

# PD-PRO-16B

Night Vision Binocular



## **Safety**

- An internal component within the image intensifier tube contains toxic materials. During normal operation, the operator will never come into contact with this component. However, if the tube is damaged or broken, avoid inhalation or ingestion of the phosphor screen materials, and avoid contact with open wounds. If the toxic material comes into contact with your skin, wash the affected area with soap and water. If any material is swallowed, drink large quantities of water, induce vomiting and seek medical assistance as soon as possible.
- The objective protective cover must always be fitted when the night vision goggle is not in use. Damage to the image intensifier can occur if subjected to a strong light source such as daylight for extended periods, even when power is switched off.
- Never point the **PD-PRO-16B** towards a bright light source such as the sun. City lights, car lights or any brightly reflecting object will not damage auto-gated tubes.
- Always remove the battery after use and before repackaging.
- Dry the **PD-PRO-16B** completely before replacing it in the transit/carrying case.
- Take care when using the "IR" position '3' of the operation switch an IR light is beaming around, which can easily be detected by observers and bright light is shining out of the eyepiece, if not covered.
- For underwater operations, use only the PD-PRO-16B-SUB, which is specially designed to withstand depths of up to 20m and equipped with Plano-Plano windows.

**ENSURE THE LENS IS TIGHTENED FIRMLY BEFORE IMMERSION.**

## **Limited Warranty**

The manufacturer of this device has provided a limited warranty to the original purchaser. It was attached to manufacturer's terms and conditions of sale.

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# Chapter 1

## General Description

### 1. Scope of Manual

This manual provides description, operating instructions and field maintenance procedures for the **PD-PRO-16B** Night Vision Binocular.

This manual is intended to help you operate and properly maintain the device and promote trouble-free and efficient operation.

### 2. PD-PRO-16B Night Vision Binocular

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#### CAUTION

The **PD-PRO-16B** is a precision electro-optical device. **HANDLE IT WITH CARE!**

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#### 2.1. General Description

The **PD-PRO-16B** (see Figure 1 and Figure 2) is a lightweight, ruggedized, metallic alloy night vision BINOCULAR system. It offers a high resolution and clear bright image in a lightweight configuration.

The **PD-PRO-16B** operation is passive; the light available at the scene is electronically intensified so that targets can be observed without artificial illumination.

The **PD-PRO-16B** provides a stereoscopic vision to facilitate spatial vision, to drive, measure distances, etc.

The **PD-PRO-16B** is equipped with a built-in Infra-Red (IR) light, which gives additional close-range covert illumination.

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#### WARNING

When the IR light is activated, the emitted light can be detected by other image intensifying equipment.

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The **PD-PRO-16B** employs a pair advanced Photonic image intensifier tubes characterized by high resolution and a clear, bright image. 4G auto-gated tubes are the standard configuration.

The **PD-PRO-16B** is powered by a single "AA" 1.5V, alkaline or lithium battery, or with an external battery pack with capacity for two alkaline batteries "AA" 1.5V

The system operates under every ambient temperature from -40°C to +55°C.

The **PD-PRO-16B** includes LOW BAT indicator (LED green) in the top of field of view of right arm, and IR activation indicator (LED red) in the top of field of view left arm that providing indications to operator about state of the system.

The **PD-PRO-16B** is small and light enough to be hand-held, head mounted or helmet-mounted.

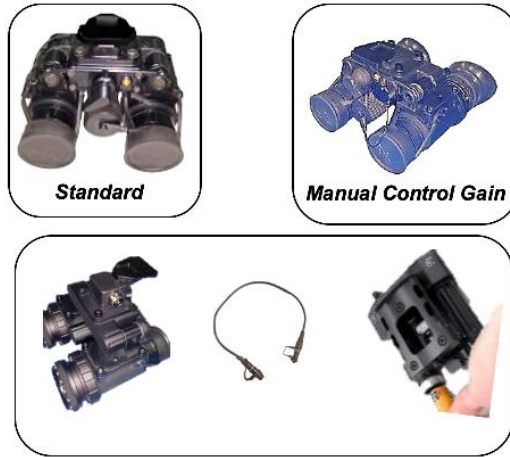


Figure 1- MINIMUS-BINO Different Versions

## 2.2 Main Operational Components

The PD-PRO-16B is composed of the following main operational components (see Figure 2):

- Operation switch
- Objectives cover
- Objectives focus
- Diopters rings
- Eye-guards
- IR LED illuminator
- Battery compartment
- Mounting recess

### Options:

- Manual Control Gain
- External Battery Pack



Figure 2 NVLS-EVO Components Location

- |                                   |   |
|-----------------------------------|---|
| 1. Objective Cover                | 7. Operation Switch                     |
| 2. Objective Focus                | 8. Battery Cap                          |
| 3. Eyepiece Diopter Ring          | 9. Mounting Recess                      |
| 4. Eye-guard                      | 10. External Power Connector (OPTIONAL) |
| 5. IR LED                         | 11. External Battery Pack (OPTIONAL)    |
| 6. Manual Gain Control (OPTIONAL) | 12. Power Wire (OPTIONAL)               |

## Night Vision

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### 2.2.1. Operation Switch

A three-position rotary switch controls the operation of the **MINIMUS-BINO**.

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#### **WARNING**

The IR position is very dangerous when used in the field, since you will be visible to external observers using image intensified equipment.

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#### Operation switch of the **PD-PRO-16B**

The Operation switch of the **PD-PRO-16B** has three different positions:



**Position 1: "OFF/M"**. The device is disconnected and turns ON each arm of the BINOCULAR when attached to the helmet mount or head mount and each arm is aligned with the eye of the operator. When the **PD-PRO-16B** is flipped to side, the equipment disconnects automatically, preventing the operator from emitting uncontrolled light that can be detected by the enemy. When reattached to the helmet mount and aligned with the operator's eye, the equipment restarts automatically, without need to restart the ON/OFF switch.



#### **WARNING**

Before flipping the goggle into the up position, ensure each channel is rotated up to obtain the ultra-low profile over the helmet.

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**Position 2: "ON"**. In this position the device is on when each arm is aligned with the eye of the operator. This position activates the **PD-PRO-16B** for the use in manual mode, as observation binocular; the main magnetic sensor is disabled.



**Position 3: "IR"**. In this position the system works like 2 position and a short-range IR illuminator switching on. This position has two modes, instantaneous or continuous, for instantaneous mode turn the knob to position 3 and keeps it clamped, when you release it, automatically will return to position 2. To keep the IR illuminator continuous; pull the knob slightly outwards and then turn it to the position 3.





## Night Vision

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The tube also contains Automatic Brightness Control (ABC) and Bright Source Protection (BSP) and Auto Gated power supply, that gives a steady state of screen brightness under varying light conditions and high resolution, including conditions normally too bright for a night vision device.

### 2.3. Technical Data

#### 2.3.1. Physical Characteristics

- a. Length: 100 mm
- b. Width: 100-170 mm
- c. Height: 60-80 mm
- d. Weight: < 440 g

#### 2.3.2. Performance

- a. Magnification:  $\times 1 \pm 3\%$
- b. Field of View:  $> 40^\circ$
- c. Image Intensifier Tube: 4G
- d. Phosphor: Green or White

#### 2.3.3. Objective Lens

- a. Focal Length: 22.7 mm
- b. F Number: 1.03
- c. Focusing Range: 15 cm to infinity

#### 2.3.4. Eyepiece

- a. Focal Length: 22.7 mm
- b. Eye Relief: 25 mm
- c. Diopter Adjustment: -6 to +4 diopter
- d. Distortion: Lower than 2%

#### 2.3.5. Electrical Data

- a. Power Source: Single 1.5V "AA" size battery
- b. Reverse Polarity Protection: Yes
- c. Minimum Operating Time:
  - AA 1.5V battery:
    - > 10 hours (at 21°C)
  - External Battery Pack
    - (x2 AA) >30 hours
- d. Auto-gating

When using auto-gated tubes there will be no shut down of the tubes, even at high light levels of 5000 lux. The center resolution stays at not less than 55 lp/mm under these conditions, allowing a normal operation at dynamic light levels conditions.

### 3. NVLS-24 Adapter

The NVLS-24 adapter enables head-mounted use of the **PD-PRO-16B** (using helmet mounts for helmet and Skull Crusher, diver's masks, etc.). The adapter is composed of the following (see Figure 4):

1. **Quick Release:** Separate for a strong hold and put together to make a quick separation system.
2. **Height Control:** Move to the right in order to release the mounting, setting the proper height and then turn to the left to secure the position.
3. **Release the Adapter:** Press to release the NVLS-24 adapter.
4. **Flip-Up:** Press and move up to separate night vision system from field of view.
5. **Proximity Control:** Press the two buttons at the same time and move forward and backward, release the buttons and the system will be fixed.
6. **Release Mono/Bino Bridge:** Press to release the Mono/Bino Bridge system.
7. **Tilt Control:** Turn CW or CCW to adjust the angle of vision.

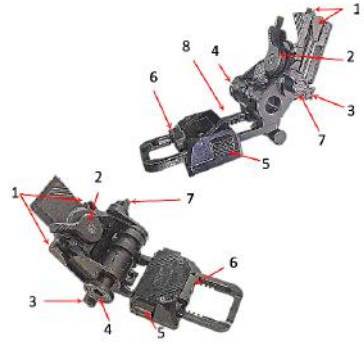


Figure 4 NVLS-24 Adapter

### 4. Diver's Version PD-PRO-16B SUB

(Only for submersible version)

The optional diver's face mask enables positioning of a single **PD-PRO-16B SUB** in front of the diver's eye without using his hands, while wearing a diver's mask. The **PD-PRO-16B SUB** in this configuration is water-tight, eliminating the need for additional sealing of the **PD-PRO-16B SUB** before entering the water and enabling immediate re-use of the **PD-PRO-16B SUB** when out of the water.



Figure 5 Possible NVG Configurations

## Night Vision

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### CAUTION

Typically, the **PD-PRO-16B** is not designed for under-water operations.

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Use only the **PD-PRO-16B SUB**, which is specially designed to withstand depths of up to 20m and equipped with Plano-Plano windows.

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### CAUTION

**FIRMLY TIGHTEN THE LENS BEFORE IMMERSION.**

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Figure 6 Diver Using Possible Configurations

## 5. Cleaning

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### CAUTION

The goggles are a precision electro-optical instrument and must be handled carefully. Do not scratch the external lens surfaces or touch them with your fingers. Wiping demist shields with lens paper while wet or with wet lens paper can damage the coating. Clean goggles with water if necessary and dry completely. Clean lenses with lens paper (and water if necessary, except for demist shields). Demist shields must be dry before being cleaned with dry lens paper.

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## 6. Optional Accessories

The **PD-PRO-16B** may be supplied with one or more of the optional accessories described in the following paragraphs.

### 6.1. Manual Control Gain (Optional Version)

You can modify the system gain by turning the manual gain control. Note that manual gain control will remain disabled when the Auto-gating system is activated and the Auto-gating system is automatically activated in high-light conditions

### 6.2. External Battery Pack (Optional Version)

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#### WARNING

Never use external and internal batteries together.

An external battery pack with two alkaline batteries size "AA" must be connected to power the system. If system is powered with the external battery pack, make sure that the internal battery is not installed.

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#### NOTE

Never connect the external battery pack while there is a battery installed in the goggle's battery holder.

### 6.3. Carrying and storage soft case

The soft case (figure 8) is a user configurable system used for carrying the **PD-PRO-16B** under field conditions or for storing it inside the hard case. The soft case provides protection from field damages. The system consists of three counterweight elements, with an individual weight of 187 gram that can be fitted according to the operator's preference.



Figure 7 Typical Soft Case

### 6.4. Hard Shell Case

The hard-shell case (Figure 9) is used for storing the soft case with **PD-PRO-16B** and its accessories under field conditions. The case is water and air-tight and its interior is prepared to accommodate the soft case.



Figure 10 Typical Hard-Shell Case

### 6.5. Sacrificial Window

The **PD-PRO-16B** is provided with sacrificial windows (see Figure 10) to protect the objectives and the eyepieces lens from scratches caused by blowing sand or other abrasive conditions. In order to install them on the **PD-PRO-16B** the sacrificial windows should be screwed over the objectives or eyepieces lens.

#### **NOTE**

The sacrificial window can be installed only in **PD-PRO-16B** units that have an objective or eyepiece with a thread.



Figure 11 Sacrificial Window

### 6.6. Demist Shield

The demist shield (see Figure 11) prevents the eyepiece from fogging over when the **PD-PRO-16B** is cold or being used in cold and humid conditions. It is made of plastic and is installed between the eye-guard and the eyepiece. The demist shield must be handled by the edge only. Special attention shall be paid to cleaning and handling of the shield (see paragraph 3.2.1).



Figure 12 Demist Shield

## Chapter 2 Operation

### 8. General

This chapter provides operating instructions for the **PD-PRO-16B**.

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#### **CAUTION**

The **PD-PRO-16B** is a precision electro-optical device - handle it with care!

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### 9. Safety

An internal component within the image intensifier tube contains toxic materials. During normal operation, the operator will never come into contact with this component. However, if the tube is damaged or broken, avoid inhalation or ingestion of the phosphor screen materials, and avoid contact with open wounds.

- a. If the toxic material comes into contact with your skin, wash the affected area with soap and water. If any material is swallowed, drink large quantities of water, induce vomiting and seek medical assistance as soon as possible.
- b. The objective protective cover must be fitted at all times when the night vision goggle is not in use. Damage to the image intensifier can occur if it is pointed to a strong light source such as daylight for extended periods, **even when power is switched off**.
- c. Never point the night vision goggle towards the sun, even when shut off and with an objective cover with pinhole. The center of the photocathode can be damaged. When training at daylight a totally shuttered objective cover or a neutral density filter must be used. A searchlight, a camera flash or any brightly reflecting object, at distances of more than 5 meter will not damage auto-gated tubes. Never point a visible or IR laser towards eyepiece or objective as the tube will be damaged permanently.
- d. Always remove the battery after using and before repackaging, to avoid acid leakage due to defective battery and permanent damage to the electronic board of NVLS EVO.
- e. Rinse thoroughly in tap water after immersion in sea water to prevent drying of salt deposits.
- f. Dry the night vision goggle completely before replacing it in the tactical bag or hard-shell case.
- g. Take care when using the V and IR positions of the operation switch. In V position bright light is shining out of the eyepiece, if not covered. In IR position IR light is beaming around, which can easily be detected by enemy forces and bright light is shining out of the eyepiece, if not covered.

### 10. Battery Installation

#### **CAUTION**

The **PD-PRO-16B** is powered by a single 1.5V "AA" size alkaline or lithium battery. Do not use any other type of battery. Batteries with a higher voltage will damage the **MINIMUS-BINO**.

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- a. Turn the battery cap counterclockwise to remove it from the battery compartment.
- b. Make sure the battery compartment is clean and dry.
- c. Make a note of the polarity indicated on the side of the **PD-PRO-16B** and install a battery.
- d. Put the battery cap in position at the battery compartment.
- e. Turn the battery cap clockwise until the battery cap is tightly closed and gives a good seal against the "O"-ring.

### 11. External battery pack connection (optional)

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#### **WARNING**

Never use external and internal batteries together.

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An external battery pack can be connected to power the system.

- a. If the system is powered with the external battery pack, make sure that the internal battery is not installed.
- b. Remove the two battery caps in the external battery pack.
- c. Make sure the two compartments of the batteries are clean and dry.
- d. Make a note of the polarity indicated on the side of the battery pack and install a battery in each compartment.
- e. Put the two-battery caps back into position at the batterie compartments.
- f. Connect the battery pack to the **PD-PRO-16B** using the proper wire.



Figure 11 External Battery Pack Interconnection

Make sure that there is not battery installed on the goggle when powering the system using the external battery pack.

Never connect the external battery pack while there is a battery installed in the goggle battery holder

### 12. Preparation for Use

- a. Remove the **PD-PRO-16B** from the carrying case, or pouch.
- b. Examine the **PD-PRO-16B** for damage. If damage is found return the **PD-PRO-16B** to a suitable maintenance facility.
- c. Make sure that the operation switch is set to OFF.
- d. Make sure that all lenses are clean.
- e. Install a battery (see paragraph 2.3) or connect the external battery pack (see paragraph 2.4).
- f. With the objective protective covers on, turn the operation switch to ON position to check function.

### 13. Stand Alone Operation

(Without Head mount or Helmet Mount)

- a. When the **PD-PRO-16B** is removed from the head mount or helmet mount and the main switch are at position 'OFF/M', the magnetic switch automatically turns the unit off.
- b. To operate the **PD-PRO-16B** as a stand-alone device, turn the operation switch to the "ON" position.



## 14. General Operating Guidelines

### 14.1. Activating the IR light

**WARNING**

When the IR light is activated, the emitted light can be detected by other image intensifying equipment.

**NOTES**

- The Infra-red (IR) light is not visible to the naked eye.
- The use of a 935 nm IR diode will make it hardly visible for user's whit tubes Gen III
- To activate the IR light, proceed as follows:
  - a. Turn the operation switch to IR position.
  - b. Make sure that a red LED illuminates in the field of view in the left arm, this indicates that the IR light is active.

### 14.2. Low battery indication

If a green LED light illuminates in the field of view of the right arm, indicate that the battery is near to be empty, in this condition, the battery must be replaced as soon as possible.

**NOTE**

-The battery in this condition will allow approximately 30 minutes of operation.

## 15. Head-Mounted Operation

Head mounted operation refers to using of the **PD-PRO-16B** along with a head mount (option), helmet mount (option) or diver's mask (option).

### 15.1. Ergonomic Head Mount

The new ergonomic head mount allows the use of the same BINOCULAR helmet adapter.



Figure 12 Ergonomic Head Mount

### 15.2. Fitting the Head Mount

- a. Loosen all straps and unclick the chin support
- b. Place the head mount on your head. When necessary loosen also the rotary adjustment wheels to get a comfortable feeling.
- c. Close the chinstrap, tighten the straps and finish by adjusting the three rotary wheels until the head mount sits firmly and in the correct, centered position of your head and face.
- d. Attach the head/helmet adapter with the NVLS-24 adapter by inserting it into the NVLS-24 receptacle.
- e. Adjust the BINOCULAR to get a comfortable and circular vision, centered in front of your eye. When necessary readjust head mount and BINOCULAR.
- f. The **PD-PRO-16B** allows the individual flip to side of each arm and the binocular flip-up.

### 15.3. Attachment of the Helmet Adapter

- a. Insert the head/helmet adapter on the NVLS-24 adapter and then click the assembly into the helmet NVLS-24 shroud, starting the insertion on the top side of the NVLS-24 shroud and pushing firmly the bottom until the interface plate is completely inserted and locked. Adjust the height if needed by releasing the locking lever.
- b. Position the clutch adapter in the fully forward position.
- c. When using a single **PD-PRO-16B**, it should be first placed in front of the required eye and then adjusted.
- d. Moving of the **PD-PRO-16B** from eye to eye is done by releasing the central locking screw, pushing the arm slightly away from the face until it is released from the dent, moving towards the other eye until it engages the second dent and locking again the central screw.
- e. Fine adjustment of the **PD-PRO-16B** in front of the eye is done by means of the height adjustment and the rotation of the BINOCULAR after pressing firmly the clutch.
- f. When using binocular configuration proceed in the same way as with BINOCULAR configuration for each system.



Figure 13 Combinations of Universal Head/Helmet Mount

#### 15.4. Head/Helmet-Mounted, PD-PRO-16B Operations

- a. Take off the objective protective cover (**in low light conditions only**) and position it under the **PD-PRO-16B**. Opposite side of the electronic housing.
- b. Set the operation switch to OFF for magnetic switch-controlled operation.
- c. Adjust the diopter ring to achieve the clearest screen resolution (sharp spots on the eyepiece). **Does not focus on an object yet; put your palm over the objective front lens, to only allow a small amount of light into the PD-PRO-16B.** Once set for your eye, it should not require further adjustment during operation.
- d. Adjust the objective focus ring to obtain a clear image of a desired object. Readjust eyepiece and objective if necessary.

#### **NOTE**

The mounting adapter incorporates a magnetic switch that automatically turns off the **PD-PRO-16B** when it is moved to the side away from the eye, switched between eyes or removed from the head mount.

#### 15.5. Removing the PD-PRO-16B and Head Mount

- a. Set the **PD-PRO-16B** operation switch to OFF.
- b. Disconnect the neck cord from the anchor point on clothing or webbing.
- c. Make sure that the objective protective cover is in position.
- d. Press and hold the NVLS-24 release button on the mounting adapter.
- e. Pull the **PD-PRO-16B** off the dovetail of the adapter assembly.
- f. Loosen all straps and unbuckle the chin support.
- g. Remove the head mount over your head.
- h. Remove the battery from the **PD-PRO-16B**.

### 16. Operation at Low Temperature

At very low temperature (below zero) it can require more effort to operate the **PD-PRO-16B** controls than in warmer conditions. This is normal. Do not attempt to force the movement of controls as this can damage the working parts.

The capacity of the battery is reduced at low temperatures. This reduction in battery life is normal and battery depletion will increase as the temperature decreases.

### 17. Operation at High Temperature

The **PD-PRO-16B** can be operated up to 55 °C, but wherever possible protect the battery from excessive heat. The **PD-PRO-16B** can be subjected to sudden changes in temperature. But if the **PD-PRO-16B** is moved from a cold area (A/C acclimatized) into an area with a much higher temperature and humidity, condensation can occur on the optical surfaces.

### 18. Operation in Humid or Dusty Conditions

In humid or dusty conditions, extra care must be taken to keep all surfaces (particularly the optical surfaces) clean at all times.

When using for diving the sacrificial flat-flat lenses must be firmly attached to objective and eyepiece. Adjust eyepiece diopter and focusing ring at 1-meter depth.

**After immersion in salt water, all elements of the goggle must be cleaned with fresh water for dissolving salts and dried completely with a clean cloth. Salt will corrode any material over a medium or long-term duration. This will particularly impact the Magnesium variant of the PD-PRO-16B.**

## 19. Transportation and Storage

When the equipment is to be transported or stored for long periods, proceed as follows:

- a. Remove the battery.
- b. Make sure that the objective protective cover is in position.
- c. Carry out a visual inspection of the **PD-PRO-16B** and the accessories.
- d. Clean and dry the **PD-PRO-16B** and accessories.
- e. Place the **PD-PRO-16B** in the tactical bags and the accessories in the hard-shell case.

## Chapter 3

# Maintenance

### 20. General

This chapter provides maintenance instructions for the **PD-PRO-16B**.

#### **CAUTION**

The **PD-PRO-16B** is a precision electro-optical device – handle it with care!

To ensure readiness of the **PD-PRO-16B**, it must be properly stored. Preventive maintenance must be performed prior to each mission.

### 21. Preventive Maintenance

Preventive maintenance procedures include inspection, cleaning and operational checks. They are used to keep the **PD-PRO-16B** in an operational condition and prevent malfunctions.

#### 21.1. Optical Surfaces

Inspect all lens surfaces for dirt, fingerprints, scratches or cracks. If necessary, clean and dry the surfaces. If the lens is cracked, chipped or scratched, send the unit for inspection at a higher maintenance level.

#### 21.2. External Surfaces

Inspect the **PD-PRO-16B** and accessories for damage and loose or missing parts. If damaged, loose or missing parts are discovered, send the unit for inspection to a higher maintenance level for repair.

#### 21.3. Eyepiece Assembly

Turn the diopter ring all the way in both directions. Make sure that the eyepiece and the focus ring move freely. If they do not, send the unit for inspection at a higher maintenance level.

#### 21.4. Objective Assembly

Turn the objective focus nut all the way in both directions. Make sure that the objective cell assembly and the focus nut move freely. If they do not, send the unit for inspection at a higher maintenance level.

#### 21.5. Operation Switch

#### **NOTE**

To test the operation of the **PD-PRO-16B** with the operation switch in the ON-M position, the **PD-PRO-16B** must be installed in the correct position in front of the left or right eye on the adapter assembly.

- a. Install a battery and set the operation switch to all three positions. Make sure that the **PD-PRO-16B** operates correctly in each switch position. Make sure that a definitive stop is felt at each position.
- b. Make sure that the operation switch is easily pulled out and set to ON-V and IR positions.
- c. Make sure that the ON-V and IR positions cannot be set without the operation switch pulled out.
- d. If any malfunctions are detected, send the unit for inspection at a higher maintenance level.

## 22. Cleaning

### 22.1. External Surfaces

- a. Use a soft brush to remove excess dirt and grit.
- b. Make sure that the battery compartment cap is tightly closed.
- c. Use soapy water and a lint-free cloth to wipe clean the **PD-PRO-16B** and the accessories.
- d. Use a lint-free cloth to dry the **PD-PRO-16B** and the accessories.
- e. After use of the **PD-PRO-16B** in salt water, wash it thoroughly with fresh tap water.

### 22.2. Optical Surfaces

#### NOTE

Do not clean any optical surface if it is not necessary.

- a. Use a soft brush to remove excess dirt and grit from optical surfaces.
- b. Clean the lens using lens paper dampened in lens cleaning liquid. Lightly wipe once in a circular motion. Turn the paper to a clean area. Repeat the procedure until the glass is clean. Follow up with a dry lens paper.

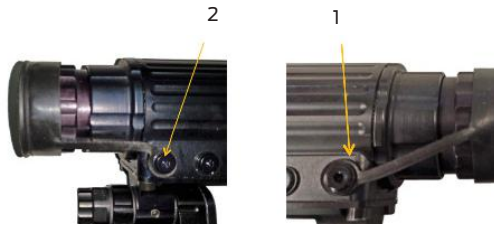
### 22.3. Demist Shield

- a. Never dry wipe!
- b. Before cleaning, always rinse first with cool, running water to remove surface grit.
- c. If necessary, wash gently with a mild soap solution, rinse and wipe dry with a soft cloth or tissue.
- d. Exercise care in wiping whenever the coating is wet. Shake off excess water and wipe gently in a single direction.
- e. Never use commercial glass cleaners or any product containing ammonia or abrasives.
- f. Additional polishes, sprays or rub-on are not recommended.

## 23. Elements Replacement

### 23.1. Replace Objective Cover

- a. Remove the screws, (1 & 2 Fig 19) which secures the objective cover and the battery cup from the left side and right side of main body.
- b. Discard the used screws and clean the threads with alcohol.
- c. Apply one drop of Loctite 222 sealant to two new screws.
- d. Insert one of the screws through the right hole of the objective cover and screw it to the right side (1) of the main body.
- e. Insert the other screw through the cable of the battery cap and through the left hole of the objective cover and screw the assembly to the left side (2) of the main body.



**Figure 14** Screws for Securing the Objective Cover and the Battery Cap

### 23.2. Replace Eye-Guard

- a. Pull the old eye-guard towards the side until it separates from the **MINIMUS-BINO**.
- c. Insert the new eye-guard at the edge of the eyepiece.

### 23.3. Replace Battery Cap

- a. Remove the left screw (2 Fig 19) which secures the objective cover and the battery cup.
- b. Discard the used screw and clean the thread with alcohol.
- c. Apply one drop of Loctite 222 sealant to a new screws.
- d. Insert the screw through the cable of the battery cap and through the left hole of the objective cover and screw the assembly to the left side (2 Fig 19) of the main body

### 23.4. Replace Anti-Fog/ Demist Lens

- a. Perform steps 3.4.2 'a' and 'b' to remove the eye-guard.
- b. Turn the old sacrificial lens CCW to remove it.
- c. Clean, if necessary, the new sacrificial lens, and screw it into the eyepiece by turning CW
- d. Follow the steps in point 3.4.2 to reinstall the eye-guard.

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**CAUTION**  
BEFORE IMMERSION, SCREW AND TIGHTEN FIRMLY THE LENS.

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### 23.5. Replace Sacrificial Lens

- a. Make sure the **PD-PRO-16B** is turned off and remove the objective cover.
- b. Turn the old Anti-fog lens CCW to remove it.
- c. Clean, if necessary, the new Anti-fog lens, and screw it into the objective by turning CW.

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**CAUTION**  
BEFORE IMMERSION, SCREW AND TIGHTEN FIRMLY THE LENS.

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