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NIVISYS™ LLC

NIGHT VISION SYSTEMS

OPERATOR MANUAL **Night Vision Goggle System** **Model: PVS-7B/D**



Nivisys, LLC
1120 Alza Drive
El Paso, TX 79907
915-633-8354 (tel)
915-633-8529 (fax)
info@nivisys.com
www.nivisys.com

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SAFETY SUMMARY

WARNING and CAUTION statements have been strategically placed throughout the text prior to operating or maintenance procedures, practices or conditions considered essential to the protection of personnel (WARNING) or equipment and property (CAUTION). NOTES emphasize necessary and important data. CAUTIONS and NOTES appear in the text as applicable. Definitions for WARNINGS, CAUTIONS and NOTES are as follows:

Warning

Highlights an operation or maintenance procedure, practice, condition, statement, etc., which if not strictly observed, could result in injury to or death of personnel.

Caution

Highlights operating or maintenance procedure, practice, condition, statement, etc., which if not strictly observed could result in damage to, or destruction of equipment or loss of mission effectiveness.

Note

Highlights an essential operating or maintenance procedure, condition or statement.

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CHAPTER 1: GENERAL INFORMATION

Scope:

This manual provides operation and maintenance instructions for the AN/PVS-7B/D Night Vision Goggle (which shall be designated a goggle or PVS-7 throughout this manual). The PVS-7 is a self-contained night vision device that enables improved night vision using ambient light from the night sky (moon, stars, skyglow, etc.).

Reporting Equipment Improvement Recommendations (EIR):

Reports from the user on recommendations for improvements are encouraged. Send reports to the address below:

Nivisys, LLC
1120 Alza Drive
El Paso, TX 79907
USA

Administrative Stowage:

Administrative stowage of equipment should be done in the factory-supplied container and after a thorough PMCS as outlined in Chapter 3 of this manual. This will ensure the PVS-7 remains in a mission ready condition during storage.

Auto-Gated Option

Auto-gating is a feature built into specified image intensifier tubes which protects the device from high-light conditions and also improves NVG resolution in higher illumination environments. Without the auto-gating feature, the image seen through the NVG will lose some detail when used in high light illumination. With auto-gating, the image intensifier will automatically reduce gain (i.e. not be subject to overexposure) and will continue to provide a clear image under high-light conditions. In addition, prolonged exposure to high illumination will shorten the life of an image intensifier tube without auto-gating, whereas a PVS7-B/D with auto-gating will generally have an extended useful life. One feature of auto-gating is that when the PVS7-B/D is exposed to a highly illuminated environment, it will produce a faintly audible high-pitched sound. This high-pitch sound is of the internal power supply adjusting the image intensifier tube to the bright light. The high-pitch sound is only detectable from a very short distance and is not a defect, but rather a feature of the auto-gating system.

CHAPTER 2: EQUIPMENT DESCRIPTION

Part Identification:

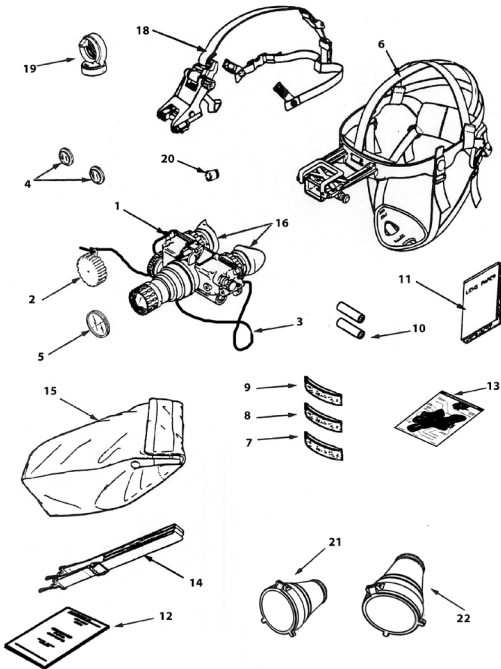


Fig 2-1. Part Identification

| NO. | Part # | Description | U/I | QTY |
|-----------------|-----------------|----------------------------|------------|------------|
| 1 | NVG-xxxxx | Goggle Assembly | ea | 1 |
| 2 | A3144318 | Lens Cap | ea | 1 |
| 3 | A3144306 | Neck Cord | ea | 1 |
| 4 | A3144263-1 | Demist Shield | ea | 2 |
| 5 | A3144264 | Sacrificial Window | ea | 1 |
| 6 | A3144268 | Head Mount Assembly | ea | 1 |
| 7 | A3144280 | Browpad Thin | ea | 1 |
| 8 | A3144435 | Browpad Medium | ea | 1 |
| 9 | A3144436 | Browpad Thick | ea | 1 |
| 10 | 580-0001-A | Battery, Alkaline, AA 1.5V | ea | 2 |
| 11 | 170-10 | Paper, Lens Cleaning | pk | 1 |
| 12 | 830-0007-0 | Manual, Operator's | ea | 1 |
| 13 | 830-0020-0 | QRG | ea | 1 |
| 14 | A3144267 | Strap, Case Carrying | ea | 1 |
| 15 | A3187392 | Case, Soft Carrying | ea | 1 |
| 16 | A3144422 | Eyecup Assembly | ea | 2 |
| Optional | | | | |
| 18 | A3256368 | Mount Assembly, Helmet | ea | 1 |
| 19 | A3187430 | Compass, Magnetic | ea | 1 |
| 20 | A3187441 | Lens, Infrared Spot/Flood | ea | 1 |
| 21 | A3256391 | Lens, Magnifier 3X | ea | 1 |
| 22 | AA-473000-0499X | Lens, Magnifier 5X | ea | 1 |

Table 2-1. Part Identification

Major Component Description:

- A. Goggle Assembly. The goggle assembly consists of four primary sub-assemblies; a simple objective lens, a wired housing assembly, an image intensifier assembly (not shown) and a rear cover assembly. The AN/PVS-7B contains a GEN II image intensifier. The AN/PVS-7D contains a GEN III image intensifier. The wired housing assembly contains a built-in battery compartment, attached battery cap and the RESET/OFF-ON-IR/PULL switch.
- B. Head mount Assembly. The adjustable, cushioned head mount assembly secures the goggle to the operator's head for night viewing providing freehand support for use with a weapon, protective mask or other purposes. The thin brow pad (used for larger heads) comes attached to the head mount and the thick or medium brow pads (for smaller heads) are stored in the carrying case.
- C. Carrying Case. The canvas carrying case is provided for transportation and protection of the PVS-7, head mount assembly, batteries and accessories. Two ALICE clips are provided for belt attachment. A carrying case strap is also provided which can be attached to the two D-rings on the back of the carrying case. The case has a zipper closure.
- D. Demist Shields. The two demist shields are used to prevent the eyepiece lenses from becoming fogged.
- E. Sacrificial Window. A replaceable sacrificial window is supplied to protect the objective lens during operation in adverse conditions.
- F. IR Spot/Flood Lens. This item focuses the IR light for a narrow beam (spot) or wide-angle (flood) beam illumination (Optional).
- G. Compass. This item enables the operator to see azimuth readings in the goggle's illumination viewing area (Optional).
- I. Optional Equipment. Optional equipment includes demist shields, sacrificial window, compass, helmet mount assembly and an IR spot/flood lens which focuses the IR light for a narrow beam (spot) or wide angle (flood) beam illumination. Also optional is a shipping and storage case. The PVS-7 may be supplied in hard shipping and storage case. Batteries may be stored in the shipping and storage case.

System Capabilities:

The PVS-7 is a hand-held, head mounted or helmet mounted night vision system that enables walking, driving, 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 straps), fore-and-aft adjustment, objective lens focus, eyepiece focus and eye span distance adjustment. The goggle is also equipped with an infrared light-emitting diode (LED) and a low battery indicator. The goggle automatically shuts off when disconnected from the head mount. There is also a high light cutoff feature that shuts off power to the goggle when it is exposed to high levels of light for 70 (\pm 30) seconds.

System Specifications:

| ITEM | LIMITS |
|-----------------------------------|--|
| Operator Adjustment Limits | |
| Interpupillary Distance | 55 to 71 mm |
| Diopter Focus | +2 to -6 diopters |
| Objective Focus | 25 cm to infinity |
| Electrical Data | |
| Power Source | Battery (3V DC max.) |
| Battery Requirements | 2 AA alkaline or 2 AA lithium 1 Lithium (BA-5567/U) |

Table 2-2. System Specifications

| ITEM | LIMITS |
|---------------------------|--|
| Mechanical Data | |
| Shipping and Storage Case | 17" x 12" x 7" (L x W x H) Weight: 6.7 lbs. |
| Soft Carrying Case | Approx. (8"W x 9"D x 14"H) |
| Goggle (w/o accessories) | Weight: 1.5 lbs. |
| Optical Data | |
| Magnification | 1.0X |
| Field of View | 40° |
| Diopter Focus | +2 to -6 diopters |
| Focus Range | 25 cm (9.8") to infinity |
| Environmental Data | |
| Operating Temperature | -51°C to +49°C |
| Storage Temperature | -51°C to +85°C |
| Illumination Required | Overcast starlight to moonlight |
| Immersion | 1 meter for 30 min. |

Table 2-2. System Specifications (cont.)

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CHAPTER 3: PRINCIPLES OF OPERATION

Mechanical Functions:

Mechanical adjustments of the PVS-7 allow for physical differences between individual operators using the system. The goggle's functions include the power switch, interpupillary adjustment, release latch, eye relief adjustment, diopter adjustment, IR spot/flood focus (optional), compass illumination (optional), and objective lens focus. The mechanical controls are identified in Figure 3-1.

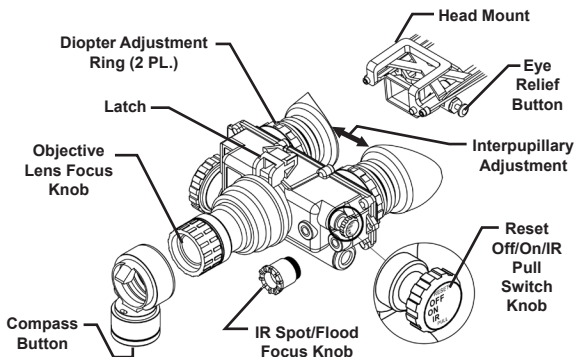


Figure 3-1. Mechanical Controls for the PVS-7

Optical Functions:

The optical functions include an objective lens, image intensifier, a collimator lens and two eyepieces (Figure 3-2). The objective lens collects light reflected from the night scene by the moon, stars, or night sky and inverts the image and focuses that image on the image intensifier.

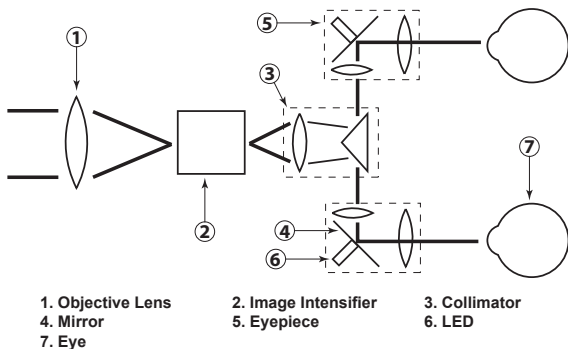


Figure 3-2. Optical Function Diagram

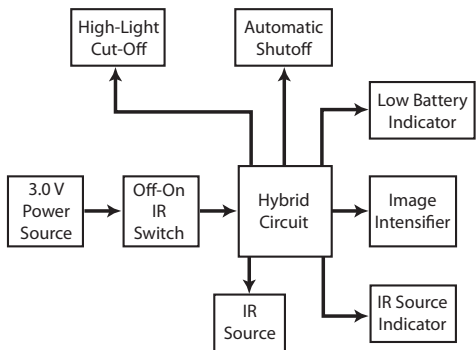


Figure 3-3. Electrical Function of the PVS-7

Electrical Functions:

A. Power Source. The electronic circuit is powered by replaceable batteries – either a 3.0 volt lithium battery (BA-5567/U) or two AA 1.5 volt alkaline batteries (BA-3058/U).

B. Power from the batteries is supplied to the components through the RESET/OFF-ON-IR/PULL switch as follows:

RESET/OFF Position: With the switch in the OFF position, the circuit is not energized either to the image intensifier or the IR illuminator. Also, turn the switch to this position to reset after automatic shutoff or high light cutoff.

ON Position: Power is drawn from the battery compartment to energize the goggle. When the voltage drops to 2.4 Vdc, a low battery indicator at the right eyepiece blinks indicating approximately 30 minutes of operating time.

IR/PULL Position: Power is drawn from the battery compartment to energize the goggle and IR light source and a steady red indicator light in the left eyepiece. The IR is momentarily turned on by turning the switch past ON without pulling the knob.

C. Automatic Shutoff. When the goggle is removed from the head mount or helmet mount while in operation, it will automatically shut off. This prevents enemy detection of the green glow of the image intensifier. To turn the goggle back on, turn the switch to RESET/OFF and then to ON again.

D. High Light Cutoff. The goggle will automatically shut off after 70 (\pm 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 cutoff function unless focused directly on the high light detector located on the front of the goggle. To turn the goggle back on, turn the switch to RESET/OFF position and then to ON again.

Consumable Items:

The following items listed are recommended for operator maintenance:

1. Lens Paper
2. Cotton Swabs
3. Alcohol

CHAPTER 4: PREPARATION FOR USE

General:

This section contains instructions for installing and attaching various components and accessories to the PVS-7 for operation under normal conditions.

Installation of Batteries:

WARNING

THE LITHIUM BATTERY CONTAINS SULPHUR DIOXIDE GAS UNDER PRESSURE. DO NOT HEAT, PUNCTURE, DISASSEMBLE, SHORT CIRCUIT, ATTEMPT TO RECHARGE OR OTHERWISE TAMPER WITH THE BATTERIES. TURN OFF EQUIPMENT IF BATTERY COMPARTMENT BECOMES UNDULY HOT. IF POSSIBLE, WAIT UNTIL THE BATTERIES HAVE COOLED BEFORE REMOVING THEM.

WARNING

DO NOT MIX ALKALINE AND LITHIUM BATTERIES. DO NOT MIX OLD AND NEW BATTERIES. DO NOT MIX BRANDS OF BATTERIES. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH OR INJURY OR IMPOSITION OF LONG-TERM HEALTH HAZARDS.

WARNING

INSPECT BATTERIES FOR BULGING PRIOR TO USE. IF THE BATTERY SHOWS SIGNS OF BULGING, DO NOT USE. AA 1.5 V BATTERIES MAY CONTAIN LITHIUM OR MERCURY THAT COULD EMIT SULFUR DIOXIDE AND MAY EXPLODE IF HANDLED IMPROPERLY. DO NOT SHORT-CIRCUIT, INCINERATE, MUTILATE, OR ATTEMPT TO CHARGE THESE BATTERIES (UNLESS DESIGNED TO BE RECHARGED). DO NOT CARRY BATTERIES LOOSELY IN POCKETS OR CASES WHERE THEY COULD SHORT CIRCUIT AND CAUSE DAMAGE OR INJURY. DO NOT REPLACE BATTERIES IN A POTENTIALLY EXPLOSIVE ATMOSPHERE. CONTACT SPARKING MAY OCCUR WHILE INSTALLING OR REMOVING BATTERIES AND CAUSE AN EXPLOSION. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH OR INJURY OR IMPOSITION OF LONG-TERM HEALTH HAZARDS. CONSULT LOCAL PROPERTY DISPOSAL OFFICER AND DLSC HANDBOOK 41601 FOR PROPER BATTERY DISPOSAL.

WARNING

IF YOU INHALE SULPHUR DIOXIDE, SEEK MEDICAL ATTENTION.

CAUTION

TO PROTECT THE IMAGE INTENSIFIER, KEEP THE LENS CAP ON THE OBJECTIVE LENS WHEN THE GOGGLE IS NOT IN USE OR WHEN CHECKED OUT IN DAYLIGHT CONDITIONS.

CAUTION

BATTERIES HAVE SAFETY VENTS TO PREVENT EXPLOSION. WHEN THEY ARE VENTING GAS, YOU WILL SMELL IT OR HEAR IT. WHEN THE SAFETY VENTS HAVE OPERATED, THE BATTERIES MUST BE HANDLED WITH EXTREME CARE BECAUSE OF HEAT.

The PVS-7 will operate with either of the two battery types identified in Table 4-1. AA Batteries are supplied with the PVS-7.

| Battery Type | Typical use hours |
|-----------------------------------|--------------------------|
| Lithium (3v) (BA-5567/U) | 22 Hours |
| AA Alkaline (1.5v) (BA-3058/U) | 50 Hours |
| AA Lithium (1.5v) (L91) | 60 Hours |

Table 4-1. Estimated Battery Life

NOTE

THE BATTERY DATA IN TABLE 4-1 REPRESENTS OPERATION UNDER ROOM TEMPERATURE. WHEN OPERATING UNDER COOLER CONDITIONS, BATTERY LIFE WILL DECREASE.

WARNING

MAKE CERTAIN THE RESET/OFF-ON-IR/PULL SWITCH IS IN THE OFF POSITION BEFORE INSTALLING BATTERIES.

Install either two (2) AA batteries or one (1) BA-5567/U lithium battery as follows. Do not attempt to mix battery types in the compartment.

1. Remove the battery cap by turning it counterclockwise.
2. Check to ensure the o-ring is present. If not, replace it.
3. Observe polarity, as indicated on the outside of the battery compartment, and insert either two AA, 1.5 volt batteries or one 3.0 volt BA-5567 lithium battery into the battery compartment, plus (+) end first.
4. Replace battery cap by pushing and turning it clockwise. Tighten it firmly to ensure a watertight seal.

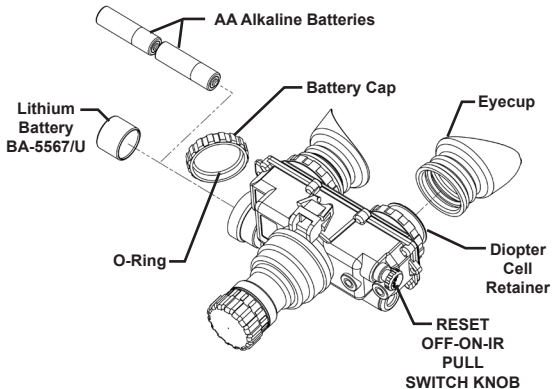


Figure 4-1. Battery and Eyecup Installation

Installation of the Eyecups:

Perform the following procedure to install the eyecups onto the PVS-7. Refer to Figure 4-1.

1. Carefully press each eyecup over the diopter cell retainer.
2. Rotate each eyecup into proper viewing position. Adjust for best eye fit. The eyecups must seal around your eyes and prevent the green glow from escaping.

Installation of the Demist Shields:

Perform the following procedure to install the demist shields on the diopter lenses. Refer to Figure 4-2.

CAUTION

IF THE DEMISTING SHIELDS NEED TO BE CLEANED, MAKE SURE THE SHIELDS ARE DRY AND USE DRY LENS PAPER. IF THE DEMIST SHIELDS ARE WIPED WHILE WET OR WITH WET LENS PAPER, YOU WILL DAMAGE THE COATING.

NOTE

IF INCLEMENT OPERATING CONDITIONS ARE KNOWN TO EXIST (E.G. SIGNIFICANT TEMPERATURE CHANGE AND HIGH HUMIDITY), INSTALL THE DEMIST SHIELDS TO MINIMIZE DIOPTRER LENS FOG PRIOR TO EXECUTION OF MISSION.

1. Carefully remove the eyecups.
2. Carefully press a demist shield onto each eyepiece until it snaps into place. Be careful not to smudge the eyepieces or demist shields.
3. Replace the eyecups.

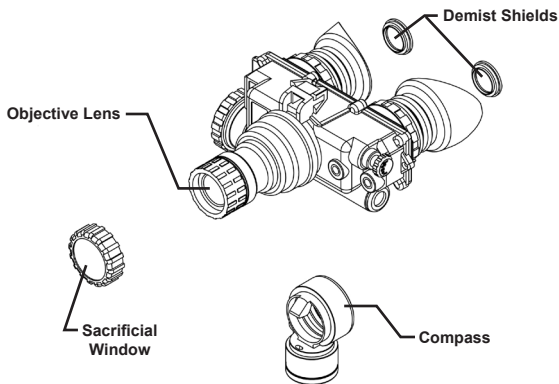


Figure 4-2. Installation of Demist Shields and Sacrificial Window

Installation of the Sacrificial Window:

Perform the following procedure to install the sacrificial window. Refer to Figure 4-2.

WARNING

IF ADVERSE OPERATING CONDITIONS (DUST OR SAND), ARE KNOWN TO EXIST, ATTACH THE SACRIFICIAL WINDOW TO PROTECT THE OBJECTIVE LENS FROM SCRATCHES OR OTHER DAMAGE.

1. If the compass assembly or lens cap is in place, remove it.
2. Carefully push the sacrificial window over the objective lens until it stops. Turn the sacrificial window clockwise until it snaps into place.

Installation of the Compass Assembly:

NOTE

**PREPARE THE PVS-7 FOR OPERATION.
ENSURE THE TETHERING CORD IS SECURED
TO THE COMPASS AND CLOTHING BEFORE
INSTALLING.**

1. If the sacrificial window or lens cap is in place, remove it.
2. Turn the PVS-7 on.
3. Rotate the objective lens focus completely counterclockwise (while looking through the goggle).
4. Press the compass assembly onto the objective lens at an angle using your left hand. Slowly turn the compass assembly counterclockwise until it is in the vertical position (with compass illumination button pointing down). See Figure 4-3.
5. Ensure that the compass fits tightly to the PVS-7.

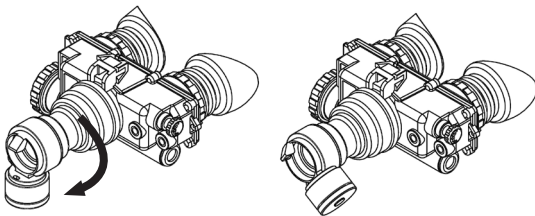


Figure 4-3. Compass Installation

NOTE

**THE O-RING MUST BE IN PLACE IN THE
COMPASS ASSEMBLY IN ORDER FOR THE
COMPASS TO FIT PROPERLY.**

Installation of the IR Spot/Flood Lens:

Press the IR spot/flood lens over the IR source until it is tight against the goggle. Refer to Figure 4-4.

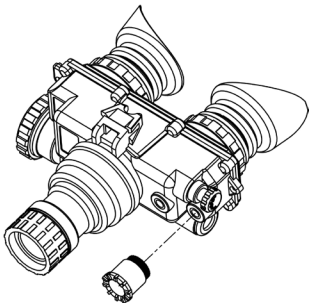


Figure 4-4. IR Spot/Flood Lens Installation

Installation and Adjustment of the Head Mount Assembly:

Perform the following procedures for putting on the head mount.

NOTE

**DO NOT PUT ON THE HEAD MOUNT WHILE
THE PVS-7 IS ATTACHED TO IT.**

1. Prior to putting on the head mount, loosen the four chin straps so the ends of each strap are approximately two inches from the sliding bar buckles (See Figure 4-5).
2. Snap the front and rear snaps in place.
3. With both hands, grasp the neck pad assembly 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 rear chin cup assembly straps until you feel light pressure against your chin. (DO NOT TIGHTEN.)

NOTE

IF THE HEAD MOUNT IS TOO LOOSE, REMOVE THE ATTACHED THIN BROW PAD AND REPLACE WITH THE MEDIUM OR LARGE BROW PAD, STORED IN THE CARRYING CASE.

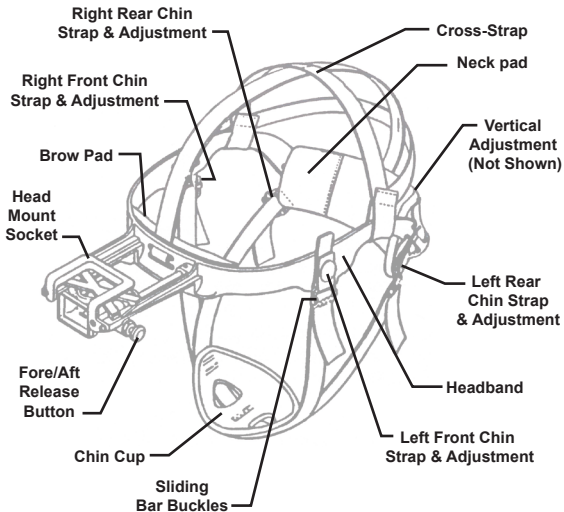


Figure 4-5. PVS-7 Head Mount Adjustments

5. Maintain the position of the chin cup and remove any slack from the front and rear chin straps. (DO NOT TIGHTEN).
6. Ensure that the cross-strap assembly is not twisted and remove slack by adjusting the vertical adjustment strap at the neck pad.
7. Adjust chin strap and vertical adjustment until the chin cup and headband assembly are in comfortable but firm position.

Installing the Head Mount Assembly with the PASGT Helmet:

Install the head mount assembly as outlined previously in this chapter.

Installing the Head Mount Assembly with the M1 Helmet:

Install the head mount assembly as outlined previously in this chapter.

Installation of Head Mount Assembly with Protective Mask:

Perform the following procedures for putting on the head mount with a protective mask. It may be necessary to remove the brow pad when wearing the head mount over a protective mask.

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

WARNING

WHEN INSTALLING THE HEAD MOUNT OVER THE PROTECTIVE MASK, BE CAREFUL NOT TO BREAK THE PROTECTIVE MASK SEAL AROUND YOUR FACE.

2. Install the head mount assembly as outlined in this chapter.

NOTE

IT MAY BE NECESSARY TO REMOVE THE BROW PAD WHEN WEARING THE HEAD MOUNT OVER A PROTECTIVE MASK.

Installing the Helmet Mount Assembly (Optional) to the PASGT Helmet:

1. Remove mount assembly from the carrying case. Refer to Figure 4-7 and 4-8 for the helmet mount features.

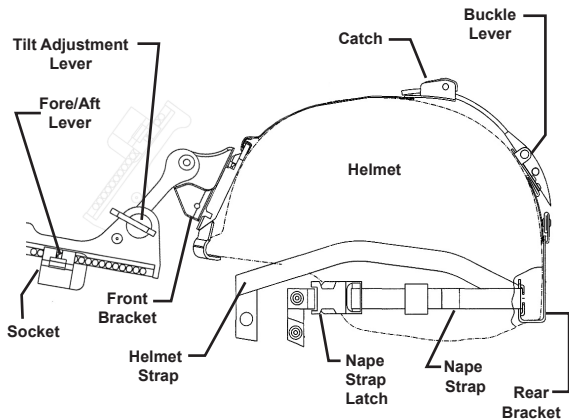


Figure 4-6. Helmet Mount Features

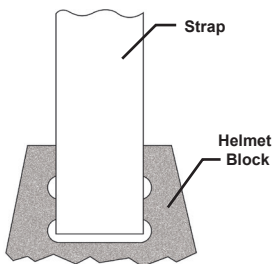


Figure 4-7. Helmet Strap Size Adjustment

2. With the catch in forward most position, place the strap over the top of the helmet, center and hook the rear bracket onto the rear of the helmet. Center the front bracket, hook in on the front of the helmet and hold it in place. (See Figure 4-6.)
3. With the buckle-lever open, take up the slack in the strap using catch. Close the buckle lever. (See Figure 4-8.)
4. Place the helmet upside down with the helmet mount facing you.

NOTE

STEPS 5 AND 6 DESCRIBE THE INSTALLATION OF THE NAPE STRAP TO THE CHINSTRAP. TO ACCOMPLISH THESE STEPS, IT MAY BE NECESSARY TO UNTHREAD THE CHINSTRAP FROM THE HELMET.

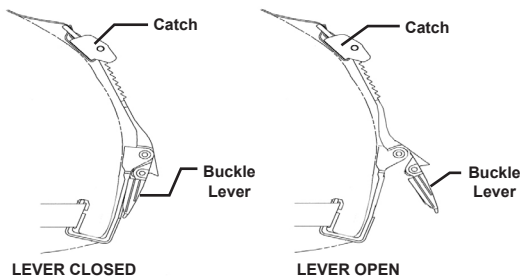


Figure 4-8. Buckle and Catch

5. Thread the chinstrap through the right end of nape strap and snap nape strap fastener tab closed. (Refer to Figure 4-9.)
6. Thread chin strap through the left end of nape strap and snap nape strap fastener tab closed. (Refer to Figure 4-9.)
7. Disengage the nape strap latch on the left side of the nape strap.
8. Put on the helmet.

- Engage the nape strap at the nape strap latch. Tension the chinstrap and nape strap for a secure and stable fit.

NOTE

THE BROW OF THE HELMET SHOULD BE PARALLEL WITH THE GROUND.

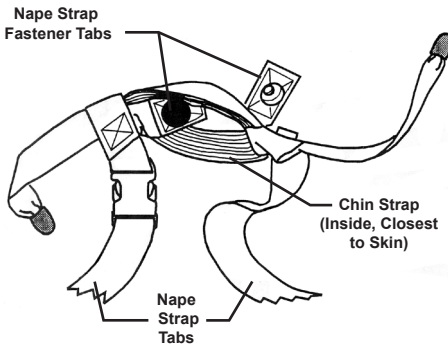


Figure 4-9. Nape Strap Installation

Installation of the Quick Disconnect Helmet Mount Assembly:

- Remove the helmet mount assembly from the carrying case. Make sure the helmet mount is complete. Refer to Figure 4-10 for the helmet mount components and features.
- If the mount assembly and clip/strap assembly are connected, remove the mount assembly. To do this, push the release lever at the top center of the mount and slide the two assemblies apart.
- Adjust the clip/strap assembly to fit the helmet size being used.

CAUTION

TO PREVENT POSSIBLE EQUIPMENT DAMAGE, REMOVE BOTH THE GOGGLES AND THE MOUNT ASSEMBLY FROM THE HELMET WHEN NOT REQUIRED FOR IMMEDIATE USE. THE CLIP/STRAP ASSEMBLY CAN REMAIN IN PLACE ON THE HELMET.

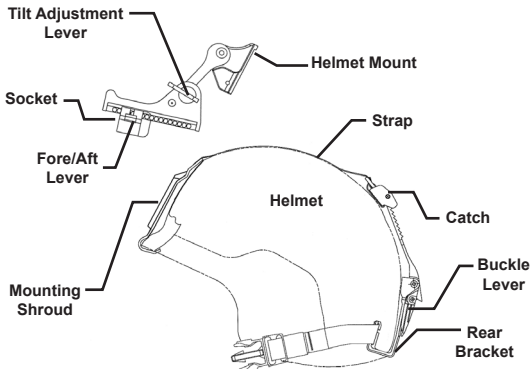


Figure 4-10. Quick Disconnect Helmet Mount Features

4. With the catch in the most extended position, place the strap over the top of the helmet, center and hook the rear bracket onto the rear of the helmet. Center the front bracket hook on the front of the helmet and hold it in place (see Figure 4-11).
5. With the buckle lever open, take up the slack in the clip/strap assembly using the catch. Close the buckle lever (see Figure 4-9).
6. If the PASGT helmet has its cloth cover and camouflage strap installed, it will be necessary to slide the camouflage strap up (30° - 45° angle) at the front of the helmet (see Figure 4-11).

7. Disengage the nape strap latch on the left side of the nape strap.
8. Put on the helmet. Do not fasten the helmet chinstrap.

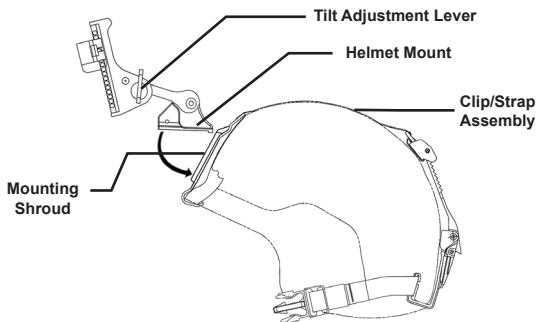


Figure 4-11. Attaching the Mount Assembly to the Clip/Strap Assembly

9. 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.
10. To install the mount assembly into the clip/strap assembly, place it over the top of the mounting clip and slide it down until it locks into place with a click (see Figure 4-11).

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CHAPTER 5: OPERATION INSTRUCTIONS

General:

This section contains operating procedures for using the PVS-7 as a hand-held, head mounted or helmet mounted goggle.

CAUTION

THE PVS-7 IS A PRECISION ELECTRO-OPTICAL INSTRUMENT AND MUST BE HANDLED CAREFULLY AT ALL TIMES.

Controls and Indicators:

The controls and indicators for the PVS-7 are shown or described in Figure 5-1 and Table 5-1.

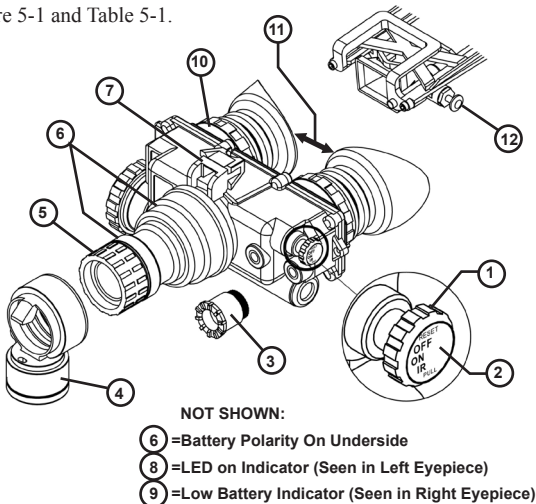


Figure 5-1. PVS-7 Controls and Indicators

| Item | Controls and Indicators | Functions |
|---|------------------------------------|---|
| 1 | RESET/OFF ON IR/PULL | Same as system OFF. Also resets goggle after automatic shutoff or highlight cutoff. Goggle activated. Pull switch out and turn clockwise to activate goggle and IR. Illuminates led indicator in left eyepiece. |
| <p><u>NOTE</u></p> <p>PVS-7's contain an additional momentary IR function. For momentary IR, continue to turn the switch knob clockwise, past ON and without pulling. The switch will return to the ON position when released.</p> | | |
| 2 | RESET/OFF- ON-IR/PULL | Defines the switch positions. |
| 3 | IR Spot/Flood Lens | Focuses the IR light for a narrow beam (spot) or wide angle (flood) beam illumination. |
| 4 | Compass Illuminator Button | Pressing this button activates the compass illuminator LED that makes compass readings visible in the goggle viewing area. Additional pressure will make the image brighter. The image dis-appears when button is released. |
| 5 | Objective Focus | Focuses objective lens. Adjusts for sharpest image of viewed object. |
| 6 | Battery Polarity Indicator | This feature, molded into the PVS-7, shows the proper orientation of the AA (BA-3058/U or L91) and (BA-5567/U) batteries. |

Table 5-1. PVS-7 Controls and Indicators

| Item | Controls and Indicators | Functions |
|-------------|--------------------------------|--|
| 7 | Latch | Latch used for separation of goggle assembly from head mount/helmet mount assembly. |
| 8 | Red LED On | When illuminated (left eyepiece) it indicates that the IR illumination is on. |
| 9 | Yellow LED On | When illuminated (right eyepiece) it indicates a low battery condition with less than 30 minutes of battery life remaining. |
| 10 | Diopter Adjustment Ring | Focuses eyepiece lens for each eye without the need for glasses. Adjusts for sharpest image of intensifier screen. |
| 11 | Interpupillary Adjustment | Adjusts for distance between eyes by sliding the eyepieces either together or apart so each eye can observe the entire field at the same time. |
| 12 | Eye Relief | Adjusts the distance between your eyes and the goggle. |

Table 5-1. PVS-7 Controls and Indicators (cont.)

Head Mounted Operation:

Perform the following procedures for head mounted operation.

CAUTION

OPERATE THE THE PVS-7 ONLY UNDER DARK-ENED CONDITIONS OR USE THE OBJECTIVE LENS CAP WHEN THE UNIT IS EXPOSED TO HIGH LIGHT CONDITIONS.

NOTE

PROPER OBJECTIVE FOCUS CANNOT BE OBTAINED WHILE THE OBJECTIVE LENS CAP WITH PINHOLE IS COVERING THE OBJECTIVE LENS. PROPER OBJECTIVE FOCUS MUST BE DONE IN THE DARK WITH THE OBJECTIVE LENS COVER REMOVED.

1. Ensure that the batteries are installed.
2. Put on the head mount.

NOTE

TO MAKE IT EASIER TO ALIGN THE GOGGLE, EYECUPS AND DIOPTER EYEPIECES TO THE EYES, DEPRESS THE SOCKET-RELEASE BUTTON AND SLIDE THE HEAD MOUNT SOCKET ALL THE WAY FORWARD BEFORE ATTACHING THE GOGGLES.

3. Align the PVS-7's latch to the head mount socket (See Figure 5-1,7). Press and hold down the latch lever while installing the goggle into the head mount socket. Release the latch when the goggle is fully engaged in the socket. After releasing the latch lever, pull the goggle away from the mount to ensure that the goggle is engaged and latched securely.

4. Set your eye relief by depressing the socket-release button and move the PVS-7 back toward your eyes until the eyecups comfortably seal around your eyes.
5. Turn the RESET/OFF-ON-IR/PULL switch ON.
6. Adjust the interpupillary distance (Figure 5-1, Item 12) by sliding the eyepieces together or apart so each eye can observe the entire field of view at the same time. The eyepieces adjust independently.
7. Readjust the vertical strap assembly (See Figure 4-5) for vertical adjustment of the head mount until the PVS-7 is properly aligned with your eyes.

NOTE

THE SHARPEST IMAGE WILL BE OBSERVED ONLY WHEN THE OBJECTIVE LENS AND BOTH EYEPIECES ARE PROPERLY FOCUSED. THE OBJECTIVE LENS FOCUS ADJUSTMENT IS USED TO FOCUS ON OBJECTS AT VARYING DISTANCES. THE DIOPTR ADJUSTMENT RINGS ARE USED TO FOCUS YOUR EYES (WITHOUT GLASSES) ON THE IMAGE INTENSIFIER SCREEN.

8. Fold the right eyecup over the eyepiece with your right thumb or forefinger to obstruct the view through the right eyepiece. Rotate the left diopter adjustment ring for the clearest view of the image intensifier screen.
9. Fold the left eyecup over the eyepiece with your left thumb or forefinger to obstruct the view through the left eyepiece. Rotate the right diopter adjustment ring for the clearest view on the image intensifier screen.
10. Adjust the eye relief distance by pressing the socket release button (See Figure 4-5) and sliding the PVS-7 fore or aft to obtain a full field of view of the image. Readjust the diopter rings for best image.

NOTE

ANY READJUSTMENT OF EYE RELIEF REQUIRES READJUSTMENT OF THE DIOPTRER RINGS.

11. Adjust the objective lens focus (Figure 5-1, Item 5) while observing an object until the sharpest image is obtained.

Helmet Mounted Operation:

Perform the following procedures for helmet mounted operation.

1. Ensure that batteries are installed.
2. Put on the helmet mount.
3. Place the PVS-7 in the socket of the helmet mount. (See Figure 5-2.) Set your eye relief by depressing the side button and carefully move the goggles fore or aft until the eyecups comfortably seal around the eyes. Readjust the helmet straps as required for vertical adjustment.
4. Turn power switch to ON. Adjust the tilt by using the tilt adjustment lever (Figure 5-2) until you obtain a comfortable viewing angle.
5. Adjust the interpupillary distance (Figure 5-1, Item 12) by sliding the eyepieces together or apart so each eye can observe the entire field of view at the same time. The eyepieces adjust independently. If necessary, readjust the eye relief.
6. Fold the right eyecup over the eyepiece with your right thumb or forefinger to obstruct view through the right eyepiece. Rotate the left diopter adjustment ring for the clearest view on the image intensifier screen.
7. Fold the left eyecup over the eyepiece with your left thumb or forefinger to obstruct view through the left eyepiece. Rotate the right diopter adjustment ring for the clearest view on the image intensifier screen.

NOTE

THE SHARPEST IMAGE WILL BE OBSERVED ONLY WHEN THE OBJECTIVE LENS AND BOTH EYEPIECES ARE PROPERLY FOCUSED. THE OBJECTIVE FOCUS ADJUSTMENT IS USED TO FOCUS ON OBJECTS AT VARYING DISTANCES. THE DIOPTER ADJUSTMENT RINGS ARE USED TO FOCUS YOUR EYES (WITH OR WITHOUT GLASSES) ON THE IMAGE INTENSIFIER SCREEN. THESE ADJUSTMENTS OPERATE INDEPENDENTLY AND MUST BE MADE SEPARATELY.

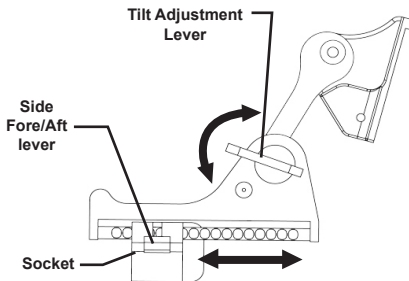


Figure 5-2. Tilt and Flip-Up Assembly Mechanisms

8. Adjust the eye relief distance by pressing the side button (See Figure 5-2) and sliding the PVS-7 fore or aft to obtain a full field of view of the image. Readjust the diopter rings for the best image.

NOTE

**ANY READJUSTMENT OF EYE RELIEF
READJUSTMENT OF THE DIOPTER RINGS.**

9. Adjust the objective focus (Figure 5-1, Item 5) while observing an object until the sharpest image is obtained.
10. To flip up, place an open hand under the goggle, grasp the goggle and rotate up and rearward until the latch is firmly engaged.
11. To flip down grasp the goggle housing and rotate down and forward until the latch is firmly engaged.
12. Turn the switch to the RESET/OFF position, then to the ON position to resume viewing.

Hand-Held Operation:

CAUTION

OPERATE THE PVS-7 UNDER DARKENED CONDITIONS ONLY OR USE THE LENS CAP TO COVER THE OBJECTIVE LENS FOR DAYLIGHT CONDITIONS.

NOTE

WHEN USING THE PVS-7 WITHOUT A MOUNTING DEVICE, MAKE SURE TO PLACE THE NECK CORD AROUND YOUR NECK.

1. Ensure that the batteries are installed.
2. Turn the RESET/OF-ON-IR/PULL switch to ON.
3. Adjust the interpupillary distance (Figure 5-1, 12) by sliding the eyepieces together or apart so each eye can observe the entire field of view at the same time. The eyepieces adjust independently.

NOTE

THE SHARPEST IMAGE WILL BE OBSERVED ONLY WHEN THE OBJECTIVE LENS AND BOTH EYEPIECES ARE PROPERLY FOCUSED. THE OBJECTIVE FOCUS ADJUSTMENT IS USED TO FOCUS ON OBJECTS AT VARYING DISTANCES. THE DIOPTRER ADJUSTMENT RINGS ARE USED TO FOCUS YOUR EYES (WITH OR WITHOUT GLASSES) ON THE IMAGE INTENSIFIER SCREEN. THESE ADJUSTMENTS OPERATE INDEPENDENTLY AND MUST BE MADE SEPARATELY.

4. Hold the PVS-7 with your left hand and fold the left eyecup over the eyepiece with your left thumb or forefinger to obstruct view through the left eyepiece. Rotate the right diopter adjustment ring for the clearest view on the image intensifier screen.
5. Hold the PVS-7 with your right hand and fold the right eyecup over the eyepiece with your right thumb or forefinger to obstruct view through the right eyepiece. Rotate the left diopter adjustment ring for the clearest view on the image intensifier screen.
6. Readjust the objective lens assembly while observing an object until the sharpest image is obtained.

Operation with Compass Assembly:

NOTE

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. Focus PVS-7 for best image clarity and focus.
2. Install the compass in vertical orientation so that readings are accurate.
3. If necessary, to more clearly view your distant object, adjust the objective focus slightly by gripping the compass and turning clockwise. Remember that compass must be in vertically oriented for best readings.
4. To view the compass through the PVS-7, grip the compass with index finger on top and thumb on illumination button on the bottom (Figure 5-1, Item 4). Press button slightly with thumb until proper brightness is obtained. The image should appear as shown in Figure 5-3.

NOTE

INCREASE BRIGHTNESS SLOWLY; IF BRIGHTNESS IS INCREASED TOO QUICKLY, EXCESSIVE BRIGHTNESS MAY BURN A TEMPORARY IMAGE INTO THE IMAGE INTENSIFIER.

THE GOGGLE MUST BE FOCUSED AT OR NEAR INFINITY FOR PROPER COMPASS OPERATION.

5. 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 PVS-7 in a level position to assure free rotation of the compass scale.

WARNING

THE COMPASS ILLUMINATOR CAN BE SEEN BY OTHERS USING NIGHT VISION DEVICES.

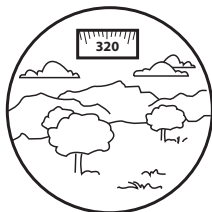


Figure 5-3. View Through Installed Compass

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 A MOUNTED PVS-7 (HEAD MOUNT OR HELMET MOUNT) CAN BE UP TO ±15° OF CORRECT ABSOLUTE MAGNETIC BEARING. THIS OCCURS MOST IN THE EAST (90°) TO WEST (270°) AND LESS IN THE NORTH (0°) TO SOUTH (360°) READING.

IF THE COMPASS IS INADVERTENTLY MAGNETIZED THIS COULD CAUSE AN ADDITIONAL 15° ERROR.

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

Using 3X or 5X Magnifier Lens Assembly:

The 3X or 5X magnifier lens assembly can be threaded directly into the 1X objective lens with the sacrificial window removed. It can also be threaded into the focus ring adapter and slipped on over the end of the objective lens.

NOTE

THE TETHERING CORD CAN BE USED TO TETHER THE MAGNIFIER TO YOUR PERSON TO PREVENT LOSING THE LENS IF IT IS DROPPED. TO USE THE TETHERING CORD, TIE THE END WITHOUT THE CLIP TIGHTLY AROUND THE MAGNIFIER AND ATTACH THE CLIP TO A BUTTONHOLE, BELT LOOP OR OTHER CONVENIENT POINT.

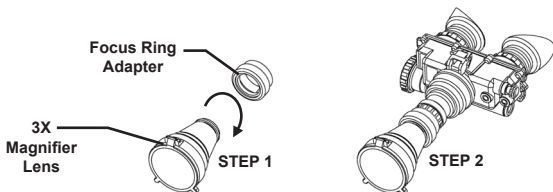


Figure 5-4. 3X Magnifier Lens Assembly with Focus Ring Adapter

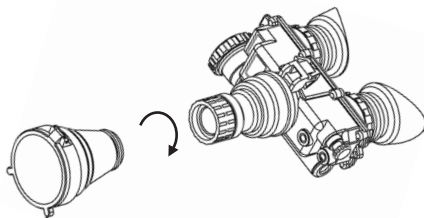


Figure 5-5. 3X Magnifier Lens Assembly Without Focus Ring Adapter

Infrared (IR) Operations:

WARNING

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.

1. Pull the RESET/OFF-ON-IR/PULL switch knob (Figure 5-1, Item 1) out and rotate clockwise two clicks to the IR position. With the PVS-7 held to the eyes, observe that a red light appears in the left eyepiece. This indicates that the IR illuminator is operating. When spring loaded momentary IR position is used, the illuminator should only flash on.
2. To operate with the IR Spot/Flood Lens: Pull the RESET/OFF-ON-IR/PULL switch knob out and rotate clock-wise to the IR position as described above. With the PVS-7 held to the eyes, turn the IR spot/flood until you have achieved the optimum illumination of the desired distance. To return to the non-IR illumination mode, turn the RESET/OFF-ON-IR/PULL switch counterclockwise to the ON position. Observe that the red indicator disappears.

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CHAPTER 6: PREPARATION FOR STOWAGE

Shutdown:

Perform the following procedures to shut down the PVS-7

1. Turn the RESET/OFF-ON-IR/PULL switch to the OFF position.
2. Remove the PVS-7 from the head mount or helmet mount (if so equipped) by depressing the latch lever (Figure 5-1, Item 7) and removing the PVS-7 from the head mount socket.

Packaging After Use:

1. Unscrew the battery cap and remove the batteries.
2. Inspect the battery compartment for corrosion or moisture. Clean and dry if necessary.
3. Replace the battery cap.
4. Remove the demist shields, sacrificial window or compass assembly if installed. Install the lens cap.

NOTE

PRIOR TO PLACING THE PVS-7 ASSEMBLY INTO THE CARRYING CASE, ENSURE THE GOGGLE AND CASE ARE FREE OF DIRT, DUST AND MOISTURE.

5. Place demist shields, batteries, carrying case strap, lens paper, sacrificial window, manual, brow pads, head mount, helmet mount, compass and other appropriate accessories in the shallow side pocket of the interior.
6. Be sure to secure the closure of the side pocket with the velcro sewn in place for this purpose.
7. Place the head mount in the larger side pocket of the interior of the bag. The head mount socket is placed down (first to enter the soft carrying case) and the neck pad facing in towards the interior of the case. You will note that this side pocket does not have velcro.
8. Place the PVS-7 (objective lens down) into the center of the carrying case.
9. Be sure the soft carrying case is zipped closed before moving.

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CHAPTER 7: MAINTENANCE INSTRUCTIONS

Preventive Maintenance Checks and Services (PMCS):

PMCS is performed daily when the PVS-7 is in use to ensure that the sight is ready at all times. Procedures are a systematic inspection of the goggle that will enable you to discover defects that might cause the PVS-7 to fail on a mission.

Frequency of Performing PMCS:

The frequency of performing PMCS is as follows:

- A. Daily when the PVS-7 is in use.
- B. Weekly when in a standby condition.
- C. Semi-annually when stored in depot or administrative stowage.

Performance of PMCS:

Preventive maintenance checks and services shall be performed following the sequence number and inspection procedures indicated in Table 7-1 and Table 7-2.

| # | Item | Inspection Procedure Before Operation |
|---|---------------|--|
| 1 | Goggle | Check for completeness, including accessories. Check for dirt and moisture on external surfaces and parts. Clean and dry with lint-free cloth. |
| 2 | Shipping Case | Check for dirt, moisture and mildew. Clean with mild detergent and water. Dry with lint-free cloth. |
| 3 | Carrying Case | Check for dirt, moisture and mildew. Clean with mild detergent and water. Dry with lint-free cloth. |

Table 7-1. Inspection Procedures Before Operation

| # | Item | Inspection Procedure Before Operation |
|----|-----------------------------|--|
| 4 | Batteries | Remove batteries. Check for corrosion on terminals and dirt or moisture in battery cap. Clean battery cap with dry cloth. Replace batteries if corroded. |
| 5 | Lenses | Check for dirt and moisture. Clean with lens paper or brush and/or alcohol and cotton swabs. |
| 6 | Eyecups | Check for dirt, dust, cracked or torn cups. Inspect for bent, broken or improperly fitting eyecup. If necessary, clean with water. |
| 7 | Interpupillary Adjustment | Slide each eyepiece back and forth to check for binding or looseness. |
| 8 | Neck Cord & Lens Cap | Check for cracked, torn or missing lens cap. Inspect cord for cuts, damage or frayed ends. Tie ends again if necessary. |
| 9 | Latch | Inspect for damage. |
| 10 | RESET/OFF-ON-IR/PULL SWITCH | Remove any batteries and turn the switch from RESET/OFF to ON to IR PULL. Each position should have a definite stopping point. Inspect for broken or missing knob. |

Table 7-1. Inspection Procedures Before Operation (cont.)

| # | Item | Inspection Procedure Before Operation |
|------------------------------|-------------------------|--|
| Head Mount | | |
| 11 | Straps and Pads | Check for cuts, tears, fraying, holes, cracks or defective fasteners. |
| 12 | Socket | Check for dirt, dust or corrosion. Insert goggle latch into socket to verify secure attachment of goggle to head mount. If necessary, clean socket with water. |
| 13 | Fore and Aft Adjustment | Press the socket-release button and check for free motion. Inspect for damage. |
| Optional Helmet Mount | | |
| 14 | Straps | Check for cuts, tears, fraying, holes, cracks or defective fasteners. |
| 15 | Socket | Check for dirt, dust or corrosion. Insert goggle latch into socket to verify secure attachment of goggle to head mount. If necessary, clean socket with water. |
| 16 | Fore and Aft Adjustment | Press the socket-release button and check for free motion. Inspect for damage. |
| 17 | Tilt Adjustment | Verify knob locks tilt in place and full range of tilt is available with knob loosened. |

Table 7-1. Inspection Procedures Before Operation (cont.)

| # | Item | Inspection Procedure Before Operation |
|--|-------------------------|---|
| 18 | Soft Carrying Case | Remove all items and shake out loose dirt for foreign material. Inspect for tears, cuts, excess wear or damage to mounting clips. |
| 19 | Shoulder Strap Assembly | Inspect for cuts, tears, or excess wear of damaged clips. |
| <p><u>NOTE</u></p> <p>Damaged optional items (compass, IR spot/flood, sacrificial window, demist shields) 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.</p> | | |
| Accessory Items | | |
| 20 | Demist Shields | Inspect for dirt, dust, scratches or damage. If necessary, clean when shields are dry and with dry lens paper only. |
| 21 | IR Spot/Flood Lens | Rotate IR focus lens to ensure free movement. |
| 22 | Compass Assembly | Inspect for dirt, dust, scratches or damage. If necessary, clean with water and dry with lens paper. Install compass assembly and turn on goggle. When the illumination button is depressed, the compass should be visible. |

Table 7-1. Inspection Procedures Before Operation (cont.)

| # | Item | Inspection Procedure Before Operation |
|----|-------------------------------|---|
| 23 | 3X / 5X Afocal Magnifier Lens | Check lens for scratches or damage. Check mating to objective lens by screwing in or pressing on with adapter installed. |

Table 7-1. Inspection Procedures Before Operation (cont.)

| # | Item | Inspection Procedure During Operation |
|---|---------------------------|---|
| 1 | Objective Lens Focus Knob | Rotate objective lens focus knob to ensure free movement (range is approximately 1/3 turn). |

Table 7-2. Inspection Procedures During Operation

Cleaning the PVS-7:

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

CAUTION

THE PVS-7 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 SHIELDS WITH LENS PAPER WHILE WET CAN DAMAGE THE COATING.

Brow Pad Replacement of the Head Mount:

Replace the brow pad when cracked, torn or contaminated. Perform the following procedure to remove and replace the brow pads.

CAUTION

**FOR PROTECTION OF THE IMAGE
INTENSIFIER, DISCONNECT THE PVS-7 FROM
THE HEAD MOUNT PRIOR TO REPLACING
BROW PADS.**

1. Firmly grasp the head mount and remove the old brow pad.
2. Gently press on the new brow pad. Lightly smooth out any wrinkles in the new brow pad.

Neck Pad Re-installation of the Head Mount:

During operation of the goggle, 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 7-1) 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.

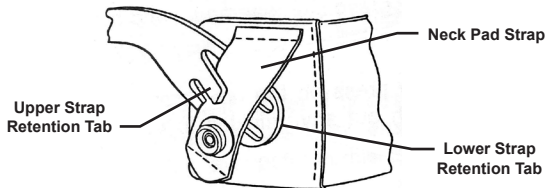


Figure 7-1. Re-installing the Neck Pad

3. Repeat steps 1 and 2 for the other side of the headband and neck pad if necessary.

Lacing the Sliding Bar Buckles of the Head Mount:

While putting on and adjusting the head mount, it is possible for a strap to slip out of a slide fastener. Perform the following procedure to replace the strap and sliding bar buckle.

1. Thread the strap from the inside of the buckle over the moveable sliding bar (see Figure 7-2). Thread the strap back through the buckle but this time under the sliding bar and over the serrated part of the buckle.

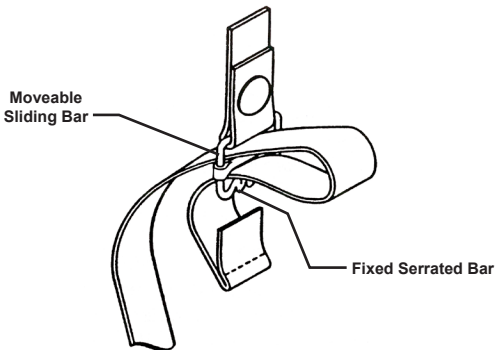


Figure 7-2. Lacing the Sliding Bar Buckles

2. Pull the strap through the buckle and tighten as necessary.
3. Repeat steps 1 and 2 for any other straps and buckles that may have come undone.

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CHAPTER 8: TROUBLESHOOTING

Troubleshooting Procedures:

Table 8-1 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 to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your maintainer.

| Malfunction | Test for Inspection | Corrective Action |
|---------------------------------|---|---|
| Goggle fails to activate. | Visual. Check for defective, missing or improperly installed battery(ies). | Turn switch to RESET/OFF position and then ON. Replace battery(ies) or install correctly. If PVS-7 still fails to activate, refer to higher level of maintenance. |
| IR indicator fails to activate. | Visual. | Refer to higher level of maintenance. |
| Poor image quality. | Check objective lens or eyepiece focus. Check for fogging or dirt on lens. | Refocus. Clean lens surfaces. If image quality is still poor, refer to higher level of maintenance. |

Table 8-1. Troubleshooting

| Malfunction | Test for Inspection | Corrective Action |
|--|--|--|
| Light visible around eyecup. | Check eye relief distance. Check eyecup for resiliency. | Readjust for proper eye relief distance. If eyecups defective, refer to higher level of maintenance. |
| Diopter adjustment cannot be made. | Check to see if the diopter adjustment ring is bent or broken. | If damaged, refer to higher level of maintenance. |
| Interpupillary adjustment cannot be made (left & right eye). | Defective eyepiece assembly. | Refer to higher level of maintenance. |
| Battery cap difficult to turn. | Check for dirt or grit in threads. Visually inspect for the presence of an o-ring Check for damaged battery cap or threads on battery compartment. | Clean. If o-ring is missing, refer to higher level of maintenance. If damaged, refer to higher level of maintenance. |
| PVS-7 does not shut off when removed from head mount. | Visual. | Return both the PVS-7 and head mount to higher level of maintenance. |

Table 8-1. Troubleshooting (cont.)

| Malfunction | Test for Inspection | Corrective Action |
|--|--|---|
| Head straps cannot be tightened. | Check for defective buckles, fasteners or straps. | If damaged, refer to higher level of maintenance. |
| Head mount or helmet mount socket and goggle do not catch. | Check socket or latch for dirt. Check socket or latch for damage. | Clean socket and latch If damaged, return both head mount or helmet mount and PVS-7 for higher level of maintenance. |
| Helmet mount will not tighten to helmet. | Visual. | If damaged, refer to higher level of maintenance. |
| IR spot/flood lens will not adjust. | Visual. | Refer to higher level of maintenance. |
| Compass does not illuminate. | Visual. | Refer to higher level of maintenance. |
| Compass will not stay on the PVS-7. | Visual. | Possibly missing an o-ring. Refer to higher level of maintenance. |

Table 8-1. Troubleshooting (cont.)

| Malfunction | Test for Inspection | Corrective Action |
|---|---|---|
| Compass display is not clear. | Visual. | Make sure the PVS-7 is focused for infinity. If so, and compass display is still not clear, refer to higher level of maintenance. |
| PVS-7 does not shut off when exposed to high light. | Perform the following test under daylight or bright room light Place the lens cap on the objective lens. Turn PVS-7 on and observe that it shut off within 70(\pm 30) seconds after energized Turn goggle off and then on to re-energize. | If damaged, refer to higher level of maintenance. |

Table 8-1. Troubleshooting (cont.)

GLOSSARY

Black Spots

These are cosmetic blemishes in the image intensifier of the PVS-7 or dirt or debris between the lenses.

Bright Spots

These can be defects in the image area produced by the PVS-7. This condition is caused by a flaw in the film on the microchannel plate. A bright spot is a small, non-uniform, 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 head mount to fit different head sizes. The thin brow pad (fits on a large head) comes attached to the head mount and the thick or medium (fits on a smaller head) brow pads are stored in the carrying case.

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.

Demist Shields

The two demisting shields are used to prevent the eyepiece lenses from becoming fogged.

GLOSSARY (cont.)

Diopter

A unit of measure used to define eye correction. Adjustments to the eyepiece focus ring will change diopter and provide a clearer image.

Edge Glow

There is a defect in the image area of the PVS-7. 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 that does not go away when all light is blocked from the objective lens. The position of an emission point within the image area 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 where it appears to flicker or flash.

Flickering

See “flashing”.

GLOSSARY (cont.)

Image-Intensifier Assembly

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 PVS-7. See “flashing”.

Microchannel Plate

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

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.

Sacrificial Window

A replaceable sacrificial window is supplied to protect the objective lens assembly during operation in adverse conditions.

Scintillation

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

GLOSSARY (cont.)

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.

WARRANTY

Equipment Warranties And Remedy:

Seller warrants that each newly manufactured item sold hereunder and such portion of a repaired/refurbished item as has been repaired or replaced by Seller under this warranty, shall be free from defects in material or workmanship at the time of shipment and shall perform during the warranty period in accordance with the specifications incorporated herein. Should any failure to conform to these warranties be discovered and brought to Seller's attention during the warranty period and be substantiated by examination at Seller's factory or by authorized field personnel, then at its own cost, Seller shall correct such failure by, at Seller's option.

The warranty period for newly-manufactured items shall extend 24 months from the date of shipment by Seller unless a different warranty period is agreed in writing to by Seller. The warranty period for repaired/refurbished electronic components shall extend for the unexpired warranty period or 90 days, whichever is longer, of the item repaired or replaced. The warranty period for intensifier repair/replacement shall extend six (6) months from the date of shipment by seller or the balance of original warranty, whichever is longer.

This warranty shall not extend to any item that upon examination by Seller is found to have been subject to:

- a) mishandling, misuse, negligence or accident.
- b) installation, operation or maintenance that either was not in accordance with Seller's specifications and instructions, or otherwise improper.
- c) tampering, as evidenced, for example, by broken seals, damaged packaging containers, etc.
- d) repair or alteration by anyone other than Seller without Seller's express advance written approval.

Failure to promptly notify Seller in writing upon discovery of any non-conforming item during the warranty period shall void the warranty as to such item. Buyer shall describe any such non-conformity in detail, expressing its position as to return of any article under the remedy provided herein. No returns shall be accepted without prior approval by Seller, who shall arrange for transportation. The cost of transportation for articles returned to Seller and/or redelivered to Buyer shall be paid by Seller only if Seller is responsible for repair or replacement under this warranty. In the event the item is found to conform to the specifications and requirements of this order, the transportation charges related to the return and re-delivery thereof are for the account of Buyer.

Return Material Authorization Number (RMA#):

Warranty and non-warranty items returned to Nivisys for repair or replacement require a RMA#. Email services@nivisys.com, call 915-633-8354 or fax 915-633-8529 with a serial number and detailed information to obtain a RMA#.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

NOTES

NIVISYS[™]_{LLC}

Nivisys, LLC
1120 Alza Drive
El Paso, TX 79907
USA

nivisys.com