ATN PS-22

NIGHT VISION FRONT SIGHT

ATN PS-22
OPERATOR'S MANUAL (REV. 8, JULY 2012)

operator's manual

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AMERICAN TECHNOLOGIES NETWORK CORP.

Register your product warranty online at www.atncorp.com/warranty

SAFETY SUMMARY

CAUTIONS

• The ATN PS-22 is a precision optical instrument and must be handled carefully at all times to prevent damage.

• Do not scratch the external lens surfaces or touch them with your fingers.

• To protect the image intensifier, keep the lens cap on the objective lens when the sight 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

Do not use contaminated light suppressor. They must be replaced.

EQUIPMENT LIMITATIONS

To avoid physical and equipment damage when using the ATN PS-22, 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.

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SECTION I

INTRODUCTION

1.1 GENERAL INFORMATION

1.1.1. SIGHT

This manual contains instructions for use in operating and maintaining the ATN PS-22 Night Vision Front Sight. Throughout this manual, the ATN PS-22 will be referred to as the sight or the PS-22 or NVFS.

1.1.2. REPORTS

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

American Technologies Network Corp.
1341 San Mateo Avenue
South San Francisco, CA 94080
(800) 910-2862
(650) 989-5100
(650) 875-0129 fax
www.atncorp.com
info@atncorp.com

1.1.3. STORAGE

Storage of the PS-22 should be done in the factory packing and after a thorough PMCS as outlined in Section 4 of this manual. This will ensure the sight remains in mission ready condition during storage. Battery should be stored separately from the sight.

The PS-22 should not be placed on the floor, in any area exposed to high temperatures or direct sunlight. Presence of acid and alkaline vapor, as well as of other aggressive admixtures in the air is unacceptable.

1.1.4. WARRANTY

2 YEAR PRODUCT WARRANTY

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of 2 (two) years from the date of purchase. In the event a defect that is covered by the foregoing warranty occurs during the applicable period stated above, ATN, at its option, will either repair or replace the product, and such action on the part of ATN shall be the full extent of ATN's liability, and the Customer's sole and exclusive remedy. This warranty does not cover a product (a) used in other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer of by any party other than ATN without prior written consent of ATN; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either ATN or the ATN dealer; or (e) merchandise that has been discontinued by the manufacturer and either parts or replacement units are not available due to reasons beyond the control of ATN. ATN shall not be responsible for any defects or damage that in ATN's opinion is a result from the mishandling, abuse, misuse, improper storage or improper operation, including use in conjunction with equipment which is electrically or mechanically incompatible with or of inferior quality to the product, as well as failure to maintain the environmental conditions specified by the manufacturer.**CUSTOMER IS HEREBY NOTIFIED THAT OPERATION OF THE EQUIPMENT DURING DAYLIGHT HOURS OR UNDER ANY EXCESSIVE LIGHT CONDITIONS MAY PERMANENTLY DAMAGE THE INTERNAL COMPONENTS OF THE UNIT AND SAID DAMAGE WILL NOT BE COVERED UNDER THIS WARRANTY.** This warranty is extended only to the original purchaser. Any breach of this warranty shall be waived unless the customer notifies ATN at the address noted below within the applicable warranty period.

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

LIMITATION OF LIABILITY

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

any obligation toward any third party of legal entity outside ATN and the Customer; ATN's obligations under this Agreement extend solely to the Customer.

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

PRODUCT WARRANTY REGISTRATION

In order to validate the warranty on your product, ATN must receive a completed Product Warranty Registration Card for each unit or complete warranty registration on our website at www.atncorp.com. Please complete the included form and immediately mail it to our Service Center: ATN Corporation, 1341 San Mateo Avenue, South San Francisco, CA 94080.

OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, End-user must notify ATN service department by calling **800-910-2862** or **650-989-5100** or via e-mail **service@atncorp.com** to receive a Return Merchandise Authorization number (RMA).

When returning please take or send the product, postage paid, with a copy of your sales receipt to our service center, ATN Corporation at the address noted above. All merchandise must be fully insured with the correct postage; ATN will not be responsible for improper postage or, missing or damaged merchandise during shipment.

When sending product back, please clearly mark the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, Name, Return Address, reason for service return, Contact information such as valid telephone numbers and/or e-mail address and proof of purchases that will help us to establish the valid start date of the warranty. Product merchandise returns that do not have an RMA listed may be refused or a significant delay in processing may occur.

Estimated Warranty service time is 10-20 business days. End-user/customer is responsible for postage to ATN for warranty service. ATN will cover return postage/shipping to continental USA end-users/customers after warranty repair only if product is covered by aforementioned warranty. ATN will return product after warranty service by domestic UPS ground and/or domestic mail. Any other requested, required or international shipping method the postage/shipping fee will be the responsibility of the end-user/customer.

1.2. DESCRIPTION AND DATA

1.2.1. DESCRIPTION

A. Purpose

The PS-22 is an effective night vision system that mounts forward of an existing riflescope/spotting scope (further referred to as a scope) adding night vision capabilities to daytime target acquisition platform. Advisable dayscope magnification is 1X to 6X (2.5X to 4X is optimum). The sight is installed and removed without affecting boresight (permanent boresight alignment).

NOTE

The PS-22 can be installed also forward of viewfinders of various instruments to widen operating illumination range.

B. Principle of Operation

The PS-22 operation is based on the principle of electron-optical intensification of light. The input fast catadioptric lens collects available ambient light from source such as the moon, stars and skyglow and focuses it on the image intensifier tube photocathode. The tube amplifies the light and produces the viewable image projected by the output lens from the tube screen into the dayscope lens. Thus the sight provides the capability for operator to see through the scope at night.

C. Features

The PS-22 has the following important features:

- Available with 2+, CGT, HPT or 3rd generation image intensifier tube.
- Powered by a single CR 123A battery.
- Adjusts for lens focus.
- Is mounted on MIL-STD-1913/Picatinny rail or dayscope lens.
- Equipped with remote control.
- Automatic Brightness Control System always keeps the IIT brightness level constant, even under unsteady brightness conditions.

NOTE

Automatic Brightness Control System do not protect a device from damage by bright light sources (a fire, headlights of the automobile, lanterns, etc.). Do not point the device at a bright light source.

- Is submersible to 10 m for 30 minutes.
- Filled with dry nitrogen to prevent internal fogging.

D. System Limitations

The PS-22 is an effective night vision system designed for night operations but does have following limitations:

- The sight requires some night light (moonlight, starlight, etc.) to operate. Night light is reduced by such factors as passing cloud cover and objects that produce shadows.
- The sight is less effective viewing through rain, fog, sleet, snow, smoke.
- Under starlight conditions low contrast environments (such as snow-covered territory, sandy deserts, large bodies of water or grassy hills) degrade visibility thereby disguising or masking changes in terrain.
- Under too low-light conditions the sight looses some of the resolution that it has under full moon.

TABLE 1-1. SYSTEM DATA

ITEM	DATA
Magnification	Unity (1X)
Boresight Characteristics:	
Accuracy	Factory aligned to ½ MOA or better
Retention	Permanent to within 1 MOA or better
Repeatability	Within ½ MOA
System Resolution subject to Tube Resolution:	
36 to 44 lp/mm	0.38 mrad/lp
45 to 54 lp/mm	0.30 mrad/lp
55 to 64 lp/mm	0.25 mrad/lp
Over 65 lp/mm	0.21 mrad/lp

TABLE 1-2. MECHANICAL DATA

ITEM	DATA
Dimensions without mount (Length x Width x Height)	150 mm x 80 mm x 72 mm
Weight:	
without Battery with QRM mount	0.64 kg
with Remote Control, Light Suppressor and Battery	0.7 kg
Height of the Sight Axis above Arm Rail:	
with Issued Mount	40 mm
with A.R.M.S.#19 ACOG Mount	49 mm

TABLE 1-3. ELECTRICAL DATA

ITEM	DATA
Battery	123A Lithium
Consumption Current	26 mA
Cell Life at 20 ˚C	50 hours

NOTE

CR 123A batteries are “dead” at 2.5 VDC under load.

TABLE 1-4. OPTICAL DATA

ITEM	DATA
Objective Lens Focal Length	80 mm
Objective Lens F/number	1:1.44
Focus Range	10 m to infinity
Field of View	12˚
Output Lens Exit Pupil Diameter	21 mm

TABLE 1-5. ENVIRONMENTAL DATA

ITEM	DATA
Operating Temperature	-40 to +50 ˚C
Storage Temperature	-50 to +50 ˚C
Humidity	95 %, 25 ˚C to 40 ˚C for 48 hours
Illumination Required	Natural night illumination (overcast starlight to moonlight)
Immersion	10 m for 30 minutes

1.2.2. PS-22 STANDARD COMPONENTS AND OPTIONAL EQUIPMENT

The PS-22 standard components are shown in Figure 1-1 and presented in Table 1-6.

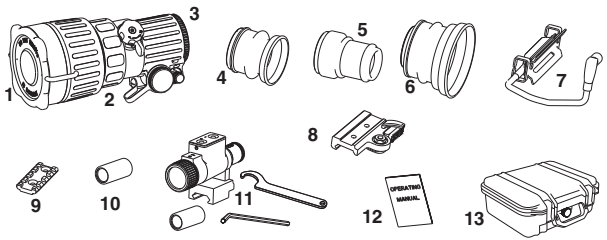


FIGURE 1-1. PS-22 STANDARD COMPONENTS

TABLE 1-6. PS-22 STANDARD COMPONENTS

ITEM	DESCRIPTION	QTY
1	Front Lens Cap	1
2	ATN PS-22 Night Vision Front Sight	1
3	Back Cap	1
4	Light Supressor for the Scopes with 30-42 mm Lens Diameter	1
5	Light Supressor for Trijicon ACOG Scopes	1
6	Light Supressor for the Scopes with 42-63 mm Lens Diameter	1
7	Remote Control	1
8	Picatinny Quick Release Mount	1
9	Picatinny Rail	1
10	CR123A Type Battery	1
11	IR Illuminator IR450 Kit	1
12	Operator's Manual	1
13	Shipping/Storage Case	1

IR450-B4 IR Illuminator Kit is shown in Figure 1-2 and listed in Table 1-7.

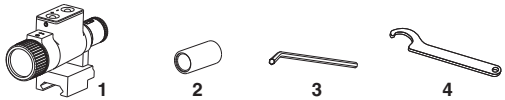


FIGURE 1-2. IR450 IR ILLUMINATOR KIT

TABLE 1-7. IR450 KIT

ITEM	DESCRIPTION	QTY
1	IR450-B4 Illuminator	1
2	CR123A Type Battery	1
3	1,5 mm Allen Key	1
4	IR450 Wrench	1

Optional items are shown in Figure 1-3 and listed in Table 1-8.

FIGURE 1-3. PS-22 OPTIONAL EQUIPMENT

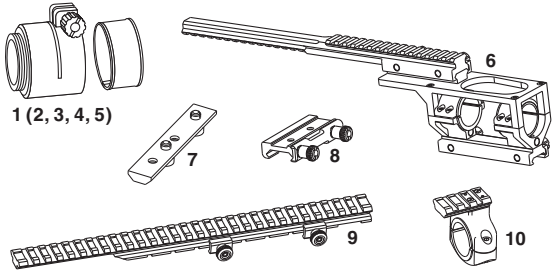


TABLE 1-8. PS-22 OPTIONAL EQUIPMENT

ITEM	DESCRIPTION	ITEM #
1	Scope Mounting System #1	ACDNPS22SM01
2	Scope Mounting System #2	ACDNPS22SM02
3	Scope Mounting System #3	ACDNPS22SM03
4	Scope Mounting System #4	ACDNPS22SM04
5	Scope Mounting System #6	ACDNPS22SM06
6	Boresight Attachment Mount (B.A.M.)	ACDNPS22BM01
7	Adapter for A.R.M.S. Mount	COWSPSAM
8	7/8" Weaver Mount	ACDNPS22WVR
9	Long Rail Adapter	ACWSLRADPT
10	Platform Ring	ACWSRTRA

SECTION II

OPERATING INSTRUCTIONS

2.1. INSTALLATION PROCEDURES

2.1.1. BATTERY INSTALLATION

CAUTION

Ensure the function switch is in the off position before installing a battery.

Install the battery as follows:

1. Unscrew the battery compartment cap.
2. Install the battery into the battery compartment. Follow battery symbol on the sight body (Figure 2-1).
3. Replace the battery compartment cap.

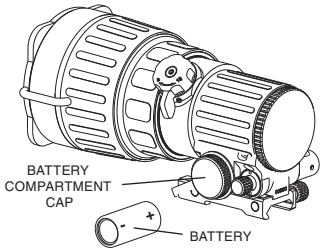


FIGURE 2-1.
BATTERY INSTALLATION

2.1.2. INSTALLATION ON MIL-STD-1913/ PICATINNY RAIL

NOTE

The optical axis of the PS-22 and the riflescope should be matched. Difference of the axes position more than 3 mm is not recommended. Measure the height of the riflescope axis above the rail. Observe Table 1-2 for the sight axis height above the rail. If the difference in the axis heights of the PS-22 and riflescope is more than 3 mm it is necessary to replace riflescope mounting rings or monoblock by proper ones.

Install the PS-22 on MIL-STD-1913 rail as follows:

1. Take off the output lens cap (Figure 1-1, 4) and put it into the storage case.
2. Remove the light suppressor from the storage case. Put it on in place of the out put lens cap.
3. To open the sight Quick Release Mount , slide the cam latch forward (Figure 2-2, arrow A) and turn the cam backward (arrow B).
4. Place the sight onto MIL-STD-1913 rail. Be sure to engage the recoil lug into the groove on the top mounting surface of the

rifle. The light suppressor should cover the riflescope objective lens.

5. Turn the cam forward pushing the latch to close the mount.
6. The Quick Release Mount may be adjusted to eliminate excessive play when mounted on the rail by using the wrench to increase/decrease the cam latch nut (Figure 2-2).

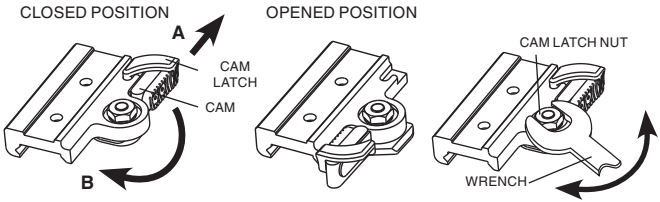


FIGURE 2-2. QUICK RELEASE MOUNT

2.1.3. ATTACHMENT TO DAY SCOPE OBJECTIVE

CAUTION

The PS-22 will not attach to those riflescopes/spotting scopes which have their focusing ring on the hood of the objective lens bell.

Optional Scope Mounting Systems are designed to install the PS-22 onto the riflescope/spotting scope objective lens.

The Scope Mounting Systems and their inserts differ in attaching diameters and are supplied on special order with account of the parameters of the scope. To choose the proper system # and its correspondent insert refer to the Table 2-1. For example, you will need the scope mounting system #1 and 25.4 mm insert in order to mount the PS-22 onto the front lens of Leupold 1.5-5x20 PR.

NOTE

If scope mounting system is used, the issued weapon mount should be removed.

TABLE 2-1. SCOPE MOUNTING SYSTEMS

SCOPE MOUNTING SYSTEM #	OBJECTIVE LENS DIAMETER (INSERT SIZE), MM	CLEAR APERTURE OF OBJECTIVE LENS, MM	RIFLESCOPE MODEL
1	25,4	20	Leupold 1.5-5x20 PR
	30	20	Leupold 1.5-5x20 MR/T M2
	30	24	Zeiss 1.1-4x24T
2	38	32	Meopta Artemis 2000 4x32
	42	36	Leupold Mark 4 3-9x36
	42	36	Leupold Mark 4 2.5-8x36
	42	36	Kahles 4x36
3	42	36	Leupold Mark 4 3-9x36
	42	36	Leupold Mark 4 2.5-8x36
	42	36	Kahles 4x36
	46,7	40	Leupold 3.5-10x40
	46,7	40	Leupold VX-II 3-9x40
	48	42	Zeiss 1.5-6x42
	48	42	Swarovski PV-N 2.5-10x42
	48.7-49	42	Meopta Artemis 3000 3-9x42
	49,5	40	Meopta Artemis 3000 4-12x40
	50	42	Shmidt & Bender 10x42
4	56	50	Zeiss 2.5-10x50
	57	50	Shmidt & Bender 3-12x50
	58.7	50	Leupold 4 4.5-14x50
	58,7	50	Leupold VX-III 3.5-10x50
6	62	56	Zeiss 3-12x56
		56	Swarovski 2,5-10x56
		56	Kahles CSX 3-12x56

Installation:

1. Loosen two screws M2x2.5 inside the locking ring (Figure 2-3) of the scope mounting system. The locking ring must travel easily along the thread.

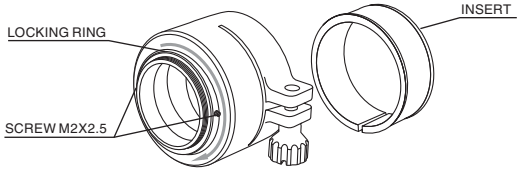


FIGURE 2-3. SCOPE MOUNTING SYSTEM

2. Rotate the locking ring towards the body of the mounting system until full stop (the rotating direction is shown with arrow on Figure 2-3). Avoid overtightening.
3. Remove the Back Cap (or Light Suppressor, if it was installed) from the PS-22 output lens and leave it in the storage case.
4. Screw the scope mounting system with insert inside into the PS-22 output lens thread and hand-tighten it.
5. Loosen the fixing nut of the mounting system.
6. Slide the PS-22 with attached mounting system onto the objective lens of the day scope until full stop.

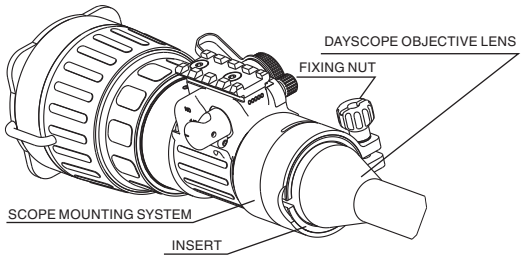


FIGURE 2-4. PS-22 INSTALLED ON DAYSCOPE OBJECTIVE LENS

7. Align the seating of the PS-22 and its mounting system on the day scope lens. Decide on the desirable position of the nut and turn the scope mounting system until you achieve it (see arrow in Figure 2-5).

8. Tighten the fixing nut hard with a screwdriver.
9. Now you may turn the PS-22 unit to the optimal position (e.g. function switch placed strictly horizontal or canted), at your discretion.

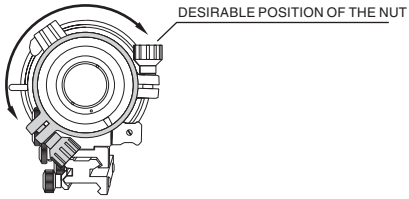


FIGURE 2-5. ESTIMATION OF THE ANGLE WHICH THE SCOPE MOUNTING SYSTEM SHOULD BE TURNED THROUGH

10. Rotate the locking ring of the scope mounting system towards the PS-22 output lens and tighten it. It will work as a lock nut to fix the PS-22 position on the day scope.
11. Apply a small amount of thread locker on threads and tighten the two screws M2x2.5 in the locking ring.

2.1.4. 7/8" WEAVER MOUNT

Optional 7/8" Weaver Mount is used for installation the PS-22 on 7/8" Weaver rail instead of the issued mount.

NOTE

If using weaver rails, please consult your gunsmith for modification to rail.

1. Loosen and remove two screws M4x8 which secure the QR mount to the sight body. Remove the QRM.

CAUTION

Use of screws longer than 8 mm will damage function switch.

2. Put the Weaver Mount on the sight body. The mount nuts should be placed the same side as switch knob. Apply a small amount of thread locker on threads, install two screws M4x8 and tighten it.

3. Loose the mount nuts. Install the sight onto the rail as close to the riflescope as possible. The light suppressor should cover the riflescope objective lens.
4. Tighten the mount nuts using screwdriver.

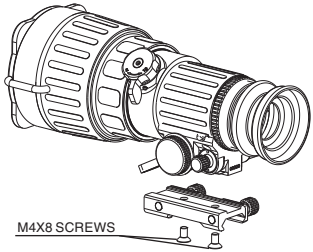


FIGURE 2-6. ASSEMBLING PS-22 WITH 7/8" WEAVER MOUNT

2.1.5. ADAPTER FOR A.R.M.S. MOUNTS

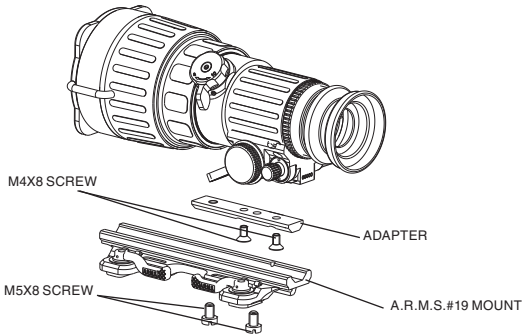


FIGURE 2-7. ASSEMBLING PS-22 WITH A.R.M.S. MOUNT

The PS-22 can be installed on MIL-STD-1913 rail by means of using an A.R.M.S. #10 or A.R.M.S. #19 ACOG mounts. Optional adapter is used to attach the sight to the said mounts.

1. Loosen and remove two screws (M4x8) that secure the Quick Release Mount to the sight body. Remove the mount.
2. Loosen and remove two screws (M5x8) installed in the adapter.
3. Put the adapter on the sight body. The adapter should not protrude out beyond the back of the sight body. Apply a small amount of thread locker on threads, install two screws M4x8 and tighten it.
4. Place the A.R.M.S. mount onto the sight. Apply a small amount of thread locker on threads, install two screws M5x8 and tighten.

2.1.6. PICATINNY RAIL

Optional adapter rail is used for mounting the IR 450 illuminator on the PS-22 to provide supplementary infrared illumination when operating under extremely low light conditions.

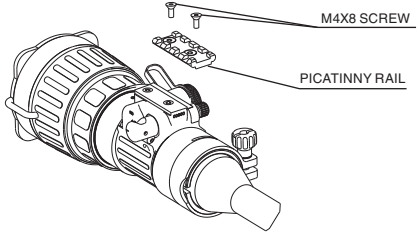


FIGURE 2-8. ASSEMBLING PS-22 WITH PICATINNY RAIL

NOTE

The rail can be used if the PS-22 is installed on the dayscope lens using scope mounting system.

The rail is attached to the PS-22 body with two screws M4x8 instead of the issued mount (Figure 2-8).

2.1.7. PLATFORM RING

If the PS-22 is installed on MIL-STD-1913 rail, optional Platform Ring is used for mounting optional IR illuminator on dayscope having mounting diameter 25.4 or 30 mm.

Attach the Platform Ring to dayscope as follows (Figure 2-9):

1. Unscrew the two screws[1] securing top[2] and bottom[3] halves of the Platform Ring.
2. If the diameter of your scope tube is 30 mm, remove plastic inserts [4].
3. Place the top and lower parts of the Platform Ring around the dayscope tube.
4. Secure the two screws[1] set using screwdriver. Do not apply excessive torque.

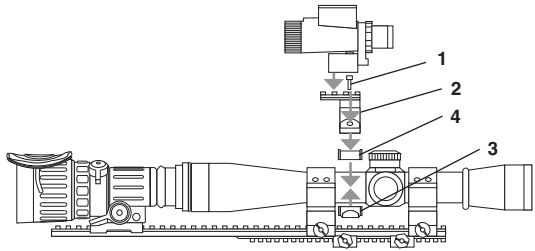


FIGURE 2-9. PLATFORM RING MOUNT

2.1.8. LONG RAIL ADAPTER

Optional long rail adapter is used if the fire arm has short rail so that no place for installing the PS-22 forward of dayscope (Figure 2-14 (C)).

2.1.9. B.A.M. SYSTEM

B.A.M. system (Boresight Attachment Mount) is used to install the PS-22 Night Vision Front Sights and the dayscope on the rifles having short mounting MIL-STD-1913 rail.

There are three advantages of the system:

- Low position of the sight and dayscope (36 mm above the rail).
- Incline of the axis of the dayscope and the sight on 20 angular minutes for long range firing.

• Resistance on the rifle with vigorous recoil.

BAM System Installation:

1. Unscrew four screws(10) and replace the top of the mount(9).
2. Install the halves of inserts (4) in the rings on the base.

NOTE

There are two sets of inserts for scopes with 25.4mm and 30mm tubes diameter.

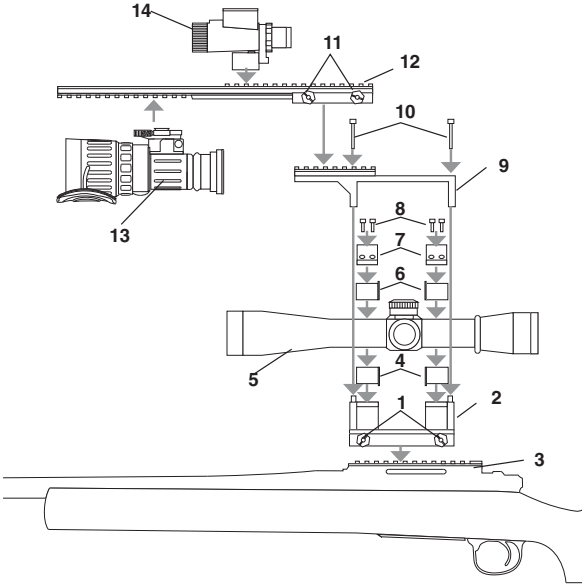


FIGURE 2-10. INSTALLATION OF B.A.M. SYSTEM

3. Cradle the scope (5) in the rings (inserts).
4. Install the top halves of the inserts (6) and the rings (7) and tighten each ring's four screws (8) slightly.
5. Slightly loosen the two fixing screws (1) on the mount base (2).
6. Place the base on the mount of the fire arm (3).
7. Tighten the fixing screws of mount base.
8. Adjust lengthwise position of the daytime scope by changing the position of mout base along the weapon mount and moving of scope along the BAM. Adjust the position of reticle by rotation of scope in the mounting rings.
9. Tighten four screws (8) tightly.
10. Install the top of the mount (9) and tighten four screws (10) to finger tight.
11. Slightly loosen the two fixing screws (11) on the top rail (12).
12. Place the top rail onto the Picatinny rail on the top of the mount.
13. Tighten the fixing screws of the top rail.
14. Place the Night Vision Front Sight (13) onto the top rail at front of the scope. The light suppressor of the front sight should cover the riflescope objective lens.
15. Place the infra-red illuminator (14) atop of the top rail.

You can quickly change your system back from night vision to day. Simply unscrew two fixing screws of the top rail and take off the top rail together with the front sight and IR illuminator.

NOTE

The fixing screws may need to be tightened after continuous shooting.

2.1.10. REMOTE CONTROL

Remote control is designed to operate the PS-22 in short-time activation mode.

1. Unscrew plug cap.
2. Attach the remote control socket to the plug on the sight body and screw the captive nut.
3. Place the control key on the fore-end of rifle stock and fix it with Velcro tape.

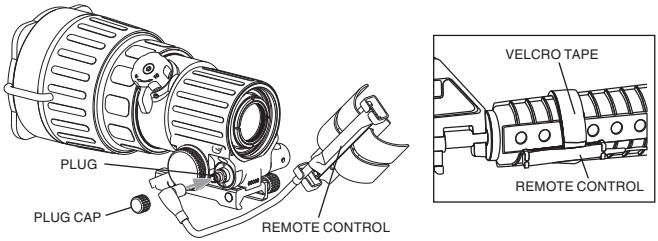


FIGURE 2-11. REMOTE CONTROL

2.1.11. IR450 ILLUMINATOR

IR450-B4 illuminator provides the capability for operator to use the PS-22 under extremely low light conditions and in total darkness. The IR illuminator can be mounted on rail of the Platform Ring (Figure 2-14 (C)) or of the Scope Mounting System (Figure 2-14 (D)), or on top rail of the B.A.M. system (Figure 2-14 (E)).

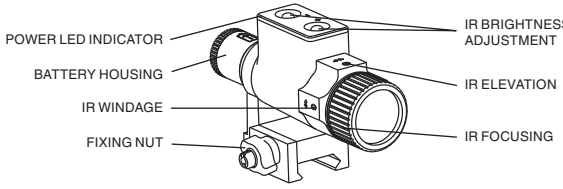


FIGURE 2-12. IR450-B4

NOTE

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.

IR450 Installation:

1. Loosen the fixing nut of IR450.
2. Install the IR450 onto the Picatinny rail.
3. Tighten the fixing nut of IR450 tightly.

The ATN IR450 is powered with one CR123A lithium battery. To install the battery unscrew the cap of the battery housing and insert the battery following the polarity arrows marked on the housing. Put the cap in place.

The IR-450 illuminator has a control panel with two buttons. To switch the IR illuminator on/off press "+" and "-" buttons simultaneously. When the IR illuminator is switched on you can see the green LED lit on the back side of IR450. By pushing the buttons "+" and "-" you may adjust the IR brightness.

The IR beam is focusable to change the field of coverage. To change the beam width slightly turn the IR lens.

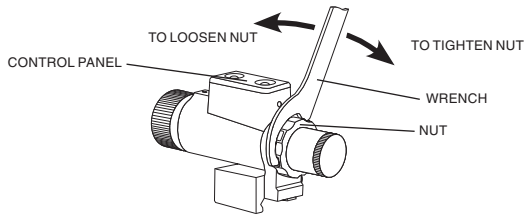


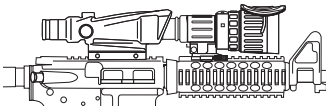
FIGURE 2-13. CHANGING OF CONTROL PANEL POSITION

You may need adjust the focusing of the IR beam to change the field of coverage. Do it by slightly rotating the IR lens. The windage and elevation screws help adjust the direction of the IR beam from the IR450 in order to focus on the scene observed in the viewfinder of your NVD. Use the included Allen wrench to rotate

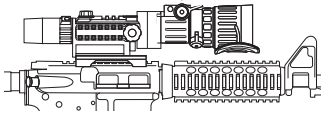
the adjusting screws until the IR beam is centered. Please remember the adjustments should be performed under night light conditions only.

You can change the position of the IR control panel to meet your your needs. The wrench that is included in the set, is used to loosen the nut located on the body of the IR. Rotate the IR to the desired position. Tighten the nut with the wrench to secure the new position.

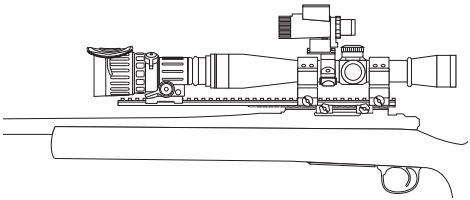
2.1.12. MOUNTING EXAMPLES



A. PS-22 WITH QRM AND TRIJICON ACOG

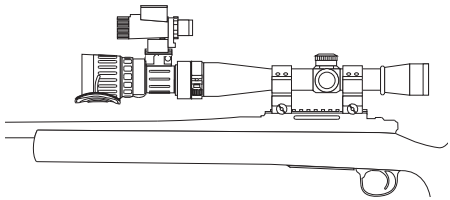


B. PS-22 WITH SCOPE MOUNTING SYSTEM AND LEUPOLD CQ/T

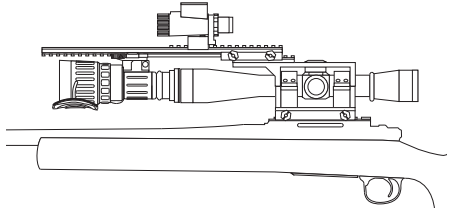


C. PS-22 WITH QRM ON THE LONG RAIL ADAPTER WITH LEUPOLD DAYTIME SCOPE AND IR450 ON PLATFORM RING

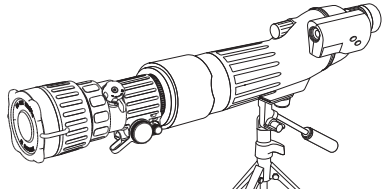
FIGURE 2-14. PS-22 MOUNTING EXAMPLES



D. PS-22 WITH LEUPOLD DAYTIME SCOPE
WITH SCOPE MOUNTING SYSTEM, PICATINNY RAIL FOR IR450



E. PS-22 WITH LEUPOLD DAYTIME SCOPE WITH B.A.M. SYSTEM AND IR450



F. PS-22 WITH SPOTTING SCOPE WITH SCOPE MOUNTING SYSTEM

FIGURE 2-14. PS-22 MOUNTING EXAMPLES (CONTINUATION)

2.2. OPERATING PROCEDURES

2.2.1. GENERAL

This section contains instructions for placing the PS-22 in operation. The function of controls is explained.

CAUTION

The PS-22 is a precision electro-optical instrument and must be handled carefully at all times.

CAUTION

Ensure the function switch is in the off position before installing a battery.

2.2.2. CONTROLS

RIGHT SIDE VIEW

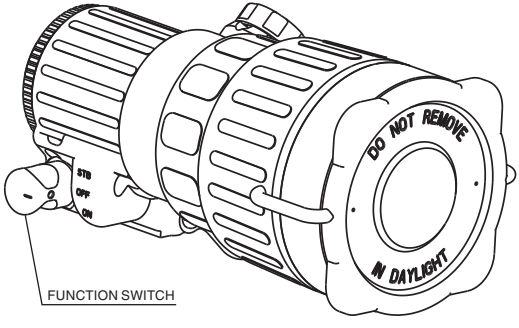


FIGURE 2-15. PS-22 CONTROLS

REAR VIEW

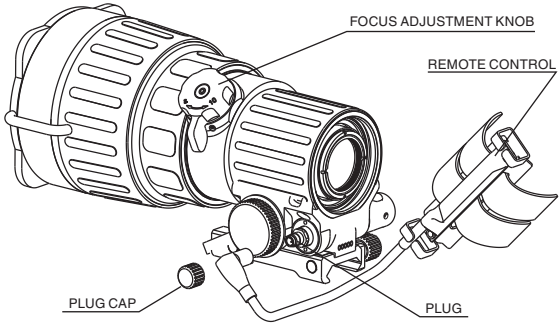


FIGURE 2-16. PS-22 CONTROLS

TABLE 2-2. PS-22 CONTROLS

CONTROLS	FUNCTION
Function Switch	STB — the sight is in standby mode.
	OFF — the sight is off.
	ON — the sight is on. Switch's spring is loaded.
Focus Adjustment Knob	Focuses the input lens. Adjusts for sharpest view of scene.
Remote Control	Switches the sight from standby to operating mode.

2.2.3. OPERATING PROCEDURES

These procedures should be performed under night light conditions only.

CAUTION

Use of the PS-22 under high light conditions may damage the image intensifier.

1. Make sure the battery is installed as indicated on the sight body.

2. Make visual estimation of the illumination level in the viewing area using the reference data presented in Appendix A. You can start to operate with the sight if illumination level is less than 1 lux.
3. Remove the Front Lens Cap and place it over the lens housing.
4. Turn the function switch to the ON position. A green glow will appear in the scope eyepiece (after a slight delay).
5. Observe the scene and adjust focus rotating focusing knob to achieve sharp image.

   CAUTION

   Bright sources such as light of fire, headlights, searchlights, etc. Can damage the PS-22.

   Take away the PS-22 from the bright sources that appear on the scene.
6. If the riflescope has focusing rings (parallax adjustment knob), adjust focus for parallax free image.
7. If the scope has reticle illumination, switch it on and adjust reticle brightness.
8. PS-22 Shut-Down:
   a) Turn the function switch to OFF position. The green glow will disappear.
   b) Replace the protective cover on the input lens.
   c) If necessary remove the sight from the rail (from the scope lens) in reverse order of installing.
   d) Unscrew the battery cap and take out the battery. Replace the battery cap. Do not store the PS-22 with the battery still in it.
   e) Return the sight and all accessories to the case.

2.2.4. OPERATING WITH REMOTE CONTROL

1. Turn the PS-22 function switch in standby position (STB).
2. To activate scope, press and hold the control key on the remote control.

3. After disconnecting the remote control screw the cap onto the plug.

2.2.5. OPERATING WITH IR450 ILLUMINATOR

Infra-red (IR) Illuminators are common for night vision technology. The IR light greatly enhances the performance of your device, while remaining almost totally invisible to the naked eye. Staying in the dark, switch on your night vision device. If the visibility is low, you may use ATN IR450 to improve the situation. Still, you should remember that the IR illuminator is just a source of infrared light so the greater is the chosen range of observation, the lesser its brightness becomes.

2.2.6. PREPARATION FOR STORAGE

A. Shutdown. Perform the following procedures to shut down the sight.

1. Turn the sight function switch to the OFF position.
2. Remove the sight from the weapon or daytime riflescope.
3 Remove attached accessories.

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.

B. Packaging After Use.

1. Remove batteries.
2. Inspect the battery housing for corrosion or moisture. Clean and dry if necessary.
3. Install objective lens cap.

NOTE

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

4. Place the sight into the storage case, close and latch.
5. Return to storage area.

SECTION III

MAINTENANCE INSTRUCTIONS

3.1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3.1.1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES TABLE

A. General

To ensure the readiness of the NVFS, perform the preventive maintenance procedures in accordance with Table 3.1., 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

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.

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.

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

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 mis-

sion or operation. You must do the procedure at the time stated in the interval column.

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 3.1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR THE PS-22

ITEM NO.	INTER-VAL	LOCATION CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
1	Before	Complete-ness	Open carrying case and check the inventory items	Items missing
			SIGHT	
2	Before/ After	Sight Body	Inspect for missing screws or connector cap.	Screws or connector cap missing.
3	Before/ After	Front Lens Cap	Inspect for cuts, tears and dirt. Clean as required.	Cap torn or cut.
4	Before/ After	Battery Compart-ment	Check for corrosion, thread damage or dirt, cap and battery adapter damaged or missing. Check O-ring for cuts or damage.	Cap, adapter or O-ring damaged or missing.
5	Before/ After	Back Cap	Inspect for thread damage or dirt. Clean as required.	Thread damage hinder installation.
6	Before/ After	Function Switch	Check for operation (without battery).	Switch inoperative. Switch missing.
7.	Before/ After	Lenses	Inspect for cleanliness, scratches, chips or cracks. Clean as required.	Chipped, cracked or if scratches hinder vision through the sight

TABLE 3.1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR THE PS-22 (CONTINUATION)

ITEM NO.	INTER-VAL	LOCATION CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
8	Before/ After	Objective Lens	Check to ensure the objective lens is not loose.	Objective lens loose.
9	Before/ After	Focus Knob	Check to ensure: — Inspect for broken or missing knob; — there is free rotation of the focus knob (more than 1/2 of turn).	Focus knob missing. Focus knob can not be rotated.
			ACCESSORIES	
10	Before/ After	Remote Control	Check cable and key for damage. Check Velcro tape for wear. Ensure the remote control connects to the sight plug securely.	Cable or key damaged. Velcro tape missing. Connector damage affects ability to connect remote control to the sight.
11	Before/ After	Light Suppressors	Inspect for cuts, tears or thread damage. Check ease of installation and removal.	Thread damage hinder installation. Suppressors torn or cut.
12	Before/ After	QRM	Check for damage, dust, dirt or corrosion.	Damaged, will not mount to rail.
13	Before/ After	7/8" Weawer mount	Check for damage, dust, dirt or corrosion.	Damaged, will not mount to rail.
14	Before/ After	Adapter for A.R.M.S. Mount	Check for damage, dust, dirt or corrosion.	Damaged, will not mount to NVFS.
15	Before/ After	Picatinny Rail	Check for damage, dust, dirt or corrosion.	Damaged, will not mount to NVFS.
16	Before/ After	Platform Ring	Check for damage, dust, dirt or corrosion.	Damaged, will not mount to day scope.
17	Before/ After	Long Rail Adapter	Check for damage, dust, dirt or corrosion.	Damaged, will not mount to rail.
18	Before/ After	B.A.M.	Check for damage, dust, dirt or corrosion.	Damaged, will not mount.

TABLE 3.1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR THE PS-22 (CONTINUATION)

ITEM NO.	INTER-VAL	LOCATION CHECK/ SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
19	Before/ After	Scope mounting system	Check for damage, dust, dirt or corrosion.	Thread or body damage hinder installation. Ring loosed. Insert or nut missing.
20	Before/ After	Storage Case	Remove all items and shake out loose dirt or foreign material. Inspect for tears, cuts, excess wear, or damage to mounting clips.	Damaged, will not latch securely.
NOTE **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.**				
		OPERATIONAL CHECKS		
CAUTION **Operate the PS-22 with Front Lens Cap on or under dark conditions.**				
21	Before/ After	Installation security	Check the sight which installed on the rail or dayscope lens does not have any movement. Tighten fixing nuts if necessary.	
22	Before/ After	Function Switch	Insert the battery. Turn the switch to ON position. Look for green glow in output lens. Turn the switch to OFF position.	Green glow absent.
23	Before/ After	Remote control	Connect the remote control to the sight. Turn the function switch to STB position. Press and hold the key. Look for green glow in output lens. Release the key; turn the switch to OFF position.	Green glow absent.
24	Before/ After	Viewed Image	Refer to paragraph 2.4. to inspect for operational defects.	Flickering, flashing, edge glow, or shading is observed.
		AFTER CHECKING PROCEDURES		
25	Before/ After		Replace protective covers on the lenses. Disconnect the remote control and screw up the cap. Remove the battery. Return the sight and all accessories to the storage case.	

3.1.2. 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 NVFS should be returned to the maintainer.

CAUTION

Perform the following inspection in the dark.

To perform this inspection, attach the sight to the daytime scope as described in paragraph 2.1.3. and turn the function 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 NVFS. 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 NVFS 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 NVFS. They include shading, edge glow, flashing, flickering, and intermittent operation.

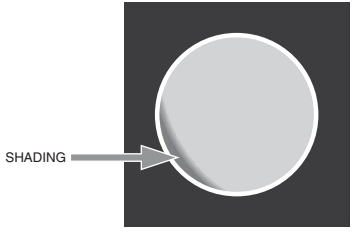


FIGURE 3-1. SHADING

Shading. If shading is present, you will not see a fully circular image (see Figure 3-1). 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 NVFS to the maintainer.

Edge Glow. Edge glow is a bright area (sometimes sparkling) in the outer portion of the viewing area (see Figure 3-2).

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 NVFS to the maintainer.

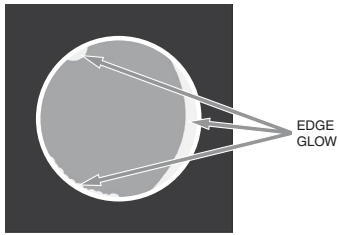


FIGURE 3-2. EDGE GLOW

Flashing, Flickering, or Intermittent Operation. The image may appear to flicker or flash. If there is more than one flicker, check for loose battery cartridge or weak batteries. If weak or loose batteries are not the problem return the NVFS 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 NVFS. 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:

Bright Spots. A bright spot is a small, nonuniform, bright area that may flicker or appear constant (Figure 3-3.). Not all bright spots make the NVFS rejectable. Cup your hand over the objective lens to block out all light. If the bright spot remains, return the NVFS 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.**

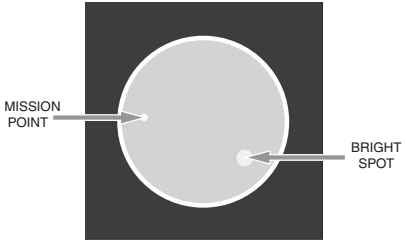


FIGURE 3-3. BRIGHT SPOTS AND EMISSION POINTS

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 3-3). The position of an emission point within the image area does not move.

Not all emission points make the NVFS 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.**

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.**

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 3-4). 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 interfere with the operator's ability to view the image or to perform the mission.**

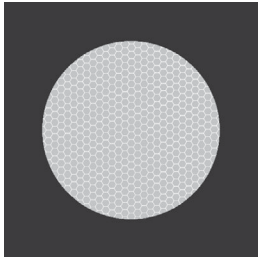


FIGURE 3-4. FIXED-PATTERN NOISE

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 3-5). 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.**

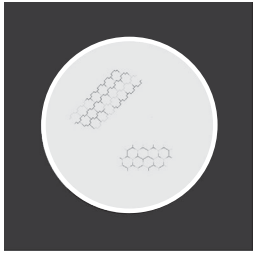


FIGURE 3-5. CHICKEN WIRE

3.2. TROUBLESHOOTING

3.2.1. GENERAL

This section contains information for locating and removal most of the PS-22 operating troubles which may occur. Each malfunction for an individual component or assembly is followed by a list of tests or inspections that will help determine probable causes and corrective action to take. Perform the tests/inspections and corrective actions in the order listed.

This manual cannot list all possible malfunctions that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective actions, contact to the service center.

3.2.2. TROUBLESHOOTING PROCEDURES

Troubleshooting procedures are listed in Table 3-2.

TABLE 3-2. TROUBLESHOOTING PROCEDURES

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Sight will not come on.	Battery is missing or improperly installed.	Insert battery or install correctly.
	Battery is dead.	Replace battery.
	Battery contact surfaces or contact springs dirty or corroded.	Clean the contact surfaces with a pencil eraser and/or alcohol and cotton swabs.
	Defective image tube.	Send the sight to the service center.
Cannot achieve the sharp image of the object.	Objective and output lenses dirty.	Clean thoroughly the lenses surfaces.
Sight affects boresight after installation or during the firing.	Objective lens loose.	Screw objective lens up to the stop. Apply a small amount of thread locker on threads, install three screws M2.5x3 and tighten.
	Factory alignment broken.	Send the sight to the service center.

3.3. MAINTENANCE PROCEDURES

3.3.1. PS-22 MAINTENANCE

The PS-22 maintenance consists of external inspection of its components for serviceability, cleaning and installation of the standard and optional accessories. Maintenance instructions covered elsewhere in this manual (PMCS, troubleshooting, etc.) are not repeated in this section.

CAUTION

The PS-22 is a precision electro-optical instrument and must be handled carefully at all times to prevent damage.

3.3.2. CLEANING PROCEDURES

A. Cleaning of the PS-22

1. Gently brush off any dirt from the sight body using only a clean soft cloth.
2. Moisten the cloth with fresh water and gently wipe the external surfaces (except lenses).
3. Dry any wet surfaces (except lenses) with another dry and clean soft cloth.
4. Using lens brush, carefully remove all loose dirt from the lenses.
5. Slightly dampen a cotton swab with ethanol and lightly and slowly wipe the lenses. Clean the glass surfaces by circular movements from the centre to the edge, not touching the lens holder and changing cotton swab after each circular stroke. Repeat this step until the glass surfaces are clean.

B. Cleaning of Accessories

Clean accessories with a soft brush (cloth) and soap and water as required.

CAUTION

Dry thoroughly each item before replacing into the storage case.

3.3.3. TUBE MAINTENANCE / REPLACEMENT

Tube maintenance/replacement is to be performed by qualified technicians only. These procedures attempted by non-qualified personnel will void warranty.

A. Tools and Equipment

Next tools are necessary for this procedure:

- Lock-ring spanner wrench;
- Focus wrench;
- Purge kit.

Table 3-3 lists requirements for the equipment needed for PS-22 focusing and aligning after tube replacement.

TABLE 3-3. EQUIPMENT FOR PS-22 FOCUSING AND ALIGNING

ITEM #	ITEM	PARAMETER	REQUIREMENT
1	Collimator	Focal length	250 to 800 mm
		Exit pupil diameter	80 mm
		Focusing distance	Infinity
		Test pattern	Crosshair
		Pattern illumination	Daytime mode
			Nighttime mode
2	Mounting rail	Type	MIL-STD-1913
3	Telescope	Magnification	6 to 12
		Entrance pupil diameter	22 to 56 mm
		Focusing distance	Infinity
		Reticle	Crosshair

B. Tube Removal

- Accurately turn up the edge of rubber ring (Figure 3-6, 7).
- Loosen three fixing screws (Figure 3-6, 2).
- Unscrew and remove the objective lens (Figure 3-6, 1).
- Unscrew and remove the lock ring (Figure 3-6, 7).
- Draw out the spring washer («Glass/GLASS» tube only, Figure 3-6, 9).

- Take out defective image intensifier tube.

Below the actions for «GLASS/GLASS» tube only are listed:

- Accurately separate the compensator glass (Figure 3-6, 10) from the tube for second using.
- Unsolder tube wires from the board on the tube end (Figure 3-7). Accurately separate the board (Figure 3-7, 1) from the tube for second using.

C. Tube Installation

«Glass/glass» tube preparation:

- Shorten tube wires up to 30 mm, strip insulation and tinning the wires.
- Bend tinning ends of the wires and solder it to the board according polarity marking on the tube body and the board.
- Align the board groove with the tube groove and glue the board (Figure 3-7, 1) onto the rear end surface of the tube (Figure 3-7, 2).
- Lay the wires into the tube groove and fix them with glue.
- Thoroughly clean the compensator glass.
- Apply small amount of glue on the glass and install it into the tube.

Tube installation:

- Thoroughly clean input and output windows of the tube.
- Insert the tube into the tube compartment. Be sure to engage the groove on the tube body with a pin in the tube compartment.
- Install the spring washer («Glass/GLASS» tube only, Figure 3-6, 9).
- Apply small amount of thread locker and screw the locking ring (Figure 3-6, 8a). Do not over tighten it.
- Screw the objective lens (Figure 3-6, 1); put the lens cap (Figure 3-6, 6) on.

CAUTION

All testing and alignment procedures must be done in dark room (illumination level less than 0.3 Lx)

NOTE

If special attenuator filter is used, testing and alignment procedure could be done in the normal illuminated room and the collimator pattern illuminator could have only daytime mode. Attenuator filter have to be neutral glass filter with density 4 to 5. The filter effective diameter should be 63 mm and surface parallelism within 1 MOA. It is installed in the housing to mount on the sight.

D. Equipment Preparing

- Provide coaxial position of the collimator, the sight and the telescope.
- Align the mounting rail with the collimator and fix it firmly. The angle between rail axis and collimator axis within 5 MOA.
- Adjusting angular position of the telescope match its crosshair with collimator crosshair.

E. Objective Lens Focusing

- Switch the collimator pattern illuminator on in nighttime mode.
- Loosen three fixing screws (Figure 3-8, 3) and rotate thrust ring (Figure 3-8, 4) one turn counterclockwise.
- Turn the focus knob (Figure 3-8, 5) of the sight to “infinity” position according the picture on the knob.
- Rotate the objective lens (Figure 3-8, 1) to achieve sharp image of collimator pattern.
- Rotate the thrust ring (Figure 3-8, 2) clockwise up to the stop and tighten it.
- Remove fixing screws (Figure 3-8, 3) one by one, drill dimples through the holes in the ring, apply small amount of thread locker and secure the thrust ring with fixing screws.
- Extra tighten objective lens.
- Remove fixing screws (Figure 3-6, 6) one by one, drill dimples through the holes in the housing, apply small amount of thread locker and secure the objective lens with fixing screws.
- turn the edge of rubber band back.

F. Preparing the Sight For Alignment

- Carefully separate the rubber cover (Figure 3-6, 4) from the sight body and remove it.

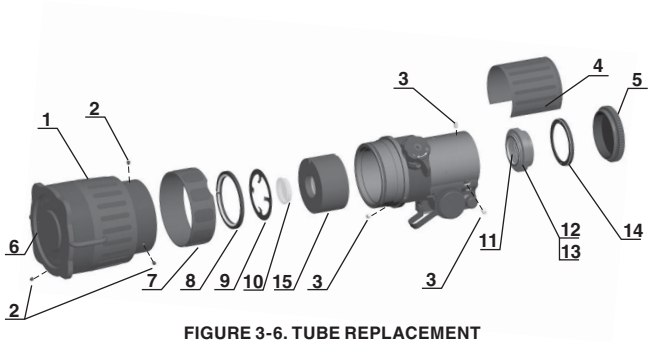


FIGURE 3-6. TUBE REPLACEMENT

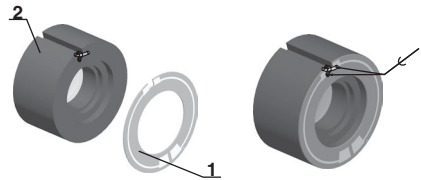


FIGURE 3-7. INSTALLATION OF THE BOARD TO THE TUBE

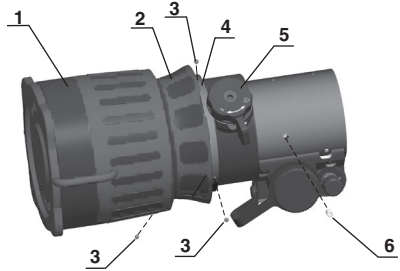


FIGURE 3-8. OBJECTIVE LENS FOCUSING

- Unscrew and remove the lock ring (Figure 3-6, 14).
- Loosen three adjusting screws (Figure 3-6, 3).
- Cut out old sealant and remove output lens assembly (Figure 3-6, 11).
- Thoroughly clean the output lens assembly and all internal surfaces of the unit including adjustment screws from sealant debris and any dirt.
- Replace the output lens assembly (Figure 3-6, 11) and tighten three adjustment screws (Figure 3-6, 3) lightly.
- Screw and tighten lightly the lock ring (Figure 3-6, 14).

G. Output Lens Focusing

- Switch the collimator pattern illuminator on in nighttime mode.
- Put the sight onto the mounting rail, switch it on and rotate focus ring (Figure 3-8, 4) to achieve sharp image.
- Unscrew the output lens on 1.5- 2 mm and apply transparent glue or black primer.
- Rotate output lens (Figure 3-6, 11) with focus wrench to achieve parallax free image.

H. Boresight Alignment

- Switch the collimator pattern illuminator on in daytime mode
- Without the sight, looking through the telescope check matching it's crosshair with collimator crosshair.
- Switch the collimator pattern illuminator on in nighttime mode.
- Put the sight onto the mounting rail, switch it on and rotate focus ring to achieve sharp image.
- Looking through the telescope, turn adjustment screws (Figure 3-6, 3) to match image of collimator crosshair with crosshair of the telescope.
- Switch the sight off and remove it from the rail.
- Unscrew and remove the lock ring (Figure 3-6, 14).
- Fill the gap between the output lens assembly (Figure 3-6, 11) and sight body with sealant.
- Screw the lock ring (Figure 3-6, 14) and tight it firmly.
- Check boresighting and correct if necessary.

I. Nitrogen Purge

- Remove the purge screw (Figure 3-8, 7).
- Check airtightness of the sight and fill it with dry nitrogen.
- Apply small amount of sealant and install the purge screw.
- Put the rubber cover (Figure 3-6, 4) onto the sight body and secure it with glue.

APPENDIX A

(Reference)

ESTIMATION OF AMBIENT ILLUMINATION LEVEL

TABLE A-1. STANDARD NATURAL LIGHT CONDITIONS AND ILLUMINATION VALUES

STANDARD NATURAL LIGHT CONDITIONS	ILLUMINATION VALUE, LUX
Quarter moon	0.05
Full moon	0.30
Late twilight sky	1.00
Twilight sky	10.00
Overcast sky in the daytime	500.00

APPENDIX B

SPARE PARTS LIST

The Spare Parts List is an illustrated catalog of main parts and assemblies completing the Night Vision Sight PS-22, here in after referred to as PS-22.

Therefore, in case of failure of any part or assembly User could replace it by ordering the corresponding part/assembly from the Spare Parts List. The amount and assortment of the spare parts needed should be arranged with each contract individually.

TABLE B-1. ATN PS-22 SPARE PARTS LIST

ITEM #	DESCRIPTION	FIG.	ITEM
	Night Vision Sight	**B1**	
COBPPS22OBLN	Objective Assembly	B1	1
COBPPS22OBOS	Objective Directive Screws	B1	2
COBPPS22	Body	B1	3
COBPPS22OBRC	Rubber Cover	B1	4
COBPPS22COVR	Back Cap	B1	5
COBPPS22LNCV	Front Lens Cap	B1	6
COBPPS22LKRG	Lock Ring	B1	7
COBPPS22SPWR	Spring Washer	B1	8
COBPPS22COGL	Compensator Glass	B1	9
	Image Intensifier Tube	B1	10
	Lever	B1	12
	Screw	B1	13
COBPPS22RBCO	Rubber Cord	B1	14
COBPPS22BTCP	Battery Cap	B1	15
COBPPS22PLCP	Plug Cap	B1	16
	Output Lens Assembly	B1	17
COBPPS22ADKN	Adjusting Knob	B1	18
COBPPS22BDSW	Body Directive Screws	B1	19
COBPPS22RLKR	Lock Ring	B1	20

TABLE B-1. ATN PS-22 SPARE PARTS LIST (CONTINUATION)

ITEM #	DESCRIPTION	FIG.	ITEM
	Accessories 1 (From The Kit)	B2	
CODNPS22LS63	Light Supressor for the Scopes with 42-63 mm Lens Diameter	B2	1
CODNPS22LSTR	Light Supressor for Trijicon Acog Scopes	B2	2
CODNPS22LS42	Light Supressor for The Scopes tith 30-42 mm Lens Diameter	B2	3
ACDNPSXXQRM1	QRM Mount (with two M4x7 screws)	B2	4
CODNPS22RMCL	Remote Control	B2	5
ACDNPS22PCMT	Picatinny Rail	B2	6
ACMUIR45B4	IR Illuminator IR450 Kit	B2	7
COMNPS22	Operator's Manual	B2	8
	Shipping/Storage Case	B2	9
	Accessories 2 (Optional)	B3	
ACDNPS22M01	Scope Mounting System #1	B3	1
ACDNPS22M02	Scope Mounting System #2	B3	1
ACDNPS22M03	Scope Mounting System #3	B3	1
ACDNPS22M04	Scope Mounting System #4	B3	1
ACDNPS22M0	Scope Mounting System #6	B3	1
COSMPS22I254	Scope Mounting System Insert with 25.4 mm Diameter	B3	2
COSMPS22I300	Scope Mounting System Insert with 30 mm Diameter	B3	2
COSMPS22I380	Scope Mounting System Insert with 38 mm Diameter	B3	2
COSMPS22I420	Scope Mounting System Insert with 42 mm Diameter	B3	2
COSMPS22I467	Scope Mounting System Insert with 46.7 mm Diameter	B3	2
COSMPS22I480	Scope Mounting System Insert with 48 mm Diameter	B3	2

TABLE B-1. ATN PS-22 SPARE PARTS LIST (CONTINUATION)

ITEM #	DESCRIPTION	FIG.	ITEM
COSMPS22I487	Scope Mounting System Insert with 48.7-49 mm Diameter	B3	2
COSMPS22I495	Scope Mounting System Insert with 49.5 mm Diameter	B3	2
COSMPS22I500	Scope Mounting System Insert with 50 mm Diameter	B3	2
COSMPS22I560	Scope Mounting System Insert with 56 mm Diameter	B3	2
COSMPS22I570	Scope Mounting System Insert with 57 mm Diameter	B3	2
COSMPS22I587	Scope Mounting System Insert with 58.7 mm Diameter	B3	2
COSMPS22I620	Scope Mounting System Insert with 62 mm Diameter	B3	2
ACWSRTRA	Platform Ring	B3	3
ACDNPS40BM01	Boresight Attachment Mount (BAM)	B3	4
COWSPSAM	Adapter for A.R.M.S. Mount	B3	5
ACWSLRADPT	Long Rail Adapter	B3	6
ACDNPS22WVR	7/8” Weaver Mount	B3	7

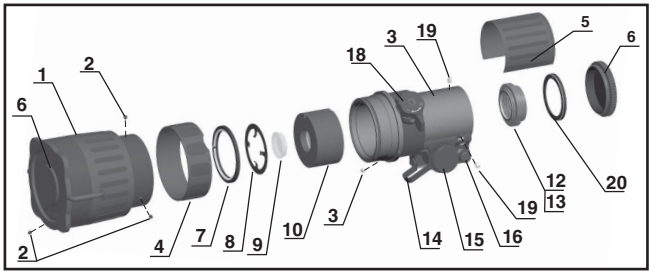


FIGURE B-1. NIGHT VISION SIGHT

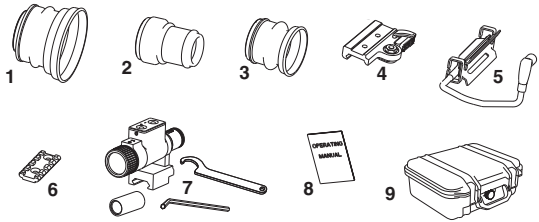


FIGURE B-2. ACCESSORIES 1 (FROM THE KIT)

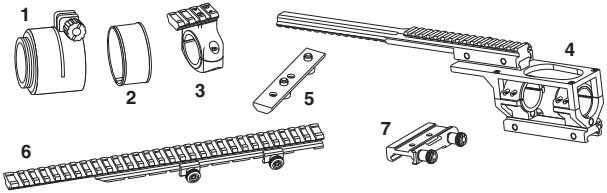


FIGURE B-3. ACCESSORIES 2 (OPTIONAL)

APPENDIX C

HOW TO SELECT SCOPE MOUNTING SYSTEM REQUIRED FOR YOUR DAYTIME SCOPE

By selecting the appropriate Scope Mounting System (with Inserts) you can mount the PS-22 onto a daytime scope with an objective tube diameter from 25 to 62 mm. At the Table 2-1 Scope Mounting System sizes (#1-6) and Insert sizes for different scope examples are provided.

If your specific daytime scope is not listed in Table 2-1, before mounting procedure you have to select the proper Scope Mounting System (and Insert) required.

To do this, perform the following actions:

1. Determine your daytime scope **objective tube diameter (external - not diameter of the glass lens)** with a millimeter ruler (with a trammel for more accurate results) as shown in figure C-1.
2. Select from the Table 2-1 the Insert size **closest (larger)** to the value measured (Insert size is also specified at an Insert body). Do the selection in Insert group that corresponds to the **same** Scope Mounting System (for example, Scope Mounting System #2).
3. The Scope Mounting System you need is the one that corresponds to Insert size selected at the Table 2-1.

For example, if your scope objective tube diameter is equal to 46 mm then you should select Insert with size of 46,7 mm and corresponding Scope Mounting Systems #3 from the Table 2-1.

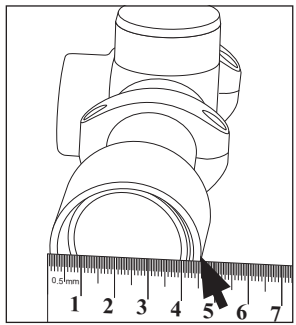


FIGURE C-1.
OBJECTIVE TUBE DIAMETER MEASURING

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