



NYX-7 PRO NYX-7 PRO MG

Night Vision Goggles



OPERATION AND MAINTENANCE MANUAL

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SAFETY SUMMARY

Before operating this product, you must carefully read and study this Operation and Maintenance Manual.

The Nyx-7 PRO is a precision electron-optical instrument, and requires careful handling. To avoid damage to the equipment or physical harm to the user when operating the Nyx-7 PRO, follow all WARNINGS, CAUTIONS and NOTES.

Below you will find definitions of the following alerts that appear throughout this Manual:

WARNING — Identifies a clear danger to the person operating the equipment.

CAUTION – Identifies risk of damage to the equipment.

NOTE – Serves to highlight essential procedures, conditions, and statements, or convey important instructional data to the user.

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WARNINGS:

- **This product contains natural rubber latex which may cause allergic reactions!** The FDA has reported an increase in the number of deaths that are associated with an apparent sensitivity to natural latex proteins. If you are allergic to latex, it is a good idea to learn which products contain it and strictly avoid exposure to those products.
- The light from the unit infrared (IR) illuminator is invisible to the unaided eye when used in total darkness. **However, the light can be detected by other Night Vision Devices (NVD).**
- To reduce the risk of detection by another NVD, avoid prolonged activation of the IR illuminator.
- The IR light is more detectable by an NVD when used in smoke, fog and rain. Avoid prolonged activation of the unit IR illuminator in these conditions.
- The intensifier's phosphor screen contains toxic materials. Please note the following:
 - If the intensifier tube breaks, be **extremely careful** to avoid inhaling the phosphor screen material. DO NOT allow the material to come in contact with your mouth, eyes, or any open wounds on the skin.
 - If the phosphor screen material comes in contact with your skin, wash it off immediately with soap and water.
 - If you inhale or swallow any phosphor screen material, drink a lot of water, induce vomiting, and **seek medical attention as soon as possible.**

CAUTION:

- The Nyx-7 PRO is a precision electron-optical instrument, and must be handled carefully at all times to prevent damage to the device and danger to the user.
- To protect the intensifier tube, **do not remove** the lens cap of the Nyx-7 PRO when the unit is being operated in daylight conditions, or when the device is not in use.
- Use of the Nyx-7 PRO in brightly lit conditions may damage the unit's intensifier tube.
- Bright light sources such as firelight, headlights, searchlights, etc. can damage the Nyx-7 PRO. Avoid exposing the unit to these types of light sources.
- Before removing the lens cap, verify that the photoreceiver is open.
- DO NOT attempt to force the controls past their stopping points, as this may cause damage to the mechanisms.
- Before replacing the intensifier tube, confirm that it is no longer covered by warranty.
- Thoroughly clean and dry each component of the Nyx-7 PRO before placing them in the storage case.

NOTES:

- The equipment requires some ambient light (moonlight, starlight, etc.) to operate.
- Performance of the device in nighttime conditions depends on the level of ambient light in the environment. Please remember the following:
 - The level of ambient light is reduced by the presence of clouds, shade, or objects that block natural light (trees, buildings, etc.).
 - The equipment is less effective when operated in shadows and other darkened areas.
 - The equipment is less effective when operated in rain, fog, sleet, snow, dust or smoke.
 - The equipment will not "see" through dense smoke.
- The IR illuminator is intended for increased illumination, as needed, when viewing at a close distance of up to 3m.
- For the purpose of returning defective components, retain all packaging materials.

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HOW TO USE THIS MANUAL

USAGE

You must familiarize yourself with the entire manual before operating the equipment. Before performing any kind of maintenance on your device, read the section on maintenance in its entirety. Follow all WARNINGS, CAUTIONS, and NOTES.

MANUAL OVERVIEW

This manual contains sections on Operating and Maintaining the Nyx-7 PRO Night Vision Unit.

The list of Spare Parts can be found in Appendix A.

The Product Warranty Registration Card can be found in Appendix B.

INTRODUCTION

1.1 GENERAL INFORMATION

1.1.1 TYPE OF MANUAL

Operation and Maintenance (including a List of Spare Parts).

1.1.2 MODEL NUMBER AND EQUIPMENT NAME

This Manual accompanies the Nyx-7 PRO Night Vision Goggles and Nyx-7 PRO MG Night Vision Goggles with Manual Gain control.

Throughout this manual, the Nyx-7 PRO will be referred to as the goggles, the device, the equipment, or the Nyx-7 PRO.

1.1.3 PURPOSE OF EQUIPMENT

To provide the operator with the ability to observe scenes at night, under moonlight and starlight conditions.

The Nyx-7 PRO can be used as a handheld, head-mounted or helmet-mounted device. When mounted to the head or a helmet, the user will be able to easily operate the device while walking, performing short-range surveillance, reading maps, performing vehicle maintenance, or administering first aid.

1.1.4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

Armasight encourages user recommendations for improvements to the device.

Mail your comments to:

Armasight Inc.
815 Dubuque Avenue
South San Francisco, CA 94080
USA.

Or, you can send an email to info@armasight.com.

1.2 WARRANTY INFORMATION AND REGISTRATION

1.2.1 WARRANTY INFORMATION

This product is guaranteed to be free from manufacturing defects in material and workmanship under normal use for a period of two (2) years from the date of purchase. In the event that a defect covered by the below warranty occurs during the applicable period stated above, Armasight, at its discretion, will either repair or replace the product; such action on the part of Armasight shall be the full extent of Armasight's liability, and the Customer's sole and exclusive reparation. This warranty does not cover a product if it has (a) been used in ways other than its normal and customary manner; (b) subjected to misuse; (c) subjected to alterations, modifications or repairs by the Customer or by any party other than Armasight without prior written consent of Armasight; (d) special order or "close-out" merchandise or merchandise sold "as-is" by either Armasight or the Armasight 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 Armasight. Armasight shall not be responsible for any defects or damage that in Armasight's view are a result from the mishandling, abuse, misuse, improper storage or improper operation of the device, including use in conjunction with equipment that 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 enforced unless the Customer notifies Armasight 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.

1.2.2 LIMITATION OF LIABILITY

Armasight 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. Armasight'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 Armasight 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 Armasight and the Customer; Armasight's obligations under this Agreement extend solely to the Customer. Armasight's liability hereunder for damages, regardless of the form or action, shall not exceed the fees or other charges paid to Armasight by the Customer or Customer's dealer. Armasight 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.

1.2.3 PRODUCT WARRANTY REGISTRATION

In order to validate the warranty on your product, Armasight must receive a completed Product Warranty Registration Card for each unit, or the Customer can complete a warranty registration on our website, at www.armsight.com. Please complete the included form (Appendix C) and immediately mail it to our Service Center:

Armasight Inc.
815 Dubuque Avenue
South San Francisco
CA 94080
United States of America.

1.2.4 OBTAINING WARRANTY SERVICE

To obtain warranty service on your unit, the End-user (Customer) must notify the Armasight service department via email. Send any requests to service@armasight.com to receive a Return Merchandise Authorization number (RMA). When returning any device, please take in the product to your retailer, or send the product, postage paid and with a copy of your sales receipt, to Armasight Corporation's service center at the address listed above. All merchandise must be fully insured with the correct postage; Armasight will not be responsible for improper postage or merchandise that becomes lost or damaged during shipment. When sending product back, please clearly write the RMA# on the outside of the shipping box. Please include a letter that indicates your RMA#, the Customer's Name, a Return Address, reason for the return, Contact information (valid telephone numbers and/ or an e-mail address), and proof of purchase 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. The End-user/ Customer is responsible for postage to Armasight for warranty service. Armasight will cover return postage/ shipping after warranty repair to the End-user/ Customer only if the product is covered by the aforementioned warranty. Armasight will return the product after warranty service by domestic UPS Ground service and/ or domestic mail. Should any other requested, required or international shipping methods be necessary, the postage/ shipping fee will be the responsibility of the End-user/ Customer.

1.4 LIST OF ABBREVIATIONS

C	Celsius (Centigrade)
CCW	counterclockwise
Cont'd	Continued
CW	clockwise
Dia	diameter
F	Fahrenheit
FOV	Field of View
g	gram
Gen	Generation
H	Height
hr	hour
IR	infrared
IT	Intensifier Tube
L	Length
LED	Light Emitting Diode
lx	lux
m	meter
mA	milliampere
min	minute
mm	millimeter
mW	milliwatt
nm	nanometer
No	Number
NV	Night Vision
NVD	Night Vision Device
Para	Paragraph
PMCS	Preventive Maintenance Checks and Services
QRM	Quick Release Mount
QTY	Quantity
RMA#	Return Merchandise Authorization number
s	second
seq	sequence
SR	Service Representative
VDC	Volts Direct Current
V	Volt
W	Width

DESCRIPTION AND DATA

2.1 SYSTEM DESCRIPTION

The Nyx-7 PRO is a hand-held, head-mounted or helmet-mounted night vision system that allows the user to operate it while walking, conducting short-range surveillance, reading maps, conducting vehicle maintenance, or administering first aid in both moonlight and starlight conditions.

The Nyx-7 PRO utilizes the principle of intensification of the residual light that is reflected from the surrounding objects. The optical system of the unit consists of an objective lens, an intensifier tube (IT), and two eyepieces.

The Nyx-7 PRO automatic brightness adjustment system retains the same gain (image brightness), even under unsteady light conditions.

The Nyx-7 PRO automatic protective system controls illumination through a photoreceiver. If the illumination level surpasses 100-300 lx for more than 10s, the unit will shut off automatically.

A built-in IR illuminator makes it possible to use the unit in low light or total darkness.

The Nyx-7 PRO uses LED lights to indicate illumination level, low battery, and to show the user that the IR illuminator is on.

The Nyx-7 PRO allows for vertical and fore-and-aft adjustment when mounted to the user's head or helmet, when focusing the lens, and when focusing the eyepiece.

Additionally, the Nyx-7 PRO MG version incorporates gain control, which allows the user to increase or decrease the brightness of the image to compensate for overly bright or extremely dark conditions.

NOTE:

The equipment requires some light (moonlight, starlight, etc.) to operate. Performance of the device depends upon the level of ambient light in the environment. Please remember the following:

- The level of ambient light in the environment is reduced by the presence of clouds, shade, or objects that block natural light (trees, buildings, etc.).
- The equipment is less effective when operated in shadows and other darkened areas.
- The equipment is less effective when operated in rain, fog, sleet, snow, or smoke.
- Under starlight conditions, particularly in low-contrast environments such as snow-covered territory, sandy deserts, large bodies of water or grassy hills, the visibility may degrade, thereby disguising or masking changes in terrain.
- The equipment will not "see" through dense smoke.



FIGURE 2-1. NYX-7 PRO NIGHT VISION GOGGLES

TABLE 2-1. NYX-7 PRO SYSTEM DESCRIPTION

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Body	8	Rail
2	Lens	9	Eyepiece Ring
3	Focus Ring	10	Eyepiece
4	Lens Cap	11	Eye-cup
5	Battery Cap	12	Function Switch
6	Photo Receiver	13	IR Illuminator
7	Pivotal Focusing Lens	14	Gain Control Knob *

* For Nyx-7 PRO MG version.

2.2 SPECIFICATIONS

TABLE 2-2. MECHANICAL DATA

EQUIPMENT ITEM	DIMENSIONS, MM	WEIGHT, G
Nyx-7 PRO Night Vision Goggles	165x120x61/165x127x61**	496/507**
Goggle Kit	280x180x80	295
Helmet Mount*	140x90x70	280
3X Afocal Lens*	Dia 64x77	188
5X Afocal Lens*	Dia 78x90	344
5X Lens*	Dia 80x140	500
8X Lens*	Dia 96x210	730
IR850*	117x41x37	102

* Optional.

** Nyx-7 PRO MG version.

TABLE 2-3. ELECTRICAL DATA

ITEM	DATA
Battery*	One 123A (3V) or AA (1.5V)
Consumption Current**:	
— at 1.5 VDC	75mA
— at 3.0 VDC	38mA
Continuous Operation** at 20 °C:	
— AA Alkaline Battery	30 (IIT Gen. 2+) / 25 (IIT Gen. 3)
— 123A Lithium Battery	60 (IIT Gen. 2+) / 50 (IIT Gen. 3)

* Any AA or CR123 type rechargeable batteries with voltage from 1.2V to 3.7V can be used

** With IR illuminator off.

TABLE 2-4. OPTICAL DATA

ITEM	DATA
Magnification:	
— with 1X Lens	(1±0.05) X
— with 3X Afocal Lens*	(3±0.15) X
— with 5X Afocal Lens*	(5±0.2) X
— with 5X Lens*	(5±0.2) X
— with 8X Lens*	(8±0.5) X
1X Lens:	
— Focal Length	27mm
— Lens F/number	1:1.2
Focus Range:	
— with 1X Lens	0.25m to infinity
— with 3X Afocal Lens*	5m to infinity
— with 5X Afocal Lens*	10m to infinity
— with 5X Lens*	10m to infinity
— with 8X Lens*	15m to infinity
FOV:	
— with 1X Lens	40°
— with 3X Afocal Lens*	9°
— with 5X Afocal Lens*	7°
— with 5X Lens*	9°30'
— with 8X Lens*	6°30'
Exit Pupil Diameter	15mm
Eye Relief	15mm
Interpupillary Distance	58 to 72 mm
Eyepiece Diopter Adjustment	-6 to +2 diopters
Built-in IR Illuminator	
— Power	50mW
— Illumination Range	20m
— Focus Distance	3m
— Illumination Wavelength	850nm

* Optional.

TABLE 2-5. ENVIRONMENTAL DATA

ITEM	DATA
Operating Temperature	-40 to +50 °C
Storage Temperature	-50 to +70 °C
Humidity	95%, 25°C to 40°C for 48 hr
Illumination Required	Natural night illumination (overcast starlight to moonlight)
Immersion	10m for 1 hr *
MIL-STD-810	Complies

* *Optional.*

TABLE 2-6. IR850/IR850W SPECIFICATIONS

ITEM	IR850	IR850W
IR Emitter Type	LED	LED
Peak Wavelength	850 nm	850 nm
Power	500 mW	500 mW
Illumination Range	Up to 450 m	Up to 800 m
Divergence	8° to 12°	2° to 30°
Battery*	Single CR123A (3V)	Single CR123A (3V)
Operational Time at 20 °C (68 °F)	1.5 hr (Full Power) / 10 hr (1/4 Power)	1.5 hr (Full Power) / 10 hr (1/4 Power)
Overall Dimensions with Mount	117×41×37mm (4.6×1.6×1.7in)	120×42×38mm (4.7×1.6×1.7in)
Weight (w/Mount, w/o Battery)	102 g (3.6 oz)	102 g (3.6 oz)
Operating Temperature	-30 to +50°C (-22 to 122°F)	-30 to +50°C (-22 to 122°F)
Storage Temperature	-50 to +70°C (-58 to 158°F)	-50 to +70°C (-58 to 158°F)
Environmental Rating	Water Resistant	Water Resistant

* *Any CR123 type rechargeable batteries with voltage 3.2V can be used*

2.3 STANDARD COMPONENTS

Nyx-7 PRO standard components are listed in Table 2-7 and shown in Figure 2-2.



FIGURE 2-2. NYX-7 PRO STANDARD COMPONENTS

TABLE 2-7. NYX-7 PRO STANDARD COMPONENTS

ITEM	DESCRIPTION	QUANTITY
1	Armasight Nyx-7 PRO Night Vision Goggles Night vision goggles with unity magnification.	1

TABLE 2-7. CONTINUED

2	Objective Lens Cap A cap used to protect the lens and to be used when testing the unit in daylight.	1
3	Eyecup The rubber cups used to protect the eyepieces as well as provide comfort for the operator.	2
4	CR123A Lithium Battery A single, 123A lithium battery used to power the unit.	1
5	Goggle Kit Adjustable universal assembly that secures the Nyx-7 PRO to the operator's head, providing hands-free operation.	1
6	Soft Carrying Case A protective case used for storing and carrying of the Nyx-7 PRO and its accessories.	1
7	Operation and Maintenance Manual Provides safety information, equipment description, mounting procedures, operating instructions, and preventive maintenance checks and services (including a List of Spare Parts).	1

2.4 OPTIONAL EQUIPMENT

Nyx-7 PRO optional equipment is listed in Table 2-8.

TABLE 2-8. NYX-7 PRO OPTIONAL EQUIPMENT

IMAGE	DESCRIPTION	
	3x A-Focal Lens #22 Quickly converts the Nyx-7 PRO into a long-range night vision device. Ideal for long range observation.	ANAF3X0002
	5x A-Focal Lens Quickly converts the Nyx-7 PRO into a long-range night vision device. Ideal for long range observation.	ANAF5X00002
	5X Lens Quickly converts the Nyx-7 PRO into a long-range night vision device. Ideal for long range observation.	ANLE5X0007
	8X Lens Quickly converts the Nyx-7 PRO into a long-range night vision device. Ideal for long range observation.	ANLE8X0006



Helmet Mount #4

ANHM000001

Helps to mount the goggles to a range of ballistic helmets.



IR850 Detachable Long Range Infrared Illuminator w/Dovetail to Weaver Transfer Piece #21

ANKI000017

Long-range infrared illuminator. Provides greater viewing capabilities when the environment has little or no ambient light. Comes fully assembled with a dedicated mount in order to be installed on a Picatinny/Weaver rail.



IR850W Detachable Wide Angle Adjustable X-Long Range IR Illuminator w/Dovetail to Weaver Transfer Piece #21

ANKIW00017

A detachable LED extra long-range infrared illuminator with wide-angle adjustable beam (2 to 30 degrees). Comes fully assembled with a dedicated mount in order to be installed on a Picatinny/Weaver rail.



Transfer Adapter to PVS7/PVS14 Headset/Helmet #59

ANAM000034

Mounts goggles to Standard US Mil Headset (PVS7/PVS14 type) and/or helmet.



Hard Shipping/Storage Case #101

ANH000001

A protective case used for the shipping/ storage of the Nyx-7 PRO and its accessories.

2.5 KEY FEATURES

- High Quality Gen 2+/ 3 intensifier tube
- Super fast lens system provides the user with a clear, sharp image
- Dual eye viewing system for long viewing sessions
- Automatic bright light cut-off system to protect the intensifier tube
- LED lights visible in the eyepiece viewing area that indicate operation of the bright light cut-off system and IR illuminator, as well as to alert the user of a low battery
- Built-in IR illuminator
- Lightweight
- Compact and robust design
- Easy to operate
- Serviceability under severe conditions
- High-performance
- Highly reliable
- Powered by single CR123A or AA battery
- Head or helmet-mountable for hands-free usage
- Automatic OFF feature with flip-up head/ helmet mount
- Manual gain control (Nyx-7 PRO MG version) for the best possible image contrast under very high and very low light conditions
- Interchangeable lenses for different magnification
- Waterproof
- Limited two-year warranty

OPERATING INSTRUCTIONS

3.1 INSTALLATION AND MOUNTING

CAUTION:

To protect the intensifier tube when the sight is not in use or when it is being operated in daylight, keep the protective lens cap securely fitted over the lens.

3.1.1 BATTERY INSTALLATION

The Nyx-7 PRO operates on a single CR123A or AA battery.

Depending on the size of the battery used, it may be necessary to reposition the battery adapter within the battery cap.

NOTE:

If operating the device at temperatures below -20°C (-4°F), the use of an alkaline battery is not recommended, as the severe cold will adversely affect the life of the battery. In these conditions, it is recommended that you use a lithium-iron disulfide 1.5V AA battery, or its equivalent.

Install the CR123A battery as follows:

1. Unscrew the battery cap (A) and insert the CR123A battery (B), observing the polarity markings on the body of the device.
2. With the battery adapter (C) installed, screw the battery cap (A) back on securely.

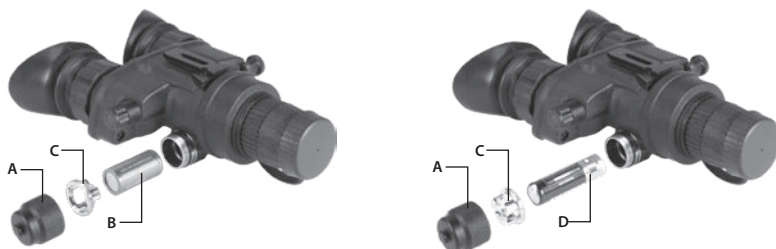


FIGURE 3-1. BATTERY INSTALLATION

Install the AA battery as follows:

1. Unscrew the battery cap (A).
2. Unscrew the battery adapter (C) from the cap, turn it around, and screw in the other end.
3. Insert the AA battery (D), observing the polarity markings as indicated on the body of the device.
4. Screw the battery cap (A) back into place.

3.1.2 MOUNTING THE NYX-7 PRO TO A GOGGLE KIT

Mount the Nyx-7 PRO to the optional goggle kit as follows:

1. Put on the goggle kit. Adjust the goggle kit strap pads until the goggles fit securely around your head. Remove the goggle kit.
2. Loosen the screw (A). While pushing down on the button (B), insert the Nyx-7 PRO rail into the guide (C) of the goggle kit bracket. Tighten the screw (A).
3. Put on the goggle kit, now mounted with the Nyx-7 PRO.
4. To adjust the equipment for greater comfort, loosen the screw (A) and move the unit along the guide (C).
5. The goggle kit has a flip-up mechanism. Push the button (D) of the goggle kit bracket and lift the unit up until it reaches its topmost position. The unit will automatically turn off when it reaches this position.
6. Push the same button (D) to lower the unit into the correct viewing position. Turn the unit back on to continue your session (rotate the function switch to OFF position and then to ON position).
7. Push the button (E) and move the unit along the slide-rail (F) until the most comfortable position is reached.
8. To remove the Nyx-7 PRO from the goggle kit, loosen the screw (A), push the button (B), and slide the unit out of the bracket guide (C).



FIGURE 3-2. MOUNTING NYX-7 PRO TO A GOGGLE KIT

3.1.3 MOUNTING THE NYX-7 PRO TO A HELMET

An optional flip-up helmet mount can be used to attach the Nyx-7 PRO to a helmet. The helmet mount fits the Nyx-7 PRO securely onto the helmet via a rugged strapping device and grooved hooks. With the helmet mount, the Nyx-7 PRO can be positioned directly in front of the user's eyes, or flipped back-wards, out of the field of view.

Mount the Nyx-7 PRO to a helmet as follows:

1. Attach the mount to the helmet as shown in Figure 3-3.
2. Adjust and tighten the straps (A).

3. Loosen the screw (B). With the button (C) pushed down, insert the Nyx-7 PRO rail into the guide (D) of the helmet mount bracket. Tighten the screw (B).
4. Put on the helmet with the Nyx-7 PRO attached.
5. Push the button (F) and move the unit along the slide-rail (G) until the most comfortable position is reached.
6. Loosen the screw (B) and move the unit along the guide (D) for eye relief adjustment.
7. Turn the lever (I) and move the unit along vertical slide-rail until the most comfortable vertical position is reached.
8. The helmet mount has a flip-up mechanism. Push the button (E) and lift the unit up until it reaches the topmost position. The unit will automatically turn off when it reaches this position.
9. Push the same button (E) to lower the Nyx-7 PRO into the correct viewing position. Turn the unit back on to continue your session.
10. To remove the Nyx-7 PRO from the helmet mount, loosen the screw (B), push down on the button (C), and slide the unit out of the guide (D).
11. To remove the flip-up mechanism from the helmet mount, loosen the lever (I), pull out the knob (H), and slide the flip-up mechanism out of the vertical rail.

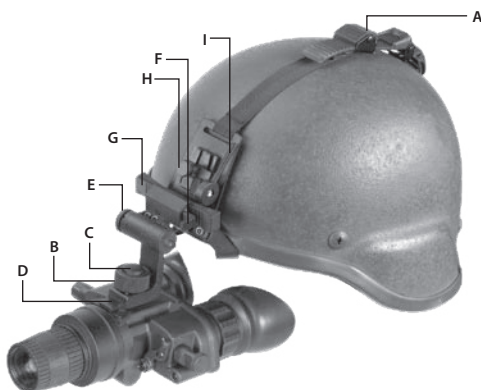


FIGURE 3-3. MOUNTING THE NYX-7 PRO TO A HELMET

3.1.4 MOUNTING A TRANSFER ADAPTER TO THE NYX-7 PRO

An optional Transfer Adapter #59 can be used to attach the Nyx-7 PRO to a PVS7/PVS14 Headset/Helmet mount. To mount the transfer adapter, unscrew two screws from Nyx-7 PRO rail and detach the rail. Install the transfer adapter in its place and fix adapter by two screws.



FIGURE 3-4. MOUNTING A TRANSFER ADAPTER TO THE NYX-7 PRO

3.1.5 MOUNTING ACCESSORY LENSES TO THE NYX-7 PRO

To mount the 3X afocal lens to the device, screw it into the threading of the standard 1X objective lens on the Nyx-7 PRO.

To mount the 5X or 8X lens, unscrew the existing 1X objective lens of the Nyx-7 PRO and screw in the 5X or 8X lens in its place.

The Nyx-7 PRO configured with an 8X lens can be installed on a tripod. To mount the unit on a tripod, use the 1/4" threaded socket (E) on the housing of the 8X lens.

NOTE:

The unit may be badly damaged if the tripod collapses or overturns. Remove the unit from the tripod if it is not within your reach.



FIGURE 3-5. MOUNTING ACCESSORY LENSES TO THE NYX-7 PRO

3.1.6 MOUNTING AN IR ILLUMINATOR TO THE NYX-7 PRO

To mount an IR illuminator to the Nyx-7 PRO, use the transfer piece from IR illuminator kit. Perform the following steps:

1. Install the transfer piece (A) onto the Nyx-7 PRO rail.
2. Tighten the fixing screw (B) on the transfer piece.
3. Loosen the IR illuminator fixing screw (C).
4. Mount the IR illuminator on the rail of transfer piece and tighten the fixing screw (C).

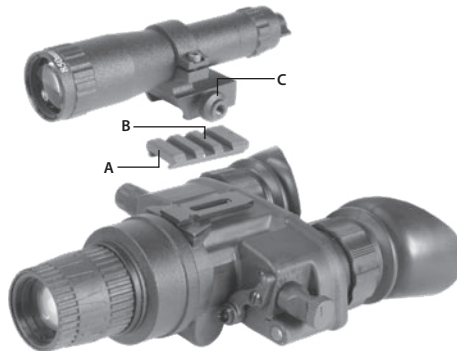


FIGURE 3-6. MOUNTING AN IR ILLUMINATOR TO THE NYX-7 PRO

3.2 CONTROLS AND INDICATORS

The Nyx-7 PRO controls and indicators are defined in Table 3-1.

The Nyx-7 PRO controls are shown in Figure 3-7.

CAUTION:

DO NOT over-adjust the controls by forcing them past their stopping points.

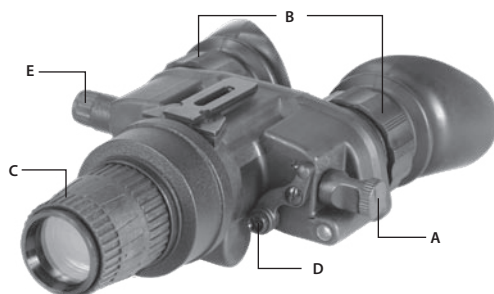


FIGURE 3-7. NYX-7 PRO CONTROLS

TABLE 3-1. NYX-7 PRO CONTROLS AND INDICATORS

CONTROL/INDICATOR	FUNCTION
Function Switch (Figure 3-7, A)	OFF position — the unit is off. ON position — the unit is on (IT powered). Turn the unit on by turning the switch CCW from OFF to ON. IR position — the unit is on, and the IR illuminator is activated. Activate the IR illuminator by pulling it out and turning the switch from ON to the IR position.
Eyepiece Rings (Figure 3-7, B)	Adjusts the unit diopter. The total dioptic range is covered in a 1/2 ring revolution.
Focusing Ring (Figure 3-7, C)	Focuses the lens. Adjusts for sharpest view of the scene. The total focus range is covered in a 1/3 ring revolution.
Pivotal Focusing Lens (Figure 3-7, D)	Allows the user to choose between the following: 1. The IR illuminator spot beam. When the pivotal focusing lens is placed in the leftmost position of the window of the IR illuminator, the photoreceiver is open. 2. The IR illuminator flood beam. When the focusing lens is placed in the center position, the photoreceiver is opened. 3. The photoreceiver is closed.
Gain Control Knob* (Figure 3-12, E)	Adjusts for image contrast.

TABLE 3-1. CONTINUED

CONTROL/INDICATOR	FUNCTION
Built-in LED Indicators	A GREEN GLOW in the eyepiece viewing area indicates excessive light conditions. After 10 s of exposure to bright light, the intensifier will shut off automatically. The unit will turn back on again when moved away from the excessive light.
	A PERMANENT RED GLOW in the eyepiece viewing area indicates that the IR illuminator is operating.
	A FLASHING RED LIGHT in the eyepiece viewing area indicates that the battery is low.

* For Nyx-7 PRO MG version only.

3.3 OPERATING PROCEDURES

3.3.1 OPERATING PROCEDURES

These procedures should be performed under nighttime conditions only.

CAUTION:

Use of the Nyx-7 PRO brightly lit conditions may damage the unit's intensifier tube.

1. Verify that the battery is installed as indicated on the unit body.
2. Make a visual estimation of the illumination level in the viewing area. The required level of illumination is less than 1 lx (late twilight sky conditions).
3. Remove the lens cap and place it over the housing of the lens.
4. Turn the function switch ON. After a slight delay, a green glow will appear in the eyepiece of the unit.
5. Adjust the unit diopter by rotating the ring of the eyepiece.
6. Observe the scene. Rotate the focus ring until the image is clear and sharp.
7. Adjust the brightness and contrast of the image using the gain control knob (Nyx-7 PRO MG version).

NOTE:

The front lens should be readjusted as you view objects at different distances.

CAUTION:

Bright light sources such as firelight, headlights, searchlights, etc. can damage the Nyx-7 PRO. Avoid exposing the unit to these types of light sources.

3.3.2 IR ILLUMINATOR OPERATIONS

CAUTION:

When operating the device in extremely dark conditions, the light from the unit's IR illuminator will be invisible to the unaided eye. However, the light can be detected by other NVDs.

NOTE:

The IR illuminator is designed to provide additional illumination (when needed) while viewing scenes or targets from a short distance (up to 3m).

1. To activate the IR illuminator, turn the unit on. Turn the function switch from ON to the IR position. A red light will appear in the eyepiece to indicate that the IR illuminator is operating.

3.3.3 OPERATING UNDER CHANGING LIGHT CONDITIONS

If the ambient light level exceeds the limit of 100-300 lx for more than 10 s, the Nyx-7 PRO automatic protective system will shut off the intensifier tube. If a mission must be carried out in changing light conditions, the user can shut down the protective system manually by closing the photoreceiver.

CAUTION:

DO NOT forget to open the photoreceiver after completing your mission.

3.3.4 NYX-7 PRO SHUT-DOWN

1. Turn the function switch OFF. The green glow in the viewing area will fade to black.
2. Secure the lens cap over the objective lens.
3. If necessary, remove the unit from the rail (from the scope lens). Remove the unit by following the mounting instructions in reverse.
4. Unscrew the battery cap and take out the battery. Replace the battery cap. Do not store the unit with the battery still in it.
5. Store the unit and all accessories in the case.

3.4 STORAGE

Prepare the Nyx-7 PRO for storage as follows:

1. Verify that the Nyx-7 PRO and all accessories are clean and dry before returning them to the storage case.
2. Secure the cap over the objective lens.
3. Remove the battery.
4. Place the Nyx-7 PRO and accessories in the appropriate locations in the case, and close the cover.

PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

4.1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Table 4-1: Preventive Maintenance Checks and Services has been provided so that you can keep your equipment operable and in good condition.

Perform all functional tests in the order listed in Table 4-1.

Operating Procedures are detailed in Chapter 3.

A. Cautions

Always observe any CAUTIONS that appear in the table.

B. Explanation of Table Entries

SEQ NO. column. Sequence numbers are for reference and appear in the order required to perform checks and services.

LOCATION/ITEM TO CHECK/SERVICE column. Indicates the location and the item to be checked or serviced.

PROCEDURE column. Details the checking/ servicing procedure.

NOT FULLY MISSION CAPABLE IF... column. Indicates what faults will prevent your equipment from operating successfully.

TABLE 4-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

SEQ NO.	LOCATION ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF...
BEFORE OPERATION CHECKS			
1	Completeness	Open the carrying case and inventory all items by comparing them with the data specified in this manual.	Items are missing.
2	Soft Carrying Case	Shake out loose dirt or foreign material. Inspect for tears, cuts, excess wear or damage to the mounting clips.	
3	External Surfaces	Inspect for cracks or damage. Scratches and gouges are OK if operation is not affected.	Cracked or damaged.

TABLE 4-1. CONTINUED

SEQ NO.	LOCATION ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF...
4	Lens Cap	Inspect for cracked, torn, or missing lens caps.	Cap is torn or cut. Cap is not secured to the housing of the lens.
5	Eyecups	Inspect for dirt or dust. Inspect for cracked, torn, bent, broken or improperly fitted eyecup. If necessary, clean as per Part 4.4.2.	Cup is torn or cut.
6	Battery Compartment/ Cap	Inspect for corrosion, moisture, corroded or defective contacts. Verify that the o-ring is present.	Contacts are damaged or corroded, or the o-ring is missing.
7	Function Switch	Check the switch for operation (without a battery).	Switch has no definite stopping points. Switch knob is broken or missing.
8	Lenses	Inspect optical surfaces for dirt, fingerprint residue, scratches, chips, or cracks.	Scratches or chips hinder vision when the Nyx-7 PRO is turned on. Cracks are present. Photoreceiver is damaged.
9	Gain Control Knob (for Nyx-7 PRO MG)	Check knob for operation.	Knob inoperative. Knob is missing.
10	Focusing Ring	Rotate the focusing ring to ensure free movement (range is approximately 1/3 turn).	Ring gets stuck or adversely affects the user's ability to properly focus the unit.
11	Eyepiece Rings	Rotate the eyepiece rings to make sure the eyepiece is not too tight or too loose. Range is approximately 1/2 turn.	Ring gets stuck, is too loose, or adversely affects the user's ability to properly adjust the diopter.
12	Goggle Kit	Check the straps and pads for cuts tears, fraying, holes, cracks or defective fasteners. Check the mount of goggle kit for dirt, dust or corrosion. Insert goggle rail into guide to verify secure attachment of goggle to head mount. If necessary, clean the mount with water. Press the buttons of the mount and check for free motion. Inspect for damage.	
13	Optional Equipment	Inspect optional items for dirt, or corrosion, damage, and missing parts. Check for proper operation. If necessary, clean as detailed in Part 4.4.2.	Equipment is damaged or parts are missing.

OPERATIONAL CHECKS

CAUTION:

Do not activate the Nyx-7 PRO in daylight unless the lens cap is on, or you are operating under dark conditions.

CAUTION:

Do not forget to open the photoreceiver after finishing operational checks.

NOTE:

Daylight checks are described below.

14	Function Switch	Install the battery. Turn the switch from OFF to ON. Look for the green glow in eyepieces (it should appear after a slight delay), and wait about 10 s for image to disappear. Look for a flashing red light in eyepiece viewing area. Close the photoreceiver. Turn the switch from ON to the IR position. Look for a permanent red glow in the eyepiece viewing area. Turn the switch from IR to ON position.	Image is present. Red light is flashing. Permanent red glow is absent
15	Gain Control (for Nyx-7 PRO MG)	Rotate the gain control knob to verify that it adjusts the screen's brightness level. Inspect for a broken or missing knob.	Knob does not adjust the screen's brightness level.
16	Viewed Image	Inspect for any operational defects (refer to Part 4.3: Identification of Operational Defects).	Shading, edge glow, flashing, flickering, and intermittent operation, or excessive cosmetic defects are found.

AFTER CHECKING PROCEDURES

17		Turn the unit OFF. Verify that the green glow fades from the eyepieces.
		Remove the battery.
		Return the unit and all accessories to the soft carrying case.

4.2 TROUBLESHOOTING

The purpose of troubleshooting is to identify the most frequently occurring equipment malfunctions, their probable causes, and the corrective actions required to fix them.

Table 4-2 lists common malfunctions that may occur during the operation or maintenance of the Nyx-7 PRO. Perform the tests, inspections, and corrective actions in the order listed in the table.

This table does not list all of the malfunctions that may occur with your device, or all of the tests and corrective actions that may be necessary. If you experience an equipment malfunction that is not listed, or is not fixed by the corrective actions listed in the table, please contact Armasight's Customer Service center.

TABLE 4-2. OPERATOR TROUBLESHOOTING

MALFUNCTION	PROBABLE CAUSE/TEST/INSPECTION	CORRECTIVE ACTION
Unit fails to activate.	Battery is dead, missing or improperly installed.	Replace the battery or install it correctly.
	Battery contact surfaces or contact springs are dirty or corroded.	Clean the contact surfaces with a pencil eraser and/ or alcohol and cotton swabs.
	Defective image intensifier.	Please contact Customer Support.
IR illuminator fails to activate.	Turn the IR illuminator on in a dark area. Visually estimate whether or not the observed scene is illuminated.	If the IR illuminator fails to activate, please contact Customer Support.
LED indicators fail to activate.	Visual inspection.	Please contact Customer Support.
Poor image quality.	Check objective lens or eyepiece focus.	Refocus the lens.
	Check for fogging or dirt on the lens.	Clean the lens as detailed in Part 4.4.2 of this manual. If image quality is still poor, please contact Customer Support.
	Damaged optical components.	Please contact Customer Support
Light is visible around the eyecup.	Check the exit pupil distance value.	Readjust for proper eye-relief distance.
	Check the eyecup resilience.	If the eyecup is defective, please contact Customer Support.
Focusing ring cannot be moved.	Check to see if the focusing ring is bent or broken.	If damaged, please contact Customer Support.
Eyepiece ring cannot be moved.	Check to see if the eyepiece ring is bent or broken.	If damaged, please contact Customer Support.

4.3 IDENTIFICATION OF OPERATIONAL DEFECTS

4.3.1 OPERATIONAL DEFECTS

Operational defects relate to the reliability of the intensifier, and are an indication of instability. If identified, the user will need to return the Nyx-7 PRO immediately. Operational defects include shading, edge glow, flashing, flickering, and intermittent operation.

A. Shading

If shading is persistent, you will not be able to see a fully circular image (Figure 4-1). Shading is a very dark, high-contrast area with a distinct line of demarcation present, and you cannot see an image through it. Shading always begins on the edge, and will eventually migrate inward until it spans across the entire image area. If you notice shading with your device, please contact Customer Support.

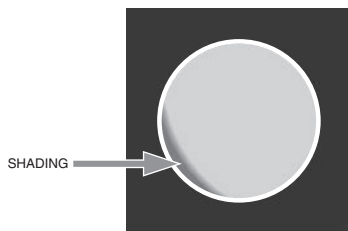


FIGURE 4-1. SHADING

NOTE:

Verify that any shading is not the result of improper eye-relief adjustment.

B. Edge Glow

Edge glow is a bright area (it sometimes appears to be sparkling) in the outer portion of the viewing area (see Figure 4-2). To check for edge glow, block out all light from the device by cupping a hand over the lens. If the image tube is displaying edge glow, the bright area will still show up; if edge glow occurs, please contact Customer Support.

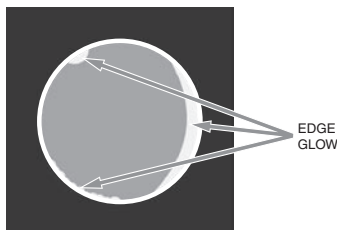


FIGURE 4-2. EDGE GLOW

C. Flashing, Flickering, or Intermittent Operation

The image may appear to flicker or flash. If there is more than a single flicker, check for a loose battery adapter or a weak battery. If flickering continues, please contact Customer Support.

4.3.2 COSMETIC BLEMISHES

Cosmetic blemishes are usually the result of manufacturing imperfections. They **do not** affect the reliability of the image intensifier, and are not normally a cause for returning the Nyx-7 PRO. However, some types of cosmetic blemishes can worsen over time and interfere with the user's ability to properly operate the device during missions. If you believe a cosmetic blemish is cause for returning the device, record the specific nature of the problem on the maintenance forms and use the clock method to identify the position of the blemish and its approximate distance from the center (e.g., 5:00 toward the outside, 2:30 near the center, or 1:00 midway).

The following are examples of cosmetic blemishes:

A. Bright Spots

A bright spot is a small, non-uniform bright area that may flicker or appear constant (Figure 4-3).

Not all bright spots make the Nyx-7 PRO rejectable. Cup your hand over the lens to block out all light. If the bright spot remains, please contact Customer Support.

Bright spots usually go away when all light is blocked out. Verify that any bright spots are not simply the result of bright light in the area you are observing. Bright spots are acceptable if they do not interfere with the user's ability to view the scene or perform missions.

B. Emission points

Emission points are steady or fluctuating pinpoints of bright light in the image area that do not go away when all external light is blocked from the objective lens (Figure 4-3). The position of an emission point within the image area does not move. Not all emission points are cause to return the Nyx-7 PRO. Verify that emission points are not simply light sources present in the scene you are observing. Emission points are acceptable if they do not interfere with the user's ability to perform missions.

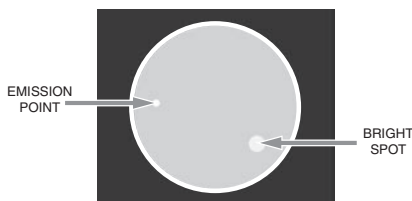


FIGURE 4-3. EMISSION POINTS AND BRIGHT SPOTS

C. Black Spots

Black spots are cosmetic blemishes in the image intensifier or debris between the lenses. Black spots are acceptable as long as they do not interfere with the user's ability to observe the scene. No action is required if this condition is present, unless the spots interfere with the operator's ability to perform missions.

D. Fixed-pattern Noise

Fixed-pattern noise is usually a cosmetic blemish characterized by a faint hexagonal (honeycomb) pattern that appears throughout the viewing area. This typically occurs in excessively lit environments or when viewing very bright lights (See Figure 4-4). This pattern can be seen in every image intensifier if the level of light is high enough. This condition is acceptable as long as the pattern does not interfere with the user's ability to view an image or interfere with their ability to perform missions.

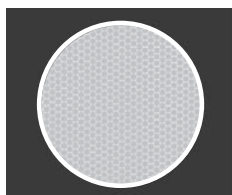


FIGURE 4-4. FIXED-PATTERN NOISE

E. Chicken Wire

Chicken wire is an irregular pattern of dark thin lines that can appear in the field of view, either throughout the image area or in sections of the image area (See Figure 4-5). In the worst-case scenario, these lines will form hexagonal or square, wave-shaped lines. No action is required if this condition is present, unless it interferes with the user's ability to view the image or their ability to perform missions.



FIGURE 4-5. CHICKEN WIRE

4.4 MAINTENANCE

4.4.1 GENERAL

The section regarding Nyx-7 PRO operator maintenance consists of operational tests, inspections for unit serviceability, cleaning and mounting procedures, troubleshooting, and replacement instructions for a limited number of parts. Maintenance instructions covered elsewhere in this manual (PMCS, troubleshooting, etc.) are not repeated in this section.

CAUTION:

The Nyx-7 PRO is a precision electron-optical instrument, and must be handled carefully at all times to prevent damage to the device's body or mechanisms.

4.4.2 CLEANING PROCEDURES

CAUTION:

Thoroughly dry each item before placing them into the storage case.

Clean the Nyx-7 PRO as follows:

1. Gently brush off any dirt from the unit's body using a clean, soft cloth.
2. Moisten the cloth with fresh water and gently wipe down external surfaces (**except** for glass surfaces).
3. Dry any wet surfaces (**except** for glass surfaces) with another clean, soft, dry cloth.
4. Using a lens brush, carefully remove all loose dirt from the glass surfaces.
5. Slightly dampen a cotton swab with ethanol. Gently and slowly wipe the lenses. Without touching the lens holders, clean the glass surfaces in circular movements, beginning in the center and moving out towards the edge. Change the cotton swab after each circular stroke. Repeat until the glass surfaces are clean.
6. Clean the battery contact surfaces and contact springs with a pencil eraser and/ or alcohol-dampened cotton swabs.

Clean optional mounting devices with a soft brush (cloth), soap, and water as required.

Clean optional lenses as detailed in items 4 and 5 above (**except** for the demist shield).

4.4.3 BATTERY REMOVAL AND REPLACEMENT

Refer to Part 3.1.1 for battery installation procedures. No special tools are required to replace the battery.

4.4.4 GOGGLE KIT MAINTENANCE

A. Browpad Replacement

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

1. Firmly grasp the goggle kit and remove the old browpad.
2. Gently press on the new browpad. Gently smooth out any wrinkles in the new browpad.



FIGURE 4-6. BROWPAD REPLACEMENT

B. Chin Strap Reinstallation

1. Detach the Velcro tape from the left side of the headband and remove the chin strap. Unfasten the chin strap from the strap assembly.
2. Replace the chin strap by joining the sides of the Velcro tape on the left side of the headband and threading the end of another strap into the corresponding buckle on the right side of the headband.

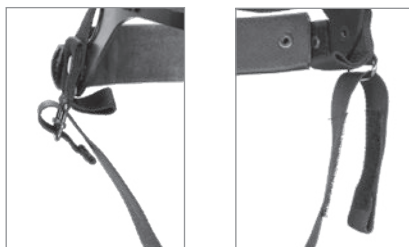


FIGURE 4-7. CHIN STRAP REINSTALLATION

C. Chin Cup Replacement

1. Detach the Velcro tape from the left side of the head-band and remove the chin strap.
2. Slide the chin cup out from the chin strap and replace it with a new one. After replacing the chin cup, attach the Velcro on the left side of the head-band.



FIGURE 4-8. CHIN CUP REPLACEMENT

4.5 SERVICE/PACKING AND UNPACKING

For service, repair or replacements, please email: service@armasight.com.

To assist the Service Representative (SR) with determining if the item is repairable, please provide the following information:

1. Serial Number of the defective item.
2. Thorough description of the malfunction, defect or damage.
3. An explanation of how the malfunction, defect or damage occurred, if known.

If the SR determines that the item is under warranty or should be returned for repair, a Return Material Authorization number (RMA#) will be provided. RMA can be obtained via e-mail to service@armasight.com or via phone by calling Armasight Customer Service at (888)959-2259 Ext. 2 or via fax (888)959-2260.

When returning the Nyx-7 PRO for service or repair, the following procedures should be followed to prevent any additional damage:

1. Verify that the Nyx-7 PRO is free of all contaminants such as dirt or any other foreign material.
2. Remove the battery.
3. Place the cap over the lens.
4. Place the Nyx-7 PRO in the hard shipping/ storage case or soft carrying case (if available). If the hard shipping/ storage case is not available, individually package each Nyx-7 PRO unit being returned in a suitable container.

Place the Nyx-7 PRO and a copy of the test report or detailed description of the failure in a suitable packing/ shipping container. Mark the package with the RMA#. Ship the items using the fastest, most easily traceable, prepaid method to:

Armasight Inc.
815 Dubuque Avenue
South San Francisco, CA 94080
USA.

A. NYX-7 PRO LIST OF SPARE PARTS

The parts authorized in this list of spare parts are required for operator maintenance. This list includes parts that must be removed in order to replace authorized parts.

The ITEM NO. Column indicates the number used to identify items in Figure A-1.

The PART NO. Column indicates the primary number used by the manufacturer to identify an item; this number controls the design and characteristics of the item by means of its engineering, specifications, standards, and inspection requirements.



FIGURE A-1. NYX-7 PRO SPARE PARTS

TABLE A-1. NYX-7 PRO LIST OF SPARE PARTS

ITEM NO.	DESCRIPTION	PART NO.
1	Objective Lens Assembly	NYX7POLA
2	Lens Cap	NYX7PLC
3	Battery Cap (not shown)	NYX7PBC
4	Rail	NYX7PRL
5	Eyepiece Assembly	NYX7PEPA
6	Eyecup Assembly	NYX7PECA
7	Function Switch	NYX7PFS
8	Gain Control Knob	NYX7PGCK
9	Pivotal Focusing Lens	NYX7PPFL
10	CR123A Lithium Battery	CR123A
11	Goggle Kit	ANHG000004
12	Soft Carry Case	NYX7PSCC
13	Operation and Maintenance Manual	NYX7POMM

B. PRODUCT WARRANTY REGISTRATION CARD

In order to validate the warranty on your product, Armasight must receive a completed Product Warranty Registration Card for each unit, or the Customer must complete warranty registration on our website at www.armsight.com. Please complete the included form and immediately mail it to our Service Center:

Armasight Inc.
815 Dubuque Avenue
South San Francisco, CA 94080
USA

ARMASIGHT PRODUCT WARRANTY REGISTRATION CARD

PRODUCT INFORMATION

Product Name _____ Purchased From _____

Purchase Date _____ Product Serial # _____

CUSTOMER INFORMATION

Name _____

Address _____

City _____ Country _____ Zip _____

Day Phone # _____ Home Phone # _____

E-mail address _____

.....
Customer Signature Required

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info@armasight.com

CAUTION:

This product contains natural rubber latex which may cause allergic reactions! The FDA has noted an increase in the number of reported deaths that are associated with an apparent sensitivity to natural latex proteins. If you are allergic to latex, it is a good idea to learn which products contain it and strictly avoid exposure to those products.

www.armasight.com