TM 11-5855-238-23&P

TECHNICAL MANUAL

UNIT AND DIRECT SUPPORT MAINTENANCE

AND

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

NIGHT VISION GOGGLES

GROUND USE

AN/PVS-5, AN/PVS-5A
(NSN 5855-00-150-1820) (EIC: IPD)
AN/PVS-5B
(NSN 5855-01-228-0938) (EIC: IPV)
AN/PVS-5C
(NSN 5855-01-228-0936) (EIC: IPU)

AVIATION USE

GM-6(V)1 NVG
GM-6(V)2 NVG

HEADQUARTERS, DEPARTMENT OF THE ARMY

15 NOVEMBER 1993

WARNING

Toxic Material

The image intensifier phosphor screen in each monocular assembly contains toxic materials.

- A broken image intensifier maybe caused from damage to the binocular assembly, especially if the monocular housing is cracked by force.
- If an image intensifier breaks, be extremely careful to avoid inhaling the phosphor screen material. Do not allow the material to come in contact with the mouth or open wounds on the skin.
- If the phosphor screen material contacts your skin, wash it off with soap and water and seek medical attention as soon as possible.
- If you inhale/swallow any phosphor screen material, drink a lot of water, induce vomiting, and seek medical attention as soon as possible.

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.

WARNING

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

WARNING

The BA-5567/U lithium battery contains sulphur dioxide gas which is under pressure and should be handled in the following manner.

- The BA-5567/U lithium batteries have safety vents to prevent explosion. When they are venting sulfur dioxide gas, you may smell it (very irritating rotten egg odor) or hear the sound of gas escaping. When the safety vents have operated, the batteries are fairly safe from bursting, but will be hot and must be handled with care to prevent injury from burns.

WARNING

- Do not heat, puncture, disassemble, short circuit, attempt to recharge, or otherwise tamper with the batteries.
- Turn off the equipment if the battery compartment becomes unduly hot. Do not open the battery compartment, but turn in the goggles or the battery pack to the maintainer and report the problem.
- If you inhale sulphur dioxide, seek medical attention.

WARNING

Acetone is toxic and extremely flammable. Use only in a well ventilated area. Avoid prolonged or repeated breathing of the vapors. Avoid prolonged contact with skin. Keep area free of sparks and open flame.

WARNING

(Ground Use) The AN/PVS-5B NVG headstrap must not be used with the AN/PVS-5A or -5C face mask as this condition will have an adverse affect on the safety of the user. The AN/PVS-5C headstrap which contains the (white dot lift) style fastens at the center snap.

FIRST AID

For first aid or artificial respiration, see FM 21-11, First aid for soldier

TECHNICAL MANUAL

NO, 11-5855-238-23&P

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

**UNIT, DIRECT SUPPORT (DS),
AVIATION UNIT MAINTENANCE (AVUM),
and
AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

NIGHT VISION GOGGLES
for

GROUND USE
AN/PVS-5 AND AN/PVS-5A
(NSN 5855-00-150-1820) (EIC: IPD)
AN/PVS-5B (NSN 5855-01 -228-0938) (EIC: IPV)
AN/PVS-5C (NSN 5855-01 -228-0936) (EIC: IPU)

AVIATION USE
GM-6(V)1 AND GM-6(V)2

Current as of 15 June 1993

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors or if you know of a way to improve this publication, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to *Publications and Blank Forms),* or DA Form 2028-2 located in the back of this manual directly to eithee: Commander, U.S. Army Communications-ElectronicsCommand and Fort Monmouth, ATTN: AMSEL-LC-LM-LT, Fort Monmouth, New Jersey 07703-5007. A reply will be furnished to you.

TABLE OF CONTENTS

*This manual supersedes TM 11-5855-238-20 dated 15 October 1988, TM 11-5855-238-24P dated 1 October 1987, and TM 11-5855-238-24&P dated December 1977 with Changes.

TABLE OF CONTENTS-Continued

TABLE OF CONTENTS-Continued

TABLE OF CONTENTS-Continued

TABLE OF CONTENTS-Continued

TABLE OF CONTENTS-Continued

TABLE OF CONTENTS-Continued

TABLE OF CONTENTS-Continued

HOW TO USE THIS MANUAL

Usage

1. You must familiarize yourself with the entire maintenance procedure before beginning the maintenance task. Read and follow all WARNINGS, CAUTIONS and NOTES.

2. The End Item Code (EIC) appears on the front cover for your convenience to use on various forms.

Manual Overview

1. WARNINGS and table of contents are provided at the front of the book. The table of contents includes the paragraph number, paragraph title, and page number for each chapter. Each chapter is divided into sections and sections into paragraphs. On the front cover selected chapters, section or titles are boxed and at the edge of each box is a blackened area. This blackened area matches a black mark appearing on the first page on that section in the manual. This manual is divided into four chapters.

a. Chapter 1 **(AVIATION and GROUND)** contains an introduction of this manual with functional description, physical description, equipment data, and principles of operation of the goggles. Full view illustrations of the six models are provided to assist you in identification of major components. The information in chapter 1 is for both **AVIATION and GROUND** use unless otherwise identified.

b. Chapter 2 contains **AVIATION** GM-6(V)1 and GM-6(V)2 goggles maintenance task for AVUM, including table with Preventive Maintenance Checks and Services (PMCS) and troubleshooting procedures. Several test procedures are included.

c. Chapter 3 contains **GROUND** goggle maintenance task for unit maintenance, including tables with PMCS and troubleshooting procedures. Several test procedures are included.

d. Chapter 4 contains **AVIATION and GROUND** maintenance data. It also provides DS and AVIM troubleshooting procedures and maintenance procedures. The information in this chapter is for both AVIATION and GROUND use unless otherwise identified.

2. This maintenance manual contains Appendix A, References to related subjet matter such as forms, associated technical publications, and other miscellaneous documents; Appendix B, Maintenance Allocation Chart (MAC); Appendix C, Repair Parts and Special Tools List (RPSTL); Appendix D, Expendable Durable Items List; and Appendix E, Illustrated List of Manufactured Items. The Information in the appendices are for both AVIATION and GROUND use unless otherwise identified.

CHAPTER 1
INTRODUCTION

OVERVIEW

Chapter 1 of this TM is intended to give you information regarding the type of equipment, its characteristics, and the principles of operation that will help you maintain the goggles properly.

Section 1. General Information

1-1 SCOPE

a. Type of Manual: Unit and Direct Support for Ground Use; Aviation Unit Maintenance (AVUM) and Intermediate Maintenance (AVIM) for Aviation Use; and includes Repair Parts and Special Tools list (RPSTL) at Appendix C.

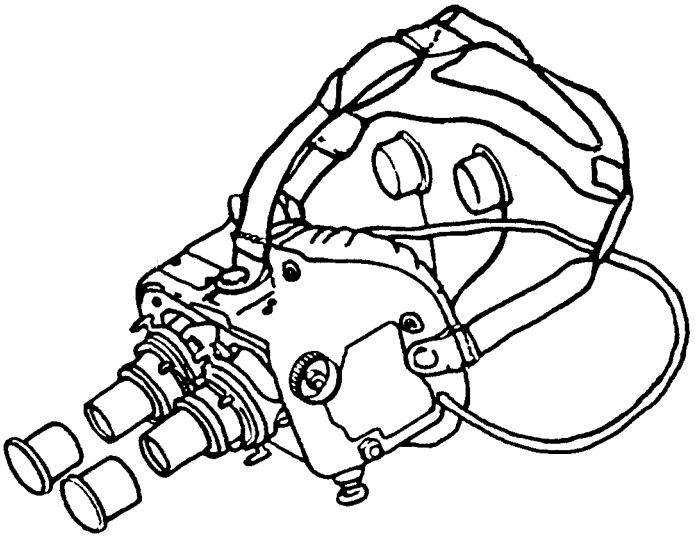
b. Model NumbEr and Equipment Name:

(1) GROUND NVG are: AN/PVS-5, AN/PVS-5A, AN/PVS-5B, and AN/PVS-5C NVG (fig. 1-1).

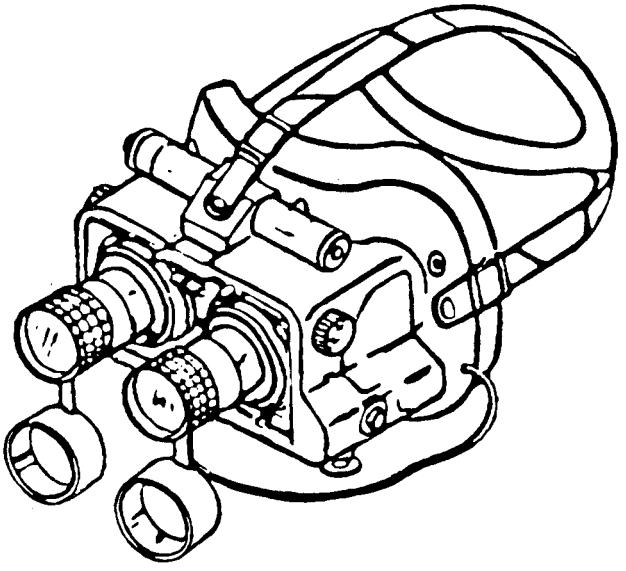
(2) AVIATION NVG are: **GM-6(V)1 and GM-6(V)2 NVG (fig. 1-1).**

c. Purpose of Equipment: The purpose of the equipment is to provide improved night vision using available light from the night sky (moon, stars, skyglow, etc.).

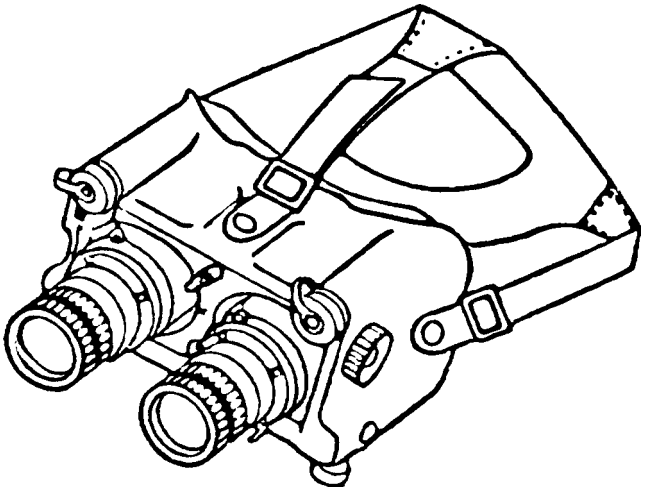
(GROUND USE)



AN/PVS-5 and AN/PVS-5A NVG.



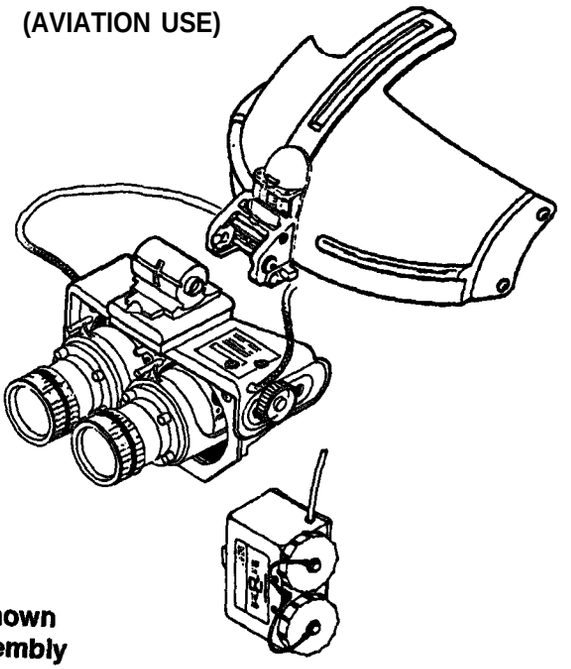
AN/PVS-5B NVG.



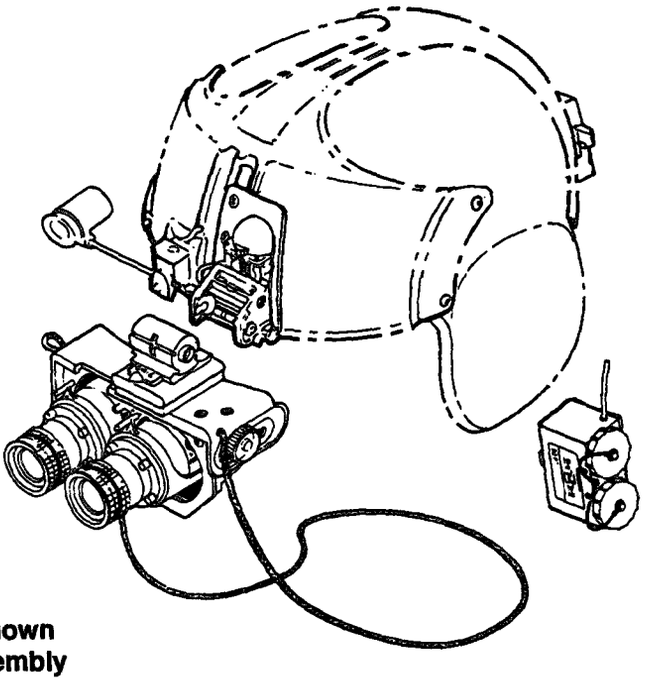
AN/PVS-5C NVG.

Figure 1-1. Night Vision Goggles (Sheet 1 of 2).

(AVIATION USE)



GM-6(V)1 Goggle Assembly shown
with AN/PVS-5C Binocular Assembly



GM-6(V)2 Goggle Assembly shown
with AN/PVS-5C Binocular Assembly

Figure 1-1. Night Vision Goggles (Sheet 2 of 2).

1-2 MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management System for Ground use; DA Pam 738-751, Functional Users Manual for the Army Maintenance Management System - Aviation (TAMMS-A) for Aviation use; or AR 700-138, Army Logistics Readiness and Sustainability.

1-3 DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of this equipment to prevent enemy use shall be in accordance with TM 750-244-2, Procedures for Destruction of Electronic Materiel to Prevent Enemy Use.

1-4 PREPARATION FOR STORAGE OR SHIPMENT

See Chapter 2, paragraph 2-25 or Chapter 3, paragraph 3-20, for instructions regarding preparation for storage or shipment of the NVG and Chapter 4, paragraph 4-36, for packing and shipping the image intensifiers.

1-5 OFFICIAL NOMENCLATURE, NAME, AND DESIGNATIONS

Table 1-1 provides a cross-reference of nonofficial and official terms.

Table 1-1. Nomenclature Cross-Reference List.

COMMON NAME	OFFICIAL NOMENCLATURE
Battery Pack	Power Pack
Clamp knob	Knob
Velcro	Hook-and-Pile Fastener
Bracket (G M-6(V)1)	Mount Assembly, GM-6(V)1 Viewer

1-6 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your NVG need improvement, let us know. Send us an EIR. You, the maintainer, 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-ED-PH, Fort Monmouth, NJ 07703-5007. We'll send you a reply.

1-7 WARRANTY INFORMATION

If the NVG or image intensifier is covered by a warranty, the items are warranted to conform to design and manufacturing requirements, to remain free from defects in material and workmanship, and to conform to performance specifications. Should the NVG or image intensifier fail or be suspected of not meeting the design performance specifications, the warranty claim procedures will be followed to ensure that the item is processed in a manner so as not to void or limit the warranty.

1-7 WARRANTY INFORMATION - Continued

a. Verfy item is warranted. Verify that the failed/defective item is a warranted item, and that the warranty is still in effect for that item. All warranted items will have a warranty identification label attached indicating the warranty expiration date. For the goggles, this label is located on the top of face mask and for the image intensifier it is located on the back of the image intensifier itself.

NO CORRECTIVE MAINTENANCE MAYBE PERFORMED BY THE MAINTAINER OTHER THAN THE AUTHORIZED DISASSEMBLY NECESSARY FOR DIRECT SUPPORT (DS) OR AVIM TO DISASSEMBLE AND SEND ONLY THE DEFECTIVE COMPONENT TO SACRAMENTO ARMY DEPOT (SAAD).

b. Test item. Test the item under question to determine the type and extent of the defect. The methods for testing and measuring the actual design performance will be per the appropriate technical maintenance manual procedures. The testing for warranty conformance applies not only to initial acceptance criteria, but to the item performance for the duration of the warranty.

c. Process the failed/defective item for shipping. The defective item will be tagged to prevent improper repair or use (e.g., using DA Form 2402, Exchange Tag). ADA Form 2407, Maintenance Request, shall be filled out requesting warranty action. The DA Form 2407 will include the nature of the defect (e.g., shading, image intensifier flickering, etc) the method used to determine the type and extent of the defect. The DA Form 2407 shall accompany the defective item shipped as described below. The individual copies of the DA Form 2407 will be distributed as follows:

Copy 1-- Kept by the owning unit

Copies 2 & 3 -- Send to:

Commander
U.S. Army CECOM
ATTN: AMSEL-PA-MS-W
Fort Monmouth, NJ 07703-5007

Copy 4-- Filed by the local Warranty Control Office (WARCO)

Copy 5-- Stays with the item until the warranty action is completed

d. Notify SAAD. The maintainer shall notify SAAD by phone or electronic mail in event of a failure/defect:

AUTOVON: 639-2705/3699
Commercial: (91 6) 388-2705/3699
DDN Address: qualqsm5@aad-emh1.army.mil

For OCONUS, an alternative method is for the local WARCO to use standard military front channel message to SAAD, or if not viable, have CECOM Logistic Assistance Representatives send the data to SAAD by MILNET.

The local WARCO will then send the defective item to SAAD for processing of the claim. Send it to:

Sacramento Army Depot
AtTN: SDSSA-QSM/WARCO
Sacramento, CA 95813-5027

NOTE

If the image intensifier is the only defective part of the NVG, send only the image intensifier to SAAD.

1-8 CORROSION PREVENTION AND CONTROL (CPC)

The CPC of Army materiel is a continuing concern. It is important that any corrosion problems with this equipment be reported so that the problem can be corrected and improvements made to prevent the problem in future equipment.

While corrosion is typically associated with rusting of metal, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these other materials may be a corrosion problem.

If a corrosion problem is identified, report it using SF 368, Product Quality Deficiency Report. Use keywords such as "corrosion," rust," "deterioration," or "cracking" to ensure that the information is identified as a CPC problem. Submit the form to the address specified in DA Pam 738-750 (Ground Use) or DA Pam 738-751 (Aviation Use).

Section H. Equipment Description and Data

1-9 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. The NVG can be adjusted for: distance between the operator's eyes (eyespan), vertical distance, tilt, eye relief, diopter settings, and focus settings.

b. The NVG amplifies light from the night sky (moon, stars, skyglow, etc.) to provide night vision for the operator. Terrain features are more visible when viewed through the goggles.

c. The goggles can be used for reading, performing manual tasks, patrolling, medical aid, construction work, mobile equipment operation, driving, walking, air support, and surveillance during darkened conditions.

d. The goggles have a limited or marginal capability operating through rain, fog, sleet, snow, or blowing sand. Visibility is unlikely through smoke.

WARNING

- The full face mask for the AN/PVS-5, -5A, -5B, and -5C configurations are not authorized to be used by pilots when flying aircraft.
- The binocular assembly for AN/PVS-5, -5A, -5B, and 5C NVG is used with all face masks (e.g. AN/PVS-5A, -5B, or 5C).
- The binocular assembly for AN/PVS-5A, -5B and -5C NVG can be used with the GM-6(V)1 or GM-6(V)2 modifications.

e. **AVIATION USE.** The GM-6(V)1 and GM-6(V)2 consist of the GM-6(V)1 mount assembly or GM-6(V)2 offset mount assembly, viewer mount assembly or offset viewer mount assembly, binocular assembly, and power pack.

f. **AVIATION USE.** The GM-6(V)1 and GM-6(V)2 NVG are visor helmet mounted. The NVG have a flip-up capability for stowing away from the eyes.

g. **GROUND USE.** When ambient light is not available or otherwise inadequate for viewing the area, the NVG have an auxiliary infrared (IR) light source for close range illumination of objects up to two meters from the goggles.

h. **GROUND USE.** The AN/PVS-5, -5A, -5B, and -5C goggles can be used with or without the Combat Vehicle Crewman's (CVC) helmet.

1-9 EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES - Continued

i. **GROUND USE.** The AN/PVS-5, -5A, -5B, and -5C NVG are comprised of two major assemblies: the face mask and the binocular assembly.

j. **GROUND USE.** The AN/PVS-5C full face mask contains a high-light cutoff circuit to protect the image intensifier.

1-10 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The location of major components some of which are identified at Figure 1-2.

a. Monocular Assembly. Amplifies the available light. Consists of an eyepiece lens assembly, image intensifier, and objective lens.

b. Objective Lens Caps. Protects the objective lens from bright light, dust, dirt, and scratching.

c. Objective Lens. Focuses the light on the image intensifier.

NOTE

The binocular assembly must contain the same type of objective lenses. That means both must bean AN/PVS-5, or -5A, or -5B, or -5C.

Objective Focus Knob. Used to focus the objective lens from 10-inches to infinity.

Diopter Adjustment Ring. Adjusts for indivdual eye acuity within the compensation range of +2 to -4 diopters.

f. Lever Clamp (Wing Nut). Allows the operator to adjust the binoculars for the desired interpupillary distance (eyespan). Tighten finger tight only.

g. Clamp Knobs. Adjusts for eye tilt and eye relief. Tighten finger tight only.

h. Eyepiece Lens. Focuses image for the operator to view. The AN/PVS-5 eyepieces are not compatible with the AN/PVS-5A, -5B, and -5C image intensifiers. The eyepieces are the same for the AN/PVS-5A, -5B, and -5C.

i. Eyepiece Lens Caps. Protects the eyepiece lens.

j. Demisting Shields (not illustrated). Used on the eyepieces to prevent fogging.

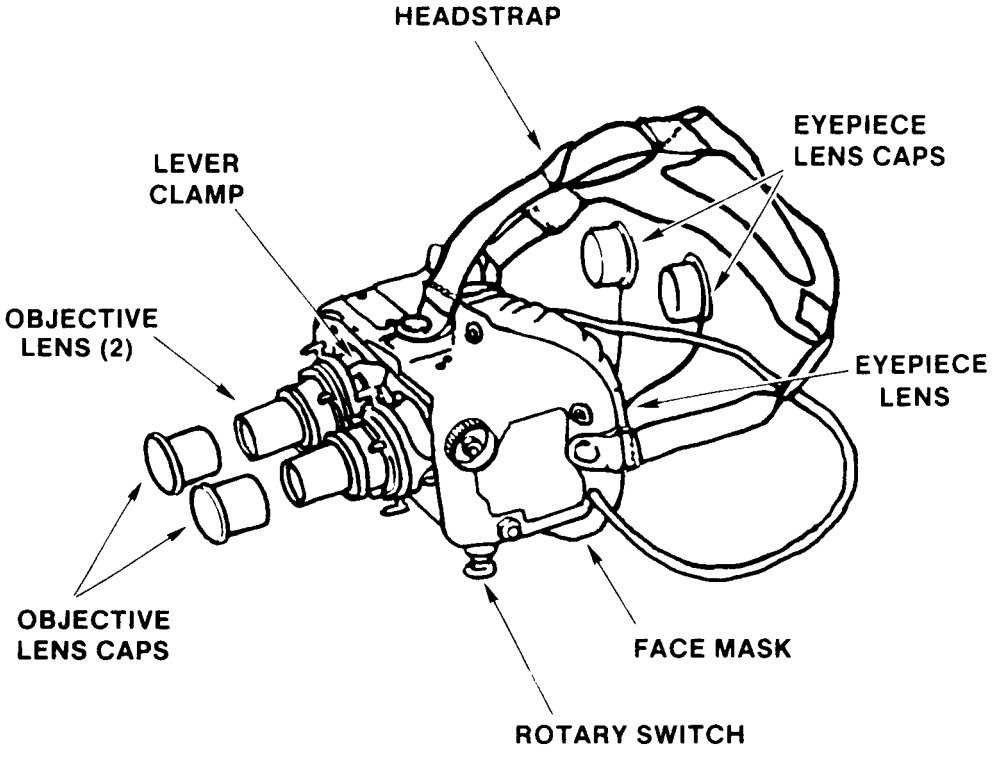
k. Sacrificial Filter Caps (not illustrated). Used on the objective lenses of the AN/PVS-5B and -5C in sandy and dusty areas.

l. Carrying Case. The carrying case is made of molded plastic with polyethylene foam inserts for protection of the goggles when not in use.

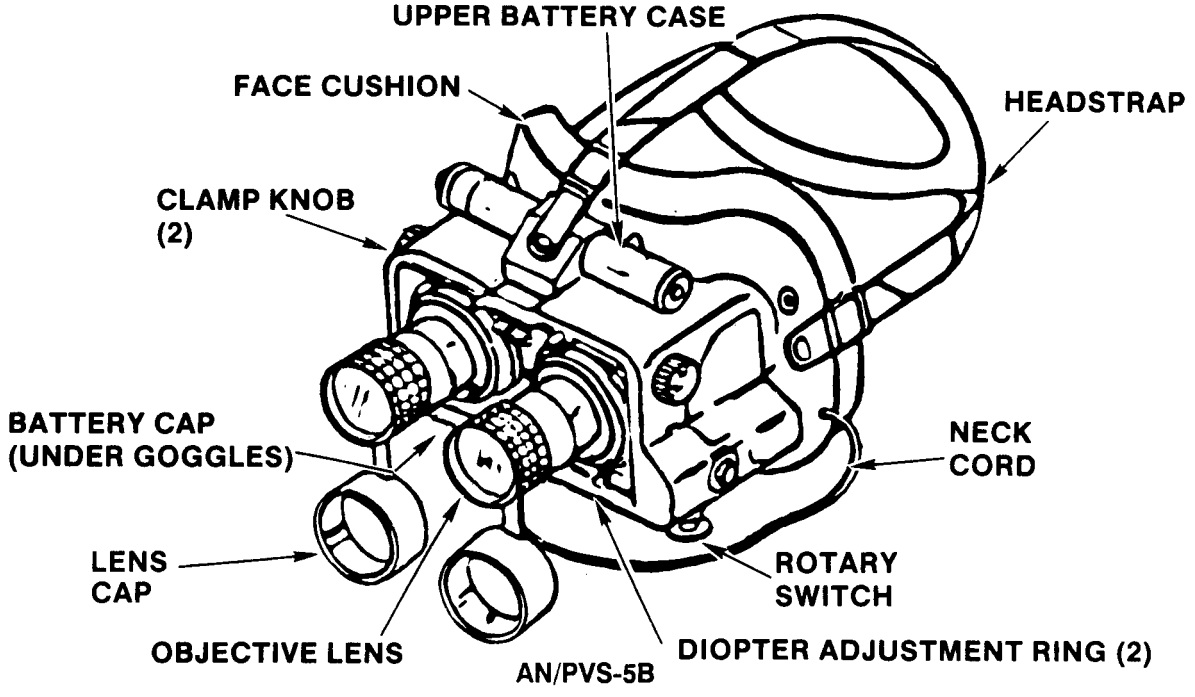
m. Shipping-and-Storage Case. This case is a hard case (either of aluminum alloy or polyethylene) to ship or store the NVG and carrying case.

n. AVIATION USE. GM-6(V)1 Viewer Mount Assembly or GM-6(V)2 Offset Viewer Mount Assembly. This component replaces the face mask and houses the binocular assembly of the AN/PVS-5A, -5B, or -5C NVG.

1-10 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued



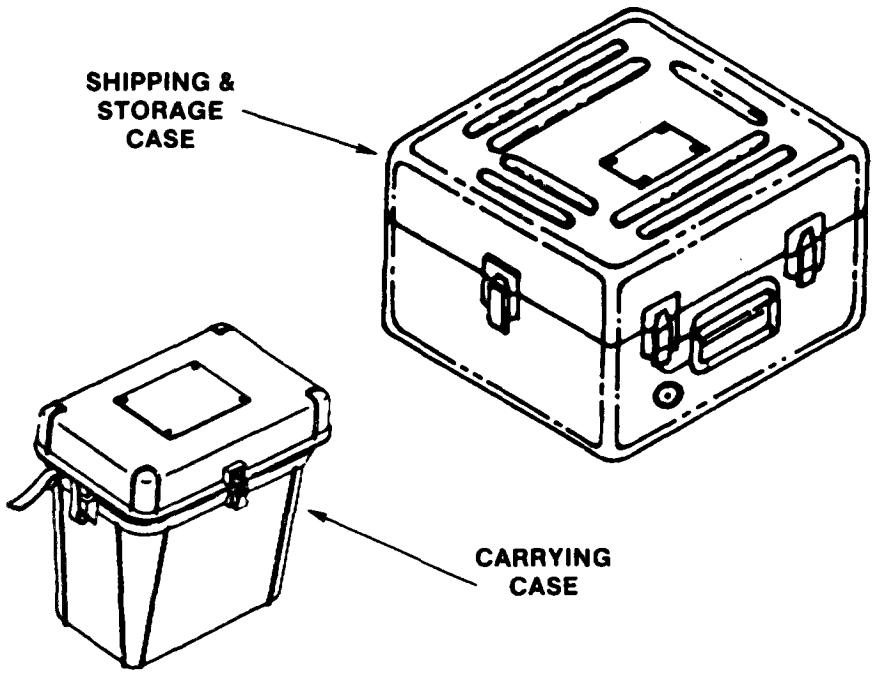
AN/PVS-5 AND -5A



AN/PVS-5B

Figure 1-2. Night Vision Goggles Major Components (Sheet 1 of 2).

1-10 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued



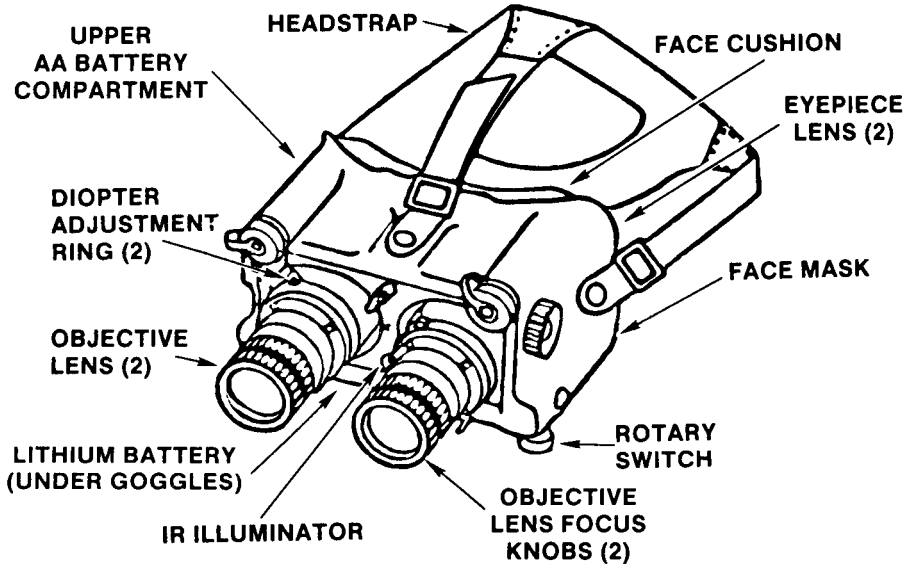
Carrying Case and Shipping-and-Storage-Case.

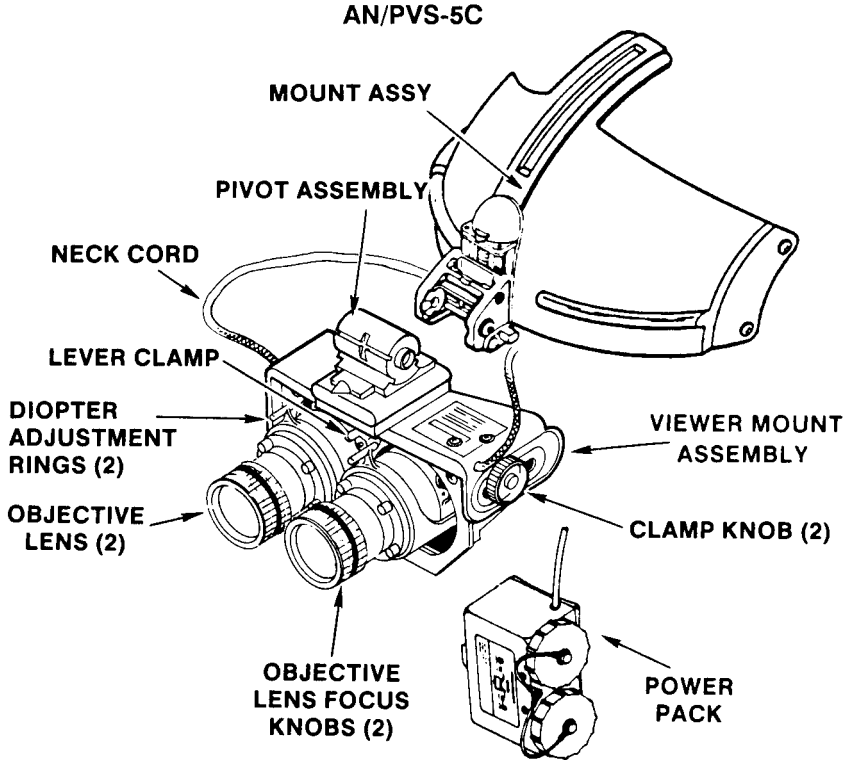
Figure 1-2. **Night Vision Goggles Major Components (Sheet 3 of 3)**

o. AVIATION USE. GM-6(V)1 Mount Assembly or GM-6(V)2 Offset Mount Assembly. The GM-6(V)1 mount assembly replaces the standard visor guard on the SPH-4 helmet. The GM-6(V)2 offset mount assembly attaches to the helmet sight assembly on the SPH-4 helmets. These contain a vertical adjustment for moving the binocular up or down and also a lock release button that allows the binocular to be stowed in the up position away from the eyes. Also permits the binocular to be pulled off or to break away during a crash load of 10g or more. These assemblies include a low-light battery voltage indicator.

p. **AVIATION USE.** Battery Power Pack. The power pack is used to power the GM-8(V)1 and GM-6(V)2 goggles. The power pack has two battery compartments. Each compartment in the power pack will hold one (BA-5567/U) lithium battery or AA battery cartridges with two (BA-3058/U) AA batteries. Two AA batteries are placed in the AA battery cartridges which are inserted in the same battery compartments that holds the lithium battery (fig. 1-3).

1-10 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued





GM-6(V)-1 with AN/PVS-5C Binocular Assembly (GM-6(V)2 is similar)

Figure 1-2. Night Vision Goggles Major Components (Sheet 2 of 3).

1-10 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued

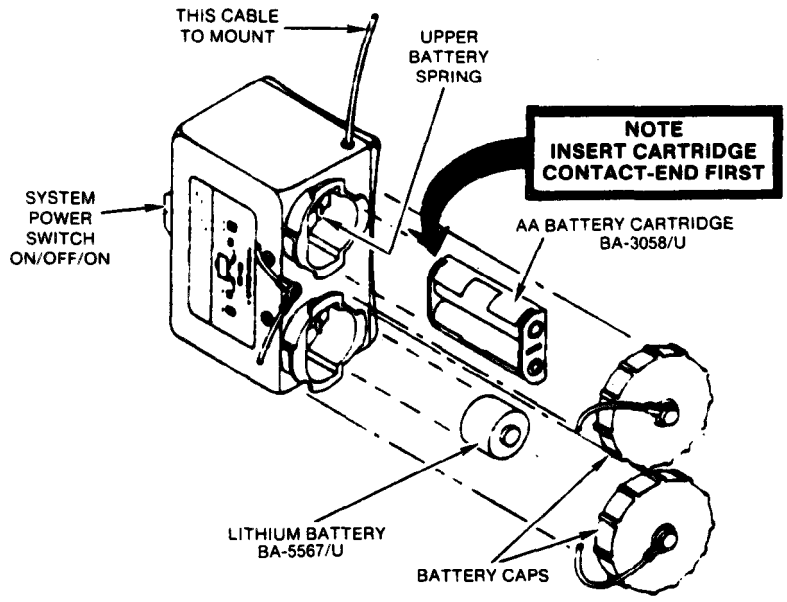


Figure 1-3. Battery Power Pack

q. **GROUND USE.** Battery Compartment. The battery compartment is where the battery is placed to power the NVG. The AN/PVS-5B has two battery compartments and the AN/PVS-5C has three battery compartments. The AN/PVS-5 and -5A goggles have only one battery compartment.

r. **GROUND USE.** IR Illuminator. Provides light for viewing approximately 2-meters in low ambient light conditions.

s. **GROUND USE.** Rotary Switch Knob. The rotary switch knob activates the goggles. It has three positions ON/OFF/IR.

t. GROUND USE. Face Mask Assembly. The face mask houses all the components for AN/PVS-5, -5A, -5B, and -5C goggles.

u. **GROUND USE.** Helmet Vee-Strap Assembly. The vee-strap is fabricated. It is used to secure the AN/PVS-5, -5A, -5B, or -5C goggles to the Combat Vehicle Crewman's (CVC) helmet.

v. **GROUND USE.** Headstrap for AN/PVS-5, -5A, -5B, and -5C with Full Face Mask. The headstrap holds the NVG on the head.

w. **GROUND USE.** Mask Cushion. A pad that acts as an interface between the face mask and the user's face.

1-11 DIFFERENCES BETWEEN MODELS

a. AVIATION USE.

GM-6(V)1 and GM-6(V)2 NVG. The GM-6(V)1 and GM-6(V)2 are designed to serve the needs of the aviation community. The unique feature of the GM-6(V)1 is that a viewer mount assembly or GM-6(V)2 offset viewer mount replaces the face mask. This increases peripheral vision permitting aviators to read instruments more easily. The GM-6(V)1 viewer mount and the GM-(V)2 offset viewer mount can house the binocular assembly of the AN/PVS-5A, -5B, or -5C, but not the -5 binocular assembly. The GM-6(V)1 attaches to the SPH-4 helmet. The GM-6(V)2 attaches to the SPH-4 which has been modified with the helmet sight assembly. The mount assembly and offset mount assembly have a flip-up and break-away feature. The GM-6(V) 1 and GM-6(V)2 utilize the dual battery power pack for power source. The GM-6(V)1 and GM-6(V)2 do not have a rotary switch. The GM-6(V)1 and GM-6(V)2 replace the GX-5, flip-up NVG and the Cut-A-Way NVG.

b. GROUND USE.

(1) AN/PVS-5 and -5A. The AN/PVS-5 and -5A are similar in operation and function. They differ in the mechanical design of the eyepiece assembly, the threaded interface between the eyepiece lens assembly and the image intensifier, and the rotary switch. Therefore, the eyepiece lens assembly and image intensifier are not interchangeable between these two models. The objective lenses are used as matched pairs. The NVG must contain the same type of objective lenses (AN/PVS-5A, or -5B, or -5C) in the binocular assembly. The rotary switch on the AN/PVS-5A incorporates a feature which requires you to pull on the rotary switch and turn to IR illuminator position to turn on the IR lamp, while the AN/PVS-5 turns on without pulling on the switch. Both models use a single 3.0 volt lithium battery BA-5567/U) as the power source. The AN/PVS-5A,-5B, or -5C binocular assembly can be used with the face mask for either of the AN/PVS-5A, -5B, or -5C NVG.

(2) **AN/PVS-5B.** The AN/PVS-5B is similar in operation and function to the AN/PVS-5 and -5A except the -5B has an additional battery compartment that allows the use of two 1.5 volt alkaline AA batteries (BA-3058/U) as an alternate power source. The objective lenses are used as matched pairs. The NVG must contain the same type of objective lenses (AN/PVS-5A, or -5B, or -5C) in the binocular assembly. Unlike the AN/PVS-5 and -5A, the objective lens caps are attached to the unit. The AN/PVS-5A,-5B, or -5C binocular assembly can be used with the face mask for either the of AN/PVS-5A, -5B, or -5C NVG.

(3) **AN/PVS-5C.** The AN/PVS-5C is similar to the AN/PVS-5B except that the AN/PVS-5C has slightly larger objective lenses. The objective lenses are interchangeable and must be replaced by the same type in a pair of NVG. The NVG must contain the same type of objective lenses (AN/PVS-5A, or -5B, or -5C) in the binocular assembly. The AN/PVS-5C also has a high-light cutoff feature integrated in the face mask. The high-light cutoff feature causes the goggles to shut down when exposed to room level light or greater for approximately one minute. Goggles with this cut-off feature are not designed for piloting aircraft. The AN/PVS-5A, -5B, or -5C binocular assembly can be used with the face mask for the AN/PVS-5A, -5B, or -5C. assembly NVG.

1-12 EQUIPMENT DATA

The following table provides information pertaining to the operational, electrical, mechanical, optical and weight characteristics of the NVG.

Table 1-2. Equipment Data

ITEM	LIMITS
Operational Adjustments Limits	
Vertical	0.768 in. (19.5mm) Total Travel, Minimum
Fore and Aft	0.630 in. (16mm) Total Travel Minimum
Eye Span	0.827 in. (21 mm) Total Travel (2.835 in. (72mm) to 2.047 in. (52mm))
Tilt	25° Total
Eyepiece Focus	+2 to -4 Diopters, Minimum
Objective Focus	10 in. (254mm) or 4.724 in. (12cm) to infinity
Electrical Data	
Voltage Requirements	3.0 vdc Nominal
Current Drawn by Binocular	400 mA Peak, 100 mA Steady State
Battery Lithium (BA-5567/U)	
Voltage	3.0 vdc
Cell life (one lithium battery)	
100°F	13-16 hours
70°F	13-16 hours
O°F	9-10 hours
-20°F	5-8 hours
Battery, Two AA Alkaline (BA-3058/U)	
Voltage	1.5 vdc (two batteries required for 3.0 vdc)
Cell life (two batteries)	
100°F	10-22 hours
70°F	10-22 hours
O°F	5-10 hours
-20°F	1-3 hours

Section III. Principles of Operation

1-13 MECHANICAL FUNCTIONS

The purpose of the mechanical function of the NVG is to fit the differences in the physical features of individual users. This function is performed by adjustments for eyespan (i.e., distance between the eyes), diopter setting, focus, and eye relief. The mechanical controls are identified in Figure 1-4.

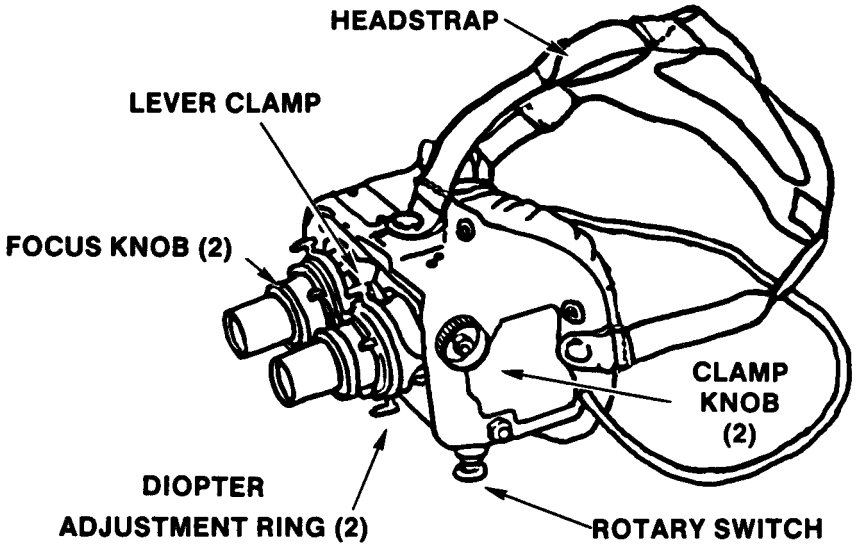
a. Eyespan Adjustment. Two monocular assemblies are mounted so they can be moved laterally to coincide with individual user eyespan. Lateral movement is performed by loosening a lever clamp (wing nut) which releases tension from the guide assembly and permits the monocular to slide on flanges of the tube housing. Monocular are moved manually to the desired eyespan and then locked in place.

b. Diopter Setting. Each eyepiece lens is focused by rotating the diopter adjustment ring. The diopter adjustment ring transmits rotation to the eyepiece assembly and causes it to move band in and out as the guide pin follows the groove in the lens and sleeve assemblies. Each eyepiece is adjustable through a range of + 2 to -4 diopters.

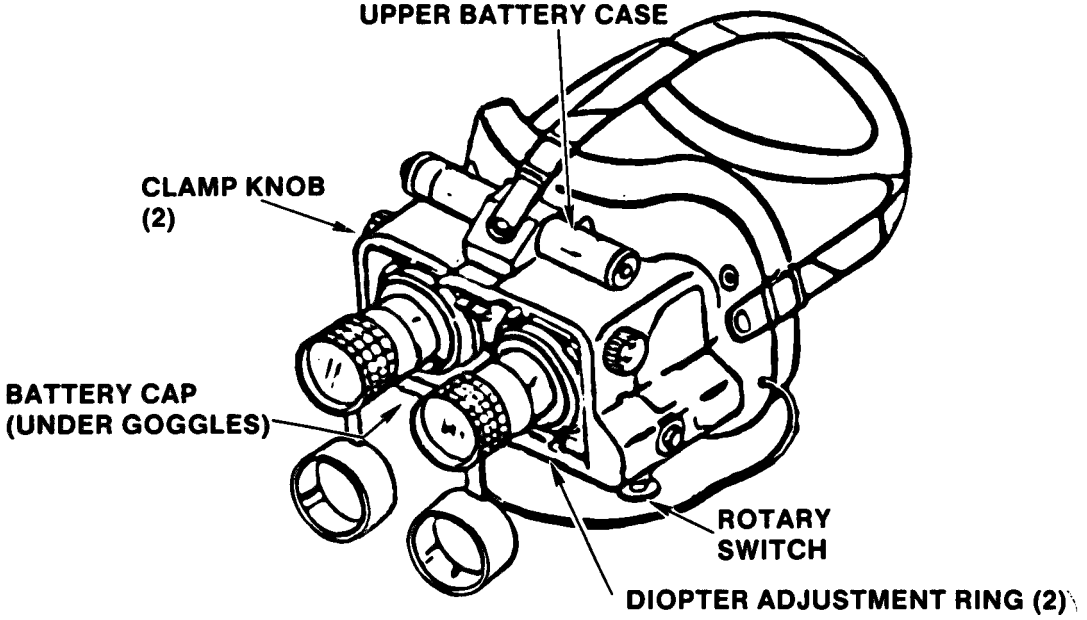
c. Objective Lens Focus. The objective lenses are focused by rotating the objective lens focus knobs. The objective lens is screwed into the mounting collar and the focus knob is screwed onto the lens and held in place by the focus knob retainer. Rotation of the focus knob causes the objective lens to be screwed in or out about one-quarter inch for adjustment of the viewed image.

d. Eye Relief. The typical eye relief adjustment for all models allows the binocular assembly to be moved within the frame for eye relief and comfort. Clamp knobs located on either side of the face mask assembly, can be loosened by turning clamp knobs counterclockwise. Allowing the frame to be moved manually to reposition the binocular assembly with reference to the user's eyes. The binocular assembly is locked in place by tightening the clamp knobs clockwise.

1-13 MECHANICAL FUNCTIONS - Continued



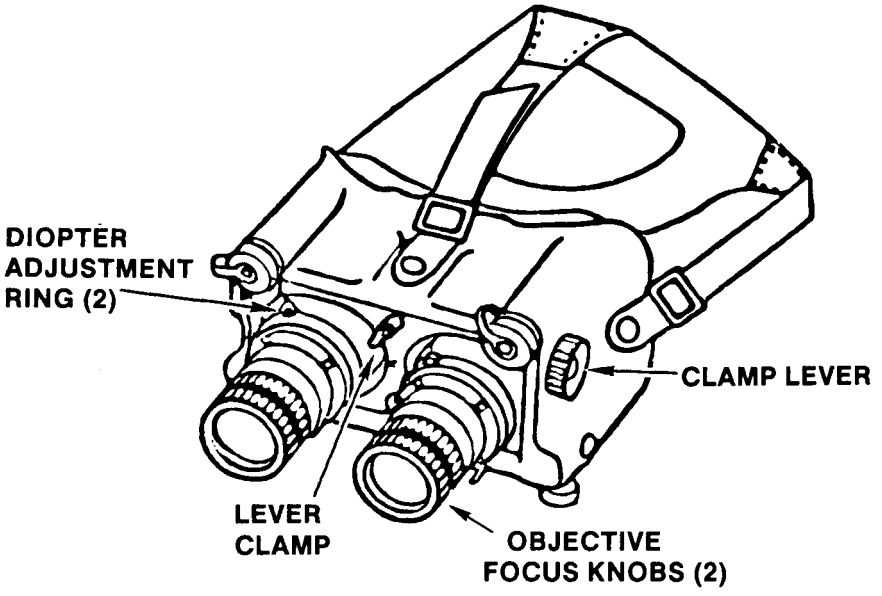
AN/PVS-5 AND -5A



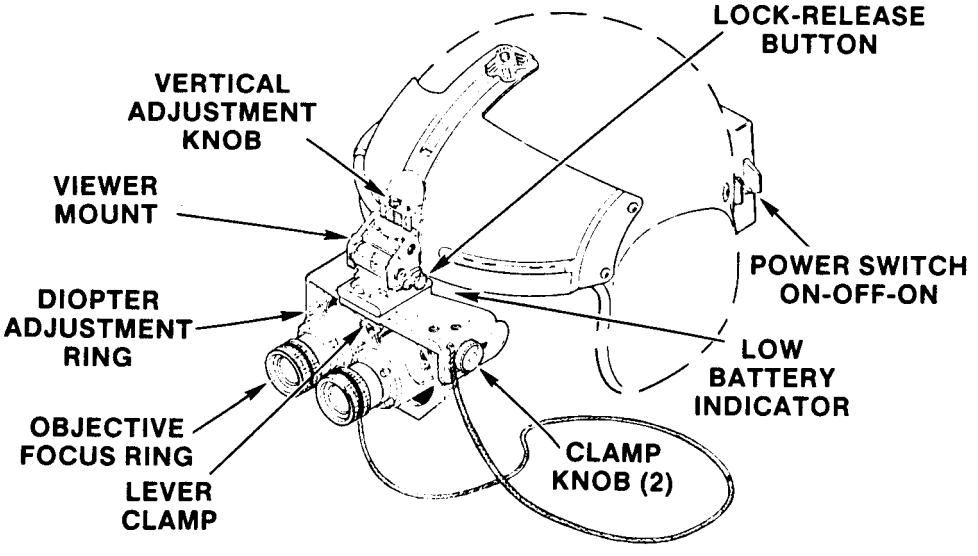
AN/PVS-5B

Figure 1-4. Mechanical Controls for the NVG (Sheet 1 of 2).

1-13 MECHANICAL FUNCTIONS - Continued



AN/PVS-5C



GM-6(V)1 with the AN/PVS-5C Binocular Assembly (GM-6(V)2 is similar)

Figure 1-4. Mechanical Controls for the NVG (Sheet 2 of 2).

1-14 OPTICAL FUNCTIONS

a. Purpose. The purpose of the optical function of the night vision goggles is to colLect available light from the night sky and to transmit an intensified image to the eyepiece Lens in the proper view.

b. Functional Diagram Description. The NVG are an electro-optical system consisting of two monocular with identical opticai features and functions (fig. 1-5). The goggles are of unity (1:1) magnification. Each monocular contains an objective lens, an image intensifier, and an eyepiece lens. The objective lens receives available light as luminous energy and transmits it to the photocathode of the image intensifier. It is amplified, projected on the phosphor screen of the monocular, and received by the eyepiece lens as an intensified image. Optical inversion of light passing through the objective lens is reversed by a fiber-optic inverter at the phosphor screen end of the tube so that the image received by the eyepiece is in its proper perspective.

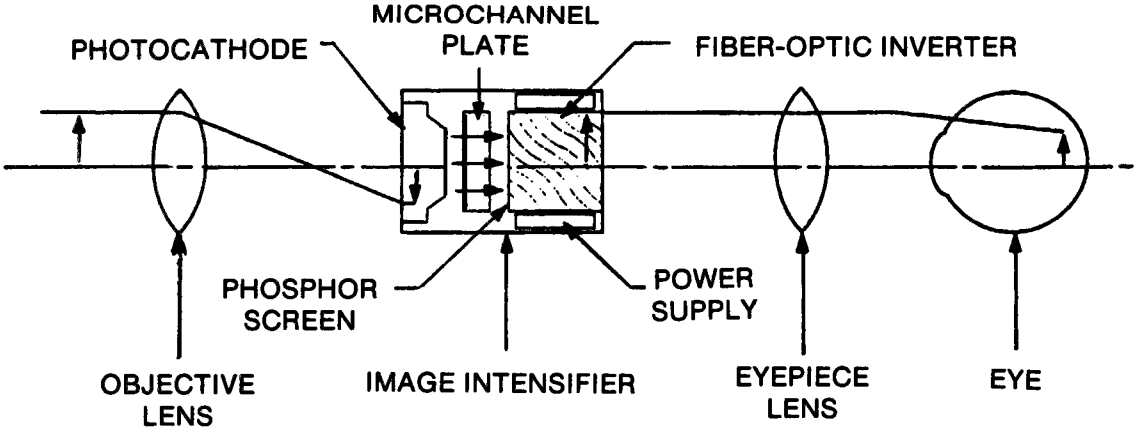


Figure 1-5. Optical Functional Diagram

1-15 ELECTRONIC CIRCUIT FUNCTIONS

a. Purpose. The electronic circuit provides regulated direct current voltages to the elements of the image intensifier as required, and it provides for an IR illumination (Ground Use only) capability for closeup work.

b. Electrical operation.

(1) **GROUND USE.** The AN/PVS-5 and -5A electronic circuit is powered by a replaceable 3.O-volt BA-5567/U lithium battery (fig. 1-6). The AN/PVS-5B electronic circuit is powered by either two 1.5-volt BA-3058/U AA batteries in the upper battery compartments or one 3.O-volt BA-5567/U lithium battery in the lower battery compartment (fig. 1-6).

1-15 ELECTRONIC CIRCUIT FUNCTIONS - Continued

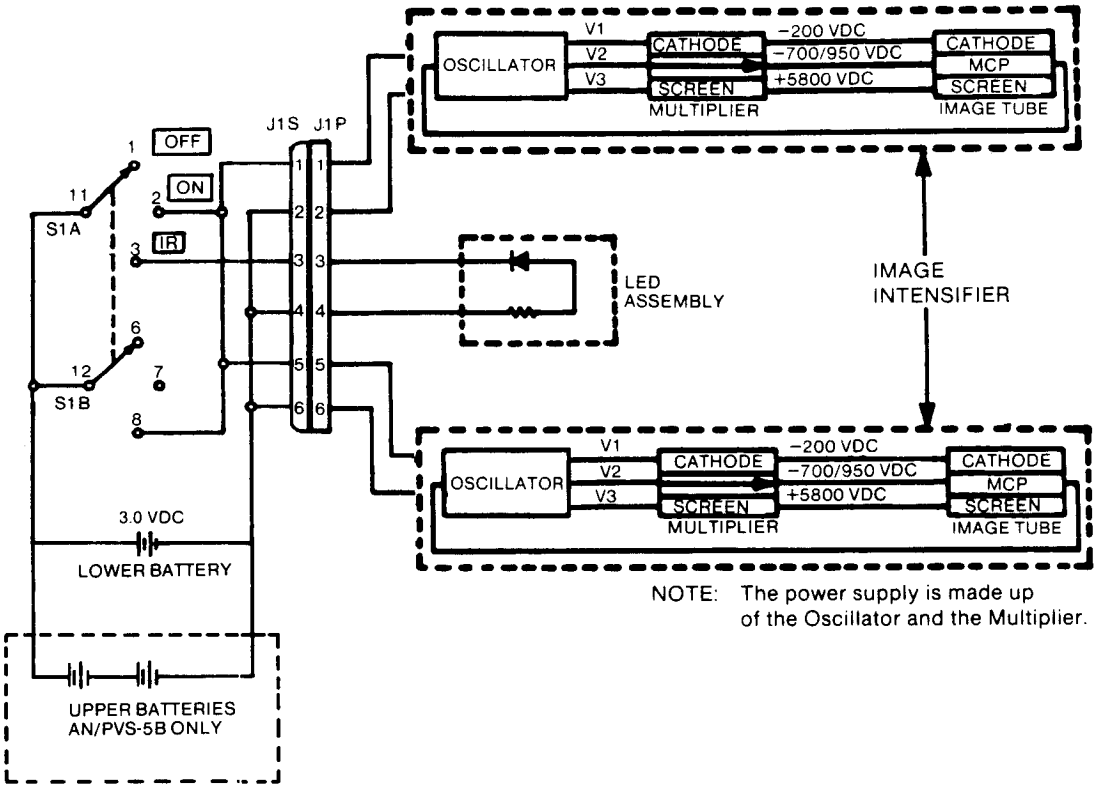


Figure 1-6. Electrical Circuit Block Diagram for the AN/PVS-5, -5A, and -5B NVG.

(2) GROUND USE. The AN/PVS-5C is also powered by one 3.0 volt BA-5567/U lithium battery in the lower battery compartment or two 1.5-volt BA-3058/U AA batteries in the two upper battery compartments. When the system is energized, the high-light cutoff circuit will be actuated. If the ambient light conditions increase to a level equal to or greater than 1-foot lambert and 4-foot lamberts for approximately 70 seconds, the circuit will shut off power to the system. Power will not be restored until the rotary switch has been turned to OFF and then back to ON. The high-light cutoff circuit is integrated into the face mask assembly (fig. 1-7).

CAUTION

AN/PVS-5B and -5C use only one type of battery at a time because it shortens the life of the batteries. Putting both battery types in your goggles draws off power and drops the efficiency.

1-15 ELECTRONIC CIRCUIT FUNCTIONS - Continued

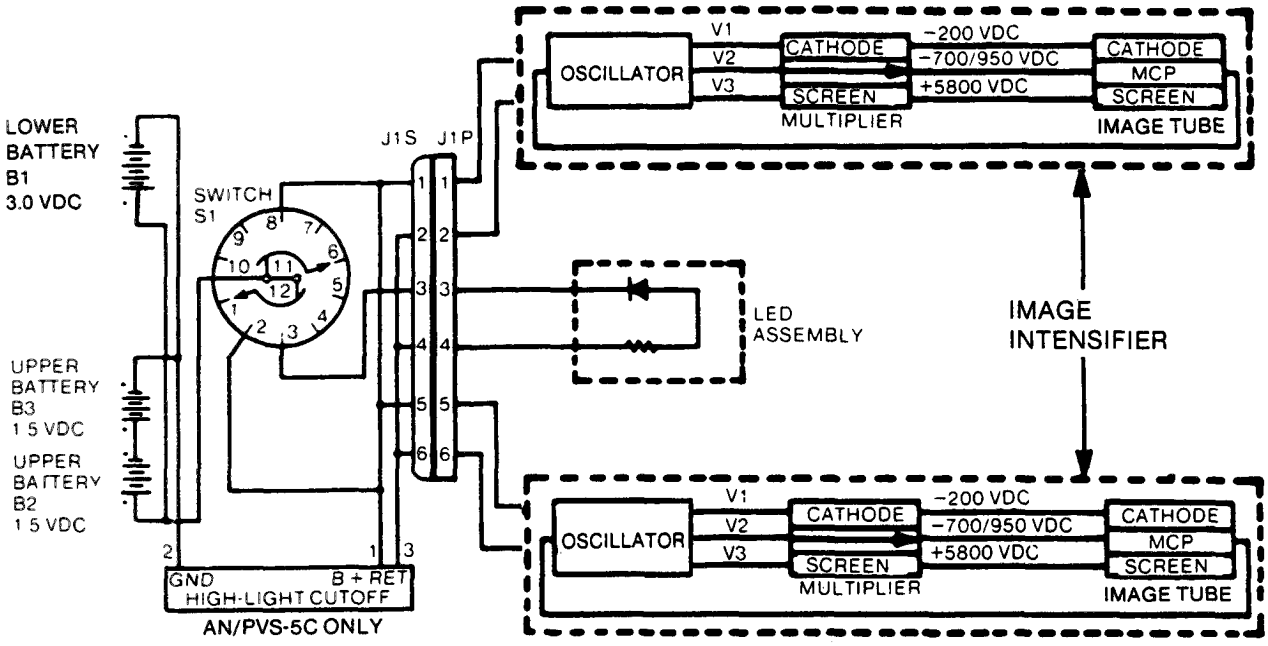


Figure 1-7. Electrical Circuit Block Diagram for AN/PVS-5C. (GM-6(V)1 and GM-6(V)2 is similar).

(3) GROUND USE. AN/PVS-5, -5A, -5B, and **-5C** are powered through the rotary switch knob indicated by the OFF/ON/IR positions. With the switch knob in the OFF position, the circuit is not energized. With the switch in the ON position, power is applied through electrical receptacle connector (J I S) and the electrical plug connector (J1 P) to each image intensifier. With the switch knob in the IR position, battery power is applied directly to the light emitting diode (LED) assembly (also referred to as the IR transmitter) to provide a capability for close in work.

(4) **AVIATION USE.** The GM-6(V)1 and GM-6(V)2 are powered by a power pack. The power pack is powered by BA-5567/ U lithium batteries or BA-3058/U AA alkaline batteries (fig. 1 -8).

(a). GM-6(V)1 and GM-6(V)2 are powered by batteries to the components through the power packs position, ON/OFF/ON, switch as follows:

Primary ON Position	Power is drawn from the primary battery compartment to energize the binocular. This power is drawn only from the compartment to which the switch points; power is never drawn from both compartments simultaneously. When the voltage drops to 2.4 vdc, a low-battery indicator light at the base of the visor mount assembly comes on.

1-15 ELECTRONIC CIRCUIT FUNCTIONS - Continued

OFF Position

With the switch in the OFF position, the circuit is not energized from either battery compartment.

Alternate ON Position

Power is drawn from the alternate battery compartment to energize the binocular. This power is drawn only from the compartment to which the switch points; power is never drawn from both compartments simultaneously. When the voltage drops to 2.4 vdc, a low battery indicator light at the base of the visor mount assembly come on.

With the switch in either ON position, power from the battery power pack is applied through the electrical receptacle connector and the electrical plug connector to each image intensifier power supply (fig. 1-8).

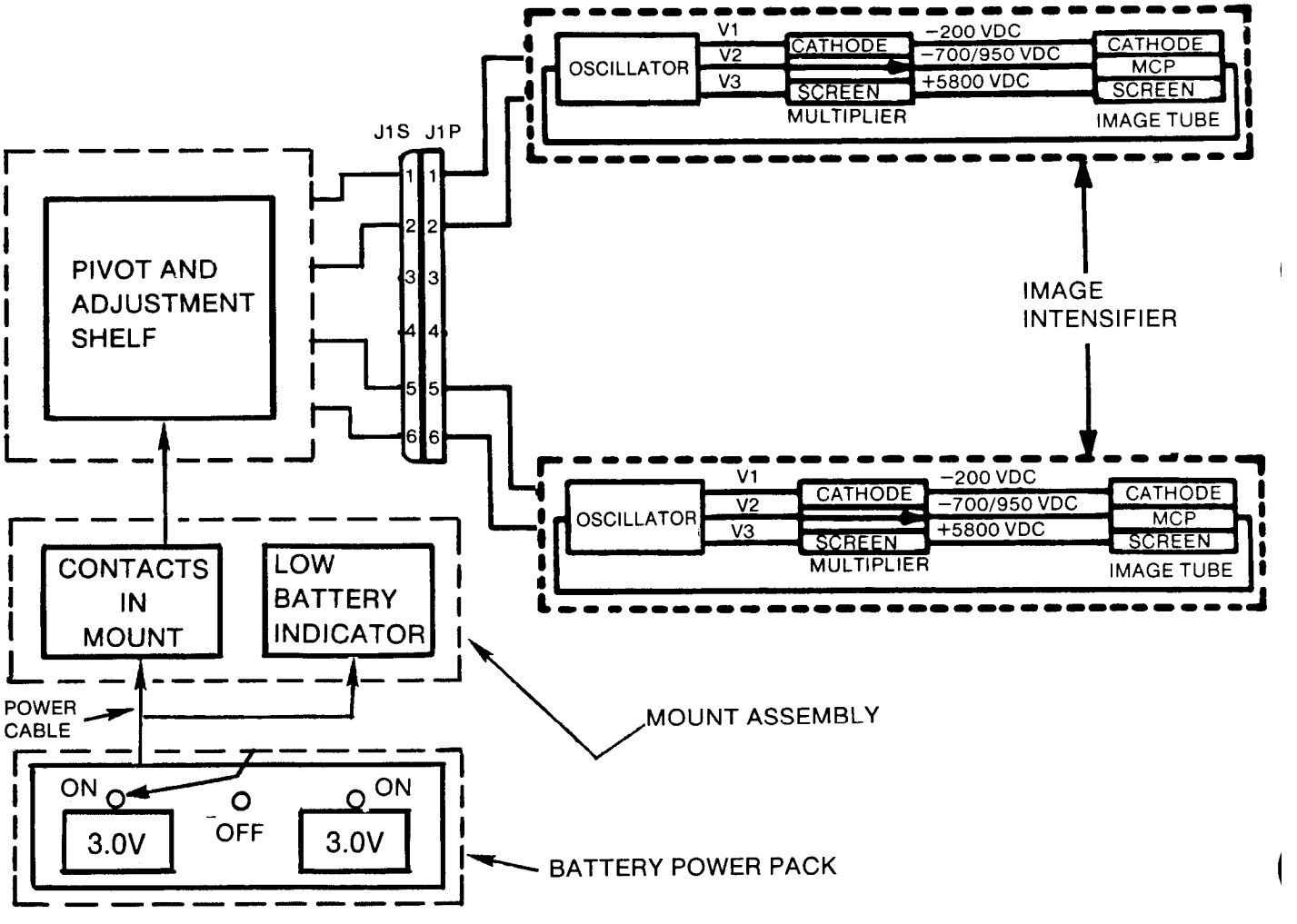


Figure 1-8. Electrical Circuit Block Diagram for the GM-6(V)1 and GM-6(V)2.

1-15 ELECTRONIC CIRCUIT FUNCTIONS - Continued

(b). Low Battery Indicator for the GM-6(V)1) and GM-6(V)2. The power pack accepts both BA-5567/U lithium batteries or 13A-3058/U AA batteries. Power for the low battery indicator is drawn from either compartment, whichever has the highest voltage. The indicator is located on the underside of both the mount assembly and the offset mount assembly. Some of the power packs make the low-battety indicator light function as a blinking red light. This is a normal function, nothing is wrong with the system (fig 1 -9).

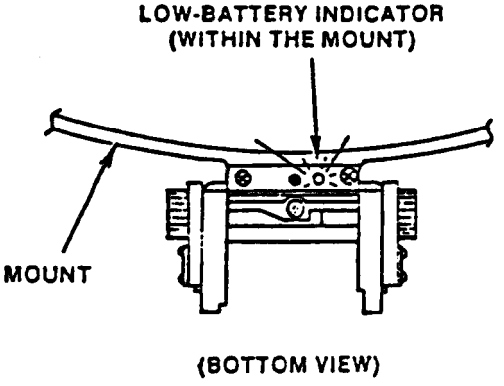


Figure 1-9. Low Battery Indicator for GM-6(V)1 and GM-6(V)2.

1-16 STAGE FUNCTIONING

a. Image Intensifier Configuration. The image intensifier is contained within the monocular housing (see electronic circuit block diagrams (fig. 1-6 thru 1-8)). High voltage power supplies are formed around the monocular, with the monocular and power supply molded into one unit by use of a potting compound. The image intensifier for the AN/PVS-5 is not interchangeable with the AN/PVS-5A, -5B, or -5C.

b. Functions.

(1) The source of primary power is supplied by a 3.O-volt BA-5567/U lithium battery for AN/PVS-5, and -5A. The AWPVS-5B and -5C are powered by one BA-5567/U lithium battery or two 1.5-volt BA-3058/U M alkaline batteries through the rotary switch and electric connectors to regulators in the oscillator section. The GM-6(V)1 and GM-6(V)2 are similar but the power source is through the battery power pack which is mounted on the helmet.

(2) One regulator supplies the input voLtage to an oscillator, with alternating current output voltages to the cathode and screen multiplier circuits. The multiplier circuits rectify the voltages to produce DC voltages V1 (-200 vdc with respect to V2) and V3 (+5800 vdc with respect to ground).

(3) A second regulator supplies the input voltage to an oscillator that produces DC output voltaage V2 to the microchannel plate (MCP). The V2 voltage is variable from -700 to -950 vdc regulated with respect to ground.

(4) Luminous energy received by the photocathode element causes current to flow from the MCP back to the oscillator section, through the multiplier circuits, and to the screen as an intensified image.

CHAPTER 2
AVIATION UNIT MAINTENANCE (AVUM) INSTRUCTIONS

OVERVIEW

This chapter contains maintenance procedures that are the responsibility of AVUM. Operation instructions and operator maintenance can be found in TM 11-5855-238-10.

The maintenance actions depicted in this section are for GM-6(V)1 and GM-6(V)2 NVG. The GM-6(V)1 and GM-6(V)2 NVG can house any of the binocular assemblies for the following models: AN/PVS-5A, -5B, or S-5C.

Section I. Repair Parts, Special Tools, TMDE, and Support Equipment

2-1 COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

2-2 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix B, paragraphs B-6 thru B-11, for a description of the AVIATION USE section of the Maintenance Allocation Chart (MAC). Also, refer to Appendix C, Repair Parts and Special Tools List (RPSTL) for information on Special Tools, Test, Measurement, and Diagnostic Equipment (TMDE), and Support Equipment required at AVUM. In addition, instructions for fabricating a black spot test fixture are contained in Appendix E.

2-3 REPAIR PARTS

Repair parts are listed and illustrated in the RPSTL at Appendix C of this manual.

Section II. Service Upon Receipt

2-4 SITE AND SHELTER REQUIREMENTS

The checks and services functions, as prescribed herein, should be accomplished in the electronic repair service area. A standard electronic workbench provides an adequate working area for NVG maintenance requirements. The surface area should be clean and free of chemicals, vapors, dust, and emissions that may damage external parts of the NVG. Normal sheltering from the elements (cold, rain, dust, etc.) is necessary. An air conditioned environment is recommended.

There should be provisions to perform certain service functions and specified tests in a dark room or dark area in which all places where light can enter (e.g., windows, doors, wall and ceiling joints) have been blocked. This blocking can be accomplished using either permanent or temporary shields such as tape or heavy curtains. The room or area should appear dark (without the evidence of light entering the area) to your unaided eye after approximately 10 minutes of dark adaptation. Use a night vision device to identify and isolate the place where light enters.

2-5 SERVICE UPON RECEIPT OF MATERIEL

NOTE

The NVG is a precision electro-optical instrument so handle it carefully.

a. Inspect the equipment for possible damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-751 as applicable.

c. Refer to DA Pam 25-30, Consolidated Index of Army Publications and Blank Forms, to determine whether there are modification work orders (MWO) pertaining to the equipment.

d. Upon receipt of a new NVG system send the system to AVIM for its initial servicing.

2-6 INSTALLATION

Installation instructions for attaching the GM-6(V)1 Visor Mount Assembly and GM-6(V)2 Offset Visor Mount Assembly are contained in TM 10-8415-206-12&P, Operator's and Organizational Maintenance Manual, Including Repair Parts and Special Tools List for Flyer's Protective Helmet, SPH-4.

Section Ill. Preventive Maintenance Checks and Services

2-7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

a. General. Table 2-1 Preventive Maintenance Checkss and Serices (PMCS) provide easy access to the schedule of checks and services for the NVG. Service intervals are periods of time within which the equipment must be checked and serviced to maintain full operation and reduce failures. The basic PMCS checks are the 90 day checks as identified in the PMCS table.

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 the warnings and cautions to prevent serious injury to yourself and others, or to prevent your equipment from being damaged.

c. Explanation of Table Entries.

(1) Sequence Number Column. Numbers in this column are for reference. When completing DA Form 2408-30, NVG Inspection and Maintenance Record, do checks and services for the intervals listed in the sequence described in accordance with DA Pam 738-751.

(2) Interval Column. This column tells you when you must do the procedure in the procedure column. Be sure to complete the appropriate maintenance forms whenever a check, test, or service is performed.

(3) Location, Check/Service Column. This column provides the location and the item to be checked or serviced.

(4) Procedure Column. This column 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 time stated in the interval column.

(5) 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 make 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 failure.

d. Other Table Entries. Be sure to observe all special information and Notes that appear in your table.

2-7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued

Table 2-1. Preventive Maintenance Checks and Services (PMCS) for GM-6(V)1 and GM-6(V)2 NVG.

Seq No.	Interval	Location Item to Check/ Service	Procedure	Not Fully Mission - Capable If:
1	90-day	Maintenance Forms and Records	Open carrying case, inventory items and check DA Form 2408-30 and logbook.	
			90-day Checks is current (goggles and power pack).	Not current
			180-day AVIM services (basic PMCS (90 day checks) on goggles, high/low light resolution check, system current check, infinity focus check, collimation check, purging) is current.	Not current
			Distortion test on each monocular completed.	Not completed
			Grounding condition on DA Form 2408-30 present.	Not corrected
2	90-day	Power Pack	Check for corrosion, damaged contact, spring tension, caps damaged, or tether cable disconnected, frayed, or broken.	contacts corroded or damaged. Tether loose, cable broken, frayed or broken. No spring tension. Cap damaged.
3	90-day	Power Pack Case	Inspect the case for damage or missing components. External scratches, digs, or small dents that do not produce cracks are acceptable. NOTE: If the aircraft power connector cap is missing, the power pack is still operable; it does not affect its function.	Case cracked or missing components.
4	90-day	Power Cable	Inspect the cable for damage; connector for bent or corroded pins; quick release for proper function; protective shield frayed or broken.	Cable or connector damaged.

2-7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued

Table 2-1. Preventive Maintenance Checks and Services (PMCS) for GM-6(V)1 and GM-6(V)2 NVG.

Seq No.	Interval	Location Item to Check/ Service	Procedure	Not Fully Mission - Capable If:
5	90-day	GM-6(V)1 Viewer Mount GM4°&2 Viewer Mount	Inspect dual contacts for dirt, corrosion, or damage. If dirty, clean with isopropyl alocohol and dry. Inspect viewer mount for cracks at neck cord, clamp knob assembly.	Missing or broken contacts. Cracks in the GM-6(V)1 viewer mount or GM-6(V)2 offset viewer mount.
6	90-day	Lenses	Inspect objective lenses and eyepiece lenses for cleanliness, scratches, chips or cracks. If necessary, clean and dry lenses using isopropyl alocohol and cotton-tipped applicators.	Scratches hinder vision on test set, chips, or cracks.
7	90-day	Diopter Adjustment Ring	Rotate diopter adjustment ring to see that they move freely, 1/4 turn.	Diopter adjustment ring binds.
8	90-day	Objective Focus Assembly	Check objective to make sure the whole assembly is not loose, that there is free movement through the full range of travel, that the focus knob can adjust through infinity.	Objective assembly loose, travel binds, or not set correctly.
9	90-day	Clamp Knob	Check for proper operation to allow loosening and tightening to adjust binoculars for eye relief.	Eye relief adjustment cannot be made or fails to remain set.
10	90-day	Monocular Housing Assembly	Inspect exterior surface and purge ports for cracks, damage, or missing purge valve.	Cracked, damaged, or missing purge valve.

2-7 PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Continued

Table 2-1. Preventive Maintenance Checks and Services (PMCS) for GM-6(V)1 and GM-6(V)2 NVG.

Seq No.	Location interval	Item to Check/ Service	Procedure	Not Fully Mission – Capable If:
11	90-day	Viewed Image	Use the TS-3895/UV or TS-3895A/UV test set to check the viewed image. On low-light setting, check for flickering, flashing, emission points, or edge glow. Then perform the low-light resolution checks. On the high-light setting, check for shading, bright spots, flashing, or flickering. Then perform the high-light resolution checks. Use the TS-4348/UV test for resolution checks only.	Presence of any one or more faults that fail the inspection criteria. NVG fails either resolution test.

2-8 INSPECTION CRITERIA FOR IMAGE INTENSIFIER OPERATION

CAUTION

Keep the protective caps on the NVG whenever it is not in use.
Operate the binocular only under darkened conditions.

As directed in the PMCS table, image intensifier's operation must be checked periodically. This section provides information for the NVG maintenance personnel concerning what to look for, how to look for it, and how to determine if the NVG needs to be repaired. All not fully mission capable or nonflyable conditions shall be recorded on the appropriate maintenance forms. While formal determination of a defective image intensifier is made by AVIM personnel, the crew member is the ultimate person responsible for determining whether the image intensifier operation interferes with his ability to perform his mission, the crew member must record the problem on the appropriate maintenance forms per DA Pam 738-751 and return NVG to the maintainer.

a. Shading. Each monocular should present a perfect circle. If shading is present, you will not see a fully circular image (fig. 2-1). Shading always begins on the edge and moves inward. If shading is present, the image intensifier must be replaced by AVIM.

NOTE

Make sure the shading is not the result of improper tilt, eyespan adjustments, or vertical adjustment.

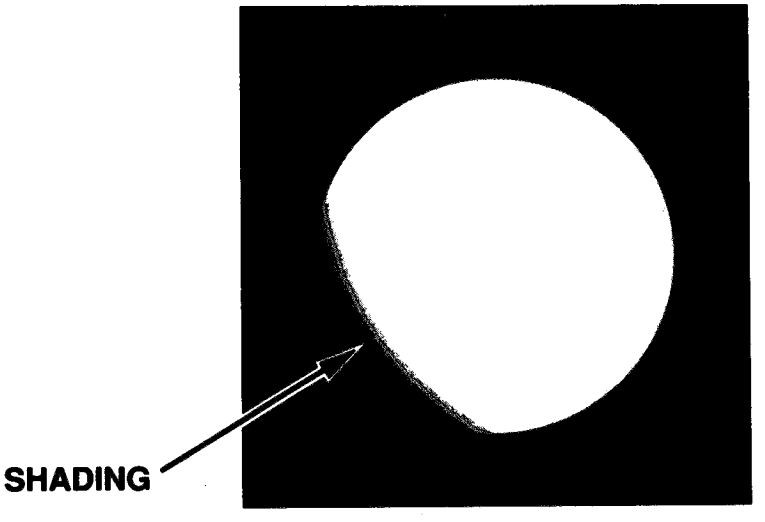


Figure 2-1. Shading.

2-8 INSPECTION CRITERIA FOR IMAGE INTENSIFIER OPERATION - Continued

b. Edge Glow. Edge glow is a bright area (sometimes sparkling) in the outer portion of the viewing area (fig. 2-2). To check for edge glow, remove the binocular from the test ports (keeping the goggle connector attached) and block out all light by cupping a hand over the lens. If the image intensifier is displaying edge glow, the bright area will still show up. If edge glow is present, the image intensifier must be replaced by AVIM.

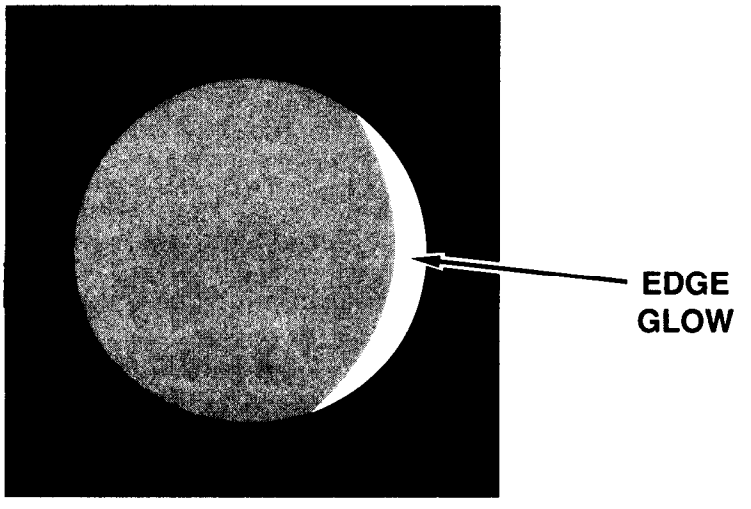


Figure 2-2. Edge Glow.

c. Bright Spots. These are defects in the image area. A bright spot is a small, nonuniform, bright area that may flicker or appear constant (fig. 2-3). Not all bright spots make an image intensifier rejectable. Remove the binocular from the test ports (keeping the goggle connector attached if using the TS-3895/UV or TS-38951VUV) and cup your hand over the lens to block out all light. Keep your eye open. If the bright spot remains, it is an emission point; refer to subparagraph d Emission Points, for evaluation. If the spot disappears, place the goggles onto the TS-3895/UV or TS-3895A/UV 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, AVIM must evaluate the image intensifier.

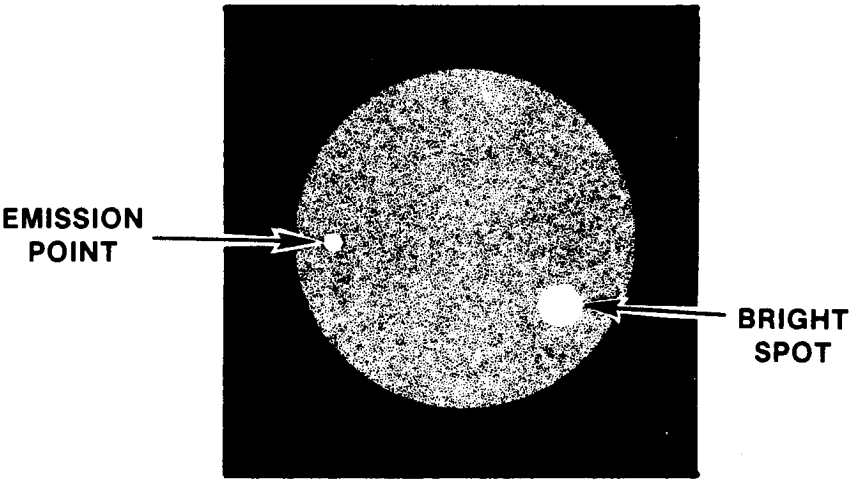


Figure 2-3. Bright Spots and Emission Points.

2-8 INSPECTION CRITERIA FOR IMAGE INTENSIFIER OPERATION - Continued

d. Emission Points. A steady or fluctuating pinpoint of bright light in the image area that does not go away when all light is blocked from the objective lens of the monocular (fig. 2-3). 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 *Bright Spots* above), place the goggles onto the TS-3895AJV or TS-3895A/UV 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, AVIM 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. This can occur in either one or both monocular. If there is more than one flicker, check for loose wires. The goggles must be repaired at AVIM.

f. Black Spots. These are blemishes in the image intensifier or dirt or debris between the lenses. Black spots are acceptable as long as they do not interfere with viewing the image. No action is required if this condition is present unless the spots or streaks are deemed excessive by the user and the appropriate maintenance forms and records are completed by the user in accordance with DA Pam 738-751. Detailed procedures evaluating black spots are contained in paragraph 2-9.

g. Fixed-Pattern Noise or Honeycomb. These are usually cosmetic defects characterized by a faint hexagonal pattern throughout the viewing area that most often occurs at high-light levels or when viewing very bright lights (fig. 2-4). 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 target at high-light. If it still remains when viewing in low-light level, AVIM must evaluate the image intensifier.

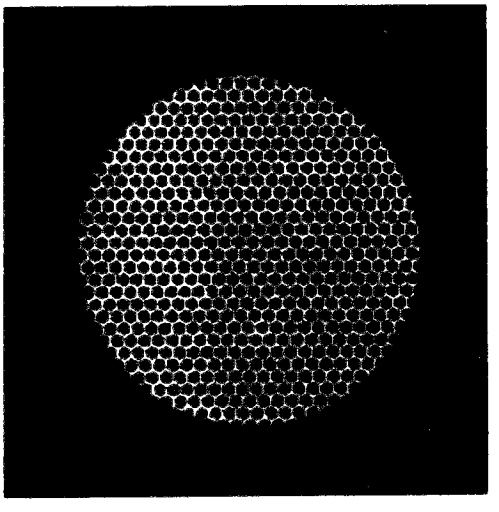


Figure 2-4. Fixed-Pattern Noise or Honeycomb.

2-8 INSPECTION CRITERIA FOR 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 (fig. 2-5). Under the worst case condition, these lines will form hexagonal or square-wave shaped lines. These lines are caused by defective fibers that do not transmit light occurring at the boundaries of fiber bundles in the output optic of the image intensifier. No action is required if this condition is present unless the chicken wire is deemed excessive by the user and the appropriate maintenance forms and records are completed in accordance with DA Pam 738-75?. In which case, AVIM must evaluate the system for further actions.

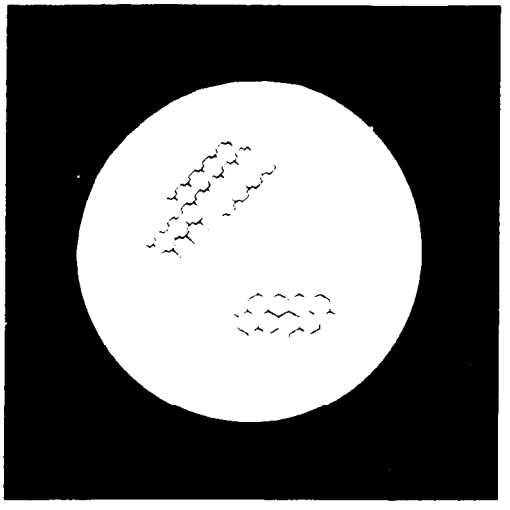


Figure 2-5. Chicken Wire.

i. Image Disparity. This condition exists when there is a difference in performance between the two image intensifiers within the same NVG. This is usually noted by one image appearing brighter than the other. This condition is acceptable unless the difference is significant enough to interfere with the operator's ability to perform the mission. No action is required if this condition is present unless it interferes with viewing the image and interferes with the ability to perform the mission. In which case, AVIM must evaluate for further action.

j. Image Distortion. This problem is more easily detected in high-light conditions. It is evidenced by vertical objects, such as trees or poles appearing to wave or bend when you move your head (wearing NVG) vertically or horizontally. Ground surfaces in the direction of hover may appear to swell or sink. Distortion does not change during the life of an image intensifier. Each image intensifier has been screened for distortion before the first use; therefore, no action is required if this condition is present unless it interferes with viewing the image and interferes with the ability to perform the mission. In which case, AVIM must replace the image intensifier. Detailed procedures for evaluating distortion in goggles, or whenever an image intensifier is replaced, are contained in paragraph 2-10.

2-9 BLACK SPOT CHECK

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 verii the location, size, and number of spots. This test allows the maintainer to evaluate possible out-of-specification black spots, or opaque spots in the image area against the specifications for the image intensifier.

INITIAL SETUP

Test Facility

Dark room

Tools

Measuring tape
3-volt incandescent flashlight or smaller
Flashlight filters #15 or # 20

Equipment

Black spot target (Appx E)
Tripod or fabricated Black Spot Target Test Fixure (Appx E)
Light source: IR Transmitter or LED on AN/PVS-5A, -5B, -5C, or AN/PVS-7A, -7B or Aviation Use, Visor mount assembly or offset mount assembly (without the helmet) and power pack with batteries
Ground Use, AN/PVS-5, -5A, -5B or -5C with batteries

Materials/Parts

Cotton-tipped applicators
Isopropyl alcohol
Dispenser, alcohol
Data sheet

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. However, if you have just been exposed to bright sun-light, dark adaptation will take longer.
- Review the following test procedure before entering the darkened area.
- You will need a flashlight with an NVG compatible filter to read this procedure while in the darkened area.

2-9 BLACK SPOT CHECK - Continued

1. Setup.

a. With lights on, set up your dark room as shown in Figures 2-6 or 2-7.

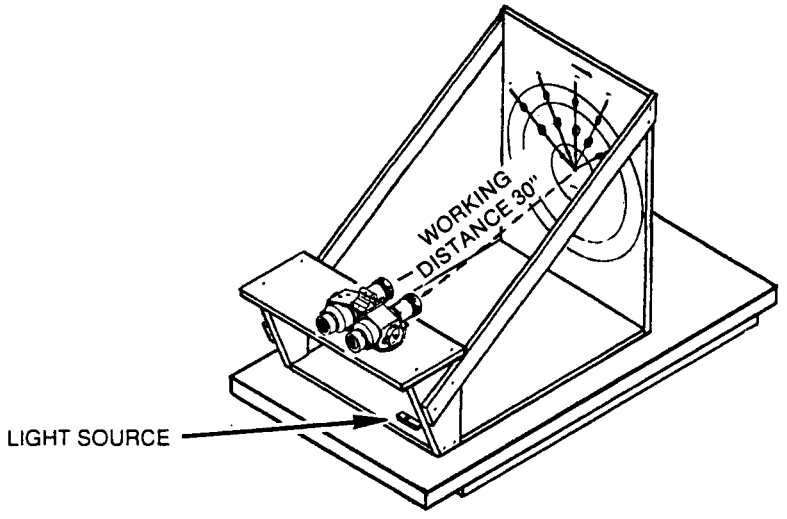


Figure 2-6. Dark Room Setup with GM-6(V)1 Shown on Test Fixture.

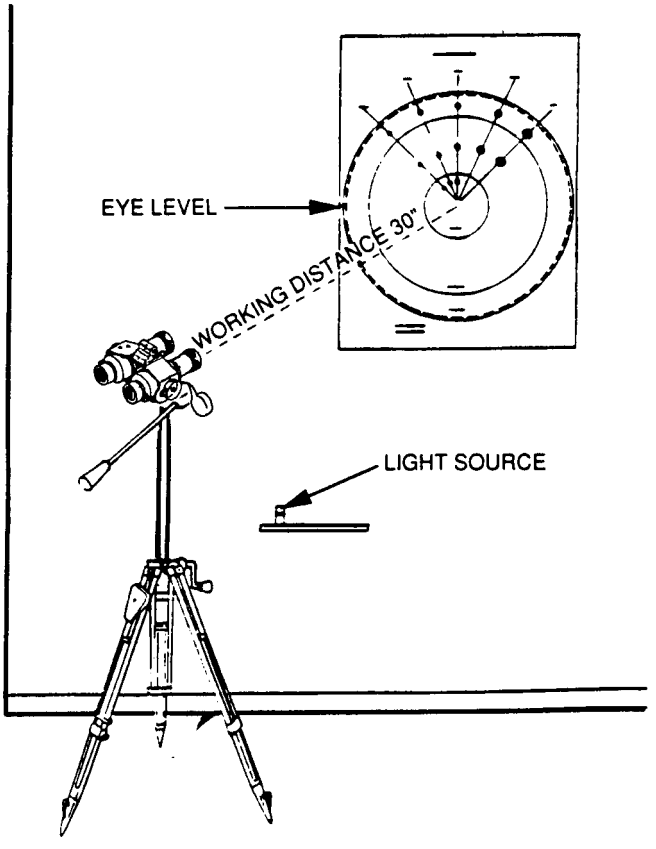


Figure 2-7. Dark Room Setup with GM-6(V)1 Shown on Tripod.

2-9 BLACK SPOT CHECK - Continued

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 isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the Iens and moving in larger circles to the outside of the lens.

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

e. Position the light source 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 NVG does not produce shadows on the target.

2. Test Method.

a. Switch off the room lights.

b. Turn on the power switch or rotary switch to power the NVG.

c. Check the dark room for light leaks using another GM-6(V)1, GM-6(V)2 AN/PVS-5,-5A, -5B, -5C NVG, ANVIS, or AN/PVS-7 and eliminate any leaks you find. Follow good dark room techniques.

d. Turn on the light source and look through the NVG. Uniformly illuminate the target by moving the light source closer or farther from the target. Eliminate any shadows.

e. Set each monocular for best focus using the same eye. Alternately adjust the objective focus and diopter setting, AT THE WORKING DISTANCE, until the best focus 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 to recheck the exact position of the NVG at 30 inches (plus or minus 1 inch). This distance from the target to the objective is critical and must be maintained during testing.

h. Observe the target separately through each monocular. Center the view through the monocular 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.

2-9 BLACK SPOT CHECK - Continued

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. Refocus the objective for the best focus on the ring of the chart identified above.

l. 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 for each monocular. Record these figures separately for each monocular.

3. Pass/Fail Criteria.

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

Table 2-2. GM-6(V)1 and GM-6(V)2 Allowable Black Spots and Sizes (AVIATION USE ONLY)

Size and Location	.003 .006	.006 .009	.009 .012	.012 .015	Larger Than .015	Smaller Than .003
Center Ring	3	1	0	0	0	any amount
1st Ring	10	6	3	1	0	any amount
2nd Ring	14	9	3	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 ocated, or if the image intensifier exceeds the number of spots allowed for that ring.

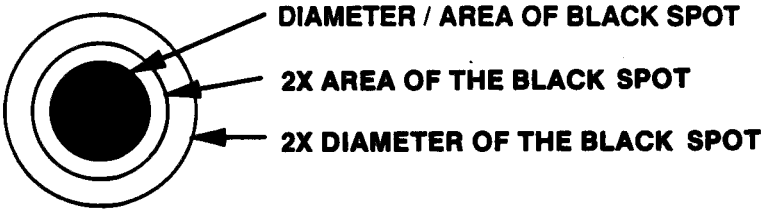
c. The image intensifier fails if the maintenance person determines, by comparison, that the area of the non-circular spot is larger than the area of the largest circular spot designated in that ring. Since this is a subjective evacuation, judging the area will be difficult. See Examples 1 “and 2 of Figure 2-8. Do not reject an image intensifier for an irregularly shaped spot by its diameter alone. **REMEMBER,** the criteria listed in the table above for the acceptance of image intensifiers is for **AVIATION USE ONLY.**

2-9 BLACK SPOT CHECK - Continued

d. Consider two spots and the distance between them as one spot anytime that the 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 shadad 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 when using the TS-3895/UV or TS-3895A/UV. The image intensifier fails if the combined area of the spot and the shaded area exceed the maximum area of 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.



2X BLACK SPOT AREA VS 2X BLACK SPOT DIAMETER

EXAMPLE 1: 2X AREA IS PERCEIVED 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 2-8. Black Spot Evacuation (Comparison of black spot area versus the black spot diameter).

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 maybe caused by contamination inside the monocular and on the surfaces of the optics. Send the system to AVIM to disassemble the monocular and clean and inspect for dirt, debris, finger-prints, or other foreign material. The AVIM will reassemble the NVG and recheck the image area for black spots.

2-10 DISTORTION CHECK

A distortion check is required whenever an image intensifier has been redated or an aviator returns the NVG for excessive distortion. Only experienced NVG ANVIS Pilots are authorized to perform the distortion check. A minimum of two evaluators are required.

As with any optical device, the NVG can have some acceptable distortion on the outer edges of the image and some minor distortion near the center. This check is designed to identify NVG that may have unacceptable localized distortion in the central portion of the image.

An image intensifier with unacceptable distortion is obvious when compared to an image intensifier without distortion. With unacceptable distortion, flat surfaces appear to have rises or depressions and straight lines appear to curve or tilt. Distortion is caused by variations in the alignment of fibers in the twist of the fiber-optic output to the image intensifier. The amount of distortion in an image intensifier does not change over its life. This TM supersedes Video TVT 46-18, Night Vision Goggle Distortion Inspection, for conducting this check. *However, this video is still to be viewed before conducting this check.*

There are two different parts to the evaluation check: indoor evaluation and outdoor evaluation. Indoor evaluation is the most precise and will identify those systems with visible distortion. Systems that are acceptable after an indoor evaluation do not require an outdoor evaluation. The outdoor evaluation is to determine the acceptability for flight operations if a system is questionable or unacceptable as a result of the indoor evaluation.

Each system that must receive the outdoor evaluation must first be evaluated by each of the NVG/ANVIS pilots using the indoor evaluation procedure. The joint decision of these evaluators will determine if the system maybe used by pilots or crew members. The judgment of these evaluators will be the standard until follow-on GO/NO-GO evaluation procedures have been developed and fielded.

If the binoculars fail the outdoor evaluation, they must be sent to AVIM where the suspect image intensifier will be removed and forwarded to depot for further evaluation.

INDOOR EVALUATION

INITIAL SETUP

Test Facility

Dark room with white or light-colored wall highly reflective or painted 4-foot by 8-foot flat sheet of plywood. The wall must be vertical. If using the plywood sheet, it must be mounted vertically and not tilted, crooked, or leaning at an angle. The wall or area below the plywood should be free of switches, pictures, or similar objects.

Tools

Measuring tape
3-volt incandescent flashlight or smaller
NVG-compatible flashlight filter: #15 or #20

Equipment

Light source: Light box, IR light transmitter, or an incandescent night light (7 watt)
Mount assembly or offset mount assembly (without the helmet) and power pack with batteries

2-10 DISTORTION CHECK - Continued

INDOOR EVALUATION - Continued

Materials/Parts

Black tape, 3/4 inch wide
Cotton-tipped applicators
Isopropyl Alcohol
DA Form 2408-15 and -30

Personnel Required

A minimum of two experienced NVG/ANVIS pilots.

Make a grid pattern on the wall or plywood as follows (fig. 2-9): Attach two 6-foot lengths of black tape, 14 inches apart, horizontally across the center of the wall or plywood. Make sure the taped lines are straight and level. Attach two 3-foot lengths of black tape, 14 inches apart, vertically (perpendicular to the first two taped lines) and centered on the two horizontal strips. Make sure these taped lines are also straight and vertical.

Locate the light source beside the observer and make sure there are no shadows cast on the grid pattern.

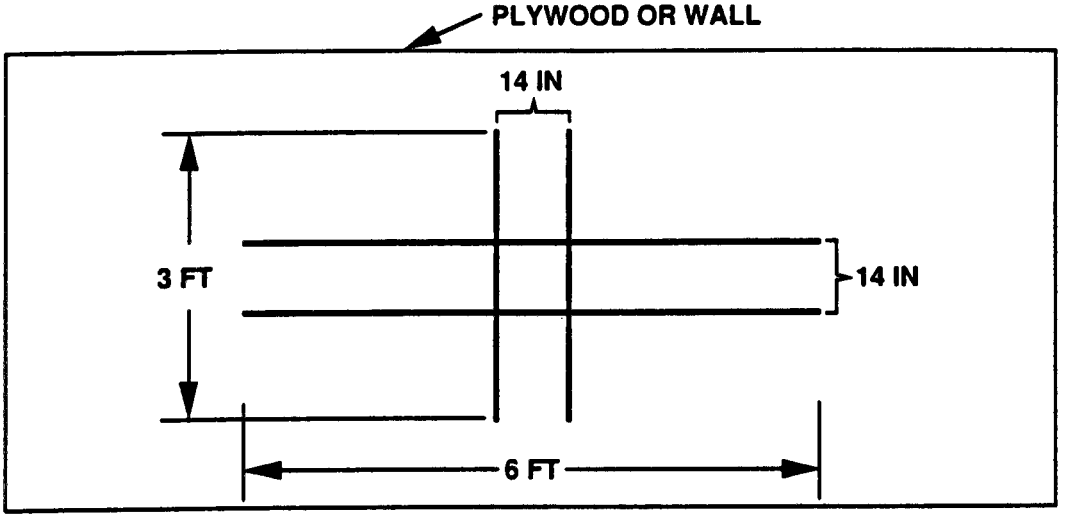


Figure 2-9. Distortion Check Grid Pattern

2-10 DISTORTION CHECK - Continued

INDOOR EVALUATION - Continued

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. However, if you have just been exposed to bright sunlight, dark adaptation will take longer.
- Review the following test procedure before entering the darkened area.
- You will need a flashlight with a NVG-compatible filter to read this procedure while in the darkened area.

1. Clean the objective and eyepiece lenses of the binocular using isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses and moving in larger circles to the outside of the lenses.

2. Turn off the room lights and adjust the light source so there is adequate light on the wall or plywood grid pattern. The pattern should appear dim to your unaided eyes but clear and evenly illuminated when viewed through the NVG being evaluated.

3. Stand 8 to 10 feet away from the grid pattern and carefully focus both objective and eyepiece lenses. The proper focus is extremely important.

4. Place a lens cap over one of the eyepieces (not an objective lens) and slowly scan the grid pattern keeping both eyes open. You will evaluate only one monocular at a time to make sure any distortion noticed can be isolated to a particular image intensifier. Slowly move your head from left to right while observing the vertical and horizontal lines. Next, slowly move your head up and down and observe the pattern again. Do not stare. An acceptable image intensifier will not cause the lines to appear to move or bend.

5. Repeat step 4 for the other monocular.

6. Remove the lens cap and view the grid with the NVG as you normally would with both eyes open. Judge whether there is distortion in either or both monocular.

7. If distortion is noted when looking through one or both monocular, the system must be evaluated outdoors.

8. Use DA Form 2408-15 and -30 to record the results of the evaluation. If a monocular passes the indoor evaluation, enter “Evaluation completed -- released for flight” in the “Deficiencies and Shortcomings” column. If a monocular (left or right) does not pass the evaluation, indicate which monocular shows distortion by entering “Distortion observed -- outdoor evaluation required in the “Deficiencies and Shortcomings” column. Both monocular must pass the indoor evaluation before the NVG is released for flight without further evaluation. All entries on the maintenance records should conform to DA Pam 738-751.

2-10 DISTORTION CHECK - Continued

OUTDOOR EVALUATION

INITIAL SETUP

Environment

Select a night with at least 30% natural illumination. Obtain the natural illumination level from the local weather observer/fcorecaster servicing your organization. Locate an area with buildings, runway, trees, etc. so that distortion can be judged for its effect on flight operations in confined area maneuvers, hovering, and landings.

Tools

None

Materials/Parts

Mount assembly or offset mount assembly (with or without helmet) and power pack with batteries,

Cotton-tipped applicators
Isopropyl Alcohol
DA Form 2408-15 and DA Form 2408-30

Personnel Required

A minimum of two experienced and current NVG/ANVIS Pilots.

NOTE

- Review the following test procedure before going outdoors.
- The outdoor evaluation is an important part of the procedure for checking systems with distortion. The success depends on the considered judgment of both experienced evaluators. Because distortion is normal in the outer edges of the monocular, those monocular may be acceptable for flight operations. A distortion level that causes an evaluator to question visual cues is unacceptable.

1. Clean the objective and eyepiece lenses of the binocular by using isopropyl alcohol and cotton-tipped applications. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses and moving in larger circles to the outside of the lenses.

2-10 DISTORTION CHECK - Continued

OUTDOOR EVALUATION - Continued

PROCEDURE

2. Place a lens cap over one of the eyepieces and slowly scan the outdoor scene and observe the buildings, runway surface and lines, trees, etc.

NOTE

Use a scanning technique to evaluate for distortion. Move your view left to right and up to down. Do not stare.

3. Repeat step 2 for the other monocular.

4. With both lens caps removed, look through the NVG using both eyes as you normally would. Judge whether the distortion in either one or both monocular would cause problems during flight operations.

NOTE

- Some types of distortion seem to cancel or grow worse when looking through both monocular.
- It is important that accurate documentation for this evaluation be maintained.

5. Use the same DA Form 2408-15 and DA Form 2408-30 used in the indoor evaluation to record the results of the outdoor evaluation. If the outdoor evaluation identifies the monocular as acceptable for aviation use, clear the entry with the following: “Outdoor evaluation complete released for flight”. If the outdoor evaluation determines the monocular to be unacceptable, enter “Tube distortion unacceptable not released for flight”: Be sure to specify which monocular (right, left, or both) caused the binocular to fail. Follow this procedure for each monocular as required. Monocular that are not released for flight must have the image intensifier replaced by those that have been evaluated as acceptable.

Section IV. Troubleshooting

2-11 PURPOSE OF TROUBLESHOOTING

The purpose of troubleshooting is to identify, usually by fault isolation, the cause for equipment malfunction. Table 2-2 provides information pertaining to the troubleshooting procedures for AVUM.

NOTE

AVUM personnel are not authorized to open the NVG monocular.

Table 2-2. Troubleshooting for GM-6(V)1 and GM-6(V)2 NVG

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Viewed object cannot be seen.	Check adjustment of objective lens focusing knob.	If knob adjustment does not correct malfunction, turn goggles into the next higher level for repair.
Both monoculars will not come on.	Batteries are defective.	Replace batteries.
	Batteries are missing or improperly installed.	Insert batteries or insert correctly.
	Electrical contacts are loose, dirty, or corroded.	Check power cord connector. Clean all electrical contacts on power pack and binocular.
		Perform electrical checks in paragraphs 2-14 thru 2-18 to isolate damaged components.
	Broken power pack, mount, or binocular.	If power pack, mount or binocular damaged, send it to AVIM for repair.
	Mount contacts are dirty.	Clean contacts

2-11 PURPOSE OF TROUBLESHOOTING - Continued

Table 2-2. Troubleshooting for GM-6(V)1 and GM-6(V)2 NVG - Continued

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
One monocular will not come on.	Electrical contacts are loose, dirty, or corroded.	Check power cord connector. Clean all electrical contacts on power pack and binocular. Perform electrical checks in paragraphs 2-14 thru 2-18 to isolate damaged components.
	Broken power pack, mount, or binocular.	If power pack, mount or binocular is damaged, send it to AVIM for repair.
	Mount contacts are dirty.	Clean contacts
	Defective image intensifier.	Send to next higher level for repair.
Intermittent operation.	Defective mount, power pack, binocular or image intensifier.	Isolate the defective component by performing electrical checks in paragraph 2-14 thru 2-18. If power pack or mount is defective, replace it. If binocular is defective, send to next higher level of repair.
Objective or eyepiece can not be focused.	Focus mechanism broken or over purged.	Refer the binocular to next higher level for repair.
Image intensifier fails	Defective image intensifier or moisture in the lens or improper lighting during test.	Verify darkroom lighting. check resolution. Send to next higher level for purging.
Poor image	Objective lenses or eyepiece lenses not focused correctly, lenses fogged or dirty, or intensifier is defective.	Adjust focus of lenses and clean external lenses. If lenses are fogged internally, or if image intensifier is defective, send to next higher level of repair. If the lenses are correctly set and clean, perform the image intensifier tests in paragraph 2-12 or 2-13. If it fails send it to next higher level for repair.
Viewer mount assembly or offset viewer mount assembly will not lock in mount.	Mounting contacts dirty or broken. Setscrew loose or missing or spring tension gone from ball bearing.	Clean mounting contacts. If problem persists, the mechanism is damaged and the NVG needs to be repaired or the mounts replaced.

2-11 PURPOSE OF TROUBLESHOOTING - Continued

Table 2-2. Troubleshooting for GM-6(V)1 and GM-6(V)2 NVG - Continued

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Low-battery indicator will not illuminate during check.	Batteries are defective.	Install new batteries.
	Batteries improperly installed.	Install batteries correctly.
	Poor power cable connection.	Check connector.
	Defective visor mount or offset visor mount.	Perform visor mount and offset visor mount continuity check (para 2-18) If it fails, send NVG to next higher level for repair.
	Defective power pack.	Replace power pack,
Edge glow or shading seen.	Defective image intensifier.	Send rejected goggles to next higher level for repair.
Black spots too many or too large.	Dirt or debris in system, or defective image intensifier.	Send to next higher level for repair
Flickering, flashing, or intermittent operation.	Defective image intensifier or loose electrical connector.	Send rejected goggles to next higher level for repair.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV

NOTE

Before using the TS-3895/UV or TS-3895A/UV, refer to TM 11-5855-264-14 to familiarize yourself with the operation and the warnings and cautions associated with that test equipment.

The following procedures are designed to check the performance of the image intensifier in each monocular. If the image intensifier inside either monocular fails the test, send the NVG to AVIM for repair.

INITIAL SETUP

Test Facilitv

Dark room

Equipment

Test Sets, TS-38951UV or TS-3895AIUV
Flashlight
NVG-compatible flashlight filters: # 15 and #20

Materials/Parts-

Cotton-tipped applicators
Isopropyl alcohol (for glass lenses)
Alcohol dispenser
Canned air

Use TM 11-5855-264-14 to set up the test set and perform the self test.

ATTACHING THE BINOCULAR

1. Clean the objective and eyepiece lenses of the binocular by using isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses, moving in larger circles to the outside of the lenses, and lifting the applicator away from lenses.

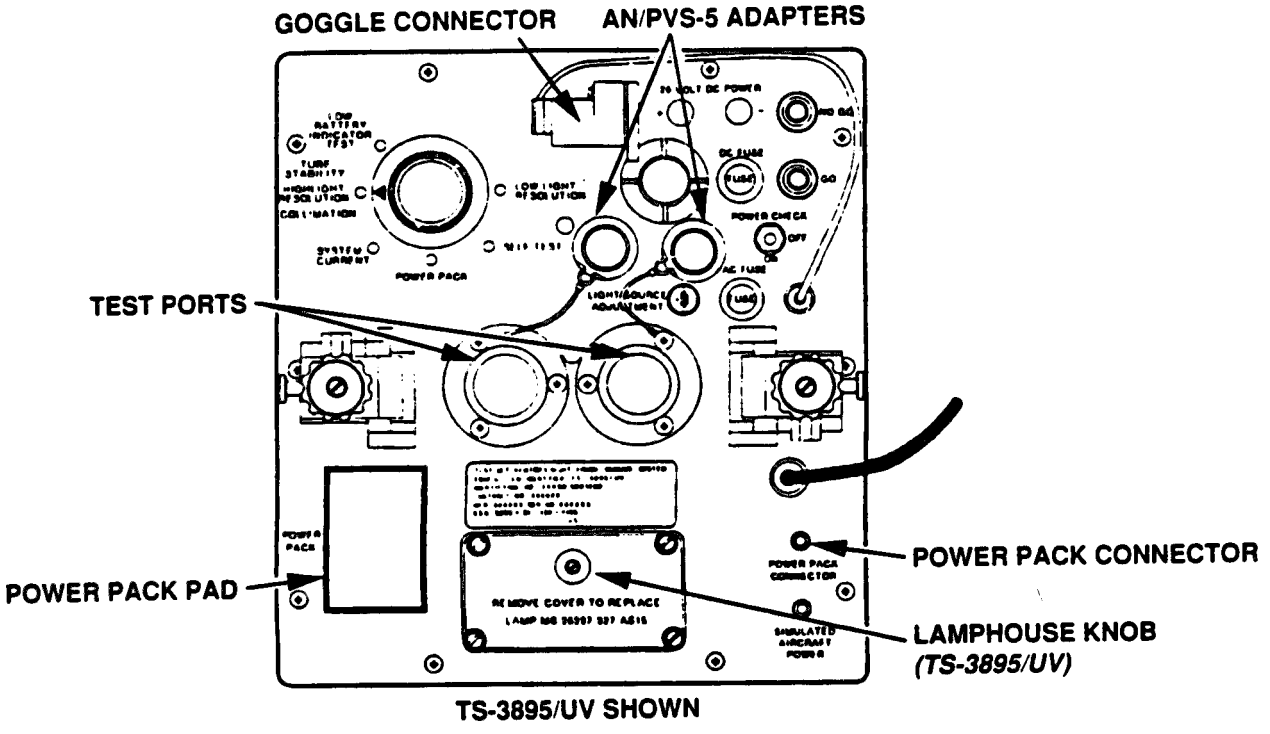
2. Ensure that the test port lenses of the test set are clean and free of dirt. Clean the test port lenses with cotton-tipped applicators and blow out any debris with canned air.

3. Adjust the eye span on the NVG until the monocular are at their widest position and align with the ports.

4. Insert the objective lenses of the NVG into the test ports on the test set as shown in Figure 2-1 OA or 2-IOB. For the AN/PVS-5C binocular assemblies, use the large goggle adapter in the test port. For the AN/PVS-5, 5A, and -5B binoculars assemblies use the small goggle adapter in the test ports.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-383/UV AND TS-3859A/ - Continued

The conneCtor must go on correctly. If it is put on backward, the binocular check will not work.



2-10A. Location of Major Components on the TS-3895/UV Test Set.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued

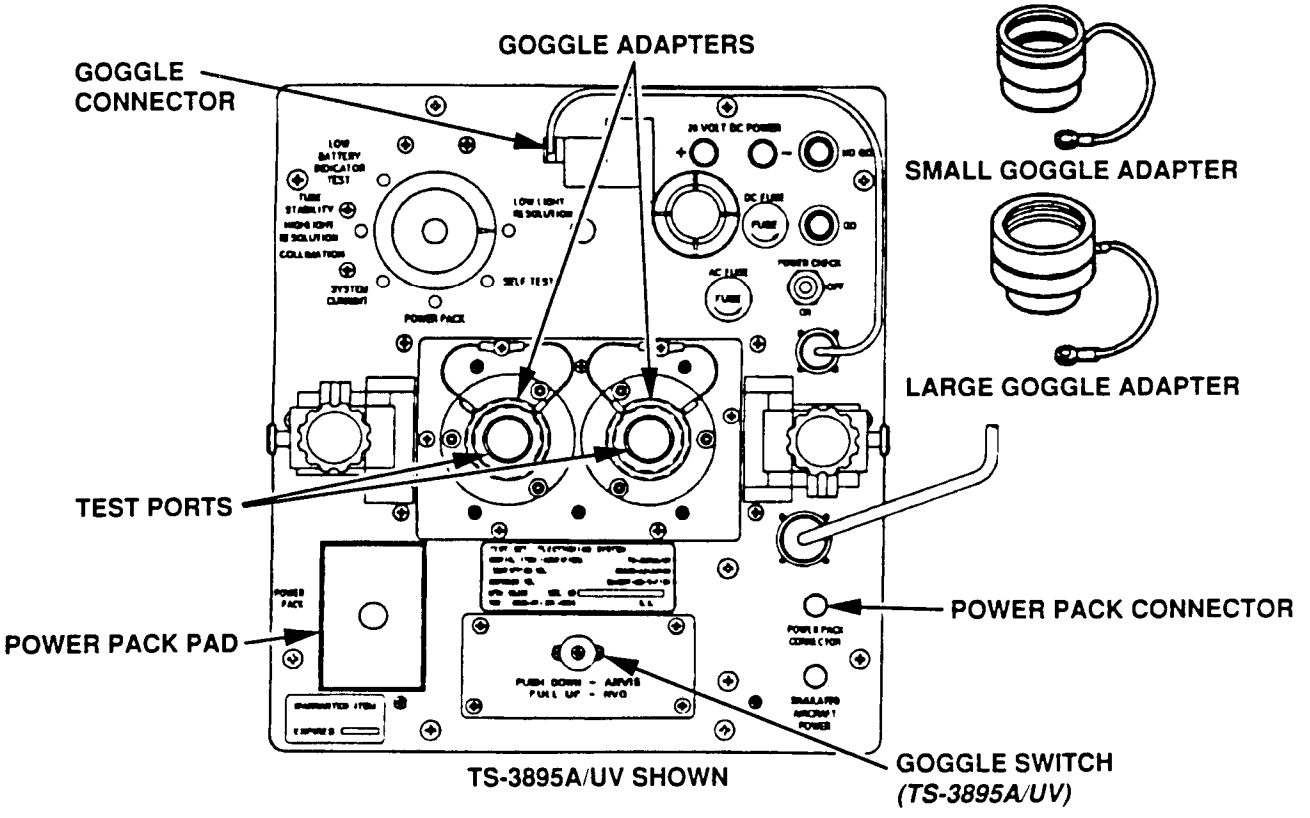


Figure 2-10B. Location of Major Components on the TS-3895A/UV Test Sets.

5. Raise the latch of the goggles connector (fig. 2-11). Slide the connector off its mounting block on the test set.

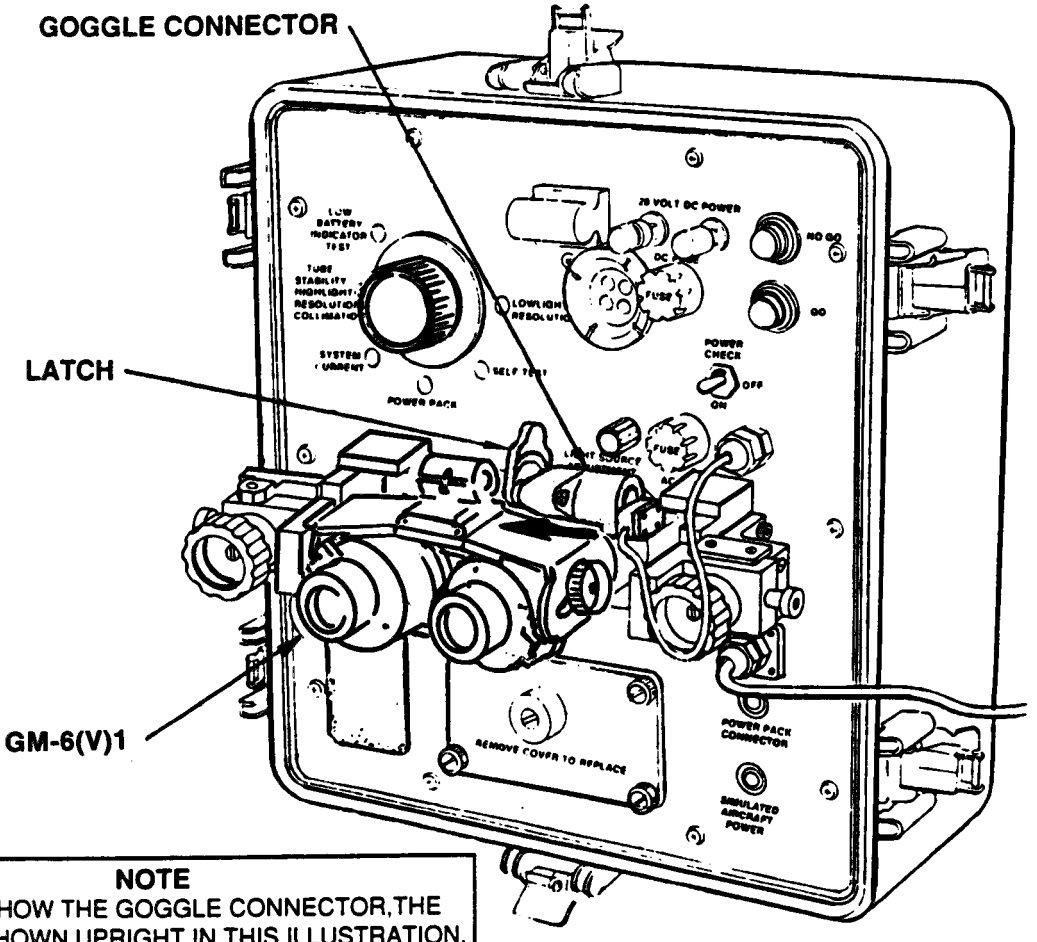
6. Slide the goggle connector from right to left over the top of the NVG. The latch must be on the left side for the connector to work.

7. Lower the latch to lock the goggle connector in place on the NVG.

8. Turn the ON/OFF/POWER CHECK switch to ON.

9. Preform the self test of the test set per TM 11-5855-264-14.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued



NOTE
TO BEST SHOW THE GOGGLE CONNECTOR, THE TS-3895 IS SHOWN UPRIGHT IN THIS ILLUSTRATION. **DO NOT** PLACE THE TEST SET UPRIGHT TO MOUNT THE BINOCULARS OR CONDUCT ANY TESTS.

Figure 2-11. Inserting the Binocular into the Test Set.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued

LOW-LIGHT RESOLUTION

NOTE

- The following test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test. This takes at least 10 minutes, however, if you have just been exposed to bright sunlight, dark adaption takes longer.
- Do not reject for resolution unless completely dark adapted.
- Review the following test procedure before entering the darkened area.

  You will need a flashlight with a NVG compatible filter to read this procedure while in the darkened area.

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

2. Perform the self test on the test set per TM 11-5855-264-14&P.

3. Turn selector switch to LOW-LIGHT RESOLUTION (yellow) position.

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

5. Preset the objective lens and then the eyepiece lens on each monocular; then focus the objective for best focus

NOTE

Check each monocular separately using the same eye to view the image.

6. Look for flashing, flickering, emission points, or edge glow (para 2-8). If any unacceptable conditions are noted, send the NVG to AVIM for repair.

7. Look through the right monocular and observe the test pattern.

8. Check both monocular using the same eye to view the image. If either monocular fails the resolution test, send the NVG to AVIM for repair.

9. The resolution test patterns are three horizontal lines and three vertical lines (fig. 2-12A and 2-12B). 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 NVG to pass. On the TS-3895A/UV, you must be able to see Group 3 on the bottom of the test pattern for the NVG to pass.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued

LOW-LIGHT RESOLUTION - Continued

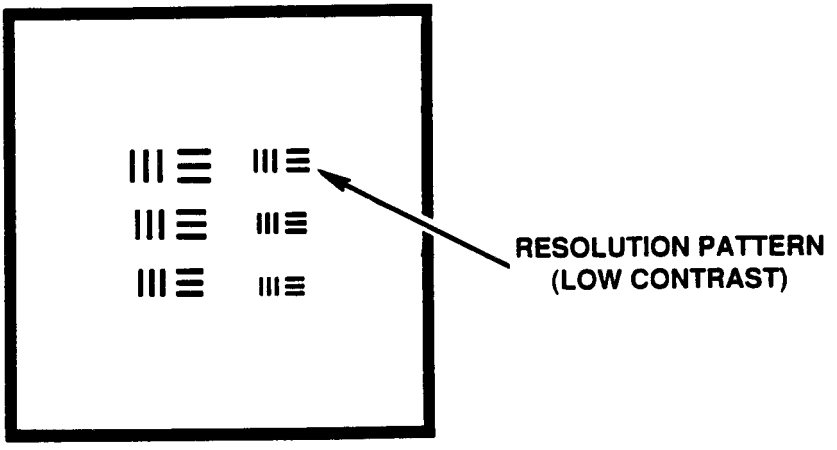
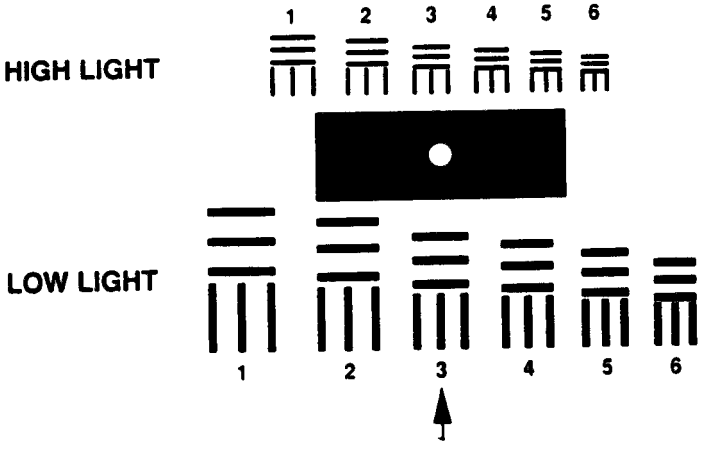


Figure 2-12A. TS-3895/UV Low-Light Resolution Test Pattern.



GM-6(V)1 and GM-6(V)2

Figure 2-12B. TS-3895A/UV Low-Light Resolution Test Pattern.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued

LOW-LIGHT RESOLUTION - Continued

10. Repeat steps 7 and 8 for the left monocular.

NOTE

Check each monocular separately using the same eye when viewing the image.

11. The NVG passes when both monocular pass this test. If one or both of the monocular fail the resolution test, double-check the focus of the objective and eyepiece lenses to make sure you have the clearest image.

12. If either monocular fails the low-light resolution test, send the NVG to AVIM for repair.

HIGH-LIGHT RESOLUTION TESTS

NOTE

Expect cosmetic blemishes, such as chicken wire, black spots, and fixed-pattern noise to stand out while viewing on the high-light level. This is acceptable.

1. Perform the self test of the test set per TM 11-5855-264-14,

2. Turn the selector switch to the high-light resolution (blue) position.

3. Leave the lamphouse knob (or goggle switch) in the up position.

4. For the TS-3895/UV only, refocus the objective lens for each monocular. If you have done the low-light level resolution test, you should not have to readjust the eyepiece lenses.

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. Do not refocus the TS-3895A/UV when you go from high light test to low light test. On the TS-3895A/UV, the image plane is the same for the low-light and high-light level targets.

5. Look for flashing, flickering, shading, or bright spots (para 2-8). If any unacceptable conditions are noted, send the NVG to AVIM for repair.

6. Check both monocular using the same eye to view the image. If either monocular fails the high-light resolution test, send the NVG to AVIM for repair.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued

HIGH-LIGHT RESOLUTION TESTS - Continued

7. Link through the right monocular and observe the test pattern.

8. The resolution test patterns are three horizontal lines and three vertical lines (figs. 2-13A and 2-13B). You must be able to distinguish all three vertical lines and the space between the lines to count seeing the group. On the TS-38WUV you must be able to see both resolution patterns on the left to pass resolution for the NVG. On the TS-389WUV, you must be able to see Group 2 on the top of the test pattern for the NVG to pass.

9. Repeat steps 6 and 7 for the left monocular.

NOTE

Check each monocular separately using the same eye when viewing the image.

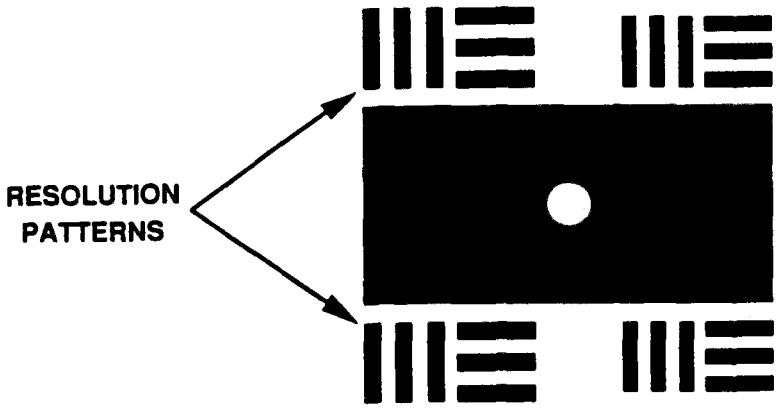


Figure 2-13A. TS-3895/UV High-Light Resolution Test Pattern.

2-12 IMAGE INTENSIFIER TESTS USING THE TS-3895/UV AND TS-3895A/UV - Continued

HIGH-LIGHT RESOLUTION TESTS - Continued

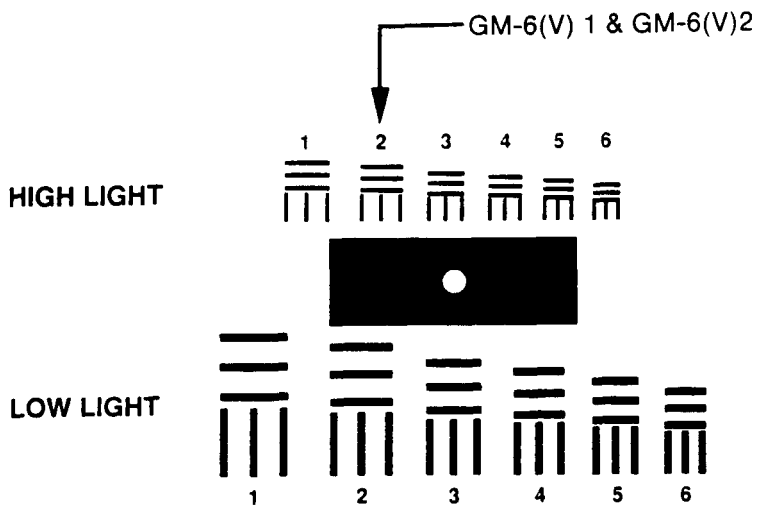


Figure 2-13B. TS-3895A/UV High-Light Resolution Test Pattern.

10. The binocular passes when both monocular pass this test. If one or both of the monocular fail this test, double-check the focus of the objective and eyepiece lenses to make sure you have the clearest image.

11. Turn off the test set.

12. Turn on the room lights.

13. Remove the binocular from the test set.

14. If either monocular fails the low-light resolution test, send the NVG to AVIM for repair.

SHUTTING DOWN THE TS-3895/UV AND TS-3895A/UV TEST SETS

Refer to TM 11-5855-264-14, to shut down the test set.

2-13 OPTIONAL IMAGE INTENSIFIER TEST USING THE TS-4348/UV

NOTE

- Before using the TS-4348/UV test set, refer to TM 11-5855-299-12&P, Operator's and Unit Maintenance Manual (including Repair Parts and Special Tools) for the Electronic Systems, TS-4348/UV to familiarize yourself with its operation and the warnings and cautions associated with that test equipment.
- The primary purpose of the TS-4348/UV is to check resolution of the image intensifier (Only the center of the image intensifier is viewed).

The following procedures are designed to check the performance of the image intensifier in each monocular. If the image intensifier inside either monocular fails the test, send the NVG to AVIM for repair.

INITIAL SETUP

Test Facility

Dark room

Tools

Flashlight
NVG-compatible flashlight filter: #15 and #20

Equipment

Test set, Electronic Systems, TS-4348/UV

Materials/Parts

Cotton-tipped applicators
Isopropyl alcohol (for glass lenses)
Mild window cleaner (for plastic lenses)
Alcohol dispenser
Canned Air

Use TM 11-5855-299-12&P to set up the TS-4348/UV test set.

CAUTION

The TS-4348/UV test set is a delicate instrument. Exercise care not to over tighten or strip the threads on either the adapter or the body of the test set when installing or removing the adapter. Be sure to inspect the threads for damage.

2-13 OPTIONAL IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

MOUNTING

1. Clean the objective and eyepiece lenses of the NVG and the port window of the test set by using isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses and moving in larger circles to the outside of the lenses.

2. Attach the NVG to a functioning visor mount assembly or a offset visor mount assembly on a SPH-4 helmet.

3. Attach a functioning power pack, with good batteries, to the back of a helmet (if using a helmet) and connect the power cable to the connector on the mount.

4. Remove eyepiece lens caps and objective lens caps from one of the NVG monocular.

CAUTION

If you do not hold the test set, it may fall off the end of the monocular,

5. Hold the test set squarely onto the front of the exposed objective lens of one monocular as shown in Figure 2-14. Continue to hold the test set squarely onto the end of the objective lens while performing the following steps. If You do not hold the test set, it may fall of the end of the monocular.

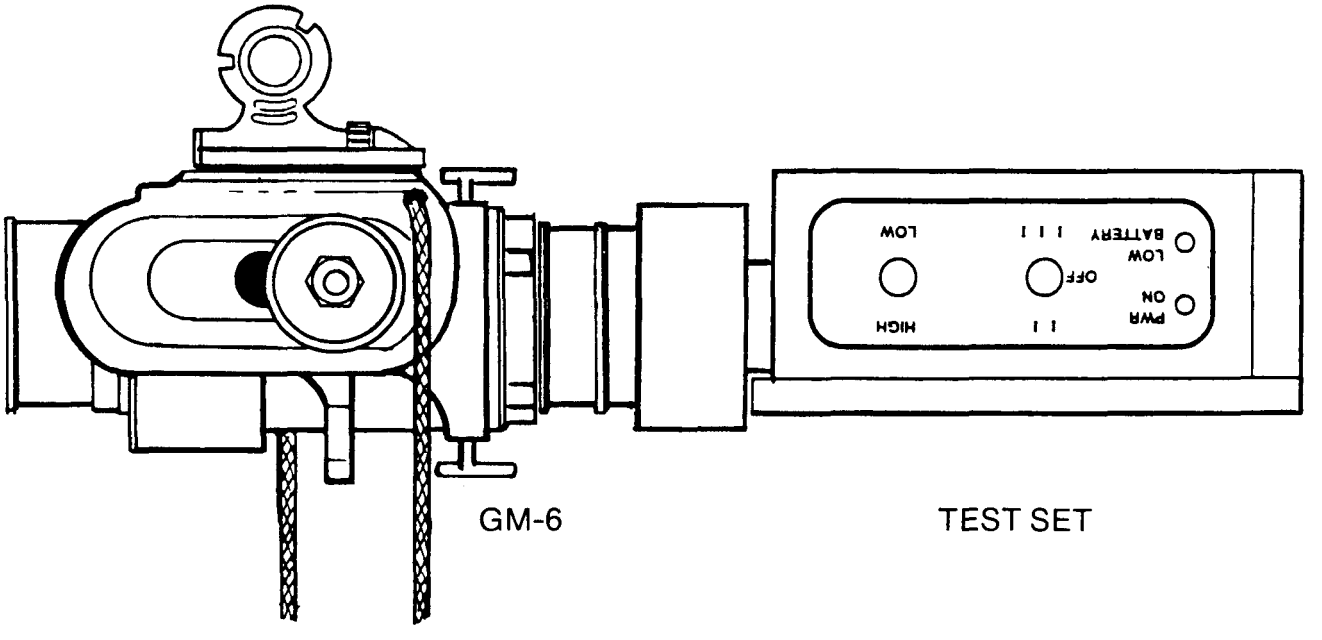


Figure 2-14. Attaching the TS-4348/UV Test Set to the NVG (GM-6(V)1 NVG shown, GM-6(V)2 is similar).

2-13 OPTIONAL IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

LOW-LIGHT RESOLUTION TESTS

Test the NVG'S image intensifier for low-light resolution according to the following steps.

NOTE

- The following test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test. This takes at least 10 minutes, however, if you have just been exposed to bright sunlight, dark adaption takes longer.
- Do not reject for resolution unless completely dark adapted.
- Review the following test procedure before entering the darkened area.
- You will need a flashlight with a NVG compatible filter to read this procedure while in the darkened area.

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

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

3. Turn on the test set by setting the "II/III" switch to "II" position.

4. Turn on the goggles by flipping the powerpack's ON/OFF/ON to ON position.

5. Look through the monocular and view the projected pattern. Preset focus the objective lens and then the eyepiece to obtain the sharpest image for the best focus.

6. Place the HIGH/LOW switch on the test set to the LOW position. Allow your eyes to adapt to this new light level. This takes about one minute.

7. Look for flashing and/or flickering. Also check the image intensifier for other unacceptable characteristics as described that interfere with reading the target and center resolution in paragraph 2-8. If any unacceptable conditions are noted, send the NVG to AVIM for repair.

8. Observe the test target and determine the group number and element of the smallest pattern resolvable.

NOTE

For a pattern to be resolvable, three vertical bars and three horizontal bars must be visible. Make sure your eyes have been adequately dark-adapted.

9. The NVG must be able to resolve Group 2, Element 1 (fig. 2-15) under low-light conditions to pass the test. If the monocular does not pass the test, send the NVG to AVIM for repair.

10. Move the TS-4348/UV to the other monocular and repeat steps 5 through 9 for that image intensifier.

2-13 OPTIONAL IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

LOW-LIGHT RESOLUTION TESTS - Continued

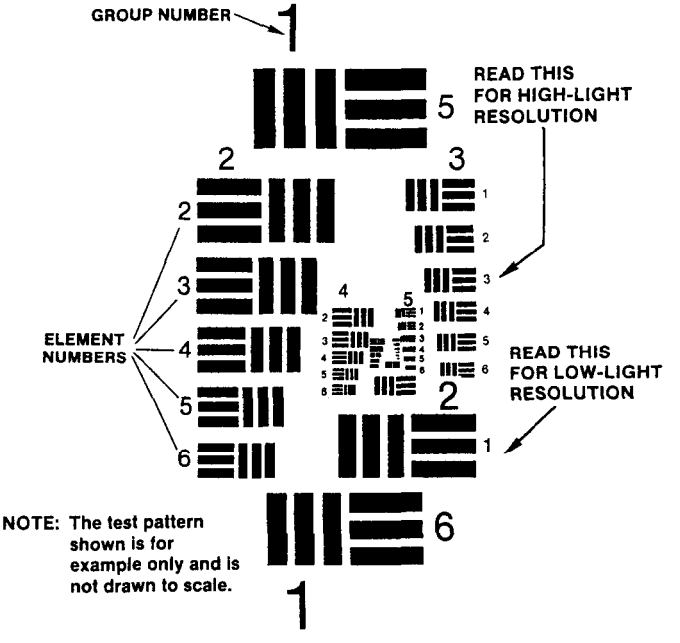


Figure 2-15. TS-4348/UV Test Set Pattern.

HIGH-LIGHT RESOLUTION TESTS

After the low-light tests, the high-light resolution tests are performed according to the following steps.

NOTE

Expect blemishes, such as chicken wire, black spots, and fixed-pattern noise to stand out while viewing on the high-light level. This is acceptable.

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

2. If the room lights have been turned on, turn off the room lights and let your eyes adjust to the dark.

3. Turn on the test set by setting the "II/III" switch to "II" position.

4. Turn on the goggles by flipping the power pack's ON/OF/ON switch to the ON position

5. Look through the appropriate monocular and view the projected pattern. Focus the objective lens and then the eyepiece of the monocular to obtain the sharpest image for best focus.

2-13 OPTIONAL IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

HIGH-LIGHT RESOLUTION TESTS - Continued

6. Look for flashing, flickering, or intermittent operation. Also check the image intensifier for other unacceptable characteristics as described in paragraph 2-8. If any unacceptable conditions are noted, send the NVG to AVIM for repair.

7. Observe the test target and determine the group number and element of the smallest pattern resolvable.

NOTE

For a pattern to be resolvable, three vertical bars and three horizontal bars must be visible. Make sure your eyes have been adequately dark-adapted and you scan your eyes left, right, up, and down to read the pattern.

8. The NVG must be able to resolve Group 3, Element 3 (fig. 2-15) under high-light conditions to pass the test. If the monocular does not pass the test, send the NVG to AVIM for repair.

9. Move the TS-4348/UV test set to the other monocular and repeat steps 5 through 8 for the other image intensifier.

2-14 POWER PACK TEST

INITIAL SETUP

Test Facility

Electronic repair service area

Equipment

Test set, TS-3895/UV or TS-3895ANV

Materials/Parts

Two BA-5567/U lithium batteries and four AA size BA-3058/U alkaline batteries

Set up the TS-3895/UV or TS-3895A/UV as described in TM 11-5855-264-14.

2-14 POWER PACK TEST - Continued

PROCEDURE

NOTE

Use the alternate power pack test (para 2-15) to check the G1 power pack.

1. Place the power pack, with good BA-5567/U lithium batteries installed, onto the power pack pad on the lower left section of the test set. Set the power pack's ON/OFF/ON switch to the OFF position.

2. Plug the connector on the power pack's power cable into the test set's receptacle designated POWER PACK

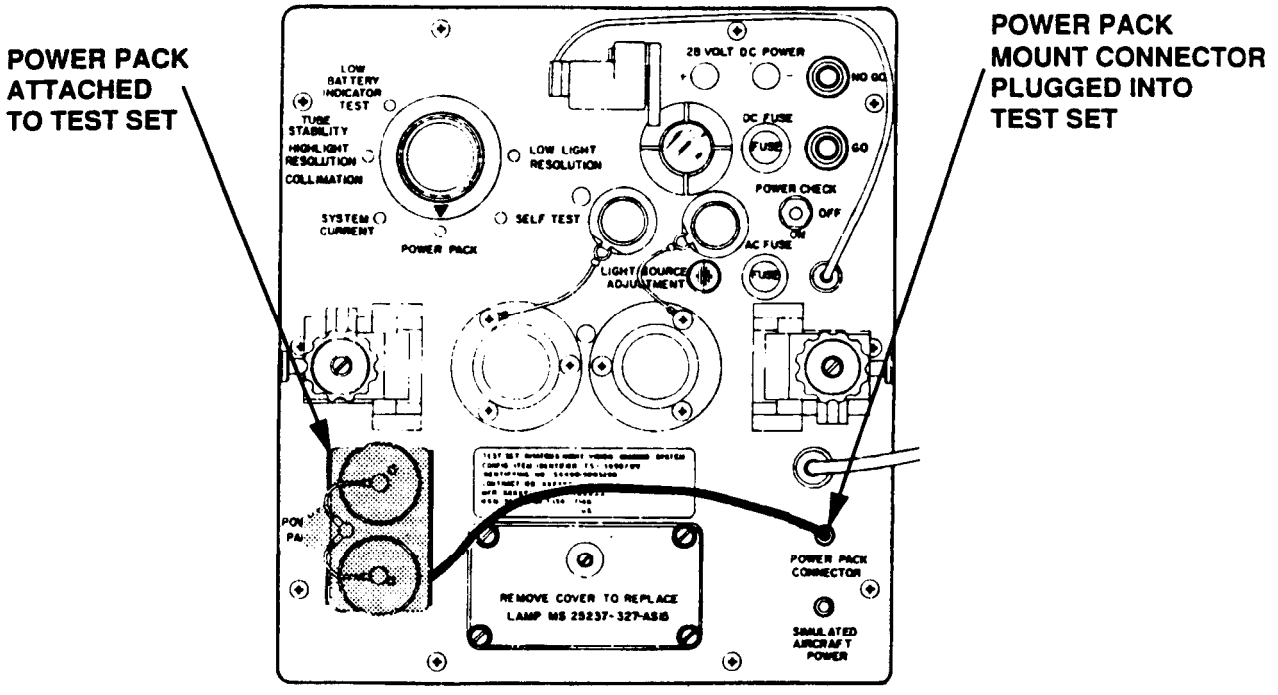


Figure 2-16. Attaching the Power Pack to the Test Set.

3. Turn the ON/OFF/POWER CHECK switch to the ON position. Turn the test set's selector switch to the POWER PACK (black) position. A NO-GO (red) light will come on.

4. Flip the ON/OFF/ON power switch on the power pack to the primary upper ON position (upper is determined with reference to the ON/OFF/ON label). Check the GO/NO-GO indicator for a green (GO) or red (NO-GO) light. A red light means that either there is a fault in the primary battery compartment circuitry or the battery in the primary compartment is bad. Check spring tension, by pushing on the spring or lightly pull on it. Replace the battery with a known good battery and check it again. If the power pack still fails, replace it.

5. Flip the ON/OFF/ON power switch on the power pack to the alternate lower ON position and repeat step 4 above, except check for the proper functioning of the alternate battery compartment.

6. Return the ON/OFF/ON power switch on the power pack to the OFF position.

2-14 POWER PACK TEST - Continued

7. Leave the power pack attached to the test set. Insert the connector on the quick disconnect cable for the aircraft power receptacle on the power pack and the other end into the test set receptacle marked SIMULATED AIRCRARFT POWER (fig. 2-17).

8. Remove both battery caps on the power pack by pushing them in and turning them counterclockwise. Remove the batteries.

9. Flip the ON/OFF/ON power switch on the power pack to the primary ON position. Check the GO/NO-GO indicator for a green (GO) or red (NO-GO) light. Flip the ON/OFF/ON power switch on the power pack to the alternate ON position. Check the GO/NO-GO indicator for a green (GO) or red (NO-GO) light. If a red light comes on in either ON position or the OFF position, the power pack is defective and must be replaced.

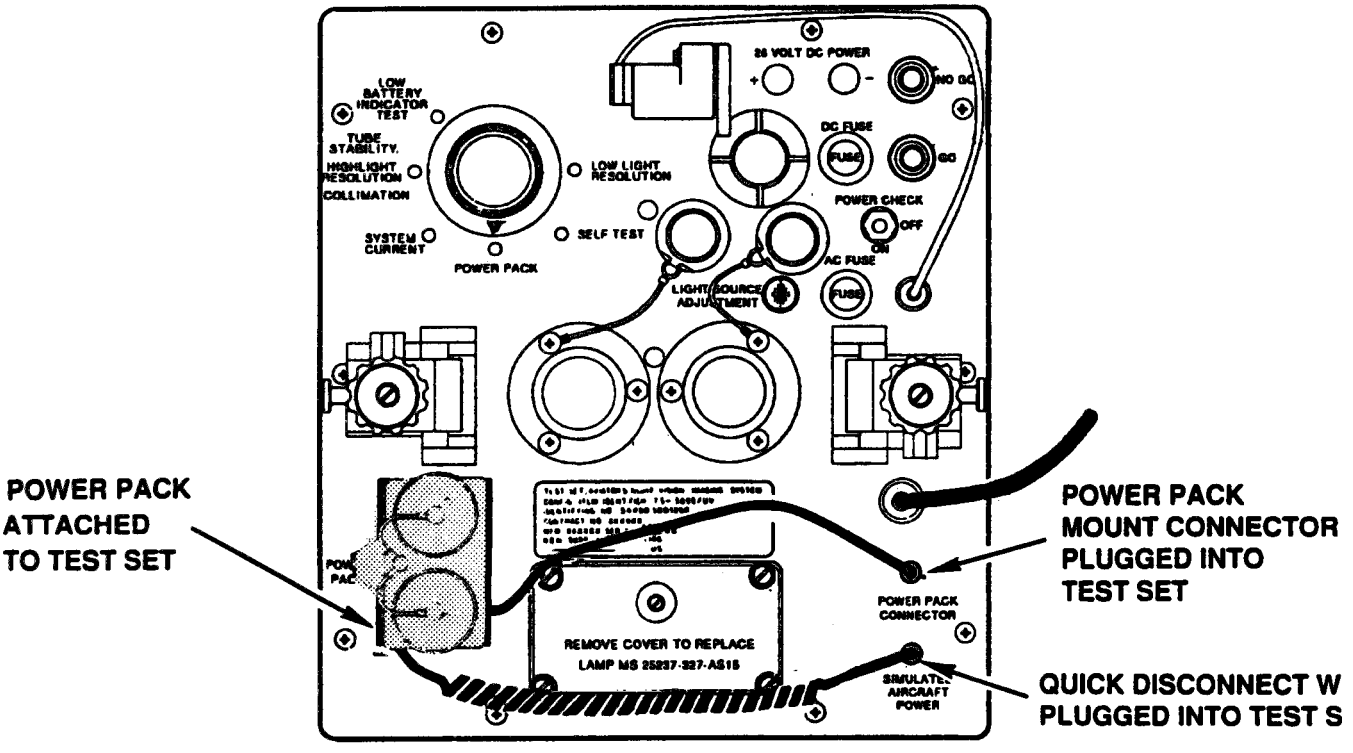


Figure 2-17. Connecting the Power Pack to Stimuiated Aircraft Power.

10. Return the ON/OFF/ON power switch on the power pack to the OFF position.

11. Disconnect the coiled quick disconnect cable from the power pack and test set.

12. Reinstall the batteries and put both battery caps back on by pushing them in and turning them clockwise.

13. Turn the test set's selector switch to the LOW BATTERY INDICATOR TEST (green) position.

14. Flip the ON/OFF/ON power switch on the power pack to the primary ON position. Take off the battery cap for the primary compartment and remove the battery(ies). If the power pack produces a steady low battery indicator light the GO/NO-GO indicator should show the green (GO). If the power pack produces a blinking low battery indicator light, the green and red (GO/NO-GO) lights should fluctuate in a steady rhythmic manner. If either the red (NO-GO) light or green (GO) light remains steady, the power pack is bad and must be rejected.

2-14 POWER PACK TEST-Continued

15. Reinstall the battery (ies) and cap and repeat step 14 for the alternate ON position (with reference to the ON/OFF/ON label) and battery compartment.

16. Return the ON/OFF/ON power switch on the power pack to the OFF position.

17. Remove the BA-5567/U lithium batteries and install good BA-3058/U AA batteries into the battery cartridges and insert one cartridge into each battery compartment.

18. Repeat steps 1 through 15 for the BA-3058/U AA battery. However, during step 14 be sure to withdraw the battery cartridge part way after taking off a battery cap. Because the battery cartridge can still have full electrical contact even when the cap is removed, this will ensure there is no contact with the batteries.

19. Return the ON/OFF/ON power switch on the power pack to the OFF position.

20. Disconnect the power pack's mount connector from the test set and the quick-disconnect cord from the power pack and SIMULATED AIRCRAFT POWER receptacle on the test set.

21. Pull the power pack off the test set and remove the batteries from the battery compartments,

2-15 ALTERNATE POWER PACK TEST

If the TS-3895/UV or TS-3895A/UV test set is not available, use the following alternative procedure to check if the power pack functions properly. If the power pack fails the function check, the assembly is defective and needs to be replaced.

INITIAL SETUP

Test Facility

Electronic repair service area

Equipment

Multimeter
Known good helmet and visor mount assembly for the GM-6

Materials/Parts

Two BA-5567/U lithium batteries and four BA-3058/U AA alkaline batteries

---

PROCEDURE

1. Obtain one BA-5567/U lithium battery. Using the multimeter, check the voltage across the contacts on the battery. The voltage must be 3.0 vdc or replace the battery with a fresh one.

2-15 ALTERNATE POWER PACK TEST - Continued

2. Connect the power cable of the power pack to a known good helmet and visor mount assembly.

3. Insert the battery into one compartment of the power pack and make sure the battery cap is secured. Make sure the other battery compartment is empty.

4. Flip the ON/OFF/ON switch to ON position on the side with the battery.

5. Using the multimeter, check the voltage across the gold contacts in the mount as shown below (fig. 2-18). The voltage should be 2.4 to 3.0 vdc; if not, the power pack is defective and must be replaced.

(a) Plunger contact position 1(-) with contact position 3(+),

(b) Plunger contact position 2(+) with contact position 4(-).

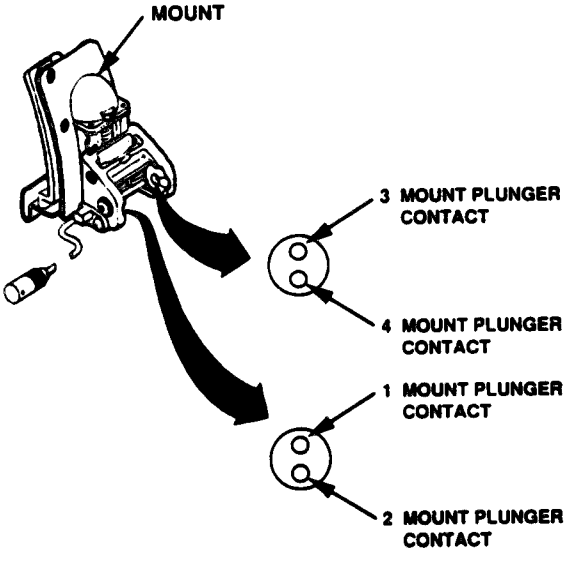


Figure 2-18. Contact Locations.

6. Flip the ON/OFF/ON switch to the other ON position on the side without the battery. The red LED in the base of the mount should light or blink. If the LED does not come on or blink the power pack is defective and must be replaced.

7. Return the ON/OFF/ON power switch on the power pack to the OFF position.

8. Remove the BA-5567/U lithium battery from the power pack and repeat steps 3 through 7 for the other battery compartment.

9. Remove the battery from the power pack.

10. Obtain two BA-3058/U AA alkaline batteries and insert them into a battery catridge. Use the multimeter to check the voltage across the contacts on the battery catiridge. It must be 3.0 vdc or replace the batteries with fresh ones.

11. Repeat steps 3 through 9 using the BA-3058/U AA batteries instead of the BA-5567/U lithium battery.

2-16 GM-6(V) VIEWER MOUNT OR GM-6(V)2 OFFSET VIEWER MOUNT ASSEMBLY SLIP RING CONTACTS CONTINUITY CHECK

INITIAL SETUP

Test Facility

Electronic repair service area

Equipment

Multimeter

PROCEDURE

This procedure checks the continuity between the slip ring contacts of the viewer mount assembly and offset viewer mount assembly.

Using the multimeter, perform the following continuity checks. Make sure to set the multimeter to the low ohms scale. The meter must show continuity between the two sets of slip ring contacts listed and shown below (fig. 2-19).

(a) Upper slip ring contact on the left side of the viewer mount to the lower slip ring contact on the right side.

(b) Lower slip ring contact on the left side to the upper slip ring contact on the right side,

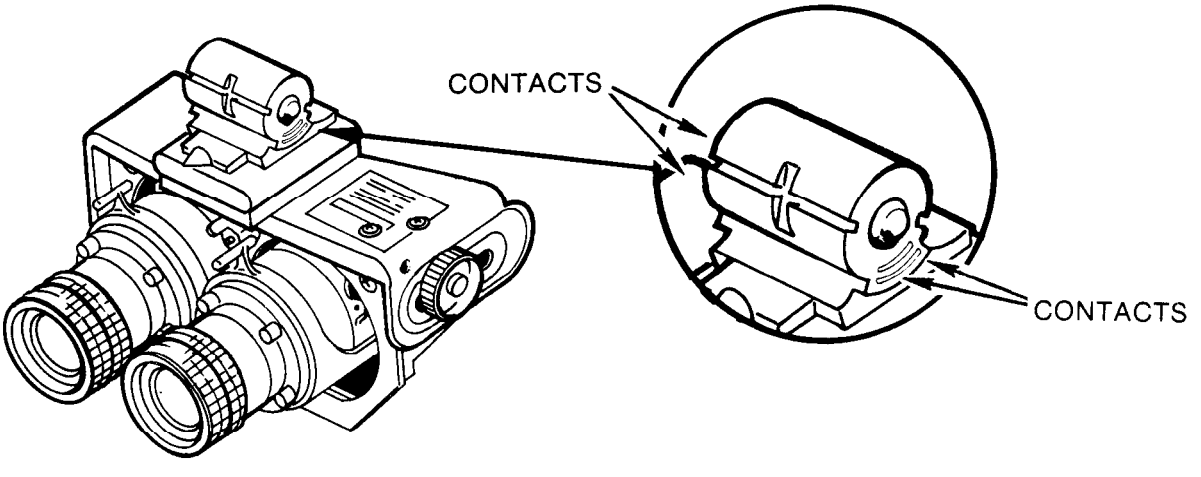


Figure 2-19. Viewer Mount Assembly Contact Positions.

2-17 GM-6(V)1 VIEWER MOUNT ASSEMBLY SLIP RING CONTACTS TO THE ELECTRICAL CONNECTOR CONTINUITY CHECK (Serial numbers 0001 thru 3929).

INITIAL SETUP

Test Facility

Electronic repair service area

Equipment

Multimeter with sharp tip probes.

Equipment Condition

Viewer mount remove from binocular assembly.

PROCEDURE

This procedure checks the continuity between the viewer mount assembly slip ring contacts and the mount electrical connector plug.

1. Remove the viewer mount assembly (para 2-21, Removal).

2. Using the muitimeter, perform the following continuity checks with the eyepiece lens end facing you. Set the mulitimeter to low ohms scale. The meter must show continuity between the two sets of slip ring contacts and the electrical connector as shown below and as illustrated in Figure 2-20. If the mount assembly slip ring contacts and electrical connector fails the continuity check, the GM-6(V)1 viewer mount wiring must be modified. Send to next higher level of maintenance.

NOTE

The meter must show continuity between the slip ring contact and both electrical connectors to pass the test.

(a) Upper slip ring contact (7) with the red wire socket (1) in the electrical connector.

(b) Upper slip ring contact (7) with the red wire socket (5) in the electrical connector.

(c). Lower slip ring contact (3) with the red wire sockets (1) in the electrical connector for continuity.

(d). Lower slip ring contact (3) with the red wire socket (5) in the electrical connector.

2-17 GM-6(V)1 VIEWER MOUNT ASSEMBLY SLIP RING CONTACTS TO THE ELECTRICAL CONNECTOR CONTINUITY CHECK (Serial numbers 0001 thru 3929) - Continued.

(e) Left lower slip ring contact (8) with the black (2) wire socket.

(f) Left lower slip ring contact (8) with the black (6) wire socket.

(9) Right upper slip ring contact (4) with the black (2) wire socket.

(h) Right upper slip ring contact (4) the black (6) wire socket.

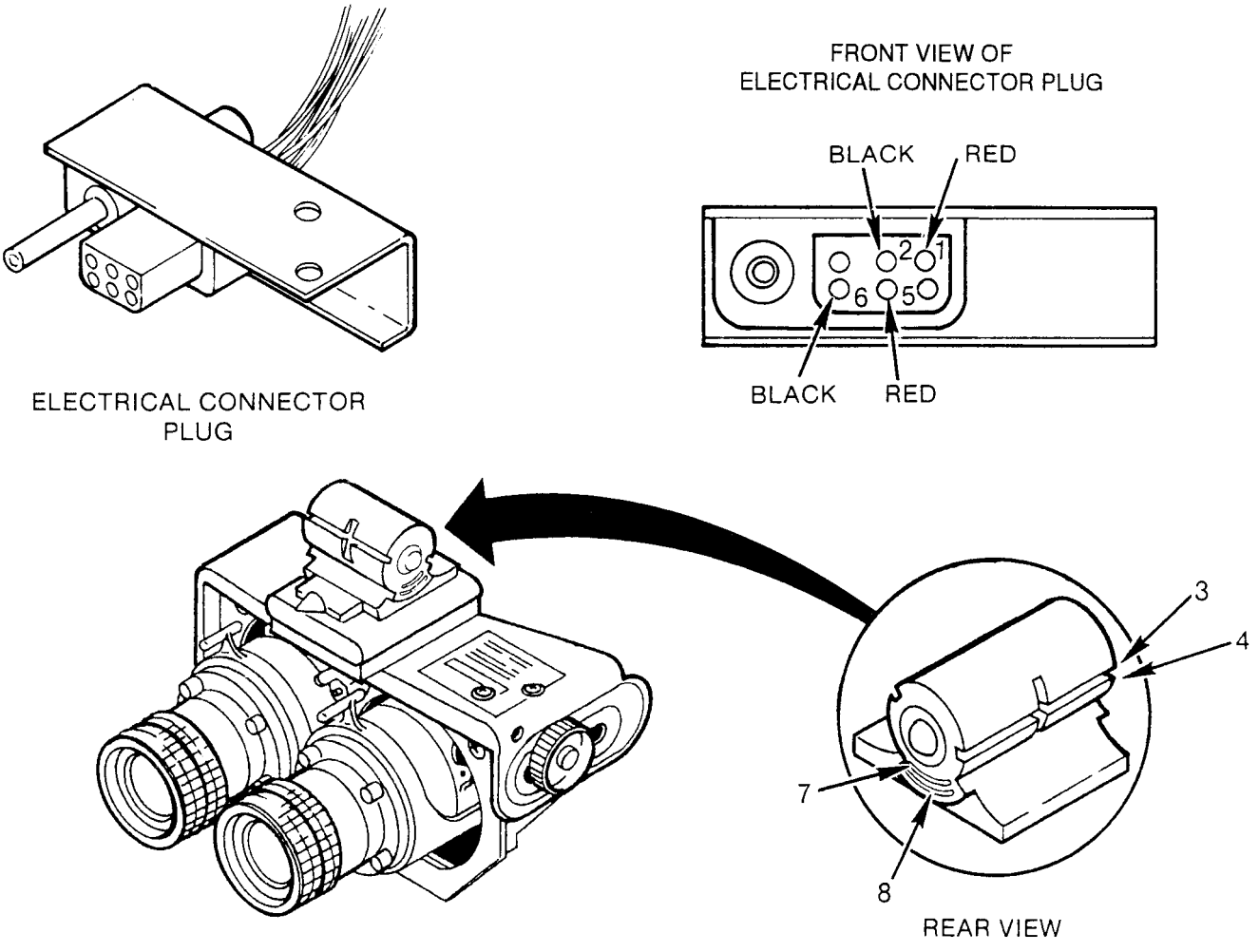


Figure 2-20. Viewer Mount Assembly Continuity Check.

3. If the the mount assembly slip ring contacts and electrical connector plug fails the continuity check, the GM-6(V)1 viewer mount wiring must be modified. Send to the next higher level of maintenance.

4. If continuity is achieved , install viewer mount assembly (para 2-21, installation)

2-18 GM-6(V)1 VISOR MOUNT OR GM-6(V)2 OFFSET VISOR MOUNT ASSEMBLY CONTINUITY CHECK

INITIAL SETUP

Test Facility

Electronic repair service area

Equipment

Multimeter

1. Locate the 4-pin female plug on the right side of the visor mount assembly.

2. Locate the red dot or keyway on the side of the connector (fig. 2-21).

3. View the plug from the end which receives the mating connector. The pins are numbered in a clockwise direction as follows. From the red dot or keyway, The first pin is 2, followed by 3, then 4 and finally 1.

4. Hold the visor mount assembly so it is facing you and the gold contacts are on the bottom edge.

5. The two contacts on the left are numbers 1 and 2. Number 1 is the negative mount plunger and is the uppermost contact of that side. Number 2 is the positive mount plunger contact and the lower contact on that side.

6. The contacts for pins 3 and 4 are located on the opposite side. The uppermost contact is number 3, the positive plunger contact, and the lower contact is number 4, the negative plunger contact.

7. Using the multimeter, perform the following continuity checks. Make sure to set the multimeter to the low ohms scale. The meter must show continuity between the sets of contacts shown below to pass this test.

(a) Mount connector socket position 1 with plunger contact position 2.

(b) Mount connector socket position 1 with plunger contact position 3.

(c) Mount connector socket position 3 with plunger contact position 1.

(d) Mount connector socket position 3 with plunger contactposition 4.

2-18 GM-6(V)1 VISOR MOUNT OR GM-6(V)2 OFFSET VISOR MOUNT ASSEMBLY CONTINUITY CHECK - Continued

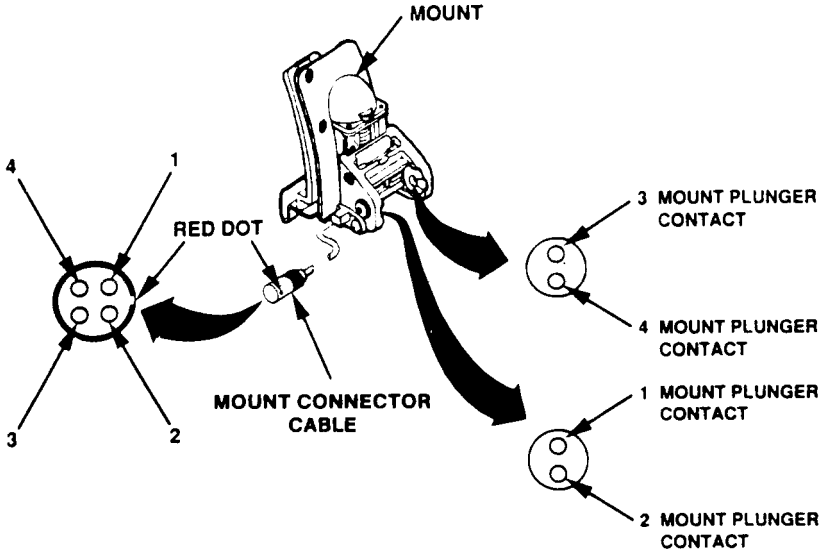


Figure 2-21. Visor Mount Assembly Contact Positions.

8. Again, using the multimeter, connect the probes to the appropriate contacts in the sequence described below. Refer to Figure 2-21 to identify the contact positions. The meter must not indicate continuity between the set of contacts shown below or the assembly has a short and needs to be replaced.

(a) Mount connector socket position 1 with plunger contact position 1.

(b) Mount connector socket position 1 with plunger contact position 4.

(c) Mount connector socket position 3 with plunger contact position 2.

(d) Mount connector socket position 3 with plunger contact position 3.

9. If the mount fails any of the above checks, it is defective. The visor mount or offset visor assembly must be removed from the helmet per TM 10-8415-206-12&P, Operator's and Organization Maintenance Manual Including Repair Parts and Special Tools List for the SPH-4 Helmet. Send the visor mount or offset visor mount assembly to AVIM for further checkouts and possible repair.

Section V. Maintenance Procedures.

2-19 REMOVAL AND REPLACEMENT OF THE GM-6(V)1 VISOR MOUNT ASSEMBLY OR GM-6(V)2 OFFSET VISOR MOUNT ASSEMBLY

Refer to TM 10-6415-206-12&P for removal and replacement instructions for the visor mount assembly and offset visor mount assembly

2-20 REMOVAL AND REPLACEMENT OF THE VISOR LINK, GM-6(V) I OR GM-6(V)2 NVG

Refer to TM 10-6415-206-12&P for removal and replacement instructions for the visor link.

2-21 REMOVAL AND REPLACEMENT OF THE GM-6(V)1 VIEWER MOUNT ASSEMBLY OR GM-6(V)2 OFFSET VIEWER MOUNT ASSEMBLY

INITIAL SETUP

Facility

Clean work area

Tools

TK-101/G, Electronic Tool Kit

Supplies

RTV 103, Adhesive silicone (black)
Lacing ties

NOTE

- When replacing a face mask with a GM-6(V)1 viewer mount or GM-6(V)2 offset viewer mount, you must remove the ID data plate from the face mask and install it on the GM-6(V)1 and GM-6(V)2 mount for future identification.
- The AN/PVS-5A, -5B, or -5C'S binocular assembly can be used with the GM-6(V)1 or GM-6(V)2 NVG.

2-21 REMOVAL AND REPLACEMENT OF THE GM-6(V)1 VIEWER MOUNT ASSEMBLY OR GM-6(V)2 OFFSET VIEWER MOUNT ASSEMBLY - Continued

NOTE

Removal is limited to removing the GM-6(V)1 viewer mount assembly and GM-6(V)2 offset viewer mount assembly. The face mask removal procedures are at paragraph 4-16.

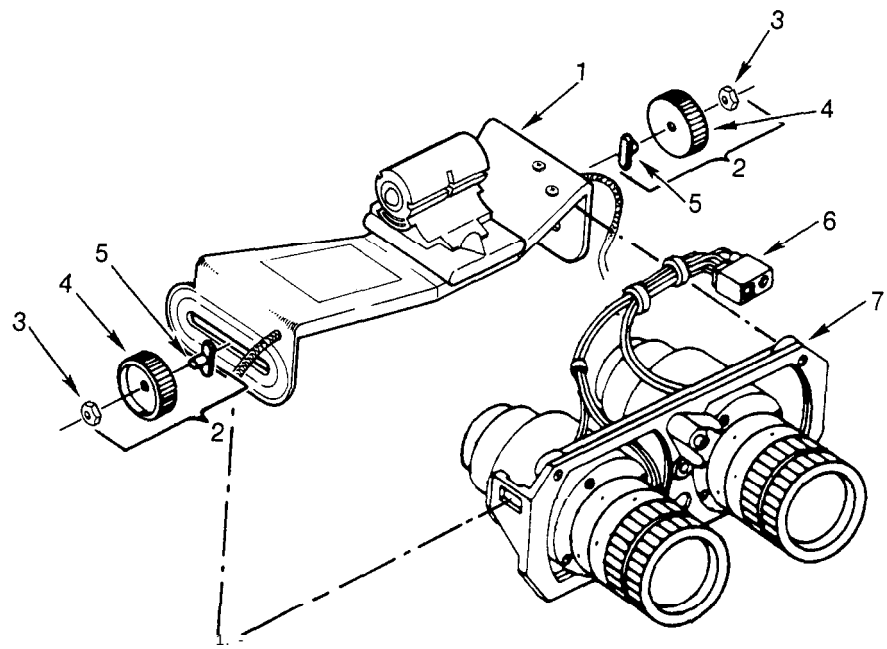
1. Disconnect the binocular electrical connector (6) from the electrical connector on the viewer mount or offset viewer mount assembly (1).

NOTE

Do not remove the self-locking nut from the shoulder screw. If self-locking nut is removed, it must be replaced with a new nut or clamp knob assembly. When replacing the nut, make sure the plastic star insert is to the outside or it will vibrate loose and let the NVG seperate.

2. Loosen self-locking nuts (3) of both clamp knob assemblies (2) and turn clamp knobs (4) in counterclockwise direction (rotated 90°) until shoulder screw (5) can be removed from binocular frame assembly (7), Remove through holes in viewer mount assembly (1) or offset viewer mount assembly (1).

3. Lift the GM-6(V)1 viewer mount assembly (1) or GM-6(V)2 offset viewer mount assembly (1) off the binocular assembly.



GM-6(V)1 Viewer Mount Assembly Replacement
(GM-6(V)2 Offset Viewer Mount Assembly Similar)

2-21 REMOVAL AND REPLACEMENT OF THE GM-6(V)1 VIEWER MOUNT ASSEMBLY AND GM-6(V)2 OFFSET VIEWER MOUNT ASSEMBLY - Continued

INSTALLATION

WARNING

If the monocular assembly or image intensifier has been rebuilt by SAAD, you cannot use it for Aviation.

CAUTION

If RTV 103 is used, allow 24 hours for curing before the goggles are used.

1. Place the binocular assembly (7) upright on the working surface.

2. Position the viewer mount assembly (1) or offset viewer mount assembly (1) on top of the binocular frame assembly with the concave end (connector assembly on your left) above the eyepiece lenses of the binocular assembly (7).

3. Place a lacing tie to the wires and put silicone adhesive to hold the wires to the viewer mount assembly (1) or offset viewer mount assembly (1).

NOTE

When replacing the GM-6(V)1 viewer mount and GM-6(V)2 offset viewer mount assembly, DO NOT connect the blue wire to the LED light.

4. Connect the binocular assembly's electrical connector (6) to the electrical connector of the viewer mount assembly (1) or offset viewer mount assembly (1).

NOTE

Do not remove the self-locking nut from the shoulder screw. If self-locking nut is removed, it must be replaced with a new nut or clamp knob assembly. When replacing the nut, make sure the plastic star insert is to the outside or the nut will vibrate loose and let the NVG separate.

5. Insert one clamp knob assembly shoulder screw (5) through holes in viewer mount assembly (1) or offset viewer mount assembly (1) and binocular frame assembly (7) then rotate 90° to engage vertical slots-in side of the frame assembly.

6. Insert other clamp knob assembly shoulder screw (5) per step 5 above.

7. Tighten the screw to secure the binocular connector to the connector on the viewer mount and offset viewer mount.

8. Refer to paragraph 2-22 for Removal and Installation of the Data Plate.

2-22 REMOVAL AND INSTALLATION OF THE DATA PLATE FROM FACE MASK ASSEMBLY TO VIEWER MOUNT ASSEMBLY OR OFFSET VIEWER MOUNT ASSEMBLY.

INITIAL SETUP

Facility

Clean work area

Tools

TK-101/G, Electronic Tool Kit

Supplies

Super Glue
Scraper, Razor Blade

NOTE

When replacing a face mask with a GM-6(V)1 viewer mount or GM-6(V)2 offset viewer mount, remove the ID data plate from the face mask and install it on the GM-6(V)1 and GM-6(V)2 mount for NVG identification.

REMOVAL

1. Using a knife or razor blade scraper, carefully remove the data plate (2) from the face mask (3).

2. Lay the data plate (2) on a clean flat surface and smooth out to lay flat.

3. Scrap and remove residue off the back of data plate.

4. Remove the inside screw (4) that holds the electrical connector in place on the viewer mount (5) or offset viewer mount (5).

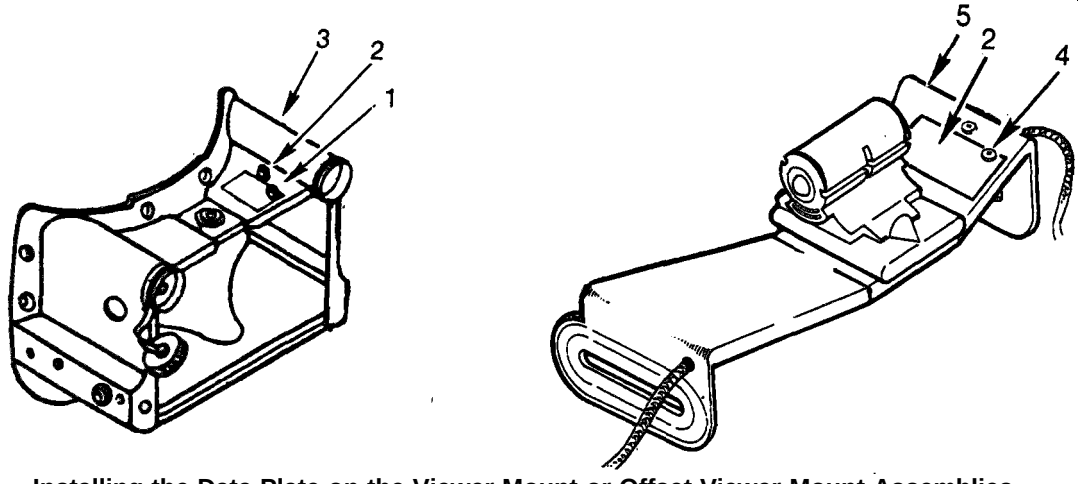
INSTALLATION

1. Using super glue, glue the data plate (2) to the top of the viewer mount (4) (or offset viewer mount) (4) alined with the electrical connector screw hole.

2. Re-install the screw (4) through the data plate and the hole for the electrical connector and tighten (If the data plate is non-matalic, punch a hole for the screw).

3. Record the equipment modification in accordance with DA-PAM 738-751, using DA Form 2408-5-1.

2-22 REMOVAL AND INSTALLATION OF THE DATA PLATE FROM FACE MASK ASSEMBLY TO VIEWER MOUNT ASSEMBLY OR OFFSET VIEWER MOUNT ASSEMBLY - Continued



Installing the Data Plate on the Viewer Mount or Offset Viewer Mount Assemblies. (GM-6(V)1 shown, GM-6(V)2 is similar)

2-23 REMOVAL AND INSTALLATION OF THE NECK CORD

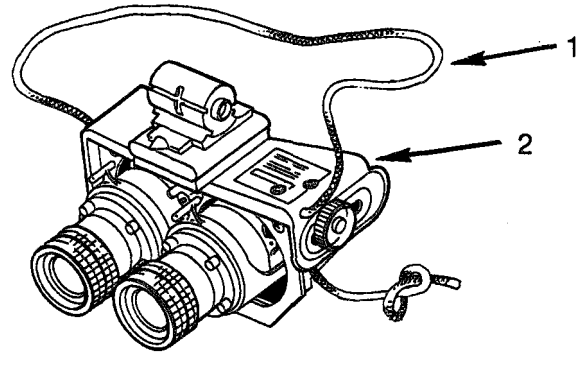
INITIAL SETUP

Facility

Clean work area.

REMOVAL

Remove neck cord (1) by cutting off knotted ends and pull cord (1) through holes in viewer mount assembly or offset viewer mount assembly (2).



INSTALLATION

1. Install new cord (1) by inserting ends through holes from outside to inside of the viewer mount assembly (2) or offset viewer mount assembly (2) and tie a knot in each end.

2. Trim ends leaving about a half inch of treated material to prevent neck cord (1) from unraveling. If neck cord (1) is loose, reinsert through holes in viewer mount assembly (2) or offset viewer mount assembly and retie.

24 REMOVAL AND INSTALLATION OF THE CLAMP KNOB ASSEMBLY

INITIAL SETUP

Facility

Clean work area.

Tool

TK-101 /G Electronic Tool Kit

REMOVAL

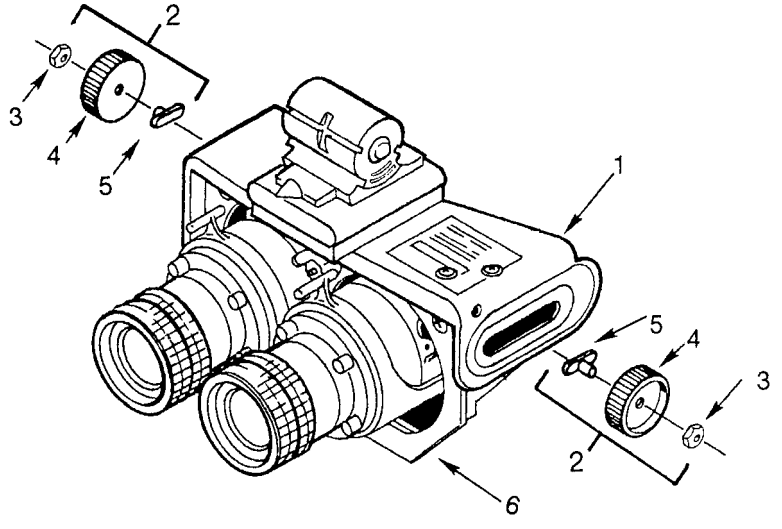
NOTE

Do not remove the self-locking nut from the shoulder screw. If the self-locking nut is removed, it must be replaced with a new one. When replacing the nut, make sure the plastic star insert is to the outside or the nut will vibrate loose and let the NVG seperate.

Unscrew the self-locking nut (3) and loosen the clamp knob (4). Twist the assembly 90° to disengage the shoulder screw (5) and remove it from the frame assembly (6) and viewer mount assembly (1) or offset viewer mount assembly (1).

INSTALLATION

1. Screw the clamp knob (4) and self-locking nut (3) onto the shoulder screw (5) but do not tighten it at this time.



2-24 REMOVAL AND INSTALLATION OF THE CLAMP KNOB ASSEMBLY- Continued

2. Insert the clamp knob assembly sholder screw (5) through the hole of the viewer mount assembly (1) or offset viewer mount assembly (1) and frame assembly (6).

3. Turn the shoulder screw 90° to engage the shoulder screw in the vertical slot in the frame assembly (6).

4. Screw the clamp knob (4) until it is fingertight against the face mask or viewer mount or offset viewer mount.

5. Repeat steps 2, 3, and 4 with the other clamp knob assembly.

6. Using a wrench, tighten the self-locking nut (3) against the clamp knob (4) and then loosen it one full turn.

Section VI. Preparation for Storage and Shipment.

2-25 PACKING THE NVG

CAUTION

Failure to loosen the clamp knobs and lever clamp (wing nut) before stowing could result in damage to the face mask and frame assembly.

1. Place the lens caps on the objective lenses and eyepiece lenses. Loosen the clamp knobs and lever clamp (wing nut) before storing.

NOTE

Before returning the goggles or any component to the carrying case, make sure it and the carrying case are free of dirt, dust, and moisture.

2. Insert the NVG, objective lens end first, and power pack into the carrying case. Close carrying case and secure latch.

3. Place carrying case in the fitted portion of the shipping and storage case and replace the top of the case and secure latches.

CHAPTER 3
UNIT MAINTENANCE INSTRUCTIONS (GROUND USE)

OVERVIEW

This chapter contains maintenance procedures that are the responsibility of Unit Maintenance GROUND USE). Operation instructions and operator maintenance can be found in TM 11-5855-238-10.

The maintenance actions depicted in this section are the same for all models AN/PVS-5, -5A, -5B, and -5C NVG unless otherwise noted.

Section I. Repair Parts, Special Tools, TMDE, and Support Equipment

3-1 COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, as applicable to your unit.

3-2 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix B, paragraphs B-1 thru B-5, for a description of the GROUND USE section of the Maintenance Allocation Chart (MAC). Also, refer to Appendix C, Repair Parts and Special Tools List (RPSTL), for information on Special Tools, Test, Measurement, and Diagnostic Equipment (TMDE), and Support Equipment required at unit maintenance.

3-3 REPAIR PARTS

Repair parts are listed and illustrated in the RPSTL at Appendix C of this manual.

Section II. Service Upon Receipt

3-4 SITE AND SHELTER REQUIREMENTS

The checks and services functions, as prescribed herein, should be accomplished in the electronic repair service area. A standard workbench provides an adequate working area for NVG maintenance requirements. The surface area must be kept clean and free of chemicals, vapors, and emissions that may damage external parts of the NVG. Normal sheltering from the elements (cold, rain, dust, etc.) is necessary. Air conditioning is recommended, whenever possible.

There should be provisions to perform certain service functions and specified tests in a dark room or dark area in which all places where light can enter (e. g., windows, doors, wall and ceiling joints) have been blocked. This blocking can be accomplished using either permanent or temporary shields such as tape or heavy curtains. The room or area should appear dark (without the evidence of light entering the area) to your unaided eye after approximately 10 minutes of dark adaptation. Use a night vision device to identify and isolate the place where light enters. The clean station does require adequate lighting to accomplish detail work.

3-5 SERVICE UPON RECEIPT OF MATERIEL

NOTE

The NVG is a precision electro-optical instrument so handle it carefully.

a. Inspect the equipment for possible damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy.

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750 as applicable.

c. Refer to DA Pam 25-30, Consolidated index of Army Publications and Blank Forms, to determine whether there are modification work orders (MWO) pertaining to the equipment.

d. Upon receipt of a new NVG system send the system to DS for its initial servicing.

Section III. Preventive Maintenance Checks and Services (PMCS)

3-6 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) TABLE

a. General. PMCS provides easy access to the schedule of checks and services for the NVG. Service intervals are periods of time within which the equipment must be checked and serviced to maintain full operation and reduce failures.

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 the warnings and cautions to prevent serious injury to yourself and others, or to prevent your equipment from being damaged.

c. Explanation of Table Entries.

(1) Sequence Number Column. Numbers in this column are for reference. When completing DA Form 24) 8-30 NVG Inspection and Maintenance Record, do checks and services for the intervals listed in the sequence described in accordance with DA Pam 738-750.

(2) Interval Column. NOT APPLICABLE - This column is not present in this particular PMCS table because all tasks required to be performed have a 180 day interval.

(3) Location, Check Service Column. This column provides the location and the item to be checked or serviced.

(4) Procedure Column. This column 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 time stated in the interval column.

(5) 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 make 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 failure.

d. Other Table Entries. Be sure to observe all special information and Notes that appear in your table.

3-6 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) TABLE - Continued

ALL CHECKS AND SERVICES ARE TO BE PERFORMED **EVERY 180 DAYS.**

Table 3-1. Preventive Maintenance Checks and Services for the NVG.

Seq No	Location Item to Check Service	Procedure (TO BE PERFORMED EVERY 180 DAYS)	Not Fully Mission Capable If:
1	Maintenance forms and records	Open carrying case, inventory items and check DA Form 2404 and logbook in accordance with DA Pam 738-750.	
		Low light and high light resolution check and purging.	Not current
		Any faults on the DA Form 2404 present.	Not corrected
2	Battery compartment	Check for corrosion, damage caps, or gasket (o-ring) missing.	Contacts corroded. Missing or damaged caps. Missing gasket (o-ring).
3	Lenses	Inspect objective lenses and eyepiece lenses for cleanliness, scratches, chips or cracks. If necessary, clean and dry lenses using isopropyl alcohol and cotton-tipped applicators.	Scratches hinder vision on test set, chips, or cracks.
4	Diopter adjustment ring	Rotate diopter adjustment ring to see that they move freely, 1/4 turn.	Diopter adjustment ring binds.
5	Objective focus assembly	Check objective to make sure the whole assembly is not loose, that there is free movement through the full range of travel, that the focus ring can adjust through infinity.	Objective assembly loose, travel binds, or not set correctly.

3-6 PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) TABLE - Continued

Table 3-1. Preventive Maintenance Checks and Services for the NVG.

Seq No	Location Item to Check Service	Procedure (TO BE PERFORMED EVERY 180 DAYS)	Not Fully Capable If:
6	Clamp knob assembly	Check for proper operation to allow loosening and tightening to adjust binoculars for eye relief.	Eye relief adjustment cannot be made or fails to remain set.
7	Monocular housing	Inspect exterior surface for damage, frayed wires or missing purge valves. **CAUTION** Keep the protective lens caps on the binocular when not in use. Operate the NVG only under dark conditions.	Cracked, damaged, or missing purge valve.
8	Viewed image	Use the TS-4348/UV test set to check the viewed image. Refer to inspection criteria for image intensifier operation. (See para 3-7).	Presence of any one or more faults that fail the inspection criteria. NVG fails either resolution test.

3-7 INSPECTION CRITERIA FOR IMAGE INTENSIFIER OPERATION

CAUTION

Keep the protective caps on the NVG whenever it is not in use.
Operate the binocular only under darkened conditions.

As directed in the PMCS table, image intensifier's operation must be checked periodically. This section provides information for the NVG maintenance personnel concerning what to look for, how to look for it, and how to determine if the NVG needs to be repaired. All not fully mission capable shall be recorded on the appropriate maintenance forms. While formal determination of a defective image intensifier is made by DS, the operator is the ultimate person responsible for determining whether the image intensifier operation interferes with his ability to perform his mission, the operator must record the problem on the appropriate maintenance forms per DA Pam 738-750 and return NVG to the maintainer.

a. Shading. Each monocular should present a perfect circle. If shading is present, you will not see a fully circular image (fig. 3-l). Shading always begins on the edge and moves inward. If shading is present, the image intensifier must be replaced by DS.

NOTE

Make sure the shading is not the result of improper tilt, eyespan adjustments, or vertical adjustment.

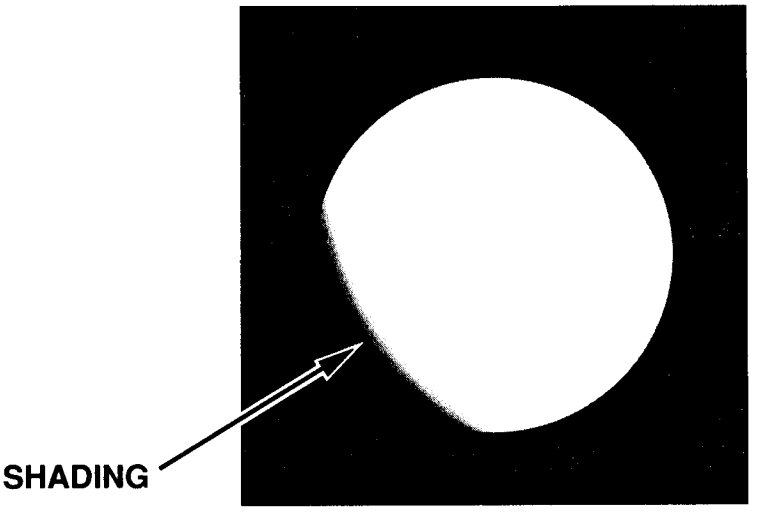


Figure 3-1. Shading.

3-7 INSPECTION CRITERIA FOR IMAGE INTENSIFIER OPERATION - Continued

b. Edge Glow. Edge glow is a bright area (sometimes sparkling) in the outer portion of the viewing area (fig. 3-2). To check for edge glow, remove the binocular from the test ports with power from the battery and block out all light by cupping a hand over the lens. If the image intensifier is displaying edge glow, the bright area will still show up. If edge glow is present, the image intensifier must be replaced by DS.

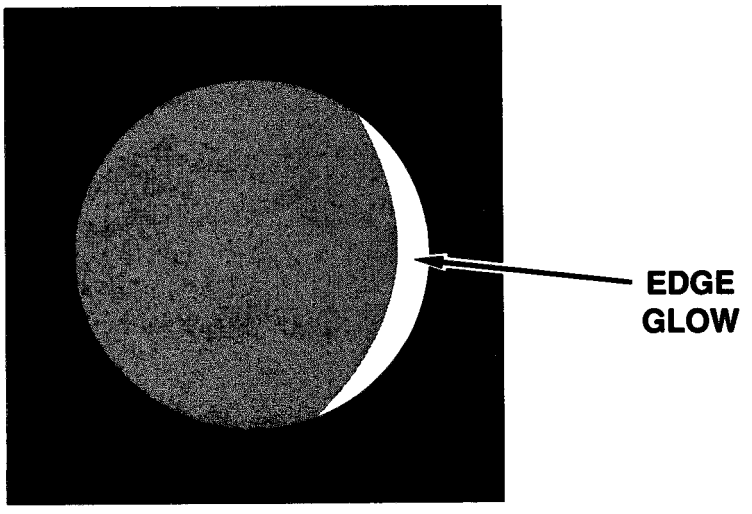


Figure 3-2. Edge Glow.

c. Flashing, flickering, or Intermittent Operation. The image may appear to flicker or flash. This can occur in either one or both monocular. If there is more than one flicker, check for loose wires. The goggles must be repaired by DS.

Section IV. Troubleshooting

3-8 PURPOSE OF TROUBLESHOOTING

The purpose of troubleshooting is to identify, usually by fault isolation, the cause for equipment malfunction. Table 3-2 provides information pertaining to the troubleshooting procedures for unit maintenance.

CAUTION

Unit maintenance personnel are not authorized to open the NVG binocular.

Do not use acetone to clean any component of the NVG.

3-8 PURPOSE OF TROUBLESHOOTING - Continued

Table 3-2. Troubleshooting

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Light visible around outside edges of full face mask.	Headstrap needs adjustment.	Adjust headstrap for tighter fit.
	Check resiliency of face mask cushion.	Replace face mask cushion,
	Face mask is cracked.	Replace face mask.
Headstrap cannot be tightened.	Buckles, fasteners, or materials are defective.	Replace headstrap.
	Check nylon strap webbing for expansion.	Replace headstrap.
Neck cord open.	End knots frayed.	Retie end knots.
	Cord is worn.	Replace neck cord.
Rotary switch knob slips.	Rotary switch knob setscrew worn, damaged or loose.	Tighten setscrew or replace.
Rotary switch is loose in frame.	Loose locking nut.	Send to next higher level for repair.
	Cracked mask around rotary switch	Replace face mask.
Demisting shield will not stay on, or is badly scratched.	Demisting shield is bent, broken, or damaged caused by wiping while wet.	Replace demisting shield,
Sacrificial filters (AN/PVS 5B and -5 C).	Filters are scratched or pitted due to blowing sand or dirt. Not clear.	Replace sacrificial filters.
Viewed object cannot be seen.	Check adjustment of objective focusing knob, and diopter adjustment ring.	If focus adjustments do not correct malfunction, turn goggles in to the next higher level of maintenance for repair.
Shading present	Defective image intensifier. next higher level for repair.	Send rejected ground use goggles to next higher level for repair.
Flickering, flashing, or intermittent operation.	Defective image intensifier or loose electrical connection.	Send rejected goggles to next higher level for repair.
High-light cutoff circuit does not operate (AN/PVS-5C).	Perform high-light cutoff test to check circuit (para 3-11).	Send goggles to next higher level of maintenance for repair.

3-8 PURPOSE OF TROUBLESHOOTING - Continued

Table 3-2. Troubleshooting - Continued

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Objectives or eyepieces can not be focused.	Focus mechanism broken or out of adjustment.	Refer the binocular to next higher level for repair.
Poor image.	Objective focus knob or diopter adjustment ring not focused correctly, lenses fogged or dirty, or intensifier is defective.	Adjust focus of lenses and clean external lenses. If lenses are fogged internally, or if intensifier is defective, send to next higher level of repair. if the lenses are correctly set and clean, perform the image intensifier tests in paragraph 3-9. if it fails, send it to next higher level for repair.
Both monoculars will not come on.	Batteries are defective.	Replace batteries.
	Batteries are missing or improperly installed.	insert batteries or insert correctly.
	Electrical contacts in battery compartment are dirty, corroded, or damaged,	Clean contacts. Replace battery cap, if necessary. Send to higher level of maintenance.
One monocular will not come on.	Defective image intensifier.	Send to next higher level for repair.

3-9 IMAGE INTENSIFIER TEST USING THE TS-4348/UV

NOTE

Before using the TS-4348/UV test set, refer to TM 11-5855-299-12&P, Operator's and Unit Maintenance Manual for the Electronic Systems, TS-4348/UV to familiarize yourself with its operation and the warnings and cautions associated with that test equipment,

The following procedures are designed to check the performance of the image intensifier in each monocular. If the image intensifier inside either monocular fails the test, send the NVG to DS for repair.

INITIAL SETUP

Test Facility

Dark room

Tools

Flashlight
NVG-compatible flashlight filter: #l5 and #20

Equipment

Test set, Electronic Systems, TS-4348/UV

Materials/Parts

Cotton-tipped applicators
Isopropyl alcohol
Alcohol dispenser
Canned air

Use TM 11-5855 -299-12&P to set up the TS-4348/UV test set,

CAUTION

The TS-4348/UV test set is a delicate instrument. Exercise care not to over tighten or strip the threads on either the adapter or the body of the test set when installing or removing the adapter. Make sure you inspect the threads for damage,

3-9 IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

MOUNTING

1. Clean the objective and eyepiece lenses of the NVG and the port window of the test set by using isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses and moving in larger circles to the outside of the lenses.

2. Remove eyepiece lens caps and objective lens caps from one of the NVG monocular.

CAUTION

If you do not hold the test set, it may fall off the end of the monocular.

3. Hold the test set squarely onto the front of the exposed objective lens of one monocular as shown in Figure 3-7. Continue to hold the test set squarely onto the end of the objective lens while performing the following steps. If you do not hold the test set, it may fall of the end of the monocular.

NOTE

You may use a piece of tape to cover the power light during testing.

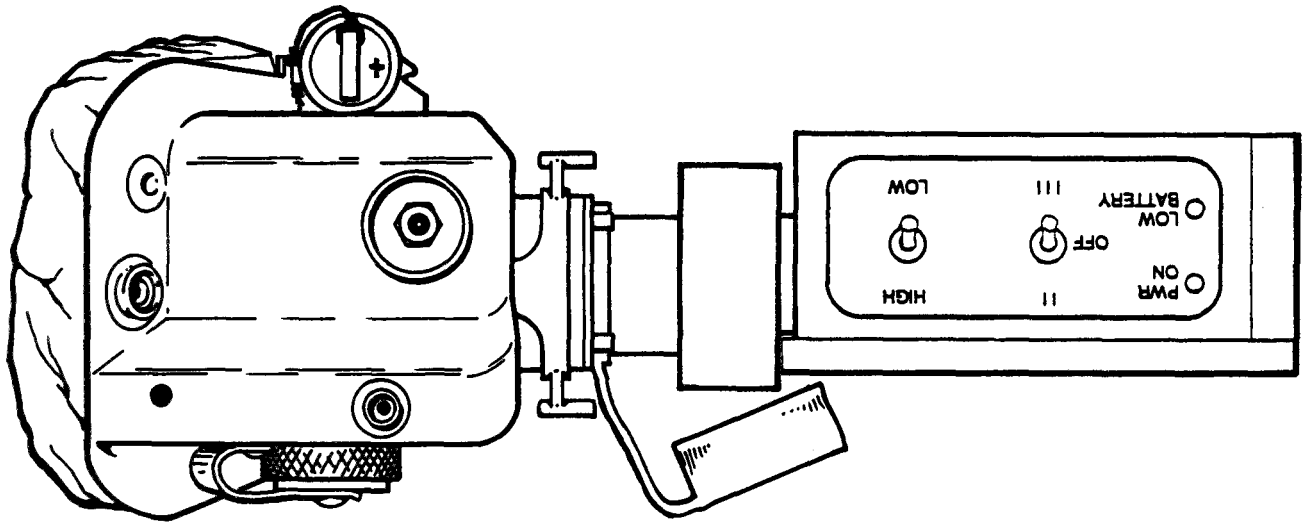


Figure 3-7. Attaching the TS-4348/UV Test Set to the NVG

3-9 IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

LOW-LIGHT RESOLUTION TESTS

Test the NVG'S image intensifier for low-light resolution according to the following steps

NOTE

The following test must be performed in a darkened area. Your eyes must be dark-adapted to perform this test. This takes at least 10 minutes, however, if you have just been exposed to bright sunlight, dark adaption takes longer.

- Do not reject for resolution unless completely dark adapted
- Review the following test procedure before entering the darkened area,
- You will need a flashlight with a NVG compatible filter to read this procedure while in the darkened area.
- You will only see approximately 1/3 center of the image intensifier.

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

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

3. Turn on the test set by setting the "II/III" switch to "II" position

4. Turn on the goggles by turning the rotary switch to ON position

5. Look through the monocular and view the projected pattern. Focus the objective lens and then the eyepiece to obtain the sharpest image.

6, Place the HIGH/LOW switch on the test set to the LOW position. Allow your eyes to adapt to this new light level, This takes about one minute.

7. Look for flashing, flickering, or intermittent operation. Also check the image intensifier for other unacceptable characteristics as described in paragraph 3-7, If any unacceptable conditions are noted, send the NVG to DS for repair.

8. Observe the test target and determine the group number and element of the smallest pattern resolvable

3-9 IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

l LOW-LIGHT RESOLUTION TESTS - Continued

NOTE

For a pattern to be resolvable, three vertical bars and three horizontal bars must be visible. Make sure your eyes have been adequately dark-adapted.

9. The NVG must be able to resolve Group 2, Element 1 (fig. 3-8) under low-light conditions to pass the test. If the monocular does not pass the test, send the NVG to DS for repair.

10. Move the TS-4348/UV to the other monocular and repeat steps 5 through 9 for that image intensifier.

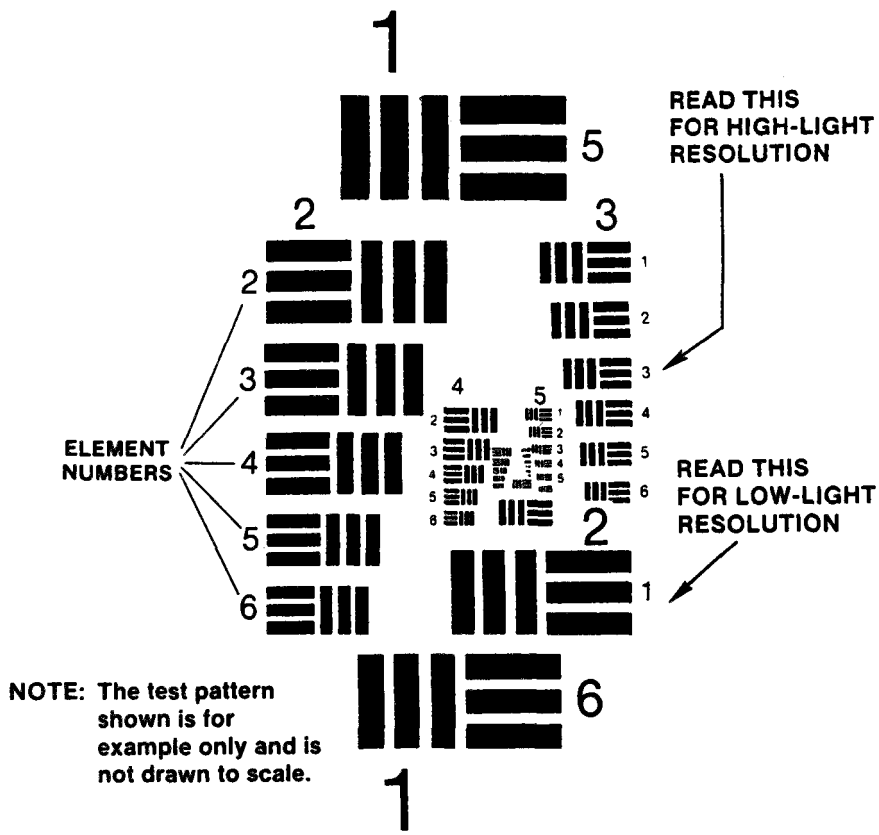


Figure 3-8. TS-4348/UV Test Set Pattern.

3-9 IMAGE INTENSIFIER TEST USING THE TS-4348/UV - Continued

HIGH-LIGHT RESOLUTION TESTS

After the low-light tests, the high-light tube stability and resolution tests are performed according to the followlng steps

1 Place the HIGH/LOW switch on the test set to the HIGH position,

2 If the room lights have been turned on, turn off the room lights and let your eyes adjust to the dark.

3. Turn on the test set by setting the "11/111" switch to "II" position.

4 Turn on the goggles by turning the rotary switch to the ON position,

5. Look through the appropriate monocular and view the projected pattern. Focus the objective lens and then the eyepiece of the monocular to obtain the sharpest image.

6, Look for flashing, flickering, or intermittent operation, Also check the image intensifier for other unacceptable characteristics as described in paragraph 3-7. If any unacceptable conditions are noted, send the NVG to DS for repair.

7, Observe the test target and determine the group number and element of the smallest pattern resolvable

NOTE

For a pattern to be resolvable, three vertical bars and three horizontal bars must be visible. Make sure your eyes have been adequately dark-adapted.

8, The NVG must be able to resolve Group 3, Element 3 (fig, 3-8) under high-light conditions to pass the test. If the monocular does not pass the test, send the NVG to DS for repair.

9 Move the TS-4348/UV test set to the other monocular and repeat steps 5 through 8 for the other image intensifier

3-10 HIGH-LIGHT CUTOFF TEST, AN/PVS-5C

1. Turn the AN/PVS-5C rotary switch to ON

2. With lens cap installed, expose the goggles to light equivalent to a well lighted room

3 The goggles should automatically turn off in approximately 70 seconds, If they do not, turn rotary switch knob to OFF, remove batteries, and return goggles to next higher level of maintenance for repair.

4, If the goggles do turn off automatically, turn rotary switch knob to OFF to reset circuits, then back to ON to test the reset circuits.

5. If the goggles do not turn off or if the goggles do not reset, turn the rotary switch knob to OFF, remove batteries, and return goggles to next higher level of maintenance for repair,

Section V. Maintenance Procedures

3-11 REMOVAL AND INSTALLATION OF THE NECK CORD

INITIAL SETUP

Facility

Clean work area.

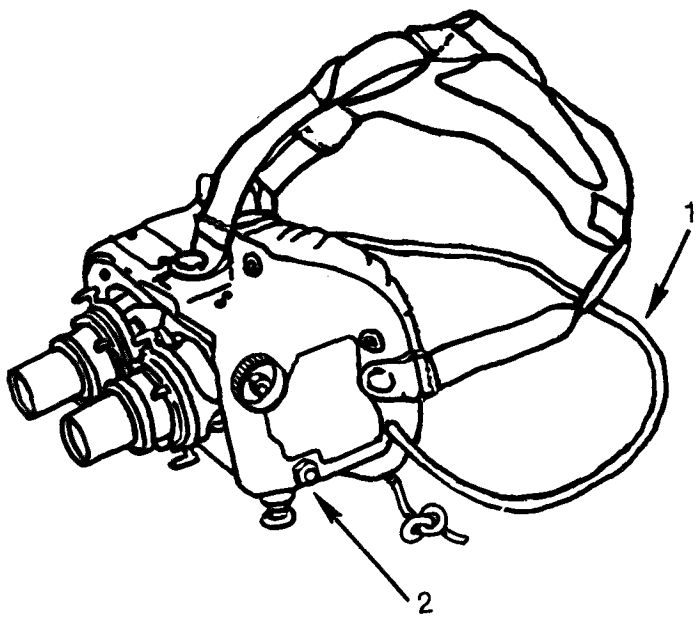
REMOVAL

Remove neck cord (19 by cutting off knotted ends and pull cord (1) through holes in face mask assembly (2)

INSTALLATION

1, Install new cord (1) by inserting ends through holes from outside to inside of the face mask (2) and tie a knot in each end.

2. Trim ends leaving about a half inch of treated material to prevent neck cord (1) from unraveling. If neck cord (1) is loose, reinsert through holes in face mask assembly (2) and retie,



3-12 REMOVAL AND INSTALLATION OF THE HEADSTRAP

INITIAL SETUP

Eacility

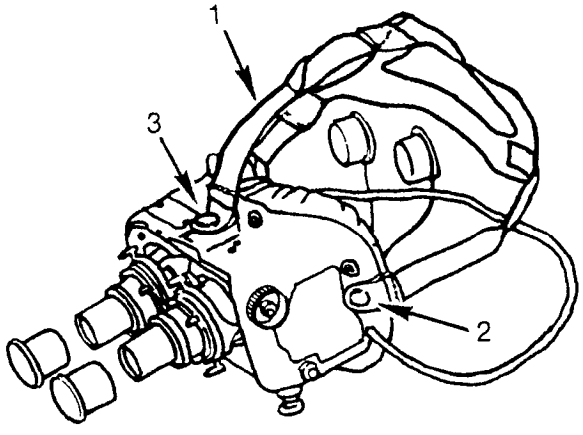
Clean work area.

REMOVAL

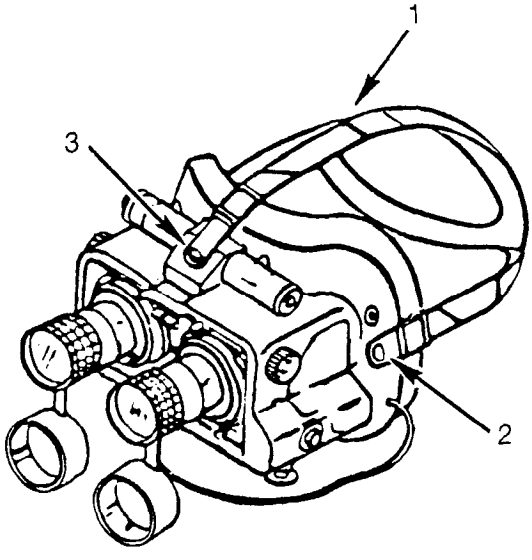
WARNING

The AN/PVS-5B NVG headstrap must not be used with the AN/PVS-5A or -5C face mask as this condition will have an adverse affect on the safety of the user. The AN/PVS-5A and -5C head strap which contains the “lift the white dot’’ style fastener at the center snap.

Unsnap headstrap (1) at two side fasteners and top fasteners (2) (lift at white dot on the button) from the goggles



AN/PVS-5 and ANIPVS-5A NVG
AN/PVS-5C is similar



ANIPVS-5B NVG
(No Lift-Dot)

3-12 REMOVAL AND INSTALLATION OF THE HEADSTRAP - Continued

INSTALLATION

1 [Mall headstrap (1) by snapping at the two side fasteners (2) and at top (3)

2. Adjust Headstrap at adjustment buckle (4) for headgear or headsize,

3-13 REMOVAL AND INSTALLATION OF THE FACE MASK CUSHION ASSEMBLY

INITIAL SETUP

Facility

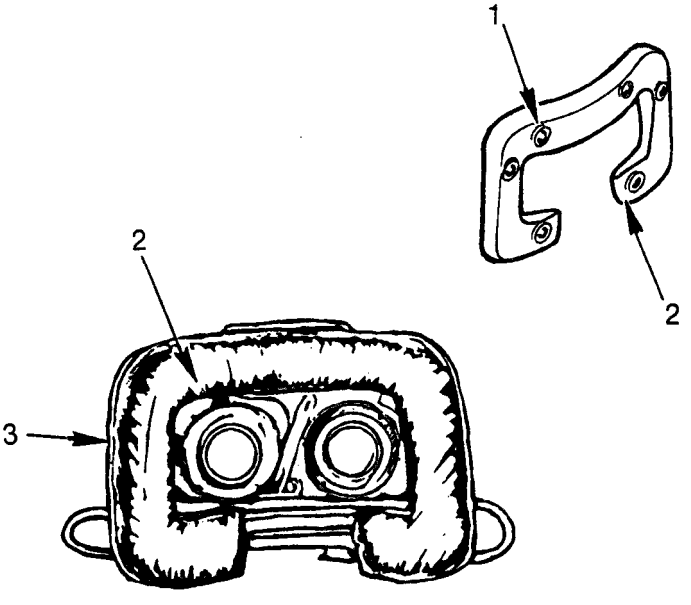
Clean work area

CAUTION

Face mask cushion is made of foam material covered with sheepskin and is easily damaged.

REMOVAL

Unsnap six fasteners (1)holding face mask cushion (2) to face mask (3).



INSTALLATION

1. Install new face mask cushion (2) by snapping fastenrers (1) on six studs in face mask assembly (3).

2. VVipe face mask cushion with clean, lint-free cloth if necessary.

3-14 INSPECTION, REMOVAL, AND INSTALLATION OF THE ROTARY SWITCH KNOB

INITIAL SETUP

Facility

Clean work area.

Tools

Socket head key

Supplies

Sealing Compound

INSPECTION

1. Press rotary switch knob (1) on shaft (2) until firmly seated and tighten the two setscrews (3) with socket head key.

2. Inspect rotary switch knob (1), if still loose replace.

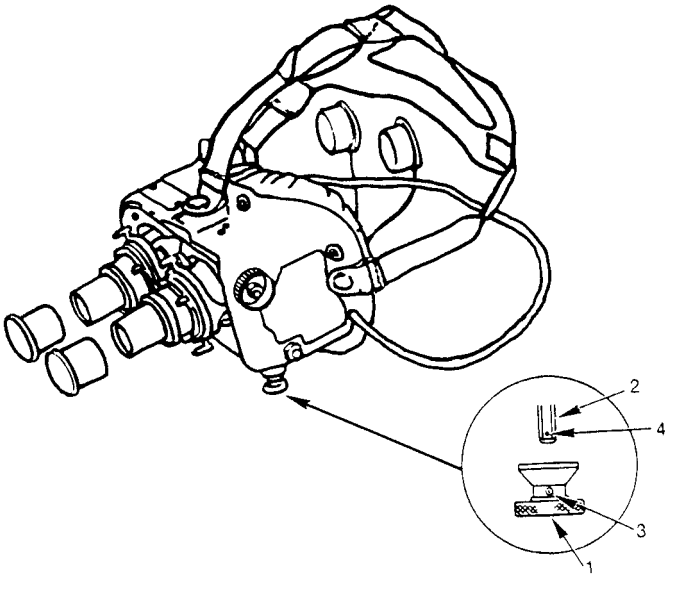
REMOVAL

Using the socket head key, remove setscrews (3), grasp rotary switch knob (1) with fingers, and pull knob off shaft (2).

INSTALLATION

1. Apply a small amount of sealing compound to the new setscrews threads, insert setscrews (3) in rotary switch knob (1).

2. Press knob on shaft (2) until fully seated. Move the rotary switch knob (1) slightly while tightening setscrews (3) to seat the setscrew in the dimple (4) on the shaft (2).



ANIPVS-5 and -5A shown

3-15 REMOVAL AND INSTALLATION OF BATTERY COMPARTMENT'S CAPS AND GASKETS (O-RINGS)

INITIAL SETUP

Supplies

Small wooden stick

REMOVAL

1. Remove battery cap (1).

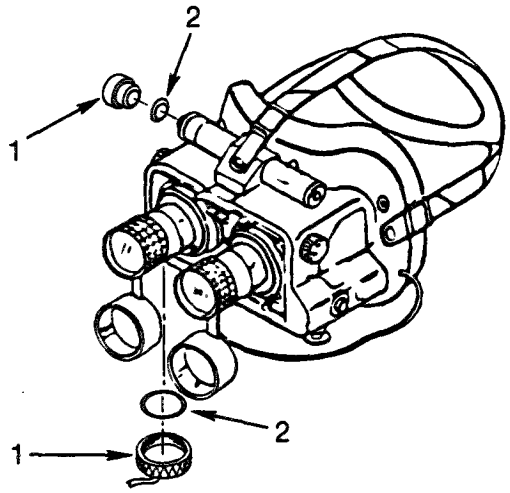
2. Remove gasket (2) from the lower battery compartment cap (1) or the packing preformed (O-ring) (2) from the upper compartment caps (1) (AN/PVS-5B and AN/PVS-5C).

3. Use fingers or small wooden stick to remove gaskets and O-ring when needed. Do not use a sharp metal instrument which could damage screw threads or sealing surface.

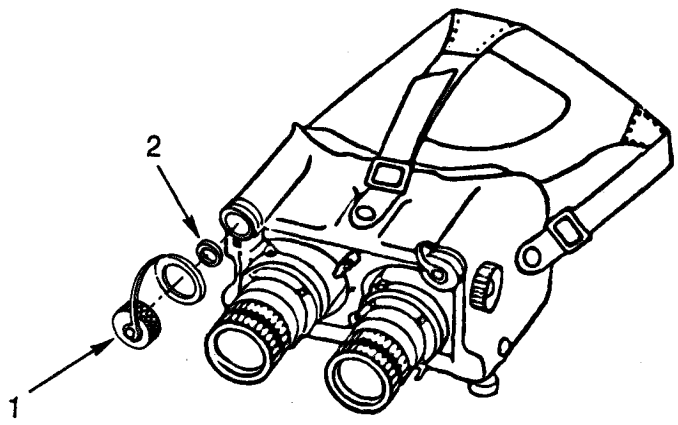
4. Remove loose dirt, dust, or pieces of the old gasket (2) from the battery caps (1).

INSTALLATION

Install by pressing gasket or O-ring (2) into recess with fingers or wooden stick until fully seated.



Upper Battery Compartments and Lower Battery Compartments (AN/PVS-5B shown, -5,-5A,-5C have a lower battery compartment).



Upper Battery Compartment (AN/PVS-5C shown, -5B has a single compartment for AA batteries)

3-16 REMOVAL AND INSTALLATION OF THE UPPER BATTERY CAP RETAINER GASKET, AN/PVS-5C

INITIAL SETUP

Supply

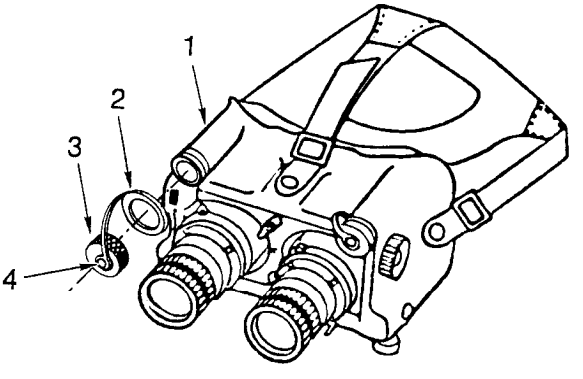
Gasket

REMOVAL

1. Remove battery cap retainer gasket (2) from the face mask (1) by removing the battery cap (3).
2. Remove the retainer gasket from the battery cap (3) by just turning and slipping off the cap retainer rivet (4)

INSTALLATION

1. Place the small end of the retainer gasket (2) over the cap retainer rivet (4)
2. Place the large end of the retainer gasket (2) on the face mask (1).



ANIPVS-5C NVG shown

3-17 REMOVAL AND INSTALLATION OF THE CLAMP KNOB ASSEMBLY

INITIAL SETUP

Facility

Clean work area.

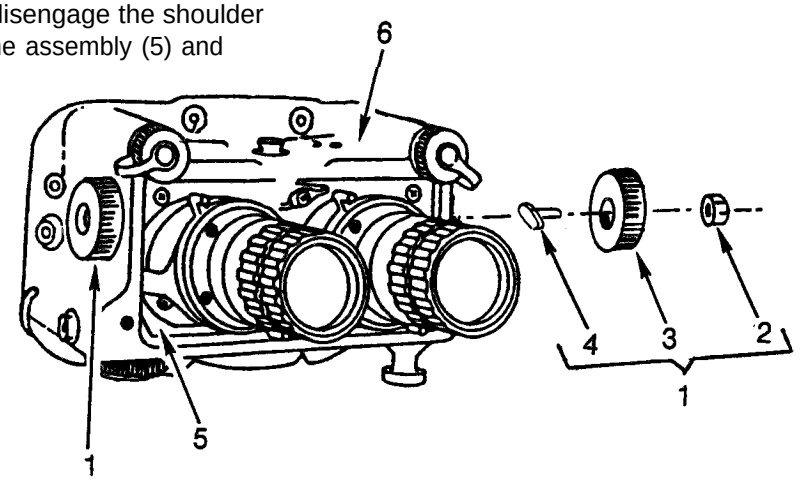
Tools

TK-101/G, Electronic Tool Kit

NOTE

REMOVAL

1. Unscrew the self-locking nut (2) and loosen the clamp knob (3). Twist the assembly 90° to disengage the shoulder screw (4) and remove it from the frame assembly (5) and face mask (6)



INSTALLATION

1. Screw the clamp knob (3) and self-locking nut (2) onto the shoulder screw (4) but do not tighten it at this time.

2. Insert the shoulder screw (4) of the clamp knob assembly (1) through the hole in the face mask (6) and frame assembly (5).

3. Turn the shoulder screw 90° to engage the shoulder screw in the vertical slot in the frame assembly (5).

4. Screw the clamp knob (3) until it is fingertight against the face mask (5).

5. Using a wrench, tighten the self-locking nut (2) against the clamp knob (3) and then loosen it one full turn.

3-18 INSTALLATION OF THE CVC HELMET VEE-STRAP ASSEMBLY

INITIAL SETUP

Facility

Clean work area.

Supplies/Tools

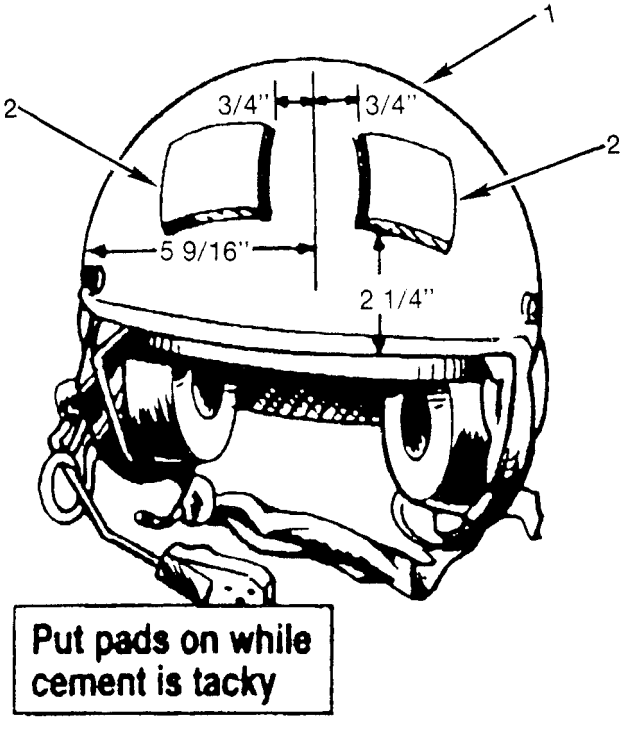
Cleaning solvent
Rubber Cement

PROCEDURES

1. Remove head strap assembly (para 3-13).

2. Clean the paint from the helmet (1) where the pads (2) will sit. Then go over the area with a good cleaning solvent.

3. Spread a thin coat of rubber cement on the cleaned area and on the backs of the pads (2). Place pads (2) on helmet while cement is tacky,



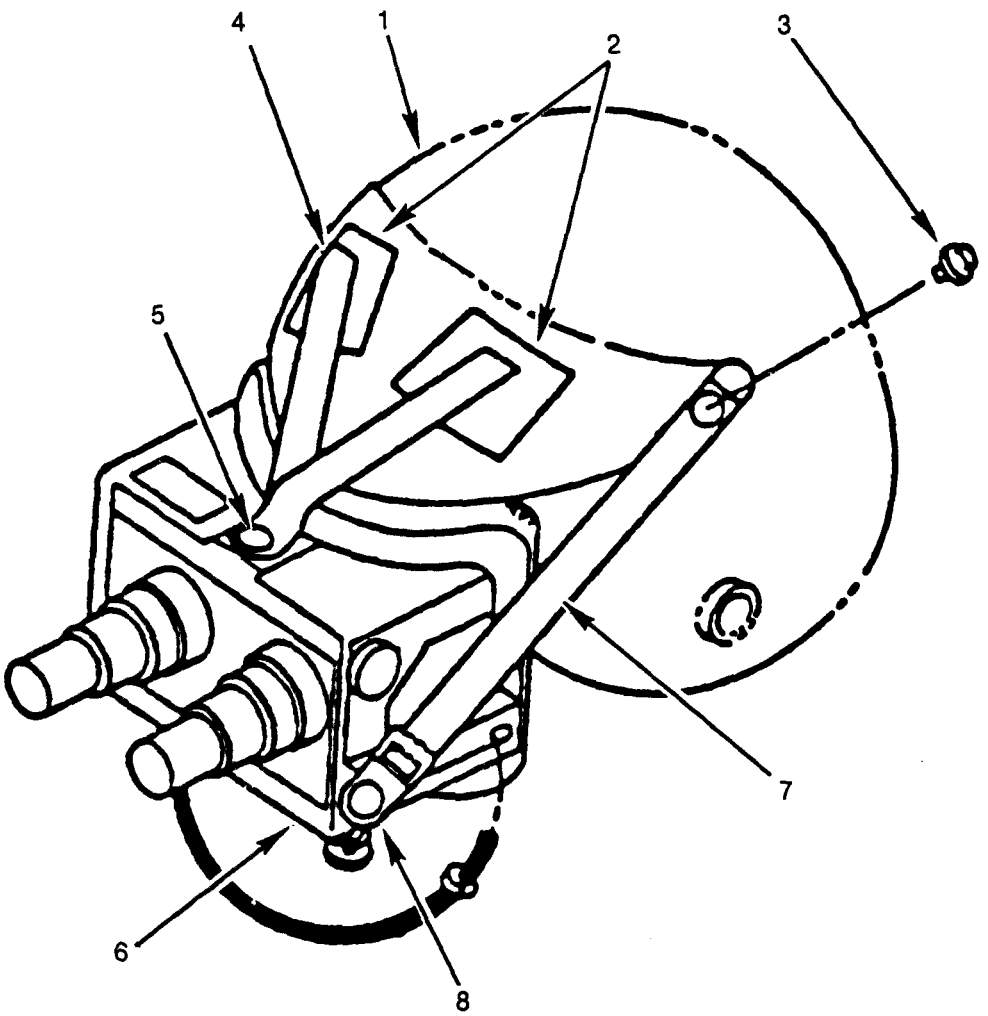
CVC Helmet Pad Location

3-18 INSTALLATION OF THE CVC HELMET VEE-STRAP ASSEMBLY - Continued

4. Replace the helmet liner screws with the stud fasteners (3).

5. Snap vee-strap (4) to top center snap (5) of the face mask (6).

6, Snap two single straps (7) at side snaps (8) of the face mask (6).



CVC Helmet with NVG using the Vee-strap AN/PVS-5A Shown

Section VI. Preparation for Storage and Shipment.

3-19 PACKING THE NVG

CAUTION

Failure to loosen the clamp knobs and lever clamp (wing nut) before stowing could result in damage to the face mask and frame assembly.

1. Place the lens caps on the objective lenses and eyepiece lenses. Loosen the clamp knobs and lever clamp (wing nut) before storing.

NOTE

Before returning the goggles or any component to the carrying case, make sure it and the carrying case are free of dirt, dust, and moisture.

2. Remove all batteries Place batteries in carrying case.

3. Insert the NVG, objective lens end first, into the carrying case. Close carrying case and secure latch

4. Place carrying case in the fitted portion of the shipping and storage case and replace the top of the case and secure latches.

CHAPTER 4
DIRECT SUPPORT (DS) AND AVIATION INTERMEDIATE (AVIM) INSTRUCTIONS

OVERVIEW

These procedures provide direct support (DS) maintenance and AVIM personnel with the instructions necessary to perform systematic inspections of the NVG and certain repair and replacement actions necessary to keep the equipment operational. This level of maintenance includes all the actions of unit level and AVUM maintenance in addition to repairing or replacing the eyepiece and objective lenses, repairing the monocular, replacing the image intensifier, and servicing the system by purging it with nitrogen. After repairs or replacements have been made to the components of the NVG, it should be ready for return to service. To verify its condition, conduct the Operator's Checks (Aviation) and the Preventive Maintenance Checks and Services (PMCS) for Ground Use as described in TM 11-5855-238-10.

The DS and AVIM personnel shall perform only those actions authorized by the MAC, Appendix B.

The maintenance actions depicted in this section are the same for all models, AN/PVS-5, -5A, -5B, -5C, GM-6(V)1 and GM-6(V)2 NVG unless otherwise noted. The GM-6(V)1 and GM-6(V)2 NVG can house the binocular assembly of the following models: AN/PVS-5A, -5B, and -5C.

Section I. Repair Parts, Tools, Special Tools, TMDE, and Support Equipment

4-1 COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, or CTA 8-100, applicable to your unit.

4-2 SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to Appendix B, MAC and Appendix C for the RPSTL for information on Special Tools, Test Measurement, and Diagnostic Equipment (TMDE), and support equipment required at DS or AVIM. In addition, instructions for a fabricated black spot test fixture are in Appendix E.

4-3 REPAIR PARTS

Repair parts required by DS and AVIM are listed and illustrated at Appendix C.

Section II. Service Upon Receipt.

4-4 SITE AND SHELTER REQUIREMENTS

The requirements for site and shelter are the same as those specified for AVUM in paragraph 2-4 or Unit maintenance in paragraph 3-4, with the additional requirement of a clean station. The clean station is an area that has a dirt-free environment, such as a bench top, where you can repair and service the binocular assembly of the NVG. The surface area must be free of chemicals, vapors, and emissions that may damage external parts of NVG. Because the clean station is that area where the monocular assembly is opened, exposing the inside lens surfaces and the optics of the image intensifier, it must be free of debris or any other material that can enter a disassembled system and contaminate it. Recommend the assembly and disassembly of the monocular be performed in an air conditioned environment to prevent moisture and fogging between the lenses. The clean station does not need to have a flow hood. The clean station does require adequate lighting to accomplish detail works.

4-5 SERVICE UPON RECEIPT OF MATERIAL

Requirements for inspecting equipment are the same as those for unit maintenance (para 3-5) and AVUM (para 2-5).

Section III. Servicing

4-6 SCOPE

As required in the AVIATION USE PMCS table, para 2-7. the GM-6s must receive a 90-dav service that is to be performed by AVIM. The GROUND USE PMCS table, para 3-6, requires the ANIPVS-5S be serviced every 180-days by DS. These services consist of the basic PMCS performed on the goggle, infinity focus check, collimation check (AVIATION ONLY), and purging. Also, before a new NVG is placed into use, it must receive the 90-day service for AVIATION USE goggles or 180-day service for GROUND USE goggles. Instructions for the other servicing requirements are contained in this section.

4-7 SYSTEM CURRENT DRAIN TEST, GROUND USE

Use the following procedure to test for current drain of the NVG for Ground Use only. The GM-6(V)1 and GM-6(V)2 NVG do not need a system current drain test.

INITIAL SETUP

Test Facility

Electronic repair seRvice area

Equipment

Test Set, TS-3895A/UV

Use TM 11-5855-284-14, Operator's Aviation Unit, Direct Support, and General Support Maintenance Manual for TS-3895/UV and TS-3895AIUV Test Sets, to set up the test set and perform the self test.

PROCEDURE

1. Attach the binocular as described in paragraph 2-12.
2. Install test set adapter in the lithium battery compartment of the NVG and connect to the test set.
3. Turn the NVG switch ON.
4. Turn the selector switch to the SYSTEM CURRENT (white) position and look at the GO/NO GO indicator.
5. If the GO (green) light comes on, the binocular is functioning properly. If the NO GO (red) light comes on, the binocular is not functioning properly and must be repaired. Refer to paragraph 4-11 to isolate the problem.
6. If testing is completed, shut down the equipment per TM 11-5855-264-14.

4-8. BLACK SPOT CHECK, GROUND USE

Direct Support will follow the instructions provided in paragraph 2-9 along with Table 4-1, shown below, to check the AN/PVS-5, -5A, -5B, and -5C Night Vision Goggles. Table 2-2, in paragraph 2-9, is for AVIATION USE ONLY and is not to be used for the checking of Ground Use NVGS.

Table 4-1. AN/PVS-5, -5A, -5B, and -5C Allowable Black Spots and Sizes (GROUND USE ONLY)

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

Table 4-1 is for GROUND USE ONLY. Table 2-2 is for AVIATION USE ONLY.

4-9 COLLIMATION CHECK

Use the following procedure to check the NVG collimation.

INITIAL SETUP

Test Facility

Electronic repair service area. You do not need a dark room to check collimation; however it should dim enough to see the targets in the test set.

Equipment

Test set, TS-38951UV or TS-3895AIUV

Materials/Parts

Cotton-tipped applicators
Isopropyl Alcohol
Alcohol dispenser
Canned air

Clean the objective and eyepiece lenses of the NVG by using isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses and moving in larger circles to the outside of the lenses. Use TM 11-5855-264-14 to set up the test set and perform the self test.

4-9 COLLIMATION CHECK - Continued

NOTE

Perform the Purging and the High-light Resolution Test before you do the collimation check.

PROCEDURE

1. Adjust eyespan distance to its widest position.

2. Insert known good batteries.

3. Insert the AN/PVS-5, -5A, and -5B binocular assemblies into the test ports or the -5C binocular assemblies with the larger goggle adapter installed in the test ports.

4. Insert the goggles or an adapter with goggles in the test ports as described in paragraph 2-12,

5. Turn the selector switch to the COLLIMATION (blue) position.

6. Dim the room lights and let your eyes adjust.

7. Pull upon the LAMPHOUSE KNOB (TS-3895/UV) or GOGGLE SWITCH (TS-3895AAJV).

8. For the AN/PVS-5, -5A, -5B, and -5C, turn goggles rotary switch to ON position or for GM-6(V)1 or GM-6(V)2 attached with the goggle connector and turn the test set ON.

9. On the TS-3895/UV only, turn the LIGHT SOURCE ADJUSTMENT knob fully clockwise to increase the intensity of the light source.

10. Look through goggles; turn focus knobs to adjust objective lenses for best focus in both monocular.

NOTE

Check each monocular separately using the same eye when viewing the image.

11. With the shutter knob facing you, place collimation attachment into the ports of the test set. Secure with lock knobs (fig. 4-1).

12. Insert the diopter scope, larger end down, into the collimator attachment.

13. Close shutter over right monocular by positioning shutter knob over right monocular.

14. While viewing through the diopter scope adjust the diopter adjustment ring and the objective focus on left monocular for best focus. The image will not be sharp because it's magnified.

15. Close shutter over left monocular by positioning shutter knob over left monocular.

16. Repeat step 14 for right monocular.

17. Move shutter knob to the both position.

4-9 COLLIMATION CHECK - Continued

NOTE

If the image isn't sharp enough to show where the white dots are in the reticle, remove the diopter scope and view the images.

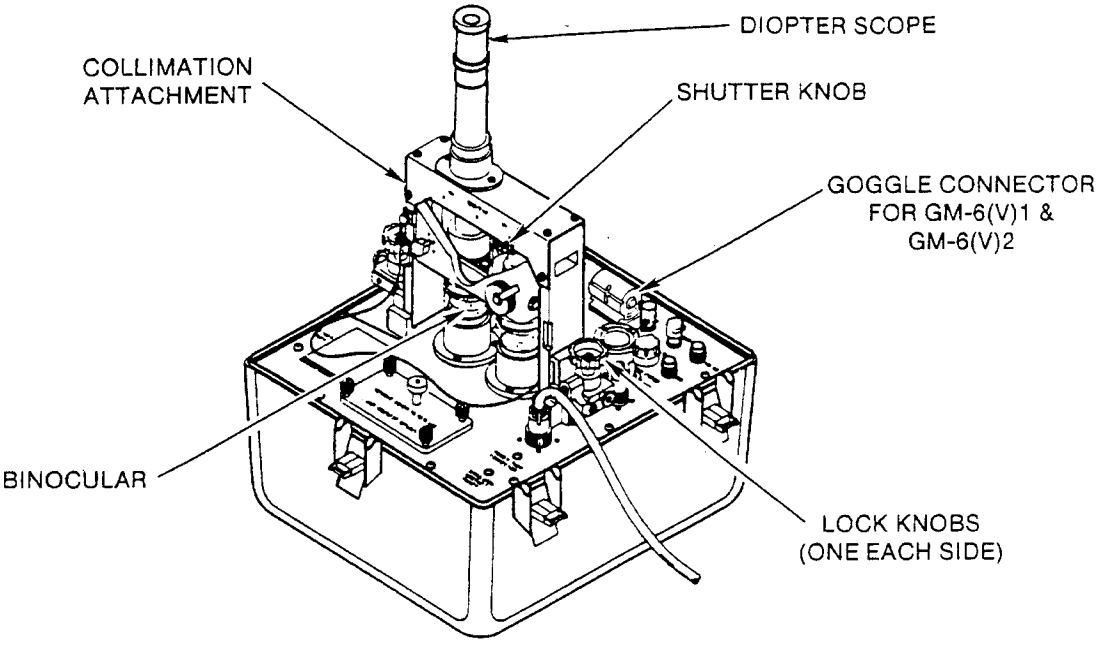


Figure 4-1. Attaching the Collimator and Diopter Scope.

18. Look through the diopter scope. The two white dots should both appear in the black portion of the boxes. If the binocular fails, replace the frame assembly (para 4-22).

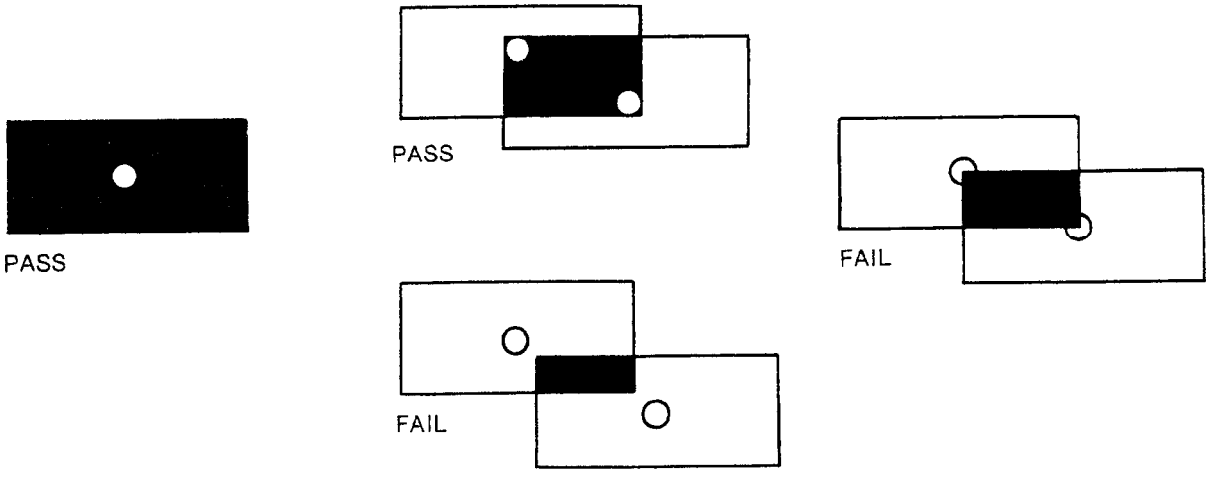


Figure 4-2. Collimation Pass/Fail Criteria

4-9 COLLIMATION CHECK - Continued

19. For the AN/PVS-5, -5A, -5B, and -5C turn the rotary switch OFF or for GM-6(V)1 or GM-6(V)2, the test set switch to OFF position.

20. Turn on room lights if they were turned off.

21. If testing is complete, remove the collimation attachments from the test set.

CAUTION

To prevent damage to the image intensifier assembly, always turn the test set's ON/OFF/POWER CHECK switch to OFF. Remove the goggles connector from the GM-6(V)1 or GM-6(V)2 NVG being tested before removing the NVG from the test set.

22. Remove the NVG under test from the test set,

23. Shut down the test set per TM 11-5855-264-14.

4-10 PURGING

Each monocular of the NVG is filled with dry nitrogen and sealed to prevent dirt and moisture from degrading the optical performance. In addition, maintaining a slight positive pressure with the nitrogen enables the objective focus and eyepiece focus rings to move smoothly. As required in the PMCS table, the NVG must be purged with nitrogen every 180 days. Use the following procedure to purge the monocular:

NOTE

If a monocular will not hold a purge, check for a damaged monocular assembly, defective valve, worn preformed packing, or a worn purge adapter.

INITIAL SETUP

Test Facility

Electronic repair service area

Tools

TK-105/G, Electronic Tool Kit
Wrench, adjustable, 15-inch

4-10 PURGING - Continued

Equipment

Purge device
Fire control purge kit
Purge adapter

Materials/Parts

Nitrogen, Compression type: water-pumped
Composition and percentage: 99.5?/o nitrogen by volume, minimum
Preformed packing (for purge valves)
Grease, aircraft
Leak detection compound
Tape, anti-seize
Isopropyl Alcohol

Reference 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 due to tank upset. 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 DS and AVIM personnel; however, using the wrong type will render the NVG inoperable. Do not use oil-pumped nitrogen because the NVG will be coated with an oil film on the interior optic and component surfaces. Use only water-pumped nitrogen.

PROCEDURE

NOTE

Ensure the valves are closed on the regulator valve and the nitrogen tank before connecting the purging equipment.

1. Using the 15-inch adjustable wrench, connect the pressure regulator (2) and purge device (8) to the nitrogen tank as shown in Figure 4-3. The fire control purge kit includes items (1), (2), (3), and (4) shown in figure 4-3.

2. Set the pressure regulator valve (1, fig. 4-3) for zero by turning the regulator valve handle (1) counterclockwise until there is no spring pressure on the control.

4-10 PURGING - Continued

3. Slowly open the nitrogen tank valve (5) all the way. The high pressure gauge (4) will indicate the pressure in the tank. If the pressure is below 100 pounds per square inch (psi), replace the tank with a full one (Refer toTM750-116).

4. On the purge device (8), set the PUMP/NITROGEN switch(11) to the PUMP position and the LEAK TEST/PURGE switch (10) to the PURGE position.

5. Slowly adjust the pressure regulator handle (1) by turning it clockwise until the low pressure gauge (3) indicates 3 (plus or minus 0.5) psi.

6. Set the lever clamp (wing nut) on the binocular at the widest setting and preset the objective lens to it's midpoint position.

7. Grasp the small knob of the purge adapter (7) and screw the thread of the purge adapter into the purge valve of one of the monocular until it "stops. Do not over tighten.

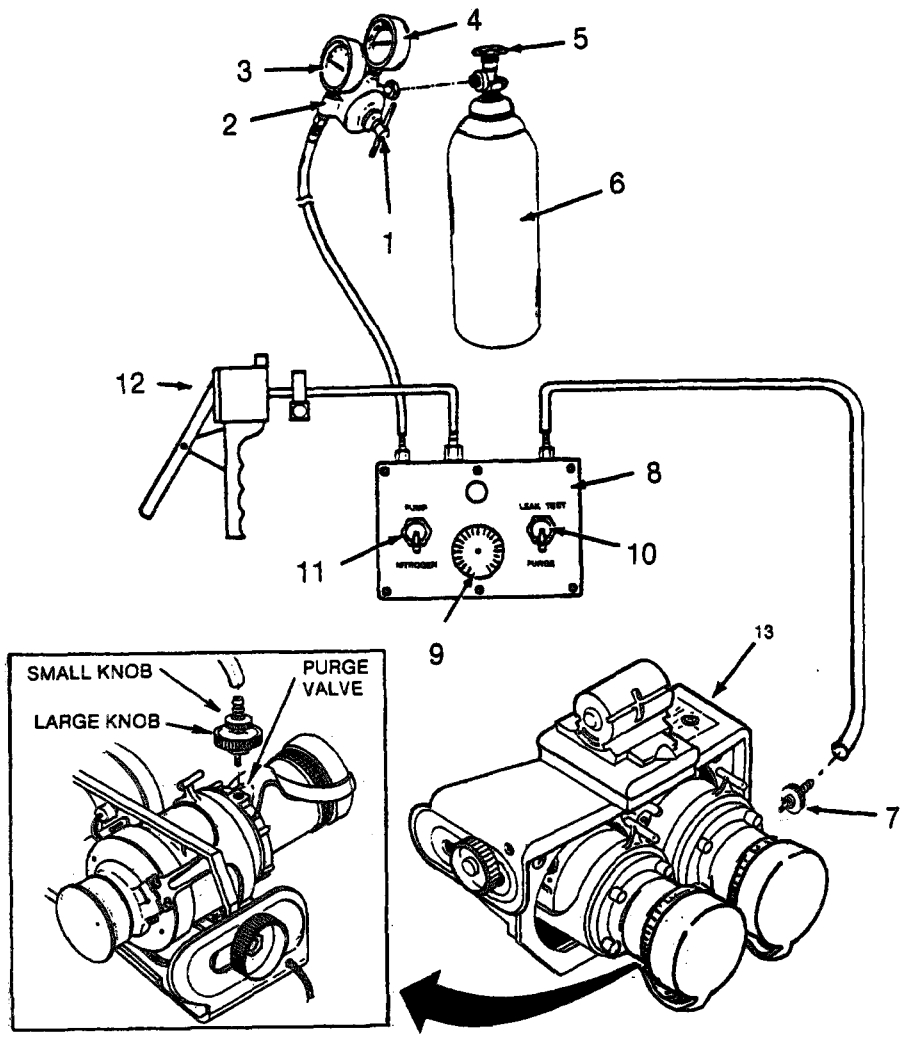


Figure 4-3. Connecting the Purge Equipment.

4-10 PURGING - Continued

8. Press the hose onto the purge adapter (Fig. 4-3, 7) (or if available, connect the quick disconnect).

9. Using the large knob of the purge adapter, engage the tabs into the slots of the purge valve. Rotate the adapter counterclockwise 1 1/2 to 2 turns to open the purge valve. Flip the PUMP/NITROGEN switch (Fig. 4-3, 11) to NITROGEN.

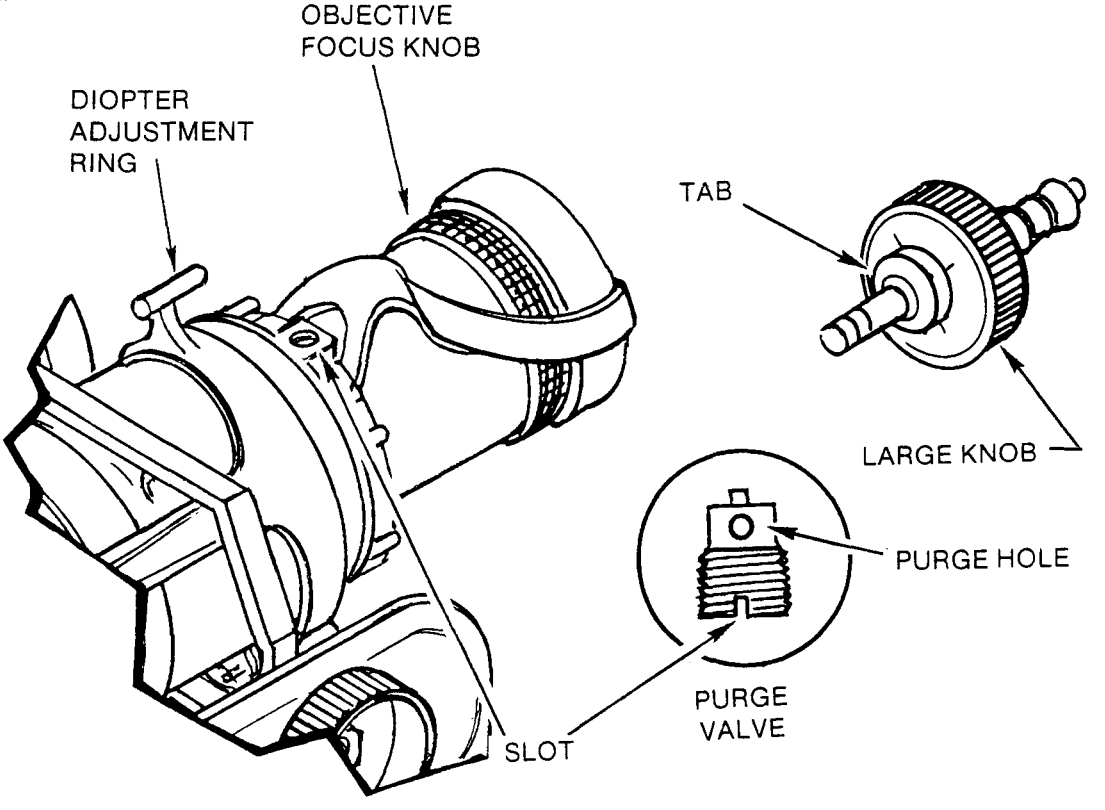


Figure 4-4. Identifying the Tabs and Slots of the Purge Valve.

CAUTION

Do not over tighten the purge valve or you may damage the preformed packing.

10. Slowly rotate the objective focus knob counterclockwise until the objective goes to its outermost position (fig. 4-4).

11. Slowly rotate the diopter adjustment ring until the eyepiece is at its outermost position (fig. 4-4).

12. On the purge device, set the PUMP/NITROGEN switch (11, fig. 4-3) to PUMP, Pump the vacuum handle (12, fig 4-3) at least 5 times while observing the gauge on the purge device (8). Make sure the needle moves to at least -10 inHg. If you cannot reach -10 inHg, remove the purge adapter, wrap a small piece of Teflon tape around the threads of the adapter and repeat steps 7 through 12. If the goggle still will not produce the necessary vacuum, check for defective preformed packing by performing a 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 mate surfaces and apply 3.0 psi.

4-10 PURGING - Continued

13. Set the objective lens and eyepiece to the midpoint position.

14. On the purge device, set the PUMP/NITROGEN switch to the NITROGEN position and leave the LEAL/PURGE switch in the PURGE position. Watch the gauge on the purge device to see that it indicates 3 (plus or minus 0,5) psi, set the objective and eyepiece lenses to their midpoint position.

15. Repeat steps 12 thru 14 two additional times (apply nitrogen a couple of times).

16. Turn the large knob of the purge adapter clockwise until it is snug and close the purge valve.

17. Grasp the small knob of the purge adapter. Unscrew it from the purge valve in the monocular.

18. Repeat steps 7 through 17 for the other monocular.

19. Close the nitrogen tank valve and release the pressure on the regulator valve handle.

Section IV. Troubleshooting

4-11 TROUBLESHOOTING TABLE

Table 4-2 lists common malfunctions. Perform the tests, inspections, and corrective actions in the order that 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 4-2. Troubleshooting

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Goggles fail to come on.	Battery is dead or battery compartment is dirty/defective. Cap spring tension bad.	Replace battery. Check spring tension. Clean battery compartment or replace.
	Rotary switch is broken (AN/PVS-5, 5A,-5B, -5C).	Replace rotary switch.
	High-light cut-off is defective or will not come on (AN/PVS-5C).	Replace the face mask assembly.
One or both monocular will not come on.	Electrical defect in the GM-6(V)1 viewer mount, GM-8(V)2 offset viewer mount, AN/PVS-5, -5A, -5B, or -5C face mask assembly, monocular housing or image intensifiers defective.	Use the TS-3895/UV or TS-3895A/UV to verify the failure. Replace the defective image intensifiers. If only one monocular fails, make sure to identify which image intensifier was removed from the defective monocular.

4-11 TROUBLESHOOTING TABLE - Continued

Table 4-2. Troubleshooting

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Continued		Perform continuity checks for the GM-6(V)1 G-5(V)2. AN/PVS-5,-5A,-5B or -5C. If the continuity check fails, take the appropriate action to correct the problem as identified in the procedures.
Intermittent operation.	Electrical defect in the viewer mount, or binocular assembly or image intensifier defective or installed incorrectly.	Isolate the defective component by performing the electrical continuity checks. Replace the defective component.
Poor Image	Lenses fogged	Purge the system.
	Objective lens cell or eyepiece lens cell is internally fogged, or lenses not set properly.	If a lens cell is fogged internally, replace the affected lens. If the lenses are clear, check the focus settings.
	Defective image intensifier (fails a test in para 2-12 or 2-13 for Aviation Use, or para 3-9 for Ground Use).	Replace image intensifier.
Black spots too many or too large.	Dirt or debris inside system.	Perform the Black Spot Check. Disassemble, clean, and purge.
	Defective image intensifier.	Replace image intensifier.
Fails collimation	Bent frame assembly.	Replace frame assembly.
Objectives or eyepieces cannot be focused.	Focus mechanism broken.	Disassemble and inspect the parts. Replace the defective parts.
Monocular will not hold purge.	Worn or missing preformed packing, purge valve, objective lens packing or eyepiece lens preformed packing.	Replace preformed packing.
	Cracked or missing purge valve.	Replace the purge valve and purge.
Visor mount fails continuity (GM-6(V)1 and GM-6(V)2 NVG).	Broken solder joints in plunger contact or incorrect wiring.	Remove contact cover plates and inspect solder connections. If loose or incorrectly wired, resolder.
	Defective cable/connector.	Replace the visor mount.

4-11 TROUBLESHOOTING TABLE - Continued

Table 4-2. Troubleshooting

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Light emitting diode (LED) does not come ON (ANIPVS-5, -5A, -5B, and -5C full face mask configuration).	Electrical connector is broken.	Replace connector.
	Rotary switch is broken.	Replace rotary switch.
	Wiring harness is broken.	Replace face mask assembly.
	LED is defective.	Replace LED.
Diopter Adjustment can not be made.	Diopter adjustment ring is bent or cracked.	Replace diopter adjustment ring.
Face mask assembly is Cracked (AN/PVS-5, -5A, -5B, and -5C)	Failure to loosen lever clamp (wing nut) before storage in case.	Replace face mask assembly.
Eyes Pan cannot be made or fails to remain set.	Wing nut is defective.	Replace wing nut.
	Interpupillary link is bent or broken.	Replace interpupillary link.
	Guide assembly is loose or damaged.	Replace guide assembly.
	Frame assembly is defective.	Replace frame assembly.
Eye relief adjustment cannot be made or fails to remain set.	Clamp knobs are improperly installed.	Reinstall clamp knobs properly.
	Clamp knob assemby is damaged or missing.	Replace clamp knob assembly.
Blurred vision in one or both monocular.	Improperly focused	Re-focus.
	Eyepiece is damaged. Objective lens is damaged.	Replace eyepiece assembly. Replace objective lens assembly,
	Damaged image intensifier.	Replace image intensifier.
One image intensifier module glows intermittently.	Power supply is defective.	Replace image intensifier.

4-12 ELECTRICAL TROUBLESHOOTING PROCEDURES

NOTE

- Before replacing any electrical part, check all wiring, the rotary switch, and the power pack for continuity using a multimeter and the following wiring and electrical circuit diagrams, respectively.

- Purging is required each time a monocular is opened.

a. If one or both monocular fail to glow green when the rotary switch or power pack switch is placed in the ON position, the probable cause is a malfunction in the electrical plug connector, electrical receptacle connector, loose wiring, defective high-light cutoff hybrid circuit network (AN/PVS-5C NVG) or a malfunction of the image intensifier, night vision. Maintenance is performed by first checking for electrical continuity using Multimeter AN/VSM-223 and the following wiring diagram for the AN/PVS-5, -5A, -5B, -5C, (figs 4-5 and 4-6) GM-6(V)1, and GM-6(V)2 (fig. 4-7). For the AN/PVS-5C, check the function of the high-light cutoff hybrid circuit by turning the rotary switch OFF and back ON to reset the hybrid circuit. If power is applied from the battery through the rotary switch to the electrical receptacle connector J S, the malfunction probably is in electrical plug connector J 1 P, wiring to the image intensifier, or the light emitting diode.

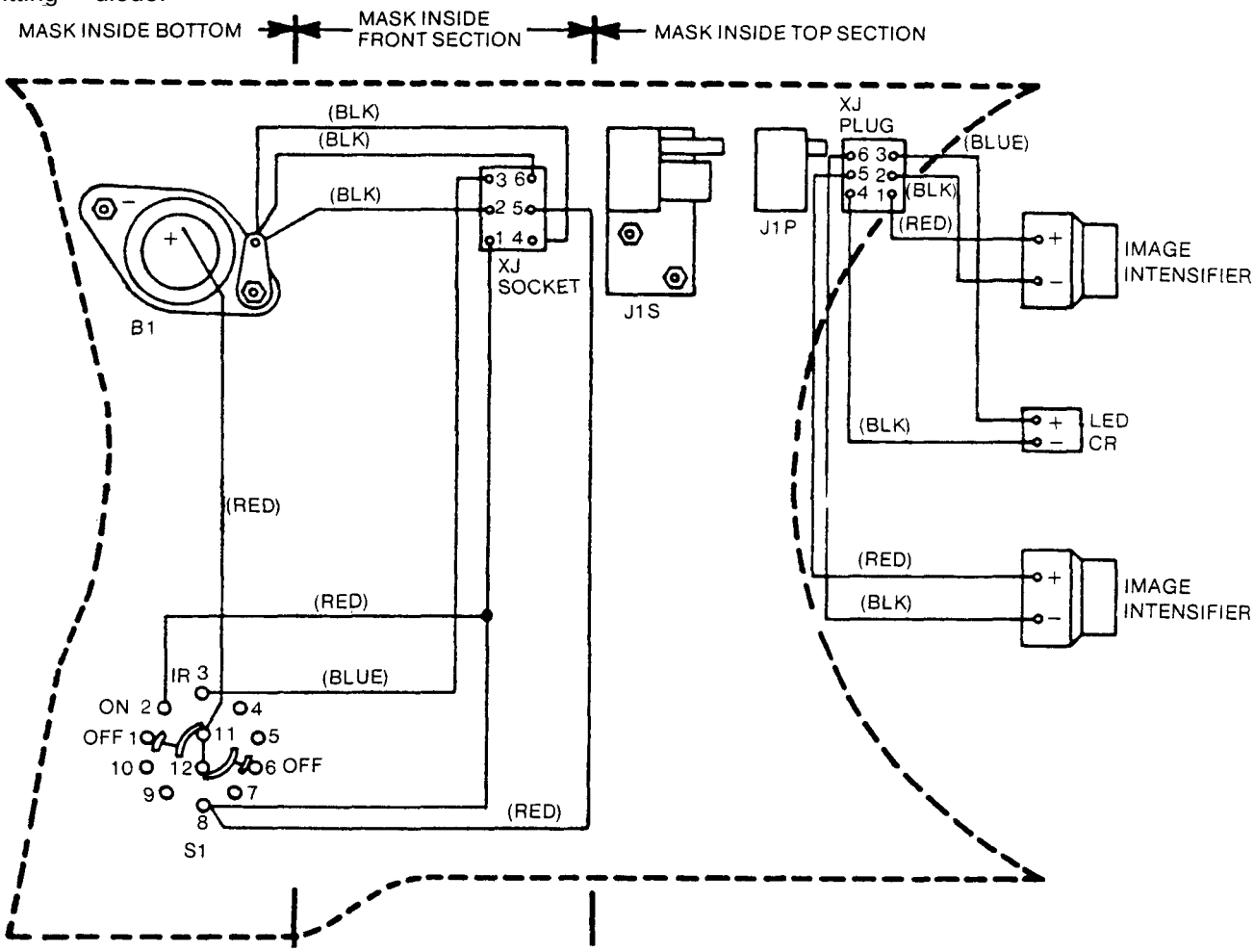


Figure 4-5. AN/PVS-5 and -5A Wiring Diagram

4-12 ELECTRICAL TROUBLESHOOTING PROCEDURES -Continued

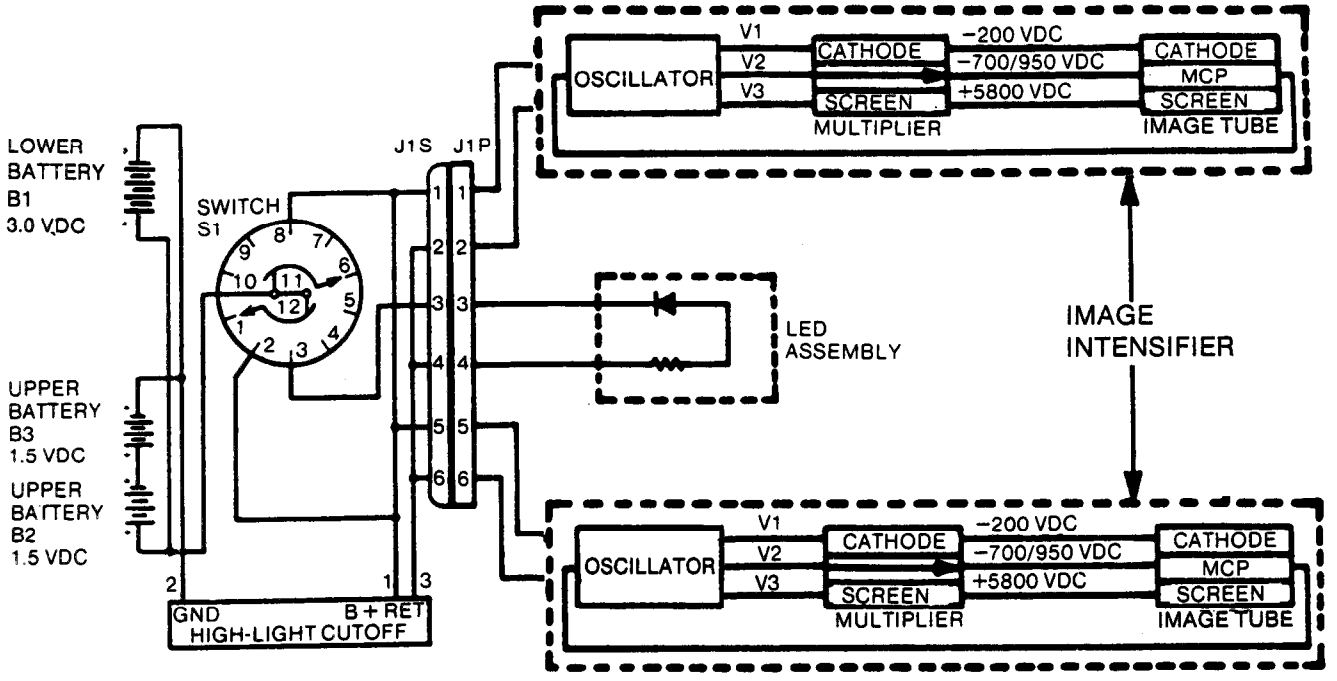


Figure 4-6. AN/PVS-5B and -5C Electrical Circuit Block Diagram

b. **GROUND USE.** System Current Drain Failure: Isolation of Defective Image Intensifier. If the NVG fails the system current drain test of paragraph 4-7, the fault lies in a defective power supply inside an image intensifier assembly. Perform the following procedure to isolate the defective image intensifier(s).

1. Follow the REMOVAL steps of paragraph 4-26 to remove one of the image intensifiers.

2. Install a new image intensifier. Do not put the eyepiece assembly back on.

3. Retest the binocular for system current drain per paragraph 4-7.

4. If the binocular passes, install the eyepiece (para 4-24).

5. If the binocular fails the image intensifier still in the binocular is defective and must be removed and replaced per paragraph 4-26. Install the new image intensifier in the other monocular. Reinstall the image intensifier removed in step 1 above and retest the binocular for system current drain. Leave the eyepiece off.

6. If the binocular fails again, then the image intensifier removed in step 1 above is also defective and must be removed and replaced as described in paragraph 4-26. Retest the binocular for system current drain per paragraph 4-7.

4-12 ELECTRICAL TROUBLESHOOTING PROCEDURES-Continued

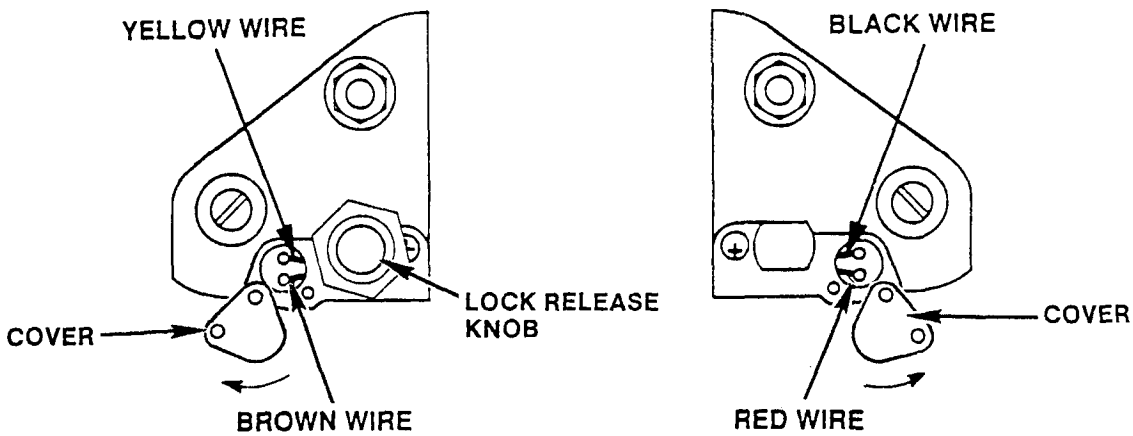
NOTE

If you replace both image intensifiers and the binocular still fails, do not return the original image intensifiers to the depot. The test set is suspect and must be checked out. If the test set proves to be defective, put the original image intensifiers back into the binocular and rerun the system current test on a good test set.

c. AVIATION USE. Visor Mount and Offset Mount Assemblies Plunger Contact Check. If the visor mount or offset visor mount fails the continuity check of paragraph 2-18, perform the following procedure to isolate the fault.

1. Using a 0.10-inch flatted-tipped, jeweler's screwdriver, remove one screw of each of the two grey cover plates on each side of the visor mount that cover the plunger contact solder connections shown below. The cover plate will swing to let you check the contacts.

2. Check to make sure the solder connections are good and that the correct wire attaches to the appropriate contact. The wires are color coded and are shown for proper matching. If any wire is loose or incorrectly wired, repair the visor mount as described in paragraph 4-15.



GM-6(V)1 Visor Mount/GM-6(V)2 Offset Visor Mount Contact Check.

4-12 ELECTRICAL TROUBLESHOOTING PROCEDURES - Continued

d. **GROUND USE. Face Mask Assembly Continuity Check.**

1. Remove the binocular assembly from the face mask assembly (para 4-16, Removal).

2. Set multimeter to low ohms scale.

3. Check the face mask assembly electrical continuity by checking the battery case to the electrical connector socket (XJ socket, illustrated on the following page).

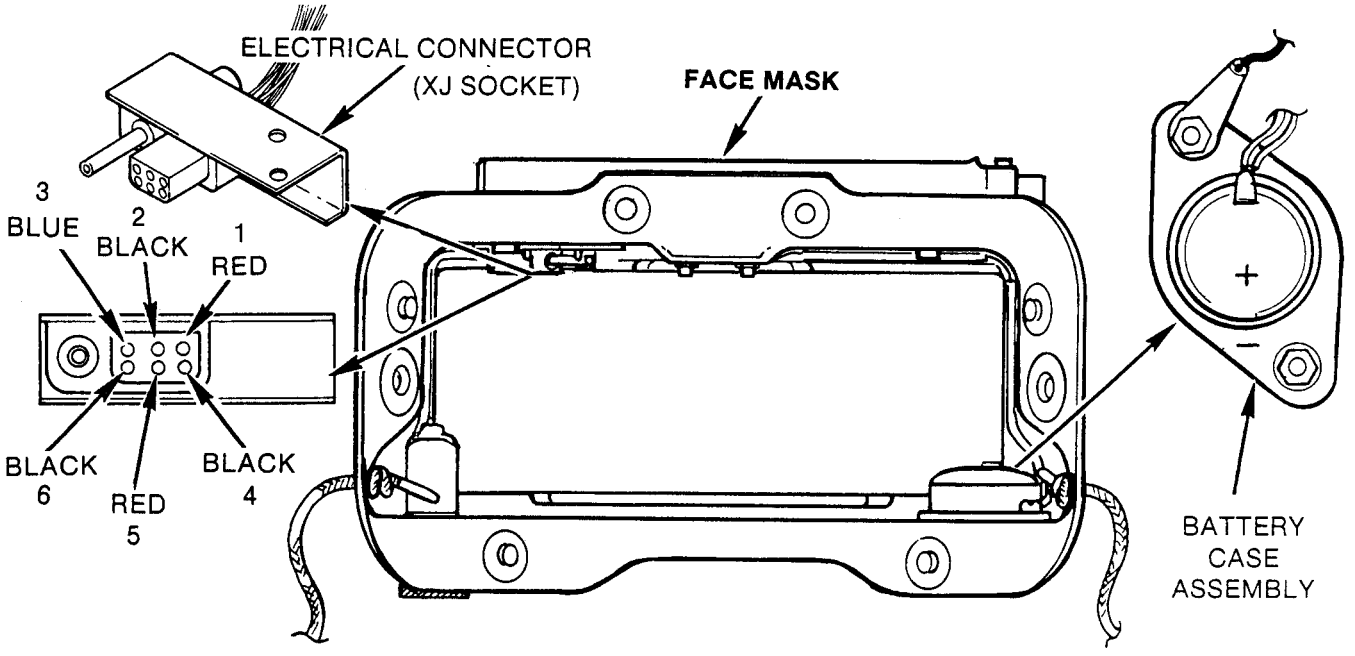
4. If the continuity check fails for any of the 24 checks, replace the face mask assembly (para 4-16).

Table 4-2. Continutiy Checks for AN/PVS-5,5A,5B,5C Face Mask Assembly

ROTARY SWITCH S1 POSITION:	OHM METER PROBES CONNECTED TO:		OHM METER READINGS:
	BATTERY CASE ASSEMBLY:	XJ SOCKET PINS:	
OFF	+ TERMINAL	ALL PINS 1, 2, 3, 4, 5, and 6	INFINITY *
ON	+ TERMINAL	PINS 1 and 5	ZERO (0) Ohms **
		PINS 2, 3, 4, and 6	INFINITY *
IR ON	+ TERMINAL	PINS 1, 3, and 5	ZERO (0) Ohms **
		PINS 2, 4, and 6	INFINITY *
ALL POSITIONS (NO CHANGE)	- TERMINAL	PINS 1, 3, and 5	INFINITY *
		PINS 2, 4, and 6	ZERO (0) Ohms **

* - Infinity indicates the circuit is open; the two points are not connected.
** - Zero ohms indicates continuity; the two points are connected.

4-12 ELECTRICAL TROUBLESHOOTING PROCEDURES-Continued



REAR VIEW

Face Mask Assembly Continuity Check.

4-13 OBJECTIVE LENS INFINITY FOCUS CHECK, AVIATION USE ONLY

Perform the following procedures to find out if the infinity focus of the objective lens is set correctly.

INITIAL SETUP

Test Facility

Electronic repair service area. You do not need a dark room to check the infinity focus; however, it needs to be dim enough to see the targets in the test set.

Equipment

Test set, TS-38951/UV or TS-3895A/UV

Materials/Parts

Cotton-tipped applicators
isopropyl alcohol
Spanner wrench

Use TM 11-5888-264-14 to set up the test set and perform the self test.

Clean the objective and eyepiece lenses of the NVG by using isopropyl alcohol and cotton-tipped applicators. Moisten the applicator with the alcohol and use circular motions beginning at the center of the lenses, moving in larger circles to the outside of the lenses, and lift the applicator from the lens.

PROCEDURE

CAUTION

While performing this test, do not remove the NVG from the test set unless the goggle connector is removed.

1. Attach the binocular to the test set as described in paragraph 2-12.

2. Turn the selector switch to the HIGH-LIGHT RESOLUTION (blue) position.

3. Dim the room lights and let your eyes adjust.

4. Look through the right monocular and adjust the objective focus knob and diopter adjustment ring for the best focus.

5. Turn the objective focus knob all the way clockwise. The pattern should appear fuzzy.

4-13 OBJECTIVE LENS INFINITY FOCUS CHECK, AVIATION USE ONLY - Continued

6. While looking at the pattern, slowly turn the objective focus knob counterclockwise. The pattern should get clearer and then fuzzy again. If this happens, it indicates the objective lens moves through the infinity focus point as it should. However, check to make sure that the infinity focus occurs, very close to the mechanical stop. If it does, the monocular passes this check.

7. Repeat steps 4 through 6 for the left monocular.

NOTE

Check each monocular separately using the same eye when viewing the image.

8. Turn up the room lights.

9. If either monocular fails this test. Refer to paragraph 4-14.

CAUTION

To prevent damage to the image intensifier, always turn the test set's ON/OFF/POWER CHECK switch to OFF and (for Aviation use) remove the NVG goggle connector from the binocular before removing the NVG from the test set.

10. If testing is completed, shut down the equipment per TM 11-5855-264-14.

Section V. Maintenance Procedures.

4-14 ADJUSTING THE INFINITY FOCUS FOR AN/PVS-5A BINOCULAR, AVIATION USE ONLY

The infinity focus for the AN/PVS-5B and -5C binocular is set just past infinity by the manufacturers.

PROCEDURES

1. Energize the goggles and focus each diopter adjustment for the best focus in each eyepiece.

2. Perform the High-Light and Low-Light Resolution Test in paragraph 2-12.

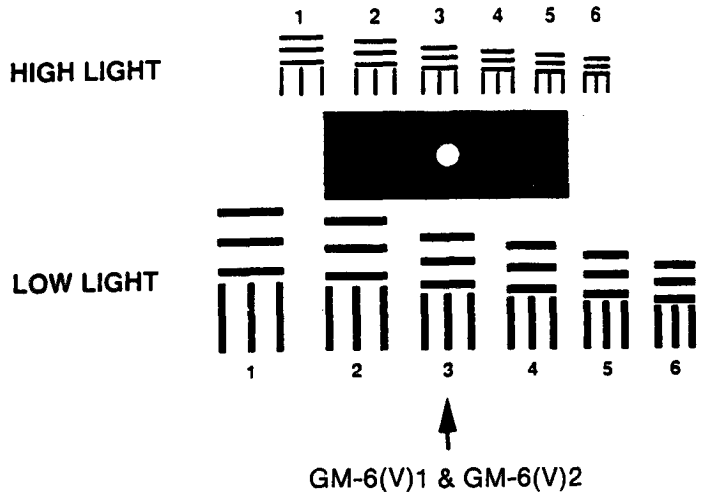
3. With the objective lens facing away from the operator, rotate the objective lens fully clockwise into the housing. Place the small end of the spanner wrench over the objective lens (1) and unlock the locking ring (2).

4. Move the focus knob to the right towards the outer end which moves the objective lens end into the lens.

5. Using the test set, focus the infinity focus to past infinity (image begins to blur). Look at the edge of the rectangle of the pattern shown below at the edge of the box across the top or corners on the right side.

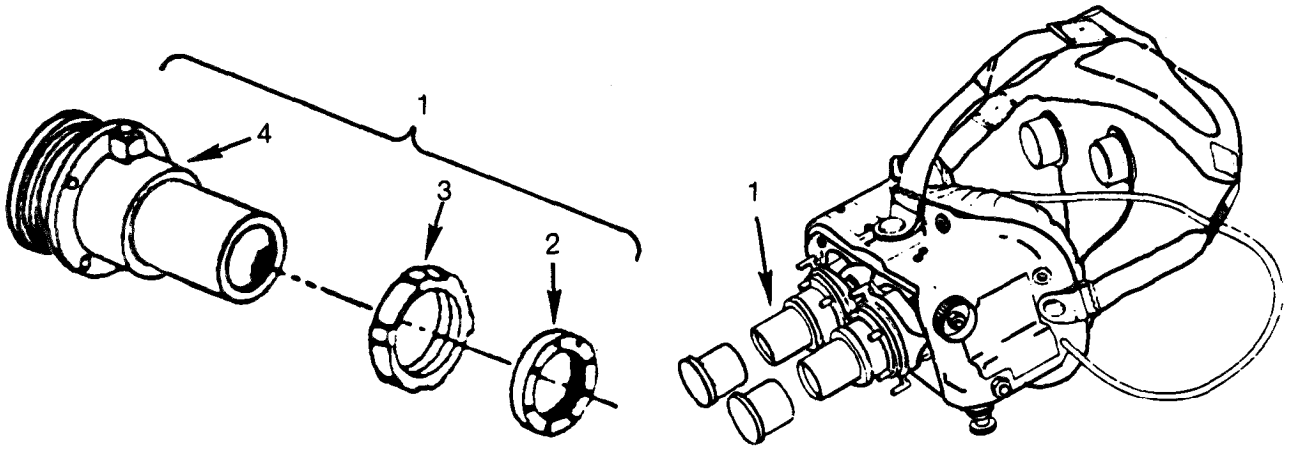
6. Focus the objective lens by rotating the objective focus ring counterclockwise slightly past the best focus (image begins to blur) of the resolution test pattern.

4-14 ADJUSTiNG THE INFINITY FOCUS FOR AN/PVS-5A BINOCULAR, AVIATION USE ONLY



TS-3895A/UV Low-Light Resolution Test Pattern.

7. Maintain the objective focus setting and using the spanner wrench, tighten the infinity lock by holding the rear lock ring (3, shown below) and turning the front focus ring (2) clockwise until the ring comes in contact with the focus adjustment knob (4). The front focus ring (2) should go inside the recess of the rear locking ring.



Objective Lens Focus Ring, AN/PVS-5 or -5A.

8. This completes the objective lens assembly (1) infinity focus adjustment.

4-15 REPAIRING THE VISOR MOUNT PLUNGER CONTACT CONNECTIONS, GM-6(V)1 AND GM-6(V)2, AVIATION USE

INITIAL SETUP

Test Facility

Electronic repair service area

Tools

TK-105/G, Electronic Tool Kit
Acid brush
Screwdriver, flat-tipped, jeweler's (0.100-inch wide)
Soldering station, (set at 625°F plus or minus 5°F)
Resoldering tool
Tweezers
Wire strippers
Alcohol dispenser

Materials/Parts

Denatured ethanol
Solder, SN63 or SN60

PROCEDURE

1. Using the jeweler's screwdriver, remove one of the screws (0.060, -80 UNF2A) securing each of the two cover plates protecting the plunger contact connections on both sides of the mount. The cover plates should swing aside and let you view the contacts.

WARNING

If wire is too short to solder replace visor mount assemby.

CAUTION

Do not touch any plastic component with the hot soldering iron.

2. If any wires are loose, first make sure the color coded wires match the illustration. If the wires match, then solder the connector, Set the soldering iron at 625° plus or minus 5°F.

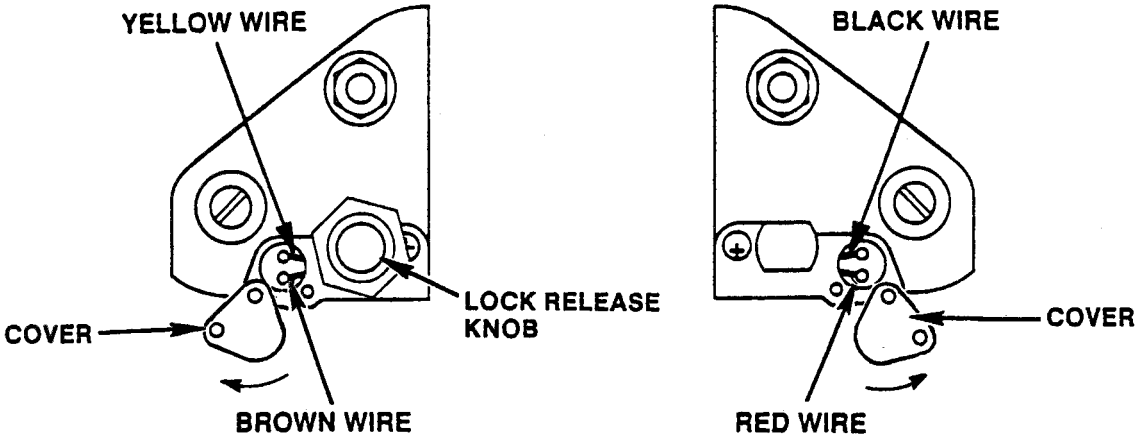
4-15 REPAIRING THE VISOR MOUNT PLUNGER CONTACT CONNECTIONS, GM-6(V)1 AND GM-6(V)2, AVIATION USE

NOTE

- Do not increase the thickness of the contact with solder or it will interfere with the spring action when the cover is in place.
- In order to resolder a wire properly, the end of the wire must be long enough to hook onto and hold the contact to make a good mechanical connection.

3. Use an acid brush wet with denatured ethanol from the alcohol dispenser and clean off any residual flux.

4. Use the 10X eye loop or magnifier to inspect the solder joints to make sure they meet the workmanship requirements of MIL-STD-2000.



SPH-4 Visor Mounting Bracket

Wire, Connections, and Color Coding to the Plunger Contacts.

5. If any of the wires do not match the color coding as illustrated, use the resoldering tool and desolder the wires. Using the soldering iron, resolder the wires in the proper position.

6. Use an acid brush wet with denatured ethanol from the alcohol dispenser and clean off any residual flux.

7. Use the 10X eye loop or magnifier to inspect the solder joints to make sure they meet the workmanship requirements of MIL-STD-2000.

8. If wires are too short to solder, refer to TM 10-8415-12&P for removal and replacement instructions of the SPH-4 Helmet mounting bracket.

9. Replace the cover plates and screws removed in step 1.

4-16 REMOVAL AND INSTALLATION OF THE BINOCULAR ASSEMBLY FROM THE FACE MASK ASSEMBLY, AN/PVS-5, 5A, -5B, 5C, GROUND USE

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

REMOVAL

NOTE

The binocular assembly is removed because it is defective or because it must be removed to gain access to another component. When the goggles fail to illuminate with the rotary switch in the ON or IR position, replace batteries, and recheck operation. For the AN/PVS-5C goggles, be sure to turn OFF the rotary switch to reset the high-light cutoff hybrid circuit. If the goggles still fail to operate, remove the binocular assembly.

1. Remove head strap assembly (para 3-12, Removal).

2. Remove face mask cushion assembly (10) by unsnapping six fasteners from the face mask assembly (8).

WARNING

Use caution not to damage electrical plug connector (1) when removing the binocular assembly (2). Completely remove the self-locking shoulder screw (5), so it doesn't damage the electrical connector.

3. Loosen hexagonal screw (11) and disconnect electrical plug connector (1).

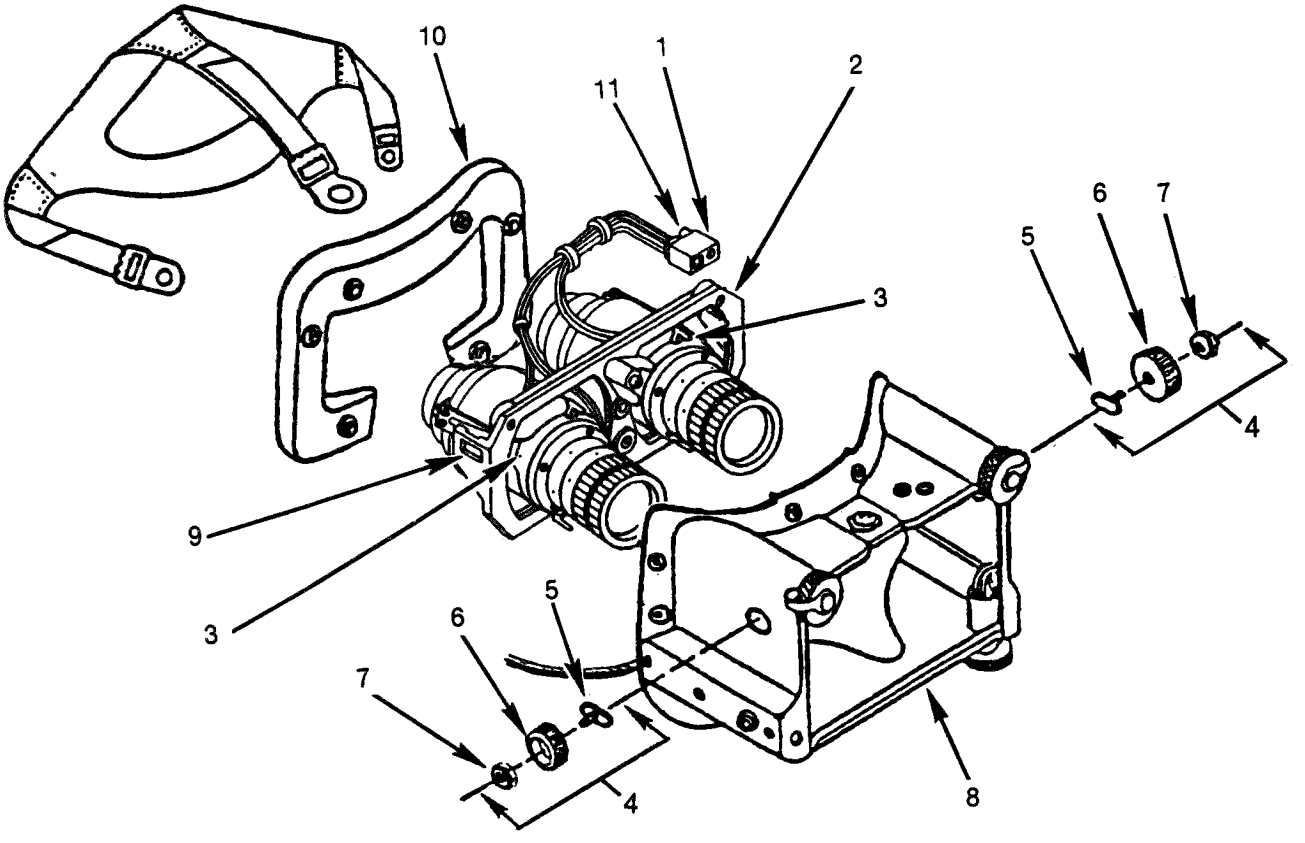
NOTE

Do not remove the clamp knob self-locking nuts (7) from the shoulder screw (5). If self-locking nut is removed, it must be replaced with a new nut or clamp knob assembly (4).

4. Loosen the self-locking nuts (7) of both clamp knob assemblies (4) and turn clamp knobs (6) in counterclockwise direction until clamp knob assemblies (4) can be twisted 90° and removed from frame (9) through holes in face mask assembly (8).

5. Remove the binocular assembly (2) from the face mask assembly (8) by standing the NVG on the objective lens caps, gently push down on the face mask assembly (8) with your thumbs as you pull on the binocular assembly (2). Rotate the diopter adjustment rings (3) so they clear the face mask.

4-16 REMOVAL AND INSTALLATION OF THE BINOCULAR ASSEMBLY FROM THE FACE MASK ASSEMBLY, AN/PVS-5, 5A, -5B, SC, GROUND USE - Continued



ANIPVS-5C NVG Shown
(AN/PVS-5, -5A, AND -5B are similar).

INSTALLTION

1. Place the face mask assembly (8) down and slide the binocular assembly (2) into the face mask assembly (8) with the objective lens caps end first and gently pull up on the face mask assembly until in place. Rotate the diopter adjustment rings (3) so they clear the face mask.

2. insert one clamp knob assembly (4) shoulder screw (5) through holes in face mask assembly (8) and frame assembly (9), then rotate 90° to engage' vertical slots in side 'of the frame assembl y.

3. Insert other clamp knob assembly (4) per step 2 above.

4. Screw clamp knobs (6) and self-locking nut (7) clockwise until tight against face mask. Tighten self-locking nuts (7), then back off self-locking nut (7) one half turn for operator adjustment.

5. Connect electrical plug connector (1) and tighten hexagonal screw (11).

6. Install face cushion assembly (1 0) by snapping six fasteners to the face mask.

7. Install head strap (para 3-12, Installation).

4-17 REMOVAL AND INSTALLATION OF THE CLAMP LEVER

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

NOTE

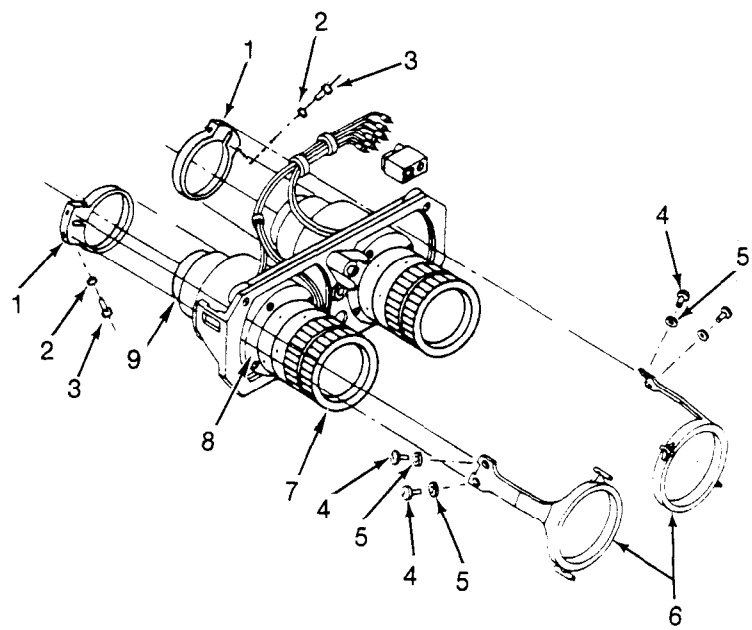
The clamp lever on the eyepiece assembly may need to be replaced or may require adjustment to allow the full range of adjustment within the diopter limits.

REMOVAL

1. Remove binocular assembly from face mask assembly (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or the GM-6(V)2 offset viewer mount assembly (para 2-21, Removal).

2. Remove machine screws (4) and lockwashers (5) to remove the diopter adjusting ring (6) from the clamp lever (1).

3. Use allen wrench to loosen socket-head cap screw (3) in clamp lever (1). Pull the clamp lever off the eyepiece assembly.



Binocular Assembly, AN/PVS-5C Shown
(AN/PVS-5, -5A, and -56 are similar.)

4-17 REMOVAL AND INSTALLATION OF THE CLAMP LEVER - Continued

INSTALLATION

1. Place new clamp lever (1) (or use old one if eyepiece (9) has been replaced) over eyepiece so that tabs face outward and socket-head cap screw (3) and lockwasher (2) faces up. Do not tighten socket-head cap screw (3) until the diopter adjustment ring (6) is attached.

2. Place the diopter adjustment ring (6) over the objective lens end (7). Attach arm of the diopter adjustment ring (6) using lockwashers (5) and machine screws (4).

3. Position clamp lever (1), so that the arm of diopter adjusting ring (6) touches tab on image intensifier housing (8) that limits its counter-clockwise rotation when viewed from eyepiece lens end (9).

4. Set the zero diopter setting by turning eyepiece (9) so that the shoulder of the movable part is approximately 0.025-inch above top surface of stationary portion of eyepiece lens assembly (9, Para 4-24).

5. With clamp lever (1) pushed forward so that it rests on shoulder of eyepiece (9) tighten socket-head cap screw (3) in clamp lever (1).

6. Install binocular assembly in the face mask assembly (para 4-16, Installation) or GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Installation).

4-18 REMOVAL AND INSTALLATION OF THE DIOPTER ADJUSTMENT RINGS

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Set

REMOVAL

NOTE

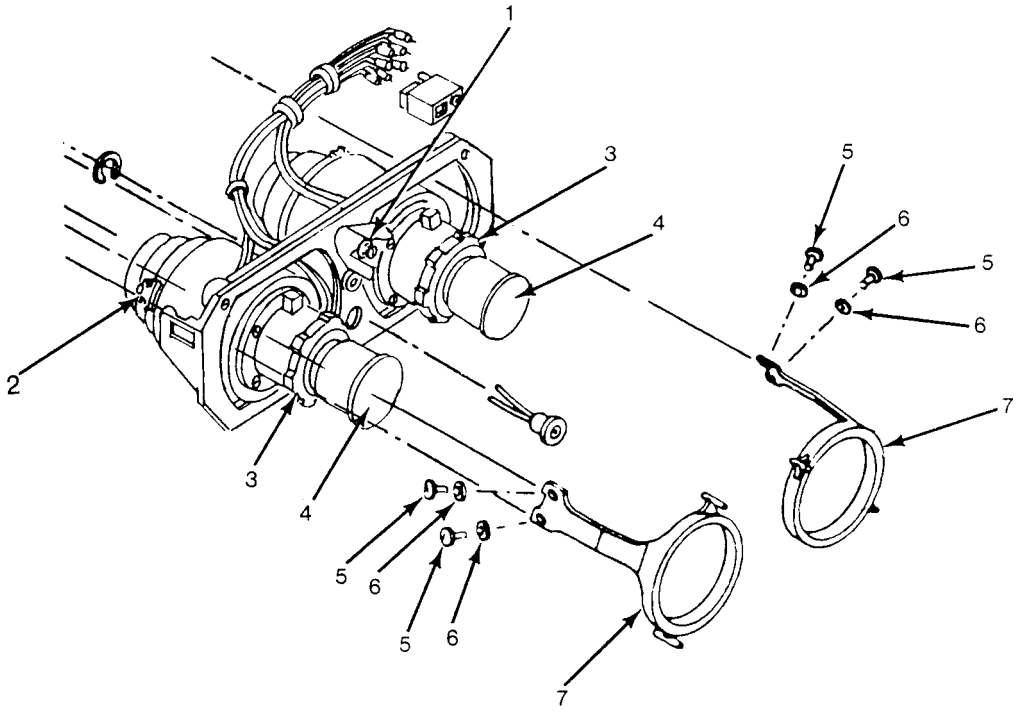
The diopter adjustment rings (7) are removed and replaced if broken or bent to the extent that they cannot be moved freely throughout the full range of diopter settings.

1. Remove binocular assembly from the face mask (as specified in para 4-16, Removal) or GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly, (para 2-21, Removal).

2. Remove two machine screws (5) and lockwashers (6), from lever clamp (2) with screwdriver.

3. Remove diopter adjusting ring (7) by slipping it off monocular assembly (3) toward objective lens (4).

4-18 REMOVAL AND INSTALLATION OF THE DIOPTER ADJUSTING RINGS - Continued



Binocular Assembly, AN/PVS-5 and -5A is Shown (AN/PVS-5B and -5C are similar)

INSTALLATION

NOTE

The new diopter adjustment ring is installed using new machine screws (5) and washers (6) if those removed are burred or worn.

1. Slip new diopter adjustment ring (7) over image intensifier (3) from objective lens (4) end and position diopter adjusting ring so that two holes are aligned with threaded holes in the lever clamp (2).

NOTE

The lever clamp must be placed to the outside when you fasten the diopter adjustment ring.

2. Attach diopter adjusting ring (7) using lockwashers (6) and machine screws (5). Tighten with screwdriver.

3. Install binocular assembly in the face mask assembly (para 4-16, Installation) or in the GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly, (para 2-21, Installation).

4-19 INSPECTION, REMOVAL, AND INSTALLATION OF THE GUIDE ASSEMBLY

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

INSPECTION

NOTE

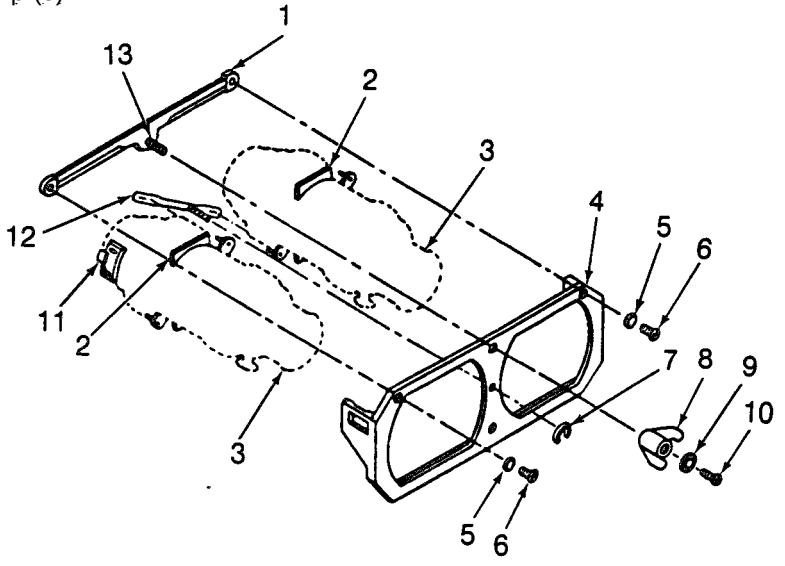
The frame assembly holds the monocular in the face mask and is adjustable for interpupillary distance. These functions depend upon proper alignment and mechanical condition of component parts. If interpupillary adjustment cannot be made, or fails to remain set in proper position, perform removal and installation procedures as outlined below.

1. Inspect for damage to lever clamp (wing nut) (8) or stud threads(13) of guide assembly (1).

2. If lever clamp (wing nut) (8) cannot be adjusted by finger pressure or will not remain tight against frame, replace the guide assembly (1).

3. Remove machine screw (10) and flat washer (9).

4. Unscrew lever clamp (8).



Frame Assembly, AN/PVS-5 and ANIPVS-5A
(AN/PVS-5B and -5C are similar)

4-19 INSPECTION, REMOVAL, AND INSTALLATION OF THE GUIDE ASSEMBLY - Continued

5. Inspect guide stud (13) for looseness. If the stud is loose the guide assembly (l) must be replaced.

6. Inspect the guide assemblv (1) for damage and to see that it is held securelv to the frame (4) by machine screws (6) and lockwashers (5). Tighten screws, if necessary, and recheck the goggles for interpupillary adjustment by loosening the lever clamp (wing nut) (8) and repositioning the monocular (3). If adjustment cannot be made easily, replace the guide assembly (1). If frame is bent, replace the frame assembly (para 4-22).

REMOVAL

1. Remove binocular assembly from face mask assembly (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Removal).

2. Remove machine screw (1 O), flat washer (9), and lever clamp (8) from guide assembly stud (13).

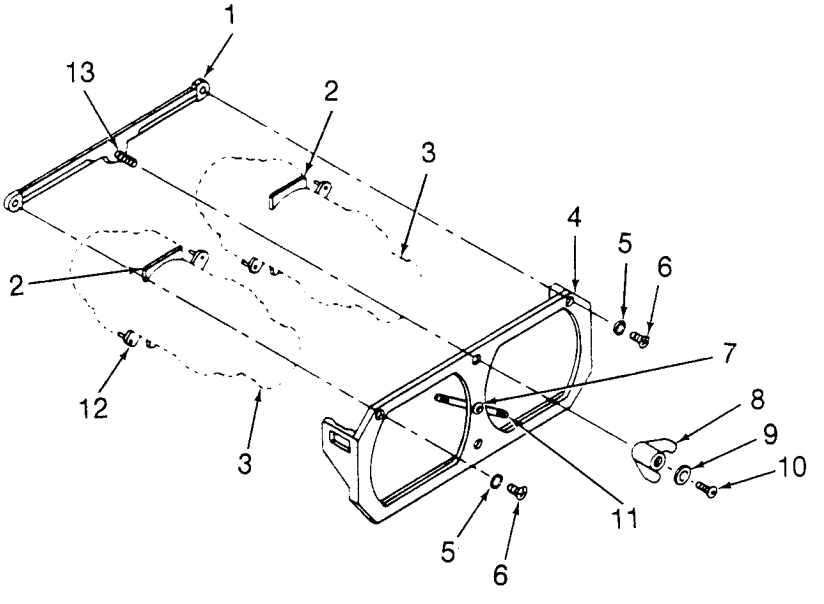
3. Remove machine screws (6) and Iockwashers (5) holding the frame (4) and guide assembly (1).

4. Separate guide assembly (1) from the frame (4). If frame is bent, replace the frame assembly (para 4-22)

INSTALLATION

1. Install a new guide assembly (1) by placing guide over the top flanges of monocular (3) and the lower image intensifier flange seated in the lower groove of the frame.

2. Insert guide assembly stud (13) through the center hole in the frame (4).



Frame Assembly, AN/PVS-5C Shown.
(AN/PVS-5, -5A, and -5C are similar)

4-19 INSPECTION, REMOVAL, AND INSTALLATION OF THE GUIDE ASSEMBLY - Continued

3. Install a machine screw (6) through a Iockwasher (5) and screw it into one of the two holes in the frame (4). Repeat with second screw and Iockwasher at side of the frame. Tighten both screws.

4. Install the lever clamp (wing nut) (8) on the guide stud (13), flat washer (9), and machine screw (10),

5. Complete reassembly of binocular assembly and install binocular assembly in the face mask assembly (para 4-16, Installation) or GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Installation).

4-20 INSPECTION, REMOVAL, AND INSTALLATION OF THE INTERPUPILLARY LINK

INITIAL SETUP

Tools

TK-1 05/G, Electronic Tool Kit

INSPECTION

1. Inspect the interpupillary link (12) for AN/PVS-5 and -5A; or (11) for AN/PVS-5B and 5C movement by loosening lever clamp (wing nut) (8) and repositioning monocular (3) laterally. If the interpupillary link does not operate properly, replace it.

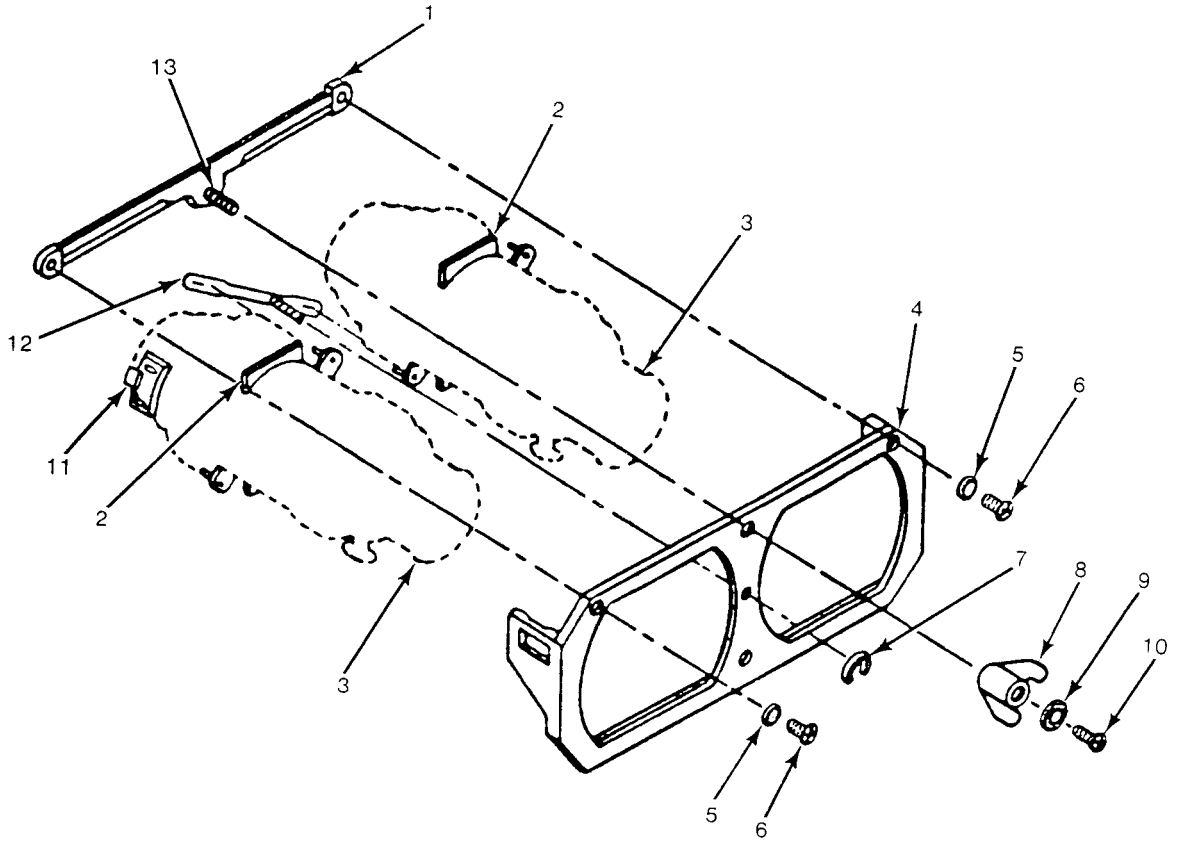
REMOVAL

1. Remove the binocular assembly from face mask assembly (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or the GM-6(V)2 offset viewer mount assembly, (para 2-21, Removal)

2. Position monocular (3) so that link pins are centered in slots of interpupillary link,

3. Push round knob of interpupillary link (1 2) through the frame (4) and remove.

4-20 INSPECTION, REMOVAL, AND INSTALLATION OF THE INTERPUPILLARY LINK - Continued



Frame Assembly, ANIPVS-5 and ANIPVS-5A
(AN/PVS-5B and -5C are similar)

INSTALLATION

1. Install a new interpupillary link from rear of frame assembly by sliding round knob of interpupillary link through center hole of frame and rotating interpupillary link so that link pins of monocular assemblies engage in link slots.

2. Press retaining ring (7) on groove of interpupillary link (12) from outside of frame (4).

3. Install binocular assembly in the face mask assembly (para 4-16, Installation) or the GM-6(V)1 viewer mount assembly or the GM-6(V)2 offset viewer mount assembly (2-21, Installation).

4-21 REMOVAL AND INSTALLATION OF THE LIGHT EMIITING DIODE (LED) ASSEMBLY, GROUND USE ONLY

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

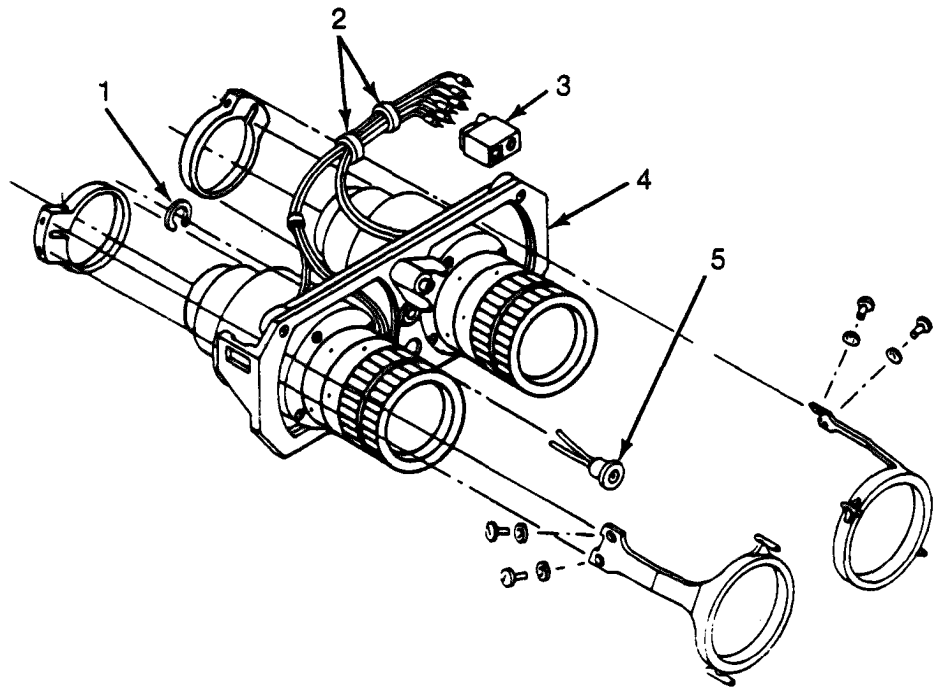
Supplies/Tools

Insert-extractor tool
Lacing tape
Tags

REMOVAL

1. Remove binocular assembly from face mask assembly (para 4-16, Removal).

2. Tag LED (5) leads to electrical plug connector (3). Remove lacing tape (2) from wiring harness.



Binocular Assembly, AN.PVSS-5C Shown.
(AN/PVS-5, -5A, -5B binocular similar)

4-21 REMOVAL AND INSTALLATION OF THE LIGHT EMIITING DIODE (LED) ASSEMBLY. GROUND USE ONLY - Continued

3. Use insert-extractor tool to remove LED (5) leads from electrical plug connector (3).

4. Remove retaining ring (1) from back of LED (5).

5. Remove LED assembly (5) from frame assembly (4) by extracting LED assembly to the front.

INSTALLATION

1. Install new LED assembly in frame assembly by inserting LED assembly (5) through hole in frame from front and replacing retainer ring (1).

2. Use insert-extractor tool to insert LED leads in electrical plug connector (3). Tie wires with lacing tape (2) at 1 -inch intervals.

3. Install binocular assembly in face mask assembly (para 4-16, Installation).

4-22 INSPECTION. REMOVAL. AND INSTALLATION OF THE FRAME ASSEMBLY

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

REMOVAL

1. Remove the binocular assembly from face mask assembly (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or the GM-6(V)2 offset viewer mount assembly, (para 2-21, Removal).

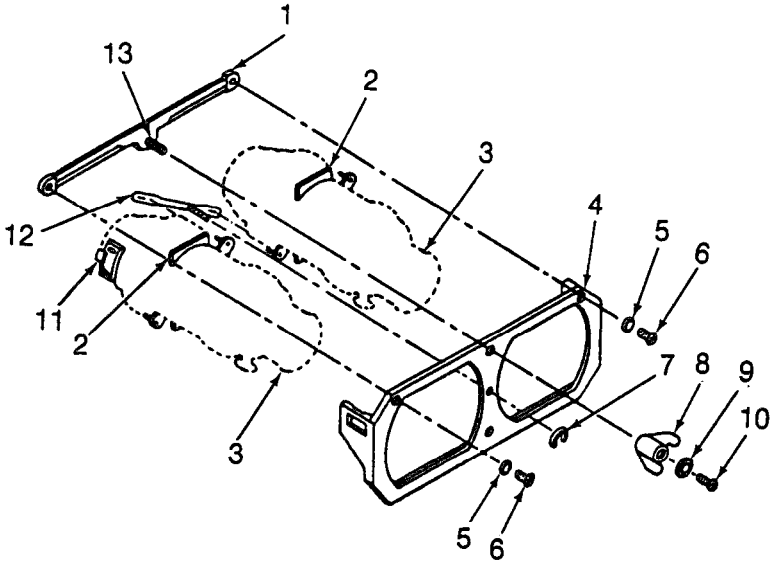
2. Remove the Interpupillary Link (para 4-20, Removal).

3. Disconnect the Diopter Adjustment Ring at the clamp lever (para 4-18, Removal),

4. Remove the Light Emitting Diode, (para 4-21, Removal).

5. Remove the Guide Assembly (para 4-19, Removal).

4-22 INSPECTION, REMOVAL, AND INSTALLATION OF THE FRAME ASSEMBLY - Continued



Frame Assembly, AN/PVS-5 and -5A
(AN/PVS-5B and -5C similar)

INSTALLATION

1. Install new frame by placing the binocular assembly through the frame and" placing the image intensifier flanges so they set in the groove at the bottom of the frame and install the guide assembly (para 4-19, installation),

2. Install Light Emitting Diode (para 4-21, Installation) (Ground Use Only).

3. Install Diopter Adjustment ring (para 4-18, Installation).

4. Install the Interpupillary Link (para 4-20, Installation).

5. Install binocular assembly in the face mask assembly (para 4-16, Installation) or the GM-6(V)1 viewer mount assembly or the GM-6(V)2 offset viewer mount assembly (2-21, Installation).

4-23 REMOVAL AND INSTALLATION OF THE MONOCULAR ASSEMBLY

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

REMOVAL

NOTE

- Purging of the monocular assembly is required when the monocular is disassembled.
- The monocular assembly is repaired by replacing the eye-piece lens assembly, objective lens assembly, or image intensifier, as required, to restore the monocular to full operation.
- The GM-6(V)1 or GM-6(V)2 NVG houses only the AN/PVS-5A, -5B. or -5C binocular assemblies.
- The AN/PVS-5, -5A, -5B, and -5C binocular assembly can be used in any face mask assembl y (AN/PVS-5, -5A, -5B, or -5 C).

1. Remove binocular assembly from the face mask assembly (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Removal).

2. Remove frame assembly (para 4-22, Removal)

INSTALLATION

1. Install the monocular in the frame assembly (para 4-22, Removal).

NOTE

When installing the monocular assembly, the image intensifier has flanges that mount in a groove located at the bottom of the frame and between the frame and the guide assembly.

2. Install binocular assembly in the face mask assembly (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Installation).

4-24 REMOVAL AND INSTALLATION OF THE EYEPIECE ASSEMBLY

INITIAL SETUP

Facility

Clean station and repair area

Tools

TK-105/G, Electronic Tool Kit

Supplies/Tools

Spanner wrench
Lens Tissue
DC33 Lubricant
Canned Air

NOTE

- Purging of the monocular assembly is required when the monocular is disassembled.
- GM-6(V)1 and GM-6(V)2 eyepieces can be removed without removing the binocular assembly from the viewer mount or offset viewer mount.

REMOVAL

1. Remove binocular assembly from face mask assembly, (para 4-16, Removal) or the GM-6(V)1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Removal).
2. Remove monocular assembly from the frame assembly (para 4-23, Removal).
3. Remove diopter adjustment ring (para 4-18, Removal).
4. Loosen eyepiece assembly (1) with spanner wrench.

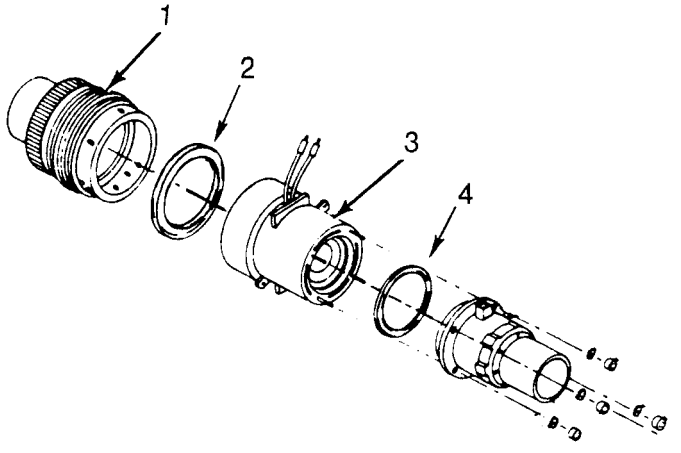
NOTE

The eyepiece assembly or image intensifier for the AN/PVS-5 is not interchangeable with either the eyepiece assembly or the image intensifier for the AN/PVS-5A, -5B, and -5C.

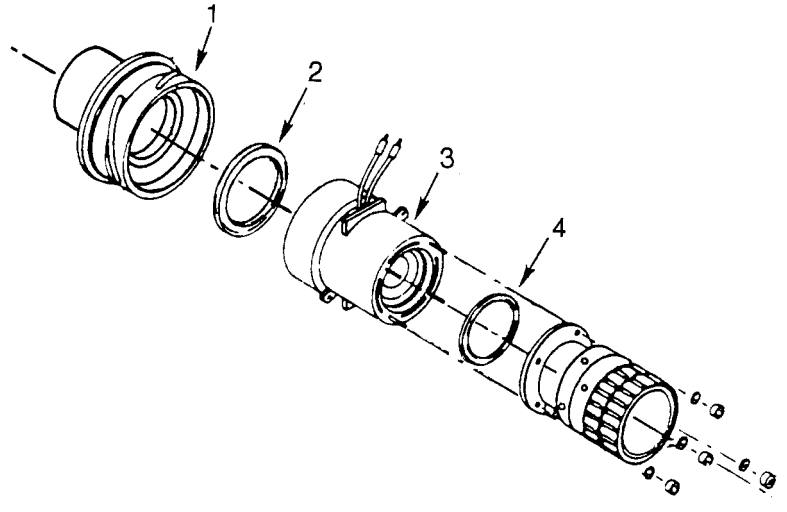
5. Rotate eyepiece lens assembly (1) counterclockwise and remove from image intensifier (3).

4-24 REMOVAL AND INSTALLATION OF THE EYEPIECE ASSEMBLY - Continued

6. Replace preformed packing (2) if removed from eyepiece lens assembly (4).



AN/PVS-5 Monocular Assembly



AN/PVS-5A,-5B, and -5C Monocular Assembly

4-24 REMOVAL AND INSTALLTION OF THE EYEPIECE ASSEMBLY- Continued

INSTALLATION

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.

1. Using canned air, blow lenses and threaded areas before appling silicone grease.

2. Apply lubricant grease DC33 to both sides of the preformed packing (2) and insert into groove on the threaded surface of eyepiece lens assembly (1).

3. Use lens tissue to clean the optics surfaces of the eyepiece lens and image intensifier lens before you put them together.

4. Insert eyepiece lens assembly (1) partially into image intensifier (3) so that preformed packing (2) remains outside of image intensifier housing.

5. Purge the monocular assembly (para 4-10).

6. Install monocular assembly in frame (para 4-23 Installation)

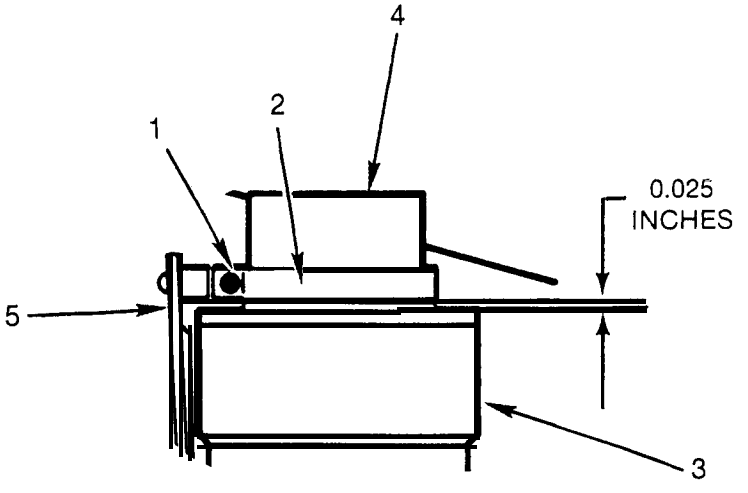
7. Install diopter adjustment ring (para 4-18, Installation).

8. Install Clamp lever (para 4-1 7).

NOTE

Adjust the eyepiece lens assembly to allow full range adjustment within diopter limits with binocular assembly from face mask.

4-24 REMOVAL AND INSTALLATION OF THE EYEPIECE ASSEMBLY - Continued



Eyepiece lens 0.025-inch Setting

9. Use screwdriver to loosen socket head cap screw (1) in clamp lever (2) so that its shoulder is about 0.025 inch above the top face of the eyepiece adapter (3).

10. Position the clamp lever (2) so that the arm of the diopter adjustment ring (5) touches the tab on the image intensifier that limits its clockwise rotation when viewed from the eyepiece lens (4) end.

NOTE

When properly positioned, the arm of the diopter adjustment ring will be on the outboard side of the monocular housings, positioned against the tab in the lower right quadrant for the right monocular, or upper left quadrant for the left monocular.

11. Rotate the diopter adjustment ring (eyepiece) outward (clockwise viewed from objective lens end) until stop is reached. The arm of the diopter adjustment ring should touch the tab on the monocular housing that limits the clockwise travel. If the arm of the diopter adjustment ring does not touch the tab, loosen the screw and rotate the clamp lever so that the arm touches the tab. Tighten the screw.

12. Using the 0.025 feeler gauge, measure near the shoulder to the top of the bevel to approximately 0.025 setting. Adjust eyepiece to meet the setting.

13. Install binocular assembly in face mask (para 4-16, Installation) or GM-6(V) 1 viewer mount assembly or GM-6(V)2 offset viewer mount assembly (para 2-21, Installation).

4-25 REMOVAL AND INSTALLATION OF THE OBJECTIVE LENS ASSEMBLY

INITIAL SETUP

Tools

Supplies/Tools

Spanner wrench
DC33 Lubricant
Canned Air

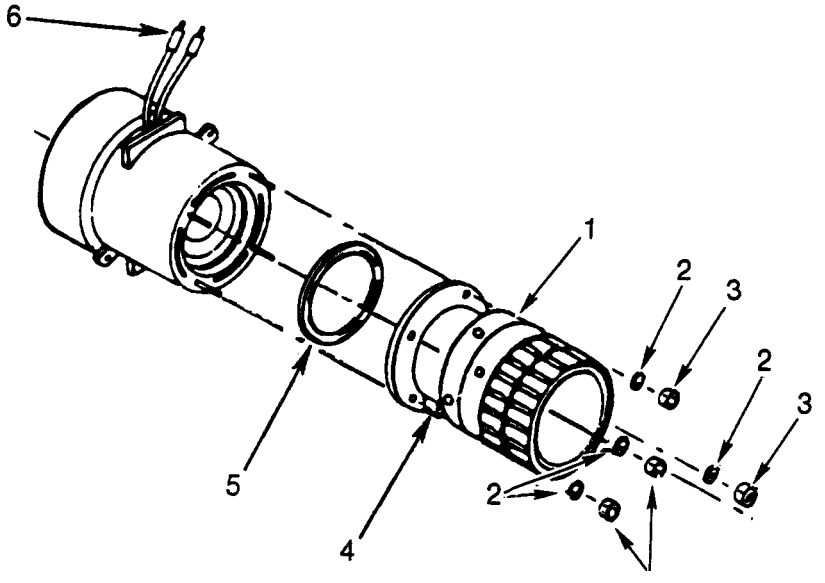
REMOVAL

NOTE

- Purging of the monocular assembly is required when the monocular is assembled.
- The objective lens can be removed without removing the binocular assembly from the viewer mount, offset viewer mount assemblies, or face mask assembly.

1. Remove the monocular from the binocular assembly (para 4-23).

2. Remove four retaining nuts (3) and lockwashers (2) (or lockwashers and screws for (AN/PVS-5C) from the mounting collar and remove objective lens assembly (1).



AN/PVS-5C Objective Lens Assembly

4-25 REMOVAL AND INSTALLATION OF THE OBJECTIVE LENS ASSEMBLY Continued

INSTALLATION

1. Clean both ends of objective lens and image intensifier lens.

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,

NOTE

- The objective lens assembly (1) is installed with the purge port (4) down, which is opposite to the image intensifier's wires (6).
- The objective lens assembly must be changed in pairs, both objective lenses must be of one type AN/PVS-5, -5A, -5B, or -5C in a pair of NVG.
- When it is necessary to replace the mounting screws of the AN/PVS-5C objective lens; replace the screws and washers with barrel threaded studs, lockwasher, and nuts as used on the AN/PVS-5A and -5B.

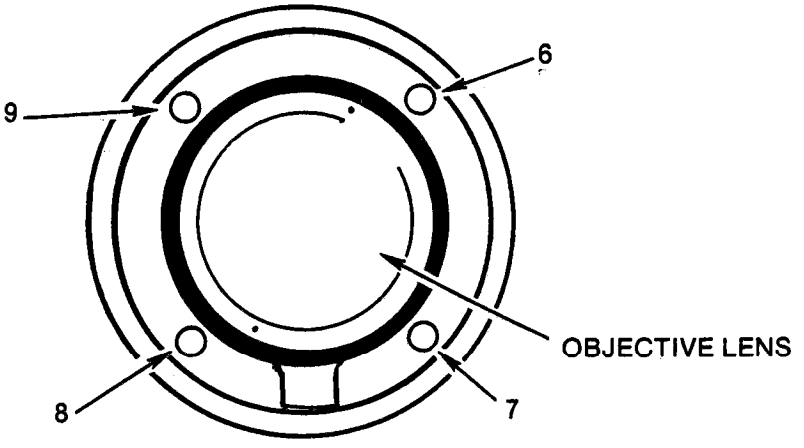
2. Using canned air, spray lens end with air before applying grease.

3. Apply lubricant grease DC33 to both sides of preformed packing (2) and insert into groove on the objective lens assembly (1).

4. Replace objective lens assembly (1) by aligning holes in objective lens mounting collar and attaching four lockwashers (2) and retainer nuts (3).

5. Tighten mounting hardware as follows and shown below: tighten the two nuts opposite each other (6) and (8) to hold in place, than tighten the other two nuts (7) and (9) to hold in place. Now tighten nuts by alternating until they are snugged down tight.

4-25 REMOVAL AND INSTALLATION OF THE OBJECTIVE LENS ASSEMBLY - Continued



Mounting Hardware for Objective Lenses.

6. Purge monocular assembly (para 4-10)..

7. Install monocular assembly (para 4-23, Installation).

4-26 REMOVAL AND INSTALLATION OF THE PURGE VALVE AND PREFORMED PACKING

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit

Supplies

Lubricant, silicone grease, DC 33

REMOVAL

1. Using screwdriver, remove purge valve (1) and preformed packing (2) from objective lens (3).

2. Inspect the preformed packing (2) for cracks or damage. Replace if damaged.

4-26 REMOVAL AND INSTALLATION OF THE PURGE VALVE AND PREFORMED PACKING - Continued

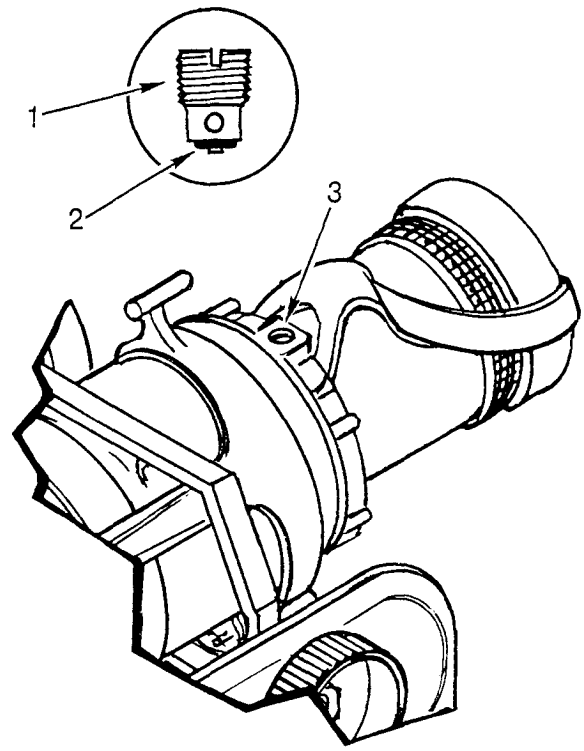
INSTALLATION

1. Place preformed packing (2) on the end of the purge valve (1).

2. Apply silicone grease to the preformed packing (2) and purge valve (1).

3. Screw purge valve (1) into objective lens (3).

4. Perform the same procedure for the other objective lens (3).



4-27 REMOVAL AND INSTALLATION OF THE IMAGE INTENSIFIER

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit
Insert-extractor tool
Spanner wrench

Supplies

Lens Tissue

REMOVAL

The image intensifier is located between the eyepiece lens and the objective lens and both must be removed to replace the image intensifier (paras 4-24 and 4-25).

4-27 REMOVAL AND INSTALLATION OF THE IMAGE INTENSIFIER - Continued

NOTE

Purging of the monocular assembly is required when the monocular is disassembled.

1. Remove the lacing tape for wiring.

2. Using the insert-extractor tool, remove the wires from the electrical connector.

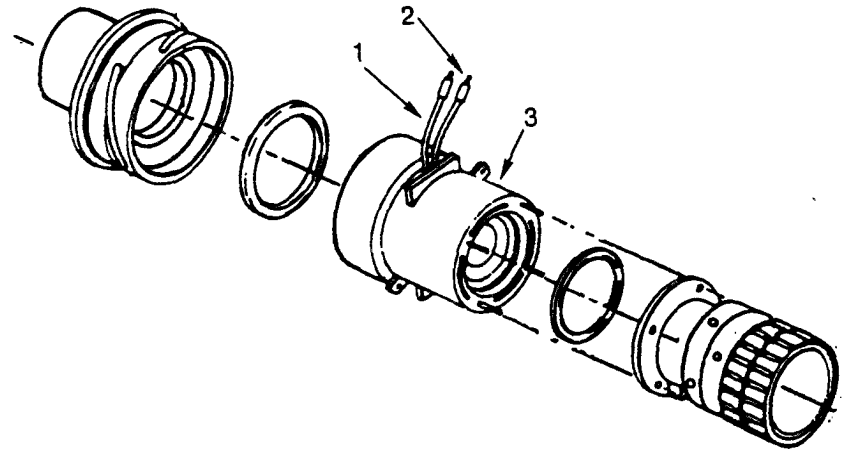
3. Remove eyepiece assembly (para 4-24, Removal).

4. Remove objective lens assembly (para 4-25, Removal).

NOTE

If the image intensifier is warranted, follow Warranty procedures in paragraph 1-7.

5. Inspect the image intensifier's wires (1) and pin contacts (2) for frays and cuts. Replace contacts (2) if damaged (para 4-27).



Monocular Assembly

4-27 REMOVAL AND INSTALLATION OF THE IMAGE INTENSIFIER - Continued

INSTALLATION

NOTE

- The image intensifier must be mounted with the wires on the top and the objective lens purge port on the underside.
- The image intensifier mounts in grooves in the frame assembly at both top and bottom.
- Clean lenses of the image intensifier, eyepiece, and objective before attaching together.
- When it is necessary to replace the mounting screws of the AN/PVS-5C objective lens; replace the screws and washers with threaded studs and barrel nuts as used on the AN/PVS-5A and -5B.

1. Install eyepiece assembly (para 4-24, Installation).
2. Install objective lens assembly (para 4-25, Installation).
3. Purge the monocular assembly (4-1 O).
4. Install monocular assembly in frame assembly (para 4-23, Installation)
5. AN/PVS-5A. Adjust the infinity focus procedures in paragraph 4-14 for Aviation Use Only.

14-28 REPLACE WIRING CONTACTS FOR IMAGE INTENSIFIER

INITIAL SETUP

Test Facility

Electronic repair service area

Tools

Soldering station, (set at 625°F plus or minus 5°F)
Resoldering tool
Solder sucker
Wire strippers

4-28 REPLACE WIRING CONTACTS FOR IMAGE INTENSIFIER - Continued

Materials/Parts

Solder, SN63 or SN60
Denatured ethanol
Solder wick braid
Stranded wire

PROCEDURE

1. If one or both of the contact pins (2) are damaged, cut off the old contact flush with the top of the contact. Cut off as little of the image intensifier (3) wire (1) as possible.

2. Strip approximately 1/4-inch of insulation and tin the exposed wire.

3. With a new contact (2) held firmly in place in a vise or other holding.fixture, place a small slug of SN60 or SN63 solder into the cavity of the contact (2). This slug of solder should extend approximately l/16-inch above the top of the contact.

4. With the soldering iron set at 625°F, apply heat to the upper half of the contact causing the solder slug to melt. Remove heat.

5. Using solder wick braid, or stripped stranded wire, reapply heat to the contact and remove the molten solder from the contact cavity.

6. Repeat steps 3 through 5 once more.

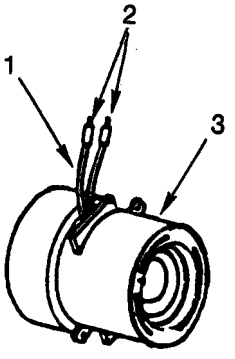


Image Intensifier Contacts

7. Replace another slug of solder into cavity. This solder slug should be flush with the top of the cavity. Apply heat to the upper half of the contact (2). When the solder melts, place the stripped and tinned end of the image intensifier wire lead into the contact cavity. Remove the heat, being careful not to move wire or the contact as the solder solidifies. After waiting 60 seconds, clean the new solder connection with denatured ethanol. Workmanship shall meet requirements of MIL-STD-2000.

8. Repeat steps steps 1 through 7 for the other image intensifier (3) wire (1), if necessary.

4-29 REMOVAL AND INSTALLATION OF THE ROTARY SWITCH, AN/PVS-5, -5A, -5B AND 5C, GROUND USE

INITIAL SETUP

Tools

TK-I 05/G, Electronic Tool Kit
Soldering Station
Resoldering Tool
Cutters

Supplies

Silicone Adhesive
Tags
Solder, SN63 or SN60
Denatured ethanol

REMOVAL

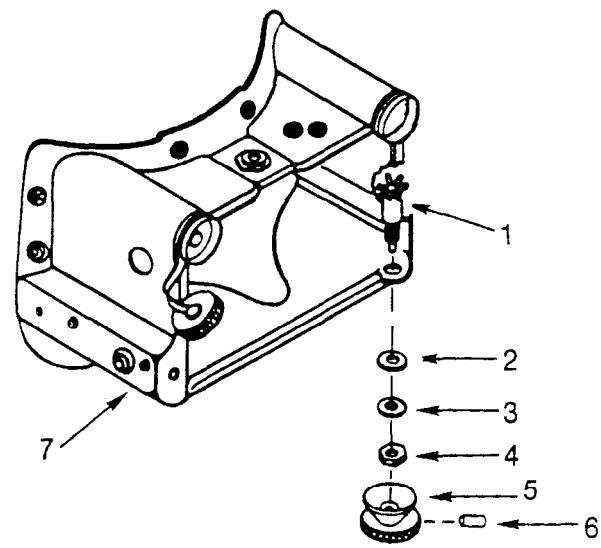
1. Remove binocular assembly from the face mask assembly (para 4-16, Removal).

2. Using small punch and lightweight hammer, carefully drive out roll pin (6) (or remove screw) that secures rotary switch shaft. Remove rotary switch knob (5).

3. Remove hexagonal nut (4), internal tooth washer (3), and washer (2) from underside of face mask (7).

4. Remove rotary switch (1) from face mask assembly by pulling rotary switch up through hole in face mask (7).

5. Tag and unsolder leads.



Rotary Switch Removal, AN/PVS-5C Face Mask shown

4-29 REMOVAL AND INSTALLATION OF THE ROTARY SWITCH, AN/PVS-5, -5A, -5B AND -5C, GROUND USE - Continued

INSTALLATION

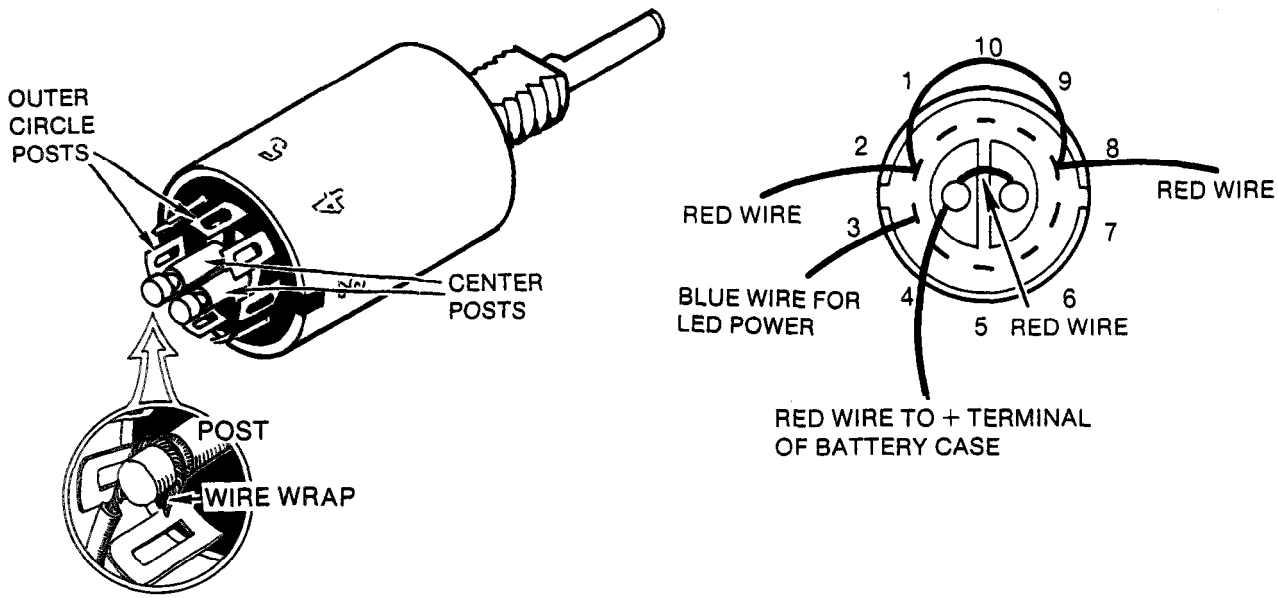
1. Cut a short length of red wire to use as a jumper for the two center posts.

2. -Strip the insulation from ends, tin each end and shape each end to wrap around the center posts.

3. Wrap one end of the jumper wire and the battery terminal lead wire around one center terminal post.

4. Using the soldering iron, set at 625°, apply solder at the wires at that center terminal post.

5. Wrap other end of jumper wire to other center terminal post.



Rotary Switch Wiring

6. Use the soldering iron, set at 625°, apply solder and tip of soldering iron to the wires at that center terminal post.

7. Inspect connection for proper solder connection and clean with denatured ethanol. The workmanship must meet the requirements of MIL-STD-2000.

8. Apply a small amount of silicone adhesive over the two center post to cover the solder and post ends.

9. Cut a red wire for a jumper wire long enough to connect at outer circle post hole (2) to post hole (8).

10. Strip insullation from each end, tin wires and shape to insert in the pest (2) and (8).

11. Insert one end of the jumper wire and one red wire lead (removed during Step 5 of Removal above) and insert through hole of post (2) and wrap around post.

4-29 REMOVAL AND INSTALLATION OF THE ROTARY SWITCH, AN/PVS-5, -5A, -5B AND -5C, GROUND USE - Continued

12. Using the soldering iron, set at 625°, apply solder and the tip of the soldering iron to the wires on post (2).

13. Insert other end of jumper wire and other red wire lead (removed during Step 5 of Removal above) through holes in post (8) and wrap around post.

14. Using the soldering iron, set at 625°, apply solderand the tip of the soldering iron to the wires on post (8).

15. Inspect connection for proper solder connection and clean with denatured ethanol. The workmanship must meet the requirements of MIL-STD-2000.

16. Insert the blue LED wire (removed during Step 5 of Removal above) in the outer circle post hole (3) and wrap around post.

17. Using the soldering iron, set at 625°, apply solder and the tip of the soldering iron to the wires on post (3).

18. Inspect connection for proper solder connection and clean with denatured ethanol. The workmanship must meet the requirements of MIL-STD-2000.

19. Apply a small amount of silicone adhesive to cover all the connections on the switch

20. After the wires are all attached lay them down the side of the switch and tape to secure the wires.

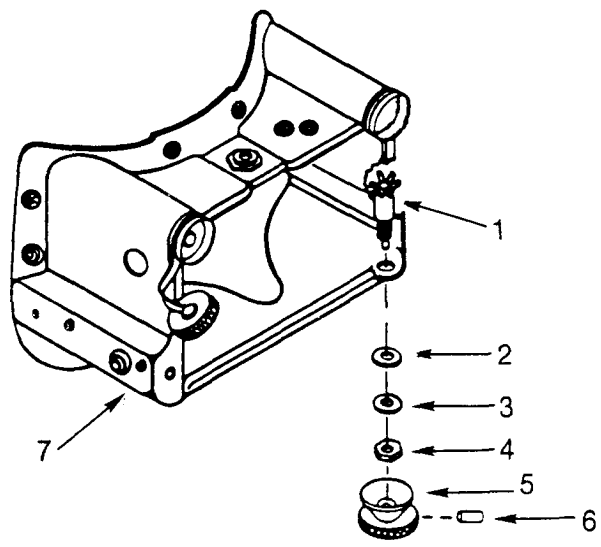
21. Install rotary switch (1) in face mask (7) with lead terminals facing up.

22. Install washer (2) with its small tip in the hole in the face mask, internal tooth washer (3), and hexagonal nut (4) at underside of face mask (7) and tighten.

23. Install rotary switch knob (5) and align hole in knob with hole in rotary switch shaft.

24. Insert roll pins (6). Using a small punch and lightweight hammer, carefully drive the roll pin (3) into the knob (5) and through the hole in the shaft of the rotary switch to secure the knob. Be sure the pin is flush with the knob.

25. Install binocular assembly in the face mask assembly (para 4-16, Installation).



Rotary Switch Installation, AN/PVS-5C Face Mask Shown

4-30 REMOVAL AND INSTALLTION OF THE LOWER BATTERY CASE ASSEMBLY, AN/PVS-5, -5A, -5B, AND -SC, GROUND USE

INITIAL SETUP

Tools

TK-105/G, Electronic Tool Kit
Solder Station
Solder (SN63 or SN60)
Resoldering Tool

NOTE

The upper battery cases for the AN/PVS-5C are part of the face mask assembly and are not replaceable.

REMOVAL

1. Remove the binocular assembly from the face mask assembly (para 4-16, Removal).

2. Unscrew battery cap (8).

3. Tag wire of wiring harness (5) soldered to terminal lug (12) on top of battery case assembly (4).

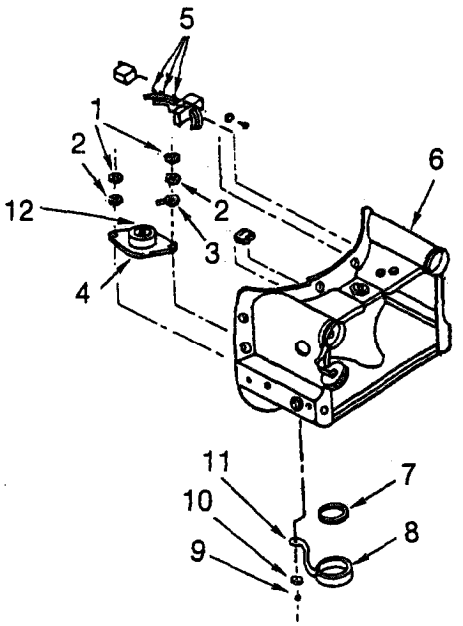
4. Unsolder wire (5) from terminal lug (12) on top of battery case assembly (4).

5. Remove hexagonal plain nut (1), lockwasher (2), and terminal lug (3) from battery case assembly (4).

6. Remove machine screws (9) and flat washers (10] from underside of face mask (6).

7. Remove battery cap retainer (11) and gasket (7).

8. Remove battery case assembly (4) from face mask (6).



ANIPVS-5C Face Mask Shown

4-30 REMOVAL AND INSTALLATION OF THE LOWER BATTERY CASE ASSEMBLY, AN/PVS-5, -5A, -56, AND -5C, GROUND USE - Continued

INSTALLATION

1. Place battery case assembly (4) in hole of face mask (6) so that screw holes are aligned with those of face mask.

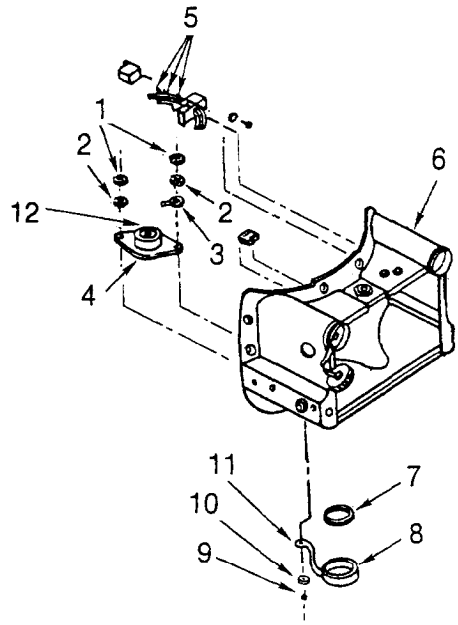
2. Replace flat washers (1 O), machine screws (9), gasket (7), battery cap (8), nuts (l), lockwashers (2), and terminal lug (3).

3. Replace terminal lug (3) over machine screw closest to front of face mask.

4. Solder three black wires (5) to terminal lug (12) on top of battery case.

5. Solder red wire to the installed terminal lug (3) on the battery case assembly (4).

6. Install binocular assembly in the face mask assembly (para 4-16, Installation).



ANIPVS-5C Face Mask Shown

4-31 REMOVAL AND INSTALLATION HIGH-LIGHT CUTOFF CIRCUIT, AN/PVS-5C FACE MASK ONLY, GROUND USE

Since the high-light cutoff circuit for the AN/PVS-5C is an integral part of the face mask assembly, no removal or installation procedures are provided. If the high-light cutoff circuit is defective, replace the face mask assembly.

4-32 MODIFICATION OF THE GM-6(V)1 VIEWER MOUNT ASSEMBLY WIRING, (Serial Numbers 0001 to 3929), AVIATION USE

INITIAL SETUP

Test Facility

Electronic repair service area

Tools

TK-105/G, Electronic Tool Kit
Soldering station
Wire strippers

Materials/Parts

Denatured ethanol
Solder, SN63 or SN60
Repair Kit, Electrical cable insulation (Shrinkable tubing)
Adhesive, Silicone (black)

PROCEDURE

1. Remove the viewer mount assembly (2) from the binocular assembly (para 2-21, Removal).

2. Inspect the wiring harness (four wires) (4) for any nicks or cracks in the insulation of the wires from the connector plug (3) to the part where the wires enter the viewer mount assembly.

3. Cut the four wires approximately 1-inch from where the wires enter the electrical connector plug (3) using wire cutters.

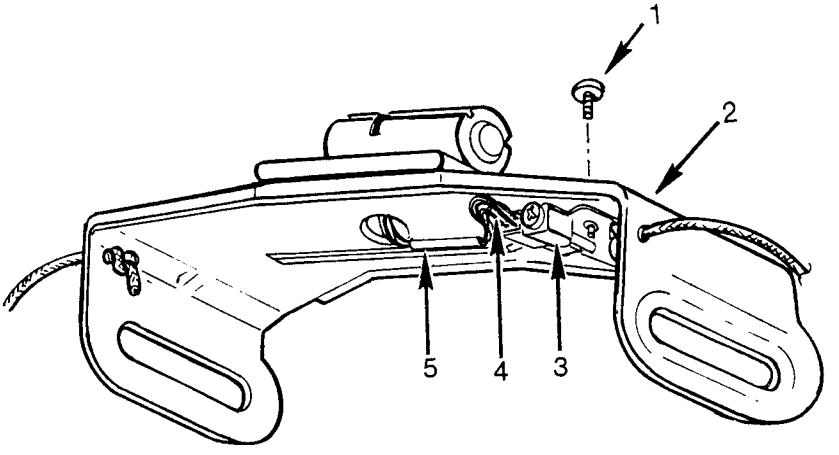
4. Remove the phillips head screw (1) that holds the connector plug to the viewer mount (2). Remove the connector plug and set aside.

5. Strip approximately 1/4-inch of the insulation from the four wires (4) coming from the viewer mount assembly. Tin the stranded wire ends (4).

6. Strip the insulation approximately 1/4-inch from the four wires (4) of the connector plug (3). Tin the stranded wire ends.

7. Mechanically connect the two red wires together coming from the viewer mount.

4-32 MODIFICATION OF GM-6(V)1 VIEWER MOUNT ASSEMBLY WIRING, (Serial Numbers 0001 to 3929), AVIATION USE - Continued



Wiring Modification

8. Repeat step 7 for the black wires.

9. Install a 1/2-inch length of 3/32-inch cable insulation (5) (shrinkable tubing) over the two red wires coming from the viewer mount (2). Make sure that the bare ends are completely exposed.

10. Repeat step 9 for two black wires coming from the viewer mount.

11. Install a 1-inch length of 5/32-inch shrinkable tubing over the two red wires and the two black wires coming from the electrical connector.

12. Connect the two red wires from the viewer mount and the two red wires from the connector plug (3) to form one wire connection and solder.

13. Repeat step 12 for connecting the black wires.

14. Inspect the connections for proper solder connections and clean with denatured ethanol. The workmanship must meet the requirements of MIL-STD-2000.

4-32 MODIFICATION OF GM-6(V)1 VIEWER MOUNT ASSEMBLY WIRING, (Serial Numbers 0001 to 3929), AVIATION USE - Continued

15. Move the 1/2-inch length of 3/32-inch shrinkable tubing (5) over the red wire solder connection and apply heat to shrink tubing.

16. Move the 1/2-inch length of 3/32-inch shrinkable tubing over the black wire solder connection and apply heat to shrink tubing.

17. Move the 5/32-inch tubing over the solder connections of the red and black wires, but do not shrink tubing.

18. Reconnect the electrical connector plug (3) using the phillips head screws (1),

19. Position the 5/32-inch tubing near the electrical connector and adhere the tubing to the underside of the visor mount with a small amount of silicone adhesive (black).

20. Apply a small amount of the silicone adhesive (black) to the wiring at the connections to hold the harness flat to the underside of the viewer mount (2).

21. Perform the continuity check in paragraph 2-17.

22. install the binocular assembly in the viewer mount assembly (Para 2-21, Installation).

23. Record this modification on DA Form 2408-5-1, Equipment Modification Record in accordance with DA Pam 738-751.

4-33 MODIFICATION OF THE CARRYING CASE TO ACCOMMODATE THE GM-6(V)1 OR GM-6(V)2 AND POWER PACK, AVIATION USE

INITIAL SETUP

Tools

TK-1 05/G, Electronic Tool Kit

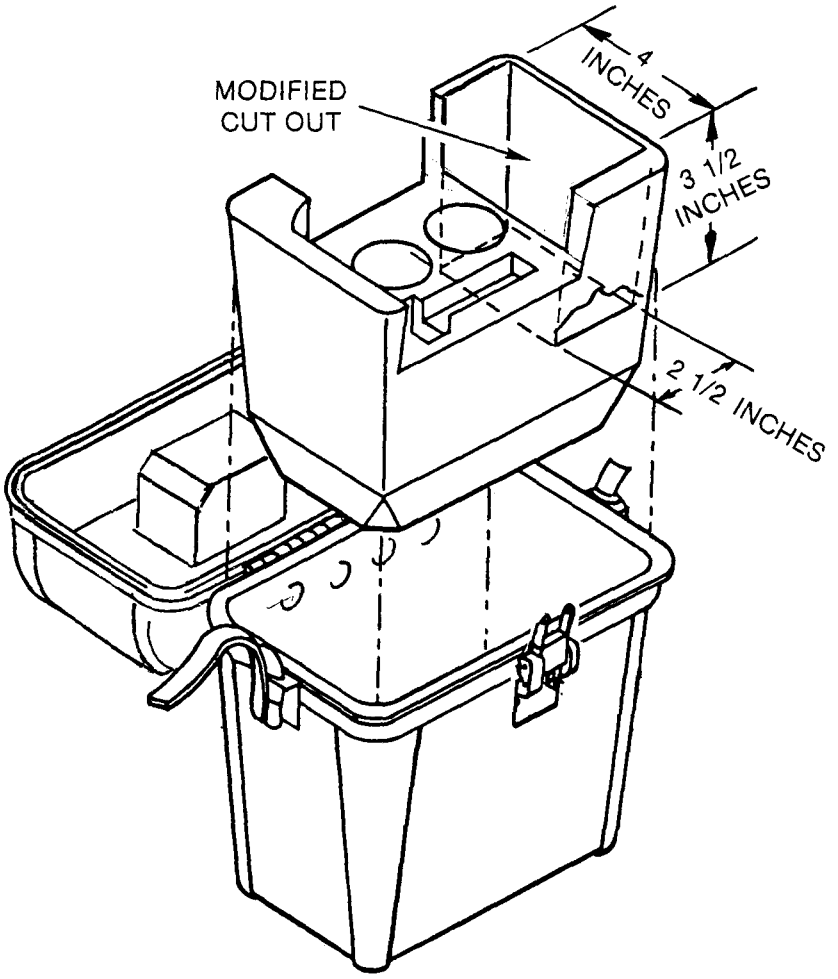
PROCEDURE

1. Remove the batteries, demisiting shields, sacrificial lenses, and allen wrench from the carrying case.

2. Using a sharp knife, cut the liner at the top right corner per the illustration to accommodate the power pack for the NVG.

3. Record this modification on DA Form 2408-5-1, Equipment Modification Record in accordance with DA Pam 738-751.

4-33 MODIFICATION OF THE CARRYING CASE TO ACCOMMODATE THE GM-6(V)1 OR GM-6(V)2 AND POWER PACK, AVIATION USE - Continued



Modification to the Carrying Case for the GM-6(V)1 and GM-6(V)2.

4-34 PAINTING

Painting the AN/PVS-5, -5A, -5B, -5C and GM-6(V)1 and GM-6(V)2 NVG is not authorized or required.

4-35 LUBRICATION

Lubrication of the NVG, except for the preformed packings and metal parts as described in the maintenance procedures, is not required or authorized. At no time should petroleum jelly be used as a lubricant for the preformed packings.

Section VI. Preparation for Storage and Shipment.

4-36 PACKING THE NVG

Packing procedures for the NVG are the same as that for Unit or AVUM (para 2-25).

4-37 SHIPPING THE IMAGE INTENSIFIER

Whenever an image intensifier has been replaced, pack the removed image intensifier in the packing and shipping material in which you received the new image intensifier or equivalent packing material. The original packing and shipping material provides the appropriate protection for the image intensifier. Return the removed image intensifier to depot for final evaluation and disposition.

If an image intensifier has been replaced and it is still under warranty, refer to paragraph 1-7 for instructions.

APPENDIX A
REFERENCES

A-1 SCOPE

This appendix lists all the forms, field manuals, technical manuals, and miscellaneous publications referred to in this manual.

A-2 FORMS

Exchange Tag . . . . . DA Form 2402

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

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

Maintenance Request . . . . . DA Form 2407

Equipment Modification Record . . . . . .DA Form 2408-5-1

NVG Inspection and Maintenance Record (Aviation) . . . . DA Form 2408-30

Report of Discrepancy SF364

ProductQuality Deficiency Report SF368

A-3 FIELD MANUALS

Aeromedical Training for Flight Personnel . . . . FM 1-301

First Aid for Solders . . . . FM 21-11

Night Flight TeChniques and Procedures . . . . . TC 1-204

A-4 TECHNICAL MANUALS

Operator's Organizational Maintenance Manual Including Repair Parts and Special Tools List for the SPH-4 Helmet . . . . . TM 10-8415-206-12&P

Operator's Manual for the Night Vision Goggles, AN/PVS-5, AN/PVS-5A, AN/PVS-5B, AN/PVS-5C, GM-6(V)1, and GM-6(V)2 . . . . . TM-11-5855-238-10

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

A-5 MISCELLANEOUS PUBLICATIONS

Operator's and Unit Maintenance Manual (Including Repair Parts and Special Tools List) for the Electronic Systems Test Set TS-4348/U . . . . . TM 11-5855-299-12&P

Procedures for Destruction of Electronic Material to Prevent Enemy Use . . . . . TM 750-244-2

General Procedures for Purging and Charging of fire Control Instruments TM-750-1 16

Battery Disposition/Disposal Handbook TB43-0134

What You Know About $LISO_2$ Batteries for Army Application . . . . . TB 43-130

Army Logistics Readiness and Sustainability . . . . . AR 700-138

Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items) . . . . CTA 50-970

Consolidated Index of Army Publication and Blank Forms. . . . . DA Pam 25-30

Functional Users Manual for the Army Maintenance Management System--Aviation (TAMMS-A) . . . . . DA Pam 738-751

The Army Maintenance Management System (TAMMS) . . . . . DA Pam 738-750

Standard Requirements for Soldered Electrical and Electronic Assemblies MIL-STD-2OOO

Night Vision Goggle Distortion Inspection Video (VHS) TVT46-18

APPENDIX B
MAINTENANCE ALLOCATION CHART (MAC)

Section I. Introduction

B-1 . THE ARMY MAINTENANCE SYSTEM MAC, GROUND USE

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

b. The 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 (unit) maintenance.

Direct Support (DS) - includes an F subcolumn.

General Support (GS) - 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 Il.

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

B-2. MAINTENANCE FUNCTIONS, GROUND USE

a. GROUND USE. Army Maintenance functions are limited to and defined as follows:

(1) 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).

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

(3) 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.

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

(5) 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.

(6) 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.

(7) Repair. The application of maintenance services (inspect, test, service adjust, align, calibrate, and or replace) including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions 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.

B-3. EXPLANATION OF COLUMNS IN THE MAC, Section II, GROUND USE

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 Functions. 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 manhours in whole hours or decimals) in the appropriate subcolumn. This work-time 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 shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end, 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 time 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 (DS) maintenance
H . .. . General support (GS) maintenance
D . . . . . Depot maintenance

e. Column 5, Tools and Test Equipment reference code. Column 5, specifies, by code, those common tools 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 III.

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

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, Section Ill, GROUND USE

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 level 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 (NSN). The NSN 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, GROUND USE

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.

B-6 MAINTENANCE ALLOCATION CHART (MAC), AVIATION USE

This MAC assigns maintenance functions in accordance with the Aviation Maintenance concept for Army aviation. These maintenance levels - Aviation Unit Maintenance (AVUM), Aviation Intermediate Maintenance (AVIM), and Depot Maintenance - are depicted on the MAC as:

AVUM - corresponds to C and O maintenance,

AVIM - corresponds to F maintenance.

Depot - corresponds to D maintenance.

Aviation Use. The maintenance to be performed below depot and in the field is described as follows:

(1) Aviation Unit Maintenance activities will be staffed and equipped to perform high frequency "On-Aircraft" maintenance tasks required to retain or return aircraft systems to a serviceable condition. The maintenance capability of the AVUM will be governed by the MAC and limited by the amount and complexity of ground support equipment (GSE), facilities required, authorized manning strength, and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignments of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources, the air mobility requirements.)

a. Company Size Aviation Units: Perform those tasks which consist primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of aircraft operational readiness. Perform maintenance inspections and servicing to include preflight, daily, intermediate, periodic (or phased), and special inspections, as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, built-in test equipment (BITE), installed aircraft instruments, or TMDE. Perform adjustments or system alignment with available tools and ground support equipment. Perform operational and continuity checks and make minor repairs to the electrical system. Inspect, service, and make operational, capacity, and pressure checks to hydraulic systems. Perform servicing, functional adjustments, and minor repair/replacement to the flight control, propulsion, power train, and fuel systems. Accomplish airframe repair that does not require extensive disassembly, jigging, or alignment. The manufacture of airframe parts will be limited to those items which can be fabricated with tools and equipment found in current air mobile tool and shop sets, Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the support AVIM.

b. Less than Company Size Aviation Units: Aviation elements organic to brigade, group, battalion headquarters, and detachment size units are normally small and have less than 10 aircraft assigned. Maintenance tasks performed by these units will be those which can be accomplished by the aircraft crew chief or assigned aircraft repairman and will normally be limited to preventive maintenance, inspections, servicing, spot painting, module/component fault diagnosis, and replacement of selected modules/components. Repair functions will normally be accomplished by the support AVIM unit.

(2) Aviation Intermediate Maintenance (AVIM).

a. Provides mobile, responsive “One-Stop” maintenance support (Maintenance functions which are not conducive to sustaining air mobility will be assigned to depot maintenance.)

b. May perform all maintenance functions authorized to be done at AVUM. Repair of equipment for return to user will emphasize support or operational readiness requirements. Authorized maintenance includes replacement and repair of modules/components and end items which can be accomplished efficiently with available skills, tools, and equipment.

c. Establishes the Repairable Management Program for AVUM units by repairing selected items for return to stock when such repairs cannot be accomplished at the AVUM level.

d. Inspects, troubleshoots, performs diagnostic tests, repairs, adjusts, calibrates, and aligns aircraft system modules/ components, AVIM units will have capability to determine the serviceability of specified modules/components removed prior to the expiration of the Time Between Overhaul or finite life. Module/ component disassembly and repair will support the Repairable Management Program and will normally be limited to tasks requiring cleaning and the replacement of seals, fittings, and items of common hardware Airframe repair and fabrication of parts will be limited to those tasks which can be performed with available tools and test equipment. Unserviceable reparable modules/components and end items which are beyond the capability of AVIM to repair will be evacuated to Depot Maintenance.

e. Performs aircraft weight and balance inspections and other special inspections which exceed AVUM capability.

f. Provides quick response maintenance support, including aircraft recovery and air evacuation, on-the-job training, and technical assistance through the use of mobile maintenance contract teams.

g. Maintains authorized operational readiness float aircraft

h. Provides collection and classification services for serviceable/unserviceable material

j. Operates a cannibalization activity in accordance with AR 750-50. (The aircraft maintenance company within the maintenance battalion of a division will perform AVIM functions consistent with air mobility requirements and conservation of personnel and equipment resources. Additional intermediate maintenance support will be provided by the supporting nondivisional AVIM unit.)

B-7. USE OF THE MAINTENANCE ALLOCATION CHART (Section II), AVIATION USE.

NOTE

Approved item names are used throughout this MAC. Generic termslnomenclatures are expressed in parentheses and are not to be considered as official terminology.

a. This MAC assigns maintenance functions to the lowest level of maintenance, based on past experience and the following considerations:

(1] Skills available.

(2) Work time required

(3) Tools and test equipment required and/or available.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated. If the lowest maintenance level cannot perform all tasks of any single maintenance function (e. g., test, repair), then the higher maintenance level(s) that can accomplish additional tasks will also be indicated.

c. A maintenance function assigned to a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance level. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required by the commander who has the authority to direct such tasking.

e. The assignment of a maintenance function will not be construed as authorization to carry the related repair parts or spares in stock. Information to requisition or otherwise secure the necessary repair parts will be as specified in the associated RPSTL (Appendix C).

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, at the request of a lower maintenance level and on a one-time basis, transfer of maintenance functions to the lower level may be accomplished by specific authorization of the maintenance officer of the higher level of maintenance to which the function is assigned. The special tools, equipment, etc., required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned.

B-8. MAINTENANCE FUNCTIONS, AVIATION USE

AVIATION USE. Maintenance functions are limited to and defined as follows:

(1) 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).

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

(3) 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.

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

(5) 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.

(6) 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.

(7) Repair. The application of maintenance services (inspect, test, service adjust, align, calibrate, and or replace) including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions 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.

B-9. EXPLANATION OF COLUMNS IN THE MAC, Section II, AVIATION USE

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 Functions. Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph B-7)

d. Column 4, Maintenance Level. The maintenance levels AVUM, AVIM, and DEPOT are listed in the MAC with individual columns that include the work times for maintenance functions at each maintenance level. Work-time figure presentation such as “0. 1” indicate the average time (expressed in man hours in whole hours or decimals) it requires a maintenance level to perform a specified maintenance function.

e. Column 5, Tools and Test Equipment reference code. Column 5, specifies, by code, those common tools 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 III.

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

B-10. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, Section Ill, AVIATION USE

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 level 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 (NSN). The NSN of the tool or test equipment.

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

B-11. EXPLANATION OF COLUMNS IN REMARKS, Section IV, AVIATION USE

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 II.

Section II. MAINTENANCE ALLOCATION CHART
FOR
Night Vision Goggles, Models AN/PVS-5, AN/PVS-5A AN/PVS-5B, AN/PVS-5C, GM-6(V)1, and GM-6(V)2

(1) Group Number	(2) Component/Assembly	(3) Maintenence Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			AVUM		AVIM		DEPOT		
			C	O	F	H	D		
00	Night Vision Goggle	Inspect	0.4					20	J
		Service	0.1						
		Adjust	0.1						U
		Inspect		0.1					
		Test		0.3				1,3,20	A,B,Y,F
		Service		0.2					
		Repair		0.1				4	C,D
		Test			0.5			1, 8, 9	B,K
		Repair			0.3			3,5,6,7, 19	E,X
01	Goggle Assembly	Inspect	0.1						Z
		Test	0.1					2	F,V,Z
		Adjust	0.1						G,Z
		Inspect		0.1					Z
		Test		0.1				2,20	F,Z
		Repair		0.2					H,I,Z
		Test			0.5			1,2,8,9,20	K,X,W,Z
		Repair			0.3				Z
0101	Binocular Assembly	Inspect			0.1				
		Remove			0.3			5	
		Install			0.3			5	
		Repair			0.3			3,5,6,10	L
010101	Frame Assembly	Inspect			0.1				
		Replace			0.3			5	
		Repair			0.2			5	M,X

MAINTENANCE ALLOCATION CHART
FOR
Night Vision Goggles, Models AN/PVS-5, AN/PVS-5A
AN/PVS-5B, AN/PVS-5C, GM-6(V)1, and GM-6(V)2

(1) Group Number	(2) Component/Assembly	(3) Maintenence Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			AVUM		AVIM		DEPOT		
			C	O	F	H	D		
010102	Monocular Assembly	Inspect			0.1				
		Service			0.3			5,11,12, 13,14,15, 21	N
		Remove			0.3			5,10	
		Install			0.3			5,10	
		Repair			0.3			5,6,10, 14,15,16, 17,18	O,P,N
01010201	Image Intensifier	Inspect			0.1				
		Replace			0.3			5,10,16,17	K
		Repair			0.4			3,5,6,7,19	Q
		Repair					TBD		
0102	Face Mask Assembly	Inspect		0.1					
		Replace		0.2					AA,AB
		Repair		0.1					R
		Replace			0.2			5	
		Repair			0.3			3,5,6,7, 19	S
02	Case Assembly Carrying	Inspect		0.1					
		Service		0.1					
		Replace		0.1					
		Repair		0.2					T

FOR
NIGHT VISION GOGGLES, AN/PVS-5A, -5B,-5C,
GM-6(V)1, AND GM-6(V)2

TOOL AND TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	F,AVUM, AVIM	TEST SET, TS-3895/UV OR TS-3895A/UV	5855-01-134-7146 6625-01-301-6894	
2	O,F,AVUM, AVIM	TS-4348/UV,TEST SET, ELEC SYSTEM	6625-01-323-9584	
3	F,AVUM, AVIM	MULTIMETER,AN/PSM-45	6625-01-139-2512	
4	O,F,AVUM, AVIM	TOOL KIT,ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	
5	F,AVIM	TOOL KIT,ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
6	F,AVIM	SOLDERING STATION DIGITAL READOUT OF TIP	3439-01-183-4632	EC 2001
7	F,AVIM	DESOLDERING TOOL	3429-00-132-1331	
8	F,AVIM	COLLIMATION ATTACHMENT	5855-01-151-4216	
9	F,AVIM	DIOPTER SCOPE (USED WITH COLLIMATOR ATTACHMENT)	5855-01-151-4217	
10	F,AVIM	TOOL,INSERT/EXTRACTOR (CONNECTOR)	5120-00-757-7653	
11	F,AVIM	TOOL KIT, FIRE CONTROL (PURGE KIT)	4913-00-065-1110	
12	F,AVIM	NITROGEN TANK	8120-00-286-8593	
13	F,AVIM	NITROGEN,TECHNICAL (DRY NITROGEN)	6830-00-616-9183	
14	F,AVIM	PURGE ADAPTER	5855-01-151-4211	

TOOL AND TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL		NATIONAL STOCK NUMBER	TOOL NUMBER
15	F,AVIM	PURGE DEVICE	5855-01-246-6815	
16	F,AVIM	WRENCH, SPANNER (EYEPIELCE)	5120-00-137-9181	
17	F,AVIM	PLIERS,SLIP JOINT	5120-00-624-8065	
18	F,AVIM	GAUGE,FEELER	5120-00-250-6245	
19	F,AVIM	STRIPPER, WIRE HARD	5110-01-019-1772	
20	F,AVIM	LIGHT,IR TRANSMITTER	5980-01-275-8080	
21	F,AVIM	WRENCH,ADJUSTABLE, 15"	5120-00-423-6728	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	Test power pack and perform continuity checks on the GM-6(V)1 and GM-6(V)2.
B	TS-3895/UV or TS-3895A/UV used for Aviation application only with GM-6(V) 1 and GM-6(V2).
C	Replacing the batteries, demisting shields, sacrificial filters, lens paper, and socket head key and the following GM-6(V)1 and GM-6(V)2 assemblies: power pack, viewer mount assemby (bracket), offset viewer mount assembly, data plate, neck cord, and clamp knob assembly.
D	By replacing the AA battery cartridge.
E	Repair by resoldering the mount asselmbly or offset mount assembly.
F	Optional test for image intensifier, using the TS-4348/UV.
G	Tighten setscrews on rotary switch (AN/PVS-5, -5 A,-5B, and -5 C).
H	By replacing : headstrap assembly, neck cord, face mask cushion, or CVC Vee-strap.
I	By replacing the objective lens caps or eyepiece lens caps.
J	Distortion Check (GM-6(V)1 and GM-6(V) 2). Only experienced NVG / ANVIS pilots are authorized to perform distortion checks.
K	If the image intensifier fails test criteria, document warranty status as affixed to the image intensifier and send failed image intensifier and documentation to Depot for disposition,
L	By replacing: diopter adjusting ring, connector plug, or LED.
M	By replacing the guide assembly, clamp lever, or interpupillary link.
N	Purging required.
o	Repair by replacing: eyepiece lens assembly, image intensifier, objective lens assembly, purge valve, clamp lever, or plain round nut.

SECTION IV. REMARKS - Continued

REEFERENCE CODE	REMARKS
P	0.025 inch feeler gauge to adjust eyepiece cell assembly.
Q	Repair is limited to replacing, and soldering new connector pins on the wires.
R	Replace battery caps and gaskets or rotary switch knob and setscrew.
S	By replacing rotary switch or clamp knob assembly.
T	By replacing carrying case inserts.
U	GM-6(V)1 and GM-6(V)2: Adjust counterweight for proper balance.
V	AN/PVS-5C only, perform High Light cutoff test.
W	Perform Black Spot Check when needed.
X	Collimation required whenever monocular assembly opened and when frame assembly rebuilt.
Y	Perform Black Spot Check on GM-6(V)1 and GM-6(V)2 at AVUM.
z	This maintenance function for ground use only.
AA	The face mask assembly can be replace by the viewer mount and offset viewer mount assemblies for aviation application.
AB	Aviation maintenance only,

APPENDIX C
REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

Section I. Introduction.

C-1. SCOPE.

This RPSTL lists and authorizes spares and repair parts; special tools; special test measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit, DS, AVUM and AVIM maintenance of the AN/PVS-5, -5A, -5B, -5C, GM-6(V)1 and GM-6(V)2 NVG. 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 I, Introduction, this RPSTL 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 lists also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional group in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed by item name in FIG BULK at the end of the section. Repair parts kits or sets are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in the section.

b. Section III - Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE (UOC) column) for the performance of maintenance.

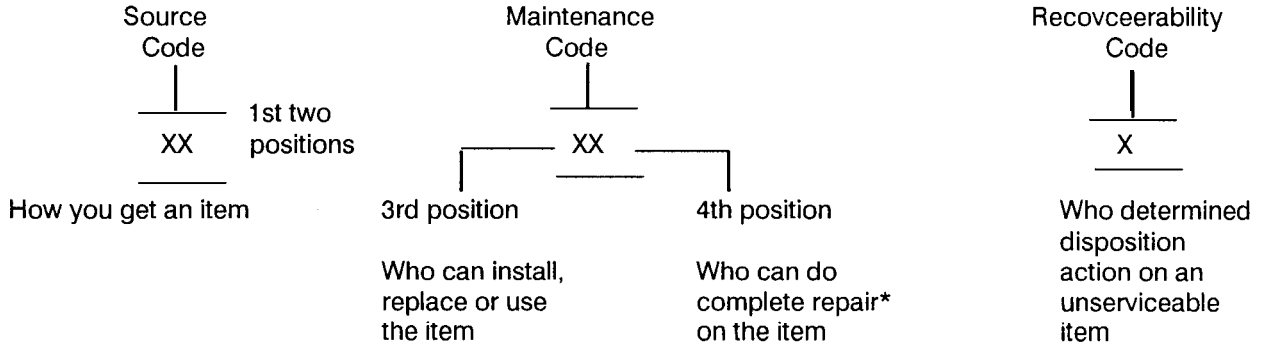
c. Section IV. Cross Reference indexes. National Stock Number (NSN) Index. NSN Index is a list, in National Item Identification (NHN) sequence, of all NSN items appearing in the list. Part Number Index is a list in alphanumerical sequence, of all part numbers appearing in the lists. Figure and Item Index. NSN and parts numbers are cross-referenced to each illustration figure and item number appearance.

Figure and Item Number Index lists the figure and Item numbers appearing in the Repair Parts List.

C-3 EXPLANATION OF COLUMNS (Sections 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 instruction, as shown-in the following breakout:



* 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 code follows:

Code	*Explanation*
PA PB PC PD PE PF PG	Stocked item; 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 3d position of the SMR code. Items coded "PC" are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.

Code	Explanation
MO- (Made at unit/AVUM Level MF - (Made at DS/AVUM Level) MH - (Made at GS Level) ML - (Made at specialized Repair Act (SAR) MD - (Made at depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material that 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 indicates it is made at a higher category, order the item from the higher category of maintenance.
AO - Assembled by org/AVIM 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/ requisitioned individually. The parts that makeup the assembled item must be requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated 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, order the item from the higher category of maintenance,

XA -Do not requisition an “X4” -coded item. Order its next higher assembly. (Also, refer to the NOTE below.)

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 manufacture’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, may be used as a source of supply for items with the above source codes, except for those source ‘codes “X4” or those aircraft support items restricted by requirements of AR 700-42.

(2) Maintenance Code. Maintenance codes tells you the level(s) 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 level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	*ApplicatiorrlExplana tion*
C	-Crew or operator maintenance done within unit or aviation unit maintenance.
O	-Unit or AVUM category can remove, replace, and use the item.
F	-DS or AVIM can remove, replace, and use the item.
H	-GS or AVIM can remove, replace, and use the item.
L	-Specialized repair activity can remove, replace, and use the item.
D	-Depot level 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 lowest maintenance level 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 as a lower category of maintenance, if authorized by the (MAC) and SMR code.

Code	Application/Explanation
O	-Unit or AVUM is the lowest level that can do complete repair of the item.
F	-DS or AVIM is the lowest level that can do complete repair of the item.
H	-GS or AVIM is the lowest level that can do complete repair of the item.
L	-Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item.
D	-Depot is the lowest level that can do complete repair of the item.
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 level.

(3)Recoverability Codes. 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 Code	Application/Explanation
Z	-Nonreparable item. When unserviceable, column, condemn and dispose of the item at the level of maintenance shown in the 3rd position of the SMR Code.
o	-Reparable item. When uneconomically reparable, condemn and dispose of the item at Unit or AVUM level.
F	-Reparable item. When uneconomically reparable, condemn and dispose of the item at DS or AVIM level.
H	-Reparable item. When uneconomically reparable, condemn and dispose of the item at GS or AVIM level.
D	-Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	-Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	-Item requires special handling or condemnation procedures because of specific reason (e.g., precious metal content, high dollar value, material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. CAGEC (Column (3))The Commercial And Government Entity Code (FAGEC)s a five digit code that is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. 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.

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) Items that are included in kits and sets are listed below the item name of the kit or set.

(3) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(4) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/ fabricated.

(5) When the item is not used with all serial numbers of the same model, the effective serial number is shown on the last line(s) of the description (before UOC).

(6) The UOC, when applicable. (Para C-5, Special Information).

(7) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(8) 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)) The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustrated 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 COLUMN (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 NIIN consists of the last nine NSN digits of the NSN. When using this NIIN column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) FIG. column. This column lists the number of the figure where the item is identified/located, The figures are in numerical order in Section II and Section 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 number in this index is listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the number O through 9 and each following letter or digit it like order).

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

(2) 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.

(3) STOCK NUMBER Column. This column lists the NSN 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 Section II and Ill. The figures are in numerical order in Section II and Section Ill.

(5) ITEM column. The item number identifies the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

c. Figure and Intem Number Index.

(1) FIG. column. This column lists the number of the figure where the item is identified located in Section II and Ill. The figures are in numerical order in Section II and Section Ill.

(2) ITEM column. The item number identifies the 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 NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGEC columns to the left.

(4) CAGEC column. The Commercial And Government Entity Code (CAGEC) is a fivedigit code that is 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.

Usable-On Code. The usable-on code appears in the lower left corner of the description column heading. Usable-on codes are shown os "UOC:" in the description column on the first line applicable of the item description nomenclature. Uncoded items are applicable to all models. Identification of the usable-on codes used in this RPSTL are:

Code	Used ON
C03	AN/PVS-5
DFS	AN/PVS-5A
HUY	AN/PVS-5B
HKZ	AN/PVS-5C
JYR	GM-6(V)1
JYV	GM-6(V)2

C-6 HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is Not Known

(l). 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 National Stock Number or Part Number is Known:

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

(2) Turn to the figure and item number, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

Section II. Repair Parts List

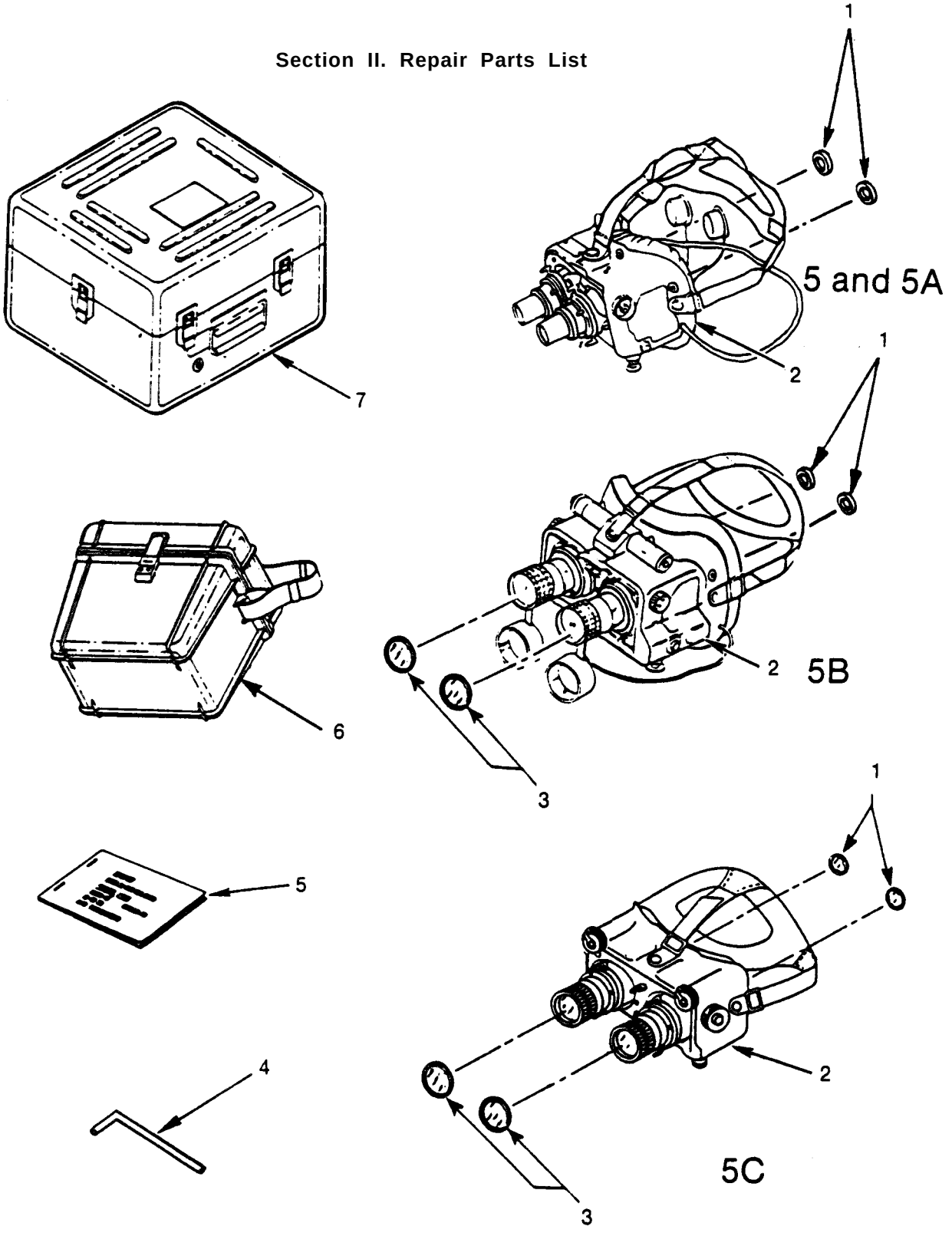
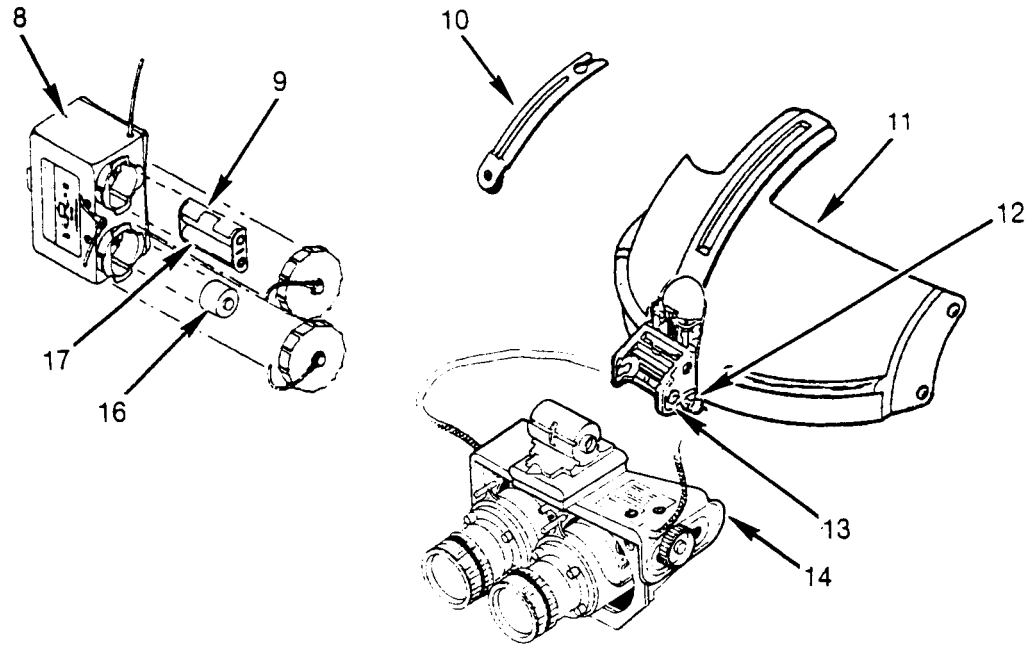
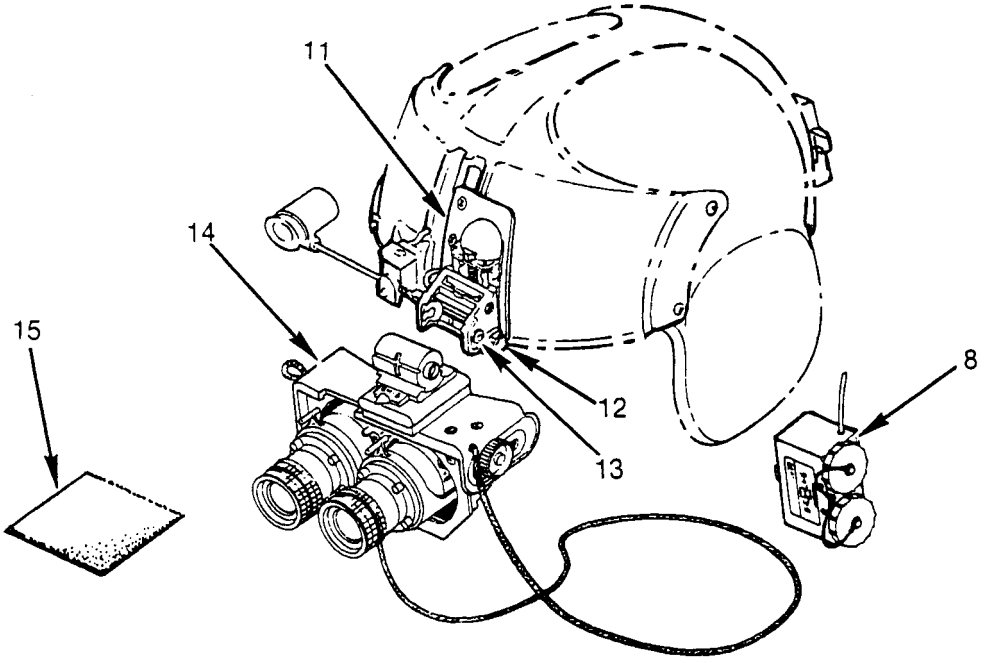


Figure C-1. Night Vision Goggles ANIPVS-5, ANIPVS-5A, ANIPVS-5B, ANIPVS-5C, GM-6(V)1 and GM-6(V)2 (Sheet 1 of 2)



GM-6(V)1 (W/AN/PVS-5C Binoculars)



GM-6(V)2 (W/AN/PVS-5C Binoculars)

Figure C-1. Night Vision Goggles ANIPVS-5, AN/PVS-5A, AN/PVS-5B, AN/PVS-5C, GM-6(v)1 AND GM-6(V)2 (Sheet 2 of 2)

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 00 NIGHT VISION GOGGLES AN/PVS-5,AN/PVS-5A, AN/PVS-5B & AN/PVS-5C GM-6(V)1 & GM-6(V)2	
				FIGURE C-1	
1	PAOZZ	80063	SM-C-657428	DEMISTING SHIELD AS UOC:C03,DFS,HKZ	2
1	PAOZZ	55311	200428-110	DEMISTING SHIELD AS UOC:HKY	2
2	XBOFF	80063	SM-D-657300-2	GOGGLE ASSEMBLY (SEE FIGURE 2 FOR PARTS BREAKDOWN) UOC:C03	1
2	XBOFF	80063	SM-D-657300-3	GOGGLE ASSEMBLY (SEE FIGURE 2 FOR PARTS BREAKDOWN) UOC:DFS,HKY,HKZ	1
3	PAOZZ	80063	A3140650	FILTER CAP,SACRIFIC UOC:HKY,JYR,JYV	2
3	PAOZZ	80063	A3144264	FILTER CAP,SACRIFIC UOC:HKZ,JYR,JYV	2
4	PAOZZ	55717	AW1-1-2	KEY,SOCKET HEAD SCR UOC:C03,DFS,HKY,HKZ	1
5	PAOZZ	06650	354	PAPER,LENS	1
6	PBOOO	80063	SM-D-657430	CASE ASSEMBLY,CARRY (SEE FIGURE 7 FOR PARTS BREAKDOWN) UOC:C03,DFS,HKZ,JYR,JYV	1
6	PBOOO	55311	206701-119	CASE ASSEMBLY,CARRY (SEE FIGURE 7 FOR PARTS BREAKDOWN) UOC:HKY,JYR,JYV	1
7	PBOZZ	80063	SM-D-657440	CASE,OPTICAL INSTRU	1
8	PAOZZ	66868	300680-G3	POWER PACK ASSEMBLY UOC:JYR,JYV	1
9	PAOZZ	54490	5008902	AA CARTRIDGE UOC:JYR,JYV	1
10	PAOZZ	54490	5002590	VISION LINK UOC:JYR	1
11	PAOZZ	54490	5002530	MOUNT ASSEMBLY UOC:JYR	1
11	PAOZZ	54490	5002610	OFFSET MOUNT ASSY UOC:JYV	1
12	PAOZZ	54490	5002539	LOCK RELEASE BUTTON UOC:JYR,JYV	1
13	PAOZZ	96906	MS519573B	SCREW,MOUNT ASSY UOC:JYR,JYV	1
14	PAOZZ	55311	209044-100	MOUNT,VIEWER ASSEMB UOC:JYR	1
14	PAOZZ	80063	A3139263	OFFSET VIEWER MT AS UOC:JYV	1
				END OF FIGURE	

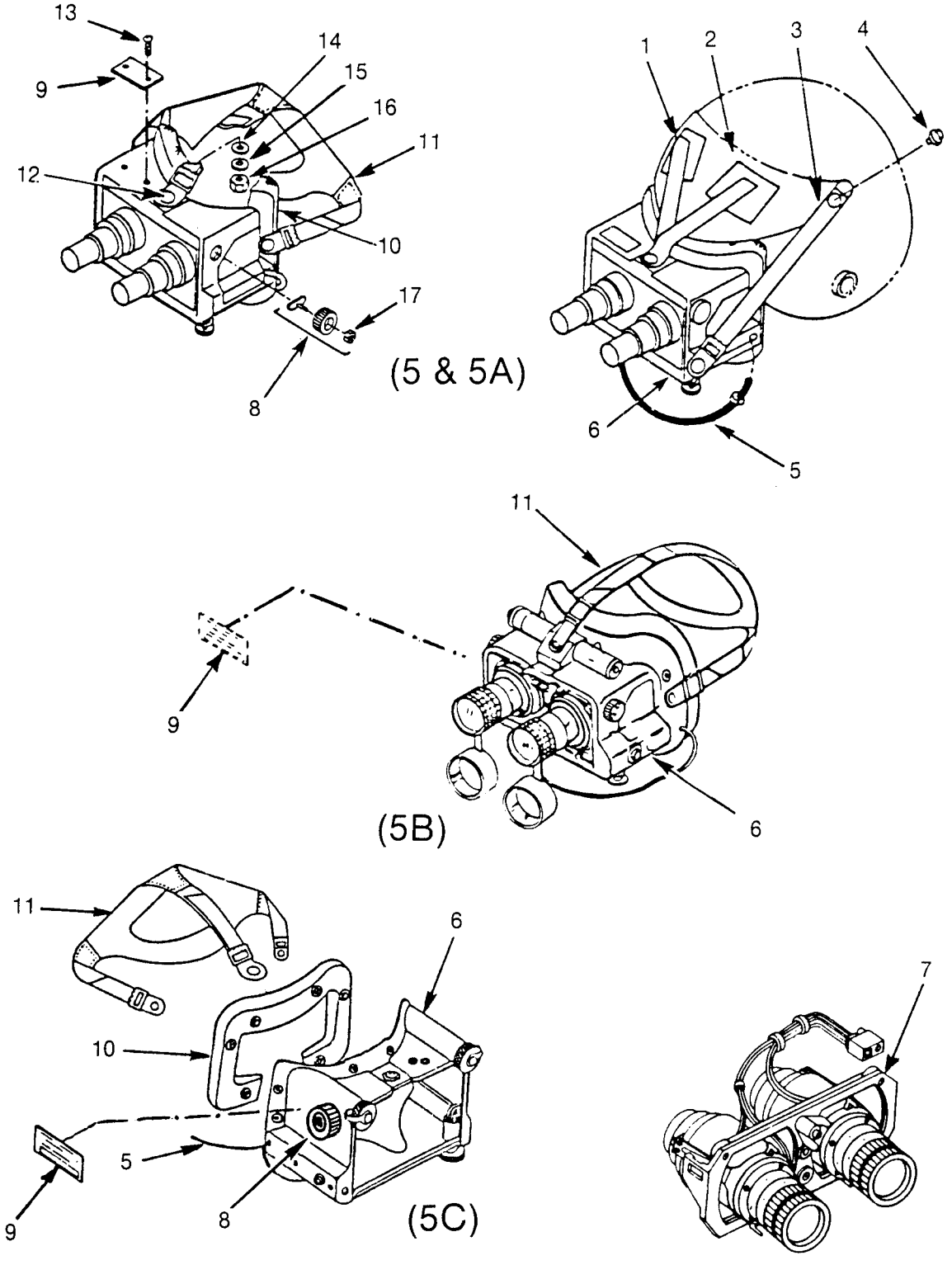


Figure C-2. Night Vision Goggles Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 01 GOGGLE ASSEMBLY	
				FIGURE C-2	
1	PAOZZ	80063	SM-D-657447-1	VEE STRAP ASSEMBLY UOC:C03,DFS,HKZ	1
1	PAOZZ	55311	208196-110	VEE STRAP ASSEMBLY UOC:HKY	1
2	PAOZZ	54490	5002516-2	FASTNER,TAPEPILE UOC:JYR,JYV	1
3	PAOZZ	80063	SM-D-657446-1	STRAP ASSEMBLY UOC:C03,DFS,HKZ	2
3	PAOZZ	55311	200446-102	STRAP ASSEMBLY,AVIO UOC:HKY	2
4	PAOZZ	88044	AN227-10M6	STUD,SNAP,FASTENER UOC:C03,DFS,HKY,HKZ	2
5	PAOZZ	73259	1599X34LTIPPED	CORD ASSEMLBY,COTTO UOC:C03,DFS,HKZ	1
6	PAFFF	80063	A3139220	MASK ASSEMBLY,FACE (SEE FIGURE 6 FOR PARTS BREAKDOWN) UOC:C03,DFS,HKY,HKZ	1
7	XBOFF	80063	SM-D-804202	BINOCULAR ASSEMBLY (SEE FIGURE 3 FOR PARTS BREAKDOWN) UOC:C03,DFS,JYR,JYV	1
7	XBOFF	55311	206704-116	BINOCULAR ASSEMBLY (SEE FIGURE 3 FOR PARTS BREAKDOWN) UOC:HKY,JYR,JYV	1
7	XBOFF	66868	300517-G1	BINOCULAR ASSEMBLY (SEE FIGURE 3 FOR PARTS BREAKDOWN) UOC:HKZ,JYR,JYV	1
8	PAOZZ	80063	SM-B-657370-1	KNOB ASSEMBLY UOC:C03,DFS,HKZ,JYR,JYV	2
8	PAOZZ	55311	207478-110	KNOB ASSEMBLY UOC:HKY,JYR,JYV	2
9	PAFZZ	80063	SM-C-657409	PLATE,IDENTIFICATIO UOC:C03,DFS,JYR,JYV	1
9	PAFZZ	55311	205083-100	PLATE,IDENTIFICATIO UOC:HKY,JYR,JYV	1
9	PAFZZ	80063	A3139222	PLATE,IDENTIFICATIO UOC:HKZ,JYR,JYV	1
10	PAOZZ	80063	SM-D-657302-2	CUSHION ASSY,FACE UOC:C03,DFS,HKY,HKZ	1
11	PAOZZ	80063	SM-D-657304	HEAD STRAP ASSEMBLY UOC:C03,DFS,HKZ	1
11	PAOZZ	80063	SM-D-657304-2	HEADSTRAP ASSEMBLY UOC:HKY	1
12	PAFZZ	55311	208197-100	SCREW & WASHER ASSY UOC:C03,DFS,HKY,HKZ	2
13	PAFZZ	96906	MS51957-3B	SCREW,MACHINE UOC:C03,DFS,HKY,HKZ	2
14	PAFZZ	96906	MS15795-802B	WASHER,FLAT (RETURN TO DEPOT FOR	2

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				PRECIOUS METAL RECOVERY)(PREFERRED FOR USE WHEN TEMPERATURE IS ABOVE 0 DEG CENT) UOC:C03,DFS,HKY,HKZ	
15	PAFZZ	96906	MS35338-134B	WASHER,LOCK (RETURN TO DEPOT FOR PRECIOUS METAL RECOVERY) UOC:C03,DFS,HKY,HKZ	2
16	PAOZZ	96906	MS35649-224B	NUT,PLAIN,HEXAGON UOC:C03,DFS,HKY,HKZ	2
17	PAOZZ	82458	TL410325	SELF-LOCKING NUT	1
				END OF FIGURE	

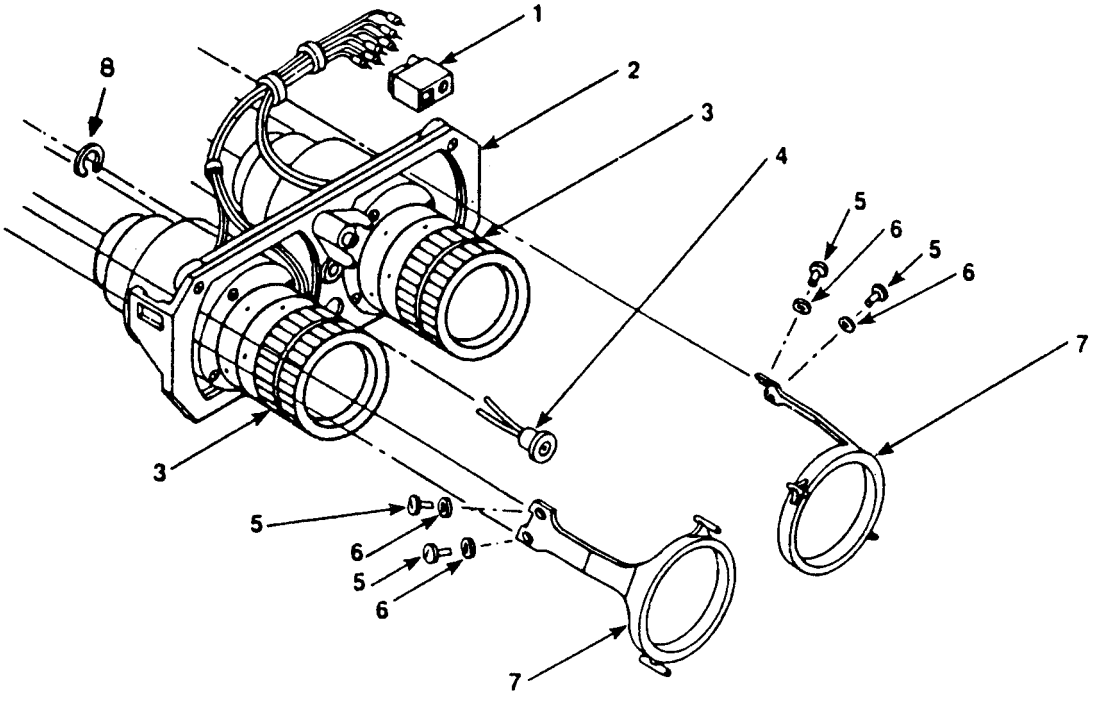


Figure C-3. Binocular Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0101 BINOCULAR ASSEMBLY	
				FIGURE C-3	
1	PAFZZ	80063	SM-D-657333	CONNECTOR,PLUG,ELEC	1
2	PAFFF	80063	SM-D-657337	FRAME,ASSEMBLY (SEE FIGURE 4 FOR PARTS BREAKDOWN) UOC:C03,DFS,HKY,JYR,JYV	1
2	PAFFF	66868	300514-G1	FRAME ASSEMBLY (SEE FIGURE 4 FOR PARTS BREAKDOWN) UOC:HKZ,JYR,JYV	1
3	XBFFF	80063	SM-C-804200	MONOCULAR ASSEMBLY (SEE FIGURE 5 FOR PARTS BREADKDOWN) UOC:C03,DFS,HKZ,JYR,JYV	2
3	XBFFF	55311	206467-002	MONOCULAR ASSEMBLY (SEE FIGURE 5 FOR PARTS BREAKDOWN) UOC:HKY,JYR,JYV	2
4	PAFZZ	80063	SM-C-657443	LIGHT,EMITTING DIOD	1
5	PAFZZ	96906	MS51957-12B	SCREW,MACHINE	4
6	PAFZZ	96906	MS35338-135B	WASHER,LOCK	6
7	PAFZZ	80063	SM-D-657334	RING,RETAINING,OPTI	2
8	PAFZZ	96906	MS16632-4025	RING,RETAINING	1
				END OF FIGURE	

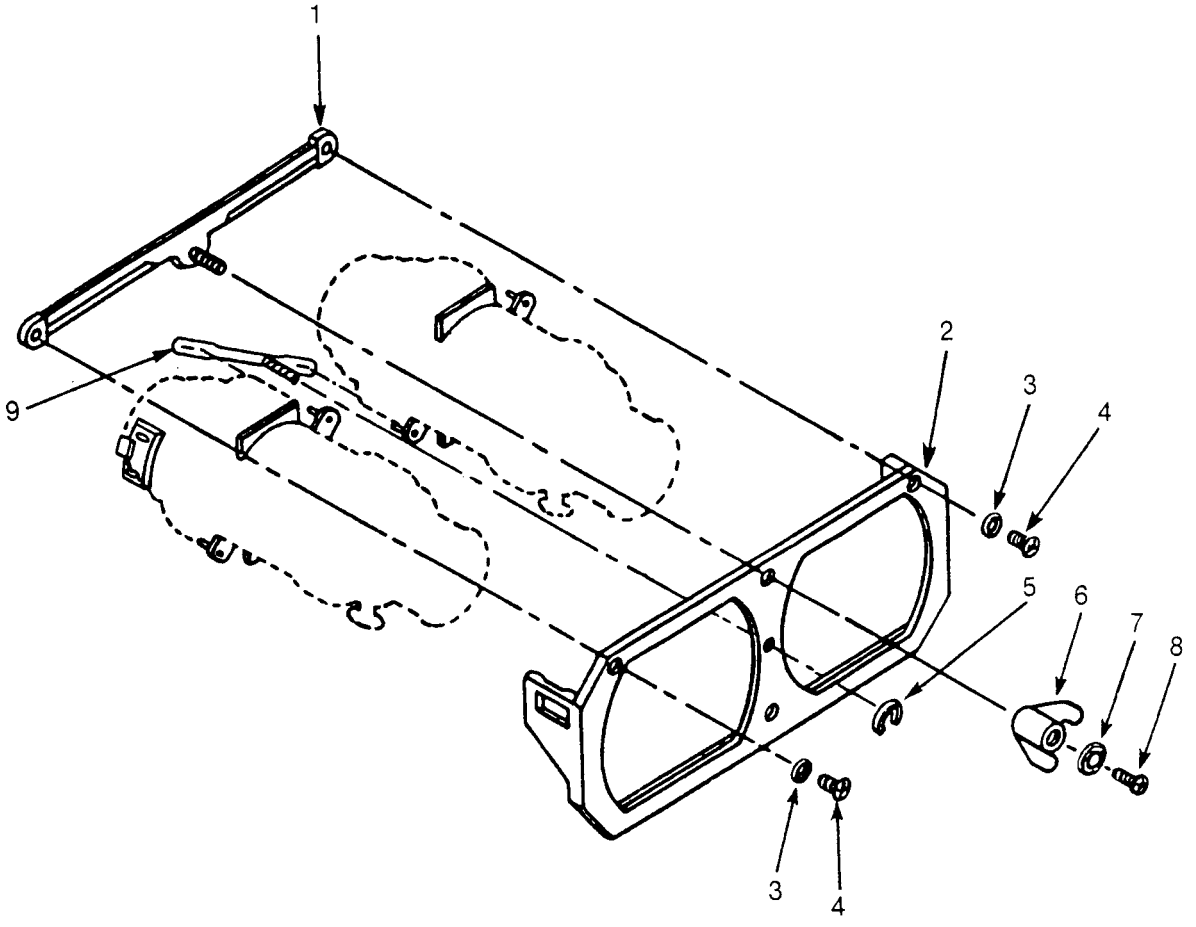


Figure C-4. Frame Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 010101 FRAME ASSEMBLY	
				FIGURE C-4	
1	PAFZZ	80063	SM-C-657341	GUIDE ASSEMBLY	1
2	PAFZZ	80063	SM-D-657338	FRAME	1
2	PAFZZ	66868	300505-G1	FRAME	1
3	PAFZZ	96906	MS35338-137B	WASHER,LOCK	2
4	PAFZZ	96906	MS35218-38	SCREW,MACHINE	2
5	PAFZZ	96906	MS16633-4012	RING,RETAINING	1
6	PAFZZ	80063	SM-C-657340	LEVER,CLAMP	1
7	PAFZZ	80205	NAS620C5L	WASHER,FLAT ,OR	1
7	PAFZZ	96906	MS35338-134B	WASHER,LOCK	1
8	PAFZZ	96906	MS51957-1	SCREW,MACHINE	1
9	PAFZZ	80063	SM-C-657339	LINK,INTERPUPILLARY	1
				END OF FIGURE	

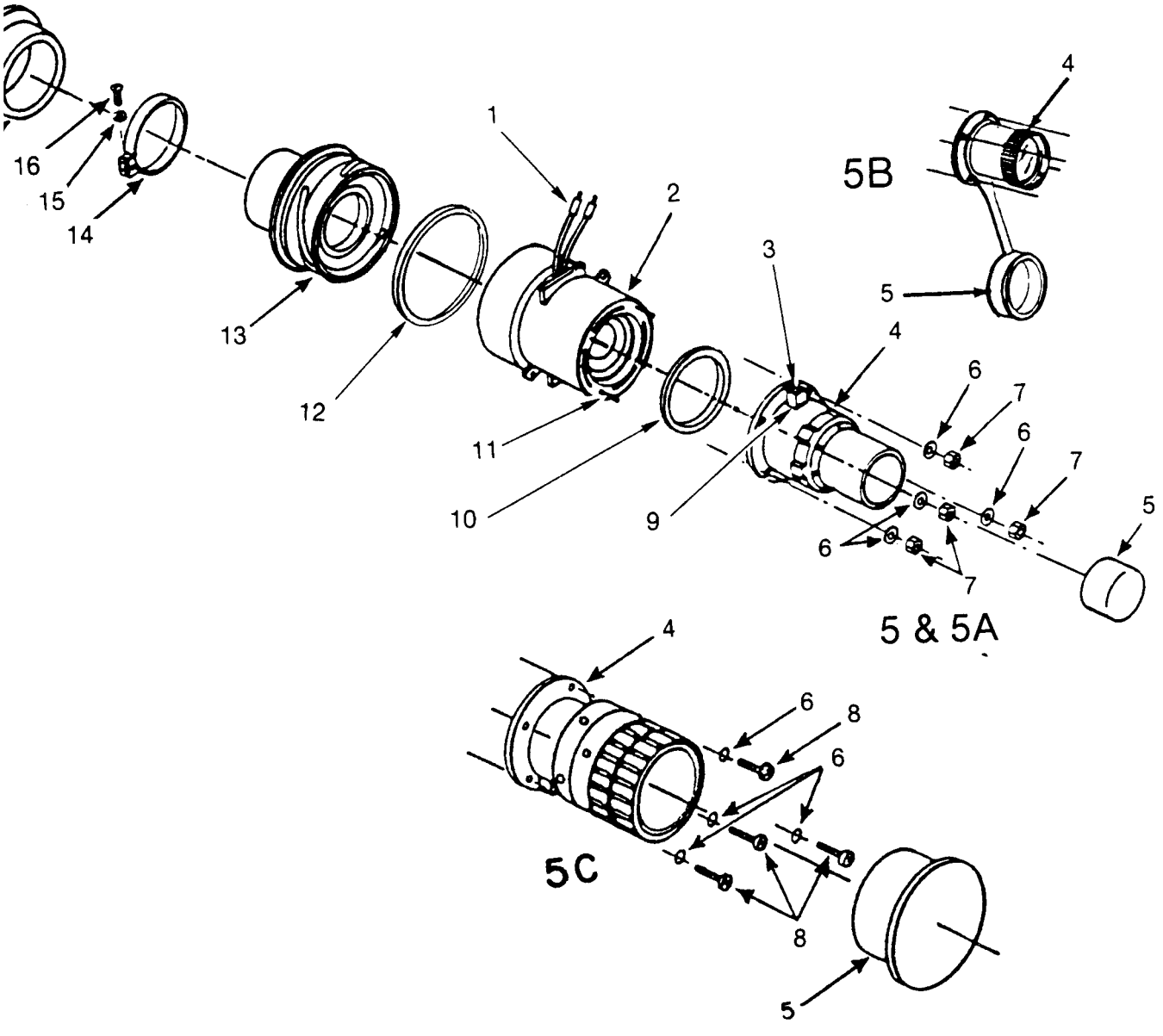


Figure C-5. Monocular Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 010102 MONOCULAR ASSEMBLY	
				FIGURE C-5	
1	PAFZZ	11139	2841-13-9000	CONTACT, PIN SUBMIN	1
2	PAFZA	80063	SM-D-657310-2	IMAGE INTENSIFIER,N	1
3	PAFZZ	81349	M25988/3-002	PREFORMED PACKING	1
4	PAFZZ	66868	300450-1	MOUNT ASSY,OBJ. LENS UOC:HKZ,JYR,JYV	1
5	PAOZZ	80063	SM-C-657314-2	CAP LENS, OBJECTIVE UOC:C03,DFS,JYR,JYV	1
5	PAOZZ	80063	A3140633	CAP,LENS,OBJECTIVE UOC:HKY,JYR,JYV	1
5	PAOZZ	80063	A3144318	CAP LENS,OBJECTIVE UOC:HKZ,JYR,JYV	1
6	PAFZZ	96906	MS35338-134B	WASHER,LOCK	4
7	PAFZZ	80063	SM-B-657335	NUT	4
8	PAFZZ	96906	M551957-3B	SCREW,MACHINE	4
9	PAFZZ	80063	SM-C-806612	PURGE VALVE	1
10	PAFZZ	81349	M25988/3-027	PREFORMED PACKING	1
11	PAFZZ	81352	AN565FC8H4	SET SCREW	4
12	PAFZZ	81349	M25988/3-030	PACKING PREFORMED	1
13	PAFZZ	80063	SM-C-804193	EYEPIECE ASSEMBY,O	1
14	PAFZZ	80063	SM-C-804198	LEVER,CLAMP	2
15	PAFZZ	96906	MS35338-135B	WASHER,LOCK	1
16	PAFZZ	96906	MS16995-11	SCREW,CAP,SOCKET HE	2
17	PAOZZ	80063	SM-C-657314-1	CAP,PROTECTIVE,DUST	1
				END OF FIGURE	

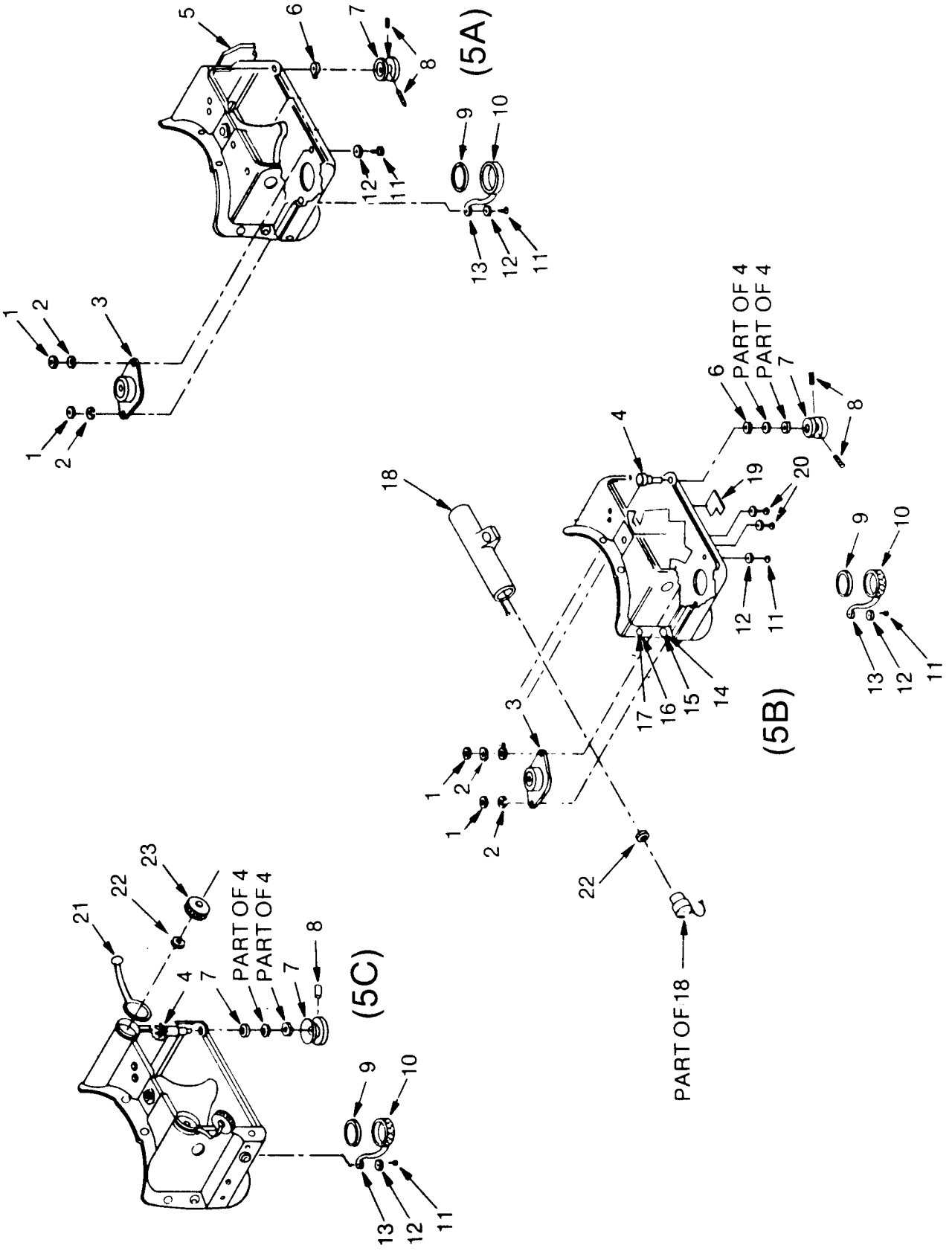


Figure C-6. Face Mask Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0102 MASK ASSEMBLY,FACE	
				FIGURE C-6	
1	PAFZZ	96906	MS35649-244B	NUT,PLAIN,HEXAGON UOC:C03,DFS,HKY,HKZ	2
2	PAFZZ	96906	MS35338-135B	WASHER,LOCK UOC:C03,DFS,HKY,HKZ	2
3	PAFZZ	80063	SM-D-657415	CASE,BATTERY ASSEMB UOC:C03,DFS,HKY,HKZ	1
4	PAFZZ	80063	SM-D-806327	SWITCH,ROTARY UOC:C03,DFS,HKY,HKZ	1
5	XBFZZ	80063	A313922-7	PLATE,INSTRUCTION UOC:C03,DFS,HKY,HKZ	1
6	PAOZZ	96906	MS-15795-852B	WASHER,FLAT UOC:C03,DFS,HKY,HKZ	1
7	PAFZZ	99813	SK-630	KNOB UOC:C03,DFS,HKY,HKZ	1
8	PAFZZ	96906	MS51021-9	SETSCREW UOC:C03,DFS,HKY,HKZ	2
9	PAOZZ	80063	SM-C-657405-1	GASKET UOC:C03,DFS,HKY,HKZ	1
10	PAOZZ	80063	SM-C-657404	CAP,BATTERY COMPART UOC:C03,DFS,HKY,HKZ	1
11	PAOZZ	96906	MS51957-15B	SCREW,MACHINE UOC:C03,DFS,HKY,HKZ	2
12	PAOZZ	96906	MS15795-803B	WASHER,FLAT UOC:C03,DFS,HKY,HKZ	2
13	PAOZZ	80063	SM-C-657406	RETAINER,OPTICAL EL UOC:C03,DFS,HKY,HKZ	1
14	PAFZZ	96906	MS27980-9B	EYELET,METALLIC UOC:C03,DFS,HKY,HKZ	4
15	PAFZZ	96906	MS27980-7B	STUD,SNAP FASTENER UOC:C03,DFS,HKY,HKZ	4
16	PAFZZ	96906	MS-27982-4B	SNAP EYELET,METALLI UOC:C03,DFS,HKY,HKZ	6
17	PAFZZ	96906	MS-27982-5B	FASTENER,SNAP,STYLE UOC:C03,DFS,HKY,HKZ	6
18	PAFZZ	55311	207831-00-1	CASE,BATTERY ASSEMB UOC:HKY	1
19	PAFZZ	80063	A3139229	SWITCH,LABEL UOC:C03,DFS,HKY,HKZ	1
20	PAFZZ	55311	208197-100	SCREW AND WASHER AS UOC:HKY	2
21	PAOZZ	66868	300529-1	RETAINER GASKET UOC:HKZ	2
22	PAOZZ	80063	A3139240	PREFORMED PACKING UOC:HKZ	2
23	PAOZZ	80063	A3139223	CAP,BATTERY,AA UOC:HKZ	2
				END OF FIGURE	

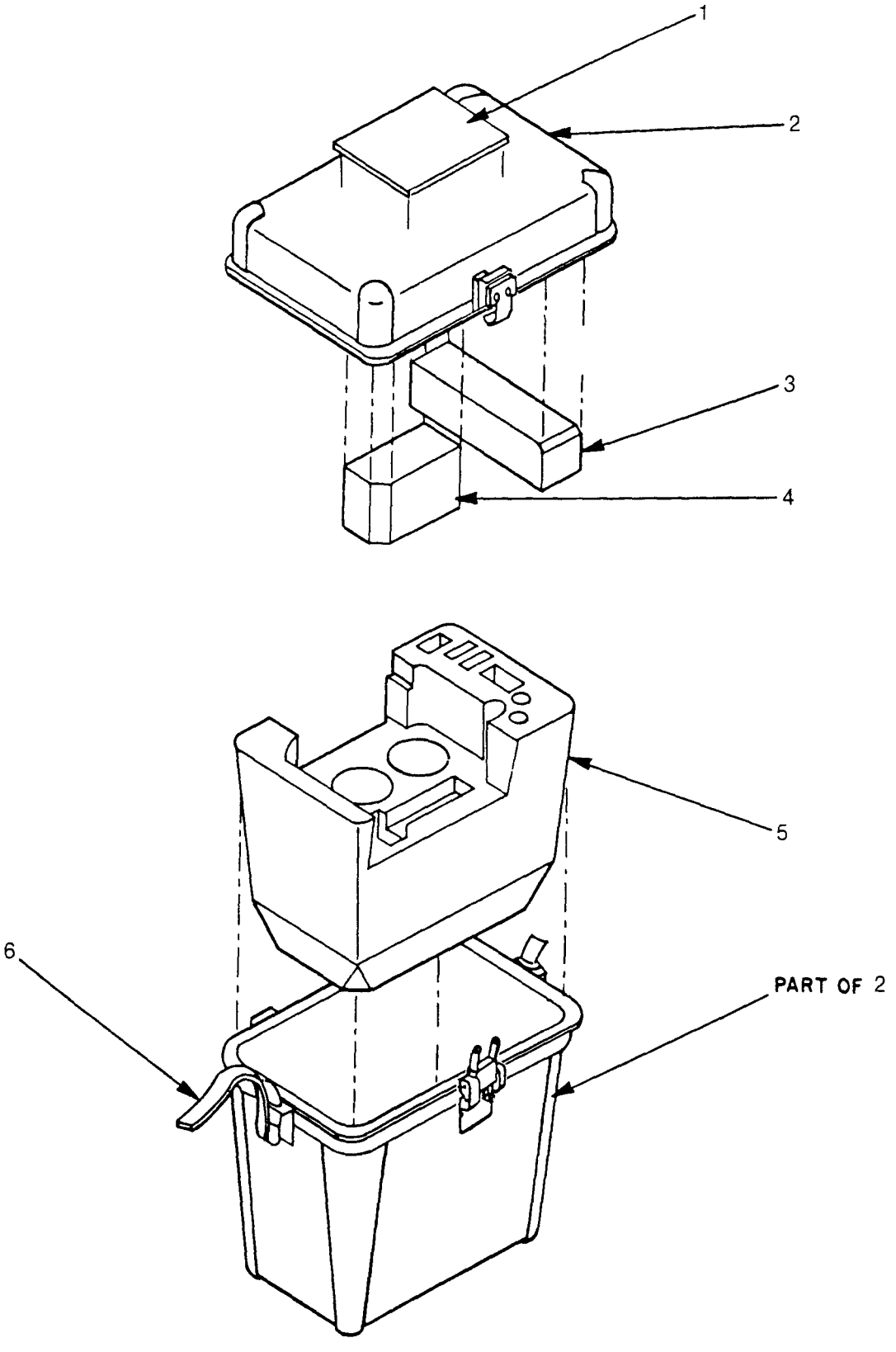


Figure C-7. Carrying Case Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 02 CASE ASSEMBLY,CARRYING	
				FIGURE C-7	
1	MFFZZ	80063	SM-C-657435	PLATE,IDENTIFICATIO (FABRICATE IN ACCORDANCE WITH SB11-631)	1
2	XBOZZ	80063	SM-D-657403	CASE,CARRYING UOC:C03,DFS,HKZ,JYR,JYV	1
2	XBOZZ	55311	200320-102	CASE,CARRYING UOC:HKY,JYR,JYV	1
3	PAOZZ	80063	SM-C-657433	INSERT,TOP	1
4	PAOZZ	80063	SM-C-657434	INSERT,TOP	1
5	PAOZZ	80063	SM-D-657432	INSERT,BOTTOM UOC:C03,DFS,HKZ,JYR,JYV	1
5	PAOZZ	55311	208125-110	INSERT,BOTTOM UOC:HKY,JYR,JYV	1
6	PAOZZ	80063	SM-C-657423	STRAP ASSEMBLY	1
				END OF FIGURE	

Section IV. Special Tools List.

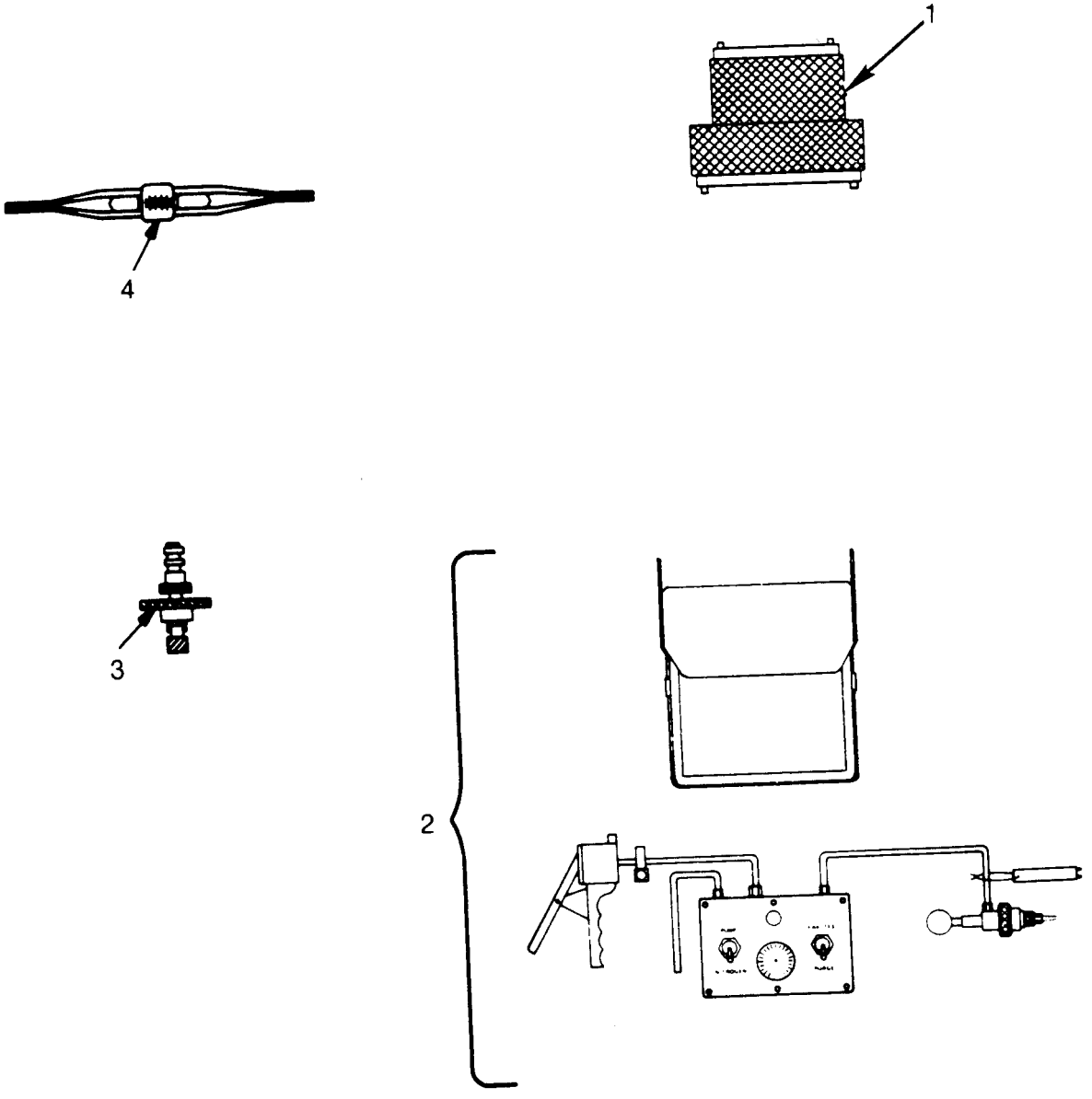


Figure C-8. Special Tools

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 05 SPECIAL TOOLS	
				FIGURE C-8	
1	PEFZZ	55311	JA138260	WRENCH,SPANNER BOI: 1 AUTH FOR 1-50 EQUIP PER DIRECT SUPPORT ELEMENTS	
2	PEFFF	55311	JA215008	DEVICE, PURGE (SEE TM11-585-262-24P FOR PARTS)BOI: 1 AUTH FOR 1-50 EQUIP PER DIRECT SUPPPORT ELEMENTS	
3	PEFZZ	80063	SM-C-657451	PURGE ADAPTER BOI: 1 AUTH FOR 1-50 EQUIP PER DIRECT SUPPORT ELEMENTS	
4	PEFZZ	11139	M1557022-1	TOOL INSETEXTRACT BOI: 1 AUTH FOR 1-50 EQUIP PER DIRECT SUPPORT ELEMENTS	
				END OF FIGURE	

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG	ITEM	STOCK NUMBER	FIG	ITEM
5305-00-054-5635	C-4	8	5305-00-800-7261	C-6	8
5305-00-068-4782	C-4	4	5325-00-842-1879	C-6	15
5305-00-068-5414	C-5	16	6210-01-011-2116	C-3	4
5310-00-124-5339	C-5	7	4020-01-023-6271	C-2	5
5340-00-124-5342	C-4	6	5855-01-034-3845	C-5	2
5855-00-125-0398	C-6	10	5855-01-040-9233	C-5	13
5855-00-125-0403	C-13	1	5340-01-051-1154	C-5	14
6625-00-125-0414	C-3	2	5330-01-066-1920	C-5	3
5855-00-125-0421	C-4	1	5355-01-099-3473	C-6	7
5855-00-125-0686	C-3	7	5330-01-130-9665	C-5	10
5855-00-125-0688	C-2	10	5930-01-137-8768	C-6	4
5855-00-125-0713	C-2	11	5855-01-149-4104	C-1	8
5855-00-125-0753	C-6	13	5855-01-149-4108	C-2	2
5855-00-125-0762	C-2	3	5855-01-151-4211	C-8	3
5855-00-125-0770	C-2	1	5855-01-151-4229	C-1	11
5340-00-132-4227	C-5	17	5855-01-151-4230	C-1	11
5340-00-132-4264	C-5	5	9905-01-165-0425	C-2	9
6135-00-137-6589	C-6	3	5855-01-246-6815	C-8	2
5935-00-137-6621	C-3	1	5855-01-246-8271	C-1	3
5340-00-137-7767	C-7	6	5855-01-250-2348	C-1	3
1240-00-137-7768	C-1	7	5855-01-250-2420	C-5	5
5120-00-137-9196	C-8	4	5855-01-258-6180	C-2	6
5855-00-138-2317	C-1	6	5855-01-260-6451	C-1	10
5310-00-158-5259	C-6	1	5306-01-268-9483	C-1	12
5310-00-177-1301	C-2	15	5855-01-300-2301	C-1	14
	C-4	7	5855-01-302-9775	C-4	2
	C-5	6	5330-01-303-9745	C-6	21
5305-00-187-9895	C-5	11	5305-01-304-5200	C-2	12
5310-00-194-3647	C-6	12		C-6	20
5120-00-198-5401	C-1	4	5855-01-331-6123	C-1	14
5310-00-224-0746	C-3	6	6650-01-331-8502	C-5	4
	C-5	15	5855-01-334-6594	C-2	11
	C-6	2	6160-01-372-5994	C-1	9
5310-00-224-0748	C-4	3			
6640-00-240-5851	C-1	5			
5305-00-242-7275	C-6	11			
5325-00-276-4930	C-2	4			
5310-00-433-3599	C-2	14			
5305-00-439-2737	C-3	5			
5310-00-470-3089	C-2	16			
5305-00-490-4580	C-2	13			
5999-00-498-5926	C-5	1			
5855-00-548-3429	C-5	9			
5365-00-550-5937	C-3	8			
5340-00-558-4692	C-5	5			
5355-00-578-0791	C-2	8			
3040-00-596-4120	C-4	9			
5365-00-598-1138	C-4	5			
5330-00-625-3876	C-6	9			
5310-00-782-8369	C-4	7			

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG	ITEM
88044	AN227-10M6	5325-00-276-4930	C-2	4
81352	AN565FC8H4	5305-00-187-9895	C-5	11
55719	AW1-1-2	5120-00-198-5401	C-1	4
80063	A313922-7		C-6	5
80063	A3139220	5855-01-258-6180	C-2	6
80063	A3139222		C-2	9
80063	A3139223		C-6	23
80063	A3139229		C-6	19
80063	A3139240		C-6	22
80063	A3139263	5855-01-331-6123	C-1	14
80063	A3140633	5855-01-250-2420	C-5	5
80063	A3140650	5855-01-250-2348	C-1	3
80063	A3144264	5855-01-246-8271	C-1	3
80063	A3144318	5340-00-558-4692	C-5	5
55311	JA138260		C-8	1
55311	JA215008	5855-01-246-6815	C-8	2
96906	MS-15795-852B		C-6	6
96906	MS-27982-4B		C-6	16
96906	MS-27982-5B		C-6	17
96906	MS15795-802B	5310-00-433-3599	C-2	14
96906	MS15795-803B	5310-00-194-3647	C-6	12
96906	MS16632-4025	5365-00-550-5937	C-3	8
96906	MS16633-4012	5365-00-598-1138	C-4	5
96906	MS16995-11	5305-00-068-5414	C-5	16
96906	MS27980-7B	5325-00-842-1879	C-6	15
96906	MS27980-9B		C-6	14
96906	MS35218-38	5305-00-068-4782	C-4	4
96906	MS35338-134B	5310-00-177-1301	C-2	15
			C-4	7
			C-5	6
96906	MS35338-135B	5310-00-224-0746	C-3	6
			C-5	15
			C-6	2
96906	MS35338-137B	5310-00-224-0748	C-4	3
96906	MS35649-224B	5310-00-470-3089	C-2	16
96906	MS35649-244B	5310-00-158-5259	C-6	1
96906	MS51021-9	5305-00-800-7261	C-6	8
96906	MS51957-1	5305-00-054-5635	C-4	8
96906	MS51957-12B	5305-00-439-2737	C-3	5
96906	MS51957-15B	5305-00-242-7275	C-6	11
96906	MS51957-3B	5305-00-490-4580	C-2	13
96906	MS519573B		C-1	13
11139	M1557022-1	5120-00-137-9196	C-8	4
81349	M25988/3-002	5330-01-066-1920	C-5	3
81349	M25988/3-027	5330-01-130-9665	C-5	10
81349	M25988/3-030		C-5	12
96906	M551957-3B		C-5	8
80205	NAS620C5L	5310-00-782-8369	C-4	7
99813	SK-630	5355-01-099-3473	C-6	7
80063	SM-B-657335	5310-00-124-5339	C-5	7
80063	SM-B-657370-1	5355-00-578-0791	C-2	8

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG	ITEM
80063	SM-C-657314-1	5340-00-132-4227	C-5	17
80063	SM-C-657314-2	5340-00-132-4264	C-5	5
80063	SM-C-657339	3040-00-596-4120	C-4	9
80063	SM-C-657340	5340-00-124-5342	C-4	6
80063	SM-C-657341	5855-00-125-0421	C-4	1
80063	SM-C-657404	5855-00-125-0398	C-6	10
80063	SM-C-657405-1	5330-00-625-3876	C-6	9
80063	SM-C-657406	5855-00-125-0753	C-6	13
80063	SM-C-657409	9905-01-165-0425	C-2	9
80063	SM-C-657423	5340-00-137-7767	C-7	6
80063	SM-C-657428	5855-00-125-0403	C-1	1
80063	SM-C-657433		C-7	3
80063	SM-C-657434		C-7	4
80063	SM-C-657435		C-7	1
80063	SM-C-657443	6210-01-011-2116	C-3	4
80063	SM-C-657451	5855-01-151-4211	C-8	3
80063	SM-C-804193	5855-01-040-9233	C-5	13
80063	SM-C-804198	5340-01-051-1154	C-5	14
80063	SM-C-804200		C-3	3
80063	SM-C-806612	5855-00-548-3429	C-5	9
80063	SM-D-657300-2		C-1	2
80063	SM-D-657300-2		C-1	2
80063	SM-D-657302-2	5855-00-125-0688	C-2	10
80063	SM-D-657304	5855-00-125-0713	C-2	11
80063	SM-D-657304-2	5855-01-334-6594	C-2	11
80063	SM-D-657310-2	5855-01-034-3845	C-5	2
80063	SM-D-657333	5935-00-137-6621	C-3	1
80063	SM-D-657334	5855-00-125-0686	C-3	7
80063	SM-D-657337	6625-00-125-0414	C-3	2
80063	SM-D-657338		C-4	2
80063	SM-D-657403		C-7	2
80063	SM-D-657415	6135-00-137-6589	C-6	3
80063	SM-D-657430	5855-00-138-2317	C-1	6
80063	SM-D-657432		C-7	5
80063	SM-D-657440	1240-00-137-7768	C-1	7
80063	SM-D-657446-1	5855-00-125-0762	C-2	3
80063	SM-D-657447-1	5855-00-125-0770	C-2	1
80063	SM-D-804202		C-2	7
80063	SM-D-806327	5930-01-137-8768	C-6	4
82458	TL410325		C-2	17
73259	1599X34LTIPPED	4020-01-023-6271	C-2	5
55311	200320-102		C-7	2
55311	200428-110		C-1	1
55311	200446-102		C-2	3
55311	205083-100		C-2	9
55311	206467-002		C-3	3
55311	206701-119		C-1	6
55311	206704-116		C-2	7
55311	207478-110		C-2	8
55311	207831-00-1		C-6	18
55311	208125-110		C-7	5

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG	ITEM
55311	208196-110		C-2	1
55311	208197-100	5305-01-304-5200	C-2	12
			C-6	20
55311	209044-100	5855-01-300-2301	C-1	14
11139	2841-13-9000	5999-00-498-5926	C-5	1
66868	300450-1	6650-01-331-8502	C-5	4
66868	300505-G1	5855-01-302-9775	C-4	2
66868	300514-G1		C-3	2
66868	300517-G1		C-2	7
66868	300529-1	5330-01-303-9745	C-6	21
66868	300680-G3	5855-01-149-4104	C-1	8
06650	354	6640-00-240-5851	C-1	5
54490	5002516-2	5855-01-149-4108	C-2	2
54490	5002530	5855-01-151-4229	C-1	11
54490	5002539	5306-01-268-9483	C-1	12
54490	5002590	5855-01-260-6451	C-1	10
54490	5002610	5855-01-151-4230	C-1	11
54490	5008902	6160-01-372-5994	C-1	9

CROSS-REFERENCE INDEXES
FIGURE AND ITEM NUMBER INDEX

FIG	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
C-1	1		55311	200428-110
C-1	1	5855-00-125-0403	80063	SM-C-657428
C-1	2		80063	SM-D-657300-2
C-1	2		80063	SM-D-657300-3
C-1	3	5855-01-246-8271	80063	A3144264
C-1	3	5855-01-250-2348	80063	A3140650
C-1	4	5120-00-198-5401	55719	AW1-1-2
C-1	5	6640-00-240-5851	06650	354
C-1	6		55311	206701-119
C-1	6	5855-00-138-2317	80063	SM-D-657430
C-1	7	1240-00-137-7768	80063	SM-D-657440
C-1	8	5855-01-149-4104	66868	300680-G3
C-1	9	6160-01-372-5994	54490	5008902
C-1	10	5855-01-260-6451	54490	5002590
C-1	11	5855-01-151-4229	54490	5002530
C-1	11	5855-01-151-4230	54490	5002610
C-1	12	5306-01-268-9483	54490	5002539
C-1	13		96906	MS519573B
C-1	14	5855-01-300-2301	55311	209044-100
C-1	14	5855-01-331-6123	80063	A3139263
C-2	1		55311	208196-110
C-2	1	5855-00-125-0770	80063	SM-D-657447-1
C-2	2	5855-01-149-4108	54490	5002516-2
C-2	3		55311	200446-102
C-2	3	5855-00-125-0762	80063	SM-D-657446-1
C-2	4	5325-00-276-4930	88044	AN227-10M6
C-2	5	4020-01-023-6271	73259	1599X34LTIPPED
C-2	6	5855-01-258-6180	80063	A3139220
C-2	7		55311	206704-116
C-2	7		66868	300517-G1
C-2	7		80063	SM-D-804202
C-2	8		55311	207478-110
C-2	8	5355-00-578-0791	80063	SM-B-657370-1
C-2	9		55311	205083-100
C-2	9		80063	A3139222
C-2	9	9905-01-165-0425	80063	SM-C-657409
C-2	10	5855-00-125-0688	80063	SM-D-657302-2
C-2	11	5855-00-125-0713	80063	SM-D-657304
C-2	11	5855-01-334-6594	80063	SM-D-657304-2
C-2	12	5305-01-304-5200	55311	208197-100
C-2	13	5305-00-490-4580	96906	MS51957-3B
C-2	14	5310-00-433-3599	96906	MS15975-802B
C-2	15	5310-00-177-1301	96906	MS35338-134B
C-2	16	5310-00-470-3089	96906	MS35649-224B
C-2	17		82458	TL410325
C-3	1	5935-00-137-6621	80063	SM-D-657333
C-3	2		66868	300514-G1
C-3	2	6625-00-125-0414	80063	SM-D-657337
C-3	3		55311	206467-002
C-3	3		80063	SM-C-804200
C-3	4	6210-01-011-2116	80063	SM-C-657443

CROSS-REFERENCE INDEXES
FIGURE AND ITEM NUMBER INDEX

FIG	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
C-3	5	5305-00-439-2737	96906	MS51957-12B
C-3	6	5310-00-224-0746	96906	MS35338-135B
C-3	7	5855-00-125-0686	80063	SM-D-657334
C-3	8	5365-00-550-5937	96906	MS16632-4025
C-4	1	5855-00-125-0421	80063	SM-C-657341
C-4	2		80063	SM-D-657338
C-4	2	5855-01-302-9775	66868	300505-G1
C-4	3	5310-00-224-0748	96906	MS35338-137B
C-4	4	5305-00-068-4782	96906	MS35218-38
C-4	5	5365-00-598-1138	96906	MS16633-4012
C-4	6	5340-00-124-5342	80063	SM-C-657340
C-4	7	5310-00-177-1301	96906	MS35338-134B
C-4	7	5310-00-782-8369	80205	NAS620C5L
C-4	8	5305-00-054-5635	96906	MS51957-1
C-4	9	3040-00-596-4120	80063	SM-C-657339
C-5	1	5999-00-498-5926	11139	2841-13-9000
C-5	2	5855-01-034-3845	80063	SM-D-657310-2
C-5	3	5330-01-066-1920	81349	M25988/3-002
C-5	4	6650-01-331-8502	66868	300450-1
C-5	5	5340-00-132-4264	80063	SM-C-657314-2
C-5	5	5340-00-558-4692	80063	A3144318
C-5	5	5855-01-250-2420	80063	A3140633
C-5	6	5310-00-177-1301	96906	MS35338-134B
C-5	7	5310-00-124-5339	80063	SM-B-657335
C-5	8		96906	M551957-3B
C-5	9	5855-00-548-3429	80063	SM-C-806612
C-5	10	5330-01-130-9665	81349	M25988/3-027
C-5	11	5305-00-187-9895	81352	AN565FC8H4
C-5	12		81349	M25988/3-030
C-5	13	5855-01-040-9233	80063	SM-C-804193
C-5	14	5340-01-051-1154	80063	SM-C-804198
C-5	15	5310-00-224-0746	96906	MS35338-135B
C-5	16	5305-00-068-5414	96906	MS16995-11
C-5	17	5340-00-132-4227	80063	SM-C-657314-1
C-6	1	5310-00-158-5259	96906	MS35649-244B
C-6	2	5310-00-224-0746	96906	MS35338-135B
C-6	3	6135-00-137-6589	80063	SM-D-657415
C-6	4	5930-01-137-8768	80063	SM-D-806327
C-6	5		80063	A313922-7
C-6	6		96906	MS-15795-852B
C-6	7	5355-01-099-3473	99813	SK-630
C-6	8	5305-00-800-7261	96906	MS51021-9
C-6	9	5330-00-625-3876	80063	SM-C-657405-1
C-6	10	5855-00-125-0398	80063	SM-C-657404
C-6	11	5305-00-242-7275	96906	MS51957-15B
C-6	12	5310-00-194-3647	96906	MS15795-803B
C-6	13	5855-00-125-0753	80063	SM-C-657406
C-6	14		96906	MS27980-9B
C-6	15	5325-00-842-1879	96906	MS27980-7B
C-6	16		96906	MS-27982-4B
C-6	17		96906	MS-27982-5B

CROSS-REFERENCE INDEXES
FIGURE AND ITEM NUMBER INDEX

FIG	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
C-6	18		55311	207831-00-1
C-6	19		80063	A3139229
C-6	20	5305-01-304-5200	55311	208197-100
C-6	21	5330-01-303-9745	66868	300529-1
C-6	22		80063	A3139240
C-6	23		80063	A3139223
C-7	1		80063	SM-C-657435
C-7	2		55311	200320-102
C-7	2		80063	SM-D-657403
C-7	3		80063	SM-C-657433
C-7	4		80063	SM-C-657434
C-7	5		55311	208125-110
C-7	5		80063	SM-D-657432
C-7	6	5340-00-137-7767	80063	SM-C-657423
C-8	1		55311	JA138260
C-8	2	5855-01-246-6815	55311	JA215008
C-8	3	5855-01-151-4211	80063	SM-C-657451
C-8	4	5120-00-137-9196	11139	M1557022-1

APPENDIX D
EXPENDABLE SUPPLIES AND DURABLE ITEMS LIST

Section I. Introduction

D-1 SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the AN/PVS-5, -5A, -55, -5C, GM-6(V)1, and GM-6(V)2 NVG. These items are authorized to you by CTA 50-970, Expendable items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2 EXPLANATION OF COLUMNS

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

b. level (Column2). This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew

O - Organizational

F - Direct Support Maintenance

H - General Support Maintenance

D - Depot

AVUM - Aviation Unit Maintenance

AVIM - Aviation Intermediate Maintenance

c. National Stock Number (Column 3). This NSN assigned to the item; use it to request or requisition the item.

d. Description (Column 4). Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity Code (CAGEC) in parenthesis followed by the part number.

e Unit of Measure (U/M) (Column 5). This measure is expressed by a two-character alphabetical abbreviation (e.:, DA, IN, PR). If the unit of measure differs from the unit of issue as shown in the Army Master Data File (AMDF), requisition the lowest unit of issue that will satisfy you requirements.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M) OR (U/I)
1	O	6516-00-303-8250	APPLICATOR,DISPOSAL,TIPPED END, STERILE	
2	O	6810-00-753-4993	ISOPROPYL ALCOHOL,TECHNICAL	
3	O	6505-00-299-8095	ETHANOL,DENATURED	
4	O	7530-00-082-2661	LABEL,PRESSURE SENSITIVE	
5	O	7930-00-926-5280	DETERGENT,GENERAL PURPOSE,SPRAY NON-AMMONIA	
6	O	3439-00-552-9309	DISPENSER,ALCOHOL	
7	O	6640-00-162-2993	LENS,PAPER (NNN-P-40)	PK
8	O		FLASHLIGHT FILTER#15 (OBN56) FFNVG	
9	O		FLASHLIGHT FILTER#20(58774) NV-4AM	
10	F	8040-00-865-8991	ADHESIVE,SILICONE(BLACK) (01139) RTV103	10OZ
11	F	9150-01-014-5402	LUBRICANT (SILICONE GREASE) DC 33	
12	F	6515-00-935-1194	FINGER COTS	
13	F	9150-00-584-4287	COMPRESSED AIR,TECHNICAL	
14	F	8040-00-142-9193	ADHESIVE,SUPER GLUE	
15	F	3439-00-555-4629	SOLDER,TIN ALLOY,ROSIN CORE, SN60 (WRP2)	
16	F	7920-00-514-2417	BRUSH,ACID SWABBING	
17	F	6830-00-616-9183	NITROGEN,TECHNICAL	
18	F	8030-00-889-3534	TAPE,ANTISEIZE	
19	F	6850-00-621-1819	LEAK DETECTION COMPOUND	
20	F	5970-00-032-0291	REPAIR KIT,ELECTRICAL CABLE INSULATION	PK

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST-CONTINUED

(1)	(2)	(3)	(4)	(5)
ITEM NUMBER	LEVEL	NATIONAL STOCK NUMBER	DESCRIPTION	(U/M) OR (U/I)
21	F	5110--00-997-4237	SCRAPPER,GLASS,RAZOE	EA
22	F	8530-00-162-5629	BLADE,SAFETY RAZOR	BX
23	F	6675-00-222-2505	TRIPOD (FOR BLACKSPOT TEST)	EA

APPENDIX E
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Section I. Introduction.

E-1. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at AVUM, DS, and AVIM.

E-2. 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.

E-3. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list or on the illustration.

Section II. Manufactured Items Part Number Index.

Fig No.	Illus No.	NSN	Description (Part Number, if Applicable)	U/M	Qty Rqd
E-1	1	5855-01-305-8524	BLACKSPOT TARGET	EA	1
	2	N/A	1/2" PLYWOOD, 22 1/2" x 30 1/2" (LOCAL PROCUREMENT)	EA	1
	3	N/A	1/2" PLYWOOD, 22 1/2" x 32" (LOCAL PROCUREMENT)	EA	1
	4	N/A	3/4" PINE BOARD, 2" x 35 3/4" WITH 31° MITER ENDS (LOCAL PROCUREMENT)	EA	2
	5	N/A	3/4" PINE BOARD 2" x 12 1/4" (LOCAL PROCUREMENT)	EA	2
	6	N/A	3/4" PINE BOARD, 6" x 24" (LOCAL PROCUREMENT)	EA	1
	7	N/A	WOOD SCREWS, 3" (LOCAL PROCUREMENT)	EA	4
	8	N/A	WOOD SCREWS, 1 1/4" (LOCAL PROCUREMENT)	EA	18

Section III. Manufactured Items Illustrations.

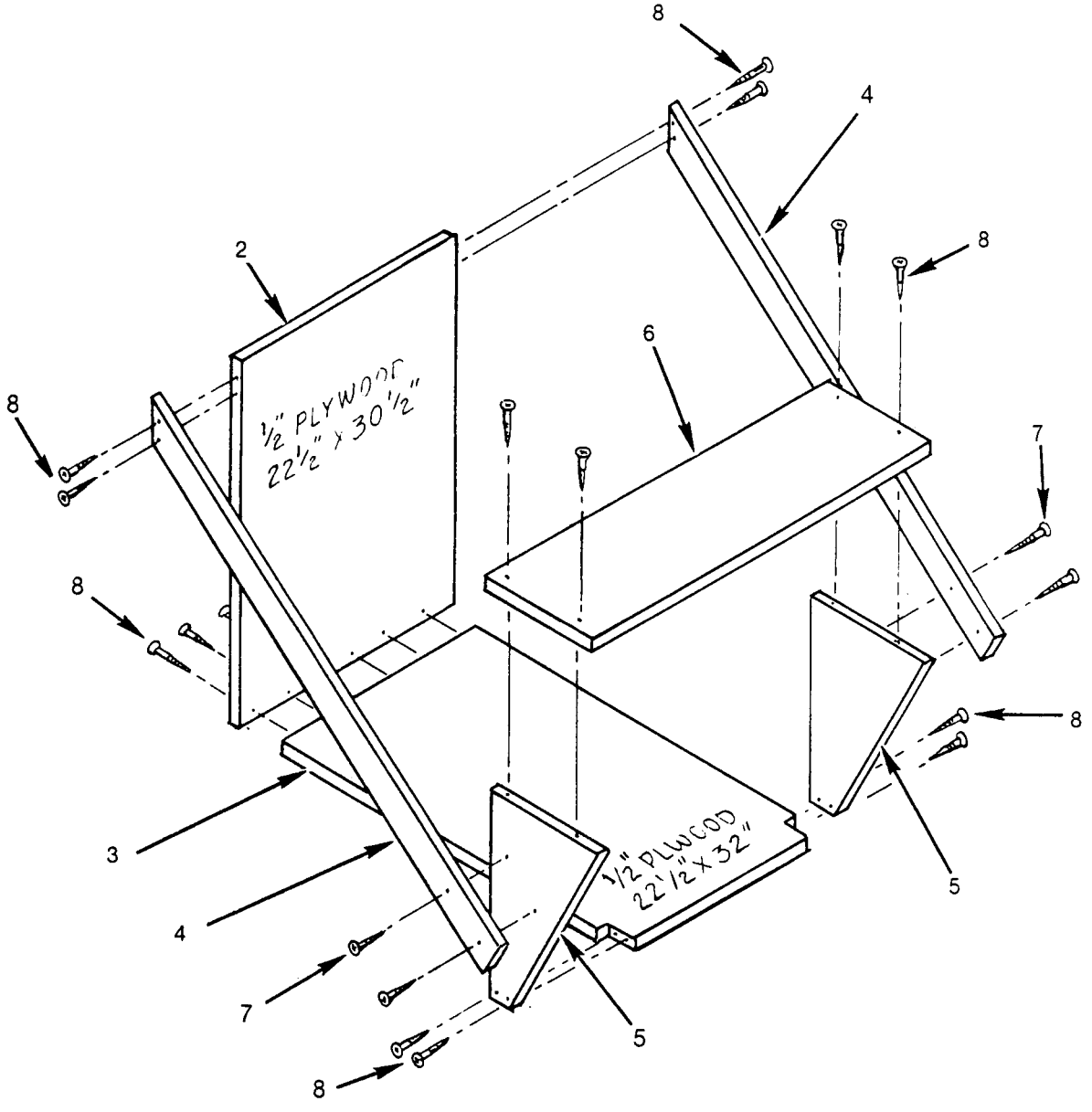


Figure E-1. Black Spot Test Stand.

GLOSSARY

Section I. Abbreviations.

ANWS	Aviators Night Vision Imaging System
AVIM	Aviation Intermediate Maintenance
AVUM	Aviation Unit Maintenance
BITE	Built In Test Equipment
BOI	Basis Of Issue
CAGEC	Commercial and Government Entity Code
CECOM	Communications-Electronics Command
CPC	Corrosion Prevention and Control
CVC	Combat Vehicle Crewman's
DS	Direct Support
EIR	Equipment Improvement Recommendation
GS	General Support
GSE	Ground Support Equipment
IP	Instructor Pilot(s)
IR	Infrared
LED	Light Emitting Diode
LIF	Light Interference Filter
MAC	Maintenance Allocation Chart
MWO	Modification Work Order
NIIN	National Item Identification Number
NVG	Night Vision Goggle(s)
NSN	National Stock Number
OCONUS	Outside Continental United States
PMCS	Preventive Maintenance Checks and Services
RPSTL	Repair Parts and Special Tools List
SAAD	Sacramento Army Depot
SIP	Standardization Instructor Pilot(s)
SMR	Source Maintenance and Recoverability
SRA	Specialized Repair Activity
TAMMS	The Army Maintenance Management System
TMDE	Test Measurement and Diagnostic Equipment
UOC	Usable On Code
WARCO	Warranty Control Office

Section II. Definitions of Unusual Terms.

BASIC PMCS. Includes all 90day checks for Aviation.

BEST FOCUS. Combination of adjusting the diopter adjustment ring (eyepiece) than the infinity focus of this objective lens.

BINOCULAR. The assembly that attaches to the mount. It contains two monocular and a supporting shelf.

BLACK SPOTS. These are cosmetic blemishes in the image intensifier of the NVG or dirt or debris between the lenses. Black spots are acceptable as long as they do not interfere with viewing the image. No action is required if this condition is present unless the spots interfere with the operator's ability to perform the mission.

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. Not all bright spots make an image intensifier rejectable. 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 goggles 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. Conditions, practices, or procedures that must be observed to avoid damage to equipment, destruction of equipment, or a long-term health hazard.

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. Under the worst case, these lines will form hexagonal or square-wave shaped lines. These lines are caused by defective fibers that do not transmit light occurring at the boundaries of fiber bundles in the output optic of the image intensifier. No action is required if the boundaries of fiber bundles in the output optic of the image intensifier. No action is required if this condition is present unless the chicken wire is deemed excessive by the user and the appropriate maintenance forms and records are completed in accordance with DA Pam 738-751..

CLEAN STATION. The clean station is an area that has a dirt-free environment, such as a bench top where you can repair and service the binocular assembly of the NVG. Because the clean station is that area where the monocular assembly is opened, exposing the inside lens surfaces and the optics of the image intensifier, it must be free of debris or any other material that can enter a disassembled system and contaminate it. The clean station does need to have a flow hood.

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 NVG. 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. Do not fly or use if edge glow is present.

EMISSION POINT. A steady or fluctuating pinpoint of bright light in the image area that does not go away when all light is blocked from the objective lens of that monocular. The position of an emission point within the image area of the monocular 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, place the goggles onto the TS-3895 test set and turn the selector knob to LOW LIGHT and note the points location. Then turn the selector knob to HIGH LIGHT. If the point disappears or is faintly visible, it is acceptable. An emission point should not be confused with a point light source in the distance.

EYEPIECE ASSEMBLY. This consists of an eyepiece lens and is adjusted for variations in the user's eyesight by the diopter adjustment ring. It is to the rear portion of the monocular housing and attaches to the image intensifier.

FIXED-PATTERN NOISE. This is usually a cosmetic blemish in the image area produced by the NVG. A faint hexagonal (honeycomb) pattern throughout the viewing area that most often occurs at high-light levels or when viewing very bright lights. This pattern is inherent in the structure of the fiber optics and can be seen in every image intensifier if the light level is high enough. This condition is acceptable as long as the pattern does not interfere with viewing the image or if it still remains when viewing low-light conditions. Also called "honey comb."

FLASHING. This is a defect in the image area produced by the NVG. The image appears to flicker. This can occur in one or both image intensifier tubes. If there is more than one flicker, check for loose wires or battery cap or weak batteries. Do not fly unless this condition is corrected.

FLICKERING. This a defect in the image area produced by the NVG. See “flashing.”

IMAGE DISPARITY. This condition exists when there is a difference between the two image intensifiers within the same binocular. This is usually noted by one monocular appearing brighter than the other. This condition is acceptable unless the difference degrades height or depth perception. No action is required if this condition is observed unless it interferes with the operator’s ability to perform the mission.

IMAGE DISTORTION. This problem is evidenced by vertical objects, such as trees or poles appearing to wave or bend when you move your head (with NVG) vertically or horizontally. Ground surfaces in the direction of hover may appear to swell or sink. Ensure that you are viewing through the center of the goggles when performing this check. The problem is within the image intensifier assembly and not the lenses. A one-time check for distortion is required prior to the first use of each image intensifier as prescribed in Chapter 2 or Chapter 3 of this manual.

IMAGE INTENSIFIER. An electro-optical device inside each monocular 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.

INTERMITTENT OPERATION. This is a defect in the image area produced by the NVG. See Flashing.”

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

NOTE. Essential information of special importance, interest, or aid in job performance.

OBJECTIVE LENS ASSEMBLY. This consists of an objective lens cell and objective focus knob. It is to the front of the monocular housing and attaches to the image intensifier. The objective focus knob adjusts for variations in distance to the viewed area or object.

OFFSET VIEWER MOUNT ASSEMBLY, GM-6(V)2. This mount houses the binocular assembly. It mates to the offset visor mount assembly.

OFFSET VISOR MOUNT ASSEMBLY, GM-6(V)2. A specialized binocular assembly for use with SPH4 helmets modified with the helmet sight assembly. Mates to the offset viewer mount; cannot be used with the standard viewer mount assembly.

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.

POWER PACK ASSEMBLY. Part of the GMl-6(V)l and GM-6(V)2 that attaches to the back of the user’s helmet and provides power to the goggles. Power is supplied by batteries contained in compartments of the power pack. The power pack utilizes either BA-5567/U lithium batteries or BA-3058/U AA batteries.

POWER PACK MOUNT CONNECTOR. The connector between the power pack and the visor mount assembly or offset visor mount assembly.

SCINTILLATION. A faint, random, sparkling effect throughout the image area. Scintillation is a normal characteristic of the image intensifier and should not be confused with emission points. Scintillation is more pronounced under low-light conditions.

SHADING. This is a defect in the image area produced by the NVG when the photocathode in the image intensifier is slowly dying. Each monocular should portray a perfect circle when adjusted correctly. If shading is present, you will not see a fully circular image. Shading always begins on the edges and moves inward. Do not fly or use if shading is present in a monocular.

VISOR MOUNT ASSEMBLY, GM-6(V)1. This is the NVG visor guard assembly that replaces the standard SPH-4 helmet's visor housing. The viewer mount assembly (with binocular assembly) attaches to this mount; however, it is not for use with the offset viewer mount assembly.

WARNING. Conditions, practices, or procedures that must be observed to avoid personal injury or loss of life.

INDEX

INDEX - Continued

INDEX - Continued

L

M

N

0

P

INDEX - Continued

By 0rder of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administmtive Assistant to the
Secretary of the Army
05885

DISTRIBUTION:

To be distributed in accordance with DA Form 12-36-E, block 9585 requirements for TM ll-5855-238-23&P.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1994 510-106/00085

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
Commander
Stateside Army Depot
ATTN: AMSTA-US
Stateside, N.J. 07703-5007

DATE SENT
10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2^0 IFF antenna lag rather than 1^0. REASON: Experience has shown that with only a 1^0 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 stress to the drive train. Hunting is minimized by adjusting the lag to 2^0 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 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.

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

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S. - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

TEAR ALONG DOTTED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN ... JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH THIS PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

TEAR ALONG DOTTED LINE

DA FORM 1 JUL 79 **2028-2**

PREVIOUS EDITIONS ARE OBSOLETE

P.S. – IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

REVERSE OF DA FORM 2028-2

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

PLEASE
AFFIX
STAMP
POSTAGE
REQUIRED

Commander
U.S. Army Communications-Electronics Command
and Fort Monmouth
ATTN: AMSEL-LC-LM-LT
Fort Monmouth, New Jersey 07703-5007

TEAR ALONG DOTTED LINE

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

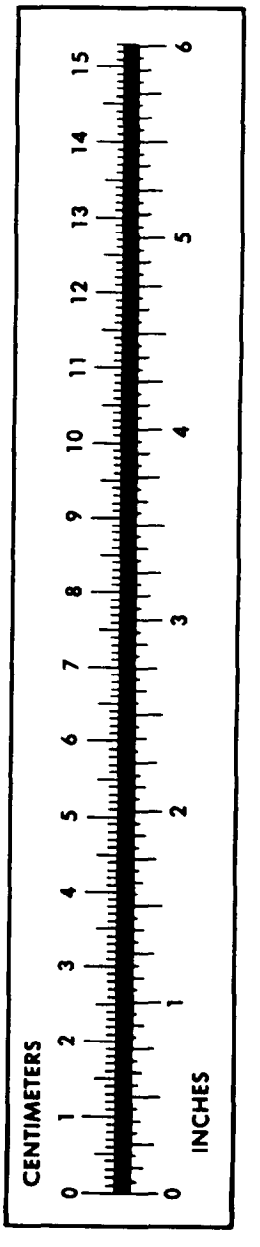
TEMPERATURE

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



PIN: 072067-000