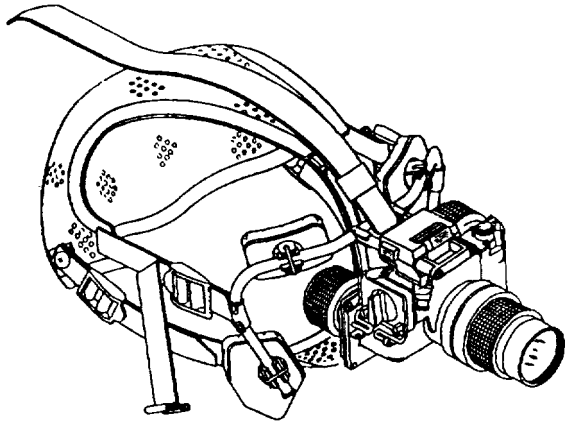
ARMY TM 11-5855-262-23&P-1
AIR FORCE TO 12S10-2PVS7-22

TECHNICAL MANUAL

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)



NIGHT VISION GOGGLE AN/PVS-7A

(NSN 5855-01 -228-0939)

EIC: IPT

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

15 MARCH 1993

NBC
NUCLEAR, BIOLOGICAL, OR CHEMICAL
HANDLE CAREFULLY

WARNING

After Nuclear, Biological, or Chemical (NBC) exposure, the Night Vision Goggle AN/PVS–7A must be handled with extreme caution. Unprotected personnel may experience injury or death if residual toxic agents or radioactive agents are present. If the goggles or vehicles are exposed to chemical or biological agents, servicing personnel must wear a protective mask, hood, protective overgarment, and chemical-protective gloves and boots.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working on the Night Vision Goggle AN/PVS–7A, Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

WARNING

The infrared (IR) Illuminator provides light for viewing in low ambient light conditions. The light from the Illuminator can be detected by other night vision devices.

WARNING

Alkaline Battery
BA–3058/U

DO NOT dispose of in fire. DO NOT short circuit or otherwise tamper with battery. Return batteries to Property Disposal Officer for disposal in accordance with DLSC Handbook 41601 and Battery Disposition/Disposal Handbook, TB 43–01 34.

WARNING

Lithium Battery
BA–5567/U

Battery BA–5567/U contains Sulfur Dioxide Gas under pressure. DO NOT heat, puncture, disassemble, short circuit, attempt to recharge, or otherwise tamper with batteries. Turn off equipment if battery compartment becomes hot. Wait until batteries have cooled before removing them. Batteries have a safety vent to prevent explosion. When they are venting gas, you will smell gas, your eyes may become irritated, or you may hear the sound of gas escaping. When safety vents have operated, batteries must still be handled with care. See TB 43–01 30, Instructions for the Safe Handling and Identification of U.S. Army [Communications-Electronics Command Managed Lithium Sulfur Dioxide Batteries and TB 43–01 34, Battery Disposition/Disposal Handbook, for additional information on Lithium batteries.

WARNING

Do not use mercury or rechargeable NiCad batteries. Using these batteries could result in personal injury or system failure.

Do not carry batteries in pockets containing metal objects such as coins, keys, etc. Metal objects can cause the batteries to short circuit and become very hot and could result in severe chemical burns. In the case of BA–5567 lithium batteries, a short circuit could cause them to explode.

WARNING

- **Secure nitrogen tank. High pressure nitrogen can propel broken tank with great force and cause injury or death.**
- **DO NOT use nitrogen in an enclosed area. Always ensure that work area is well ventilated. Concentrated nitrogen can cause death when breathed (inhaled),**
- **High pressure nitrogen can propel particles with great force and cause injury to personnel, Make sure valve opening is pointed away-from all personnel when opening valve .**

WARNING

Fluorinated Grease (KRYTOX) and Silicone Grease (DC33) could be harmful to skin and clothing, can burn easily, and may give off harmful vapors. Use in a well-ventilated area, away from open flame. Wash hands with soap and water after use.

WARNING

The Image Intensifier contains toxic material, If the Image Intensifier becomes broken, be extremely careful to avoid inhalation of the phosphor screen material and do not allow it to come in contact with your mouth or open skin wounds. Wash hands with soap and water after handling,

FIRST AID

For Artificial Respiration and First Aid, See FM 21 – 11, *First Aid for Soldiers.*

TECHNICAL MANUAL
NO. TM 11–5855–262–23&P–1
TECHNICAL ORDER
NO. 12 S10–2PVS7–22

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC,
15 March 1993

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

NIGHT VISION GOGGLE, AN/PVS-7A (NSN 5855-01 -228-0939)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended changes to Publications and Blank Forms), or DA form 2028–2 located in back of this manual direct to: Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL–LC–LM–LT, Fort Monmouth, New Jersey 07703–5007 or send your AFTO-22 to: Commander, Warner–Robins Air Logistics Center/LZDT, 226 Cochran St., Robins AFB, GA 31098-1622. In either case, a reply will be sent to you.

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* This manual supersedes TM 11-5855-262-24-1, dated 1 August 1987 and portions of: TM 11-5855-262-24P, dated 1 October 1987, that pertain to the AN/PVS-7A.

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TABLE OF CONTENTS

HOW TO USE THIS MANUAL

The safest, easiest, and best way to do maintenance on the Night Vision Goggle is to use this manual. Learning to use this manual is as easy as reading through the next few pages. Knowing what's in this manual and how to use it will save you time and work, and help you avoid exposing yourself to unnecessary hazards while you do your job.

So, where do you start?

Right here, If this is the first time you are using this manual, be sure to completely read this section first, There's a lot of information here you need to know.

ORGANIZATION

This manual is divided into two types of maintenance procedures: Unit Level Maintenance and Direct Support Maintenance. You will be using the procedures in this manual to perform one of these levels for repair of the Night Vsion Goggle.

WHERE TO START

How do you find the correct procedure?

Unit maintenance instructions are found in Chapter 2. Direct Support maintenance instructions are found in Chapter 3. If you are using the manual to perform repair or replacement of a part that you already know is bad, you will start by locating the part to be repaired or replaced in the Table of Contents. If you do not know what is wrong with the Night Vision Goggle, refer to the Unit or Direct Support Troubleshooting Symptom Indexs located in paragraphs 2–8.2 and 3–9, respectively.

Once you've located the correct procedure, read through it to determine if you have everything you need to perform , the job. Make sure all the equipment conditions have been met. Familiarize yourself with the potential hazards described by the WARNINGS and CAUTIONS. You must familiarize yourself with the entire procedure before beginning the maintenance task.

HOW TO USE A MAINTENANCE PROCEDURE

The first paragraph of a maintenance procedure contains supplementary support information you will need to perform that procedure. We will refer to this as the "Setup." The following paragraphs describe all the blocks of information you will find there.

TEST FACILITY A description of the work area or facilities needed to perform the maintenance will be listed under this heading.

TOOLS. Individual tools from your tool kit will not be listed under this heading. Special tools, fabricated tools, and tools from any source other than from the tool kit will be listed with a reference to a specific item.

MATERIALS/PARTS. If any expendable or consumable supplies are needed to perform the task, they will be listed under this heading. If more than one of an item is required, the quantity will also be provided. Appendix C will give you all the detailed information necessary to requisition the item if you don't have it on hand. The inspection steps in the removal or disassembly procedure will tell you which parts to replace. Refer to the applicable Repair Parts and Special Tools List (RPSTL) in Appendix C for additional information that you may need on these and other parts.

REFERENCING WITHIN THIS MANUAL

Referencing from one procedure to another within this manual is by paragraph number. When you are referenced to another procedure, you must read the setup page information for that procedure to determine if there are any equipment conditions that must be accomplished before you perform this procedure, and to determine what tools, supplies, or parts may be required.

REFERENCING TO OTHER publications is by the full publication identification number and title.

PROCEDURE ORGANIZATION. Most of the procedures in this manual are either replacement or repair procedures. These procedures contain both the removal and installation or the disassembly and assembly steps in the same procedure.

LOCATING COMPONENTS. The use of locator illustrations in this manual has been minimized. Locator illustrations are not used to show locations of operating controls and major components located in the unit maintenance manual. Refer to paragraph 1–10, Location and Description of Major Components, for this information.

MANUAL OVERVIEW. Additional references to the contents of this manual can be found in the index at the back of the manual. This manual also contains the Repair Parts and Special Tools List (RPSTL) in Appendix C for ordering repair parts. Appendix C gives details for using the RPSTL.

SPECIAL FEATURE. A locator is provided on the right-hand border of the front cover, This gives the location of the information most frequently used. To find the topic UNIT MAINTENANCE INSTRUCTIONS, open the manual to the correct page by using the black tab on the side of the manual that lines up with the topic UNIT MAINTENANCE INSTRUCTIONS.

CHAPTER 1
INTRODUCTION

Section 1. General Information

1-1 SCOPE

a. Type of Manual: Unit and Direct Support Maintenance, (including Repair Parts and Special Tools List).

b. Model Number and Equipment Name: AN/PVS–7A, Night Vision Goggle.

c. Purpose of Equipment: Night Vision Goggle, AN/PVS–7A provides improved night vision using available light from the night sky. The goggle enables the user to perform normal tasks such as reading, walking, driving on the ground, or surveillance during times of darkness. Throughout this manual the AN/PVS-7A, Night Vision Goggle will be referred to as the NVG.

1-2 CONSOLIDATED INDEX of ARMY PUBLICATIONS and BLANK FORMS

Refer to the latest issue of DA PAM 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3 MAINTENANCE FORMS AND RECORDS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738–750, The Army Maintenance Management System; and AR 700– 138, Army Logistics Readiness and Sustainability. Air Force personnel will use AFR 66–1 for maintenance reporting and TO–00–35D54 for unsatisfactory equipment reporting.

b. Report of Packing and Handling Deficiencies. Fill out and forward SF 364, Report of Discrepancy (ROD) as prescribed in AR 735– 11–2/DLAR 4140.55/NAVMATINST 435573B/AFR 400–54/MC04430.3H.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward as prescribed in AR 55-38/ NAVSUPINST 4610.33C/AFR 75– 18/MCO P4610.19 D/DLAR 4500.15.

1-4 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about the design. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL–PA-MA–D, Fort Monmouth, New Jersey 07703– 5023. We'll send you a reply.

1-5 ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with PMCS table (Page 2–2) before storing. Army materiel administrative storage requirements and procedures can be found in TM 470–90– 1 "Administrative Storage of Equipment" and AR 740-3 "Care of Supplies in Storage (COSIS)". When removing equipment from administrative storage, the PMCS should be performed to assure operational readiness.

1-6 DESTRUCTION of ARMY MATERIAL TO PREVENT ENEMY USE

To keep the enemy from getting useful information, the NVG should be completely destroyed, if possible, in accordance with TM 750–244–2, Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.

1-7 WARRANTY

The AN/PVS–7A is warranted by the manufacturer. The date on which the warranty expires is indicated on a warranty sticker on the NVG. Report all defects in material or workmanship in accordance with DA PAM 738–750 and warranty information card included with the NVG.

1-8 NOMENCLATURE CROSS-REFERENCE LIST

Table 1 –1 contains a list of common names used throughout this technical manual which differ from official nomenclature.

Table 1 –1. Nomenclature Cross-Reference List

Official Nomenclature	TM Nomenclature
Facemask	Headmount Assembly
Filter	Sacrificial Window
Gasket	Preformed Packing
Seal, Housing	Preformed Packing
Eyepiece Assembly	Rear Cover Assembly
Actuator, Electro-Mechanical	Wired Housing Assembly
Strap, Case, Carrying	Strap, Shoulder
Cup, Eyepiece	Eyecup
Cord, Fibrous	Cord, Neck

Section II. Equipment Description and Data

1-9 EQUIPMENT CHARACTERISTICS, CAPABILITIES, and FEATURES

CAUTION

The NVG is a precision optical instrument and must be handled carefully at all times to prevent damage.

The NVG can quickly be removed from the head mount assembly with automatic shut-off during times when lights or flares are used. It can be detached from the headmount assembly and used as a hand-held viewer. In the case of extreme darkness, as in a covered area, the goggle has an infrared feature (IR Illuminator) that allows viewing at close range. A built-in indicator lets the operator know when the IR Illuminator is in use.

The NVG has an eye relief adjustment that permits the eyepiece lenses to be moved in or out of the carriage to a position approximately one inch (2.54 cm) from the operator's eyes. The focus adjustments are made for the sharpest picture.

The headstrap attaches to the headmount assembly frame. The headstrap is slightly elastic and should be adjusted for a comfortable and secure fit. The strap ends are inserted through the slots in the strap buckle and pulled until adjusted to the operator.

Accessories with the NVG are: demist shields which enhance operation in humid or cold environments, a sacrificial window which provides protection for the objective lens in dusty and sandy areas, a light interference filter (LIF) which provides laser protection for the goggle, and objective and eyepiece lens caps which provide protection for the lenses while the goggle is stored.

1-10 EQUIPMENT DATA

Technical Data

Voltage Range . . . .2.65 to 3.00 vdc

Magnification . . . . IX (Unity)

Input illumination . . . . . Cloudy starlight to bright moonlight

1-10 EQUIPMENT DATA (continued)

Batteries	Alkaline (''AA") (BA–3058/U) Two each or Lithium (BA–5567/U) One each
Battery Lifetime Expectancy	AA Alkaline (BA-3058/U) -30 hours (two batteries) at 70°F Lithium (BA-5567/U) –30 hours (one battery) at 70°F
Weight	..680 grams max./1.5pounds
operating Temperature Range	(-51 degrees C to +49 degrees C) (-59 degrees F to +120 degrees F)
Storage Temperature Range	(-51 degrees C to +71 degrees C) (-60 degrees F to +160 degrees F)

1–11 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

1-11.1 AN/PVS–7A Goggle. Figure 1 – 1 illustrates the items which comprise the AN/PVS–7A goggle. Description of the major items are as follows.

1-11.2 Goggle Assembly. The goggle assembly is a light-weight image intensifying device, that is capable of being used as a hand-held or headmounted system.

1-11.3 Headmount Assembly. The adjustable cushioned headmount assembly secures the goggle to the operator's head for night viewing providing freehand support for use with a weapon, protective mask or other purposes.

1-11.4 Sacrificial Window. A replaceable sacrificial window is supplied to protect the objective lens during operation in adverse conditions.

1-11.5 Demist Shields. The two demisting shields are used to prevent the eyepiece lenses from becoming fogged.

1-11.6 Upper, Lower Cushions. Four clip-on cushions are provided to adjust the head mount to fit different head and face sizes.

1-11.7 Eyepiece Cups. Eyepiece cups are provided so that the green glow emitted by the NVG cannot been detected by others.

1-11.8 Light Interference Filter (LIF). This is a laser-protection filter for the goggle, Use of this filter will result in a slight reduction in system gain.

1-11.9 Neck Cord, Objective, and Eyepiece Lens Caps. The neck cord is provided to prevent damage to the system, If the NVG is dropped the neck cord will prevent it from falling. Lens caps are provided to protect the objective and eyepiece lens when not in use.

1-11.10 Shipping-and-Storage Case. The shipping-and-storage case is a two-piece molded container fastened together by a hinge and two latches. A handle is provided for carrying. The interior includes polyethylene foam cushioning for the support of the cloth carrying case which contains the goggle, headmount, and accessories, A pressure-relief valve is provided to release pressure built up within the case.

1-11.11 Carrying Case. The canvas carrying case is provided for transportation and protection of the NVG, headmount assembly, batteries and accessories. The case contains two slide keepers for belt attachment and three D-rings for shoulder and leg strap attachment.

1-11.12 Operator's Manual. The Operator's manual provides operation and installation instruction for the AN/PVS–7A goggle.

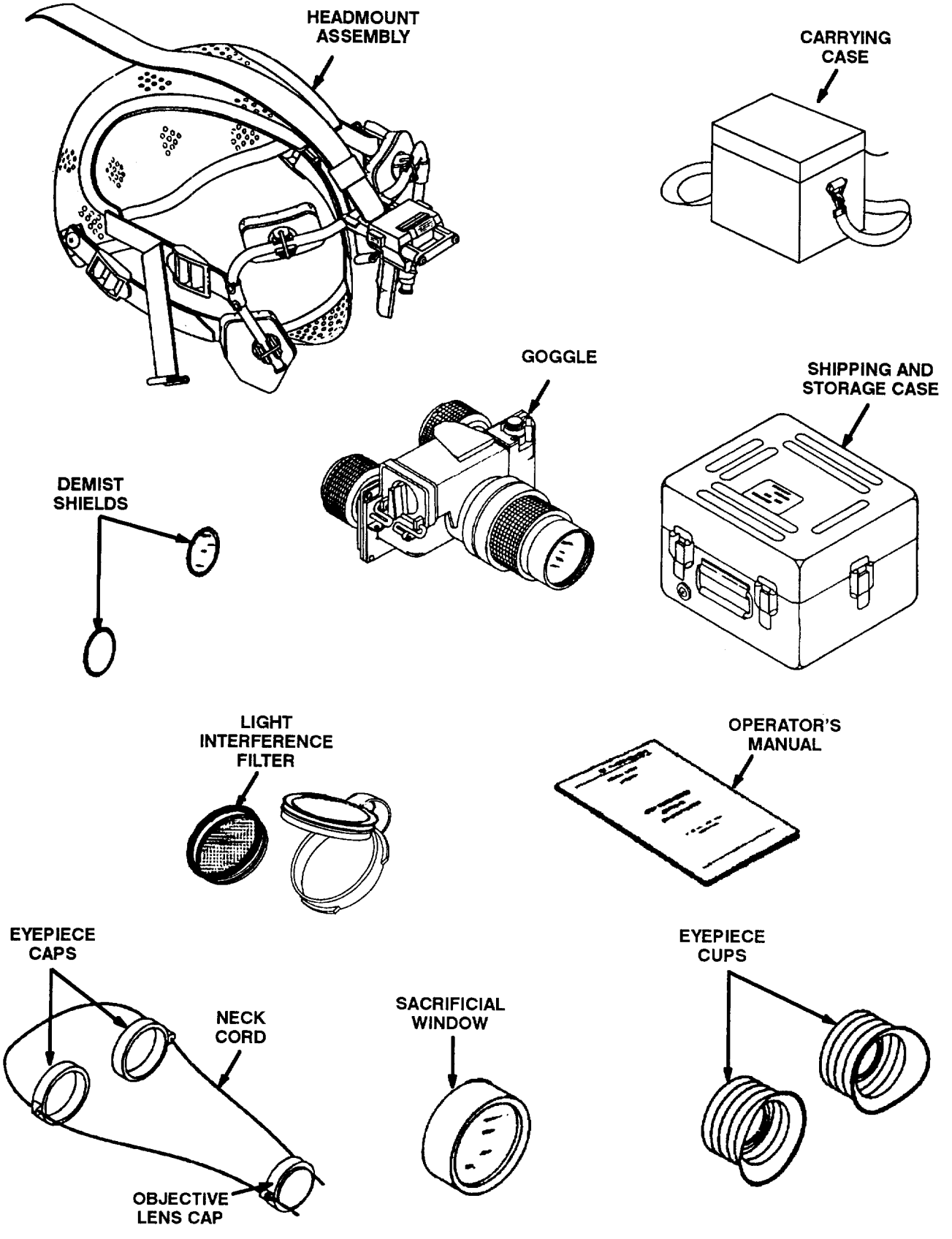


Figure 1–1. Night Vision goggle, AN/PVS-7A Major Components.

Section III. Principles of Operation

1 –12 THEORY OF OPERATION

a. Optical Function. The NVG is an electro-optical device with a single objective lens and two eyepieces with a unity (1X) magnification. The goggle receives available light at the objective lens and focuses it onto the photocathode element of the image intensifier. The photocathode converts the light energy into an electron beam. The image intensifier amplifies the electron beam and projects it onto the phosphor screen. The phosphor screen reconverts the electron beam to visible light which is directed through a collimating lens and a pair of relay lenses to each eyepiece lens. Diopter adjustment focuses the image for the operator's eye. See Figure 1 –2.

The image intensifier is kept in a nitrogen atmosphere to eliminate moisture. Periodic purging ensures that moisture is held to a minimal level.

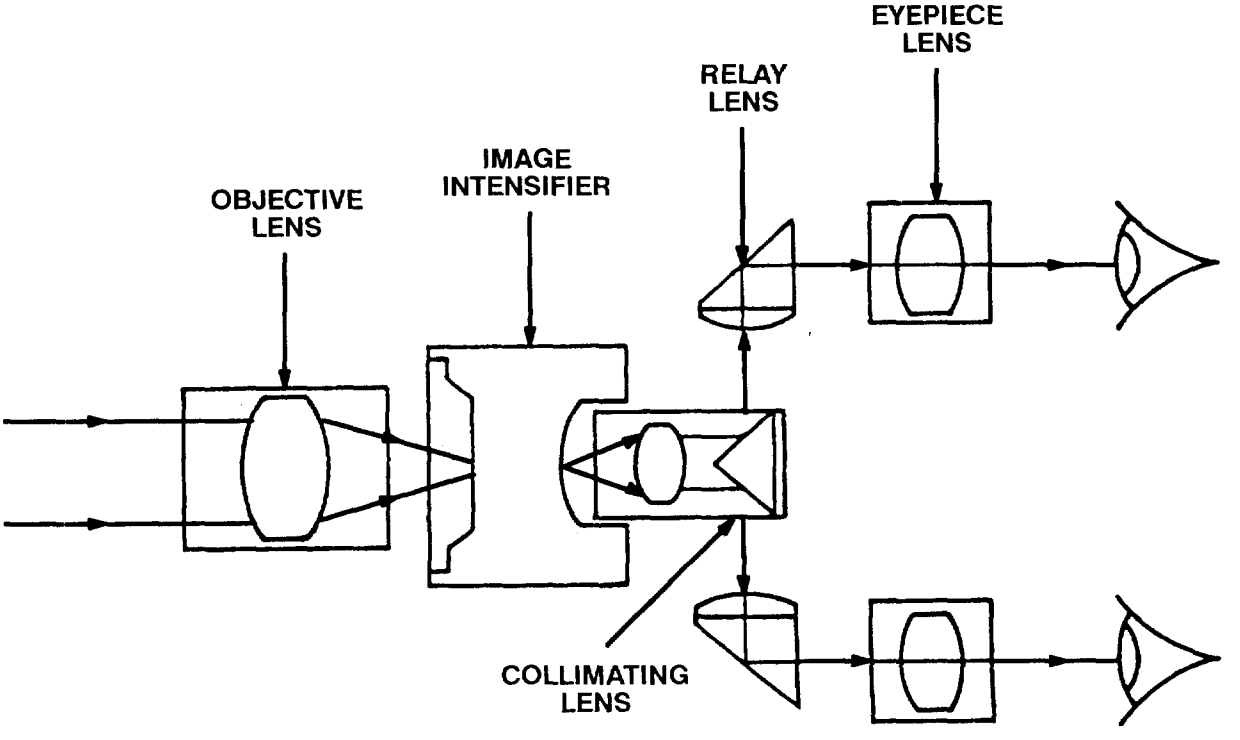


Figure 1–2. Optical Schematic.

1-12 THEORY OF OPERATION (continued)

b. Electronic Function. IR ON (on the headmount assembly): When on the headmount assembly, the battery supplies power through the magnetic switch SW–2 pole S, Through switch SW–1A contact 5 Image Intensifier, and SW–1B contact 11, through resistor R2 to visible L.E.D CR–2, and through resistor R1 to the infrared diode CR–1 (IR Illuminator). See Figure 1 –3.

ON (on the headmount assembly): The battery supplies power through the magnetic switch SW–2 pole S, through switch SW–1A contact 4, image intensifier.

ON (off the headmount assembly): When the goggle is removed from the headmount assembly, the battery supplies power, through the magnetic switch SW- 2 that transfers to pole U; through SW–1A contact 2 to the image intensifier.

IR ON (off the head mount assembly): The battery supplies power, through pole U of the magnetic switch SW– 2, contact 1 of switch SW-l A to the Image Intensifier, and SW–1B contact 7 through resistor R2, to the visible L.E.D. CR–2, and through resistor R1 to the infrared diode CR-1 (IR Illuminator) to the battery.

When the goggle is used in the head mounted configuration, a magnet in the carriage assembly creates a magnetic field with the magnetic reed switch inside the goggle. If the goggle is on and removed from the headmount, this magnetic field is broken and the magnetic reed switch signals the reed switch sensor to signal the ON/OFF control circuit which then triggers the analog power switch (11) to turn off the goggle. After removing the goggle from the headmount, it can be used in the hand-held configuration by turning the rotary switch to OFF and then back to ON. ‘

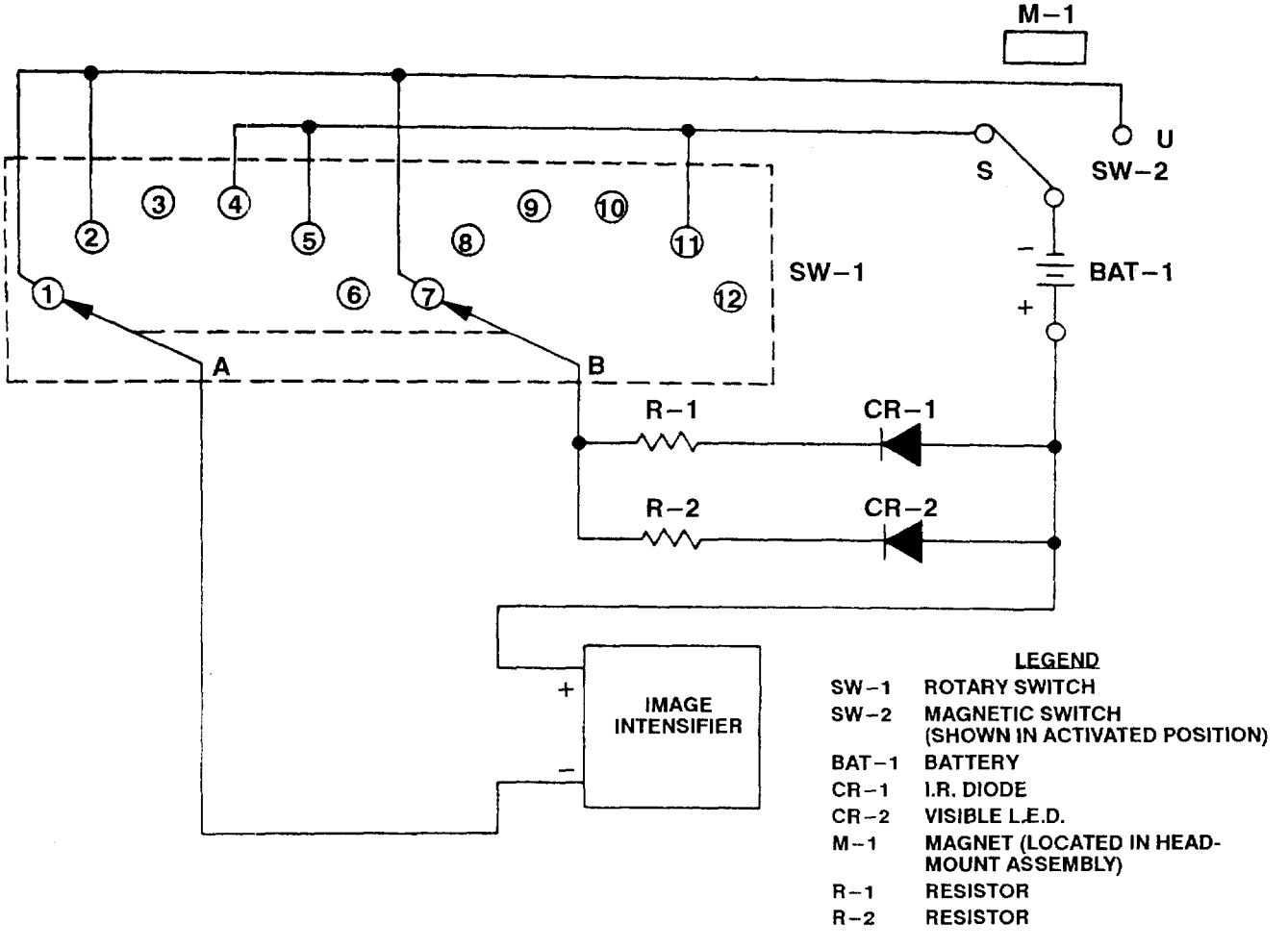


Figure 1-3. Wiring Schematic.

1-12 THEORY OF OPERATION (continued)

c. Stage Functions, Image Intensifier. The primary input power is supplied from the battery to the switch and then to the oscillator section of the image intensifier.

The oscillator provides alternating current (AC) output voltage to the cathode and screen multiplier circuits, The AC is multiplied, then rectified, to produce high DC voltages.

The multiplied voltages are applied to the photocathode, microchannel plate (MCP), and phosphor screen.

Luminous energy received by the photocathode generates a field of electrons that is amplified in the MCP and accelerated to the phosphor coating of the screen, where it is reconverted to an intensified visible image.

CHAPTER 2
UNIT MAINTENANCE INSTRUCTIONS

Section 1. Repair Parts, Tools, Special Tools, Test Measurement Diagnostic Equipment (TMDE), and Support Equipment

2-1 GENERAL

Tools and equipment are issued to unit maintenance personnel for maintaining the NVG. Maintenance responsibilities for the NVG are authorized by the Maintenance Allocation Chart (MAC), Appendix B.

2–2 COMMON TOOLS AND EQUIPMENT

Common tools and equipment used to maintain the NVG are authorized by the Modified Tables of Organization and Equipment (MTOE) CTA-50-970 or CTA 8–100 applicable to your unit. The following tools are required to perform unit level maintenance on the AN/PVS–7A: Wrench Set, Balldriver, Metric.

2–3 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

The following TMDE is required: Test Set, Electronic Systems, TS–4348/UV is needed to perform the Optical Test. Refer to MAC Appendix B for additional information.

2-4 REPAIR PARTS

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), Appendix C.

Section II. Service Upon Receipt

2–5 GENERAL

This section contains procedures which must be performed by unit maintenance personnel, upon receipt of a NVG. When the NVG is first received, it is necessary to determine that it is in combat-ready condition.

2-6 INSPECTION AND SERVICE

a. Inspection. An inspection must be performed to determine that the NVG is in operating condition, and that all Modification Work Orders (MWOs) have been completed. When handling and maintaining the equipment, observe the following general instructions:

1. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report damage on SF 364 Report Of Discrepancy (ROD).
2. Check the equipment against the packing slip to see if the shipment is complete. Report discrepancies in accordance with instructions in DA PAM 738–750 The Army Maintenance Management System (TAMMS).
3. Check to see whether all MWOs have been applied.
4. Check stock numbers and serial numbers to make sure the correct items were received.
5. Check all tags and stenciled information for correctness and completeness.

b. Service.

1. Perforrn necessary cleaning and inspection of the NVG in accordance with procedures in paragraph 2--23.
2. Report any deficiencies using applicable reports, records, forms,

Section III. Preventive Maintenance Checks And Services (PMCS)

2–7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-7.1 INTRODUCTION TO PMCS TABLE

a. General. The Preventive Maintenance Checks and Services (PMCS), Table 2–1, list the inspections required to keep your NVG in good operating condition and ready for its primary mission.

b. Warnings and Cautions. Always observe the WARNINGS and CAUTIONS appearing in your PMCS table. WARNINGS and CAUTIONS appear before applicable procedures, You must observe these WARNINGS and CAUTIONS to prevent serious injury to yourself and others or prevent your equipment nom being damaged.

c. Explanation of Table Entries.

(1) Item Number Column. Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do the checks and services.

(2) Interval Column. This column tells you when you must do the procedure in the procedure column. BEFORE (B) procedures must be done before you operate or use the equipment for its intended mission. DURING (D) procedures must be done during the time you are operating or using the equipment for its intended mission. AFTER (A) procedures must be done immediately after you have operated or used the equipment.

(3) Item to Check/Service and Procedure Column. This column provides the location and the item to be checked or serviced, The location of the item is underlined. This column also gives the procedure you must do to check or service the item listed in the Check/Service column to know if the equipment is ready or available for its intended mission or for operation, You must do the procedure at the stated interval column.

(4) **Not Fully Mission Capable If: Column.** Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you perform check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failures.

NOTE

It is mandatory that the NVG be Resolution Tested every 180 days.

It is mandatory that the NVG be purged every 180 days.

Table 2-1. Preventive Maintenance Checks and Services (PMCS) for the AN/PVS-7A

Item No.	Interval B	Interval D	Interval A	Item to Check/Service and Procedure	Not Fully Mission Capable if:
1	•		•	***Objective and Eyepiece Lens*** — Inspect each lenses for dirt, dust, fingerprints, chips, or cracks. If necessary, clean and dry lens. Inspect lens for moisture.	Lenses are chipped, cracked, broken, or cannot read resolution target on TS–4348/UV. Moisture in lens.
2	•		•	***Exterior Surfaces*** — Inspect for cracks, cuts, dents, or other damage.	Damage to exterior surfaces.
3	•		•	***Eye Span Adjustment*** — Check that eyepiece lenses can be moved together and apart easily. **CAUTION** *Be sure battery(ies) is removed before performing items* 4 *and* 5.	Eyepiece lens will not move easily or cannot be adjusted.
4	•		•	***Battery Hatch and Compartment*** — Inspect hatch and compartment for damage to seal and for corroded contacts.	Battery hatch and/or contacts are damaged or broken. Hatch seal is damaged.
5	•		•	***Switch*** — Check that the switch moves through all five positions. **CAUTION** ***Items 6, 7, and 8 should be performed in a darkroom environment.***	Switch will not move through all or any position.

Table 2-1. Preventive Maintenance Checks and Services (PMCS) for the AN/PVS-7A (continued)

Item No.	Interval B	Interval D	Interval A	Item to Check/Service and Procedure	Not Fully Mission Capable if:
6	•		•	***Quick Release/Automatic Shut-Off*** — Check that goggle can be installed and removed from headmount assembly. Activated NVG must turn off when removed from headmount.	Cannot be installed or released easily or quickly or does not shutoff when removed from headmount.
7			•	***Focus Adjust*** — Check that ail focus rings turn easily and can achieve full range of focus adjustment.	Goggle cannot be focused.
8		•	•	***Image Intensifier*** — Refer to paragraph 2–20.	Reference pattern cannot be resolved.
9		•		***IR LED***	Does not come on.

Section IV. Unit Troubleshooting

2–8 GENERAL

The following paragraphs provide information pertaining to the troubleshooting procedure for unit maintenance.

2–8.1 PURPOSE OF TROUBLESHOOTING

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

2-8.2 UNIT TROUBLESHOOTING SYMPTOM INDEX

Information concerning equipment malfunctions and necessary corrective actions which can be taken by unit maintenance personnel is contained in Table 2--2. This table cannot list all the malfunctions that may occur, all the tests and inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your supervisor.

Table 2-2. Unit Troubleshooting Symptom index

Malfunction	Probable Cause	Corrective Action
1, Goggle will not operate.	a. Battery dead, missing, or not properly installed. b. Battery hatch contact spring broken. c. Defective goggle.	a. Replace battery, or install properly. b. Replace battery hatch. c. Send goggle to higher level of maintenance,
2. Blurred image at any distance.	a. Eyepiece out of focus. b. Objective lens out of focus. c. Optics damaged.	a. Refocus eyepiece. b. Refocus objective lens. c. Perform TS–4348/UV optical test. If resolution pattern can not be resolved send goggle to higher level of maintenance.
3. Fails TS–4348 resolution test.	a. Eyes not dark-adapted. b. Objective lens or eyepieces not focused correctly. c. Fogging or dirt on lens d. Weak batteries. e. Optics will not focus.	a. Allow eyes to become dark-adapted. b. Refocus. c. Clean lens surfaces. d. Replace batteries. e. Send goggle to higher level of maintenance.
4. Light visible around eyecup assembly.	a. Eye-relief adjustment not properly adjusted. b. Eyecup has lost resiliency.	a. Adjust eye relief for better fit. b. Replace eyecups.

Table 2-2. Unit Troubleshooting Symptom index (continued)

Malfunction	Probable Cause	Corrective Action
5. Headmount strap cannot be tightened.	Defective fasteners or straps.	Replace straps.
6. Neck cord broken.	a. End knots untied. b. Unserviceable.	a. Retie end knots. b. Replace neck cord.
7. Rotary Switch.	a. Rotary switch knob broken.	a. Send goggle to higher level of maintenance.
8. Automatic shut-off will not shut off goggle when removed from headmount.	Defective carriage.	Replace carriage.
9. Goggle will not unlatch or attach to headmount carriage.	a. Dirty latch. b. Broken headmount carriage. c. Broken latch.	a. Clean headmount carriage assembly latch. b. Replace headmount assembly. c. Send goggle to higher level of maintenance.
10. Eye-relief adjustment cannot be made.	Damaged carriage.	Replace carriage.
11. Eyespan adjustment cannot be made.	Defective rear cover assembly,	Send goggle to higher level of maintenance.
12. Battery hatch knob difficult to turn.	Defective battery hatch,	Replace battery hatch.
13. Demist shields will not stay on.	a. Demist shields are broken. b. Defective eyepiece.	a. Replace demist shields. b. Send goggle to higher level of maintenance,
14. Sacrificial window cannot be installed.	a. Defective sacrificial window. b. Defective objective lens assembly.	a. Replace sacrificial window. b. Send goggle to higher level of maintenance.
15. LIF cannot be installed.	a. Defective LIF. b. Defective objective lens assembly.	a. Replace LIF. b. Send goggle to higher level of maintenance.
16. Moisture in lenses.	Defective preformed packing.	Send goggle to higher level of maintenance.
17. Moisture in battery compartment.	Battery hatch seal defective or missing.	Replace battery hatch seal.

Section V. Unit Maintenance Procedures

2–9 GENERAL

This section contains unit maintenance procedures for the NVG as authorized by the Maintenance Allocation Chart (see Appendix B).

2–10 CHIN STRAP REPLACEMENT

INITIAL SETUP

Test Facility

Clean Work Station

Tools

None

Materials/Parts

Strap, Chin P/N A3140758

1. Removal.

Unsnap both ends of chin strap from head piece.

2. Replacement.

Snap one end onto the head piece, repeat for the other side.

2–11. LOWER CUSHION REPLACEMENT

INITIAL SETUP

Test Facility

Clean Work Station

Tools

TK-101

Materials/Parts

Cushion, Lower P/N A3140730

1. Removal. See Figure 2–1.

a. Pull one end of the clip out of hole.

b. Remove clip.

c. Pull cushion away from tube assembly.

2. Replacement.

a. Install cushion on tube assembly.

b. Insert clip in holes. Make sure clip is seated properly.

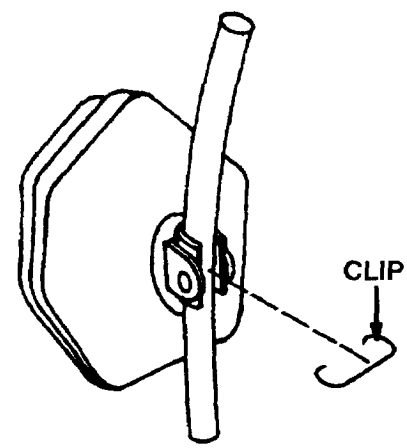


Figure 2 –1. Lower Cushions.

2-12 HEADSTRAP REPLACEMENT

INITIAL SETUP

Test Facility

Clean Work Station

Tools

TK-101

Materials/Parts

Headstrap P/N A3140740

1. Removal. See Figure 2-2

a. Remove chin strap (paragraph 2–10).

b. Remove lower cushions (paragraph 2– 11),

c. Lift headstrap loop off of retainers and slide off of tube assembly.

d. Unfasten center strap from tube.

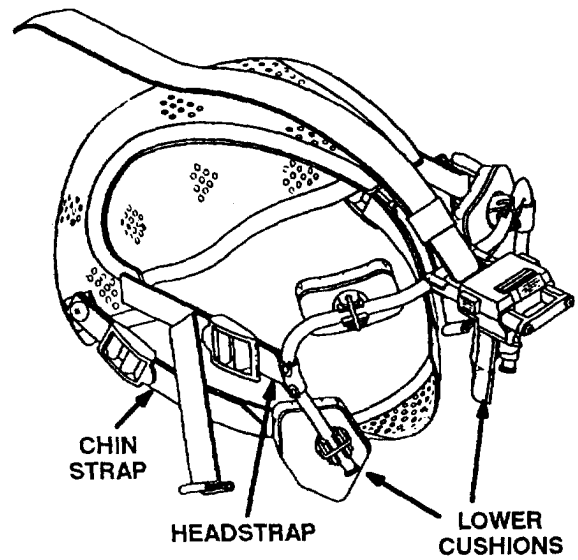


Figure 2–2. Headstrap.

2. Replacement:

a. Slide headstrap loop over tube assembly and hook on retainers.

b. Re-attach center strap to tube.

c. Replace lower cushions (paragraph 2-11).

d. Replace chin strap (paragraph 2– 10).

2–13 UPPER CUSHION REPLACEMENT

INITIAL SETUP

Test Facility

Clean Work Station

Tools

TK–101

Materials/Parts

Cushion, Upper P/N A3140720

1. Removal. See Figure 2–3.

a. Pull one end of the clip out of hole.

b. Remove clip.

c. Pull cushion away from tube assembly.

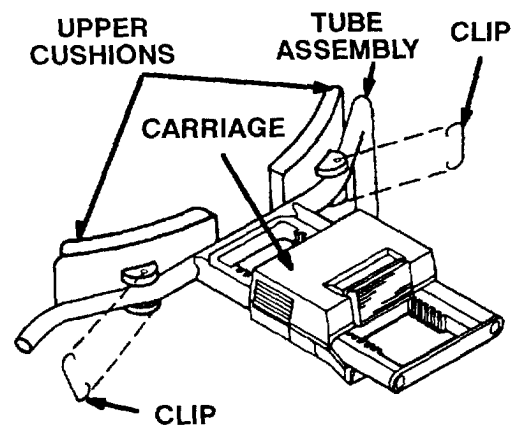


Figure 2-3. Upper Cushions.

2-13 UPPER CUSHION REPLACEMENT (continued)

2. Replacement.

a. Install cushion on tube assembly.

b, Insert clip in holes. Make sure clip is seated properly.

2-14 BATTERY REPLACEMENT

Refer to paragraph 3–3, TM 11 –5855–262–10– 1, NVG, AN/PVS–7A, Operator's Manual.

2-15 CARRYING CASE STRAP REPLACEMENT

INITIAL SETUP

Test Facility

Clean Work Station

Tools

None

Materials/Parts

Strap, Case, Carrying P/N A3140662

1. Removal.

Depress the spring catch and remove from the D ring on each side of the carrying case.

2. Replacement.

Depress the spring catch and attach to the D ring located on each side of the carrying case.

2–16 BATTERY HOLDER REPLACEMENT

INITIAL SETUP

Test Facility

Clean Work Station

Tools

TK–101

Materials/Parts

Battery Holder P/N A3140840

1. Removal. See Figure 2–4.

a. Insert blade of small flat blade screwdriver in the slot under the battery holder.

b. Push center contact up and pull holder from compartment.

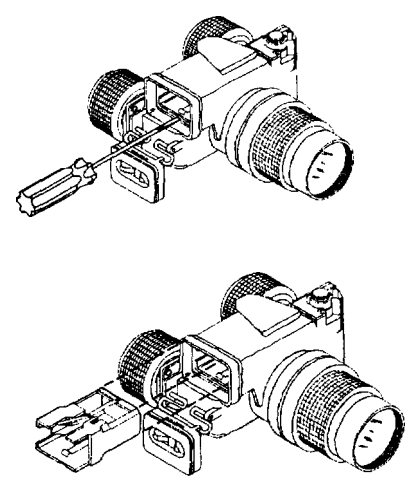


Figure 2-4. Battery Holder.

2–16 BATTERY HOLDER REPLACEMENT (continued)

2. Replacement.

a. Align the three contacts on holder with three buttons in battery compartment, Insert holder and press until holder locks into compartment.

b. Close battery hatch and check alignment.

2-17 BATTERY HATCH

INITIAL SETUP

Test Facility

Clean Work Station

Tools

TK–101

Materials/Parts

Hatch, Battery P/N A3140830

1. Removal.

a. Open battery hatch and slide wire hinge toward back plate.

b. Squeeze hinge until one end is out of hole.

c. Pull the other end out of hole and remove hatch.

2. Replacement.

a. Place one end of wire hinge in hole in back plate.

b. Squeeze wire hinge in the middle until free end can be inserted into the other hole.

c. Close and latch hatch, and check for proper alignment.

2-18 BATTERY HATCH SEAL

INITIAL SETUP

Test Facility

Clean Work Station

Tools

None

Materials/Parts

Seal, Hatch P/N A3140837
Grease, Silicone, P/N DC 33

1. Removal.

a. Open Battery Hatch by turning hatch knob one quarter turn counterclockwise.

b. Remove damaged hatch seal and discard.

2-18 BATTERY HATCH SEAL (continued)

2. Replacement.

WARNING

Silicone Grease (DC33) could be harmful to skin and clothing, can burn easily, and may give off harmful vapors. Use in a well-ventilated area, away from open flame. Wash hands with soap and water after use.

a. Apply a thin film of silicone grease item 1, Appendix D to seal.

b. Carefully stretch seal over hatch and seat into groove.

c. Close hatch and turn hatch knob one quarter turn counterclockwise and check for proper alignment.

2-19 HEADMOUNT CARRIAGE

INITIAL SETUP

Test Facility

Clean Work Station

Tools

TK–101
Wrench Set, Bail driver, Metric P/N 10687

Matajals/parts

Carriage P/N A3140700

1. Removal.

a. Remove the top strap from around frame.

b. Remove two screws on the front of the carriage.

c. Pull carriage from headmount tube assembly.

2. Replacement.

a. Place carriage into position on headmount tube assembly.

b. Insert two screws and tighten.

c. Replace top strap around frame.

2-20 CHECKOUT PROCEDURES

CAUTION

The Checkout Procedure of the goggle must be conducted in a darkened area or during actual nighttime conditions.

NOTES

This procedure must be performed in a darkened area. Your eyes must be dark-adapted to perform this procedure. This takes at least 10 minutes or longer if you have been exposed to bright lights. Review the following procedure before entering the dark area.

2-20 CHECKOUT PROCEDURES (continued)

Checkout Procedure

1. Place switch in the “OFF” position.
2. Install known good battery(ies).
3. Select an object in the area for viewing when using the goggle.
4. Insert the goggle into the carriage.
5. Turn out the lights.
6. Rotate the switch to the headmount assembly “ON” position.
   a. The green glow should appear, and selected objects should be visible.
7. Adjust eyepiece and objective lens focus for sharpest view of the object.
8. Depress IR illuminator button and rotate the switch to the headmount assembly “IR ON” position.
   a. A red light should be visible in the left eyepiece lens.
   b. Objects within two meters of the goggle should appear brighter.
   c. Alternate between the two switch positions and observe that the brightness level changes.
9. Remove the goggle from the carriage and observe that the goggle stops operating,
10. Using the goggle as a hand-held viewer, move the switch to the hand-held ON position and observe the object previously selected.
    a. A green glow should be seen in the eyepiece lenses.
    b. The selected object should become visible.
11. Depress IR illumination button and move the switch to the hand-held "IR ON” position.
    a. A red light should be visible in the left eyepiece lens.
    b. Objects within two meters of the goggle should appear brighter.
    c. Alternate between the two switch positions and observe that the brightness level changes.
12. Rotate the switch to the “OFF” position.
13. Turn on the lights.
14, Remove batteries.

2-21 OPTIONAL CHECK USING TS4348/UV TEST SET

2-21.1 TS-4348/UV Preparation for Use. The following procedures are designed to check the performance of the image intensifier.

2-21.2 Setup. Before using the TS–4348/UV Test Set, refer to TM 11–5855-299–12&P to set up and familiarize yourself with its operation and the warnings and cautions associated with that test equipment.

2-21.3 Low-light and High-light Resolution. Test the goggle for low-light and high-light resolution performance according to the following steps.

NOTE

This test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test.

2-21 OPTIONAL CHECK USING TS-4348/UV TEST SET (continued)

Review the following test procedure before entering the dark area.

Expect cosmetic blemishes, such as chicken wire, black spots, and fixed-pattern noise, to stand out while viewing through the TS–4348/UV test set when it is on the high-light level. This is acceptable.

a. Place the HIGH/LOW switch on the test set to the LOW position.

b. Install the LIF. Refer to TM 11 –5855–262- 10– 1, paragraph 2– 17, step c.

c. Turn *off* the room light and let your eyes adjust to the dark.

d. Turn *on* the test set by setting the toggle switch to the “ON” position for AN/PVS–7A goggle.

e. Insert the goggle into the test port on the test set and turn on goggle.

f. Look through the goggle and view the projected pattern (see Figure 2-5). If necessary, focus the objective lens and then the eyepiece lenses to obtain the sharpest image.

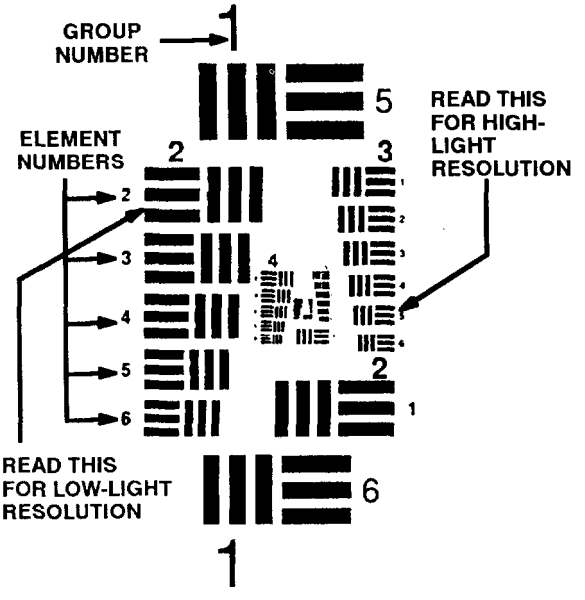
g. The AN/PVS–7A goggle must be able to resolve Group 2, Element 2, under low-light conditions to pass the test. If the goggle do not pass the test, send it to higher level of maintenance.

NOTE

For a pattern to be resolvable, three vertical bars and three horizontal bars must be visible.

h. Flip the HIGH/LOW switch to the HIGH position.

i. Again, look through the goggle and view the projected pattern (see Figure *2–5).* If necessary, refocus the objective lens and then the eyepiece lenses to obtain the sharpest image.



NOTE: The target shown is for example only and Is not drawn to scale.

Figure 2 –5. TS-4348/UV Test Set Pattern.

2-21 OPTIONAL CHECK USING TS-434WUV TEST SET (continued)

j. The AN/PVS–7A must be able to resolve Group 3, Element 5, under high-light conditions to pass the test. If the goggle do not pass the test, send it to a higher level of maintenance for repair.

k. Look for flashing, flickering, or other nonstable behavior of the image intensifier. Also check the image intensifier for other unacceptable characteristics described in paragraph 2-22, To view the image intensifier under low light conditions, flip the HIGH/LOW switch to the LOW position and allow your eyes to be accustomed to the dark. If any unacceptable conditions are noted, send goggle to higher level of maintenance.

2-22 INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION

The following procedures are designed to check the performance of the image intensifier.

CAUTION

Perform the following inspection in the dark.

To perform this inspection, attach the goggle to the headmount as described in TM 11–5855–262–10–1, paragraph 2– 14, step f, and turn the rotary switch to the ON position. Look through the goggle and view the image.

a. Shading. When properly adjusted, the goggle should present a full circle, if shading is present, you will not see a fully circular image (see Figure 2–6). Shading always begins on the edge and move inward. *Do not* use if shading is present. Send goggle to higher level maintenance,

NOTE

This procedure must be performed in a darkened area. Your eyes must be dark-adapted to perform this procedure. This takes at least 10 minutes or longer if you have been exposed to bright lights. Review the following procedure before entering the dark area.

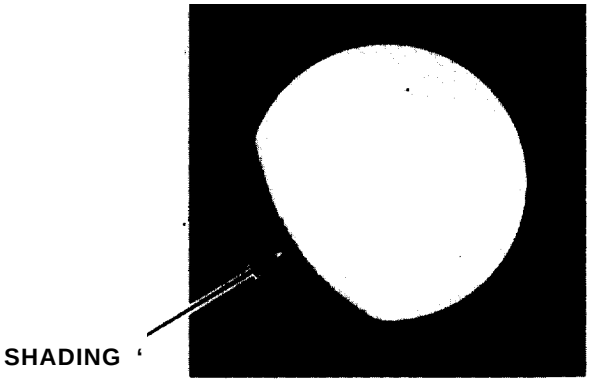


Figure 2-6. Shading.

2-22 INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION (continued)

b. Edge Glow. Edge glow is a bright area (sometime sparkling) in the outer portion of the viewing area (see Figure 2-7). To check for edge glow the operator can block out all light by cupping a hand over the objective lens, If the image intensifier is displaying edge glow, the bright area will still show up. *Do not* use if edge glow is present. Send goggle to higher level of maintenance.

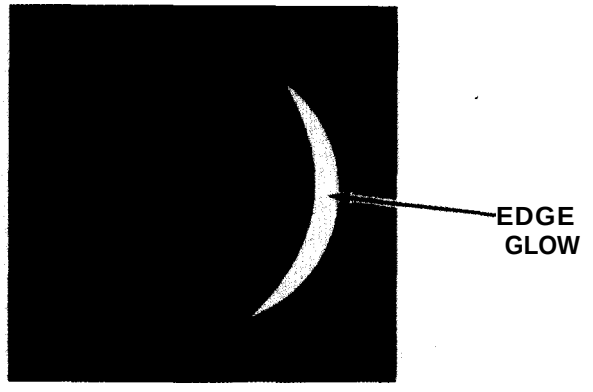


Figure 2–7. Edge Glow.

c. Bright Spots. These are cosmetics defects in the image intensifier. A bright spot is a small, nonuniform, bright area that may flicker or appear constant (Figure 2–8), Not all bright spots make the goggle unacceptable. Cup your hand over the objective lens to block out all light. If the bright spot remains, it is an emission point. Bright spots usually go away when the light is blocked out and are cosmetic defects. Bright spots are acceptable if they do not interfere with the ability to perform the mission. If bright spots do interfere, send the goggle to higher level of maintenance for evaluation.

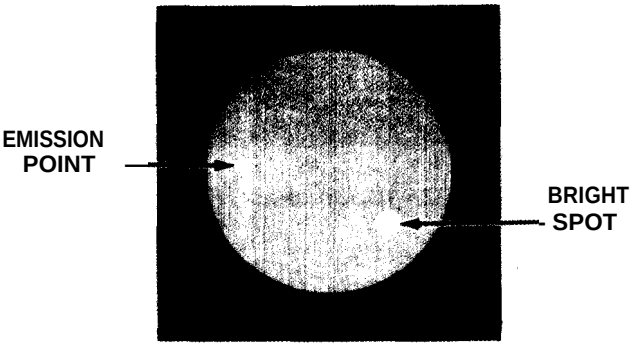


Figure 2-8. Bright Spots and Emission Points.

d. Emission Points. A steady or fluctuating pinpoint of light in the image area that does not go away when all light is blocked from the objective lens (see Figure 2–8). The position of an emission point within the image area does not move. Not all emission points make the goggle unacceptable. Emission points are acceptable if they do not interfere with the ability to perform the mission. If emission points do interfere, send the goggle to higher level of maintenance for further evaluation.

NOTE

Make sure any bright spots or emission points are not simply a bright area or point light source in the scene you are viewing.

e. Flashing, Flickering, or Intermittent Operation. The image may appear to flicker or flash. If there is more than one flicker, check for a loose battery hatch, or weak batteries. If the problem cannot be corrected, do not use the goggle; send the goggle to higher level of maintenance.

f. Black Spot. These are cosmetic blemishes in the image intensifier or dirt or debris between the lenses. Black spots are acceptable as long as they do not interfere with the operator's ability to perform the mission.

2-22 INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION (continued)

g. Fixed-Pattern Noise (Honeycomb). This is usually a cosmetic blemish characterized by a faint hexagonal pattern (see Figure 2–9) throughout the viewing area that most often occurs at high-light levels or when viewing very bright lights. This pattern can be seen in every image intensifier if the light level is high enough. This condition is acceptable as long as you can resolve the resolution targets at the low- and high-light levels.

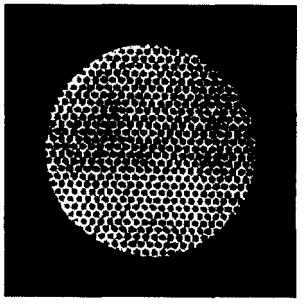


Figure 2–9. Fixed-Pattern Noise.

h. Chicken Wire. An irregular pattern of dark thin lines in the field of view either throughout the image area or in parts of the image area (see Figure 2– 10). Under the worst case condition, these lines will form hexagonal or square-wave shaped lines. Chicken wire is acceptable as long as it does not interfere with the operator's ability to perform the mission,

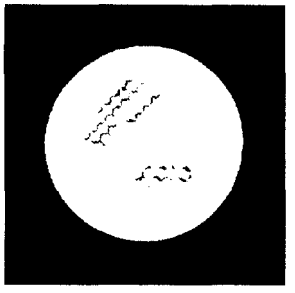


Figure 2–10. Chicken Wire.

2-23 CLEANING AND INSPECTION

1. **Objective Lens, Eyepiece Lens, and Sacrificial Window**

Remove all loose dirt from the eyepiece and objective lenses, and sacrificial window. Dampen a cotton-tip applicator with Isopropyl alcohol. Wipe the lens lightly with a circular motion, starting in the center. Repeat this procedure until the glass is clean.

CAUTION

If demist shields need to be cleaned, ensure the shields are dry and use dry lens paper. If demist shields are wiped while wet or with wet lens paper, you will damage the coating.

2. Demist Shield Cleaning

Allow demist shields to air dry if wet. Remove all loose dirt from the demist shield, Using a dry lens paper wipe the lens with a single pass over the shield.

3. Light Interference Filter (LIF)

To clean the LIF dampen a cotton-tipped applicator with clean water. Wipe the filter lightly using a circular motion, starting in the center. Dry with clean cotton cloth.

2–23 CLEANING AND INSPECTION (continued)

4. Cleaning Exterior Surfaces

Wipe exterior surfaces to remove dust, dirt, or sand. Wipe exterior surfaces clean with a dry, lint-free cloth. If necessary, clean with water and mild detergent to remove dirt and grease. Ensure NVG is dry after cleaning.

CHAPTER 3
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section 1. Repair Parts, Tools, Special Tools, Test Measurement Diagnostic Equipment (TMDE), and Support Equipment

3–1 GENERAL

Tools and equipment are issued to Direct Support maintenance personnel for maintaining the NVG. Maintenance responsibilities for the NVG are authorized by the Maintenance Allocation Chart (MAC), Appendix B.

3-2 COMMON TOOLS AND EQUIPMENT

Common tools and equipment used to maintain the NVG are authorized by the Modified Tables of Organization and Equipment (MTOE) CTA–50–970 or CTA 8–100 applicable to your unit. The following tools are required to perform Direct Support (DS) Maintenance on the AN/PVS–7A: Wrench Set, Balldriver, Metric.

3–3 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

There are no special tools required. The following TMDE and support equipment are required: Test Set, Electronic Systems, TS–4348/UV, Test Set, TS–3895/UV or TS–3895A/UV, Multimeter, AN/PSM –45 (or equivalent), and the Purge Device. Refer to RPSTL, Appendix C and MAC, Appendix B. The following support equipment is required, Black Spot Target and Test Fixture. Refer to Appendix E.

3–4 REPAIR PARTS

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), Appendix C.

Section II. Service Upon Receipt

3–5 GENERAL

This section contains procedures which must be performed by Direct Support maintenance personnel, upon receipt of a NVG. When the NVG is first received, it is necessary to determine that the materiel is in combat-ready condition.

3–6 INSPECTION AND SERVICE

a. Inspection. An inspection must be performed to determine that the equipment is in operating condition and that all Modification Work Orders (MWOs) have been completed. When handling and maintaining the equipment, observe the following general instructions:

1. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report damage on SF 364 Report Of Discrepancy (ROD).

2. Check the equipment against the packing slip to see if the shipment is complete. Report discrepancies in accordance with instructions in DA PAM 738–750, The Army Maintenance Management System (TAMMS).

3. Check to see whether all MWOs have been applied.

4. Check stock numbers and serial numbers to make sure the correct items were received.

5. Check all tags and stenciled information for correctness and completeness.

b. Service.

1. Perform necessary cleaning and inspection of the NVG in accordance with procedures in paragraph 3–25.

2. Report any deficiencies using applicable reports, records, forms.

Section Ill. Preventive Maintenance Checks and Services (PMCS)

3-7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Refer to Table 2– 1, Preventive Maintenance Checks and Services (PMCS) for the AN/PVS–7A. There are no Direct Support Level PMCS.

Section IV. Direct Support Troubleshooting

3-8 GENERAL

a. This section provides troubleshooting procedures as a guide for locating and correcting malfunctions. Use of these procedures will reduce delays and maintenance downtime and will minimize unnecessary replacement of good components.

b. After locating a specific problem in the Troubleshooting Symptom Index, complete the identified procedure to correct the problem.

c. When a replacement is performed, you must demonstrate that the original problem has been corrected.

3-9 DIRECT SUPPORT TROUBLESHOOTING SYMPTOM INDEX

Table 3-1 lists common malfunctions. Perform the tests, inspections, and corrective actions in the order they appear in the table.

This table cannot list all the malfunctions that may occur, all the tests and inspections needed to find the fault, or all the corrective actions needed to correct the fault. If the equipment malfunction is not listed or actions listed do not correct the fault, notify your supervisor.

Table 3-1. Direct Support Troubleshooting Symptom Index

Malfunction	Probable Cause	Corrective Action
1. Eye-span cannot be adjusted.	Defective pinion gear.	Replace pinion gear (paragraph 3-11).
2. Each eyepiece lens moves independently.	a. Rear cover assembly damaged. b. Pinion gear damaged.	a. Replace rear cover assembly (paragraph 3-11). b. Replace pinion gear (paragraph 3– 11).
3. Knob will not turn through all five positions.	a. Internal button broken. b. Switch broken.	a. Replace knob kit (paragraph 3–14). b. Replace wired housing assembly (paragraph 3–13).
4. Goggle and/or IR Illuminator will not operate on or off the headmount assembly.	a. Battery missing or dead. b. Battery holder defective or corroded. c. Image intensifier defective. d. Defective circuit. e. IR Illuminator does not operate.	a. Replace battery (Operator's Manual). b. Replace battery holder (paragraph 2-16). c. Perform voltage test (paragraph 3–23). d. Perform voltage test (paragraph 3–23). e. Replace wired housing assembly (paragraph 3-13).
5. Goggle will operate either on or off the headmount assembly but not both.	a. Magnetic switch inoperable. b. Magnet missing.	a. Replace battery holder (paragraph 2–16). b. Replace carriage (paragraph 3–19).
6. Eyepiece focus ring binds or will not turn.	Stripped threads on cell holder or cell.	Replace rear cover assembly (paragraph 3-11).
7. Objective focus ring binds or will not turn.	Stripped threads on cell holder or cell.	Replace objective lens assembly (paragraph 3–15).

Table 3-1. Direct Support Troubleshooting Symptom Index (continued)

Malfunction	Probable Cause	Corrective Action
9. Image is not clear or cannot be focused.	a. Optical surfaces cracked, broken, or pitted.	a. Replace rear cover assembly or objective lens assembly (paragraph 3–11, paragraph 3–15).
	b. Moisture in housing.	b. Purge unit (paragraph 3–20).
	c. Objective focus out of adjustment.	c. Set focus adjustment (paragraph 3–24).
	d. Image intensifier defective.	d. Replace Image intensifier (paragraph 3-16).
10. Fails TS–3895/UV resolution test.	a. Weak/defective battery.	a. Replace battery (Operator's Manual). Recheck resolution (paragraph 3–21).
	b. Moisture in housing.	b. Purge system (paragraph 3–20). Recheck resolution (paragraph 3–21).
	c. Optical surfaces broken, cracked or pitted.	c. Replace rear cover assembly or objective lens assembly (paragraph 3–11, paragraph 3–15).
	d. Objective focus out of adjustment.	d. Set focus adjustment (paragraph 3–24).
	e. Image intensifier is defective.	e. Replace image intensifier (paragraph 3–16).

Section V. Direct Support Maintenance Procedures

3-10 GENERAL

This section contains Direct Support (DS) Maintenance procedures for the NVG as authorized by the Maintenance Allocation Chart (MAC, Appendix B).

3-11 REAR COVER ASSEMBLY/PINION GEAR

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

Wrench Set, Balldriver, Metric P/N 10687

Materials/Parts

Rear Cover Assembly P/N A3140770
Preformed Packing P/N 5007668
Grease, Silicone P/N DC 33
Pinion Gear P/N A3140779

1. **Removal.**

   a. Open battery compartment hatch. Remove seven screws from wired housing assembly.

   b. Carefully pull rear cover assembly away from wired housing assembly.

   c. Remove preformed packing and discard.

   d. Move eyepieces to widest position. Pull pinion gear off with fingers and discard.

3-11 REAR COVER ASSEMBLY PINION GEAR (continued)

2. Replacement.

a. Move each eyepiece to widest position, press new pinion gear into recess and engage teeth of rack.

WARNING

Silicone Grease (DC33) *could be harmful to skin and clothing, can burn easily, and may give off harmful vapors. Use in a well-ventilated area, away from* open *flame. Wash hands with soap and water after use.*

b. Apply a thin film of silicone grease item 1, Appendix D, to the preformed packing. Place preformed packing in channel of wired housing assembly.

c. Press rear cover assembly and wired housing assembly together, matching the locating posts with the slots on the rear cover assembly.

d. Reinstall seven screws and tighten.

e. Purge unit (paragraph 3-20).

f . Perform resolution test (paragraph 3–21).

3-12 RETAINING RING

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

TK– 105

Materials/Parts

Objective Lens Retainer P/N A3140763
Preformed Packing P/N M25988/3–031
Grease, Fluorinated P/N KRYTOX 240AZ

1. Removal.

a. Insert small flat blade screwdriver under the rear of the retainer and release the ratchet. See Figure 3–1.

b. Unscrew retainer at least one full turn while holding ratchet open. Remove screwdriver and finish unscrewing the retainer.

c. Remove objective lens assembly.

d. Remove preformed packing and discard.

e. Remove image intensifier.

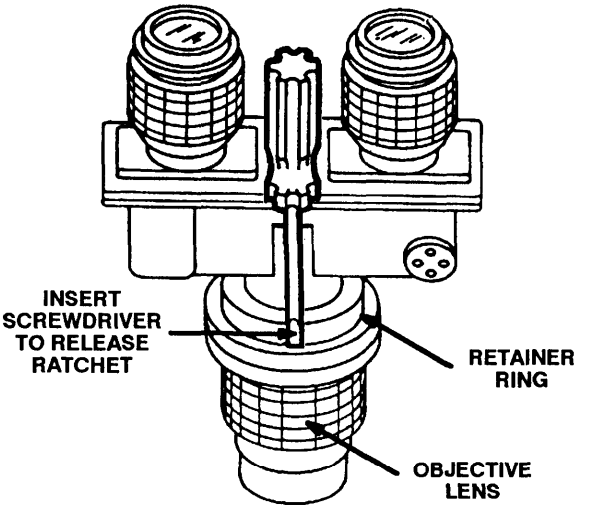


Figure 3-1. Retaining Ring.

3-12 RETAINING RING (continued)

CAUTION

Use care when removing spring clip, to prevent damaging the spring clip and threaded portion of wired housing assembly.

f. Lift notched end of spring clip over threaded portion of wired housing assembly.

g. Remove retaining ring from wired housing assembly.

2. Replacement.

a. Slide retaining ring, notched side first, over threaded portion of wired housing assembly.

b. To install the spring clip, align the notched end of spring clip with the locking tab in the innermost groove of the wired housing assembly. Lift the free end of the spring clip over the threaded portion of wired housing assembly and seat the clip into the inner most groove.

WARNING

Fluorinated Grease (KRYTOX) could be harmful to skin and clothing, can burn easily and may give off harmful vapors. Use in a we//-ventilated area, away from open flame. Wash hands with soap and water after use.

c. Apply a thin film of fluorinated grease item 2, Appendix D, to the preformed packing. Install new preformed packing on the wired housing assembly.

d. Reinstall image intensifier (paragraph 3–16).

e. Press objective lens assembly into housing, engaging alignment tab.

CAUTION

Avoid cross-threading objective lens assembly mounting threads.

c. Carefully engage retainer threads and turn until tight.

d. Purge unit (paragraph 3-20).

e. Reset correct objective focus (paragraph 3–24).

f. Perform resolution test (paragraph 3–21).

3-13 WIRED HOUSING ASSEMBLY

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

Wrench Set, Balldriver, Metric P/N 10687

3–13 WIRED HOUSING ASSEMBLY (continued)

Materials/Parts

Preformed Packing P/N A3140795
Grease, Silicone P/N DC 33
Wired Housing Assembly P/N A3140800

1. Removal.

a. Remove objective lens assembly (paragraph 3–15, 1).

b. Remove image intensifier (paragraph 3–16, 1).

c. Remove rear cover assembly (paragraph 3– 11, 1).

2. Replacement.

WARNING

Silicone Grease (DC33) could be harmful to skin and clothing, can burn easily and may give off harmful vapors. Use in a well-ventilated area, away from open flame. Wash hands with soap and water after use.

a. Install image intensifier (paragraph 3–16, 2).

b. Install objective lens assembly (paragraph 3–15, 2).

c. Install rear cover assembly (paragraph 3–11, 2).

d. Purge unit (paragraph 3-20).

e. Perform resolution test (paragraph 3–21).

3–14 KNOB KIT

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

Wrench Set, Balldriver, Metric P/N 10687

Materials/Parts

Kit, Knob P/N A31 40637
Grease, Silicone P/N DC 33

1. Removal. See Figure 3–2.

a. Remove the two screws in plate.

b. Remove plate.

c. Remove knob and rubber boot.

d. Remove button.

e. Remove preformed packing and discard.

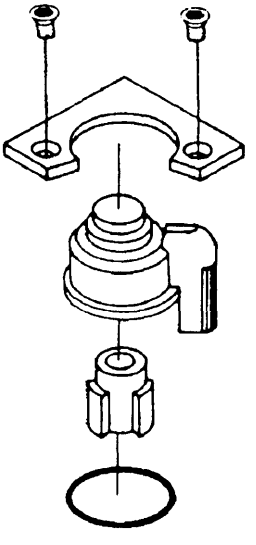


Figure 3-2. Knob Kit.

3-14 KNOB KIT (continued)

2. Replacement.

WARNING

Silicone Grease (DC33) could be harmful to skin and clothing, can burn easily and may give off harmful vapors. Use in a well-ventilated area, away from open flame. Wash hands with soap and water after use.

a. Apply a thin film of silicone grease item 1, Appendix D, to the preformed packing.

b. Install new preformed packing.

c. Install button.

d. Install knob and rubber boot.

e. Install plate.

f. Install two screws and tighten.

3-15 OBJECTIVE LENS ASSEMBLY

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

TK–I05

Materials/Parts

Objective Lens Assembly P/N A3140850
Preformed Packing P/N M25988/3-031
Grease, Fluorinated P/N KRYTOX 240AZ

1. Removal. See Figure 3–3.

a. Insert small flat blade screwdriver under the rear of the retainer and release the ratchet.

b. Unscrew retainer at least one full turn while holding ratchet open. Remove screwdriver and finish unscrewing the retainer.

c. Remove preformed packing and discard.

2. Replacement.

WARNING

Fluorinated Grease (KRYTOX) could be harmful to skin and clothing, can burn easily and may give off harmful vapors. Use in a well-ventilated area, away from open flame. Wash hands with soap and water after use.

a. Apply a thin film of fluorinated grease item 2, Appendix D, to the preformed packing. Install new preformed packing on the objective lens assembly.

3–15 OBJECTIVE LENS ASSEMBLY (continued)

b. Press objective lens assembly into housing, engaging alignment tab,

CAUTION

Avoid cross-threading objective lens assembly mounting threads.

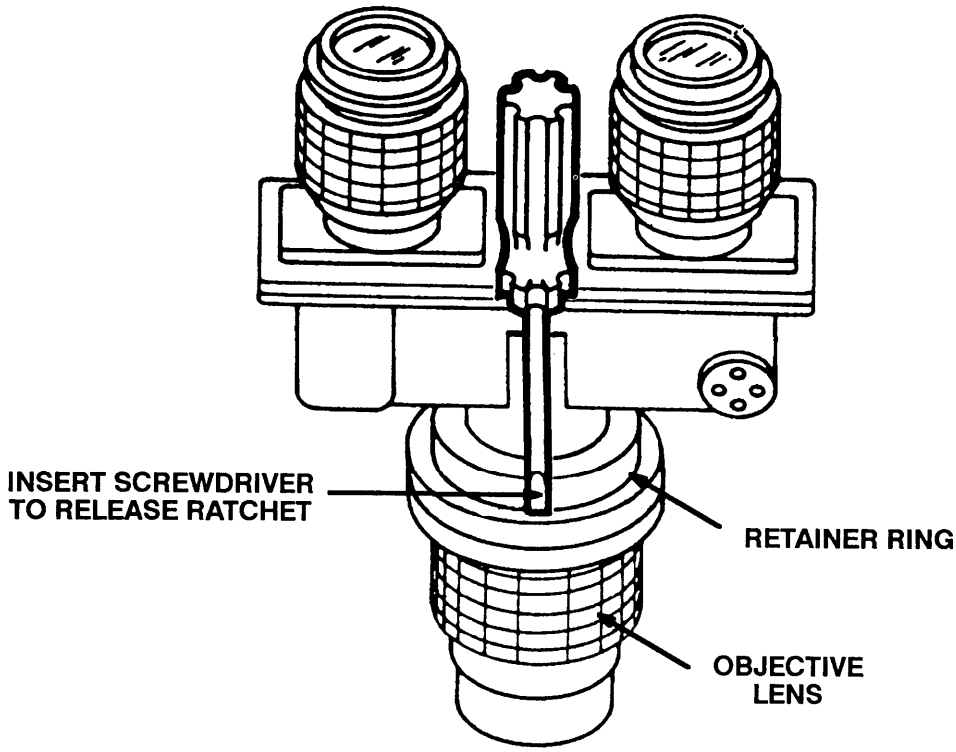


Figure 3–3. Objective Lens Assembly.

CAUTION

To prevent damage to the equipment insure that the alignment tab on the Wired Housing Assembly is engaged with the slot on the Objective Lens Assembly.

c. Carefully engage retainer threads and turn until tight. (Until you hear four clicks)

d. Purge unit (paragraph 3–20).

e. Reset correct objective focus (paragraph 3–24).

f. Perform resolution test (paragraph 3–21).

3-16 IMAGE INTENSIFIER

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

3-16 IMAGE INTENSIFIER (continued)

Tools

TK–105

Materials/Parts

Image Intensifier P/N A3140861
Denatured Alcohol
Cot, Finger, Surgical, Rubber P/N 22–F–1299
Cotton-Tipped Applicator
Air, Compressed

NOTE

The replacement image intensifier may not look the same as the image intensifier you are replacing. DO NOT modify or alter the replacement image intensifier it is a new direct replacement universal part and will not change the operation or performance of your AN/PVS– 7A. See Figure 3–4 for differences between the original image intensifier and the replacement universal image intensifier.

There are two types of image intensifiers (see Figure 3–4) for the AN/PVS–7A goggle. The initial type (MX–10130/A) is flat on the back end where the label is located and the two gold-colored contacts are round. The later type (MX–10130/C) has raised tabs on the back end and the two contacts are oblong with a small hole in one side of each contact. The two types of image intensifiers (MX– 10130/A and MX–10130/C) are interchangeable.

1. Removal.

a. Remove objective lens assembly (paragraph 3– 15, 1).

b. Grasp image intensifier through the finger slots and carefully pull the image intensifier straight out of housing.

2. **Replacement.**

a. Clean both ends of image intensifier using denatured alcohol and cotton-tipped applicator.

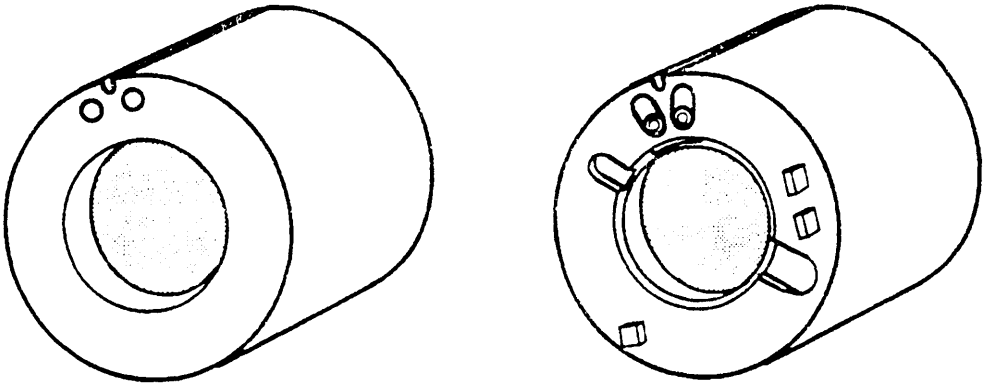
b. Blow out wired housing assembly cavity.

c. Insert contact pin end first, align the key and slot, and press the image intensifier into the housing.

d. Replace the objective lens assembly (paragraph 3–15, 2).

e. Purge unit (paragraph 3–20).

f. Perform resolution test (paragraph 3–21).



MX–10130/A
NSN:
5855–01–228–0941

MX–10130/C
NSN:
5855–01–328–3540

Figure 3-4. Differences in Image Intensifier Types.

3-17 OBJECTIVE AND EYEPIECE GRIPS

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

TK–105

Materials/Parts

Grip, Eyepiece P/N A3140777
Grip Objective P/N A3140854

1. Removal.

a. Use a non-metallic alignment tool to pry up edge of grip.

b. Slightly stretch grip while pulling it until removed from focus rings.

2. Replacement.

a. Slightly stretch grip and pull onto focus rings.

b. Press until grip is in place on the focus rings.

3–18 EYEPIECE RETAINING RING

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

TK–105

Materials/Parts

Eyepiece Retaining Ring P/N A3140788

1. Removal.

a. Rotate eyepiece focus ring clockwise until eyepiece cell is below the retaining ring.

b. Remove the retaining ring by slipping a 3/16 or wider flat tip screwdriver between the edge and the top of the eyepiece cell holder.

c. Twist the screwdriver and remove the retaining ring.

2. Replacement.

a. With the eyepiece focus ring turned fully clockwise, place the retaining ring on the eyepiece cell and snap into place.

b. Rotate the eyepiece focus ring fully counterclockwise and clockwise to ensure proper operation.

3-19 PURGE SCREW AND SEAL

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

Wrench Set, Balldriver, Metric P/N 10687
Purge Cover Tool JA215005

3-19 PURGE SCREW AND SEAL (continued)

Materials/Parts

Seal, Purge P/N A3140792
Packing, Preformed P/N M25988/3–013
Grease, Silicone P/N DC 33

1. Removal. See Figure 3–5.

CAUTION

Insure purge cover tool is fully seated in purge cover prior to removal.

a. Unscrew and remove purge cover using purge cover tool located with the purge device (item4, Appendix B).

b. Remove purge screw.

c. Remove seal and discard.

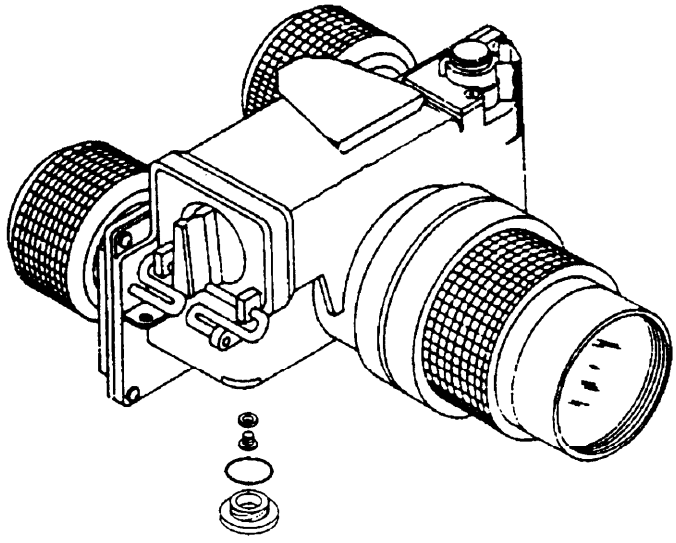


Figure 3–5. Purge Screw and Seal.

2. Replacement.

WARNING

Silicone Grease DC33 could be harmful to skin and clothing, can burn easily and may give off harmful vapors. Use in a well-ventilated area, away from open flame. Wash hands with soap and water after use.

a. Apply a thin film of silicone grease item 1, Appendix D, to the preformed packing.

b. Press seal onto purge screw.

c. Install purge screw.

d. Purge unit (paragraph 3–20).

3-19 PURGE SCREW AND SEAL (continued)

e. Install purge cover.

f. Perform resolution test (paragraph 3-21).

3-20 PURGE PROCEDURES

INITIAL SETUP

TestFacility

Purge area of Electronic Repair Service Area

Tools

Tool Kit, Fire Control Purging

Equipment

Purge Device P/N JA215008

Materials/Parts

Nitrogen Technical
Compressed type: Water-pumped
Composition and percentage: 99.5% nitrogen by volume minimum
Leak-Detection Compound
Isopropyl Alcohol

References

TM 750–116, General Procedures for Purging and Charging of Fire Control Instruments

WARNING

Serious injury may result if the nitrogen tank valve breaks off. If the tank valve breaks, the tank can be propelled by the force of escaping gas and strike you or others. To prevent injury, always secure the tank to an upright support before removing the tank valve guard and attaching the regulator valve to the tank.

CAUTION

There are different types of nitrogen available for Direct Support personnel; however using the wrong type will render the NVG inoperable. Do not use oil-pumped nitrogen or the NVG will be coated with an oil film on the interior optic and component surfaces. Use only water-pumped nitrogen.

NOTE

In order to keep moisture out of the system, a nitrogen atmosphere is held around the image intensifier Therefore, with the exception of the battery hatch seal and the knob kit, purging is required anytime the unit is opened beyond a seal or preformed packing.

NOTE

Do not let nitrogen tank get below 100 psi.

3-20 PURGE PROCEDURES (continued)

1. Refer to Figure 3-6 for Setup Diagram.

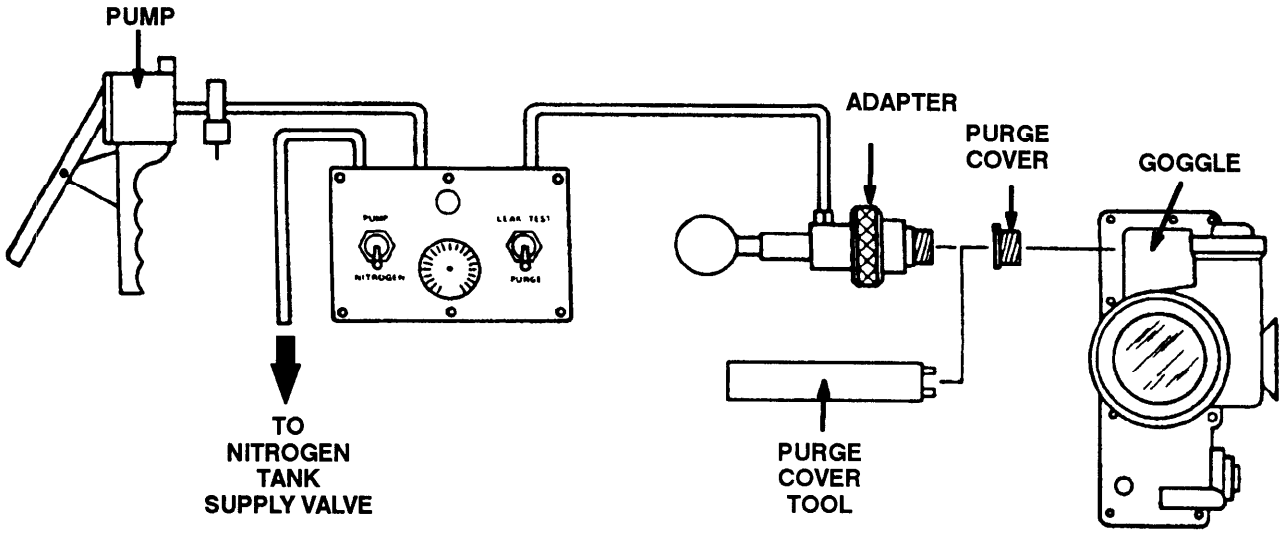


Figure 3-6. Purging Setup.

CAUTION

Ensure purge cover tool is fully seated in purge cover prior to removal.

2. Remove purge cover with *purge cover tool.*
3. Attach purge valve to purge port on goggle.
4. Open nitrogen tank supply valves.
5. Engage valve handle in purge screw and back purge screw two complete turns.
6. Place purge device switches in PUMP and PURGE positions.
7. Pump handle until gauge reads approximately 20 inHg, hold for approximately 30 seconds. If pressure does not fall, omit step 9.
8. Place switch in NITROGEN position.

NOTE

Avoid getting leak detection soap solution on lens surfaces.

9. Perform leak test to check purge adapter seals and NVG preformed packing. To conduct leak test apply leak detection solution to the purge adapter valve area and NVG mated surfaces. If leaks are detected, replace appropriate preformed packing/seal and re-purge unit.
10. Repeat steps (6) through (8) four times.

CAUTION

Do not overtighten purge screw.

11. *Close* purge screw with valve handle.

3-20 PURGE PROCEDURES (continued)

12. Close nitrogen tank supply valves.

13. Pull valve handle, remove purge valve and replace purge cover.

14. Clean all NVG surfaces that have come in contact with leak detection solution with clean water and isopropyl alcohol, Dry NVG thoroughly.

15. Perform resolution test (paragraph 3–20).

3–21 RESOLUTION TEST

3-21.1 INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION

The following procedures are designed to check the performance of the image intensifier, using the TS-3895/UV or TS–3895A/UV.

a. Shading. When properly adjusted, the goggle should present a full circle. If shading is present, you will not see a fully circular image (see Figure 3–7). Shading always begins on the edge and move inward, ***Do not*** use if shading is present. Replace the image intensifier.

NOTE

This procedure must be performed in a darkened area. Your eyes must be dark-adapted to perform this procedure. This takes at least 10 minutes or longer if you have been exposed to bright lights. Review the following procedure before entering the dark area.

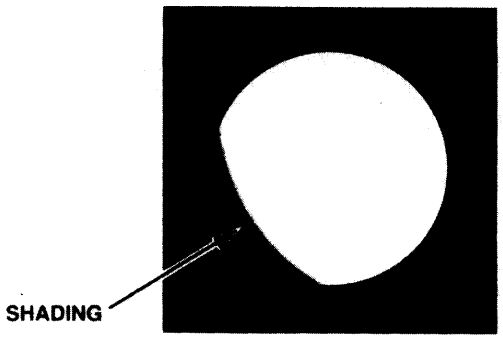


Figure 3-7. Shading.

b. Edge Glow. Edge glow is a bright area (sometime sparkling) in the outer portion of the viewing area (see Figure 3–8). To check for edge glow the operator can block out all light by cupping a hand over the objective lens. if the image intensifier is displaying edge glow, the bright area will still show up. ***Do not*** use if edge glow is present. Replace the image intensifier.

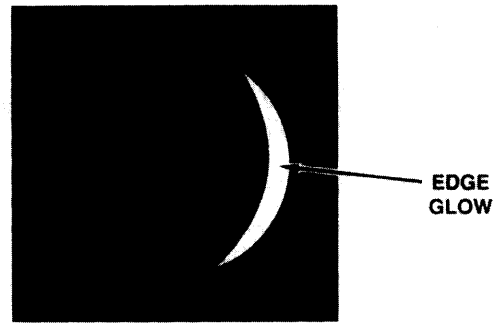


Figure 3–8. Edge Glow.

3-21.1 INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION (continued)

c. Bright Spots. These are defects in the image intensifier. A bright spot is a small, nonuniform, bright area that may flicker or appear constant (Figure 3–9). Not all bright spots make the goggle unacceptable. Cup your hand over the objective lens to block out all light. If the bright spot remains, it is an emission point; refer to subparagraph d below for evaluation. If the spot disappears, you must place the goggle onto the TS–3895 or TS–3895A test set and turn the selector knob to HIGH LIGHT for 15 seconds and note the spot's location. Turn the selector knob to LOW LIGHT and wait another 15 seconds. If the spot disappears or is faintly visible, it is acceptable. If the spot is rejectable, you must replace the image intensifier.

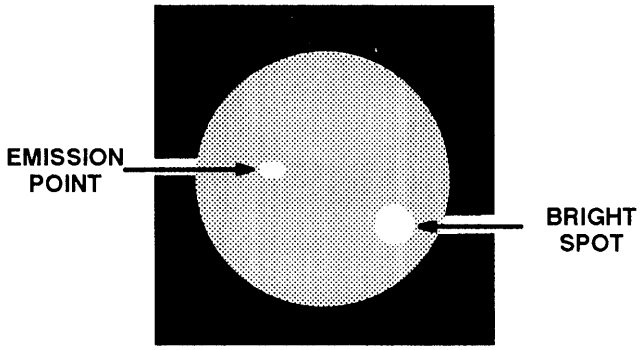


Figure 3–9. Bright Spots and Emission Points.

d. Emission Points. A steady or fluctuating pinpoint of bright light in the image area and does not go away when all light is blocked from the objective lens (see Figure 3–9). The position of an emission point within the image area does not move. Not all emission points make an image intensifier rejectable. If a bright spot remains when you cup your hands over the objective lens (subparagraph c above), you must place the goggle onto the TS–3895 or TS–3895A test set and turn the selector knob to LOW LIGHT and note the point's location. Then turn the selector knob to HIGH LIGHT. If the point disappears or is faintly visible, it is acceptable, If the point is rejectable, you must replace the image intensifier.

NOTE

Make sure any bright spots or emission points are not simply a bright area or point light source in the scene you are viewing.

e. **Flashing, Flickering, or Intermittent Operation.** The image may appear to flicker or flash. If there is more than one flicker, check for a loose battery hatch, or weak batteries. If the problem cannot be corrected, ***do not*** use the goggle; replace the image intensifier.

f. Black Spot. These are cosmetic blemishes in the image intensifier or dirt or debris between the lenses. Black spots are acceptable as long as they do not interfere with the operator's ability to perform the mission.

g. Fixed-Pattern Noise (Honeycomb). This is usually a cosmetic blemish characterized by a faint hexagonal pattern (see Figure 3–10) throughout the viewing area that most often occurs at high-light levels or when viewing very bright lights. This pattern can be seen in every image intensifier if the light level is high enough, This condition is acceptable as long as you can resolve the resolution targets at the low- and high-light levels.

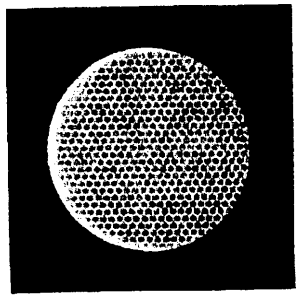


Figure 3-10. Fixed-Pattern Noise.

3–21.1 INSPECTION CRITERIA FOR PROPER IMAGE INTENSIFIER OPERATION (continued)

h. Chicken Wire. An irregular pattern of dark thin lines in the field of view either throughout the image area or in parts of the image area (see Figure 3–11). Under the worst case condition, these lines will form hexagonal or square-wave shaped lines. Chicken wire is acceptable as long as it does not interfere with the operator's ability to perform the mission.

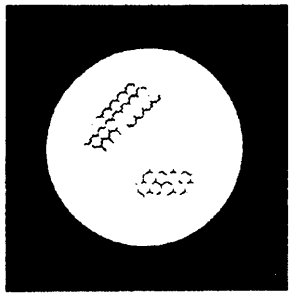


Figure 3-11. Chicken Wire.

3-21.2 TESTING THE AN/PVS–7A GOGGLE USING THE TS-3895A/UV or TS-3895/UV

INITIAL SETUP

Test Facility

Dark Room

Tools

None

Equipment

Test Set, TS–3895/UV or TS–3895A/UV

Materials/Parts

Denatured Alcohol
Cotton-Tipped Applicator

Reference

TM 11–5855–264–14, Operator's Aviation Unit, Direct Support and General Support Maintenance Manual for TS–3895/UV and TS–3895A/UV

Perform the following steps to prepare for test.

a. Unpack the goggle and Test Set.

b. Clean the objective and eyepiece lenses of the goggle with denatured alcohol and cotton-tipped applicators.

c. Review the location of major components (Figure 3– 12).

d. Ensure that the test port lenses of the Test Set are clean and free of dirt.

e. Attach the AN/PVS–7A adapter to either test port. Cover other test port to block light.

f. Attach the goggle to the test set by inserting the objective lens into the adapter (Figure 3–13).

3-21.2 TESTING THE AN/PVS-7A GOGGLE USING THE TS-3895A/UV or TS-3895/UV (continued)

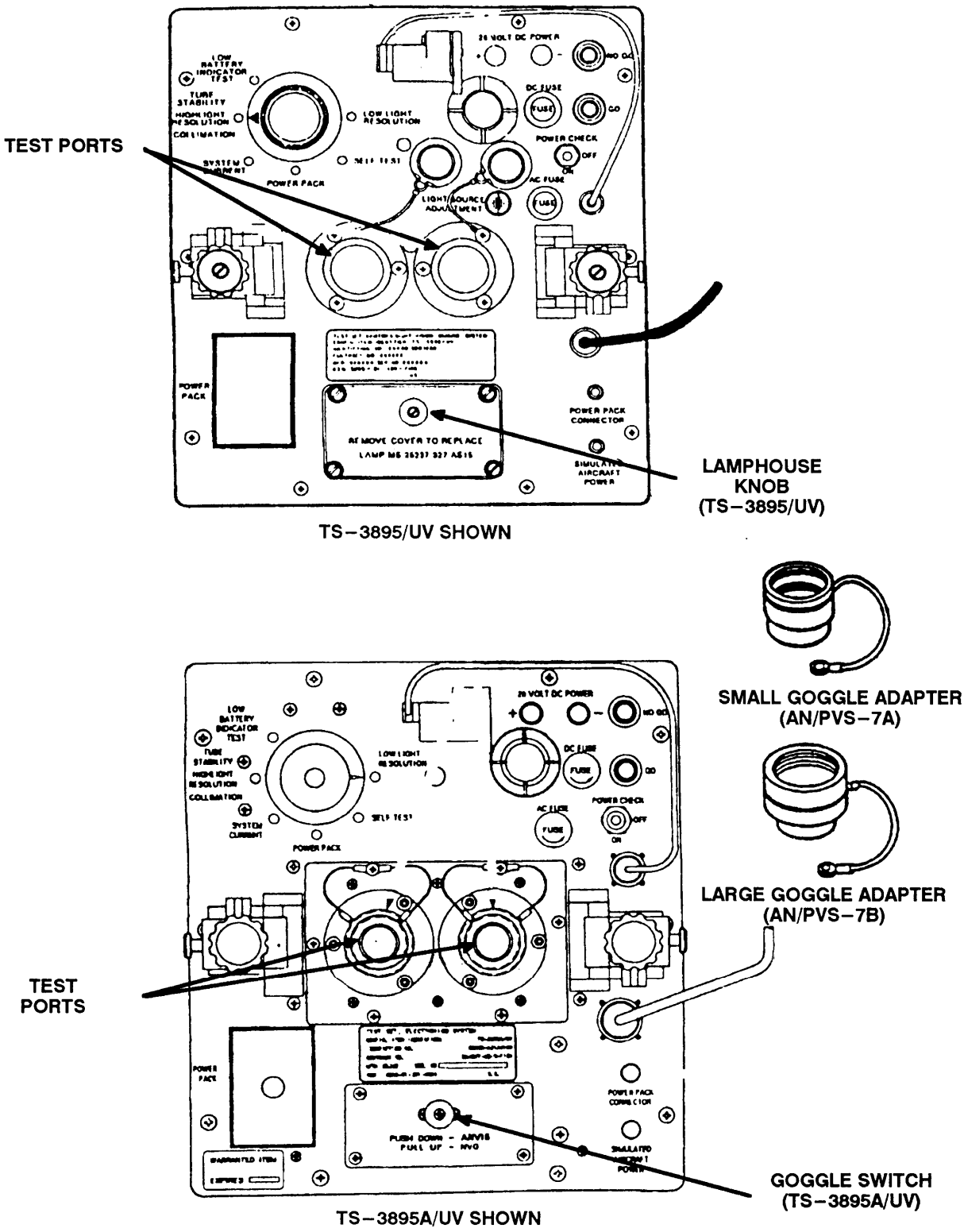


Figure 3–12. Location of Major Components on the Test Sets.

3-21.2 TESTING THE AN/PVS-7A GOGGLE USING THE TS-3895A/UV or TS-3895/UV (continued)

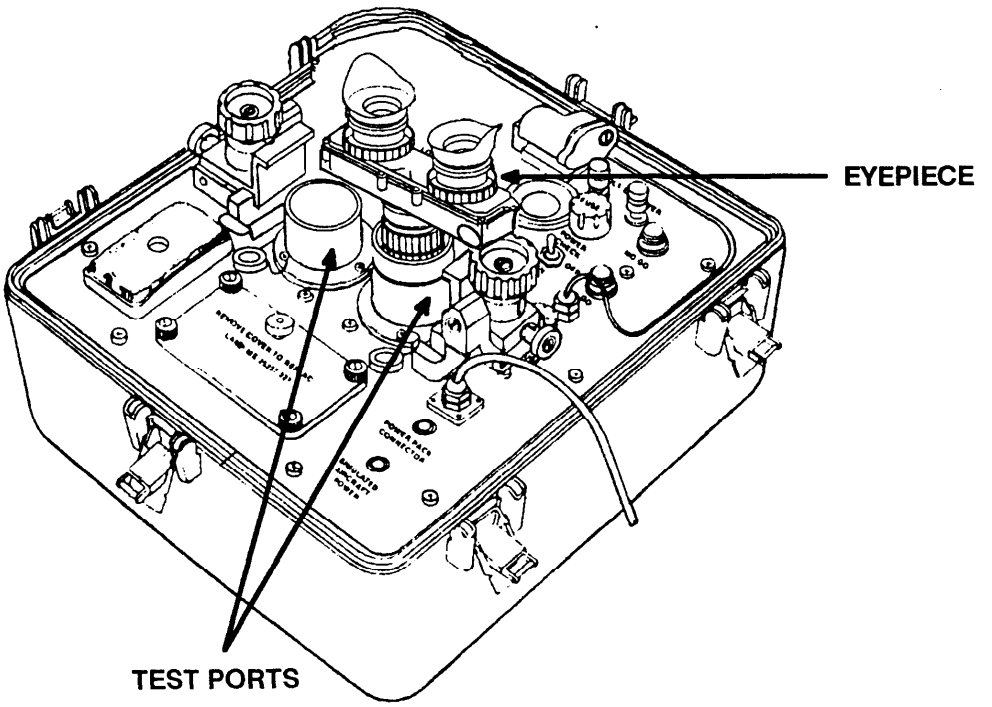


Figure 3-13. Inserting the Goggle into the Test Set.

3-21.3 LOW-LIGHT RESOLUTION TEST

NOTE

The following test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test. It takes a minimum of 10 minutes to become properly dark-adapted for low-light resolution evaluation. However if you have just been exposed to bright sunlight, dark adaptation will take longer.

Do not reject goggle for resolution unless your eyes have been adequately dark-adapted.

Review the following test procedure before entering the darkened area.

a. Turn the selector switch to the LOW LIGHT RESOLUTION (yellow) position.

b. Place the Iamphouse knob (or goggle switch) in the *up* position.

c. Turn off the room lights and let your eyes adjust to the dark.

d. Turn *on* the goggle.

e. Focus the objective lens and then the eyepiece lenses.

f. Look for flashing, flickering, emission points, or edge glow (refer to paragraph 3–21.1). If any unacceptable conditions are noted, replace the image intensifier.

3–21.3 LOW-LIGHT RESOLUTION TEST (continued)

g. Now observe the test pattern. The resolution test pattern has three horizontal lines and three vertical lines (see Figures 3–14 and 3–15). You must be able to distinguish all three horizontal lines and all three vertical lines and the space between the lines to count seeing the group. On the TS–3895/UV, you must be able to see the four largest groups for the AN/PVS–7A to pass. On the TS–3895A/UV, you must be able to see Group 3 on the bottom of the test pattern for the AN/PVS–7A to pass.

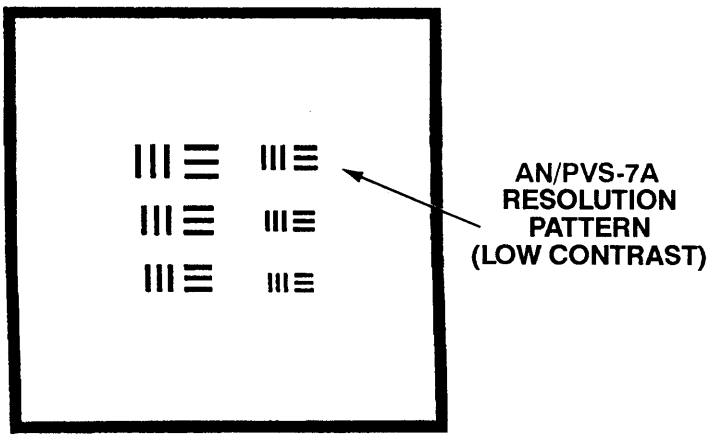


Figure 3–14. TS-3895/UV Low-Light Resolution Test Pattern.

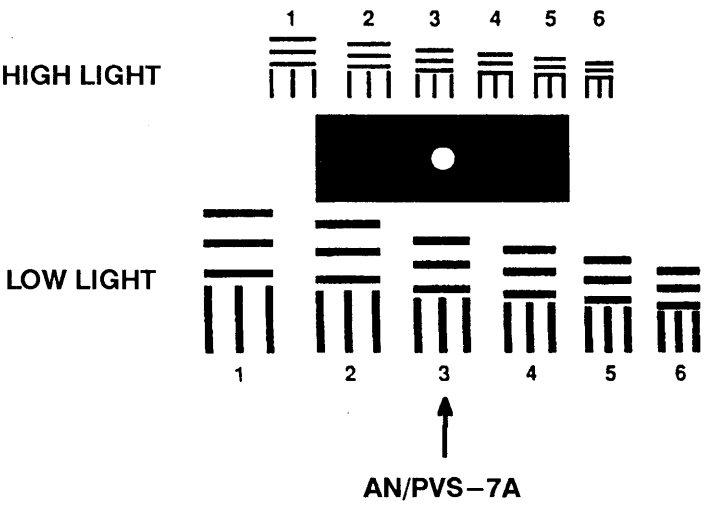


Figure 3–15. TS–3895A/UV Low-Light Resolution Test Pattern.

h. If the goggle fail, recheck the objective and eyepiece focus to make sure you have the sharpest focus.

i. If the goggle still fail, refer to Item 10, Table 3–1 Direct Support Troubleshooting Symptom Index.

3–21.4 HIGH-LIGHT RESOLUTION TEST

a. Turn the selector switch to the HIGH LIGHT RESOLUTION (blue) position (Figure 3–13).

b. Leave the Iamphouse knob (or goggle switch) in the up position.

c. If necessary, re-focus the objective lens and eyepieces to obtain the sharpest image.

3-21.4 HIGH-LIGHT RESOLUTION TEST (continued)

NOTE

On the TS-3895/UV, you will need to refocus the objective lens anytime you change light levels. The two resolution targets have a different image plane. On the TS–3895A/UV the image plane is the same for the low and high-light level targets.

d. Look for flashing, flickering, emission points, or edge glow (refer to paragraph 3–21.1). If any unacceptable conditions are noted, replace the image intensifier.

e. Now observe the test pattern. The resolution test pattern has three horizontal lines and three vertical lines (see Figures 3–16 and 3-17). You must be able to distinguish all three horizontal lines and all three vertical lines and the space between the lines to count seeing the group. On the TS–3895/UV, you must be able to see the two largest groups for the AN/PVS–7A to pass. On the TS–3895A/UV, you must be able to see Group 3 on the *top* of the test pattern for the AN/PVS–7A to pass.

f . If the goggle fail, recheck the objective and eyepiece focus to make sure you have the sharpest image.

9. If the goggle still fail, refer to Item 10, Table 3–1 Direct Support Troubleshooting Symptom Index.

h. Turnoff goggle and remove from test set.

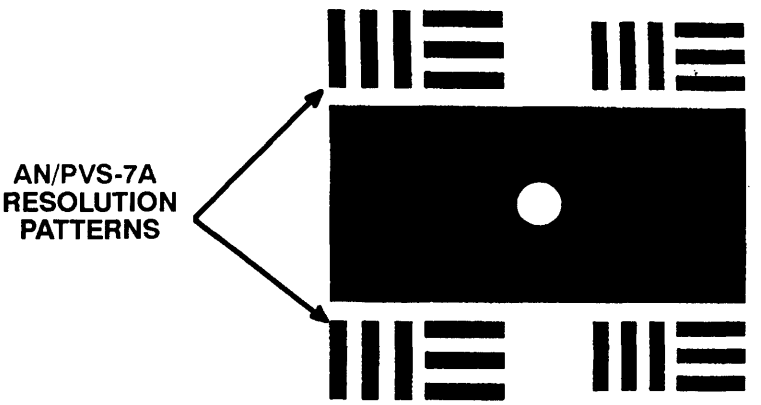


Figure 3–16. TS–3895/UV High-Light Resolution Test Pattern.

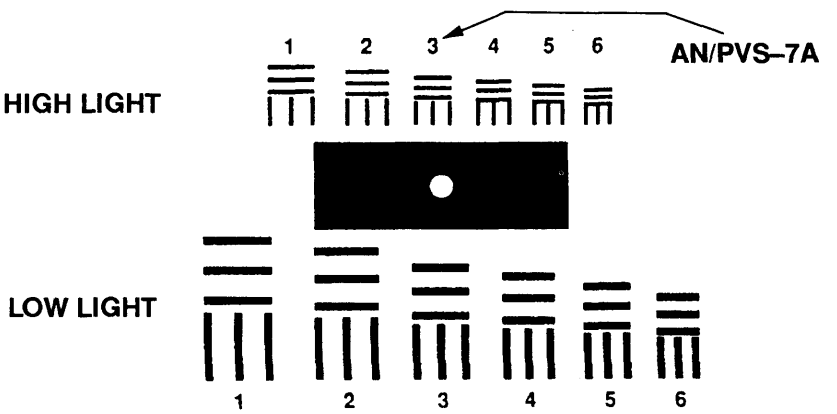


Figure 3-17. TS-3895A/UV High-Light Resolution Test Pattern.

3-21.5 SHUTTING DOWN THE TS–3895/UV TEST SET

Refer to TM 11–5855–264–14, Operator's, Aviation Unit, Direct Support, and General Support Maintenance Manual for TS–3895/UV and TS–3895A/UV Test Sets, to shut down the test set.

3-22 BLACK SPOT CHECK

INITIAL SETUP

.

Dark Room

Tools

Measuring Tape
Flashlight Filters P/N FFNG or NV–4AM

Equipment

Light, Infrared Transmitter
AN/PVS–5 or AN/PVS–7A or B

Materials/Parts

Tripod or Test Fixture
Black Spot Target
Denatured Alcohol
Cotton-Tipped Applicators

Black spots are cosmetic blemishes and do not affect reliability. Generally, you can assume that the black spot was there during acceptance testing. However, occasionally the need may arise to verify the location, size, and number of spots. This test allows the maintainer to evaluate possible out-of-specification black spots, dark spots, or opaque spots in the image area against the specifications for the image intensifier.

NOTE

The following test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test. It takes approximately 10 minutes to become properly dark-adapted for low-light resolution evaluation. Howeve, if you have just been exposed to bright sunlight, dark adaptation will take longer

Review the following test procedure before entering the darkened area.

To prevent loss of dark adaptation, the flashlight filters must be attached to the flashlight before use.

a. Set up your dark room as shown in Figure 3–18 or Figure 3–19.

b. Position the Black Spot Chart so the center ring is at eye level during testing.

c. Clean the objective and eyepiece lenses of the systems to be tested by using denatured alcohol and cotton-tipped applicators. Moisten the applicator with the denatured alcohol and use circular motions beginning at the center of the lens and moving in larger circles to the outside of the lens.

3-22 BLACK SPOT CHECK (continued)

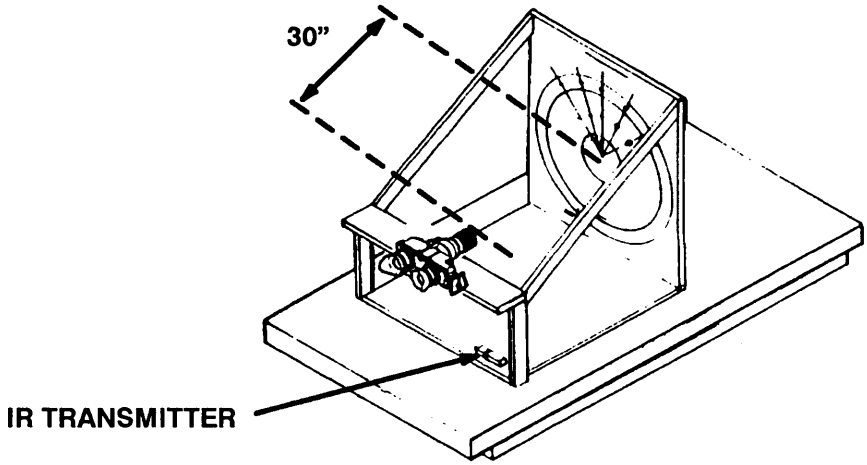


Figure 3–18. Dark Room Setup with Test Fixture.

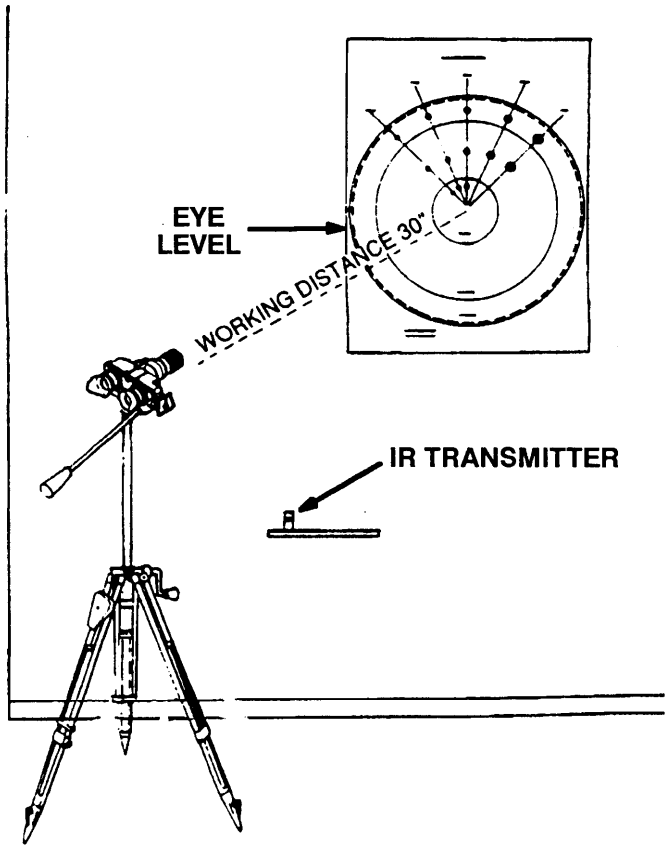


Figure 3–19. Dark Room Setup with Tripod.

3–22 BLACK SPOT CHECK (continued)

CAUTION

To prevent damage to your AN/PVS–7A ensure that the goggle is properly secured to the tripod before testing.

d. Position the goggle to be tested on the tripod or test fixture and secure it. The front surface of the objective lens of the goggle should be exactly 30 inches from the target at height of the center ring.

e. Position the IR transmitter behind, to the left, right, top, or bottom of the tripod to prevent shadows on the targets. Make sure that your position when looking through the goggle does not produce shadows on the target.

3-22.1 Test Method

NOTE

To prevent loss of dark adaptation, the flashlight filters must be attached to the flashlight before use.

a. Switch off the room lights.

b. Turn *on* the goggle.

c. Check the dark room for light leaks using another set of night vision goggle (AN/PVS–5 or AN/PVS–7Aor B) and eliminate any leaks you find.

c. Turn *on* the IR transmitter and look through the goggle. Uniformly illuminate the target by moving the light source closer or farther from the target. Eliminate any shadows.

e. Alternately adjust the diopter setting and objective focus, AT THE WORKING DISTANCE, until the best focus (sharpest view) is achieved. You must have the proper focus and the exact working distance of 30 inches from the front surface of the objective lens to achieve correct results.

f . Look at the edge of the spots in the center ring, and move the light source forward or back for the best spot contrast. Remember to refocus the objective each time you view a different ring of the chart.

g. Use the flashlight with filter to recheck the exact position of the goggle at 30 inches (+ 1 inch). This distance from the target to the objective is critical and must be maintained during testing.

h. Center the view so it is concentric with the test target rings. (The dotted line represents a circle of 17.5 mm on the cathode surface of the image intensifier). Use the lines to the left and right of the outer circle to accomplish this.

i . Observe the image for black spots.

NOTE

The total diameter of each image intensifier may vary between 17.5 mm and 18.5 mm. Evaluate only those black spots in the area of the image inside the 17.5–mm circle. The dotted line in the second ring marks this 17.5 – mm area. Spots that are located outside the dotted circle are not a cause for rejecting the image intensifier.

j. Identify the ring of the chart that bounds the black spot you are evaluating.

k. Re-focus the objective for the best focus on the ring of the chart identified above.

1. Using the allowable spot-size chart in that particular ring, determine the size of the black spot.

NOTE

Circular spots will correspond easily to this chart. However irregular (non-circular) spots require you to judge the area of the spot in question against the area of the circular spot on the chart.

m. Count the number of spots, by spot size, in each ring and record these figures.

3–22 BLACK SPOT CHECK (continued)

3-22.2 Pass/Fail Criteria

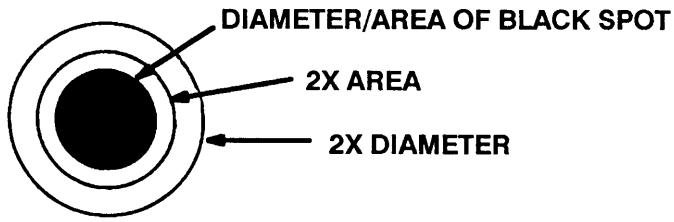
a. Refer to Table 3–2 listing allowable spots and sizes to determine if the image intensifier under test should be rejected.

Table 3–2. AN/PVS-7A Allowable Black Spots and Sizes

Size and Location	.003 .006	.006 .009	.009 .012	.012 .015	Larger Than 0.15	Smaller Than .003
Center Ring	3	1	0	0	0	any amount
1st Ring	35	9	5	1	0	any amount
2nd Ring	35	23	8	2	0	any amount

b. The image intensifier fails if the black spot (circular) is larger than the maximum spot size indicated on the chart for the ring in which the spot (circular) is located, or if the number of spots exceeds the number of spots allowed for that ring.

c. The image intensifier fails if, by comparison, that the area of the non-circular spot is larger than the area of the largest circular spot designated in that ring. This will be a subjective evaluation so remember that these spots were evaluated before Government acceptance at the contractor's plant and passed. Judging the area is difficult. See Examples 1 and 2 of Figure 3–20. Do not reject an image intensifier for an irregularly shaped spot by its diameter alone.



2X AREA VERSUS 2X DIAMETER

Example 1: 2X Area is conceived to be larger than it appears

Example 2: Although the overall lengths are different, the areas are identical. Therefore this irregularly shaped (non-circular) spot would pass.

Figure 3-20. Black Spot Evaluation.

3-22 BLACK SPOT CHECK (continued)

d. Consider two spots and the distance between them as one spot anytime that this distance between the two spots is less than the diameter of either spot. The image intensifier fails if this total dimension (diameter) is greater than the allowable spot size diameter for the ring in which the spots are located.

e. A shaded area may surround a black spot. Consider the shaded area as part of the spot if the high-light level resolution chart cannot be read through the shaded area. The image intensifier fails if the combined area of the spot and the shaded area exceed the maximum area of a the largest spot for the ring in which the spot is located.

f . Do not reject an image intensifier for a black spot that is located outside the dotted ring on the black spot chart.

NOTE

If an image intensifier is rejected on the basis of this test for black spots, do not immediately reject the system for a defective image intensifier it is possible that some of the spots may be caused by contamination inside the goggle and on the surfaces of the optics.

3-23 VOLTAGE TEST

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

TK–105

Equipment

AN/PSM –45 or equivalent

Material/Parts

As required per Voltage Test results

The Voltage Test is a measurement of voltage at the image intensifier contacts.

a. Remove image intensifier (paragraph 3-15).

b. Install battery (paragraph 2-14).

c. Turn the rotary switch to the hand-held ON position.

d. Place the multimeter leads on the two pin contacts.

e. Voltage should read between 2.3 and 3.3 vdc.

f . Insert goggle in headmount assembly, turn rotary switch to headmount assembly ON position.

9. Voltage between 2.3 and 3.3 vdc should be measured at the two pin contacts.

h. If voltage is not present, replace battery holder (paragraph 2-16) and retest.

i . If voltage is still not present, replace wired housing assembly (paragraph 3-13) and retest.

j . After testing, turn rotary switch to the OFF position and remove battery.

k. Reassemble goggle (paragraph 3-16, 2).

3-24 OBJECTIVE FOCUS ADJUSTMENT PROCEDURE

INITIAL SETUP

Test Facility

Clean Station in Electronic Repair Service Area

Tools

Wrench Set, Balldriver, MetricP/N10687

Equipment

Test Set,TS–3895/UV

Materials/Parts

None

a. Purge unit before setting the objective focus adjustment (refer to paragraph 3-20).

b. Liftup and move the rubber grip and expose the three setscrews.

c. Loosen the three setscrews one full turn. Do NOT remove the setscrews.

d. Place switch in the OFF position. Install a known good battery in goggle.

e. Verify focus with resolution test (paragraph 3–21 .4).

f. SLOWLY rotate the objective focus ring counterclockwise until resolution target is at best focus. Move slightly past best focus position.

g. Remove from test set.

h. Tighten the three setscrews. Do not over tighten. Make sure the adjust ring does not move during this operation.

i. Reinstall rubber grip.

3-25 CLEANING AND INSPECTION

1. Objective Lens, Eyepiece Lens, and Sacrificial Window

Remove all loose dirt from the eyepiece and objective lenses, and sacrificial window. Dampen a cotton-tip applicator with denatured alcohol. Wipe the lens lightly with a circular motion, starting in the center. Repeat this procedure until the glass is clean.

CAUTION

If demist shields need to be cleaned, ensure the shields are dry and use dry lens paper If demist shields are wiped while wet or with wet lens paper you will damage the coating.

2. Demist Shield Cleaning

Allow demist shields to air dry if wet. Remove all loose dirt from the demist shield. Using a dry lens paper wipe the lens with a single pass over the shield.

3. Light Interference Filter (LIF)

To clean the LIF, dampen a cotton-tipped applicator with clean water. Wipe filter lightly using a circular motion starting in the center. Dry with clean cotton cloth.

3-25 CLEANING AND INSPECTION (continued)

4. Cleaning Exterior Surfaces

Wipe exterior surfaces to remove dust, dirt, or sand. Wipe exterior surfaces clean with a dry, lint-free cloth. If necessary, clean with water and mild detergent to remove dirt and grease. Ensure NVG is dry after cleaning.

APPENDIX A
REFERENCES

A-1 SCOPE

This appendix lists all forms, field manuals, and technical publications referenced in this manual.

A–2 FORMS

Equipment, inspection, and Maintenance Worksheet . . . . . DA Form 2404

Transportation Discrepancy Report (TDR) SF361

Product Quality Deficiency Report SF368

Recommended Changes to Equipment Technical Publications . . . . . DA Form 2028-2

Recommended Changes to Publications and Blank Forms . . . . . DA Form 2028

A–3 FIELD MA0NUALS

First Aid for Soldiers . . . . . FM 21–11

A-4 TECHNICAL MANUALS

Administrative Storage of Equipment . . . . . TM 740-90-1

Procedures for Destruction of Electronics Materiel to Prevent Enemy Use . . . . . TM 750–244–2

Operators Manual, Night Vision Goggle, AN/PVS–7A . . . . . TM 11–5855–262–10–1

General Procedures for Purging and Charging of Fire Control instruments . . . . . TM 750–116

Operator's and Unit Maintenance Manual (including Repair Parts and Special Tools List) for Test Set, Electronic Systems,TS–4348/UV . . . . . TM 11–5855–299–12&P

Operator's, Aviation Unit, Direct Support, General Support Maintenance Manual for TS–3895/UVand TS–3895A/UV Test Sets . . . . . TM 11-5855–264–14

A–5 MISCELLANEOUS PUBLICATIONS

Consolidated Index of Army Publications and Blank Forms . . . . . DA PAM 25–30

DLSC Handbook 41601

The Army Maintenance Management System (TAMMS) . . . . . DA PAM 738–750

Instructions For The Safe Handling and identification of U.S. Army Communications-Electronics Command Managed Lithium Sulfur Dioxide Batteries . . . TB43–0130

Battery Disposition/Disposal Handbook TB43–0134

Care of Supplies in Storage (COSIS) AR740–3

APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)
FOR
NIGHT VISION GOGGLE AN/PVS–7A

Section 1. Introduction

B-1 THE ARMY MAINTENANCE SYSTEM MAC.

a. This introduction (Section 1) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Unit — includes two subcolumns, C (operator/crew) and O (unit) maintenance

Direct Support — includes an F subcolumn

General Support — includes an H subcolumn

Depot — includes a D subcolumn

c. Section Ill lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2 MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e. g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services[1] including fault location/troubleshooting[2], removal/installation, and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/ operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

B–3 EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field-operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

c .. . . . . .Operator or crew maintenance
o. .. . . . . Unit maintenance
F . . . . . Direct support maintenance
L . . . . Specialized Repair Activity (SRA)[5]
H . . . . . .General support maintenance
D . . . . . .Depot maintenance

1 Services - inspect, test, service, adjust, align, calibrate, or replace.
2Fault location/troubleshooting —the process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).
3Disassembly/assembly - the step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).
4Actions- welding, grinding, riveting, straightening, facing, machining, or resurfacing.
5This maintenance level is not included in Section 11, column (4) of the Maintenance Allocation Chart. Functions to this level of maintenance are identified by a work-time figure in the “H” column of Section 11, column (4), and an associated reference code is used in the Remarks column (6). This code is keyed to Section IV, Remarks, and the SRA complete repair application is explained there.

e. Column 5, Tools and Equipment Reference Code. Column 5 specifies, by code, those common tool sets (not individual tools), common TMDE, and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment in Section Ill.

f. Column 6, Remarks. When applicable, this column contains a letter code, in alphabetic order, which is keyed to the remarks contained in Section IV.

B–4 EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION Ill.

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, column 5.

b. Column 2, Maintenance Level. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number, model number, or type number.

B-5 EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Remarks Code. The code recorded in column 6, Section Il.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section Il.

Section II. Maintenance Allocation Chart for Night Vision Goggle AN/PVS-7A

(1)	(2)	(3)	(4) Maintenance Category					(5)	(6)
			Unit		Direct support	General Support	Depot	Tools and Equipment	
Group Number	Component/ Assembly	Maintenance Function	C	O	F	H	D	Ref Code	Remarks Code
00	NIGHT VISION GOGGLE, AN/PVS–7A	Inspect		0.1					
		Service		0.1					
		Repair		0.1				8	A
01	GOGGLE ASSEMBLY	Inspect		0.1					
		Test	0.2					6	
		Test		0.1				6,7	
		Repair		0.1				8	A
		Test			0.3			5,6	
		Repair			0.6			1-4,8,9	B,C,D
0101	IMAGE INTENSIFIER	Inspect			0.1				
		Replace			0.2			3,4,9	C,E
		Test							I
0102	HOUSING ASSEMBLY	Replace			0.2			3,4,9	c
		Repair			0.2			2	F
02	HEADMOUNT ASSEMBLY	Inspect		01					
		Service		0.1					
		Replace		0.1					
		Repair		0.2				8	G,H

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
NIGHT VISION GOGGLE AN/PVS-7A

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	F,D	MULTIMETER,AN/PSM-45 OR AN/USM-223 OR TS-3428/U	6625-01-139-2512 6625-00-999-7455 6625-00-553-0142	
2	F,D	TOOL KIT, ELECTRONIC EQUIPMENT, TK-105/U	5180-00-610-8177	
3	F,D	NITROGEN, TECHNICAL	6830-01-124-2344	
4	F,D	PURGE DEVICE	5855-01-246-6815	
5	F,D	TEST SET, TS-3895/UV OR TS-3895A/UV	5855-01-134-7146 6625-01-301-6894	
6	C,O,F	ELECTRONIC SYSTEMS TEST SET, TS-4348/UV	6625-01-323-9584	
7	O	TOOL KIT, ELECTRONIC EQUIPMENT, TK-101/U	5180-00-065-5178	
8	O,F	WRENCH SET, BALL-DRIVER, METRIC		(31734) 10687
9	F,D	PURGE KIT, FIRE CONTROL	4931-00-065-1110	

Section IV. Remarks

Night Vision Goggle AN/PVS-7A

Reference Code	Remarks
A	Repair by replacing neck cord, eyepiece lens caps, objective lens cap, eyepiece cups, batteries, demist shield, sacrificial window, carrying case, shipping and storage case, shoulder strap, battery hatch, battery hatch seal, battery holder, or LIF.
B	Repair by replacing eyepiece grips, or by installing knob kit.
C	Nitrogen purging required when performing functions.
D	Repair by replacing wired housing assembly, objective lens assembly, image intensifier, rear cover assembly, preformed packing, objective grip, objective lens retaining ring, rear cover assembly retaining ring or pinion gear.
E	Forward to depot for defect verification.
F	Repair by replacing purge screw, purge seal, purge cover or packing performed.
G	Repair by replacing upper and lower cushions, chin strap or headstrap of headmount assembly.
H	Repair by replacing carriage.
I	Depot to test the Image Intensifier only.

APPENDIX C
REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. Introduction

C–1 SCOPE

This Repair Parts and Special Tools List (RPSTL) authorizes spares and repair parts, special tools, special test measurement and diagnostic equipment (TMDE), and other special support equipment required for performance of Unit Maintenance and Direct Support Maintenance of the AN/PVS–7A. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

C-2 GENERAL

In addition to Section 1, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending numeric sequence, with the parts in each group listed in ascending item number sequence. Figure numbers are listed directly beneath the group header. Items listed are shown on the associated illustration.

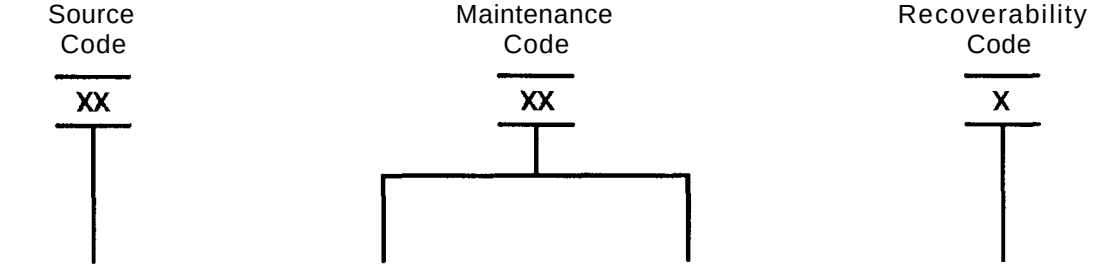
b. Section III. Special Tools List. Not Applicable. No Special Tools required.

c. Section IV. Cross-Reference Indexes. A list, in National Item Identification Number (NIIN) sequence, of all national stock numbered items appearing in the tabular list, followed by a list in alphanumeric sequence of all part numbers appearing in the tabular list. National Stock Numbers (NSN)'S and part numbers are cross-referenced to each illustration figure and item number appearance. The figure number and item number index lists figure and item numbers in numeric sequence and cross-references National Stock Number, Commercial and Government Entity Code (CAGEC) and part numbers.

C-3 EXPLANATION OF COLUMNS (SECTION II AND III)

a. Item No. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. SMR Code. (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a five-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instructions, as shown in the following breakout:



C–3 EXPLANATION OF COLUMNS (SECTION II AND III) (continued)

NOTE

Complete repair: Maintenance capacity capability, and authority to perform all corrective maintenance tasks of the "repair" function in a use/user environment in *order to restore serviceability to a failed item.*

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	Explanation
PA PB PC > PD PE PF PG	Stocked items: use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the third position of the SMR code.

NOTE

Items coded PC are Subject to deterioration.

KD KF > KB	Items with these codes are not to be requested or requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.

Code	Explanation
MO — Made at ORG/AVUM category MF — Made at > DS/AVIM category MH — Made at GS category ML — Made at Specialized Repair Activity (SRA) MD — Made at Depot	Items with these codes are not to be requested or requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at a higher category, order the from the higher category of maintenance.

Code	Explanation
AO — Assembled by ORG/AVUM category AF — Assembled by DS/AVIM category >> AH — Assembled by GS category AL — Assembled by SRA AD — Assembled by Depot	Items with these codes are not to be requested or requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and and assembled at the category of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher category of maintenance.

C–3 EXPLANATION OF COLUMNS (SECTION II AND III) (continued)

Code	Explanation
XA	Do not requisition an 'XA" coded item. Order its next higher assembly.
XB	If an "XB" item is not available from salvage, order it using the CAGEC and Part Number given.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD	Item is not stocked. Order an "XD" coded item through normal supply channels using the CAGEC and Part Number given, if no NSN is available.

NOTE

Cannibalization or controlled *exchange,* when authorized, maybe used as a *source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750 –1.*

***(2)* Maintenance Code.** Maintenance codes tell you the category of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance category authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following categories of maintenance.

Code	Application/Explanation
C	Crew or operator maintenance done within organizational or aviation maintenance.
O	Organizational or aviation unit category can remove, replace and use the item.
F	Direct Support or aviation intermediate category can remove, replace, and use the item.
H	General Support Category can remove, replace, and use the item.
L	Specialized repair activity can remove, replace and use the item.
D	Depot category can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance category with the capability to do complete repair (i.e., perform all authorized repair functions). This position will contain one of the following maintenance codes.

NOTE

Some limited repair may be done on the item at a lower categoty of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Code	Application/Explanation
O	Organizational or aviation unit is the lowest category that can do complete repair of the item.
F	Direct Support or aviation intermediate is the lowest category that can do complete repair of the item.
H	General Support is the lowest category that can do complete repair of the item.

C–3 EXPLANATION OF COLUMNS (SECTION II AND III) (continued)

L Specialized repair activity (designate the specialized repair activity) is the lowest category that can do complete repair of the item.

D Depot is the lowest category that can do complete repair of the item,

Code	Application/Explanation
Z	Nonreparable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc. at the user category,

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Codes	Application/Explanation
Z	Nonreparable item. When unserviceable, condemn and dispose of the item at the category of maintenance shown in the third position of the SMR code.
O	Reparable item, When uneconomical reparable, condemn and dispose of the item at Organizational or Aviation unit category.
F	Reparable item. When uneconomical reparable, condemn and dispose of the item at Direct Support or Aviation intermediate category.
H	Reparable item. When uneconomical reparable, condemn and dispose of the item at General Support category.
D	Reparable item. When beyond lower category repair capability, return to Depot, Condemnation and disposal of item not authorized below Depot category.
L	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious "metal content high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

b. CAGEC. (Column (3)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

c. Part Number. (Column (4)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. **Description and Usable on Code (UOC). (Column (5)).** This column includes the following information.

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) The statement "END OF FIGURE" appears just below the last item description in Column (5) for a given figure in both Section II and Section Ill.

f. Qty. (Column (6)). Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

C–4 EXPLANATION OF COLUMNS (SECTION IV)

a. National Stock Number (NSN) Index.

(1) Stock Number column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NllN consists of the last nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. When requisitioning items use the complete NSN (13 digits).

(2) Fig. column. This column lists the number of the figure where the item is identified/located.The illustrations are in numerical sequence in Sections II and Ill.

(3) Item column. The item number identifies the item associated with the figure listed in the adjacent Fig. column. This item is also identified by the NSN listed on the same line.

b. Part Number Index. Part numbers in this index are listed by part number in ascending alphanumeric sequence.

(1) CAGEC column. This column lists the Commercial and Government Entity Code,

(2) Part Number column. This column indicates the part number assigned to the item.

(3) Stock Number column. This column lists the National Stock Number for the associated part number and manufacturer identified in the part number and CAGEC columns to the left.

(4) Fig. column. This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) Item column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

c. Figure and Item Number Index.

(1) Fig. column. This column lists the number of the figure where the item is identified/located in Sections II and III.

(2) Item column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) Stock Number column. This column lists the National Stock Number for the item.

(4) CAGEC column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(5) Part Number column. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

C–5 SPECIAL INFORMATION

a. Fabrication Instructions. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in SB 11–631.

C–5 SPECIAL INFORMATION (continued)

b. Usable On Code. The UOC appears in the lower right corner of the Description column heading. Usable On Codes are shown as "UOC: . . . . . " in the Description Column on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on code(s) used in this RPSTL are:

Code	Used On
HK8	AN/PVS–7A

c. Associated Publications. The publication(s) listed below pertains to the AN/PVS–7A and its components:

TM 11–5855–262–10–1 Operator's Manual, Night Vision Goggles, AN/PVA–7A

d. National Stock Numbers. National Stock Numbers (NSN's) that are missing from "P" source coded items have been applied for and will be added to this TM by future change/revision when they are entered in the Army Master Data File (AMDF). Until the NSN's are established and published, submit exception requisitions to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL–LC–MMK–P Fort Monmouth, NJ 07703–5000 for the part required to support your equipment.

C–6 HOW TO LOCATE REPAIR PARTS

a. When the National Stock Number or Pan Number is not known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs.This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Part Number Index to find the NSN, if assigned.

b. When the National Stock Number or Part Number is known.

(1) First. Using the index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number. The NSN index is in National Item Identification Number (NIIN) sequence (paragraph C–4a (1)), The part numbers in the Part Number Index are listed in ascending alphanumeric sequence (paragraph C-4b). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) Second. After finding the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

C–7 ABBREVIATIONS

Not applicable.

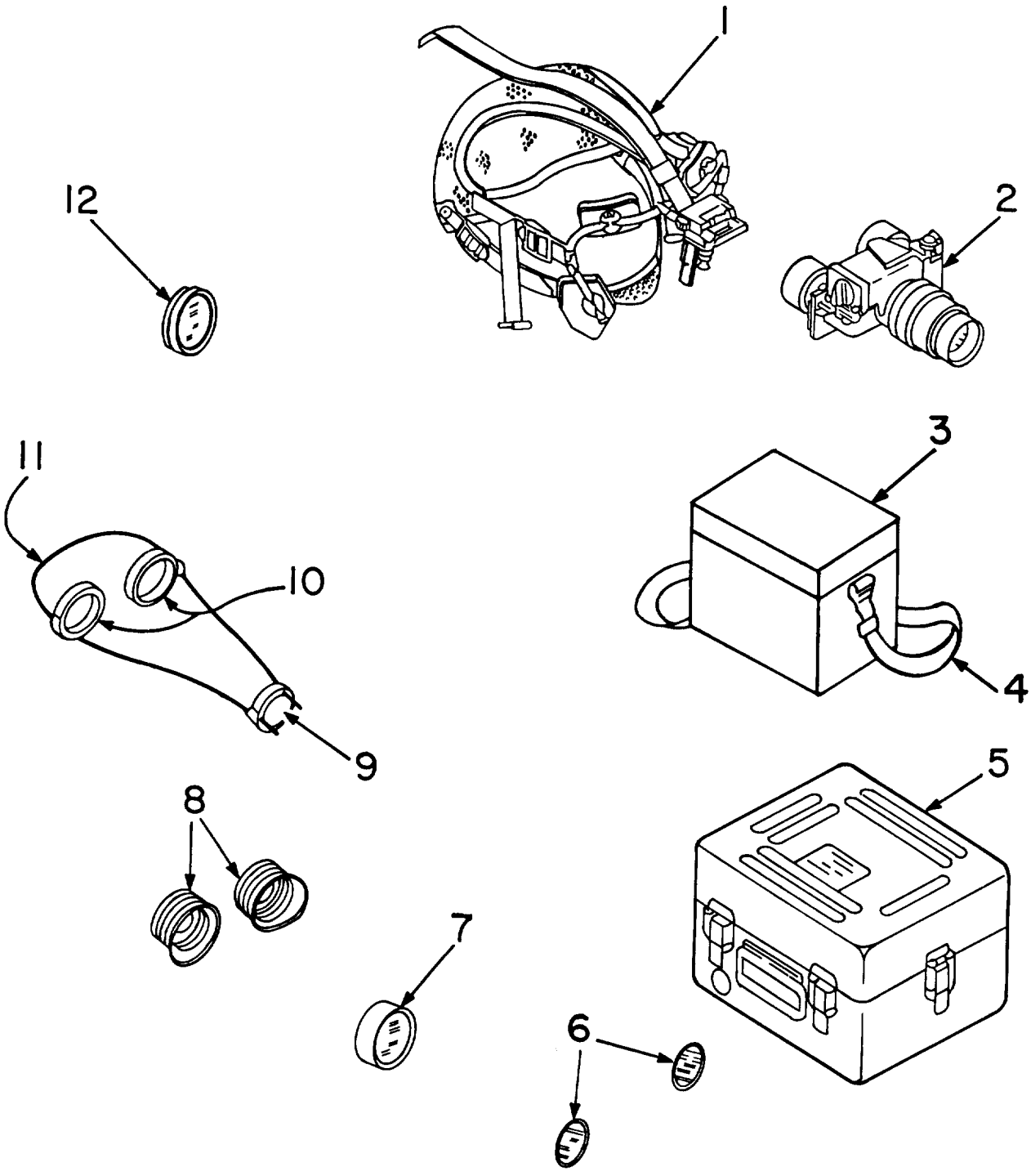


Figure 1. Night Vision Goggle AN/PVS-7A

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 00 NIGHT VISION GOGGLE, AN/PVS-7A	
				FIGURE 1	
1	PAOFF	80063	A3140690	FACEMASK (SEE FIGURE 4 FOR PARTS)	1
2	PBOFF	80063	A3140760	GOGGLE ASSEMBLY (SEE FIGURE 2 FOR PARTS)	1
3	PAOOZ	80063	A3140660	CASE, CARRYING	1
4	PAOZZ	80063	A3140662	STRAP,CASE,CARRYING	1
5	PBOOZ	80063	A3140670	CASE,SHIPPING AND S	1
6	PAOZZ	80063	A3140653	SHIELD,DEMIST	1
7	PAOZZ	80063	A3140650	CELL ASSEMBLY,OPTIC	1
8	PAOZZ	80063	A3140632	CUP,EYEPIECE	2
9	PAOZZ	80063	A3140633	CAP,LENS	1
10	PAOZZ	80063	A3140765	CAP,LENS	2
11	PAOZZ	80063	A3140631	CORD,FIBROUS	1
12	PAOZZ	80058	MX11391/PVS-7	FILTER,LIGHT,INTERF	1
				END OF FIGURE	

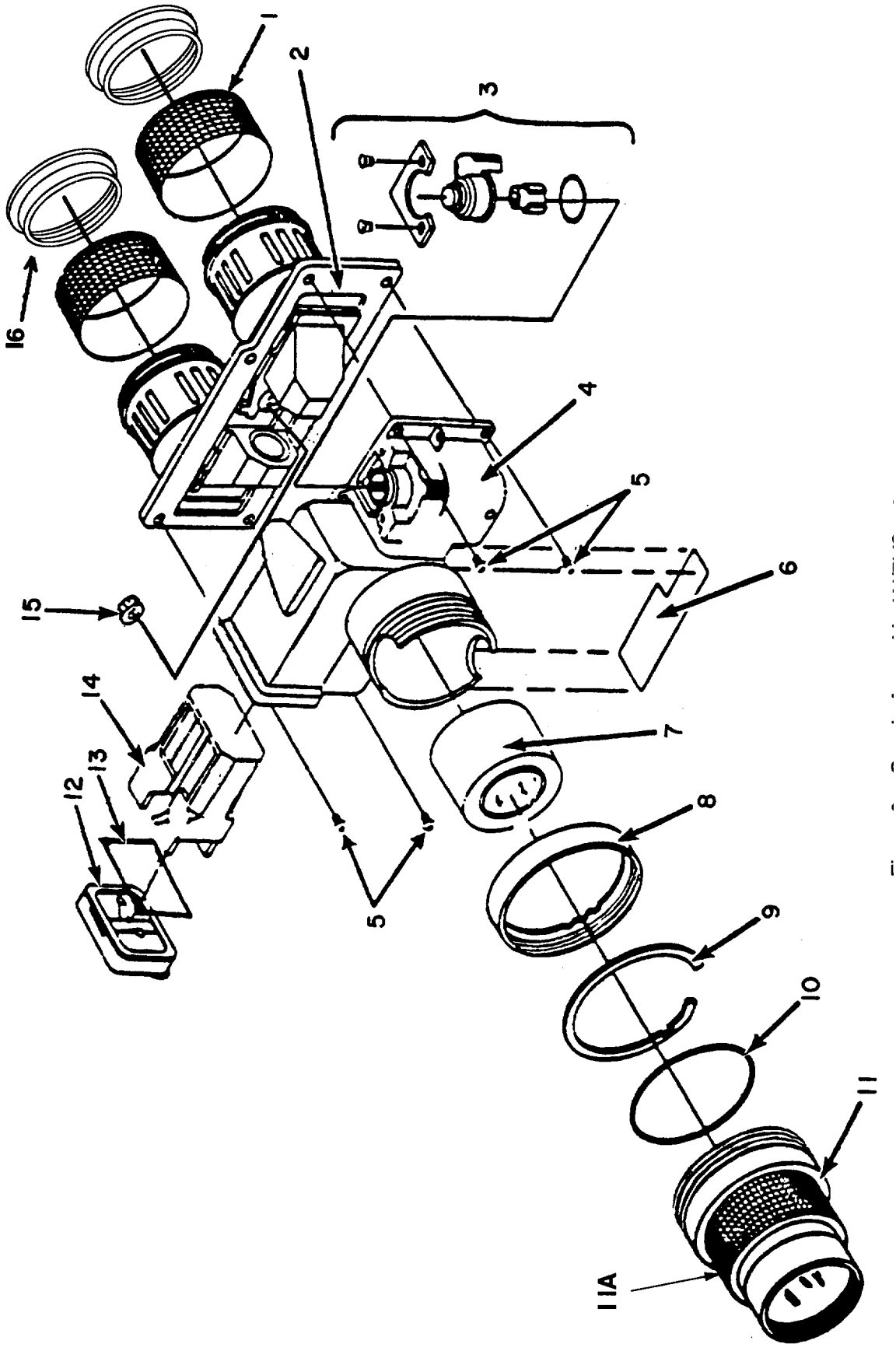


Figure 2. Goggle Assembly AN/PVS-7A

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 01 GOGGLE ASSEMBLY,AN/PVS-7A	
				FIGURE 2	
1	PCFZZ	80063	A3140777	GRIP,EYEPIECE	2
2	PAFZD	80063	A3140770	EYEPIECE ASSEMBLY,O	1
3	PAFZZ	80063	A3140637	KIT,KNOB	1
4	PAFFF	80063	A3140790	ACTUATOR,ELECTRO-ME (SEE FIGURE 3 FOR PARTS)	1
5	PAFZZ	80063	A3140692	SCREW,CAP,SOCKET HE	7
6	MDFZZ	80063	A3140761	PLATE, IDENTIFICATI SEE SB11-631 FOR INSTRUCTION	1
7	PAFZA	80058	MX10130A/UV	IMAGE INTENSIFIER,N USE P/N MX-10130A/UV UNTIL EXAUSTED,THEN REFER TO THE CROSS REFERENCE INDEX FOR THE MX-10130C/UV,THE REPLACEMENT OF THE MX-10130A/UV	1
8	PAFZZ	80063	A3140763	RETAINER,LENS	1
9	PAFZZ	80063	A3140764	CLIP,SPRING	1
10	PAFZZ	81349	M25988/3-031	PACKING,PREFORMED	1
11	PAFZZ	80063	A3140850	LENS ASSEMBLY, OBJE	1
11A	PCFZZ	80063	A3140854	GRIP,OBJECTIVE	1
12	PAOFF	80063	A3140830	HATCH,BATTERY	1
13	PCOZZ	80063	A3140837	GASKET	1
14	PAOZZ	80063	A3140840	RETAINER,BATTERY	1
15	PAFZZ	80063	A3140779	GEAR,SPUR	1
16	PAFZZ	80063	A3140778	RING,RETAINING	2
				END OF FIGURE	

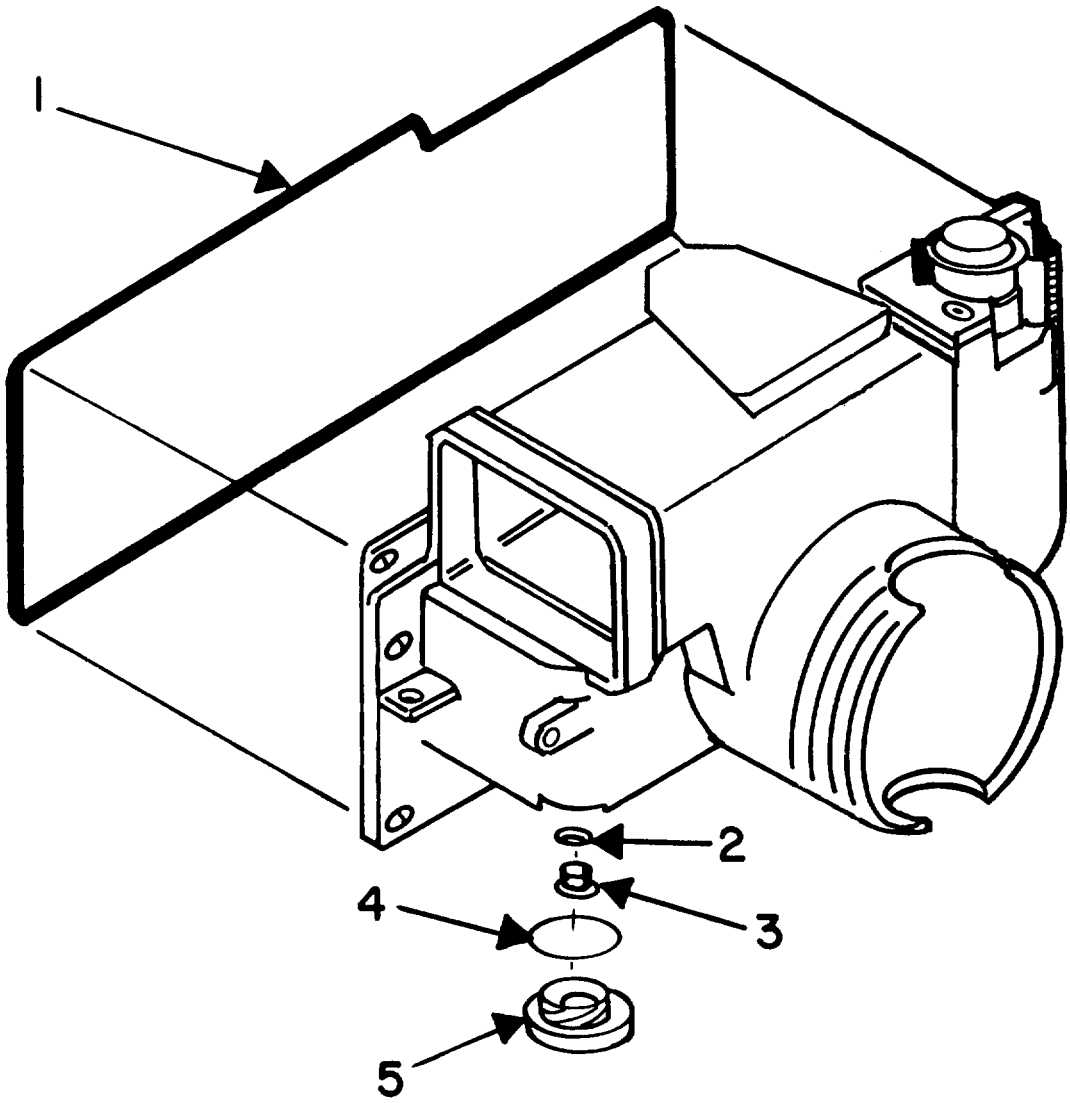


Figure 3. Wired Housing Assembly AN/PVS–7A

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0101 WIRED HOUSING ASSY AN/PVS-7A	
				FIGURE 3	
1	PCFZZ	80063	A3140795	SEAL,HOUSING	1
2	PCFZZ	80063	A3140792	GASKET	1
3	PAFZZ	80063	A3140791	SCREW,PURGE	1
4	PCFZZ	81349	M25988/3-013	PACKING,PREFORMED	1
5	PAFZZ	80063	A3140793	COVER,PURGE	1
				END OF FIGURE	

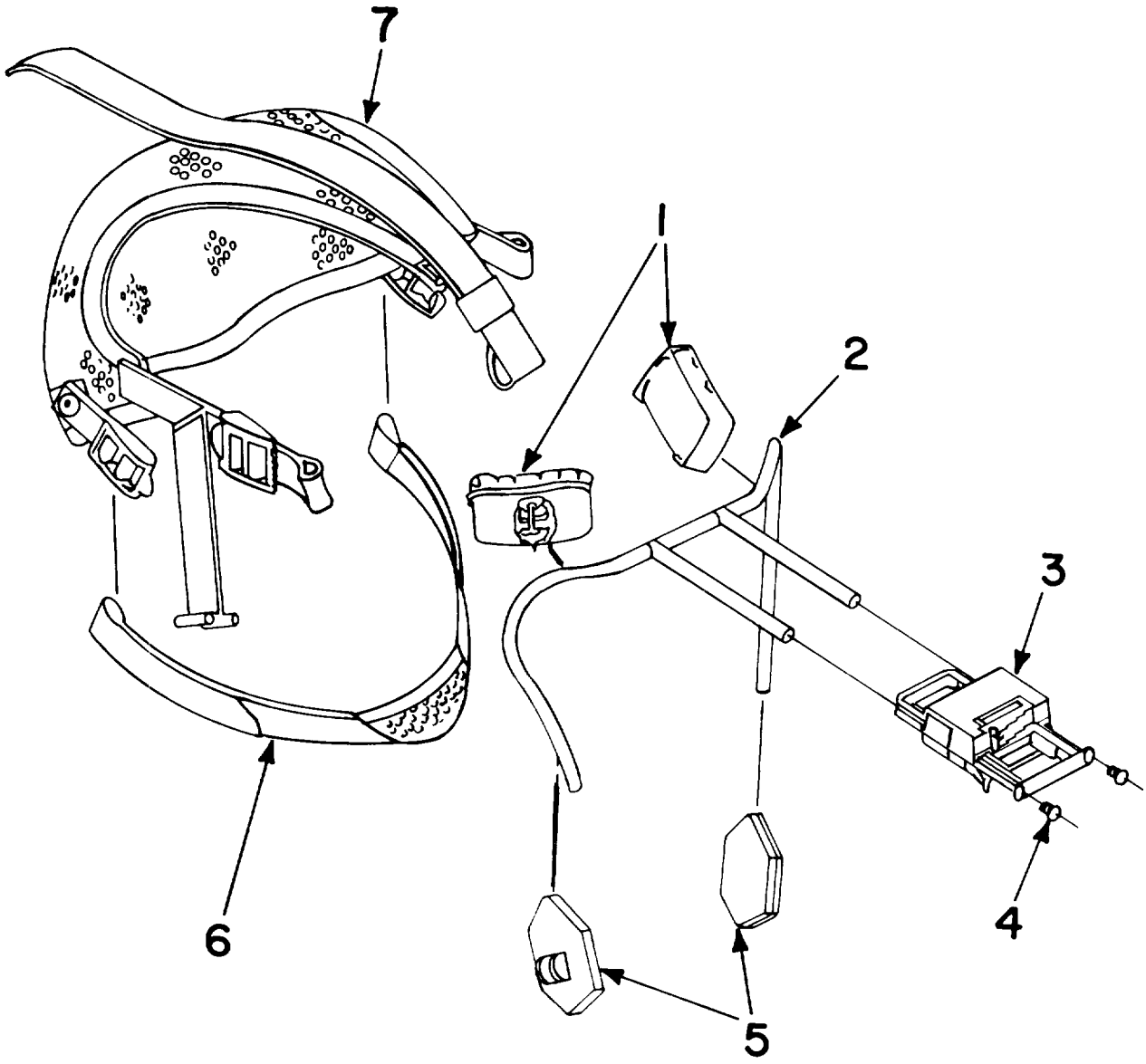


Figure 4. Headmount Assembly AN/PVS–7A

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 02 HEADMOUNT ASSEMBLY AN/PVS-7A	
				FIGURE 4	
1	PAOZZ	80063	A3140720	CUSHION,UPPER	2
2	XA0ZZ	80063	A3140693	TUBE ASSEMBLY,METAL	1
3	PAOZZ	80063	A3140700	CARRIAGE	1
4	PAOZZ	80063	A3140692	SCREW,CAP,SOCKET HE	2
5	PAOZZ	80063	A3140730	CUSHION,LOWER	2
6	PAOZZ	80063	A3140750	STRAP ASSEMBLY,CHIN	1
7	PAOZZ	80063	A3140740	HEADSTRAP	1
				END OF FIGURE	

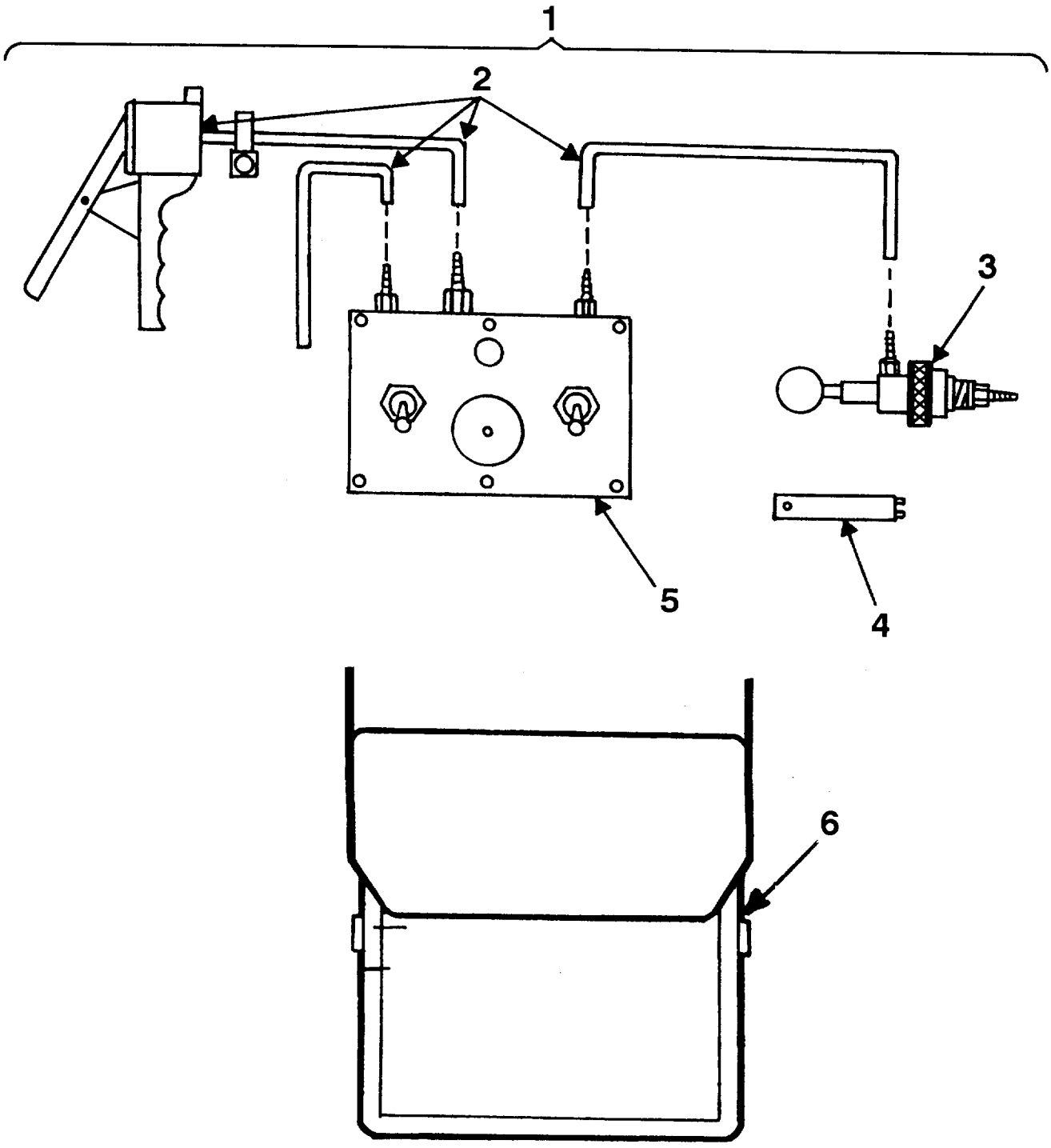


Figure 5. Purge Device

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 10 PURGE DEVICE	
				FIGURE 5	
1	PEFFF	55311	JA215008	DEVICE, PURGE	1
2	PAFZZ	54490	5007678	HOSE SET,VACUUM	1
3	PAFZZ	54490	5007667	VALVE	1
4	PAFZZ	55311	JA215005	TOOL	1
5	XAFZZ	54490	5007679	HOUSING,IMAGE INTEN	1
6	PAFZZ	54490	5007693	CASE,CARRYING	1
				END OF FIGURE	

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
5330-00-304-8713	2	10			
5330-01-210-3438	3	4			
5855-01-228-0941	2	7			
5855-01-246-6801	1	3			
5855-01-246-6802	1	5			
5855-01-246-6803	2	11			
5855-01-246-6804	1	1			
5855-01-246-6815	5	1			
5855-01-246-6820	1	2			
5855-01-246-6822	2	3			
5855-01-246-6876	2	2			
5855-01-249-8456	5	4			
6160-01-249-8548	2	14			
5855-01-250-1337	2	12			
5855-01-250-2348	1	7			
5355-01-250-2349	1	6			
5855-01-250-2350	2	11A			
5855-01-250-2351	3	5			
5855-01-250-2352	4	1			
5855-01-250-2353	4	5			
5855-01-250-2354	4	3			
5340-01-250-2355	4	7			
5855-01-250-2356	1	8			
5855-01-250-2359	5	2			
4820-01-250-2360	5	3			
5855-01-250-2361	5	6			
5330-01-250-2391	3	2			
5365-01-250-2403	2	16			
5855-01-250-2420	1	9			
5855-01-250-2421	1	10			
5305-01-254-1311	2	5			
	4	4			
5330-01-256-4420	3	1			
5340-01-256-4421	2	9			
5330-01-256-4422	2	13			
5855-01-256-9384	2	1			
6230-01-258-6217	2	8			
3020-01-263-0076	2	15			
5855-01-263-7667	1	4			
6110-01-263-7669	2	4			
4020-01-292-1281	1	11			
6650-01-321-2905	1	12			
5855-01-328-3540	2	7			
4710-01-359-0755	4	2			
5855-01-361-9787	4	6			

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG	ITEM
80063	A3140631	4020-01-292-1281	1	11
80063	A3140632	5855-01-250-2356	1	8
80063	A3140633	5855-01-250-2420	1	9
80063	A3140637	5855-01-246-6822	2	3
80063	A3140650	5855-01-250-2348	1	7
80063	A3140653	5355-01-250-2349	1	6
80063	A3140660	5855-01-246-6801	1	3
80063	A3140662	5855-01-263-7667	1	4
80063	A3140670	5855-01-246-6802	1	5
80063	A3140690	5855-01-246-6804	1	1
80063	A3140692	5305-01-254-1311	2	5
			4	4
80063	A3140693	4710-01-359-0755	4	2
80063	A3140700	5855-01-250-2354	4	3
80063	A3140720	5855-01-250-2352	4	1
80063	A3140730	5855-01-250-2353	4	5
80063	A3140740	5340-01-250-2355	4	7
80063	A3140750	5855-01-361-9787	4	6
80063	A3140760	5855-01-246-6820	1	2
80063	A3140761		2	6
80063	A3140763	6230-01-258-6217	2	8
80063	A3140764	5340-01-256-4421	2	9
80063	A3140765	5855-01-250-2421	1	10
80063	A3140770	5855-01-246-6876	2	2
80063	A3140777	5855-01-256-9384	2	1
80063	A3140778	5365-01-250-2403	2	16
80063	A3140779	3020-01-263-0076	2	15
80063	A3140790	6110-01-263-7669	2	4
80063	A3140791		3	3
80063	A3140792	5330-01-250-2391	3	2
80063	A3140793	5855-01-250-2351	3	5
80063	A3140795	5330-01-256-4420	3	1
80063	A3140830	5855-01-250-1337	2	12
80063	A3140837	5330-01-256-4422	2	13
80063	A3140840	6160-01-249-8548	2	14
80063	A3140850	5855-01-246-6803	2	11
80063	A3140854	5855-01-250-2350	2	11A
55311	JA215005	5855-01-249-8456	5	4
55311	JA215008	5855-01-246-6815	5	1
80058	MX10130A/UV	5855-01-228-0941	2	7
80058	MX10130C/UV	5855-01-328-3540	2	7
80058	MX11391/PVS-7	6650-01-321-2905	1	12
81349	M25988/3-013	5330-01-210-3438	3	4
81349	M25988/3-031	5330-00-304-8713	2	10
54490	5007667	4820-01-250-2360	5	3
54490	5007678	5855-01-250-2359	5	2
54490	5007679		5	5
54490	5007693	5855-01-250-2361	5	6

FIGURE AND ITEM NUMBER INDEX

FIG	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
1	1	5855-01-246-6804	80063	A3140690
1	2	5855-01-246-6820	80063	A3140760
1	3	5855-01-246-6801	80063	A3140660
1	4	5855-01-263-7667	80063	A3140662
1	5	5855-01-246-6802	80063	A3140670
1	6	5355-01-250-2349	80063	A3140653
1	7	5855-01-250-2348	80063	A3140650
1	8	5855-01-250-2356	80063	A3140632
1	9	5855-01-250-2420	80063	A3140633
1	10	5855-01-250-2421	80063	A3140765
1	11	4020-01-292-1281	80063	A3140631
1	12	6650-01-321-2905	80058	MX11391/PVS-7
2	1	5855-01-256-9384	80063	A3140777
2	2	5855-01-246-6876	80063	A3140770
2	3	5855-01-246-6822	80063	A3140637
2	4	6110-01-263-7669	80063	A3140790
2	5	5305-01-254-1311	80063	A3140692
2	6		80063	A3140761
2	7	5855-01-228-0941	80058	MX10130A/UV
2	7	5855-01-328-3540	80058	MX10130C/UV
2	8	6230-01-258-6217	80063	A3140763
2	9	5855-01-256-4421	80063	A3140764
2	10	5330-00-304-8713	81349	M25988/3-031
2	11	5855-01-246-6803	80063	A3140850
2	11A	5855-01-250-2350	80063	A3140854
2	12	5855-01-250-1337	80063	A3140830
2	13	5330-01-256-4422	80063	A3140837
2	14	6160-01-249-8548	80063	A3140840
2	15	3020-01-263-0076	80063	A3140779
2	16	5365-01-250-2403	80063	A3140778
3	1	5855-01-256-4420	80063	A3140795
3	2	5330-01-250-2391	80063	A3140792
3	3		80063	A3140791
3	4	5330-01-210-3438	81349	M25988/3-013
3	5	5855-01-250-2351	80063	A3140793
4	1	5855-01-250-2352	80063	A3140720
4	2	4710-01-359-0755	80063	A3140693
4	3	5855-01-250-2354	80063	A3140700
4	4	5305-01-254-1311	80063	A3140692
4	5	5855-01-250-2353	80063	A3140730
4	6	5855-01-361-9787	80063	A3140750
4	7	5855-01-250-2355	80063	A3140740
5	1	5855-01-246-6815	55311	JA215008
5	2	5855-01-250-2359	54490	5007678
5	3	4820-01-250-2360	54490	5007667
5	4	5855-01-249-8456	55311	JA215005
5	5		54490	5007679
5	6	5855-01-250-2361	54490	5007693

APPENDIX D
EXPENDABLE AND DURABLE ITEMS LIST

Section I. Introduction

D–1 SCOPE

This appendix lists expendable and durable items that you need to operate and maintain the AN/PVS-7A. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50–970, Expendable/Durable Items (except medical, class V repair parts, and heraldic items).

D–2 EXPLANATION OF COLUMNS

a. Column 1. Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item (e.g. “Use cleaning compound, item 5, Appendix D”),

b. Column 2. Level. This column identifies the lowest level of maintenance that requires the item.

c. Column 3. National Stock Number. This is the National Stock Number (NSN) assigned to the item which you can use to requisition it.

d. Column 4. Item name, description, Commercial and Government Entity Code (CAGE), and part number. This provides the other information you need to identify the item.

e. Column 5. Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

1	2	3	4	5
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION (CAGE) PART NUMBER	U/M
1	F	9150-00-584-4289	GREASE, SILICONE (71984) DC 33	
2	F	9150-01-007-4384	GREASE, FLUORINATED (82348) KRYOX 240AZ	
3	F	6515-00-935-1193	COT, FINGER, SURGICAL, RUBBER ( ) ZZ-F-1299	
4	O,F	7920-00-044-9281	CLOTH, COTTON, WIPING ( ) CCC-C-466	
5	O,F	7930-00-926-5280	DETERGENT, GENERAL PURPOSE, SPRAY NON-AMMONIA	
6	O,F	6640-00-240-5851	PAPER LENS (81348) NNN-P-40	
7	F	6850-00-621-1819	LEAK DETECTION COMPOUND	
8	O,F	6810-00-753-4993	ISOPROPY ALCOHOL, TECHNICAL	
9	F	3439-00-552-9309	DISPENSER, ALCOHOL	
10	O,F	7920-00-823-9773	TOWEL, SHOP	
11	F		FILTERS, FLASHLIGHT (58774) NV-4AM OR(OBN5G) FFNG	
12	F	6675-00-222-2505	TRIPOD	
13	F	5980-01-275-8080	LIGHT, INFRARED TRANSMITTER	
14	F	6810-00-201-0904	ALCOHOL, DENATURED AND ETHYL	
15	O,F	6515-00-303-8250	COTTON-TIPPED APPLICATORS	
16	F	5210-00-287-3335	MEASURING TAPE	
17	F	6830-00-602-2357	COMPRESSED AIR, TECHNICAL	

APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. Introduction

a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at the Direct Support maintenance level. The black spot test stand is authorized for DS maintenance levels.

b. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria. See Figure E-1.

c. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Section II. Manufactured Items Part Number Index

Figure Number	Illustration Number	National Stock Number	Description/ (Part Number, If Applicable)	U/M	Quantity Required
E-1	1	5855–01–305–8524	BLACK SPOT TARGET	EA	1
E–1	2	N/A	1/2" PLYWOOD, 22–1/2 x 30–1/2" (LOCAL PROCUREMENT)	EA	1
E–1	3	N/A	1/2" PLYWOOD, 22–1/2 X 32" (LOCAL PROCUREMENT)	EA	1
E–1	4	N/A	3/4" PINE BOARD, 2" x 35–3/4" WITH 31° MITER ENDS (LOCAL PROCUREMENT)	EA	2
E–1	5	N/A	3/4" PINE BOARD, 2" x 12– 1/4" (LOCAL PROCUREMENT)	EA	2
E–1	6	N/A	3/4" PINE BOARD, 5" x 24" (LOCAL PROCUREMENT)	EA	1
E–1	7	N/A	WOOD SCREWS, 3" (LOCAL PROCUREMENT)	EA	4
E–1	8	N/A	WOOD SCREWS, 1–1/4" (LOCAL PROCUREMENT)	EA	18

Section III. Manufactured Items Illustrations

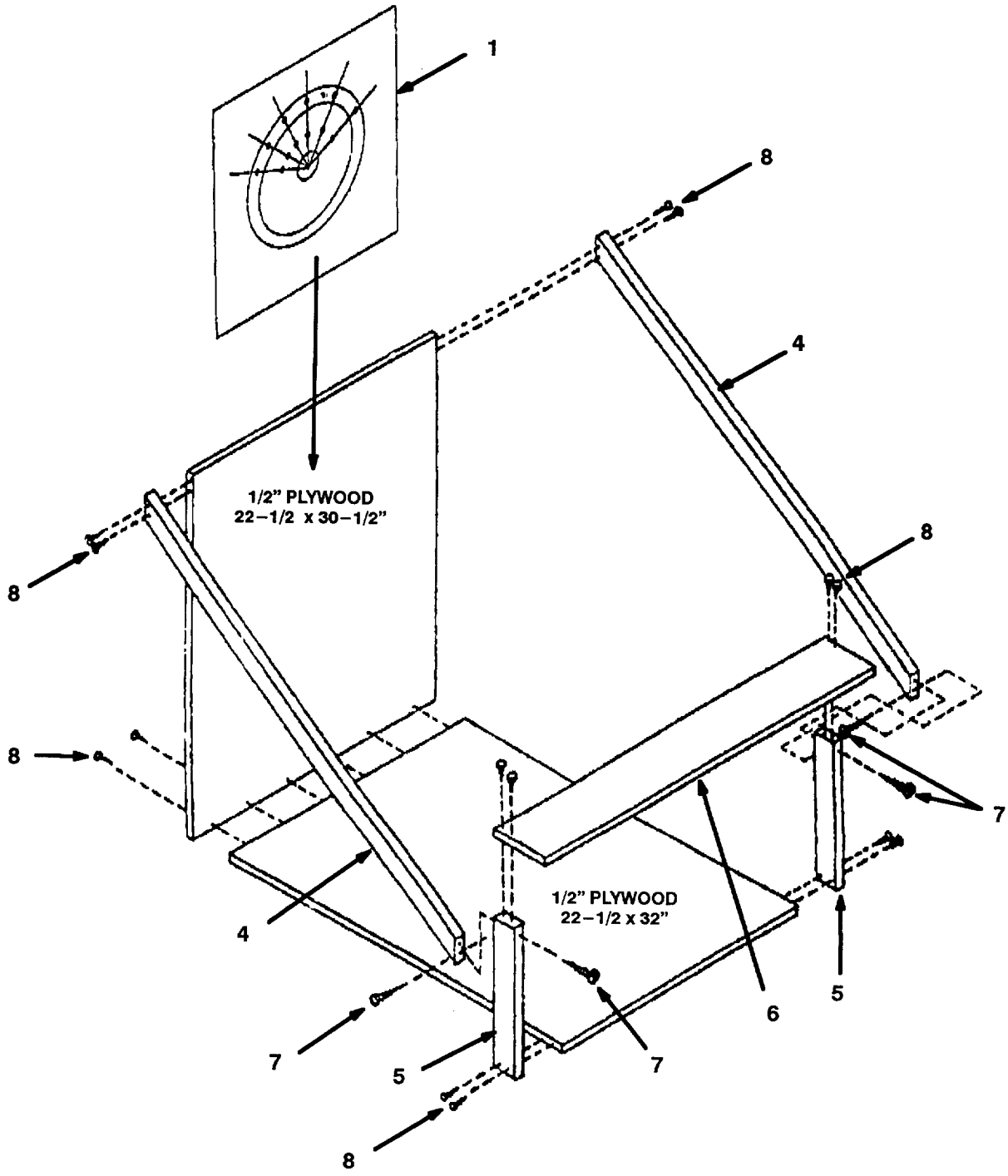


Figure E–1. Black Spot Test Stand.

GLOSSARY

BLACK SPOTS. These are cosmetic blemishes in the image intensifier or dirt or debris between the lenses.

BRIGHT SPOTS. These are defects in the image area caused by a flaw in the film on the microchannel plate. A bright spot is a small, nonuniform bright area that may flicker or appear constant. Remove the binocular from the TS–3895 test set ports and cup your hand over the lens to block out all light. If the bright spot remains, it is an emission point. If the spot disappears, place the goggle back onto the test set and turn the selector knob to HIGH LIGHT for “15 seconds and note the spot’s location. Turn the selector knob to LOW LIGHT and wait another 15 seconds. If the spot disappears or is faintly visible, it is acceptable.

CAUTION. A caution calls out conditions, practices or procedures which must be observed to avoid damage to equipment, destruction of equipment or long-term health hazard.

DARK (OR DARK AREA). A place in which there is very little light. It does not mean *total* darkness. Generally, this means conditions similar to a quarter-moon or starlit night.

DIOPTER. A unit of measure used to define eye correction. Adjustments to the eyepiece focus ring will provide a clearer image in each eye. It is determined as a unit of refractive power of a lens. In a lens system, such as the eyepiece lens, it is equal to the reciprocal of the focal length measured in meters.

EDGE GLOW. This is a defect in the image area produced by the AN/PVS–7A. Edge glow is a bright area (sometimes sparkling) in the outer portion of the viewing area. To check for edge glow, cup your hand over the objective lens to block out all light.

IMAGE INTENSIFIER. An electro-optical device that detects and amplifies ambient light to produce a visual image. It consists of a photocathode, microchannel plate, phosphor screen optic, and an integral power supply.

INFINITY FOCUS. Adjustment of the objective lens so that a distant object, such as a star or the point light on a distant tower, forms the sharpest image.

LIGHT INTERFERENCE FILTER. This is a laser-protection filter for the goggle. Use of this filter will result in a slight reduction in system gain.

MICROCHANNEL PLATE. A current-multiplying optical disk that intensifies the electron image produced by the photocathode.

OBJECTIVE LENS ASSEMBLY. This consists of an objective lens cell and an objective focus ring. It attaches to the front of the wired housing assembly and adjusts for variations in distance to the viewed area or object.

PHOTOCATHODE. The input optic of an image intensifier that absorbs light energy and in turn releases electrical energy in the form of an electron image.

REAR HOUSING ASSEMBLY. Consists of an eyepiece lens cell and eyepiece focus ring. Attaches to the rear of the wired housing assembly and adjusts for variations in the user’s eyesight.

SHADING. This is a defect in the image area produced when the photocathode in the image intensifier is slowly dying. The viewed image should portray a perfect circle when adjusted correctly. If shading is present, you will not see a fully circular image.

WARNING. A warning calls out conditions, practices or procedures which must be observed to prevent personal injury or loss of life.

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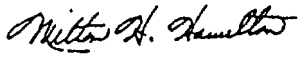

MILTON H. HAMILTON
Administrative Assistant to the
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PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2_ IFF antenna lag rather than 1_. REASON: Experience has shown that with only a 1_ lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2_ without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 dB" to "3 dB". REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 dB (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1 above." REASON: To replace the cover plate.
		FO-3		Zone C 3. On J1-2, change "+24 VDC" to "+5 VDC". REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE
SSG I. M. DeSpiritof 999-1776	I. M. DeSpiritof

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THE METRIC SYSTEM AND EQUIVALENTS

'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

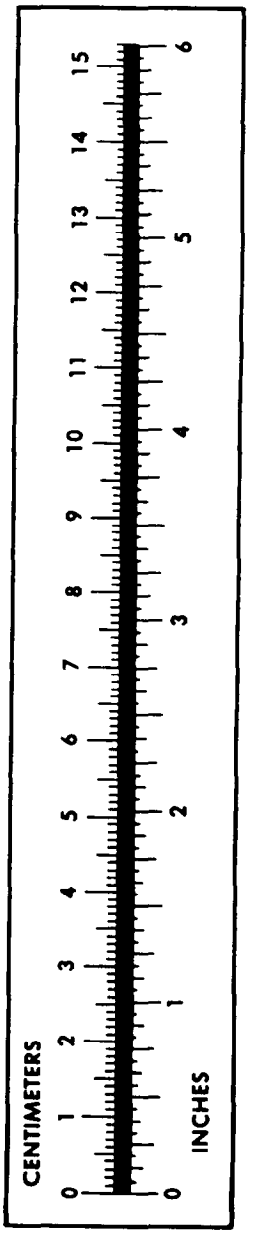
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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