



# N-15

## Night Vision Goggles



## OPERATION AND MAINTENANCE MANUAL

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## SAFETY SUMMARY

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

The N-15 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 N-15, 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.

### WARNING:

**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.

### WARNINGS:

- 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.**

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### CAUTION:

- The N-15 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 N-15 when the Goggles is being operated in daylight conditions, or when the device is not in use.
- Use of the N-15 in brightly lit conditions may damage the unit's intensifier tube.
- Bright light sources such as firelight, headlights, searchlights, etc. can damage the N-15. Avoid exposing the unit to these types of light sources.
- Before removing the lens cap, verify that the photoreceiver is open.
- DO NOT forget to open the photoreceiver after completing your mission.
- DO NOT attempt to force the controls past their stopping points, as this may cause damage to the mechanisms.
- The unit may be badly damaged if the tripod on which it is mounted collapses or overturns. Remove the unit from the tripod if it is not within your reach.
- Before replacing the intensifier tube, confirm that it is no longer covered by warranty.
- Thoroughly dry each component of the N-15 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.
- At operating temperatures below -20°C (-4°F), the use of an alkaline battery is not recommended, as the battery life will be severely reduced. Under said conditions, lithium-iron disulfide 1.5V AA batteries or their equivalent should be used.
- 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 N-15 Night Vision Goggles.

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

The Intensifier Tube Replacement Manual can be found in Appendix B.

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

# INTRODUCTION

## 1.1 GENERAL INFORMATION

### 1.1.1 TYPE OF MANUAL

Operation and Maintenance (including a List of Spare Parts and an Intensifier Tube Replacement Manual).

### 1.1.2 MODEL NUMBER AND EQUIPMENT NAME

N-15 Night Vision Goggles

### 1.1.3 PURPOSE OF EQUIPMENT

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

The N-15 can be used as a handheld, head-mounted or helmet-mounted device to allow walking, short-range surveillance, map reading, vehicle maintenance, and administering of first aid.

The N-15 allows for horizontal and vertical adjustments when mounted to the user's head or helmet, and is equipped with an infrared light-emitting source (IR illuminator).

### 1.1.4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

Recommendations from the user for improvements to the device are encouraged.

Mail your comments to Armasight Inc., 815 Dubuque Avenue, South San Francisco, CA 94080, USA.

Or, send an email to [info@armasight.com](mailto: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](http://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](mailto: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.

## 1.3 LIST OF ABBREVIATIONS

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

## DESCRIPTION AND DATA

### 2.1 SYSTEM DESCRIPTION

The N-15 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 N-15 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 an eyepiece.

The N-15 automatic brightness adjustment system retains the same gain (image brightness), even under unsteady light conditions.

The N-15 automatic protective system controls illumination through a photoreceiver. If the illumination level surpasses 100-300 lx for more than 10 s, the unit will shut off automatically.

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

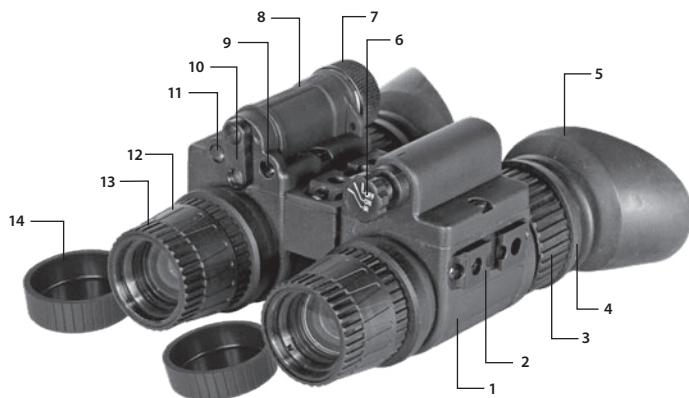
The N-15 uses LED lights to indicate illumination level, low battery, and to show the user that the IR illuminator is on.

The N-15 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.

#### 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. N-15 NIGHT VISION GOGGLES**

**TABLE 2-1. N-15 SYSTEM DESCRIPTION**

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

## 2.2 SPECIFICATIONS

**TABLE 2-2. MECHANICAL DATA**

| EQUIPMENT ITEM            | DIMENSIONS, MM (L X W X H)/(DIA X L) | WEIGHT, G |
|---------------------------|--------------------------------------|-----------|
| N-15 Night Vision Goggles | 140x114x69                           | 700       |
| Goggle Kit                | 280x180x80                           | 295       |
| Flip-up Helmet Mount*     | 140x90x70                            | 210       |
| IR850W*                   | 120x42x38                            | 102       |
| Sacrificial Window*       | Dia 30x7                             | 5         |
| Demist Shield*            | Dia 8.5x5.5                          | 4         |
| Camera Adapter*           | Dia 60x22                            | 52        |
| 3X Lens*                  | Dia 60x109                           | 450       |

\* Optional

**TABLE 2-3. ELECTRICAL DATA**

| ITEM                                                                                                                                           | DATA                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Battery                                                                                                                                        | One AA (1.5 V) or 123A (3 V) *                                       |
| Consumption Current **: <ul style="list-style-type: none"> <li>- at 1.5 VDC</li> <li>- at 3.0 VDC</li> </ul>                                   | 75 mA<br>38 mA                                                       |
| Continuous Operation* at 20 °C (68°F): <ul style="list-style-type: none"> <li>- AA Alkaline Battery</li> <li>- 123A Lithium Battery</li> </ul> | 30 (IT Gen. 2+) / 25 (IT Gen. 3)<br>60 (IT Gen. 2+) / 50 (IT Gen. 3) |

\* Any CR123 or AA type rechargeable batteries with voltage from 1.2V to 3.0V can be used.

\*\* With IR illuminator off.

**TABLE 2-4. OPTICAL DATA**

| ITEM                                                                                                                                                                         | DATA                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Magnification: <ul style="list-style-type: none"> <li>— with 1X Lens</li> <li>— with 3X Lens*</li> </ul>                                                                     | (1±0.05) X<br>(3.3±0.2) X             |
| 1X Lens: <ul style="list-style-type: none"> <li>— Focal Length</li> <li>— Lens F/number</li> </ul>                                                                           | 27 mm<br>1:1.2                        |
| Focus Range: <ul style="list-style-type: none"> <li>— with 1X Lens</li> <li>— with 3X Lens*</li> </ul>                                                                       | 0.25 m to infinity<br>5 m to infinity |
| FOV: <ul style="list-style-type: none"> <li>— with 1X Lens</li> <li>— with 3X Lens*</li> </ul>                                                                               | 40°<br>12°30'                         |
| Exit Pupil Diameter                                                                                                                                                          | 14 mm                                 |
| Eyepiece Focal Length                                                                                                                                                        | 27 mm                                 |
| Eye Relief                                                                                                                                                                   | 25 mm                                 |
| Eyepiece Diopter Adjustment                                                                                                                                                  | -6 to +2 diopters                     |
| Built-in IR Illuminator <ul style="list-style-type: none"> <li>— Power</li> <li>— Illumination Range</li> <li>— Focus Distance</li> <li>— Illumination Wavelength</li> </ul> | 50 mW<br>20 m<br>3 m<br>850 nm        |

\* 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             | 20 m for 1 hr *                                              |
| MIL-STD-810           | Complies                                                     |

\* *Optional.*

## 2.3 STANDARD COMPONENTS

The standard components of the N-15 are shown in Figure 2-2 and listed in Table 2-6. The ITEM NO. column indicates the number used to identify items in Figure 2-2.

**FIGURE 2-2. N-15 STANDARD COMPONENTS****TABLE 2-6. N-15 STANDARD COMPONENTS**

| ITEM NO. | DESCRIPTION                      | QUANTITY |
|----------|----------------------------------|----------|
| 1        | Night Vision Goggles             | 1        |
| 2        | Lens Cap                         | 2        |
| 3        | Eye-cup                          | 2        |
| 4        | Battery Adapter                  | 1        |
| 5        | Battery CR123A Lithium           | 1        |
| 6        | Goggle Kit                       | 1        |
| 7        | Operation and Maintenance Manual | 1        |
| 8        | Carrying Case                    | 1        |

### 1) Armasight N-15 Night Vision Goggles

Goggles night vision device with unity magnification.

### 2) Lens Cap

A cap used to protect the lens and to be used when testing the unit in daylight.

### 3) Eye-cup

A rubber cup used to protect the eyepiece as well as provide comfort for the operator.

### 4) Battery Adapter

Allows use of a single 3V CR123 or 1.5V AA batteries.

### 5) Battery 123A Lithium

A single, 123A lithium battery used to power the unit.

### 6) Goggle Kit

Adjustable universal assembly that secures the N-15 to the operator's head providing hands-free operation.

### 7) Operation and Maintenance Manual

Provides safety information, equipment description, mounting procedures, operating instructions, and preventive maintenance checks and service (including a List of Spare Parts and an Intensifier Tube Replacement Manual).

### 8) Carrying Case

A protective case used for storing and carrying of the N-15 and its accessories.

## 2.4 OPTIONAL EQUIPMENT

Optional items are shown and listed in Table 2-7.

The PART NO. column indicates the primary number used by the manufacturer to identify an item.

**TABLE 2-7. N-15 OPTIONAL EQUIPMENT**

| IMAGE                                                                               | DESCRIPTION                                                                                                                                                                                                                                                   | PART NO.   |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|    | <b>Afocal 3x Lens Kit</b><br>Quickly converts the N-15 into a long-range night vision device. Ideal for long range observation.                                                                                                                               | ANAF3X0N15 |
|   | <b>Helmet Mount #4</b><br>Helps to mount the N-15 on a range of ballistic helmets.                                                                                                                                                                            | ANHM000001 |
|  | <b>Transfer Adapter to PVS-7/PVS-14 Headset/Helmet #147</b><br>Helps to mount the N-15 to standard US Mil headset (PVS-7/PVS-14 type) and/or helmet.                                                                                                          | ANHG000147 |
|  | <b>IR850W Detachable Wide Angle Adjustable X-Long-Range Infrared Illuminator w/Dovetail to Weaver Transfer Piece #21</b><br>Extra-long-range infrared illuminator. Provides greater viewing capabilities when the environment has little or no ambient light. | ANKIW00017 |
|  | <b>Camera Adapter #46</b><br>An adapter with step down ring that allows the N-15 to be attached to any 35 mm SLR camera or 8 mm camcorder.                                                                                                                    | ANAM000029 |

TABLE 2-7. CONTINUED

| IMAGE                                                                             | DESCRIPTION                                                                                                                                                                                                                                                                | PART NO.    |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|  | <b>Time Tracker System #83</b><br>System/IIT service life recorder is a feature that lets you measure the hours of operation (within one minute) that have been used on the system.                                                                                        | ANCA000001  |
|  | <b>Demist Shield #34</b><br>When attached to the N-15 eyepiece, the demist shield prevents condensation from developing on the optics under rapid temperature changes.                                                                                                     | ANLC000001  |
|  | <b>Sacrificial Window #30</b><br>This feature is useful in environments with large amounts of dust, dirt or debris in the air, as can be found in environments with high-speed winds or storm conditions. The sacrificial window preserves the objective lens of the N-15. | ANLC000002  |
|  | <b>Hard Shipping/Storage Case #101</b><br>A protective case used for the shipping/ storage of the N-15 and its accessories.                                                                                                                                                | ANHCC000001 |

## 2.5 KEY FEATURES

- Gen 2+/3 intensifier tube
- 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 with pivotal lens to select between IR spot and flood beam
- 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
- Adaptable for use with cameras
- Automatic ON/ OFF feature with flip-up head/ helmet mount
- 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 N-15 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  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ), 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 battery (B), observing the polarity as indicated.
2. Replace the battery cap (A) and screw cap.
3. Please make sure the cap comes in assembly with the battery adapter.

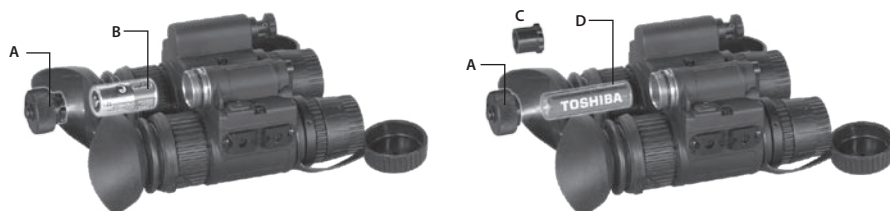


FIGURE 3-1. BATTERY INSTALLATION



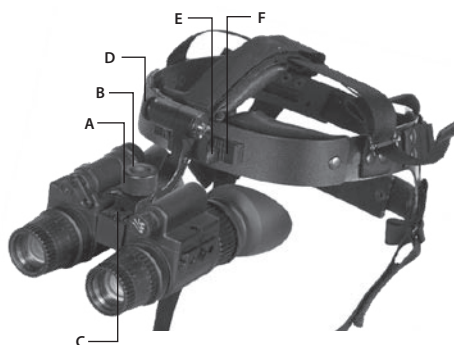
Install the AA battery as follows:

1. Unscrew the battery cap (A).
2. Unscrew the CR123 battery adapter (C) from the cap.
3. Insert AA battery (D), observing the polarity as indicated.
4. Put on the battery cap and screw it hand-tight.

### 3.1.2 MOUNTING THE N-15 TO A GOGGLE KIT

Mount the N-15 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 N-15 rail into the guide (C) of the goggle kit bracket. Tighten the screw (A).
3. Put on the goggle kit, now mounted with the N-15.
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 top 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.
7. With the button (E) pushed, move the unit along the slide-rail (F) until the desired, most comfortable position is reached.
8. To remove the N-15 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 N-15 TO A GOGGLE KIT**

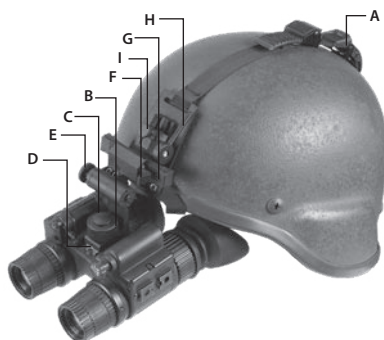
### 3.1.3 MOUNTING THE N-15 TO A HELMET

An optional flip-up helmet mount can be used to attach the N-15 to a helmet. The helmet mount fits the N-15 securely onto helmet via a rugged strapping device and grooved hooks. With the helmet mount, the N-15 can be positioned directly in front of the user's eyes, or flipped backwards, out of the field of view.

Mount the N-15 to a helmet as follows:

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

3. Loosen the screw (B). With the button (C) pushed down, insert the N-15 rail into the guide (D) of the helmet mount bracket. Tighten the screw (B).
4. Put on the helmet with the N-15 attached.
5. Push the button (F) and move the unit along the slide-rail (G) until the most comfortable position is reached.
6. Adjust the mount for comfortable using. Loosen the screw (B) and move the unit along the guide (D) for eye relief adjustment. Turn the lever (H) and move the unit along vertical slide-rail until the most comfortable vertical position is reached. Push the button (F) and move the unit along the slide-rail (G) until the most comfortable position is reached.
7. The helmet mount has a flip-up mechanism. Push the button (E) of the mount bracket and lift the unit up until it reaches its top position. Once it reaches this position, the unit will turn off automatically.
8. Push the same button (E) to lower the N-15 into the proper viewing position. Turn the unit on to proceed with your mission.
9. To remove the N-15 from the helmet mount, loosen the screw (B), push down on the button (C), and slide the unit out of the guide (D). To remove the flip-up mechanism from the helmet mount, loosen the lever (H), pull the knob out (I), and slide the flip-up mechanism out of the vertical rail.

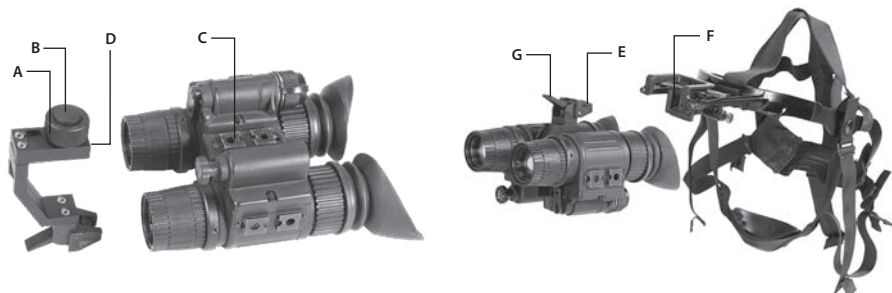


**FIGURE 3-3. MOUNTING THE N-15 TO A HELMET**

### **3.1.4 MOUNTING THE N-15 TO A STANDARD US MIL HELMET/ HEADGEAR ASSEMBLY**

To mount the N-15 to a standard US Mil helmet or headgear assembly use an optional transfer adapter. Perform the following steps:

1. Loosen the screw (A) of adapter. While pushing down on the button (B), insert the N-15 rail (C) into the guide (D) of the adapter. Tighten the screw (A).



**FIGURE 3-4. MOUNTING THE N-15 TO A US MIL HELMET/HEADGEAR ASSEMBLY**

2. Align the adapter prism (E) with the helmet/ headgear assembly mount (F). Slide the N-15 until its alignment boss is in line with the alignment groove on the helmet/ headgear assembly mount. Push down until the N-15 locks into the helmet/ headgear assembly mount.

To dismount the N-15 from the helmet/ headgear assembly, push down on the lever (G) and remove the unit.

Loosen the screw (A), push the button (B) and remove the adapter from the N-15 rail.

### 3.1.5 MOUNTING AN IR ILLUMINATOR TO THE N-15

To mount an IR illuminator to the N-15, use the optional Dovetail to Weaver Transfer Piece. Perform the following steps:

1. Install the transfer piece (A) onto one of the N-15 rails.
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 Weaver rail of transfer piece and tighten the fixing screw (C).

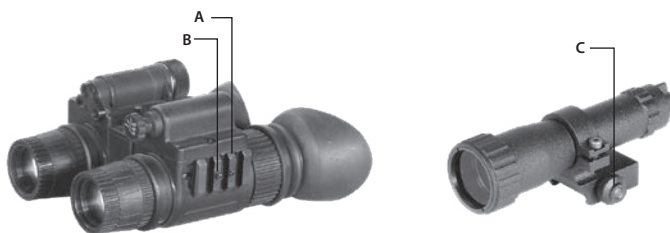


FIGURE 3-5. MOUNTING AN IR ILLUMINATOR TO THE N-15

### 3.1.6 MOUNTING A CAMERA/ CAMCORDER TO THE N-15

To mount any 35mm SLR photographic camera or 8mm camcorder to the N-15, use the optional camera adapter and perform the following:

1. Using the (M37x0.75 threaded) adapter ring (B), screw the (M52x0.75 threaded) adapter (A) into the front lens of the photographic camera or video camera.
2. Remove the eyecup from the N-15 eyepiece.
3. Connect the adapter with the eyepiece and tighten the three fixing screws (C) located on the adapter.

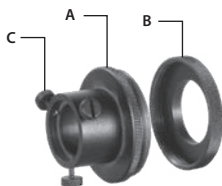


FIGURE 3-6. CAMERA ADAPTER

### 3.1.7 MOUNTING 3X AFOCAL LENSES TO THE N-15

To mount the 3x afocal lenses to the device, screw it into the threading of the standard 1X objective lenses of the N-15.



**FIGURE 3-7. MOUNTING 3X AFOCAL LENSES TO THE N-15**

### **3.1.8 MOUNTING A DEMIST SHIELD TO THE N-15**

Mount a demist shield to the N-15 as follows:

1. Remove the eyecup from the N-15 eyepiece.
2. Coat the demist shield with an anti-fogging compound, to prevent moisture condensation on the surface of the shield.
3. Screw the demist shield into the threading of the eyepiece.
4. Secure the eyecup back into place.

### **3.1.9 MOUNTING A SACRIFICIAL WINDOW TO THE N-15**

Mount a sacrificial window to the N-15 as follows:

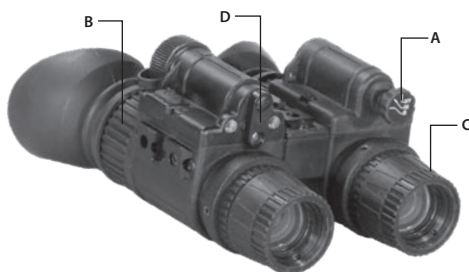
1. Remove the N-15 lens cap.
2. Screw the sacrificial window into the lens threading.

## **3.2 CONTROLS AND INDICATORS**

### **3.2.1 CONTROLS AND INDICATORS**

The N-15 controls and indicators are defined in Table 3-1.

The N-15 controls are shown in Figure 3-8.



**FIGURE 3-8. N-15 CONTROLS**

#### **CAUTION:**

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

**TABLE 3-1. N-15 CONTROLS AND INDICATORS**

| CONTROL/INDICATOR                        | FUNCTION                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function Switch<br>(Figure 3-8, A)       | OFF position — the unit is off.<br>ON position — the unit is on (IT powered).<br>Turn the unit on by turning the switch from OFF to ON.<br>IR position — the unit is on, and the IR illuminator is activated.<br>Activate the IR illuminator by turning the switch from ON to the IR position.                                                                                                                                                 |
| Eyepiece Ring<br>(Figure 3-8, B)         | Adjusts the unit diopter. The total dioptric range is covered in a 1/2 ring revolution.                                                                                                                                                                                                                                                                                                                                                        |
| Focusing Ring<br>(Figure 3-8, 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<br>(Figure 3-8, D) | Allows the user to choose between the following:<br>1. The IR illuminator spot beam. The pivotal focusing lens is placed onto the IR illuminator output window.<br>2. The IR illuminator flood beam. The pivotal focusing lens does not cover the IR illuminator output window.                                                                                                                                                                |
| Built-in LED Indicators                  | A GREEN GLOW in the eyepiece viewing area indicates excessive light conditions. After 10 sec 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.<br>A PERMANENT RED GLOW in the eyepiece viewing area indicates that the IR illuminator is operating.<br>A FLASHING RED LIGHT in the eyepiece viewing area indicates that the battery is low. |

## 3.3 OPERATING PROCEDURES

### 3.3.1 OPERATING PROCEDURES

These procedures should be performed under nighttime conditions only.

**CAUTION:**

Use of the N-15 in brightly lit conditions may damage the unit's intensifier tube.

1. Verify that the battery is installed as indicated on the goggles 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.

**CAUTION:**

Before removing the objective lens cap, verify that the photoreceiver is open.

4. Turn the function switch ON. After a slight delay, a green glow will appear in the eyepiece of the Goggles.
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.

**CAUTION:**

Bright sources such as firelight, headlights, searchlights, etc. can damage the N-15. 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 goggles on. Rotate the function switch (A) from ON to the IR position. A red light will appear in the eyepiece to indicate that the IR illuminator is operating.
2. Focus the IR light, if necessary, by placing the pivotal focusing lens (B) onto the IR illuminator output window (C).

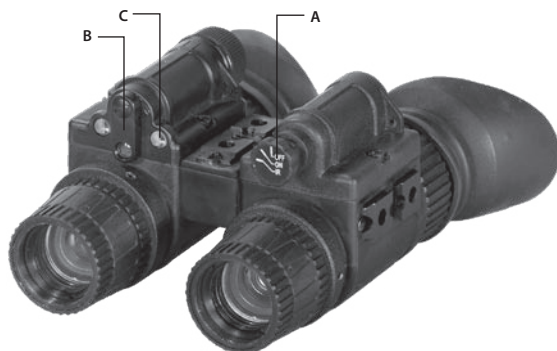


FIGURE 3-9. IR ILLUMINATOR OPERATIONS

### 3.3.3 OPERATING UNDER CHANGING LIGHT CONDITIONS

If the ambient light level exceeds the limit of 100-300 lx for more than 10 sec, the N-15 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 N-15 SHUT-DOWN**

1. Turn the function switch to OFF. The green glow of 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**

### **3.4.1 PREPARATIONS FOR STORAGE**

Prepare the N-15 for storage as follows:

1. Verify that the N-15 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 N-15 and accessories in the appropriate locations in the case, and close the cover.

# PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

## 4.1 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

### 4.1.1 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                                          |
|--------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>BEFORE OPERATION CHECKS</b> |                                |                                                                                                                 |                                                                       |
| 1                              | Completeness                   | Open the carrying case and inventory items by means of comparing 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.<br>Scratches and gouges are OK if operation is not affected.                      | Cracked or damaged.                                                   |
| 4                              | Lens Cap                       | Inspect for cracked, torn, or missing lens caps.                                                                | Cap is torn or cut.<br>Cap is not secured to the housing of the lens. |



TABLE 4-1. CONTINUED

| SEQ NO. | LOCATION ITEM TO CHECK/SERVICE    | PROCEDURE                                                                                                                                               | NOT FULLY MISSION CAPABLE IF                                                                                                          |
|---------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 5       | Eyecup                            | Inspect for dirt, dust. Inspect for cracked or torn, bent, broken or improperly fitting eyecup.<br>If necessary, clean as per Para 4.4.2.               | Cup torn or cut.                                                                                                                      |
| 6       | Battery Adapter/ Compartment/ Cap | Verify that the battery adapter is present. Inspect for corrosion, moisture, corroded or defective contacts. Verify that the o-ring is present.         | Adapter is missing, contacts damaged or corroded, or 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       | Pivotal Focusing Lens             | Check to make sure pivotal focusing lens is present.                                                                                                    | Pivotal focusing lens is missing.                                                                                                     |
| 10      | Lenses                            | Inspect optical surfaces for dirt, fingerprint residue, scratches, chips, or cracks.                                                                    | Scratches or chips hinder vision with N-15 turned on. Cracks are present.<br>Photoreceiver damaged.<br>Pivotal focusing lens damaged. |
| 11      | 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.                                                   |
| 12      | Eyepiece Ring                     | Rotate the eyepiece ring 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.                                |
| 13      | Optional Equipment                | Inspect optional items for dirt, or corrosion, damage, and missing parts. Check for proper operation.<br>If necessary, clean as detailed in Part 4.4.2. | Equipment is damaged or parts are missing.                                                                                            |

### OPERATIONAL CHECKS

**CAUTION:**

Do not activate the N-15 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. Verify that the photoreceiver is open.<br>Turn the switch from OFF to ON. Look for the green glow in eyepiece (it should appear after a slight delay), and wait about 10 sec for image to disappear.<br>Look for a flashing red light in eyepiece viewing area. | Image is present.<br>Red light is flashing.                                                                    |
|    |                 | Close the photoreceiver by placing the pivotal focusing lens in rightmost position. Pull out the IR and 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.                              | Permanent red glow is absent.                                                                                  |
| 16 | Viewed Image    | Inspect for any operational defects (refer to Part 4.3.1: 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

### 4.2.1 OPERATOR 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 N-15. 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                                                                                          |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Goggles 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.                                                                           |
| Battery adapter difficult to re-move. | Check for damaged battery adapter and battery cap.                                                             | If damaged 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. 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.                                                               |

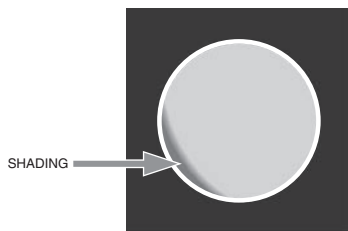
## 4.3 IDENTIFICATION OF OPERATIONAL DEFECTS

### 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 N-15 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.



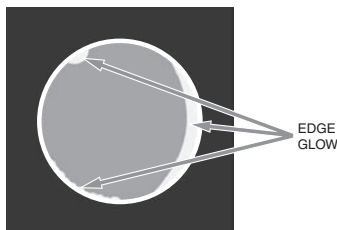
**FIGURE 4-1. SHADING**

**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 N-15. 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 N-15 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 N-15. 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.

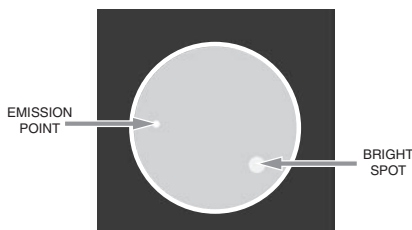


FIGURE 4-3. EMISSION POINTS AND BRIGHT SPOTS

## 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.

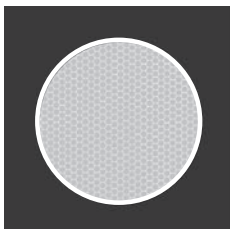


FIGURE 4-4. FIXED-PATTERN NOISE

## 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 N-15 operator maintenance consists of operational tests, inspections for the 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 N-15 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:

The coating on the demist shield can be damaged if the shield is cleaned while wet, or if it is cleaned with wet lens paper. Clean the shield only when it is dry, and only use dry lens paper.

#### CAUTION:

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

Clean the N-15 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 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 (including the photoreceiver and the pivotal focusing lens). 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:

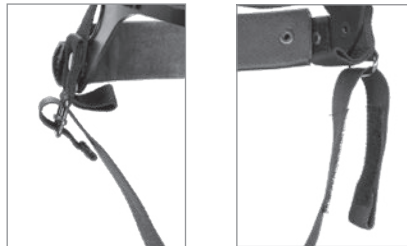
1. Firmly grasp the goggle kit and remove the old browpad.
2. Gently press on the new browpad. Gently smooth out any wrinkles in the new browpad.



**FIGURE 4-6. BROWPAD REPLACEMENT**

### **B. Chin Strap Reinstallation**

1. Detach the Velcro tape from the left side of the head-band 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 head-band and threading the end of another strap into the corresponding buckle on the right side of the head-band.



**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

### 4.5.1 RETURN INSTRUCTIONS

For service, repair or replacements, please email [service@armasight.com](mailto: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](mailto: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 N-15 for service or repair, the following procedures should be followed to prevent any additional damage:

1. Verify that the N-15 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 N-15 in the hard shipping/ storage case or soft carrying case (if available). If the hard shipping/ storage case is not available, individually package each N-15 unit being returned in a suitable container.

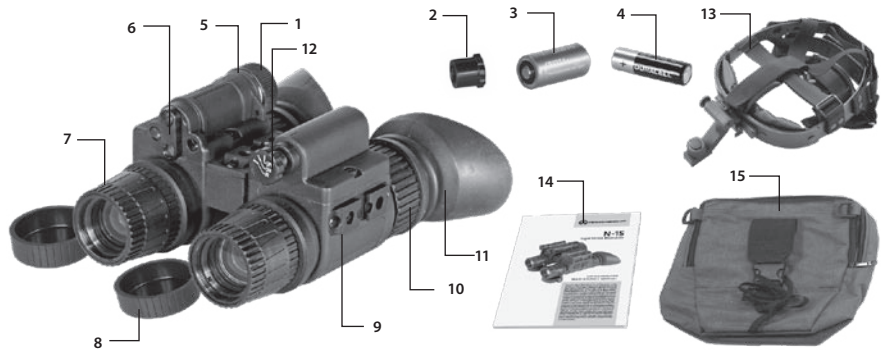
Place the N-15 and a copy of the test report or detailed description of the failure in a suitable packing/ shipping container. Mark the package with the RMA#. Ship the items using the fastest, most easily traceable, prepaid method to Armasight Inc., 815 Dubuque Avenue, South San Francisco, CA 94080, USA.

## A. N-15 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.

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

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. N-15 SPARE PARTS**

**TABLE A-1. N-15 LIST OF SPARE PARTS**

| ITEM NO. | DESCRIPTION             | PART NO. |
|----------|-------------------------|----------|
| 1        | Battery Cap             | N15BC    |
| 2        | Battery Adapter         | N15BA    |
| 3        | CR123A Lithium Battery  | ALT      |
| 4        | AA Alkaline Battery     | ALT      |
| 5        | Battery Cap Retainer    | N15BCR   |
| 6        | Pivotal Focusing Lens   | N15PFL   |
| 7        | Objective Lens Assembly | N15OLA   |
| 8        | Lens Cap                | N15LC    |
| 9        | Rail                    | N15PR    |
| 10       | Eyepiece Assembly       | N15EPA   |



TABLE A-1. CONTINUED

| ITEM NO. | DESCRIPTION                      | PART NO.   |
|----------|----------------------------------|------------|
| 11       | Eyecup Assembly                  | N15ECA     |
| 12       | Function Switch                  | N15FS      |
| 13       | Goggle Kit                       | ANHG000004 |
| 14       | Operation and Maintenance Manual | N15OUMM    |
| 15       | Carrying Case                    | N15SCC     |

## B. INTENSIFIER TUBE REPLACEMENT MANUAL

The intensifier tube can be removed or installed without disassembling the unit's wired housing. Removing or installing the intensifier tube only requires the removal of the eyepiece. The airtight seal will be broken, and the final assembly must be purged with nitrogen to eliminate moisture within the Goggles.

### B.1 INITIAL SETUP

#### A. Test Facility

Clean station in the electronic repair service area.

#### B. Tools

None

#### C. Materials/Parts

Intensifier Tube

Cotton-tipped applicators

Isopropyl alcohol

**WARNING:****The intensifier's phosphor screen contains toxic materials!**

- If an intensifier tube breaks, be extremely careful to avoid inhaling the phosphor screen material. DO NOT allow the material to come in contact with the mouth, eyes, 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 or swallow any phosphor screen material, drink a lot of water, induce vomiting, and **seek medical attention as soon as possible.**

**NOTE:**

Before replacing the intensifier tube, confirm that it is out of the warranty period.

**B.2 PROCEDURE OF INTENSIFIER TUBE REPLACEMENT****CAUTION:**

Handle the intensifier tube gently to prevent damage.

Treat any supposedly defective tubes as though they are in good condition so they are not damaged when returned to be reused.

Gently remove the intensifier tube from within the wired housing.

Slowly pull the tube out of the housing in a straight line.

If the intensifier tube is not defective, wrap it in lens paper to protect it and store it in a clean, dry location.

**ARMASIGHT PRODUCT WARRANTY REGISTRATION CARD****PRODUCT INFORMATION**

Product Name \_\_\_\_\_ Purchased From \_\_\_\_\_

Purchase Date \_\_\_\_\_ Product Serial # \_\_\_\_\_

**CUSTOMER INFORMATION**

Name \_\_\_\_\_

Address \_\_\_\_\_

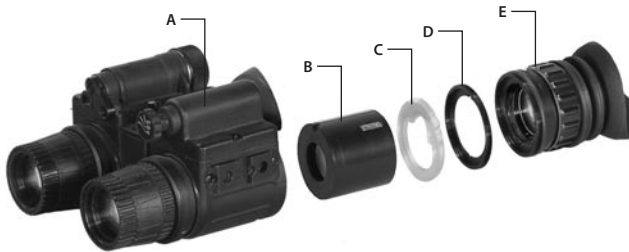
City \_\_\_\_\_ Country \_\_\_\_\_ Zip \_\_\_\_\_

Day Phone # \_\_\_\_\_ Home Phone # \_\_\_\_\_

E-mail address \_\_\_\_\_

.....  
Customer Signature Required

1. Unscrew the eyepiece (E) from the unit body (A).
2. Unscrew the lock ring (D) from the unit body (A).
3. Extract the light guide (C) from the unit body (A).
4. Extract the intensifier tube (B) from the body of the unit (A).



**FIGURE B-1. INTENSIFIER TUBE REPLACEMENT**

**CAUTION:**

To avoid damaging the tube, use caution when opening the shipping container.  
Treat the defective intensifier tube carefully to avoid damaging it further before returning it.  
Only set the intensifier tube down on its contact end.  
DO NOT force the intensifier tube into the wired housing of the device.

**NOTE:**

Retain packaging material for use in returning defective intensifier tubes.

5. Clean both ends of the new intensifier tube with cotton-tipped applicators dampened with isopropyl alcohol.
6. Slide the intensifier tube, contact-end first, into the opening of the wired housing. The groove on the side of the tube should engage the ridge inside the opening of the wired housing.
7. Slide the light guide (C) into place within the body of the unit (A).
8. Screw the lock ring (D) into the body of the unit (A).
9. Screw the eyepiece (E) into the body of the unit (A).

## **C. 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 user must complete warranty registration on our website ([www.armsight.com](http://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 Inc.

815 Dubuque Avenue  
South San Francisco  
CA 94080, USA

Phone: (888)959-2259

Fax: (888)959-2260

Intl Phone/Fax: (650)492-7755

[info@armasight.com](mailto: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](http://www.armasight.com)