintenance forms and identify the position of the blemish by using the clock method and approximate distance from the center (e.g., 5 o'clock toward the outside, 2:30 near the center, or 1:00 midway). The following are cosmetic blemishes:

(1) Bright Spots. A bright spot is a small, nonuniform, bright area that may flicker or appear constant (Figure 2.5.). Not all bright spots make the MUNVM rejectable. Cup your hand over the objective lens to block out all light. If the bright spot remains, return the MUNVM to the maintainer. Bright spots usually go away when the light is blocked out. Make sure any bright spot is not simply a bright area

in the scene you are viewing. **Bright spots are acceptable if they do not interfere with the operator's ability to view the image or to perform the mission.**

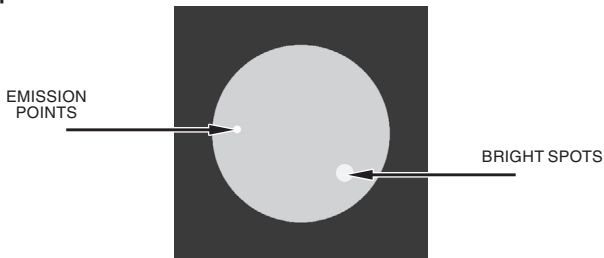


FIGURE 2.5. BRIGHT SPOTS AND EMISSION POINTS

(2) Emission Points. A steady or fluctuating pinpoint of bright light in image area that does not go away when all light is blocked from the objective lens of the monocular (Figure 2.5.). The position of an emission point within the image area does not move.

Not all emission points make the MUNVM rejectable. Make sure any emission point is not simply a point light source in the scene you are viewing. **Emission points are acceptable if they do not interfere with the operator's ability to view the image or to perform the mission.**

(3) Black Spots. These are cosmetic blemishes in the image intensifier or dirt or debris between the lenses. Black spots are acceptable as long as they do not interfere with viewing the image. **No action is required if this condition is present unless the spots interfere with the operator's ability to view the image or to perform the mission.**

(4) Fixed-Pattern Noise. This is usually a cosmetic blemish characterized by a faint hexagonal (honeycomb) pattern throughout the viewing area that most often occurs at high light levels or when viewing very bright lights (see Figure 2.6.). This pattern can be seen in every image intensifier if the light level is high enough. **This condition is acceptable as long as the pattern does not inter-**

ferre with the operator's ability to view the image or to perform the mission.

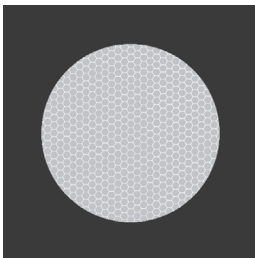


FIGURE 2.6. FIXED-PATTERN NOISE

(5) Chicken Wire. An irregular pattern of dark thin lines in the field-of-view either throughout the image or in parts of the image area (see Figure 2.7.). Under the worst case condition, these lines will form hexagonal or square-wave shaped lines. **No action is required if this condition is present unless it interferes with the operator's ability to view the image or to perform the mission.**

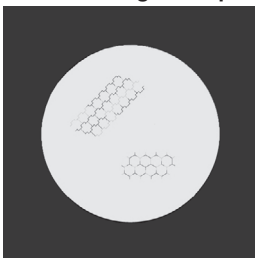


FIGURE 2.7. CHICKEN WIRE

2.3. ASSEMBLY AND PREPARATION FOR USE

2.3.1. UNPACKING

The following steps must be accomplished prior to each mission where the MUNVM is used.

CAUTION

Relieve air pressure inside shipping and storage case by pressing in on opposite sides of the case before releasing latches.

- (1) Release the latch securing top of shipping and storage case and open.
- (2) Check contents for completeness (see Figure 1.1.).
- (3) Remove carrying case. Open carrying case (Figure 1.3.), remove MUNVM, and check contents for completeness.
- (4) Inspect the monocular for obvious evidence of damage to optical surfaces, body, eyecup, eyeguard, power switch, battery cap, etc. Ensure that all optical surfaces are clean and ready for use. Clean with lens paper.

2.3.2. INSTALLATION OF BATTERY

CAUTION

To protect the image intensifier, keep the objective lens cap on when the monocular is not in use or when using the monocular in daylight conditions.

The MUNVM operates with one AA battery. Battery is not supplied with the MUNVM and must be obtained separately.

At operating temperatures below -20°C (-4°F), Alkaline batteries are not recommended, as operating life will be severely reduced. Lithium-iron disulfide L91 1.5V AA batteries should be used below -20°C (-4°F).

TABLE 2.3. ESTIMATED BATTERY LIFE

BATTERY TYPE	TEMPERATURE	NEGLECTIBLE IR SOURCE USAGE	IR SOURCE USAGE 10% OF THE TIME
AA Alkaline	21°C(70°F)	60 Hrs	55 Hrs
AA Lithium L91	21°C(70°F)	70 Hrs	65 Hrs
AA Alkaline	-20°C(-4°F)	12 Hrs	10 Hrs
AA Lithium L91	-20°C(-4°F)	60 Hrs	55 Hrs

CAUTION

- **Make certain the power switch is in the OFF position before installing the battery.**

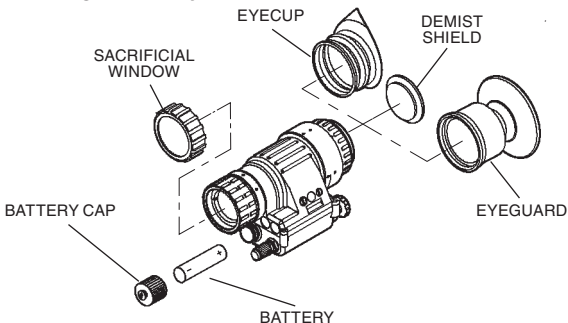


FIGURE 2.8. BATTERY, EYECUP AND EYEGUARD INSTALLATION

Install the AA battery into PVS14 or 6015 as follows.

- (1) Unscrew the battery cap.
- (2) Observe polarity, as indicated on the side of the battery compartment and insert the battery.
- (3) Replace the battery cap and screw cap hand tight.

2.3.3. INSTALLATION OF EYECUP OR EYEGUARD

Perform the following procedure to install eyecup or eyeguard onto the monocular. Refer to Figure 2.8.

- (1) Carefully press the eyecup or eyeguard over the end of the eyepiece lens.
- (2) Rotate the eyecup or eyeguard into proper viewing position. Adjust for best fit. The eyecup must seal around your eye and prevent the green glow from escaping.

2.3.4. INSTALLATION OF DEMIST SHIELD

Perform the following procedures to install the demist shield on the eyepiece lens. Refer to Figure 2.8.

CAUTION

If the demist shield needs to be cleaned, refer to paragraph 3.3.1. for cleaning. If the demist shield is wiped while wet or with wet lens paper, you will damage the coating.

NOTE

If inclement operating conditions are expected to exist (e.g. significant temperature change and high humidity), install demist shield to minimize eyepiece lens fog prior to execution of mission.

- (1) Carefully remove the eyecup or eyeguard.
- (2) Carefully press the demist shield onto the eyepiece. Be careful not to smudge the eyepiece lens or demist shield.
- (3) Replace the eyecup or eyeguard (see paragraph 2.3.3.).

2.3.5. INSTALLATION OF SACRIFICIAL WINDOW

Perform the following procedure to install the sacrificial window. Refer to Figure 2.8.

CAUTION

If adverse operating conditions (dust or sand) are expected to exist, attach the sacrificial window to protect the objective lens from scratches or other damage.

- (1) If the objective lens cap is in place, remove it.

(2) Carefully push the sacrificial window onto the objective lens until it stops. Turn the sacrificial window clockwise until it snaps into place.

2.3.6. INSTALLATION OF LIF

Perform the following procedure to install the LIF onto the objective lens.

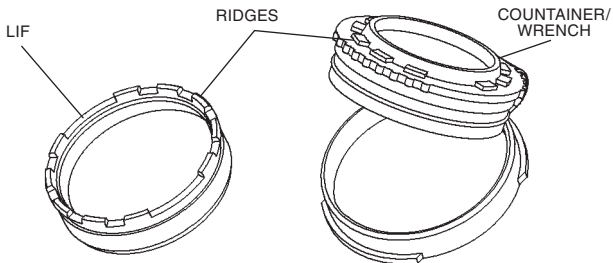


FIGURE 2.9. LIF

(1) Remove the container/wrench (Figure 1.3.) from the carrying case pouch.

CAUTION

Be careful not to touch glass surfaces. If you get fingerprints or contamination on glass surfaces, use lens paper to clean the LIF. If moisture is needed, use your breath to mist the surface of the glass.

(2) If the objective lens cap or sacrificial window is on the objective lens of the monocular, remove it.

(3) Carefully open the container/wrench and remove the LIF. Refer to Figure 2.9.

(4) Hold the LIF by the ridged end (see Figure 2.9.) and thread it clockwise, into the end of the objective lens.

CAUTION

Do not overtighten the LIF into the objective lens.

- (5) Using the ridged side of the container/wrench as a wrench, engage the ridges on the container with the ridges on the LIF and tighten the LIF handtight.
- (6) Place the empty container/wrench back into the carrying case pouch.
- (7) Install the objective lens cap or the sacrificial window onto the end of the objective lens and cover the LIF.

NOTE

The LIF must be used at all times unless directed by the unit commander, to remove the LIF, based upon his/her assessment of the laser threat in the theater of operations.

2.3.7. INSTALLATION AND ADJUSTMENT OF HEADMOUNT

Perform the following procedures for donning the headmount.

NOTE

Do not don the headmount while the monocular is attached.

- (1) Prior to donning the headmount, loosen the four ends of the chinstrap approximately two inches from the sliding bar buckles (Figure 2.10.).
- (2) Snap the front and rear snaps (Figure 2.10.) in place.

NOTE

If the headmount is too loose, remove the attached thin brow-pad (Figure 3.3.) and replace with either the medium or thick browpad stored in the carrying case. Refer to paragraph 3.3.2. for removal and replacement of the browpads.

- (3) With both hands grasp the neck pad (Figure 2.10.) and pull the harness over your head and the neck pad down to the back of your neck.
- (4) Holding the chin cup in position on chin, adjust both sides of the chinstrap until you feel light pressure against your chin. (DO NOT TIGHTEN.)
- (5) Maintain the position of the chin cup and remove any slack from the chinstrap. (DO NOT TIGHTEN.)

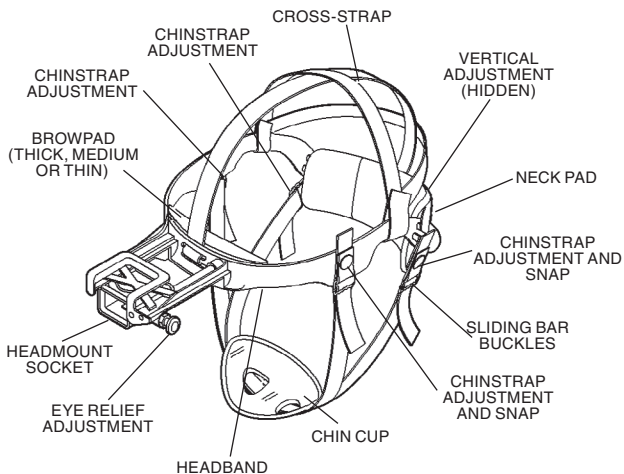


FIGURE 2.10. MUNVM HEADMOUNT ADJUSTMENTS

- (6) Ensure that the cross-strap is not twisted and remove slack by adjusting the vertical adjustment at the neck pad.
- (7) Adjust chinstrap and vertical adjustment until the chin cup and headband are in a comfortable but firm position.

NOTE

After installing the monocular, minor strap adjustments may be necessary to achieve comfort.

- (8) Install the headmount/helmet mount adapter (refer to paragraph 2.3.8).
- (9) Refer to paragraph 2.4.2. for operating procedures.

2.3.8. INSTALLATION OF HEADMOUNT/HELMET MOUNT ADAPTER

Install the headmount/helmet mount adapter (Figure 1.1.) into the monocular by aligning thumbscrew to hole and tightening as shown in Figure 2.11. There is an alignment boss on the headmount/hel-

met mount adapter that fits into a groove on the monocular. Make sure the boss on the adapter fits into the groove on the monocular.

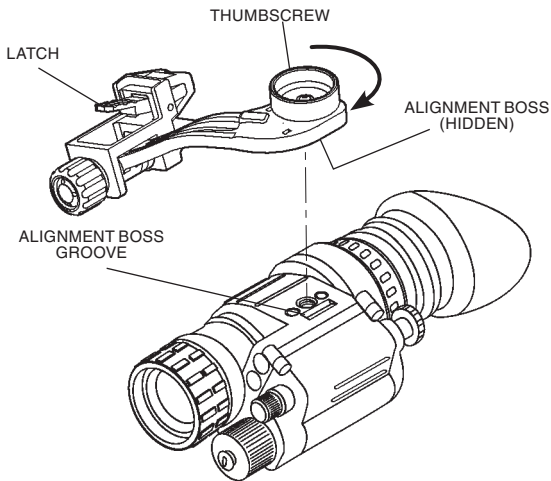


FIGURE 2.11. HEADMOUNT/HELMET MOUNT ADAPTER INSTALLATION

2.3.9. INSTALLATION OF HELMET MOUNT TO HELMET

- (1) Remove the helmet mount from the carrying case. Refer to Figure 2.12. for helmet mount features.
- (2) Press the release (Figure 2.13.) to remove the mount from the helmet mount bracket.
- (3) Make sure the strap is laced onto the helmet mount bracket as shown in Figure 2.13.
- (4) With catch (see Figure 2.13.) in forward most position, place the strap over the top of the helmet center (see Figure 2.14).

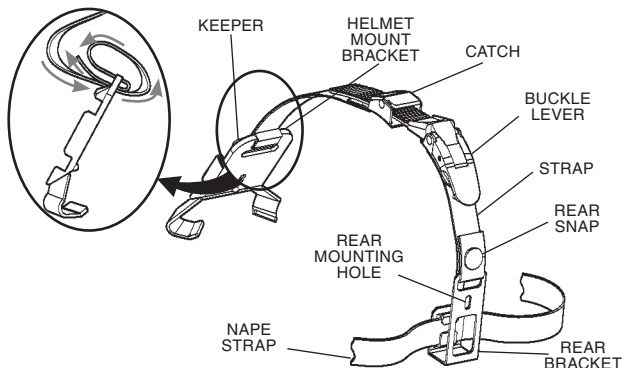


FIGURE 2.12. INSTALLATION OF HELMET MOUNT

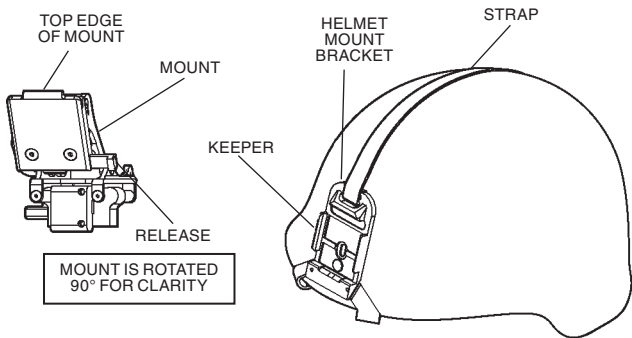


FIGURE 2.13. HELMET MOUNT

(5) Hook the rear bracket (see Figure 2.13.) on the center of the back of the helmet and lay the strap with helmet mount bracket over the top of the helmet.

(6) Hook the helmet mount bracket in the center of the front lip of the helmet and hold it in place (see Figure 2.14.).

- (7) With the buckle lever open, take up the slack in the strap using the catch. Close the buckle lever.
- (8) Disengage the nape strap latch on the left side of nape strap.
- (9) Don the helmet. Do not fasten the helmet chinstrap.
- (10) Engage the nape strap at the nape strap latch. Tension the nape strap for a stable fit, then install and tension the helmet chinstrap. The brow of the helmet should be parallel to the ground and the helmet stable on the head.
- (11) Insert the top edge of the mount under the keeper on the helmet mount bracket and rotate downward until the latch engages (see Figure 2.14.). To release the mount from the helmet bracket, press the release and pull forward and down.

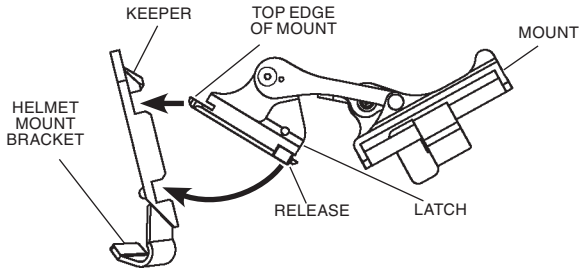


FIGURE 2.14. REASSEMBLY OF HELMET MOUNT

2.3.10. INSTALLATION OF HEADMOUNT WITH PROTECTIVE MASK

Perform the following procedures for donning headmount with protective mask.

- (1) Place protective mask on your head per the instructions provided with the protective mask.

WARNING

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

(2) Install the headmount per the instructions in paragraph 2.3.7.

NOTE

It may be necessary to remove the browpad (Figure 2.10.) when wearing the headmount over a protective mask.

2.3.11. INSTALLATION OF WEAPON MOUNT

Perform the following procedure to install the weapon mount.

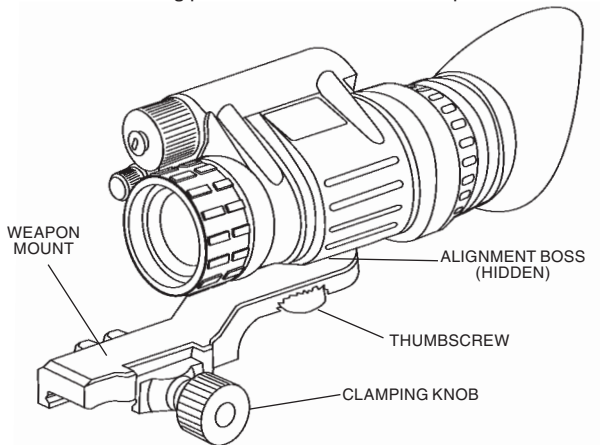


FIGURE 2.15. WEAPON MOUNT USAGE

CAUTION

The MUNVM is not a weapon sight, however, it can be used in conjunction with a collimated dot sight or laser aiming device.

NOTE

It is recommended that the eyecup be replaced with the eyeguard during weapon mounted use.

(1) Orient the monocular and weapon mount as shown in Figure 2.15. Be sure to align the alignment boss on the weapon mount with the alignment groove in the monocular.

- (2) Screw in the thumbscrew to secure the monocular to the weapon mount.
- (3) Loosen the clamping knob on the weapon mount. Position the weapon mount with the monocular onto the weapon's mounting rail. Tighten by turning the clamping knob.

NOTE

There is a ratchet in the weapon mount that prevents over-tightening of the clamp. Turn until the knob clicks.

- (4) Check the position of the monocular by holding the weapon in your normal firing position. Adjust the fore/aft position of the monocular as necessary by loosening the clamping knob and repositioning the weapon mount on the weapon's mounting rail.

2.3.12. INSTALLATION OF COMPASS

CAUTION

- Use of the compass with the plastic headmount or the plastic helmet mount will result in inaccurate compass readings. The magnet cannot be removed from these mounts.
- The magnet must be removed from the ruggedized metal helmet mount before installation of the compass. Failure to do so will result in inaccurate compass readings.
- If the magnet is not removed, turn the ruggedized metal helmet mount in to unit maintenance for removal. See Figure 2.16. for location of magnet.

NOTE

- Prepare the monocular for operation.
- Leave LIF in place when installing the compass.

- (1) If the sacrificial window or objective lens cap is in place, remove it.
- (2) Turn monocular on.
- (3) Rotate the objective lens focus completely counterclockwise (while looking through the monocular).

NOTE

The o-ring must be in place in the compass in order for the compass to fit properly.

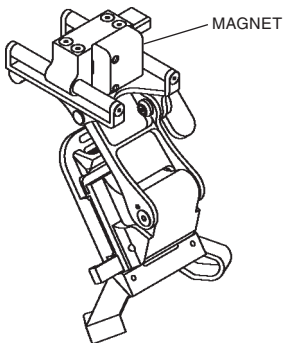


FIGURE 2.16. LOCATING THE MAGNET

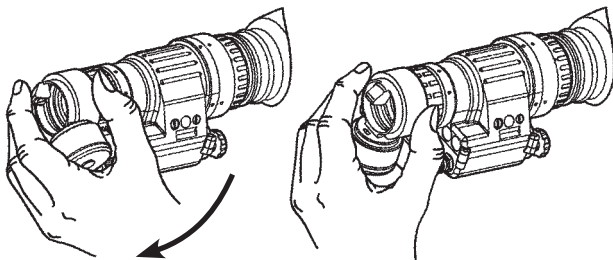


FIGURE 2.17. COMPASS INSTALLATION

(4) Press the compass onto the objective lens at an angle using your left hand. Slowly turn the compass counterclockwise until it is in the vertical position (with compass illumination button pointing down). See Figure 2.17.

(5) Ensure that the compass fits tightly to the objective lens.

(6) Refer to paragraph 2.4.6. for operation of the compass.

2.3.13. INSTALLATION OF 3X MAGNIFIER

The 3X magnifier can be threaded directly into the objective lens, with the LIF removed. It can also be threaded into the focus ring adapter and slipped on over the end of the objective lens with the LIF installed.

Figures 2.18. and 2.19. illustrate these installation procedures.

THREAD DIRECTLY INTO
OBJECTIVE LENS AS SHOWN

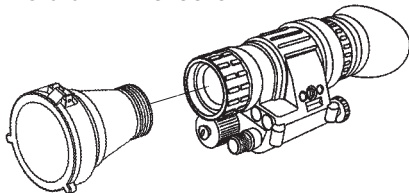


FIGURE 2.18. 3X MAGNIFIER INSTALLATION WITHOUT LIF

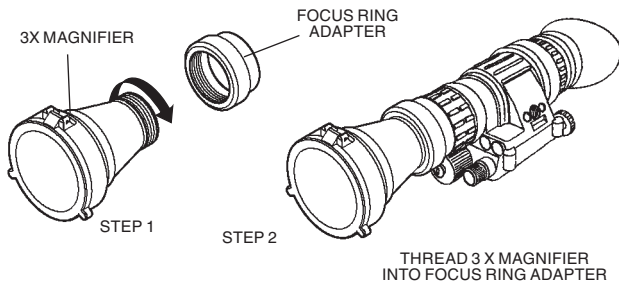


FIGURE 2.19. 3X MAGNIFIER INSTALLATION WITH LIF

2.4. OPERATING PROCEDURES

This section contains operating procedures for using the NVMPs as hand-held, head mounted, helmet mounted or weapon mounted monocular. Prior to operating the monocular, make certain that all the steps in 2.3.3., Assembly and Preparation for Use, have been read and performed.

2.4.1. HAND-HELD OPERATION

Operate the monocular only under darkened conditions or use the objective lens cap to cover the objective lens for daylight conditions.

NOTE

When using the monocular without a mounting device, make sure to place the neck cord around your neck.

- (1) Ensure that the battery are installed per paragraph 2.3.2.
- (2) Turn the power switch to ON.

NOTE

The sharpest image will be observed only when the objective lens and eyepiece lens are properly focused.

- (3) Rotate the diopter adjustment for the clearest view of the image intensifier screen.
- (4) Focus the objective lens while observing an object until the sharpest image is obtained.

2.4.2. HEAD MOUNTED OPERATION

Perform the following procedures for head mounted operation.

CAUTION

Operate the monocular only under darkened conditions or use the lens cap to cover the objective lens for daylight conditions.

- (1) Ensure that battery are installed per paragraph 2.3.2.
- (2) Don the headmount per instructions in paragraph 2.3.7.

NOTE

To make it easier to align the monocular, eyecup, and eyepiece lens to the eye, depress the eye relief adjustment and slide the headmount socket all the way forward before attaching the monocular.

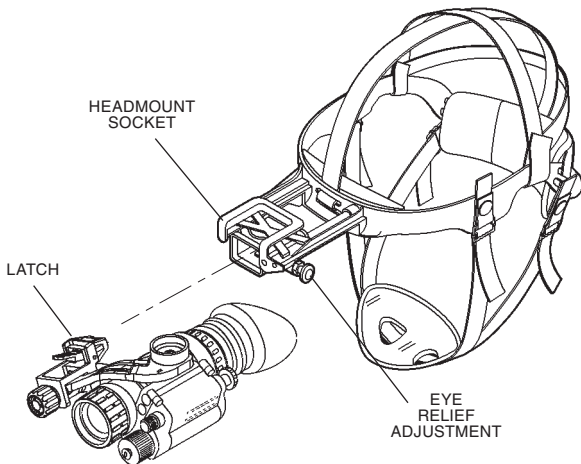


FIGURE 2.20. HEADMOUNT/HELMET MOUNT ADAPTER OPERATION

(3) Align the headmount/helmet mount adapter's latch to the headmount socket (Figure 2.20.). Press and hold down the latch lever while installing the monocular into the headmount socket.

Release the latch when the monocular fully engages the socket.

(4) Set your eye relief by depressing the eye relief adjustment (Figure 2.20.) and move the monocular back toward your non-dominant eye until the eyecup comfortably seals around the eye.

(5) Turn the monocular ON.

(6) Readjust the vertical adjustment (Figure 2.10.) of the headmount until the monocular is properly aligned with your eye.

NOTE

The sharpest image will be observed only when the objective lens and eyepiece lens are properly focused.

(7) Rotate the diopter adjustment for the clearest view of the image intensifier screen.

NOTE

Any readjustment of eye relief requires readjustment of the diopter.

(8) Adjust the eye relief distance by pressing the eye relief adjustment and sliding monocular fore or aft to obtain a full field-of-view of the image. Reset the diopter adjustment for best image.

(9) Adjust the objective lens focus (Figure 2.1.) while observing an object until the sharpest image is obtained.

2.4.3. HELMET MOUNTED OPERATION

CAUTION

Take some precaution when using/handling the helmet mount. Most damage occurs when the helmet mount is left on the helmet when not needed for immediate use. Observe the following cautions to significantly extend the useful life of the helmet mount.

CAUTION

- **Do not use excessive force when changing the up/down position of the MUNVM. Excessive force can break the headmount/helmet mount adapter.**
- **Do not drop or throw the helmet with the helmet mount attached to it.**
- **With the monocular in the flipped up position, do not flick the monocular down by shaking the helmet. This places significant stress on the helmet mount.**
- **All Other Services – Return the helmet and the helmet mount to unit maintenance for direct mounting of the bracket via the helmet screws.**

Perform the following procedures for helmet mounted operation.

NOTE

The helmet mount provides two positions for the user to position the MUNVM. The flipped down position allows the user to position the MUNVM directly in front of the eyes. The helmet mount also allows the user to rotate the MUNVM to a flipped up position when the MUNVM is not needed for immediate use. Both the flipped down and the flipped up positions have a positive stop which assures the user that the MUNVM is in the correct position.

NOTE

The headmount/helmet mount adapter allows the MUNVM to be rotated from the left to the right eye or vice versa. The MUNVM can be moved to the flipped up position with the headmount/helmet mount adapter positioned to either the left or the right.

- (1) Ensure that the battery are installed per paragraph 2.3.2.
- (2) Don the helmet mount per instructions in paragraph 2.3.9.
- (3) Place the monocular in the socket of the helmet mount.

Set your eye relief by depressing the side buttons (or press down on side lever on metal mount) (see Figure 2.21.) and carefully move the monocular fore or aft until the eyecup comfortably seals around the eye. Readjust the helmet straps as required for vertical adjustment.

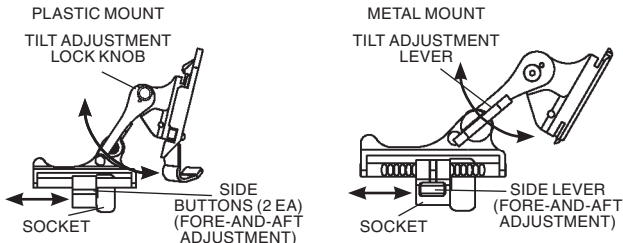


FIGURE 2.21. TILT AND FLIP-UP ASSEMBLY MECHANISMS

- (4) Turn power switch to ON. Adjust the tilt by using the tilt adjustment lock knob (or tilt adjustment lever on metal mount) (Figure 2.21.) until you obtain a comfortable viewing angle.

NOTE

The sharpest image will be observed only when the objective lens and eyepiece lens are properly focused.

(5) Rotate the diopter adjustment for the clearest view of the image intensifier screen.

NOTE

Any readjustment of eye relief requires readjustment of the diopter.

(6) Adjust the eye relief distance by depressing the side buttons (Figure 2.21.) (or press down on side lever on metal mount) and sliding monocular fore or aft to obtain a full field-of-view of the image. Reset the diopter adjustment for best image.

(7) Adjust the objective lens focus (Figure 2.1.) while observing an object until the sharpest image is obtained.

(8) To flip up, grasp the helmet tilt and flip-up assembly and rotate upward and rearward until the latch is firmly engaged.

WARNING

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

(9) To flip down, grasp the helmet tilt and flip-up assembly and rotate downward and forward until the latch is firmly engaged.

(10) Turn the power switch to the ON position to resume viewing.

2.4.4. WEAPON MOUNTED OPERATION

NOTE

The MUNVM 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 it's minimum setting.

Perform the following procedures for weapon mounted operation:

(1) Ensure that the battery are installed per paragraph 2.3.2.

(2) Assemble the weapon mount to the monocular per paragraph 2.3.11., steps 1 and 2.

- (3) Mount the monocular with adapter onto the M16/M4 receiver rail per paragraph 2.3.11., steps 3 and 4.
- (4) Rotate the diopter adjustment for the clearest view of the image intensifier screen.
- (5) Adjust the objective lens focus (Figure 2.1.) while observing an object until the sharpest image is obtained.

2.4.5. IR SOURCE OPERATIONS

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.

NOTE

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

- (1) Pull the power 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 source is operating.
- (2) For momentary IR, turn the power switch clockwise (without pulling) past the ON position. Observe that a red light appears in the eyepiece.

2.4.6. OPERATION WITH COMPASS

WARNING

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

CAUTION

You will get inaccurate readings, when using the compass on any head or helmet mount with the magnet still installed. Only the magnet on the metal mount can be removed without causing damage to the equipment, see paragraph 2.3.12.

NOTE

- The compass reading is the magnetic North, not true North.
- The compass reading is within 2° of correct absolute magnetic bearing. Compass readings with mounted monocular (head mount or helmet mount) can be up to 15° of correct absolute magnetic bearing. This occurs mostly in the East (90°) to West (270°) and less in the North (360°) to South (180°) reading. If the compass is inadvertently magnetized this could cause an additional 15° error.
- The objective lens focus can be fine tuned after installation, but in order to obtain an accurate reading, the compass must be vertical. (The compass image must be level.)

(1) Install per paragraph 2.3.12.

(2) If necessary to more clearly view your distant object, adjust the objective lens focus slightly by gripping the compass and turning clockwise.

NOTE

- Increase brightness slowly. Excessive brightness may burn a temporary image into the image intensifier. Do not increase brightness any more than is necessary to clearly read the compass heading.
- The monocular must be focused at or near infinity for proper compass operation.

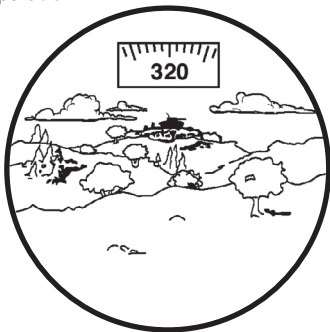


FIGURE 2.22. VIEW THROUGH INSTALLED COMPASS

(3) To view the compass through the monocular, grip the compass with index finger on top and thumb on illumination button on bottom. Press button slowly with thumb until proper brightness is obtained. The image should appear as shown in Figure 2.22.

(4) The compass readings should change when you move your head from side to side. Rotate or tap compass slightly to ensure compass is operating correctly. Hold the monocular in a level position to assure free rotation of the compass scale.

(5) The tick mark closest to the center of the lighted display is the compass bearing. The tick marks are in degrees, with longer tick marks every five degrees and bearing labels every 10 degrees.

2.4.7. OPERATION WITH 3X MAGNIFIER

(1) Install per paragraph 2.3.13.

NOTE

The mated 3X magnifier and objective lens will turn as a unit to allow focusing.

(2) Grasp the 3X magnifier and focus while observing an object until the sharpest image is obtained.

2.4.8. OPERATION WITH GAIN CONTROL (PVS-14 ONLY)

Turn the gain control (Figure 2.23) to balance the illumination input to the eye.

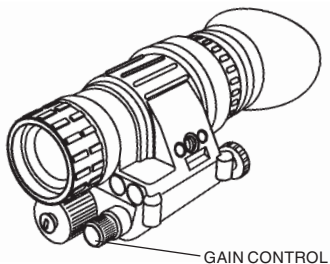


FIGURE 2.23. GAIN CONTROL

2.4.9. PREPARATION FOR STORAGE

(1) Shutdown. Perform the following procedures to shut down the monocular.

(a) Turn the monocular power switch to the OFF position.

(b) Remove the monocular from the headmount, helmet mount or weapon and remove the weapon mount from the monocular.

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.

(2) Packaging After Use.

(a) Remove battery cap and remove battery.

(b) Inspect the battery housing for corrosion or moisture. Clean and dry if necessary.

(c) Replace the battery cap.

(d) Remove the demist shield or sacrificial window if installed. Install objective lens cap.

NOTE

• **Prior to placing MUNVM into carrying case, ensure MUNVM and case are free of dirt, dust, and moisture.**

• **The monocular and helmet mount should not be left on the helmet when the helmet is removed.**

(e) Refer to Figure 1.1. for proper placement of demist shield, battery, carrying case strap, lens paper, sacrificial window, manual, LIF, browpads, headmount, helmet mount, headmount/helmet mount adapter and weapon mount.

(f) Place the monocular into the shallow pocket of the carrying case.

(g) Place the carrying case into the shipping and storage case, close and latch (Figure 1.3.).

(h) Return to storage area.

2.5. OPERATION UNDER UNUSUAL CONDITIONS

2.5.1. OPERATION IN DUSTY OR SANDY AREAS

CAUTION

Operation in dusty or sandy areas can pit and scratch the optical elements and damage the mechanical components unless the precautions given below are observed.

- (1) Ensure that the sacrificial window is in place over the LIF.
- (2) Avoid pointing the monocular into the wind unless necessary for operation.
- (3) Keep the carrying case closed unless removing or replacing items.
- (4) Ensure that all dust and sand is removed from the MUNVM and carrying case after operation.

2.5.2. OPERATION IN RAINY OR HUMID CONDITIONS

CAUTION

Operation in rainy or humid conditions can cause corrosion and deterioration of the MUNVM unless the precautions given below are observed.

- (1) Install the demist shield (paragraph 2.3.4.).
- (2) Keep the carrying case, and shipping and storage case closed unless removing or replacing items.
- (3) Dry the monocular, mounts, and accessories after exposure to rain or high humidity and before storage. This will prevent mildew from forming in the case.
- (4) Do not store monocular in a wet carrying case or a wet shipping and storage case.

2.5.3. OPERATION IN SALT WATER AREAS

After exposure to salt water, clean the MUNVM (paragraph 3.3.1).

2.5.4. OPERATION IN NUCLEAR, BIOLOGICAL AND CHEMICAL (NBC) ENVIRONMENTS

WARNING

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

- (1) Decontamination – Wear a protective mask while using MUNVM after decontamination process.
- (2) Hardness – Do not use DS-2 for decontaminating the MUNVM. To decontaminate, use 5% sodium hypochlorite and rinse with hot (158° F) soapy water.

2.5.5. OPERATION IN LASER THREAT ENVIRONMENTS

NOTE

The LIF is a light-protection filter. This filter must be used at all times unless directed by the unit commander, to remove the LIF based upon his/her assessment of the laser threat in the theater of operations. Use of this filter will result in a slight reduction in system gain.

Install the LIF as described in paragraph 2.3.6.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

3.1. LUBRICATION INSTRUCTIONS

No lubrication is required.

3.2. TROUBLESHOOTING PROCEDURES

3.2.1. TROUBLESHOOTING

Table 3.1. lists common malfunctions that you may find with your equipment. Perform the tests, inspections and corrective actions in the order they appear in the table.

This table cannot list all the malfunctions that may occur, all the tests and inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your maintainer.

TABLE 3.1. OPERATOR'S TROUBLESHOOTING.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. Monocular fails to activate.	Visual.	Turn power switch to RESET/OFF position and then ON.
2. IR source fails to activate.	Check for defective, missing or improperly installed battery. In a dark location with system turned on, activate IR source. Visually check IR source operation; scene should brighten.	Replace battery or install correctly. If IR source still fails to activate, refer to higher level of maintenance.
3. IR source indicator fails to activate.	Visual.	Refer to higher level of maintenance.
4. Poor image quality.	Check objective lens or eyepiece lens focus. Check for fogging or dirt on objective lens or eyepiece lens.	Refocus. Clean lens surfaces per paragraph 3.2.
5. Light visible around eyecup.	Check eye relief distance. Check eyecup for resiliency.	Readjust for proper eye relief distance. If eyecup is defective, refer to higher level of maintenance.
6. Diopter adjustment cannot be made.	Check to see if the diopter adjustment is bent or broken.	If damaged, refer to higher level of maintenance.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
7. Battery cap difficult to open.	Visually inspect for the presence of an o-ring. Check for damaged battery cap.	If o-ring is missing, refer to higher level of maintenance. If damaged, refer to higher level of maintenance.
8. Head straps cannot be tightened.	Check for defective buckles, fasteners or straps.	If damaged, refer to higher level of maintenance.
9. Headmount or helmet mount socket and headmount/ helmet mount adapter latch does not catch.	Check socket or latch for dirt. Check socket or latch for damage.	Clean socket and latch. If damaged, return either headmount or helmet mount socket and headmount/ helmet mount adapter to higher level of maintenance.
10. Helmet mount will not tighten to helmet.	Inspect mounting hardware for damage.	If damaged, refer to higher level of maintenance.
11. LIF will not thread in or obstruct view.	Check for dirt in threads. Check for damaged LIF.	Clean threads. If damaged, refer to higher level of maintenance.
12. If damaged, refer to higher level of maintenance.	Visual.	Refer to higher level of maintenance.
13. Compass will not stay on the goggles.	Visual.	Refer to higher level of maintenance.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
14. Compass display is not clear.	Visual.	Make sure the monocular is focused for infinity. If so, and compass display is still not clear, refer to higher level of maintenance.
15. Monocular does not cut off when exposed to high light.	Visual. Perform the following test under daylight or bright room light (not fluorescent light). Place the objective lens cap on the objective lens. Turn monocular ON and observe that it cuts off within 70 ±30 seconds after energized. Turn monocular OFF and then ON to reenergize monocular.	If damaged, refer to higher level of maintenance.

3.3. OPERATOR'S MAINTENANCE PROCEDURES

3.3.1. CLEANING THE MUNVM

CAUTION

- The monocular is a precision electro-optical instrument and must be handled carefully.
- Do not scratch the external lens surfaces or touch them with your fingers.
- Wiping demist shield with lens paper while wet or with wet lens paper can damage the coating.

Clean monocular with water if necessary and dry thoroughly. Clean lenses with lens paper (and water if necessary, except for the demist shield).

3.3.2. HEADMOUNT MAINTENANCE

a. Browpad Replacement

Replace the browpad when cracked, torn, or contaminated. Perform the following procedures to remove and replace the browpad.

- (1) Firmly grasp the headmount and remove the old browpad.
- (2) Gently press on the new browpad. Lightly smooth out any wrinkles in the new browpad.

b. Neck Pad Reinstallation

During operation of the MUNVM, it is possible for the neck pad to become separated from its position on the headband. Perform the following procedure to reinstall the neck pad.

- (1) Lift the upper headband strap retention tab (see Figure 3.1) allowing the neck pad strap to be inserted underneath.
- (2) Slip the neck pad strap all the way under the upper strap retention tab and then pull the lower part of the neck pad strap under the lower strap retention tab.
- (3) Repeat steps 1 and 2 for the other side of the headband and neckband if necessary.

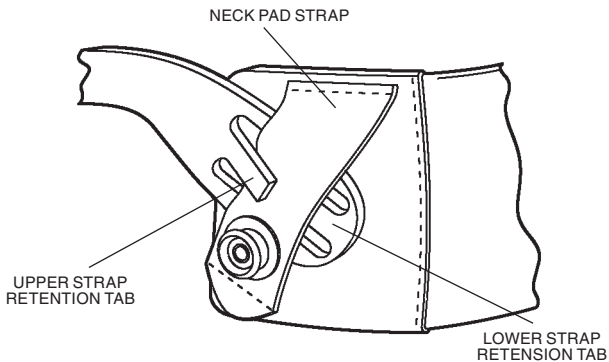


FIGURE 3.1. REINSTALLING THE NECK PAD

c. Lacing the Sliding Bar Buckles

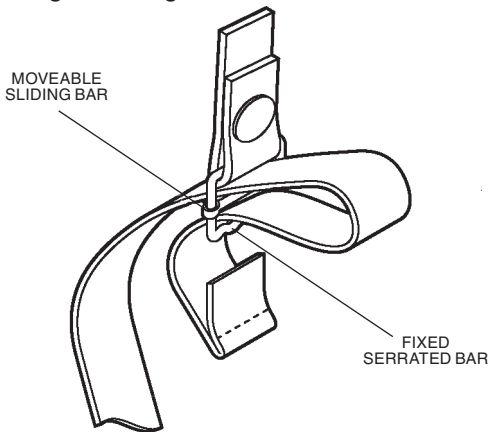


FIGURE 3.2. THREADING THE SLIDING BAR BUCKLES

While donning and adjusting the headmount, it is possible for a strap to slip out of a slide fastener. Perform the following procedure to adjust the strap and sliding bar buckle.

(1) Thread the strap from the inside of the buckle over the moveable sliding bar (see Figure 3.2.). Thread the strap back through the buckle but this time under the moveable sliding bar and over the serrated part of the buckle.

(2) Pull the strap through the buckle and tighten as necessary.

(3) Repeat steps 1 and 2 for other straps and buckles that may have come undone.

3.3.3. NECK CORD MAINTENANCE

The neck cord (Figure 1.1.) may be broken, frayed, or loose at one or both ends.

If loose, re-tie cord. If broken or severely frayed, install new cord as follows:

(1) Insert ends through monocular holes from the rear.

(2) Thread right cord end through hole in objective lens cap.

(3) Tie a knot in each end.

APPENDIX A

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

A1. SCOPE

This appendix lists COEI and BII for the PVS-14/6015 to help you inventory items for safe and efficient operation of the equipment.

A2. GENERAL

The COEI and BII information is divided into the following lists. Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements.

These items are part of the PVS-14/6015. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required to place the PVS-14/6015 in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the PVS-14/6015 during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you identify the items.

A3. EXPLANATION OF COLUMNS IN THE COEI LIST AND BII LIST

Column (1), Illus. Number. Gives you the number of the item illustrated.

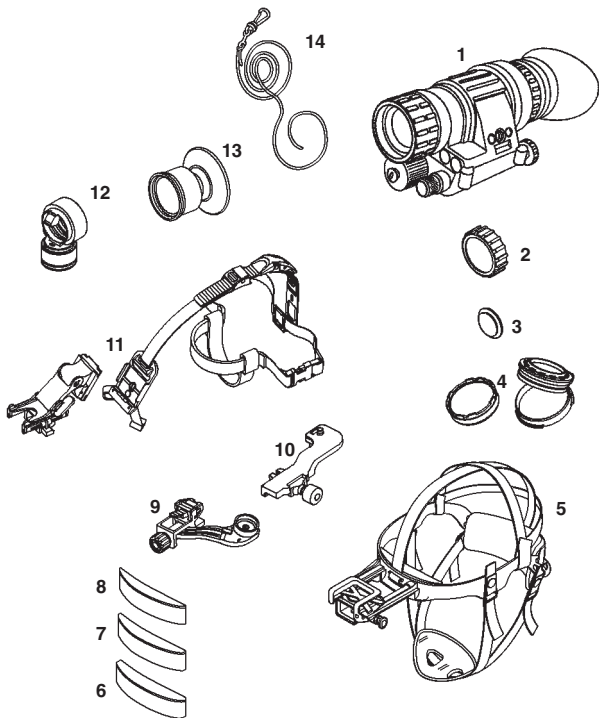
Column (2), National Stock Number. Identifies the stock number of the item to be used for requisitioning purposes.

Column (3), Description CAGEC and Part Number. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the CAGEC (commercial and Government entity code) (in parenthesis) and the part number.

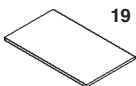
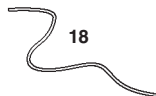
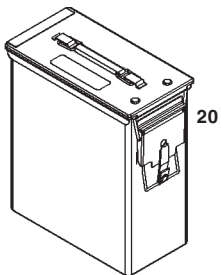
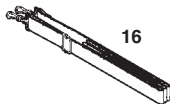
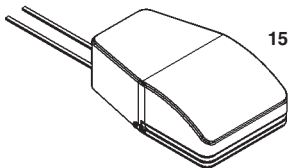
Column (4), Usable on Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5), U/M (Unit of Measure). Indicates how the item is issued for the National Stock Number shown in column (2).

Column (6), Qty Rqr. Indicates the quantity required.



**FIGURE A1. COMPONENTS OF END ITEM
(SHEET 1 OF 2)**



**FIGURE A1.COMPONENTS OF END ITEM
(SHEET 2 OF 2)**

TABLE A1. COMPONENTS OF END ITEM LIST.

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
1		MONOCULAR ASSEMBLY (80063) A3256340		EA	1
2	5855-01-246-8271	WINDOW, SACRIFICIAL (80063) A3144264		EA	1
3	5855-01-444-1230	LENS, INFRARED RECEIVER (80063) A3256353		EA	1
4	5855-01-379-1410	FILTER, INFRARED LIGHT (54490) 5009737		EA	1
5	5855-01-246-8266	HEADSET ASSEMBLY (80063) A3144268		EA	1
6	5855-01-297-7847	BROWPAD ASSY, THICK (80063) A3144436		EA	1
7	5855-01-355-8600	BROWPAD ASSY, MEDIUM (80063) A3144435		EA	1
8	5855-01-355-8599	BROWPAD ASSY, THIN (80063) A3144280		EA	1
9	5965-01-444-1216	ADAPTER, HEADSET (80063) A3256347		EA	1
10	5340-01-446-8588	BRACKET, MOUNTING (80063) A3256348		EA	1

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
11	5855-01-457-2953 5855-01-441-0401	MOUNT, VIEWER (80063) A3256368 or MOUNT, VIEWER (80063) A3260927		EA	1
12	5855-01-381-6052	COMPASS ASSEMBLY (80063) A3187430		EA	1
13	6650-01-444-1229	EYEGUARD, OPTICAL INSTRUMENT (80063) A3256345		EA	1
14	5340-01-451-7737	CLIP, RETAINING (80063) A3260933		EA	1
15	5855-01-398-4284	CASE, INFRARED EQUIPMENT (80063) A3187392		EA	1
16	5340-01-250-2431	STRAPPING (80063) A3144267		EA	1
17	5340-01-397-6608	CAP, PROTECTIVE, DUST (80063) A3144318		EA	1
18	4020-01-446-8097	CORD, FIBROUS (80063) A3144306		EA	1
19		OPERATOR'S MANUAL TM 11-5855-306-10		EA	1

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CATEG., AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
20		CASE, SHIPPING & STORAGE (80063) A3264350		EA	1

APPENDIX B

ADDITIONAL AUTHORIZATION LIST (AAL)

B1. SCOPE

This appendix lists additional items you are authorized for the support of the PVS-14/6015.

B2. GENERAL

This list identifies items that do not have to accompany the PVS-14/6015 and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

B3. EXPLANATION OF COLUMNS IN THE AAL

Column (1), National Stock Number. Identifies the stock number of the item to be used for requisitioning purposes.

Column (2), Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (3), Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (4), U/M (Unit of Measure). Indicates how the item is issued for the National Stock Number shown in column (1).

Column (5), Qty Recm. Indicates the quantity recommended.

TABLE B1. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION, CAGEC, AND PART NUMBER	(3) USABLE ON CODE	(4) U/M	(5) QTY RECM
6135-00-985-7845	BATTERY, NONRECHARGEABLE (AA), 1.5 Vdc (80058) BA-3058/U		EA	2
6135-01-333-6101	BATTERY, NONRECHARGEABLE (AA) (83740) L91, 1.5 Vdc		EA	2
6625-01-323-9584	TEST SET, ELEC. SYS. TS-4348/UV (80063) A3139775		EA	1
5855-01-423-0817	MAGNIFIER LENS ASSEMBLY (80063) A3256391		EA	1

APPENDIX C

EXPENDABLE AND DURABLE ITEMS LIST

C1. SCOPE

This appendix lists expendable and durable items that you will need to operate and maintain the PVS-14/6015. This list is for information only and is not authority to requisition the listed items.

C2. EXPLANATION OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1) - Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g. "Use lubricating oil, item 25, APPENDIX C").

Column (2) - Level. This column includes the lowest level of maintenance that requires the listed item (C = Operator/Crew).

Column (3) - National Stock Number. This is the NSN assigned to the item, which you can use to requisition it.

Column (4) – Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) - Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

TABLE C1. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
1	C	6640-01-459-4239	PAPER, LENS (81348) A-A-50177, TYPE I, CLASS 5	PK

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