



NVD-UM-0006

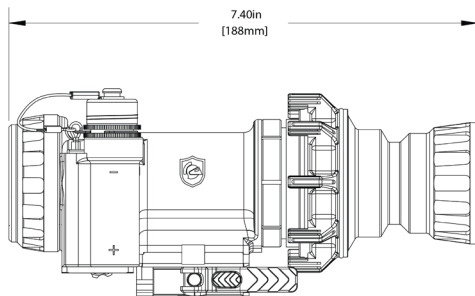
UNS - A3
Universal Night Sight - A3



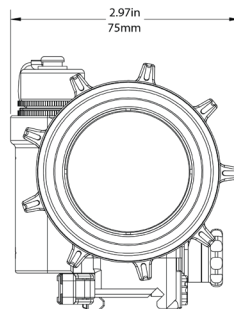
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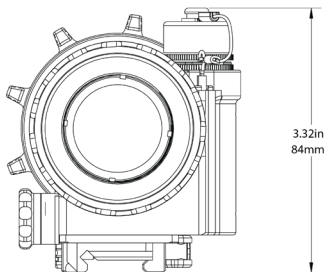
OPERATORS MANUAL



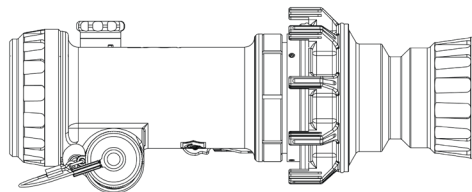
RIGHT SIDE VIEW



FRONT VIEW



REAR VIEW



TOP VIEW

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SAFETY SUMMARY

GENERAL SAFETY INSTRUCTIONS

This manual describes processes that may cause injury to personnel or damage to equipment if not properly followed. This safety summary includes general safety precautions and instructions that must be understood and applied during operation and maintenance to ensure personnel safety and protection of equipment. Prior to performing any task, the WARNINGS, CAUTIONS, and NOTES included in that task shall be reviewed and understood.

WARNINGS, CAUTIONS, AND NOTES

WARNINGS and CAUTIONS are used in this manual to highlight operating or maintenance procedures, practices, conditions or statements that are considered essential to protection of personnel (WARNING) or equipment (CAUTION). WARNINGS and CAUTIONS immediately precede the step or procedure to which they apply. NOTES are used in this manual to highlight operating or maintenance procedures, practices, conditions or statements that are not essential to protection of personnel or equipment. NOTES may precede or follow the step or procedures depending upon the information to be highlighted. The headings used and their definitions are as follows: Warning, Caution and Note.



WARNING



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



CAUTION



Highlights an essential 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.



ACRONYMS	DEFINITION
FOV	FIELD OF VIEW
KAC	KNIGHT'S ARMAMENT COMPANY
MIL-STD	MILITARY STANDARD
MOA	MINUTE OF ANGLE
RAS	RAIL ADAPTER SYSTEM
UNS-A3	UNIVERSAL NIGHT SCOPE-A3

GENERAL SAFETY PRECAUTIONS

The following safety precautions of a general nature shall be observed while operating the equipment or performing the procedures in this manual.



All batteries should be inspected for bulging prior to use. If a battery shows signs of bulging, corrosion or leakage, do not use. Batteries should be handled in the following manner :

- Ensure battery is fully secured.
- Do not dispose of in fire.
- Do not short circuit, puncture, or disassemble.
- Return for disposal in accordance with proper disposal instructions.

To avoid physical injury and equipment damage when using the UNS-A3 during night operations, carefully read and understand the following precautions:

- The equipment requires some night light (moonlight, starlight, sky glow, etc.) to operate.
The level of performance depends upon the level of light.
- Night light is reduced by passing cloud cover or while operating under trees, in building shadows, etc.
- The equipment is less effective when viewing into shadows and other darkened areas.
- The equipment has degraded function through rain, fog, sleet, snow or smoke.



The UNS-A3 is a precision electro-optical instrument and must be handled with care at all times.

Read and understand this entire manual before attempting to turn on or operate.

Do not remove the front lens cover in bright light. Exposure of the image intensifier tube in the UNS-A3 to bright light for long durations may cause damage.

Do not store the UNS-A3 with the batteries installed. Damage can occur from corroded, leaking or improperly stored batteries.

Using the UNS-A3 under high light conditions can damage the Image Intensifier Assembly, which permanently lowers performance.

Do not point the UNS-A3 at bright lights without the lens cover in place. Remove the lens cover when preparing to use. The unit cannot be used with the lens cover on the objective lens or eyepiece.

Rinse optical surfaces with clean water to remove dirt before wiping with lens tissue. Wiping extremely dirty or sandy optical surfaces could scratch the optical surfaces and permanently damage the lenses.



NOTES:



If the base cannot pivot down onto the rail, the base is adjusted too tight!

If the base is loose on the rail when the lever is fully closed, the base is adjusted too loose!

The factory QD Rail Mount can be adjusted to fit Picatinny rails, manufactured per MIL-STD-1913, or STANAG 4694.



CAUTION



The design of the Objective and Eyepiece of this sight are not intended to allow the user to turn either part of the device. Only the Focus Knob is intended to be turned by hand to focus the scope.

1. INTRODUCTION

1.1 General

This manual provides descriptive information, operating instructions and maintenance procedures for the UNS-A3. The high performance, unity-power (1X) night vision device allows night operation of any weapon system equipped with a MIL-STD-1913 rail. Mounting options are available for weapons that are not equipped with a MIL-STD 1913 rail in front on the day optic which will provide adequate space for mounting the UNS-A3. Any weapon equipped with a Knight's Armament Company Rail Adapter System (RAS) will accommodate the UNS-A3.

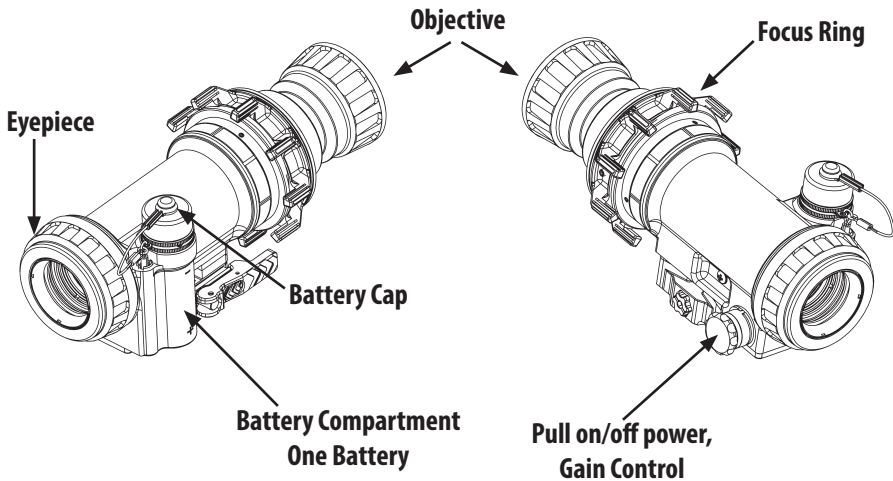
The UNS-A3 is intended to be used in conjunction with day optics mounted to weapons as the primary sighting system. The UNS-A3 can be mounted forward of the day optic without any adverse effect on the weapon's Point of Aim or Point of Impact. Verify after adjustments of QD rail mount and prior to mission.

The UNS-A3 does not require any zeroing procedure when installed in front of a day optic. However, the following steps should be taken to ensure optimum picture quality. The controls on the UNS-A3 are focus and gain. The day optic, if equipped with a parallax or focus adjustment, should be adjusted to near infinity and parallax free. This allows the day optic to be focused clearly on the back of the image intensifier tube. The focus on the UNS-A3 will then be used to adjust the focus of the sight picture

1.2 System Description

Size	7.40" (188mm) length, 2.97" (75mm) width, 3.32" (84mm) height, 1.50" (38mm) or 1.54" (39mm) to optical centerline
Weight	1.8 lbs. (.80 kg) with one AA battery and lens cover
Magnification	1X Unity Sight
Finish	Flat Black Matte, Corrosion Resistant
Controls	Pull On/Off and Gain Control Switch, Focus Ring
Power	One standard "AA" size battery or one DL123 or Equivalent battery
Mount	Quick attach/detach, fits the Mil-STD-1913 / STANAG-4694 Rail Configuration
Image Intensifier Tube	High FOM, white or green, manufactured by Elbit USA, L3-Harris, or Photonis (exportable models available)
Objective Focus Continuity	Continually adjustable from approximately 20 meters to infinity via manual control
Bore Sight	Factory bore sight to < .5 MOA of alignment to day scope point of impact
Bore Sight Retention	Maintained within < .5 MOA over a 300 round, 300 WIN MAG firing schedule

UNS-A3 Layout



1.3 Capabilities

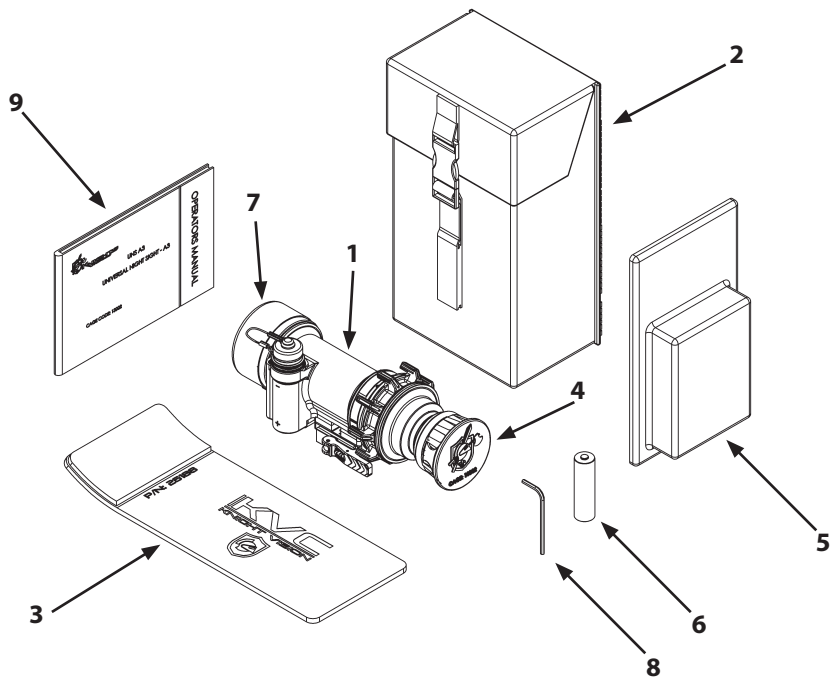
The UNS-A3 is a light weight, mid-range optimized night vision device. The UNS-A3 adds the latest high-performance Gen 3 light intensification night vision to most rifles and day scopes. This product is appropriate for common mid and long-range rifles. The Knight Vision patented technology makes the product universal and assures the accuracy of your range tested day scope boresight will not be degraded. When the UNS A3 is added in front of your existing optic, eye relief and cheek weld are unaffected. The refractive lens provides high performance light collection in a light weight design. Knight Vision patented Single Interchangeable Battery (SIB)[®] allows use of either DL123 or AA single cells, with a battery life exceeding 24 hours (36 hours for DL123), and can be changed while you remain in shooting position. The highly efficient power circuit allows use of depleted flashlight batteries to provide several hours of operation. Single Interchangeable Battery (SIB)[®] U.S. Patent No. 7,576,516.

1.4 Performance Characteristics

System Resolution	3.16 Lp/mm minimum using 100% contrast USAF Resolution Chart
Focus Range	20M to infinity adjustment range
Magnification	Unity 1X
Image Intensifier Tube	High FOM, white or green, manufactured by Elbit USA, L3-Harris, or Photonis (exportable models available)
Gain Control	On/Off and Gain Control in a single knob
Objective Lens	62mm EFL Refractive Telephoto Lens Design
Exit Pupil	25mm Diameter
Bore Sight Deviation	Less than .5 MOA
Bore Sight Repeatability	Less than .5 MOA
Environmental	MIL-STD-810G used as guideline, temperature ranges, saltwater resistance, immersion to 3 feet saltwater pressure 4 hours
Finish	Matte Black, Corrosion / Saltwater Resistant
Dimensions	7.40" (188mm) length, 2.97" (75mm) width, 3.32" (84mm) height

1.5 Items Furnished UNS-A3

ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	28526	UNS-A3	1
2	26187	POUCH, SCOPE	1
3	26188	SHROUD WRAP/COUPLER	1
4	26183	OBJECTIVE LENS COVER	1
5	26572	LENS CLEANING KIT	1
6	20299	AA BATTERIES	1
7	26546	EYEPIECE COVER	1
8	23228	1/8" HEX KEY WRENCH	1
9	NVD-UM-0006	OPERATOR'S MANUAL, UNS-A3	1



1.6 Equipment Required But Not Supplied

The UNS-A3 is equipped to fit on any weapon with a MIL-STD-1913 rail forward of the day optic. In some cases, additional mounting rails must be fitted to the weapon to allow UNS-A3 optics mounting.

1.7 Shipping, Handling and Storage

The UNS-A3 is a precision electro-optical device and must be handled with care at all times. The UNS-A3 should normally be transported and stored in the soft pouch carry case that is provided in the kit or can be purchased separately.



Do not store or ship the UNS-A3 with the batteries installed. Damage can occur from corroded or improperly stored batteries.

1.8 Warranty (Limited Commercial Warranty)

Knight's Armament Company (KAC) warrants the UNS-A3 "Knightscope™" against defects due to substandard parts or workmanship for a period of 12 months from date of acceptance (or as stated in Contract). Failed units must be returned to KAC for warranty repairs. If KAC determines, after incoming inspection, that the unit has failed due to misuse or abuse, warranty provisions will not apply. At the customer's request KAC will generate and provide a repair estimate. KAC is not liable for any and all direct or consequential damages that may arise from the misuse or misapplication of this product. For factory service, please contact KAC and obtain a Return Material Authorization (RMA) number prior to return of any equipment.

1.9 Handling Instructions

The UNS-A3 is a precision optical instrument and must be handled with care. It is designed to handle extreme weapon shock through the mounting rails only. Dropping the unit will expose it to shock loads in an axis not intended, and can result in damage to the unit. Dropping the unit on hard surfaces can also result in damage to lens, protective coatings and controls.

Avoid touching the optical surface. The oils from human fingerprints can cause a long-term damaging effect to the lenses and their coatings.

The unit is designed to sustain its seal in 3 feet of salt water. Avoid submerging the unit in more than 3 feet of water for long periods.

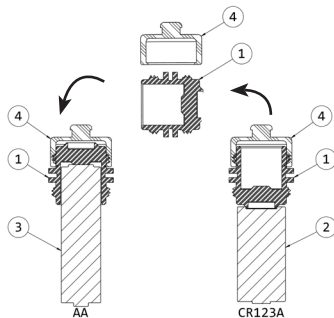
Do not attempt to make any adjustments other than those described in this manual. Adjustment of the mounting base to accommodate mounting rails is explained. The unit is sealed at the factory. No attempt should be made to tamper with internal components.

2. PREPARATION FOR USE

2.1 Preparation for Use

Unpack the UNS-A3 from the soft pouch. Install the battery.

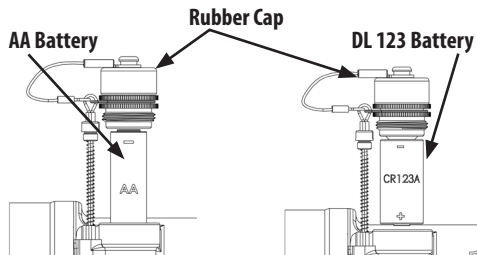
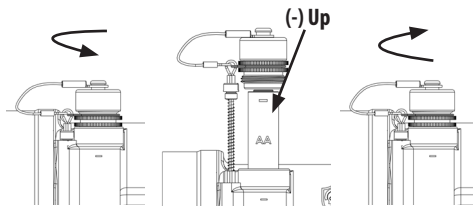
ITEM	DESCRIPTION	QTY
1	BATTERY CAP, REVERSIBLE, UNS	1
2	DL 123 BATTERY (OPTIONAL)	1
3	AA BATTERY (OPTIONAL)	1
4	RUBBER COVER, BATTERY CAP	1



NOTE: The rubber cover for the battery cap can remain on when changing the same type batteries. Only remove the rubber cover for the battery cap when switching battery types.

2.2 Battery Installation (1 Battery)

1. Clear away any debris (dirt, sand, etc.).
2. Unscrew cap counterclockwise to remove battery cap.
3. Replace battery positive contact down. Use extreme care to keep debris out of the battery compartment and battery cap threads.
4. Screw cap clockwise back on.
5. To switch battery types (AA or DL 123), remove the rubber cap cover and turn the reversible battery cap over. The cap is recessed on one side to allow space for the longer AA battery.
6. The attached lanyard will keep the cap from getting lost. Pull up on lanyard to extend length.



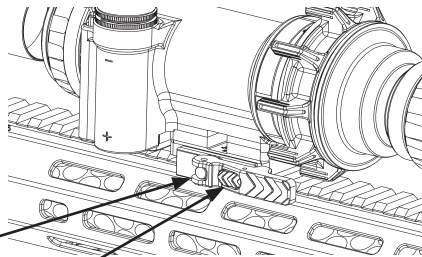
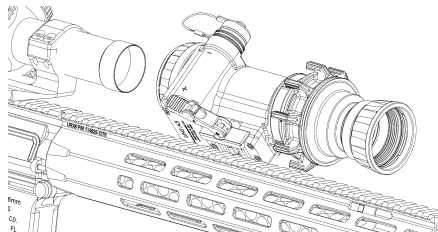
2.3 Installation / Mounting



NOTE: The sight should fit all MIL-STD-1913 rails that are within the manufacturing tolerances when the base is adjusted properly.



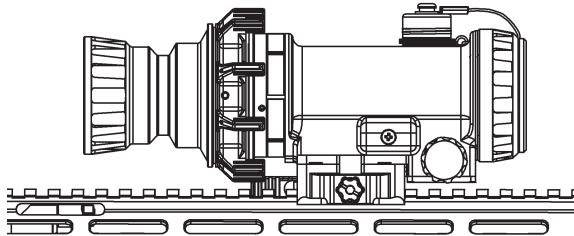
1. To release (open) the mount lever, push the thumb latch then pull the mount lever to the rear of the scope.
2. Orient the UNS-A3 in front of the scope so that the objective lens points towards the muzzle of the weapon. The UNS-A3 should be far enough in front of the scope to avoid any contact.
3. Locate an installation position where the objective clears any close object, including the rail. Place the UNS-A3 onto the picatinny rail with the lever and clamp in the open position.
4. Rotate the QD lever forward into the closed position until it locks into place and the UNS-A3 is secured to the rail



Thumb Latch

Mount Lever

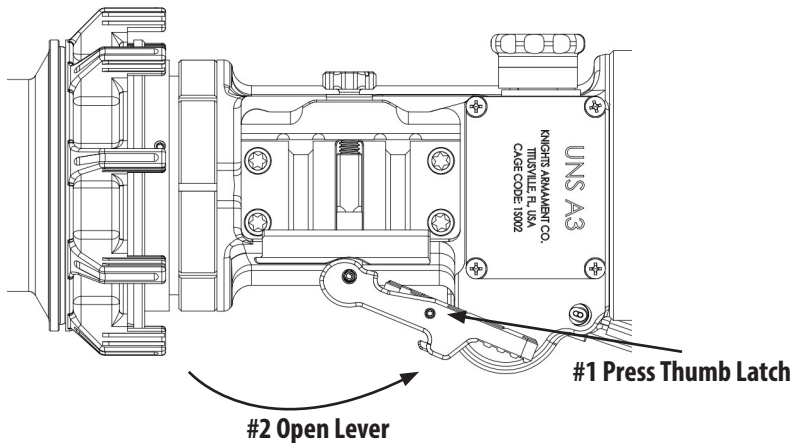
5. Verify that the UNS-A3 is securely mounted onto the rail. If the fitment of the UNS-A3 is too loose or too tight, adjust as necessary. See adjustment of QD Rail Mount steps in the following section.
6. When properly adjusted, the UNS-A3 can be removed and/or installed by only operating the mount lever and thumb latch. There should be minimal/no play between the sight and rail while not requiring excessive force to install or remove.
7. Repeat adjustments of QD rail Mount as necessary to achieve a secure fit. Test fire to check for adjustment and point-of-impact shift.



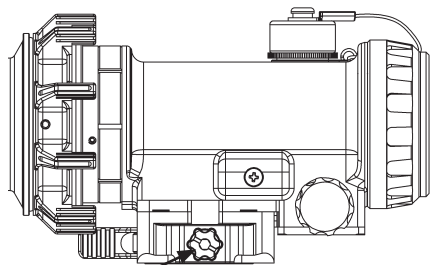
2.4 Adjusting the Mount Base



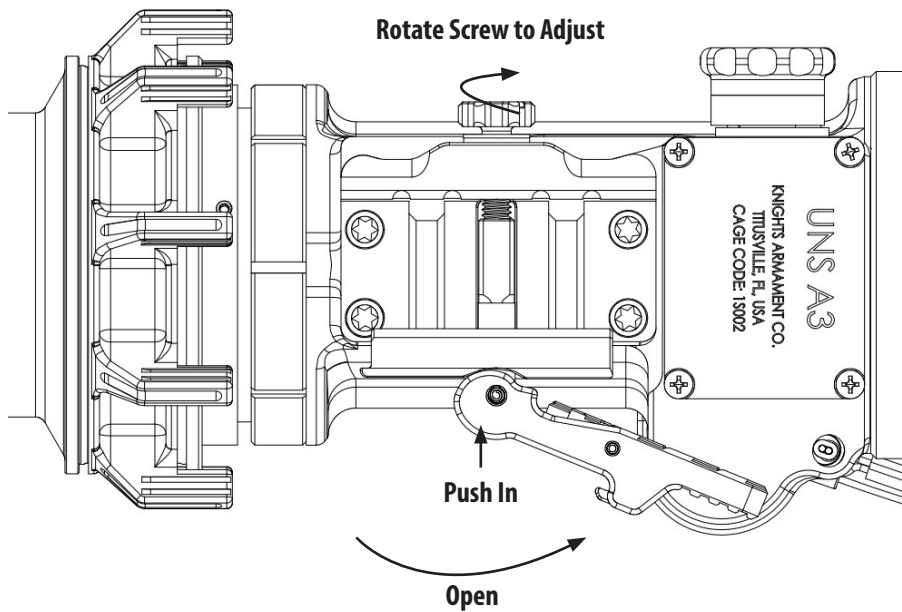
NOTE: The sight should fit all MIL-STD-1913, or STANAG 4694, rails that are within the manufacturing tolerances, when the base is adjusted properly.



1. For proper base adjustment, open the mount lever by pressing the thumb latch and rotating the lever toward the rear of the sight.
2. Push the lever in to expose the head of the adjustment screw from its locked position.
3. Using your fingers or a 1/8" hex key, loosen (counter-clockwise) or tighten (clockwise) the adjustment screw as needed.
4. Install the sight onto the rail to check if further adjustment is necessary.



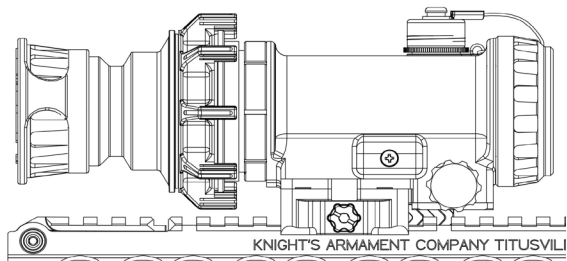
1/8" Hex Key



 **CAUTION** 

Possible lens breakage and failure of mission can occur if the UNS-A3 objective (front) lens makes contact with the flip-up sight during firing or if the eyepiece impacts the day scope.

- Position the objective Rubber Lens Cover so the flat edge is on the bottom if the UNS-A3 is positioned above a rail.
- Properly align sight in relation to the flip-up sight on the weapon.
- Do not mount the sight in a position that makes it contact with a flip-up sight or any object.

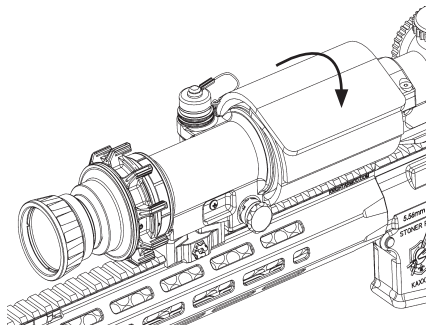
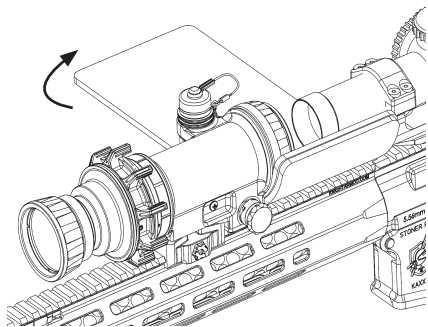


2.5 Installing Shroud Wrap Coupler

The shroud wrap coupler (26188) is a neoprene wrap that wraps tightly on the rear lens of the UNS-A3 and the objective lens of the day scope.

The shroud wrap coupler fills the gap between the optical scopes and eliminates the stray light which reflects onto or out from the system when the UNS-A3 is powered on.

1. Lay the Shroud wrap coupler open under the gap (between the day scope and the UNS-A3).
2. With the logo facing up, wrap the non-Velcro® side around first.
3. Wrap the Velcro® end around tightly for a snug closure.



3. PRINCIPLES OF OPERATION

3.1 General

The UNS-A3 is constructed of a system of lenses combined with an image intensifier tube. This produces a light intensified image of the viewed scene. This chapter describes the optical and electrical principles of operation, which allow the UNS-A3 to perform this function.

3.2 Optical Principle of Operation

The UNS-A3 is a single channel electro-optical device providing a system magnification of 1X. The sight is comprised of three basic components: the objective lens assembly, the image intensifier tube, and the eyepiece lens assembly. The objective lens assembly collects available light from the scene being viewed and focuses it onto the front surface of the image intensifier tube. The image tube amplifies the light; it is then viewed by the eyepiece assembly. The sight interior is sealed in a nitrogen atmosphere to keep moisture out and prevent condensation on the lenses and the image tube assembly.



Do not remove the front lens cover in bright light. Exposure of the image intensifier tube in the UNS-A3 to bright light for long durations may cause permanent damage.

3.3 Electrical Principle of Operation

The entire UNS-A3 is powered by one AA or one DL123 battery that will provide over 36 hours of continuous use, at 23 degrees Centigrade (73° F). Battery life is shorter at low temperatures. If the display starts to blink, then change the battery. One switch controls the on/off function as well as the variable gain setting.



Do not store batteries in the sight for more than 24 hours. Batteries should be inspected for bulging, corrosion and leakage before use. Do not use if a battery shows signs of bulging, corrosion or leaking.

Batteries should be handled in the following manner.

- Do not dispose of in fire.
- Do not short circuit, puncture, or disassemble.
- Return for disposal in accordance with proper disposal instructions.



Do not point the UNS-A3 at bright lights without the lens cover in place. Remove the lens cover when preparing to use. The unit cannot be used with the lens cover on the objective lens.

4. OPERATING INSTRUCTIONS

4.1 Basic Operation

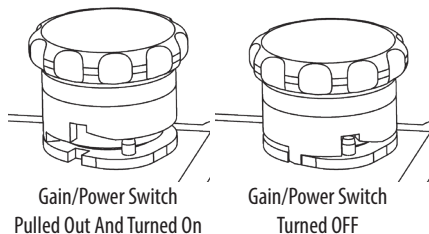
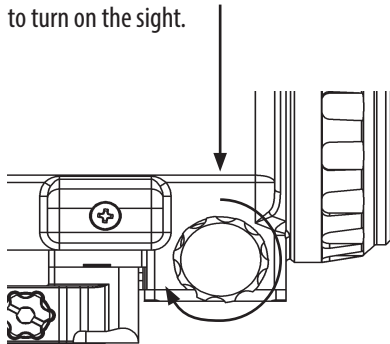
To operate the UNS-A3, simply turn the unit on by pulling out and rotating the Gain/Power Switch clockwise toward the butt stock.

When the UNS-A3 is initially turned on, it is at the brightest gain. Turning the knob further clockwise makes the image darker.

To make the image brighter, turn the knob counterclockwise. Utilize the gain switch to obtain the maximum contrast, which is very instrumental in the target acquisition phase of deploying the UNS-A3.

To shut down the system, turn the Gain/Power Switch counterclockwise to the stop. A tactile click can be felt when turning the system on or off.

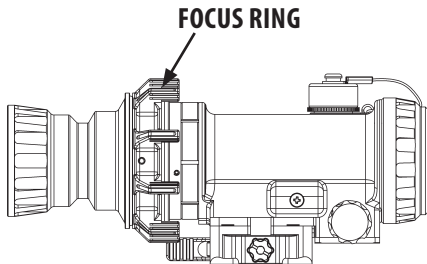
Pull out Gain/Power Switch and turn clockwise to turn on the sight.



4.2 Manual Focus Control

The Focus can be adjusted on the UNS-A3 as follows:

1. The Focus Ring is located near the front of the sight.
2. Rotate Focus Ring to focus. The focus can be adjusted to allow viewing of objects at distances from 20 meters to infinity.
3. Clockwise movement of the Focus Ring will result in Infinity focus, while counterclockwise rotation will result in near focus.
4. Friction in the Focus Ring prevents movement.



5. OPERATION UNDER ADVERSE CONDITIONS

The following paragraphs describe the operation of the UNS-A3 in dusty, sandy, humid, and saltwater conditions.

5.1 Operation in Dusty or Sandy Conditions

Operating the UNS-A3 in these conditions can cause scratching and pitting of optical elements. If a mission requires the UNS-A3 be used in these conditions, the unit should be cleaned per the manual as soon as the conditions subside.

5.2 Operation in Rainy or Humid Conditions

Operating the UNS-A3 in these conditions can lead to corrosion and deterioration of performance. If a mission requires the UNS-A3 to be used in these conditions, the unit should be dried thoroughly before storage, and the unit should not be stored wet or in a wet soft carrying case (pouch).

5.3 Operation in Saltwater Areas

If the UNS-A3 is exposed to salt water, the unit should be rinsed in fresh water as soon as possible.

6. MAINTENANCE AND SERVICING INSTRUCTIONS

6.1 Cleaning and Lubrication Instructions

These cleaning processes should be followed after every use to ensure the unit is cleaned and lubricated before storage.

6.2 Non-Optical Surfaces

These areas can be cleaned with water and a mild detergent as needed.

6.3 Optical Surfaces

The Optical surfaces should be cleaned when visibly dirty. Blow on the lens to remove loose sand or dust particles from the surfaces before cleaning. The optical surfaces can be cleaned with a soft cloth or the cleaning tissues that are provided.



Rinse optical surfaces with clean water to remove dirt before wiping with lens tissue. Wiping extremely dirty or sandy optical surfaces could scratch the optical surfaces and permanently damage the lenses. Ensure surface is wiped clean of water with lens tissue to avoid water beading.

6.4 Lubrication

Moving parts of the throw lever mount can be lubricated using Break-Free® CLP or another similar oil.

6.5 Troubleshooting

If the sight fails to function after the unit has been installed properly on the rail, the following actions should be taken to correct the problem:

UNIT WILL NOT TURN ON OR NO IMAGE DISPLAYED

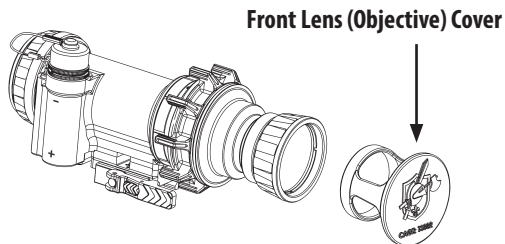
- A. Ensure the front lens (Objective) cover is removed from the lens but remains tethered to the UNS.
- B. Replace batteries.
- C. Verify that all batteries are installed in the proper orientation (- Negative up).
- D. Check the unit for obvious damage.

UNFOCUSED IMAGE

- A. Adjust focus ring.

GRAINY IMAGE

- A. Check lenses for foreign debris, clean lenses.



6.6 Preparation for Shipment

The unit should be packed in the soft carrying case (pouch) with batteries removed, and then securely packaged in a cardboard box with packing material. The box should be marked "FRAGILE" before shipping.

6.7 Storage

If this unit will be stored and not operated for longer than 24 hours, all batteries should be removed to minimize the possibility of damage from defective or corroded batteries.

The sight ships with a soft case. It is recommended that this case be used to store the sight to prevent damage to the unit. If the UNS-A3 is stored longer than one month, all batteries should be removed from the UNS-A3 and the soft pack to prevent the possibility of damage from defective or corroded batteries.

7. SPARE PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION
1	26183	OBJECTIVE COVER, UNS A3
2	NVD-UM-0006	OPERATORS MANUAL, UNS A3
3	26572	LENS CLEANING KIT
4	26188	SHROUD WRAP, BLACK
5	27361	RUBBER COVER, BATTERY CAP, BLK
6	26546	SHROUD EYEPIECE COVER
7	26187	SOFT CARRY CASE
8	27358	ELECTRONICS LID ORING
9	26217	ELECTRONICS LID SCREWS
10	26909	GAIN SWITCH
11	26211	GAIN SWITCH NUT
12	26053	ORING, SWITCH INNER

7. SPARE PARTS LIST CONTINUED

ITEM NO.	PART NO.	DESCRIPTION
13	26257	ORING, SWITCH OUTER
14	26206	KNOB, GAIN SWITCH
15	26222	WASHER, GAIN SWITCH RETAINING
16	26221	1/16 X 7/16 ROLL PIN
17	26184	WAVESPRING SWITCH
18	27297	GAIN SWITCH CAP
19	27337-1	RETRACTABLE LANYARD ASSY, BLK
20	118990 or 118990-1	HYBRID RAIL MOUNT ASSY
21	120007	PURGE SCREW



ITAR
International Traffic in Arms Regulations

RESTRICTED EXPORT. The item(s) are firearm or defense related goods governed by U.S. Government International Traffic in Arms Regulations 22 CFR, ITAR Parts 120-130 and therefore require an Export License issued by the U.S. Department of State to be subsequently transported outside of the United States. These items may not be transferred, transhipped on a non-continuous voyage, or otherwise be disposed of in any other country, either in their original form or after being incorporated into other end items. The International Traffic in Arms Regulations (ITAR) is a set of United States government regulations that control the export of defense-related articles and services on the United States Munitions List. These regulations implement the provisions of the Arms Export Control Act, and are described in Title 22 (Foreign Relations), Chapter (Department of State), Sub chapter M of the Code of Federal Regulations.