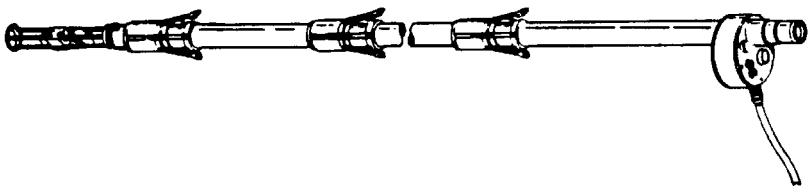
ARMY TM 9-6650-235-13&P
MARINE CORPS TM-08552A-13&P

SUPERSEDES COPY DATED 30 APRIL 1983

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) (INCLUDING DEPOT MAINTENANCE REPAIR PARTS) FOR BORESCOPE, M3 (6650-0 1 -063-0035)



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HEADQUARTERS, DEPARTMENT OF THE ARMY

JUNE 1986

WARNING

The illuminating head assembly presents a shock hazard if the M3 Borescope is not unplugged during assembly and disassembly.

Bare electrical wiring could cause shock upon contact.

Be careful when engaging/disengaging the two pieces of the objective tube assembly or the borescope extension tubes to avoid pinching the thumb.

Solvent vapors are toxic. Do not use solvent in a confined space. Avoid long periods of breathing

solvent vapors and/or contact with skin.

For information on first aid, see FM 21-11.

ARMY TM 9-6650-235-13&P
MARINE CORPS TM-08552A-13&P
C2

CHANGE

No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
U.S. MARINE CORPS
Washington D.C., 8 February 1994

OPERATOR'S, UNIT AND
INTERMEDIATE DIRECT SUPPORT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
FOR

BORESCOPE, M3
(6650-01-063-0035)

ARMY TM 9-6650-235-13&P, MARINE CORPS TM-08552A-13&P, dated 30 June 1986, is changed as follows:

1. The purpose of this change notice is to provide notification under Section 326 of Public Law 102-484, FY 93 National Defense Authorization Act, that Ozone Depleting Chemicals may no longer be used on Army equipment.

2. Throughout this publication the following items should be substituted for Ozone Depleting Chemicals used on your equipment:

FOR:	SUBSTITUTE:
Solvent, tricholorethane 6180-00-476-5612 5 gal. can MIL-T-81533	Solvent, dry cleaning, Type III 6850-01-331-3349 5 gal. can P-D-680 Type III

3. File this change notice in the front of the publication for reference purposes.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
05974

DISTRIBUTION: To be distributed in accordance with DA Form 12-41-E, Block 0181, requirements for TM 9-6650-235-13&P.

*U.S. G.P.O.:1994-546-042:80122

PIN: 052975-002

ARMY TM 9-6650-235-13&P
MARINE CORPS TM-08552A-13&P
C1

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 2 July 1992

Operators, Unit, and Direct Support
Maintenance Manual
(Including Repair Parts and Special Tools List)
for
Borescope, M3
(6650-01-063-0035)

ARMY TM 9-6650-235-13&P, MARINE CORPS TM-08552A-13&P, 30 June 1986, is changed as follows:

1. The title is changed as shown above.

2. Remove old pages and insert new pages as indicated below.

3. New or changed material is indicated by a vertical bar in the margin of the page.

4. Illustration changes are indicated by a miniature pointing hand.

Remove Pages	Insert Pages
iii and 1-0	iii and 1-0
5-129 through 5-134	5-129 through 5-134
B-3 and B-4	B-3 and B-4
C-1-1 and Fig. C-2	C-1-1 and Fig. C-2
C-5-1 and Fig. C-6	C-5-1 and Fig. C-6
C-6-1 and C-7-1	C-6-1 and C-7-1
C-8-1 and C-9-1	C-8-1 and C-9-1
C-10-1 and C-11-1	C-10-1 and C-11-1
C-12-1 and C-13-1	C-12-1 and C-13-1
C-16-1 and C-17-1	C-16-1 and C-17-1
C-22-1 and C-23-1	C-22-1 and C-23-1
C-25-1/(C-26-1 blank)	C-25-1/(C-26-1 blank)
I-3 through I-6	I-3 through I-6

5. File this change sheet in the front of the publication for reference purposes.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
01856

By Order of the Marine Corps:

H. E. REESE
Deputy for Support
Marine Corps Research, Development and
Acquisition Command

DISTRIBUTION:

To be distributed in accordance with DA Form 12-41-E, (Block 0181), Operators, Unit, Direct and General Support Maintenance Requirements for TM 9-6650-235-13&P.

ARMY **TM 9-6650-235-13&P**

MARINE CORPS **TM-08552A-13&P**

TECHNICAL MANUAL

NO. 9-6650-235-13&P

NO. 08552A-13&P

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 30 June 1986

Operator's, Organizational, and Direct Support Maintenance Manual

(Including Repair Parts and Special Tools List)
(Including Depot Maintenance Repair Parts)

for

BORESCOPE, M3

(6650-01-063-0035)

Current as of 7 Mar 86 for appendix C.

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual, direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000. A reply will be furnished to you.

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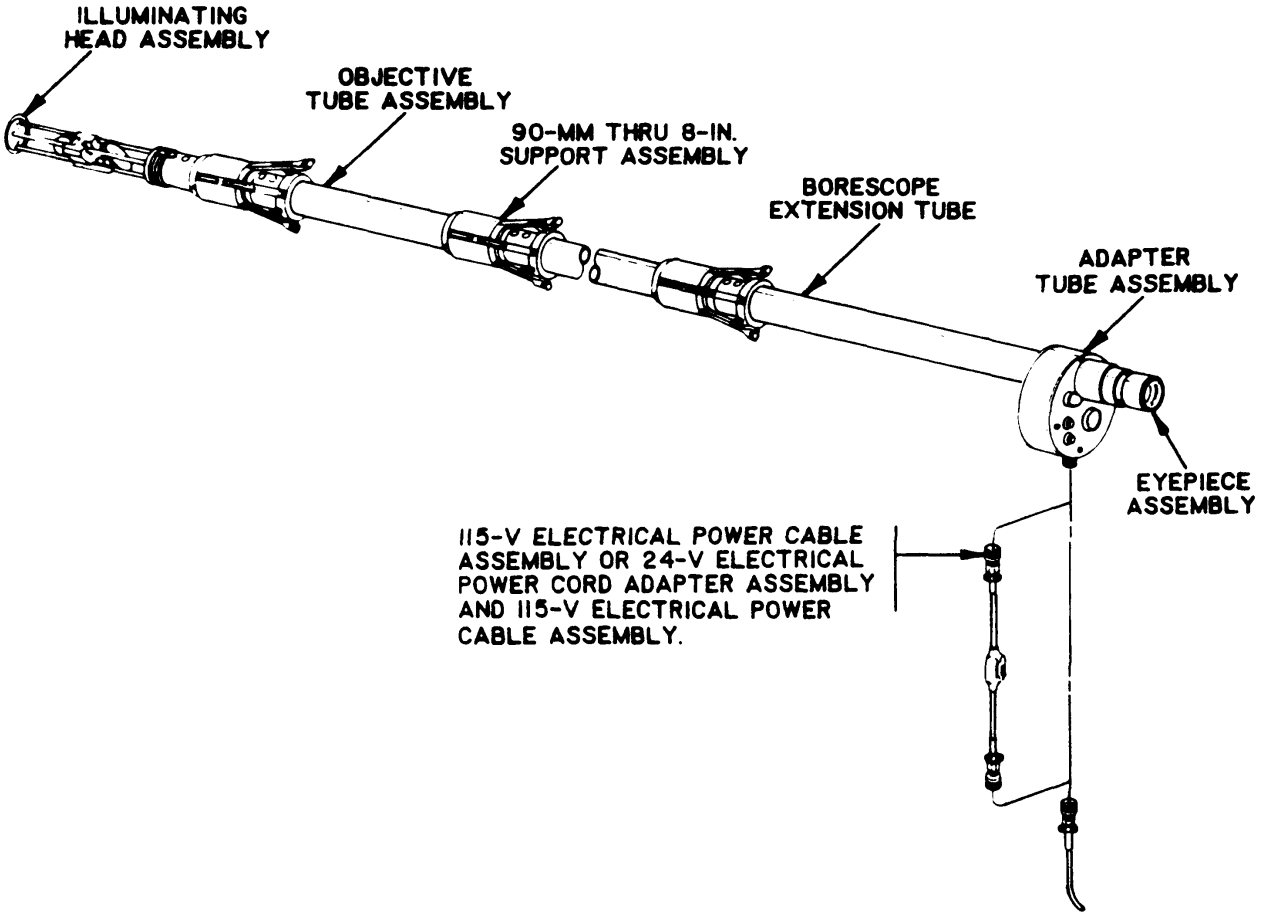


M3 BORESCOPE

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

a. Type of Manual: Operator's, organizational, and direct support maintenance (including repair parts and special tools list) (including depot maintenance repair parts).

b. Model Number and Equipment Name: M3 Borescope.

c. Purpose of Equipment: The M3 Borescope is used to inspect cannon bores of howitzers, tanks, recoilless rifles, and mortars for defects of manufacture and damage caused by firing.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will he those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. DESTRUCTION OF ARM-Y MATERIEL TO PREVENT ENEMY USE.

Refer to TM 750-244-6.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

Refer to TM 740-90-1.

1-5. NOMENCLATURE CROSS-REFERENCE LIST.

This listing includes the nomenclature cross-references used in this manual.

Common Name	Official Nomenclature
Blacklight lamp switch	Switch, toggle
Body	Bushing, sleeve
Cord	Cable, power
Erector lens	Lens, optical
Sleeve	Retainer, optical
Support arm	Clevis, rod end

1-6. LIST OF ABBREVIATIONS.

This listing includes the list of abbreviations used in this manual.

FOV ..... Field of View

1-7. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your M3 Borescope needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, US Army Armament, Munitions, and Chemical Command, AMSMC-QAD, Rock Island, IL 61299-6000. We'll send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES. CHARACTERISTICS:

- Self-contained.
- Transportable by one person (unassembled)
- Weighs 85 lb (38.56 kg).
- Case dimensions are 11 x 13.5 x 47 in. (0.28 x 0.34 x 1.19 m).

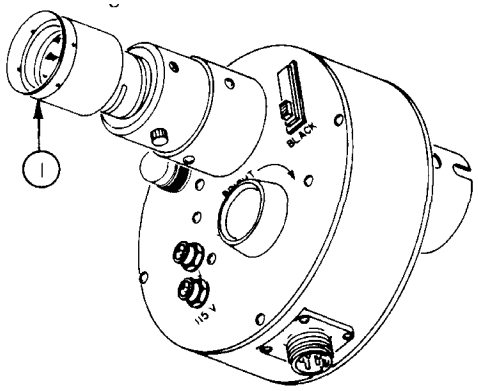
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

a. Eyepiece Assembly (1). This assembly is located in the adapter tube assembly. A rubber eyeshield is provided to form a light block. The outside eye-piece sleeve has a helical lead groove in which a setscrew acts as a detent to prevent the eyepiece assembly from falling out of the adapter tube assembly.

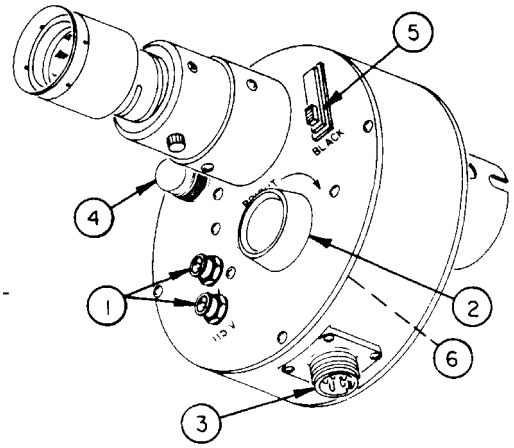
b. Adapter Tube Assembly. This assembly connects the eyepiece assembly to the borescope extension tube, or objective tube assembly, depending on the length of the bore to be inspected. The body of the adapter tube assembly houses the circuit breaker(s) (1) for 24- or 115-volt operation, the electric light control (2), and the electrical receptacle connector (3) for the power cord(s). The adapter tube assembly revolves on the adapter tube and contains spring loaded plunger contacts which maintain the electrical connection. This assembly also houses the indicator light (4), a blacklight lamp switch (5), and an electrical system schematic diagram (6). The blacklight switch is used only at depot level and will not be addressed in this manual.

CAPABILITIES AND FEATURES:

- Operates on either 24-V dc or 115-V ac.
- Will assemble to a length of 28 ft (8.53-m) for inspecting the longest of bores.
- Will inspect bores from 58-mm through 8-in.

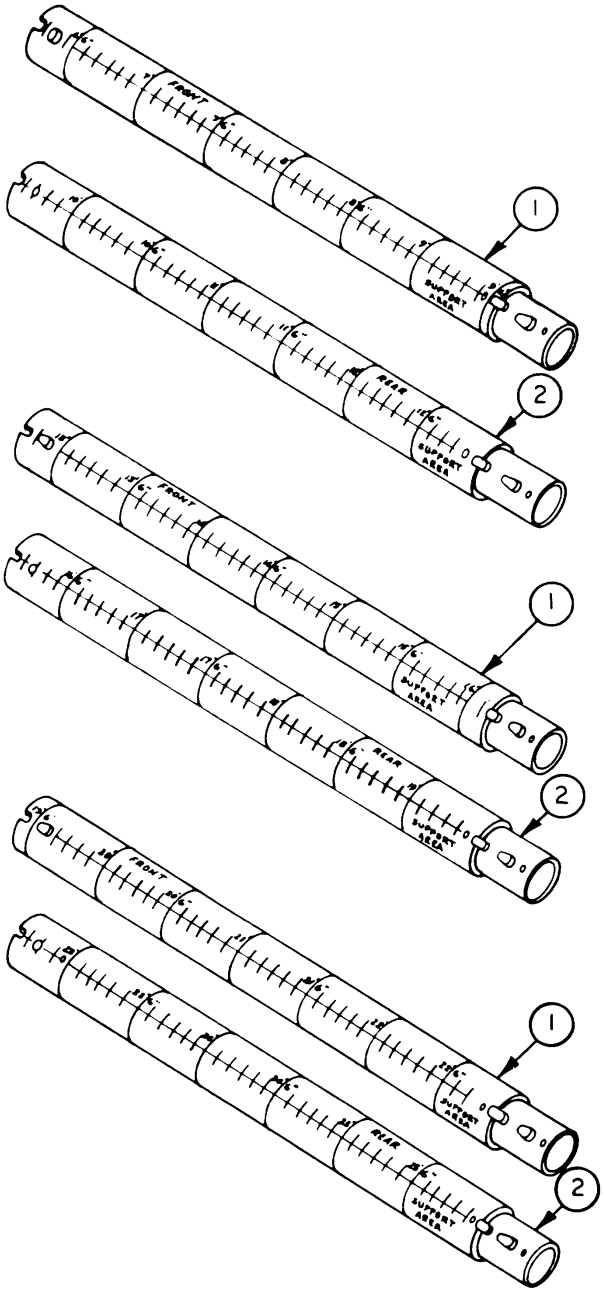


EYEPIECE ASSEMBLY



ADAPTER TUBE ASSEMBLY

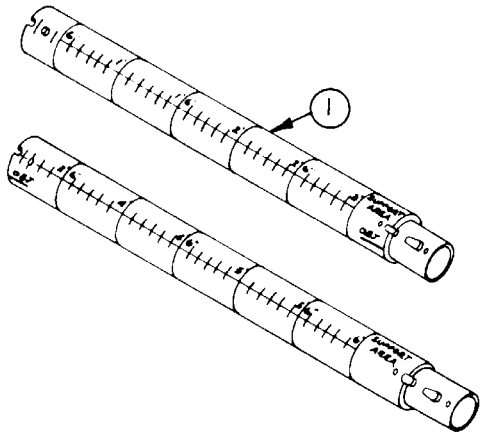
c. Borescope Extension Tubes I, II, and III. Three borescope extension tubes are provided, each consisting of a forward (1) and a rear (2) section. They permit inspection of the longest weapons encountered. The borescope extension tubes are numbered with Roman numerals (I, II, and III). These tubes have a lock assembly on one end and a hole on the other end to receive the key on the lock assembly of the next tube section. The forward sections of the extension tubes are identical (as are the rear sections) except for the graduations on the outside of the tubes. The tubes have graduation marks of 1.0 inch, 6.0 inch and 1.0 foot intervals (up to 26 feet) with the 6.0 inch and 1.0 foot marks completely encircling the tube. A line runs within 4.0 inches of the length of the tube through the center of the graduation intervals to assist in the assembly of the sections and to provide a reference point for stating the o'clock position of cannon bore defects. The specific order of assembly between the objective tube assembly and adapter tube assembly is borescope extension tubes I, II, and III.



BORESCOPE EXTENSION TUBES I, II, & III

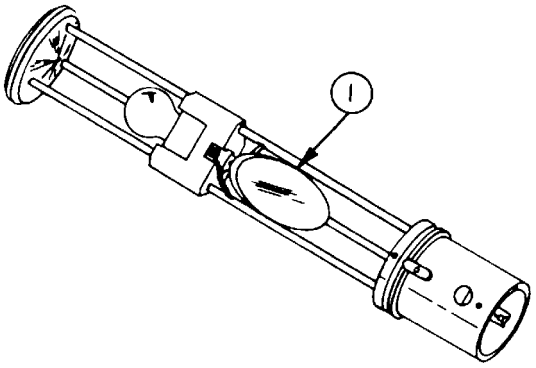
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

d. Objective Tube Assembly. The two-section objective tube assembly contains lenses that transmit the image from the mirror. Both sections must always be used. This assembly connects to one of the two illuminating head assemblies. The end of the first section (1) of the objective tube assembly connects to the illuminating head assembly. The outside surface of the tube sections has graduation marks of 1.0 inch, 6.0 inch, and 1.0 foot intervals, with the 6.0 inch and 1.0 foot marks completely encircling the tube. A line runs on section I within 3.0 inches and on section II within 4.0 inches of the length of the tube through the center of the graduation intervals to assist in the assembly of the sections and to provide a reference point for stating the o'clock position of cannon bore defects.



OBJECTIVE TUBE ASSEMBLY

e. Illuminating Head Assembly. One end of the illuminating head assembly connects to the objective tube assembly and has a lock assembly which locks in the first section of the objective tube assembly. The same end has three terminals that connect to three plugs of the objective tube assembly for lamp power supply. The mirror assembly (1) mounts on the adjustable holder to provide a field of view (FOV) ranging from a point ahead of the lamp, to a right angle to the tube centerline. The lamps are incandescent; one is 75 watts for 115-volt operation and the other is 100 watts for 24-volt operation.

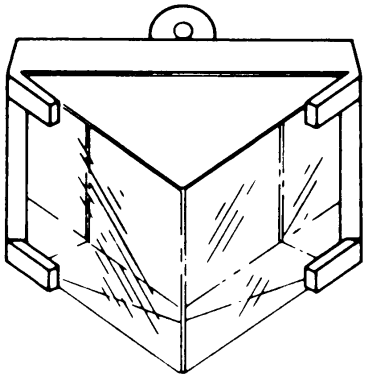


ILLUMINATING HEAD ASSEMBLY

NOTE

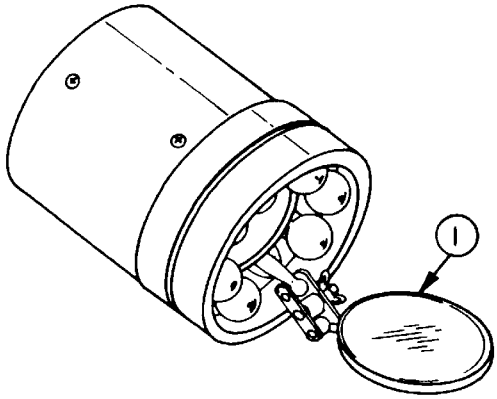
Later configurations do not include the following item.

f. Optical Instrument Prism. The prism assembly is designed to permit inspection of the bore at a right angle to the tube centerline. The prism assembly replaces the mirror assembly by unscrewing the knurled nut of the illuminating head assembly, lifting out the mirror assembly, inserting the prism assembly in place, and screwing the knurled nut back on.



PRISM ASSEMBLY

g. Blind Illuminating Head Assembly. The blind illuminating head assembly is designed to permit viewing of blind holes or cavities such as mortar tubes. This optical assembly allows the field of-view to pass straight through when the inspection mirror (1) is removed, and is designed primarily to permit inspection of the area around the firing pin of blind bores like mortar tubes. Seven miniature lamps are in parallel for 115-volt operation of the blind illuminating head assembly. Seven 24-volt lamps may be used instead of the 115-volt lamps for 24-volt operation.



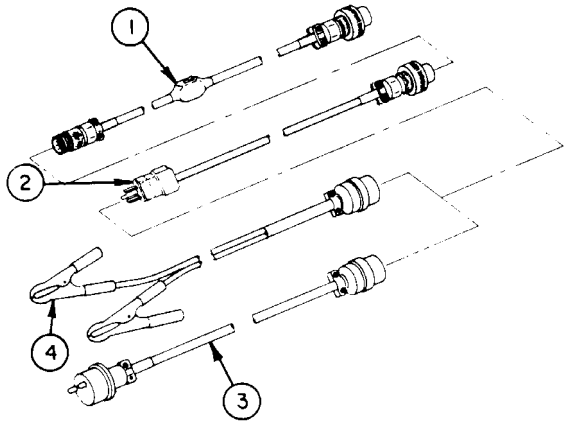
BLIND ILLUMINATING HEAD ASSEMBLY

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

NOTE

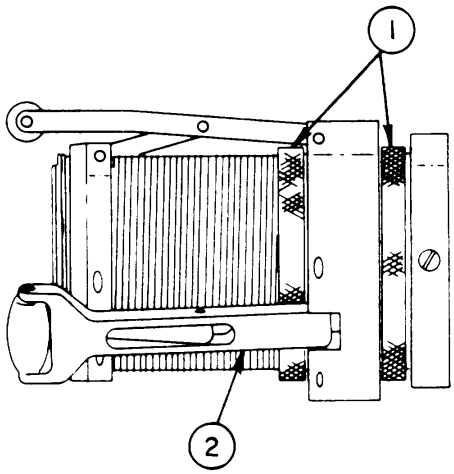
24-V Electrical Power Cord Adapter Assembly is only found on early configurations.

h. 24-V Electrical Power Cord Adapter Assembly (1), 115-V Electrical Power Cable Assembly (2), 24-V Slave Cord Assembly (3), and 24-V Battery Cord Assembly (4). The black 115-V electrical power cable assembly is used alone for 115-volt operation on all configurations. On early configurations the black 115-V electrical power cable assembly is used for 24 volt operation when connected to the red, yellow, or orange 18-inch 24-V electrical power cord adapter assembly. On later configurations the black 115-V electrical power cable assembly is used alone for 24-volt operation and a toggle switch on the adapter tube assembly is positioned for 24-volt operation. The slave cord assembly is used to tap into vehicle power for M3 Borescope operation if 115-V electrical power is unavailable. The battery cord assembly is used to obtain power directly from vehicle batteries if other power outlets are not available. For occasions when extra cord length is necessary, a standard 115-volt, three wire grounded extension cord may be attached to the 115-V electrical power cable assembly provided with the borescope.



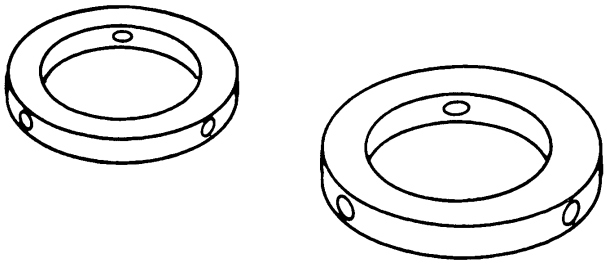
24-V ELECTRICAL POWER CORD ADAPTER ASSEMBLY, 115-V ELECTRICAL POWER CABLE ASSEMBLY, 24-V SLAVE CORD ASSEMBLY, 24-V BATTERY CORD ASSEMBLY

i. 90-mm Thru 8-in. Support Assembly Four support assemblies are used to center and balance the M3 Borescope when inspecting 90-mm thru 8-in. cannon bores. The support assemblies are installed over the M3 Borescope and held in place by three setscrews. The number of support assemblies used at any time is determined by the number of borescope extension tubes used. Two large knurled nuts (1) are used to adjust the support assembly to the bore size and lock the support arms (2).



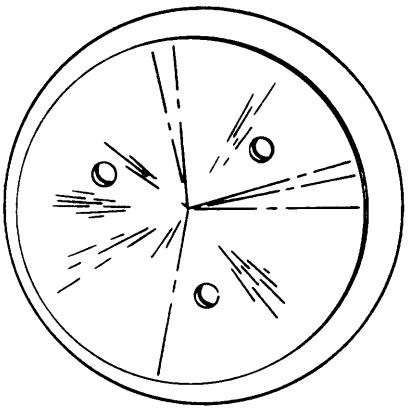
90-MM THRU 8-IN. SUPPORT ASSEMBLY

j. 75-mm and 81-mm Support Assemblies. There are two additional pairs of support assemblies (75-mm and 81-mm) in the borescope optical case. These support assemblies are issued to provide support when inspecting. 75-mm or 81-mm cannon bores. The appropriate support assembly is installed over the M3 Borescope and held in position by three setscrews.



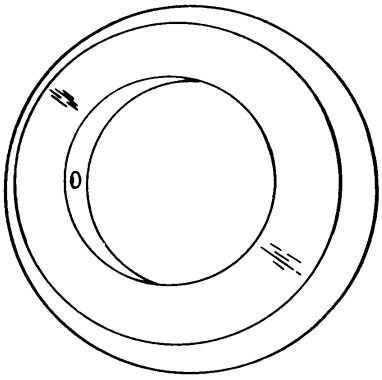
75-MM AND 81-MM SUPPORT ASSEMBLIES

k. Large Reflector Assembly. The large reflector assembly is installed on the illuminating head assembly in place of the small reflector when inspecting large bore diameters (105-mm thru 8-in.). It is secured by the three screws that normally secure the small reflector to the illuminating head assembly. The large reflector assembly concentrates the light on the area being inspected.



LARGE REFLECTOR ASSEMBLY

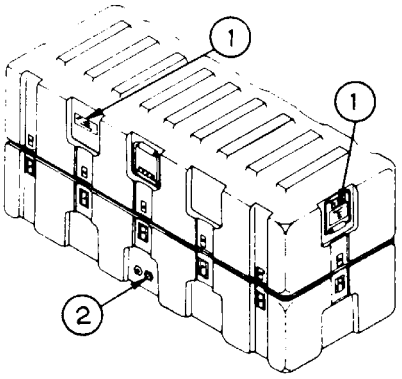
l. Shaft Collar. The shaft collar is used when the large reflector assembly is used. It is the opposite reflecting surface for the large reflector assembly and concentrates light on the area being inspected. It is positioned over the groove on the illuminating head assembly near the mirror assembly and secured in place by three setscrews.



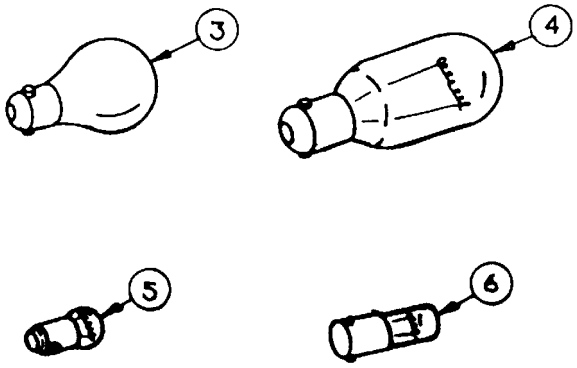
SHAFT COLLAR

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).

m. Borescope Optical Case. A borescope optical case is provided as a convenient means of storing and transporting the M3 Borescope. Equipment data plates (1) are located on the outside of the borescope optical case. The borescope optical case is also provided with a pressure relief valve (2) to release pressure accumulated due to outside temperature changes. There are six spare lamps (3) for 115-volt operation, and seven spare lamps (4) for 24-volt operation of the illuminating head assembly. There are ten spare lamps (5) for 24-volt operation, and three spare lamps (6) for 115-volt operation of the blind illuminating head assembly.

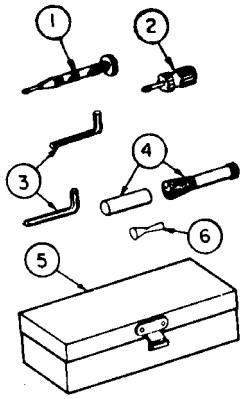


BORESCOPE OPTICAL CASE



SPARE LAMPS

n. Tool Kit. A tool kit for operator use on the M3 Borescope is provided to facilitate changing and attaching assemblies, and cleaning dust from optics. It consists of: jeweler's screwdriver (1), cross tip screwdriver (2), socket head screw keys (3), lens dusting brush (4), socket wrench case (5), and pilot bulb remover (6).



TOOL KIT

1-10. DIFFERENCE BETWEEN MODELS.

a. Early Configuration. Early configurations of the M3 Borescope are supplied with the 24-V electrical power cord adapter assembly. The adapter tube assembly has an indicator light and two circuit breakers. The illuminating head assembly has a one-piece lampholder assembly body.

b. Late Configuration. Late configurations of the M3 Borescope are not supplied with the 24-V electrical power cord adapter assembly. The adapter tube assembly has no indicator light and is equipped with a toggle switch and one circuit breaker. The illuminating head assembly has a two piece lampholder assembly body. New style battery and slave cord assemblies are provided and the eyepiece assembly has an added optical element retainer. There is no optical instrument prism.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. GENERAL.

This chapter describes, illustrates, and furnishes the operator with information for operation of the M3 Borescope.

2-2. CONTROLS AND INDICATORS.

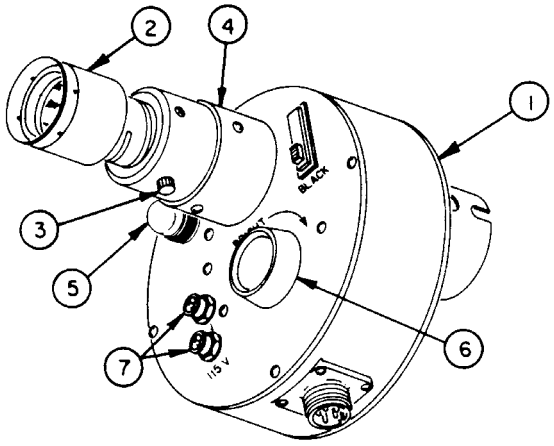
a. Adapter Tube Assembly (1). The adapter tube assembly (1) houses a variety of controls and indicators as described in steps 1 thru 6 below.

(1) The eyepiece assembly (2) focuses the M3 Borescope. Loosen the thumbscrew (3) and rotate the eyepiece assembly (2) clockwise or counterclockwise until a clear image is seen. Tighten the thumbscrew (3).

(2) The adapter tube subassembly (4) rotates within the adapter tube assembly (1) to allow the cannon bore to be inspected in its entirety while maintaining electrical continuity with the power source through the use of built-in electrical contact rings.

(3) Early models have an indicator light (5) that illuminates only during 115-volt operation. Late models are not equipped with the indicator light.

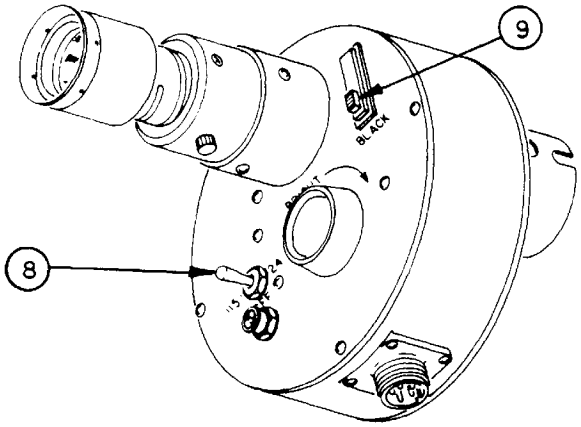
(4) The electric light control (6) is a push on/push off switch that uses a rheostat for controlling the intensity of the light bulb contained in the illuminating head assembly during 115-volt operation only.

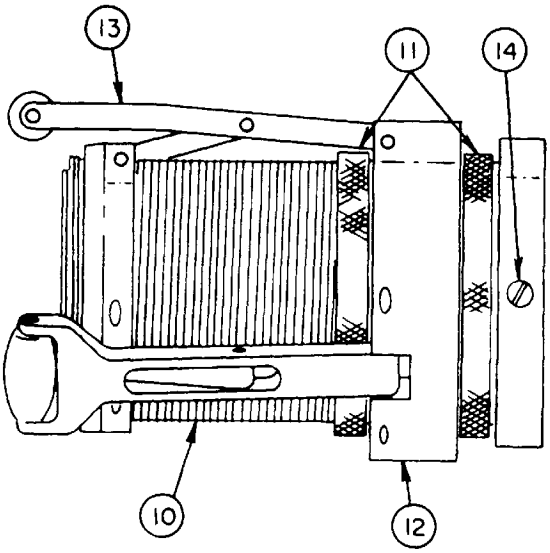


EARLY MODEL

(5) On early models two circuit breakers (7) are provided to break the electrical power in the event of an electrical short circuit. One circuit breaker controls power in the 115-volt circuit and the other controls power in the 24-volt circuit. On later models there is only one circuit breaker to control both 115-volt and 24-volt circuits.

2-2. CONTROLS AND INDICATORS (CONT).





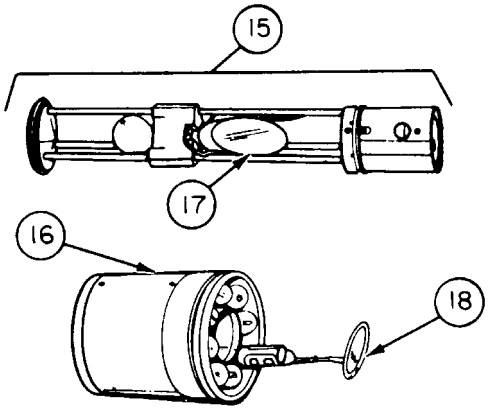
LATE MODEL

(6) Later models also have a double pole, double-throw toggle switch (8) to select either 115-volt or 24-volt operation, and the 24-V electrical power cord adapter assembly is not required.

(7) The blacklight lamp switch (9) is used to provide power to the illuminating head assembly. This switch is used by depot maintenance and also for inspection of new cannon tubes by the manufacturer.

b. Support Assemblies. The 90-mm thru 8-in. support assembly (10) is adjusted by two large knurled nuts (11) located on each side of the rear ring (12) to expand or retract the support arms (13) until the desired bore diameter is achieved. In order to determine if the proper diameter has been achieved, insert the support assembly in the bore of the weapon to be inspected. After proper adjustment has been achieved, install the support assembly (10) on the borescope and lock in place with three screws (14).

c. Illuminating Head Assembly (15) and Blind Illuminating Head Assembly (16). The illuminating head assembly (15) is equipped with an adjustable mirror assembly (17) and the blind illuminating head assembly (16) is equipped with an adjustable inspection mirror (18). Since the field of view (FOV) desired is at the option of the operator, there is no established correct setting position for the mirror assembly (17) or the inspection mirror (18).



Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-3. GENERAL

a. Before You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.

b. While You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

c. After You Operate. Be sure to perform your after (A) PMCS.

d. If Your Equipment Fails to Operate. Troubleshoot with proper equipment. Report any deficiencies, using the proper forms. (See DA PAM 738-750).

2-4. PMCS PROCEDURES.

a. The preventive maintenance checks and services table lists the inspections and care of your equipment required to keep it in good operating condition. (The numbers in the item number column shall be used as a source of item numbers for the TM number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.) The services are divided as follows:

(1) Before Operation Service. This is a brief service to insure the M3 Borescope is ready for operation.

(2) During Operation Service. This service consists of detecting unsatisfactory performance while operating the M3 Borescope. The operator should be alert for any unusual noises, odors, or any other malfunctions.

(3) After Operation Service. This is a service designed to correct, where possible, all operational deficiencies so that the M3 Borescope will be ready to operate when required.

b. The interval column of your PMCS table tells you when to do a certain check or service.

c. Before you begin to check specific items, remember that there are some things to be checked that are common in all areas on the M3 Borescope. Always keep the items listed below in mind as you perform your PMCS.

(1) Loose Screws. A loose screw is sometimes difficult to spot without actually applying a screwdriver. However, you can often tell by a bright area around the base of the screw or by attempting to insert a fingernail under the screw head.

2-4. PMCS PROCEDURES (CONT).

WARNING

Bare electrical wiring could cause shock upon contact.

(2) Damaged Wires. The nylon coating on the electrical wiring is easily damaged, and may be stripped away, presenting a possible hazardous condition. Ensure that the electrical wiring, especially on the illuminating head assembly, is not damaged.

d. The procedure column of your PMCS table tells you how to do the required checks and services. Carefully follow these instructions.

e. If your equipment does not per- form as required, refer to troubleshooting on page 5-3. Report any malfunctions or failures on the proper DA Form 2404, or refer to DA PAM 738-750.

f. The equipment is not ready/ available if column indicates deficiencies which must be corrected before you can operate the M3 Borescope.

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B—Before Operation D—During Operation A—After Operation

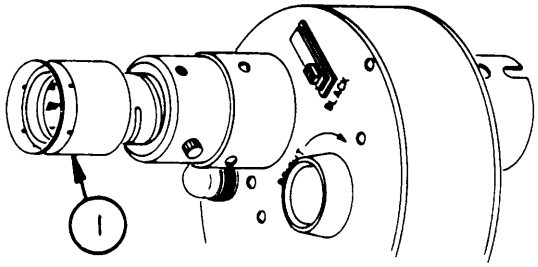
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
1	•			Check to make sure that all items referenced in paragraph 1-9 are in the M3 Borescope optical case. 	Items are missing.
2				EYEPIECE ASSEMBLY	
2	•	•		a. Check eyepiece assembly (1) for ease of operation or broken parts.	Eyepiece assembly binds or has missing or broken parts.

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B—Before Operation D—During Operation A—After Operation

Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
2				EYEPIECE ASSEMBLY (Cont)	
	•			b. Clean exterior lens surface of the eyepiece assembly with denatured alcohol (item 1, app D) and lens paper (item 10, app D).	
3				ADAPTER TUBE ASSEMBLY	
	•	•		a. Ensure the adapter tube sub-assembly (1) rotates freely within the adapter tube assembly (2).	The adapter tube sub-assembly binds during operations.
	•	•		b. On early configuration, check to see that electric light control (3) operates without binding and the circuit breaker(s) (4) stay pressed in.	The adapter tube or the electric light control is damaged to the extent that neither 24-volt nor 115-volt power can be used to illuminate the illuminating head assembly.

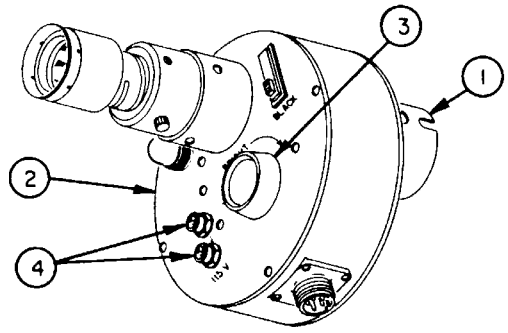


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B—Before Operation D—During Operation A—After Operation

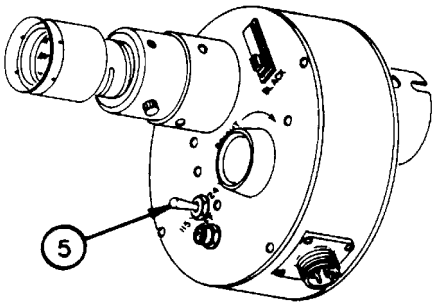
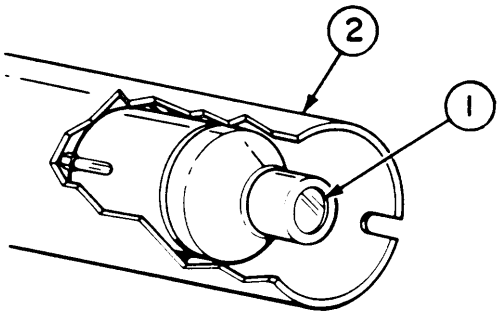
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
					
	•	•		c. On late configuration, check that power switch (5) is operable.	Power switch is broken.
					
4				OBJECTIVE TUBE ASSEMBLY	
	•			a. Inspect for broken electrical contacts.	Electrical contacts are broken.
	•			b. Check that optical instrument lens (1) is not damaged.	Optical instrument lens is damaged.
	•			c. Inspect all connecting parts for ease of assembly. Check for burrs on mating surfaces. Remove burrs with abrasive cloth (item 3, app D) or fine sandpaper (item 9, app D).	

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B—Before Operation D—During Operation A—After Operation

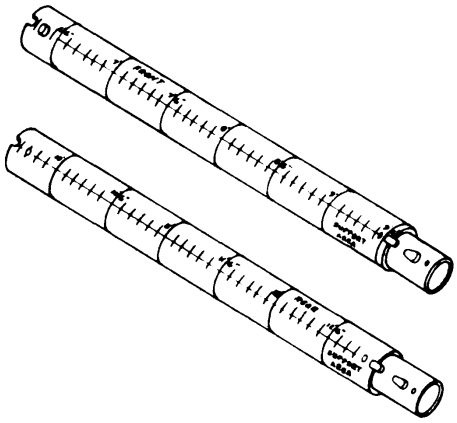
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
4				OBJECTIVE TUBE ASSEMBLY (Cont)	
	•			d. To service the objective tube assembly (2), clean the lens (1) with the brush provided in the socket wrench case or lens paper (item 10, app D). 	
5				BORESCOPE EXTENSION TUBES	
	•			a. Inspect for broken electrical contacts.	Electrical contacts are broken.
	•			b. Inspect all connecting parts for ease of assembly. Check for burrs on mating surfaces. Remove burrs using abrasive cloth (item 3, app D) or fine sandpaper (item 9, app D).	

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B—Before Operation D—During Operation A—After Operation

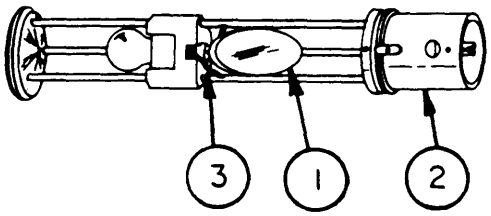
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
					
6				ILLUMINATING HEAD ASSEMBLY	
	•			a. Check the mirror assembly (1) of the illuminating head assembly (2) for nicks and scratches.	Mirror is nicked or scratched.
				WARNING **Bare electrical wire can cause shock upon contact**.	
	•			b. On early configuration only, ensure that the electrical wiring (3) on the illuminating head assembly (2) is not frayed or otherwise damaged.	The electrical wires are missing or insulation is stripped off.
				c. Check for good electrical connections and that correct lamp bulbs are installed.	Bulbs are broken, missing, not of the correct type. Electrical connections are loose or broken.

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B—Before Operation D—During Operation A—After Operation

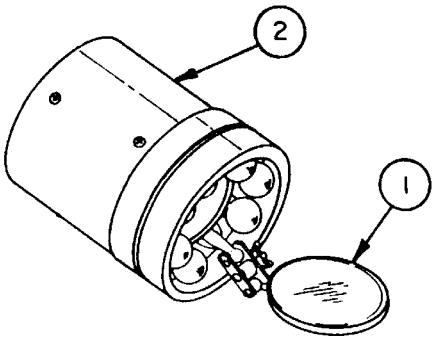
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
6				ILLUMINATING HEAD ASSEMBLY (Cont) **CAUTION** **Exercise care in cleaning mirror to prevent damage to reflective surface.**	
	•			d. Clean the mirrors using the brush in the socket wrench case or lens paper (item 10, app D) and alcohol (item 1, app D).  	
7				BLIND ILLUMINATING HEAD ASSEMBLY	
	•			a. Check the inspection mirror (1) of the blind illuminating head assembly (2) for nicks and scratches.	Mirror is nicked or scratched.
				WARNING **Bare electrical wire can cause shock upon contact**.	
				b. Ensure that the wiring on the blind illuminating head assembly is not frayed or otherwise damaged.	The electrical wires are missing or insulation is stripped off.

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B—Before Operation D—During Operation A—After Operation

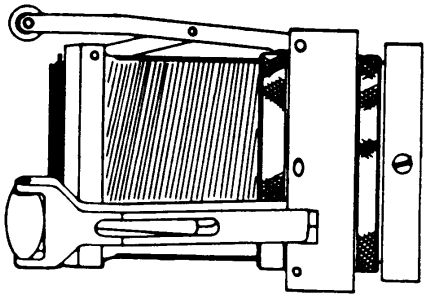
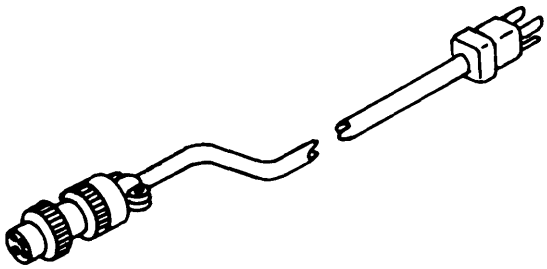
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment Is not Ready/Available If:
7				BLIND ILLUMINATING HEAD ASSEMBLY (Cont)	
	•			c. Check for good electrical connections and that correct lamp bulbs are installed.	Electrical connections are loose or broken. Bulbs are broken, missing, or not the correct type.
				CAUTION **Exercise care in cleaning mirror to prevent damage to reflective surface**.	
	•			d. Clean the mirror using the brush in the socket wrench case or lens paper (item 10, app D) and alcohol (item 1, app D).	
					
8				90-MM - 8-IN. SUPPORT ASSEMBLY	
	•	•		Check for ease of operation or broken parts.	Support assembly binds or has broken or missing parts.

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B - Before Operation D - During Operation A - After Operation

ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED PROCEDURE	Equipment is not ready/available if:
9				 115-V ELECTRICAL POWER CABLE ASSEMBLY	
	•		•	Check for frayed or damaged cord and for broken or damaged electrical connectors.	The electrical cord is cut, stripped, frayed, or connectors are loose or broken.

Section III. OPERATION UNDER USUAL CONDITIONS

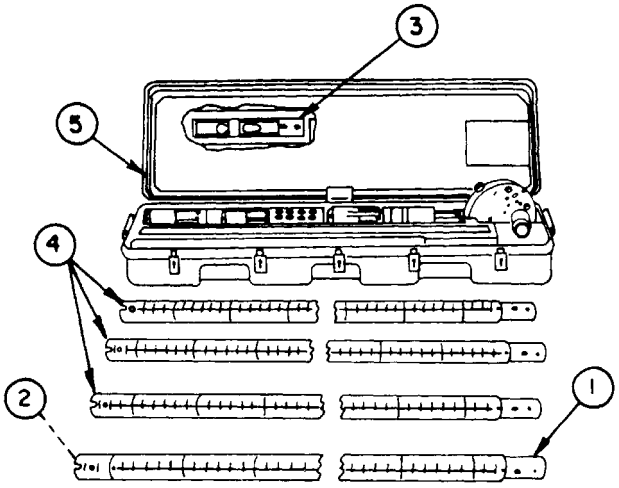
2-5. GENERAL.

This section contains instructions for operating the M3 Borescope under usual conditions. Instructions for operating the M3 Borescope under unusual conditions are found in section IV, page 2-15.

2-6. ASSEMBLY AND PREPARATION FOR USE.

NOTE

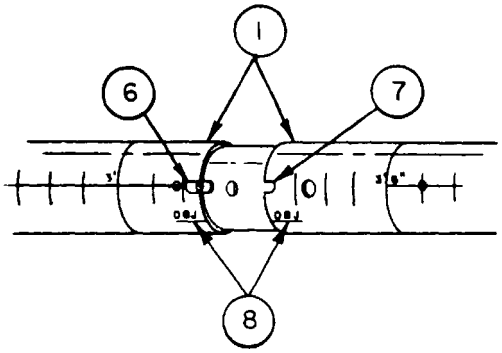
The objective tube assembly (1) consists of two sections. It contains the objective lens optical cell assembly (2) and is connected to the illuminating head assembly (3) whether or not any borescope extension tubes (4) are used. Borescope extension tubes (4) consist of two sections each. Use of only one section or odd number of sections will present a blurred, unfocused image.



a. Open the borescope optical case (5) and remove the objective tube assembly (1) and the correct number of borescope extension tubes (4). (Refer to table 2-2, page 2-16 for the number of borescope extension tubes required for each cannon bore.)

WARNING

Be careful when engaging/ disengaging the two pieces of the objective tube assembly or borescope extension tubes to avoid pinching the thumb.



b. Connect the two pieces (1) of the objective tube assembly together by first alining the key (6) with the corresponding keyway (7) in the other piece and then engaging the two pieces so the lines (8) marked OBJ are alined.

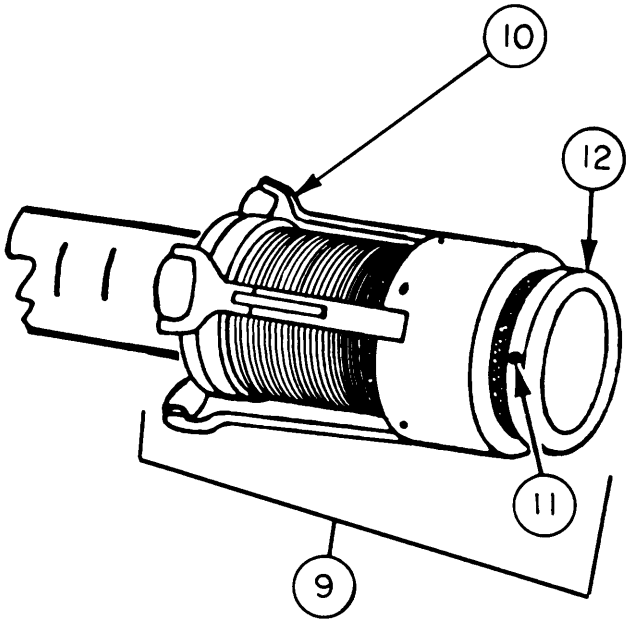
CAUTION

The M3 Borescope must be supported to prevent bowing and resultant damage. Refer to table 2-2, page 2-16 for the correct number of supports required.

c. If using the 90-mm thru 8-inch support assemblies (9), adjust to desired bore size by inserting into muzzle end of cannon bore and adjusting as stated in paragraph 2-2b, page 2-2. Then install supports on objective tube assembly and borescope extension tubes with support arms (10) facing away from end of tube where illuminating head assembly attaches.

d. All supports should be installed in areas marked SUPPORT AREA except for one support, which should be installed immediately adjacent to illuminating head assembly. When using more than one borescope extension tube, alternate the support assemblies on the support areas. Tighten the three screws (11) in body (12) to secure supports to tubes.

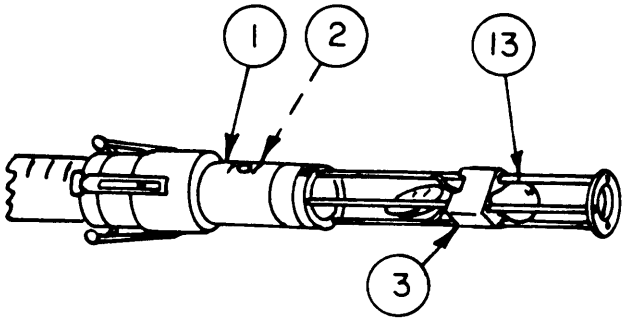
e. If using 75-mm or 81-mm support assemblies, install supports in locations noted above and tighten the three setscrews to secure supports to tubes.



WARNING

The illuminating head assembly presents a shock hazard if the M3 Borescope is not unplugged during assembly.

f. Insert the illuminating head assembly (3) on the end of the objective tube assembly (1) containing the objective lens optical cell assembly (2). Ensure the correct lamp (13) is installed.



2-6. ASSEMBLY AND PREPARATION FOR USE (CONT).

g. For bore diameters, (105-mm thru 8 inch), first install the shaft collar (14) and then the large reflector assembly (15) on the illuminating head assembly (3).

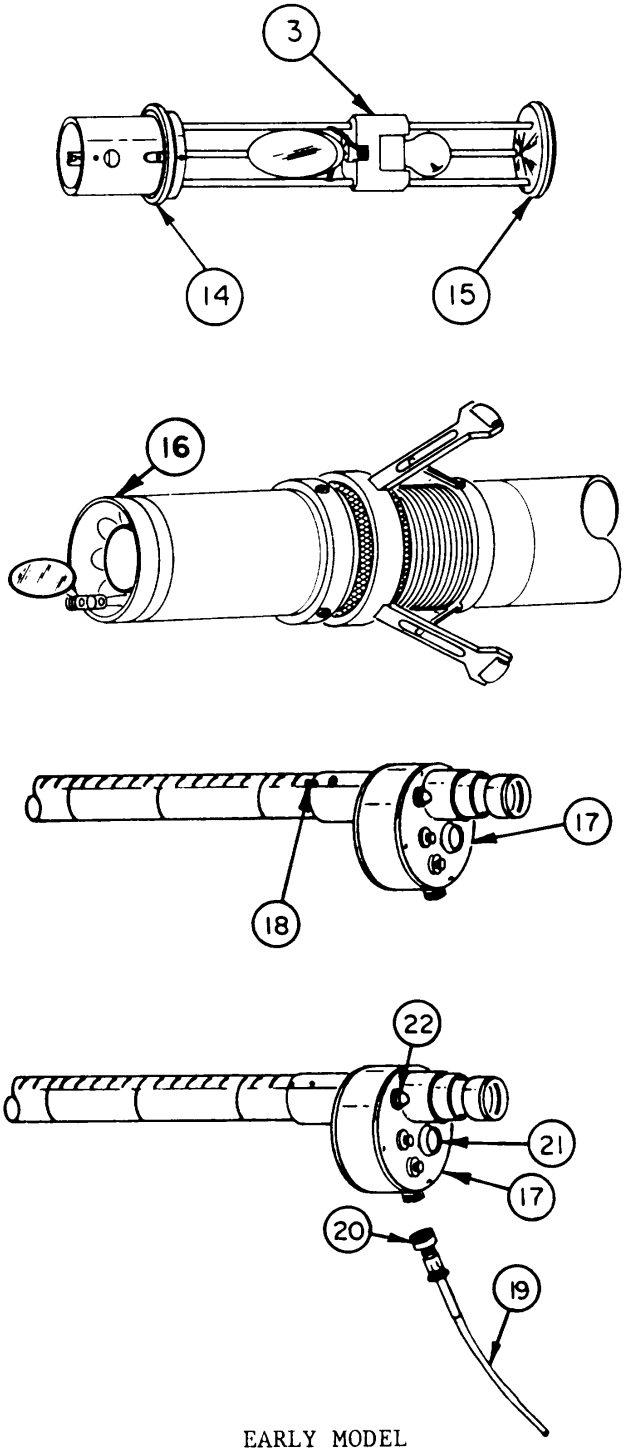
h. Install the blind illuminating head assembly (16) in the same manner as step f.

i. Install the adapter tube assembly (17) on the opposite end of the tube assemblies from the illuminating head assembly by alining the keyway and key (18) and sliding together.

CAUTION

Do not operate M3 Borescope utilizing vehicle power when the engine is running.

j. On early configurations, install as required, either the 115-V electrical power cable assembly (19) or the 24-V electrical power cord adapter assembly with 115-V electrical power cable assembly (19) attached on the adapter tube assembly (17) by inserting and tightening the plug connector (20). Connect the black 115-V electrical power cable assembly (19) to the adapter tube assembly (17) and to the 115-V power source and turn on electric light control (21) to test lamp (22).

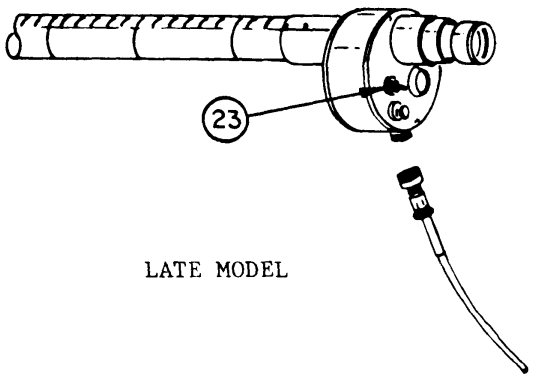


EARLY MODEL

k. On later configurations, install the 115-V electrical power cable assembly and place the 115-V/24-V toggle switch (23) in the 115-V or 24-V position as required.

l. The 24-V slave cord assembly or the 24-V battery cord assembly may be used to obtain 24 volts from vehicle for inspecting bore of weapon.

m. Insert the M3 Borescope (24) into cannon bore (25). Adjust eyepiece assembly (26) until a clear focus is achieved and lock in place. As the bore is examined, turn the M3 Borescope clockwise or counterclockwise to get complete coverage. After a complete revolution of the M3 Borescope, move it about 1 inch (or more as desired) and repeat the examination.



LATE MODEL

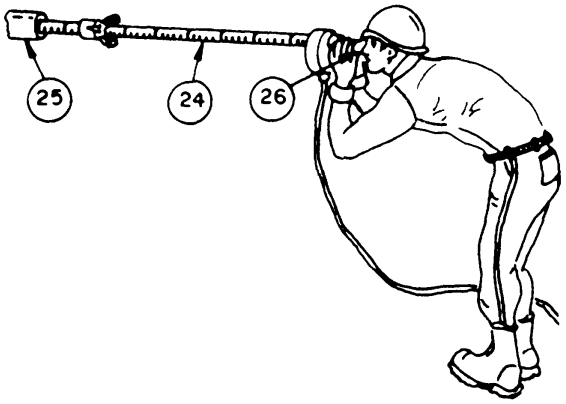
2-7. INTERPRETATION OF M3 BORESCOPE VIEWS.

The bore of the weapon as seen through the M3 Borescope is usually not life-size. Due to the various size bores to be inspected and the design of the M3 Borescope, the magnification of the viewed area varies. See table 2-2, page 2-16 to approximate the magnification to be encountered in each weapon.

2-8. RECORDING RESULTS OF M3 BORESCOPE INSPECTION.

NOTE

The reference line that runs within 4.0 inches of the length of the extension tubes is always alined with the mirror of the illuminating head assembly.

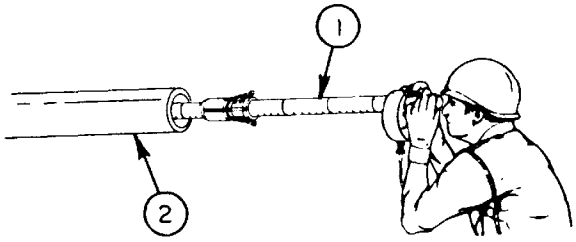


The M3 Borescope inspection should be conducted according to the guidance given in TM 9-1000-202-14, Evaluation of Cannon Tubes. Results of the inspection should be recorded by expressing the deficiency in o'clock position and distance from the end of the cannon tube, using the scale and reference line on the side of the M3 Borescope.

Table 2-2. M3 BORESCOPE ASSEMBLY AND BORE MAGNIFICATION TABLE

Weapon being inspection	Approximate length of gun	Supports required	Borescope extension tubes required	Length of assembled M3 Borescope	Magnification
60-mm mortar series	2 ft 4 in. (0.71 m)	2	None	7 ft (2.13 m)	2.2
75-mm rifle series	4 to 6 ft (1.22 to 1.83 m)	2	None	7 ft (2.13 m)	2.0
76-mm gun series	13 to 16 ft (3.96 to 4.88 m)	3	I, II	21 ft (6.40 m)	2.0
81-mm mortar series	4 ft (1.22 m)	2	None	7 ft (2.13 m)	1.9
90-mm gun series	16 ft (4.88 m)	3	I, II	21 ft (6.40 m)	1.8
90-mm recoil-less rifle	4 ft 5 in. (1.37 m)	2	None	7 ft (2.13 m)	1.8
105-mm gun series	17 ft (5.18 m)	3	I, II	21 ft (6.40 m)	1.8
105-mm howitzer series	8 ft (2.44 m)	2	I	14 ft (4.27 m)	1.6
106-mm recoil-less rifle	11 ft 2 in. (3.42 m)	2	I	14 ft (4.27 m)	1.6
4.2-in. mortar series	5 ft (1.52 m)	2	None	7 ft (2.13 m)	1.6
120-mm gun series	26 ft (7.92 m)	4	I, II, lll	28 ft (8.53 m)	1.5
155-mm gun series	24 ft (7.32 m)	4	I, II, lll	28 ft (8.53 m)	1.5
155-n:m howitzer series	12 ft (3.66 m)	2	I	14 ft (4.27 m)	1.2
8-in. howitzer series	17 ft (5.18 m)	3	I, II	21 ft (6.40 m)	0.9

2-9. PREPARATION FOR MOVEMENT.

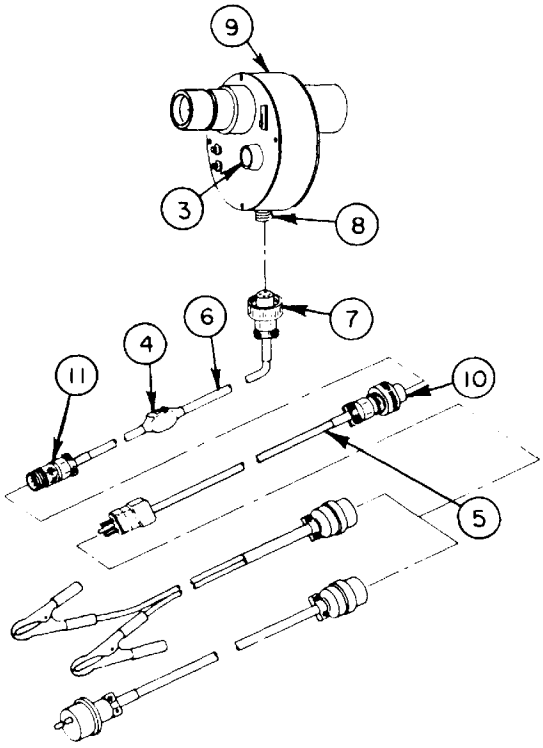


a. Remove the M3 Borescope (1) from the cannon bore (2) with adequate support being provided during removal, or remove from bore through disassembly of the borescope by sections.

WARNING

The illuminating head assembly presents a shock hazard if the M3 Borescope is not unplugged during disassembly.

b. Turn off the electric light control (3) and/or switch (4), and disconnect the 115-V electrical power cable assembly (5) or 24-V electrical power cord adapter assembly (6), 115-V electrical power cable assembly (5), and associated electrical branched cord assemblies from the power source.



c. After 24-volt operation on early configuration, unscrew connector (7) of 24-V electrical power cord adapter assembly (6) from plug (8) of adapter tube assembly (9) and unscrew connector (10) of 115-V electrical power cord assembly (5) from plug (11) of 24-V electrical power cord adapter assembly. Then unplug black 115-V electrical power cable from which ever electrical branched cord was used.

d. After 24-volt operation on late configurations, unscrew connector (10) of 115-V electrical power cable assembly from plug (8) of adapter tube assembly (9). Then unplug black 115-V electrical power cable assembly from whichever electrical branched cord was used.

e. After 115-volt operations, disconnect connector (10) of 115-V electrical power cable from plug (8) of adapter tribe assembly (9) and store in borescope optical case.

2-9. PREPARATION FOR MOVEMENT (CONT).

WARNING

Be careful when engaging/disengaging the two pieces of the objective tube assembly or borescope extension tubes to avoid pinching the thumb.

NOTE

There is no required order for disassembly of the remaining M3 Borescope components.

f. Disassemble the components of the M3 Borescope by depressing the respective lock assemblies and removing the components. Place all the components into the borescope optical case. Close and lock the borescope optical case.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-10. GENERAL.

a. This section contains special instructions for operating and servicing the M3 Borescope under unusual conditions. Special care must be taken in cleaning and handling when extremes in temperature, humidity, and terrain conditions are present or anticipated, in addition to performing all normal preventive maintenance services. Proper cleaning, storage, and handling not only ensure proper operation and functioning, but also guard against excessive wear of the working parts and deterioration of the materiel.

b. A pressure release valve is provided on the side of the borescope optical case to release pressure accumulated in the borescope optical case due to extreme hot weather. At temperatures above 90°F, use your finger to press the center of the pressure relief valve to equalize the pressure inside the borescope optical case.

2-11. OPERATION IN EXTREME COLD WEATHER CONDITIONS.

a. Extensive preparation of materiel scheduled for operation in extreme cold weather is necessary. Generally, extreme cold weather will cause clouding of the optical components of the M3 Borescope and the formation of moisture on the metallic components. For description of operation in extreme cold weather, refer to FM 9-207.

b. No lubrication of the M3 Borescope is required.

2-12. OPERATION IN HOT, DAMP, OR SALTY ATMOSPHERE.

a. Materiel should be inspected daily when being operated in hot, moist, or salty areas.

b. When the materiel is active, clean the lenses and exposed metal surfaces daily.

c. The M3 Borescope is constructed of anodized aluminum which is highly resistant to corrosion but will form a salty film on the exterior if exposed to hot, salty, or damp air. Keep the M3 Borescope in the borescope optical case and keep the borescope optical case closed as much of the time as conditions permit.

2-13. OPERATION IN EXTREME HOT WEATHER CONDITIONS.

If the M3 Borescope must be operated in extreme hot weather conditions, protect the lenses and the rubber part of the eyepiece assembly from the direct rays of the sun to prevent damage.

2-14. OPERATION IN DUSTY AND SANDY CONDITIONS.

a. Dust and sand can cause damage to both the lenses and mating surfaces of the M3 Borescope. Ensure the lenses are cleaned with the brush in the socket wrench case.

b. Also ensure the mating surfaces of the M3 Borescope are cleaned with a wiping rag (item 12, app D) prior to assembly and again before the M3 Borescope is returned to the borescope optical case.

c. Keep the instrument covered and in the borescope optical case as much of the time as possible.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

The M3 Borescope operator is a direct support maintenance person and performs routine maintenance (changing lamps, cleaning mirrors and lenses, tightening loose screws, cleaning electrical contacts, cleaning the borescope, and removing burrs) during PMCS (page 2-3) and regular operation (page 2-11). Repair is conducted by the direct support maintenance instrument repair shop.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

No maintenance is authorized for the M3 Borescope at the organizational maintenance level. The M3 Borescope operator is a direct support maintenance person and the repair is conducted by the direct support maintenance instrument repair shop.

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

5-1. LUBRICATION.

Lubrication is not required or recommended.

Section II. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

5-2. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-3. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

No special tools, TMDE, or support equipment is required for the M3 Borescope.

5-4. REPAIR PARTS.

Repair parts are listed and illustrated in appendix C of this manual.

Section III. SERVICE UPON RECEIPT

5-5. GENERAL.

This section contains instructions for services to be performed by the using organization upon the receipt of a new or overhauled M3 Borescope. These services include unpacking, deprocessing, and checking the M3 Borescope and equipment.

5-6. CHECKING UNPACKED EQUIPMENT.

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

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.

5-7. SERVICE UPON RECEIPT OF MATERIEL.

Table 5-1 contains instructions for performing those services required upon the receipt of this equipment.

Table 5-1. SERVICE UPON RECEIPT--M3 BORESCOPE

LOCATION	ITEM	ACTION	REMARKS
Borescope optical case	1. Borescope optical case	Inspect for damage due to shipping.	
	2. M3 Borescope (complete)	a. Inspect the instrument for general condition, loose, missing, or broken components, corrosion, dents, gouges, or other defects which may impair its use. b. Using wiping rag (item 12, app D), wipe clean all exposed surfaces: the outside of the tubes, the outside of the connecting ends, and the inside of the connecting ends. c. Inspect the cable and cord assemblies for loose or broken connections and broken, frayed, or exposed wires. d. Connect the M3 Borescope to the desired power source and check the illuminating head assemblies. e. Inspect for completeness and serviceability. f. Check the focusing by assembling the M3 Borescope and performing the inspection on page 5-143.	
	3. Publications and forms	Make sure the publications and forms required by DA PAM 738-750 are with the M3 Borescope.	

Section IV. TROUBLESHOOTING

5-8. TROUBLESHOOTING.

a. Troubleshooting is the systematic isolation of defective components by means of symptoms, tests, or inspections. The troubleshooting procedure described in the following section is one of determining upon occurrence the malfunction, reviewing the probable cause, then taking the necessary corrective action.

b. The symptom index can be used as a quick guide to troubleshooting. Common malfunctions are listed in alphabetical order with a page number reference to the troubleshooting table where a test or inspection and corrective action are provided.

c. The troubleshooting table lists the common malfunctions which you may find during the operation or maintenance of the M3 Borescope. You should perform the tests or inspections and corrective actions in the order listed.

d. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not corrected by listed corrective actions, or is not listed in the troubleshooting table, notify your supervisor.

SYMPTOM INDEX

	Troubleshooting Procedure (Page)
ASSEMBLED M3 BORESCOPE	
M3 Borescope components will not remain together	5-8
ELECTRICAL SYSTEM	
Lamp in illuminating head assembly or blind illuminating head assembly is too bright or too dim	5-7
Lamp will not illuminate in illuminating head assembly or blind illuminating head assembly	5-5
115-V lamp illuminates, but 24-V lamp does not	5-8
24-V lamp illuminates, but 115-V lamp does not	5-7
LENSES	
Distorted image is seen through M3 Borescope	5-4

Table 5-2. TROUBLESHOOTING

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
LENSES
1. DISTORTED IMAGE IS SEEN THROUGH M3 BORESCOPE. Step 1. Check focus of the eyepiece assembly (1). Focus eyepiece assembly as necessary by loosening thumbscrew (2) and turning eyepiece assembly (1) clockwise or counterclockwise for a clear image. Step 2. Check assembled borescope for proper number of objective tube and borescope extension tube sections. The minimum quantity of tubes that may be used are the two sections of the objective tube assembly. When borescope extension tubes are used, each borescope extension tube consists of two sections and both sections must be used together. These sections must also be assembled in the proper order since the lenses are positioned differently in the forward and rear sections. Step 3. Check lenses in the components of the M3 Borescope for damage due to heat, moisture, or cracks. Heat damage will cause discoloration of lenses and separation of bonded lenses. Moisture will cause fogging and possible fungus growth on lenses. Replace any damaged lenses authorized at direct support maintenance. Step 4. Check for proper sequence of lenses. Locate lenses in proper sequence (page 5-11).

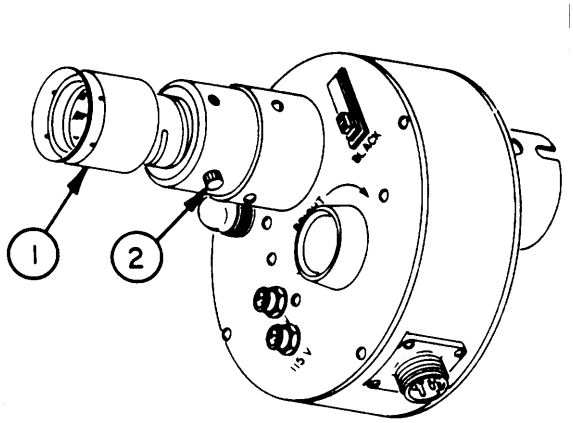


Table 5-2. TROUBLESHOOTING (CONT)

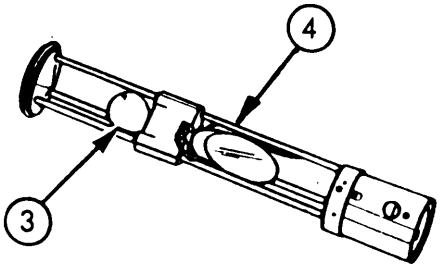
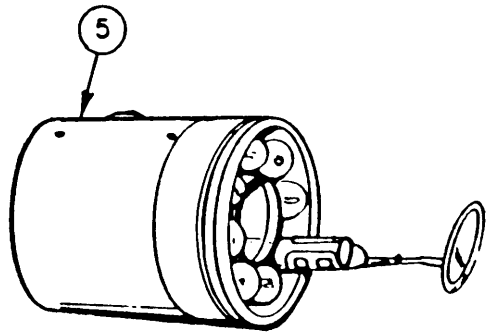
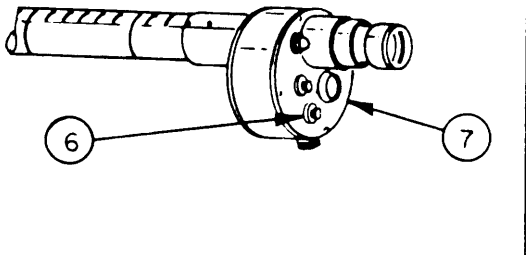
MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
ELECTRICAL SYSTEM **NOTE** • **Procedures for the blind illuminating head assembly (5) will be the same as for the illuminating head assembly (4).** • **On later model borescopes ensure that the 115-V/24-V toggle switch is in the proper position for the applied voltage.**	
2. LAMP (3) WILL NOT ILLUMINATE IN ILLUMINATING HEAD ASSEMBLY (4) OR BLIND ILLUMINATING HEAD ASSEMBLY (5). Step 1. Check for a tripped circuit breaker (6) on the front of adapter tube assembly (7). Reset tripped circuit breaker (6) by pressing it in. If the circuit breaker trips again, disconnect power and using multimeter, check for short circuit. Step 2. Check lamp (3) in the illuminating head assembly (4) by removing and installing a spare lamp. If lamp (3) lights, discard defective lamp. If lamp does not light, install the blind illuminating head assembly with the correct lamps installed for the supply voltage being used. If lamps in the blind illuminating assembly light, use a multimeter to check the wiring of the illuminating head assembly for an open circuit. Check lamps in the blind illuminating head assembly (5) in the same manner.	 

Table 5-2. TROUBLESHOOTING (CONT)

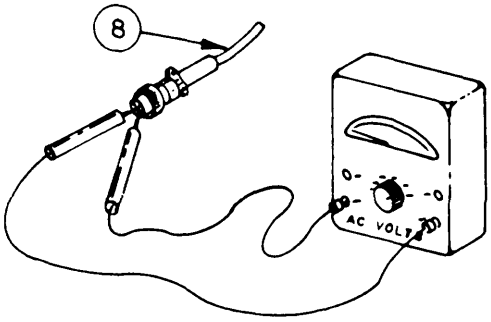
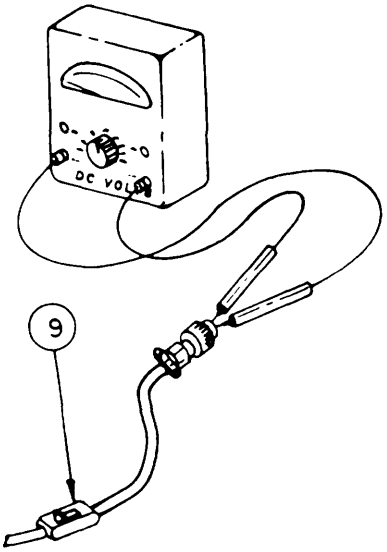
MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
ELECTRICAL SYSTEM (CONT)	
Step 3. Remove the 115-V electrical power cable assembly (8), and using a multimeter set for ac voltage measurement, check for 115 V ac between pins A and B of the 115-V electrical power cable assembly. Repair or replace defective 115-V electrical power cable assembly (page 5-130).	
Step 4. a. For early model borescopes equipped with 24-V electrical power cord adapter assembly (9), remove it, and using a multimeter set for dc voltage measurement, check for 24 V dc between pins A and C of the 24-V electrical power cord adapter assembly. Replace the defective 24-V electrical power cord adapter assembly.	
b. On later model borescopes which use the 115-V electrical power cable assembly (8) for 24-volt operation, remove the 115-V electrical power cable assembly, and using a multimeter set for dc voltage measurement, check for 24 V dc between pins A and B of the 115-V electrical power cable assembly. Repair or replace the defective 115-V electrical power cable assembly.	

Table 5-2. TROUBLESHOOTING (CONT)

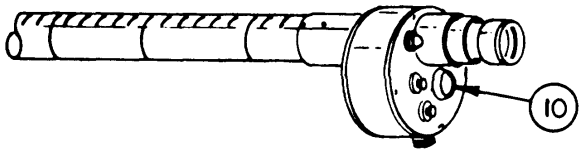
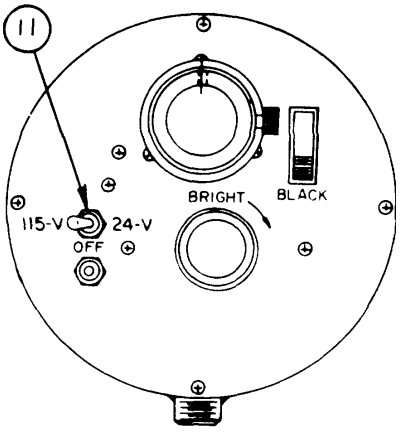
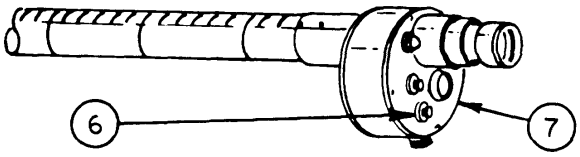
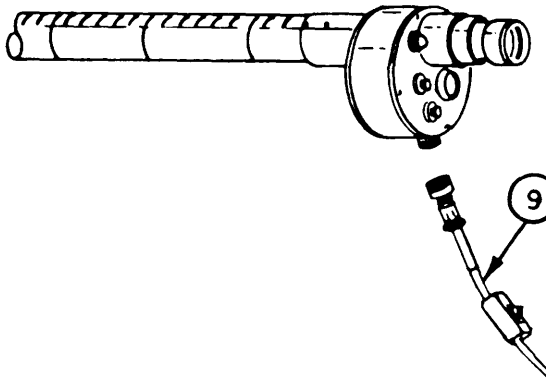
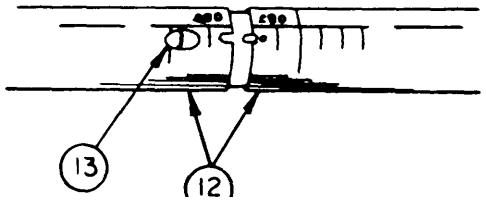
MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
NOTE **The electric light control knob is used for 115-volt operation only. The 24-volt operation of the M3 Borescope bypasses the electric light control.**	
3. LAMP IN ILLUMINATING HEAD ASSEMBLY OR BI,IND ILLUMINATING HEAD ASSEMBLY IS TOO BRIGHT OR TOO DIM. Step 1. For 115-volt operation, rotate electric light control knob (10) clockwise or counterclockwise. Replace the electric light control (pages 5-78 and 5-97) if lamp intensity cannot be controlled. Step 2. On later model borescopes, check that the 115-V/24-V toggle switch (11) is in the correct position for applied voltage. Place 115-V/24-V toggle switch in the proper position for applied voltage. Step 3. For 24-volt operation, check that the proper lamp is installed in the illuminating head assembly or blind illuminating head assembly and that there are no loose connections in the adapter tube assembly, objective tube assembly, or borescope extension tubes. Replace lamp or repair defective assembly.	 
4. 24-V LAMP ILLUMIINATES, BUT 115-V LAMP DOES NOT. Reset circuit breaker (6) on adapter tube assembly (7). If lamp does not illuminate, repair the adapter tube assembly (7).	

Table 5-2. TROUBLESHOOTING (CONT)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
ELECTRICAL SYSTEM (CONT)	
5. 115-V LAMP ILLUMINATES, BUT 24-V LAMP DOES NOT. Replace the 24-V electrical power cord adapter assembly (9) with one known to be good. If lamp illuminates, replace defective 24-V electrical power cord adapter assembly. If lamp doesn't illuminate, repair the adapter tube assembly. (pages 5-78 and 5-97).	
6. M3 BORESCOPE COMPONENTS (12) WILL NOT REMAIN TOGETHER. Ensure the M3 Borescope is properly assembled. (Refer to chapter 2, section III, page 2-12.) Repair or replace any defective lock assemblies (13).	

Section V. MAINTENANCE PROCEDURES

5-9. GENERAL.

a. Responsibilities. The maintenance responsibility for the M3 Borescope is assigned to the direct support instrument repair shop. All repair authorized at the direct support level with the exception of those maintenance procedures noted in Chapter 3 should be performed by an instrument repairman. Disassembly will be accomplished only to the extent necessary to facilitate repair.

b. Handling of Disassembled Parts. A parts tray or suitable receptacle should be provided so that parts, as removed, can be placed in their respective positions in relation to the assembled M3 Borescope. Always keep the parts in their relative position until the M3 Borescope is completely reassembled.

c. Marking Parts During Disassembly. As each part is removed, it may be necessary to return that part to its exact original position. Its exact position, in relation to the assembly, should be established by making reference marks. Never make marks on threads or bearing surfaces. Optics may be marked as specified in paragraph 5-10.

d. Removal of Burrs. Movable components of the M3 Borescope must operate smoothly. Small burrs can be removed with a knife-edge oilstone. If the burr is larger, a jeweler's file can be used to reduce it until it is practicable to use an oilstone. Clean parts after filing or honing, taking care to remove all metal particles and abrasives and install the component in the assembly.

e. Conversion of Decimals to Fractions. See appendix G for converting decimal measurements into fractions.

5-10. OPTICAL SYSTEM.

a. Installation of Lenses. It is very important that all lenses in the M3 Borescope are properly installed. Refer to figure 5-1 (page 5-11) for the M3 Borescope optical system. Ensure the lenses are facing the proper direction during reassembly.

CAUTION

Never touch the coated surface of optics.

b. Handling Optics When Removed. When optics are to be laid aside, each must be wrapped in a piece of lens paper (item 10, app D). When storing optics, always clean and wrap them completely in lens paper (item 10, app D).

c. Marking of Optical Elements.

(1) General. The marking of optical elements has a double purpose. It aids in the assembly of the instrument by indicating the original position of the element in relation to other elements.

(2) Lenses. The prime purpose for marking lenses upon disassembly is to establish a guide by which the lenses can be assembled in their proper relative position. This mark should consist of a "V" inscribed on the uncoated surface (edge) across all the elements of a compound lens. The point of the "V" should be directed toward the cell when assembling. The marking can be done with an indelible pencil. In addition, the lenses should be lettered and numbered to indicate the assembly and the sequence in which they are placed in the instrument. For example: eyepiece assembly should be marked with an "E". Optical instrument lenses should be marked "1", optical instrument field lenses "2", etc. The numbering system aids in preventing improper replacement of the lenses that are similar in appearance and easily mistaken for each other.

5-11. ELECTRICAL SYSTEM.

a. Schematic Diagrams. Figure 5-3 (page 5-13) and figure 5-4 (page 5-14) are schematic diagrams of the electrical system of the M3 Borescope. Refer to the schematic diagram to ensure proper connection of the wiring during reassembly of the individual assemblies of the M3 Borescope. Figure 5-2 (page 5-12) is a schematic diagram of the 115-V electrical power cable assembly and the 24-V electrical power cord adapter assembly.

b. Internal Wiring. All internal electrical wiring in the M3 Borescope is 18 gage. If a wire is damaged, refer to the maintenance instructions for the respective component. Instructions for fabricating new wire are in appendix E.

c. External Wiring. The 24-V electrical power cord adapter assembly and the 115-V electrical power cable

5-11. ELECTRICAL SYSTEM (CONT).

assembly both contain three conductors. If the 115-V electrical power cable assembly is damaged, refer to its maintenance instructions. Instructions for fabricating new cord are in appendix E. The 24-V electrical power cord adapter assembly is not repairable.

5-12. INITIAL SETUP.

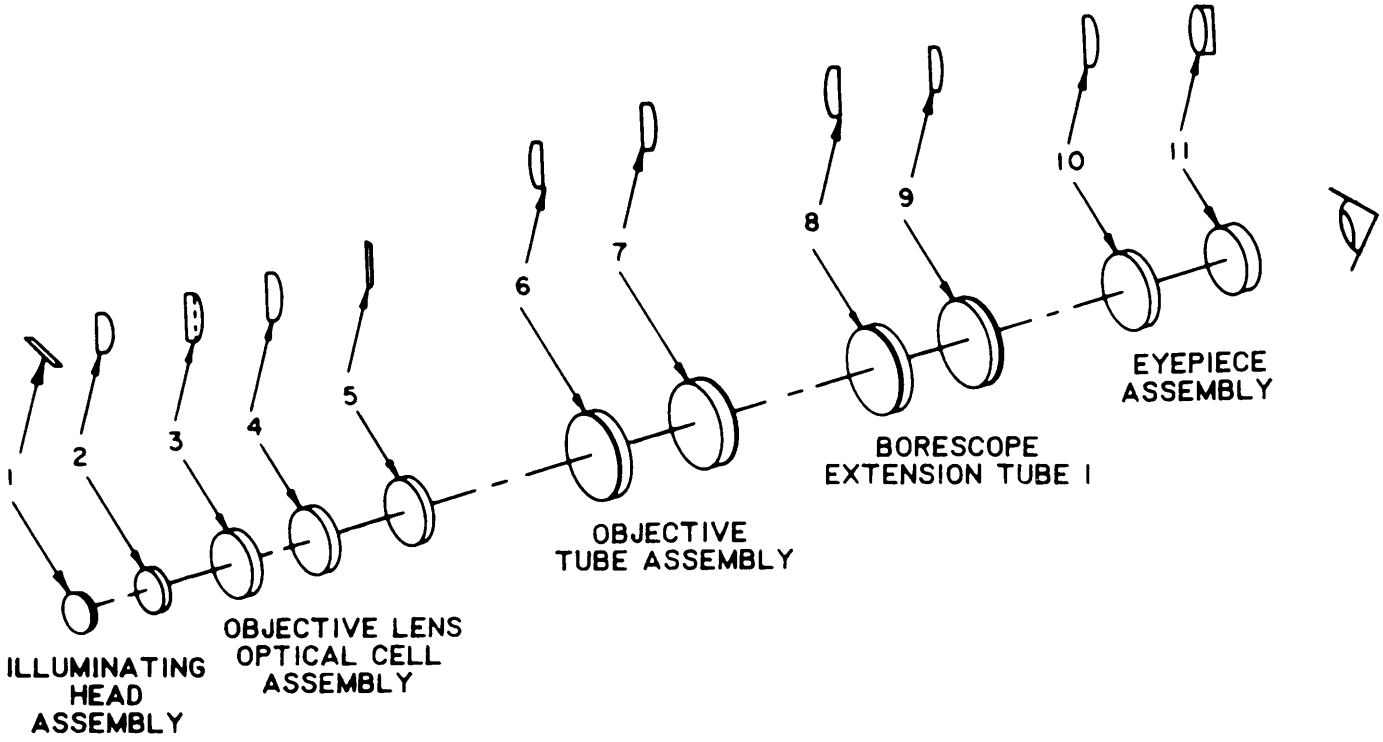
a. Tools and Special Tools list tools needed for the procedures.

b. Materials/Parts refers to expendable materials and 100% replaceable parts.

c. Personnel Required is listed only if the task requires more than one person. If Personnel Required is not listed, it means one person can do the job.

d. Reference lists other publications containing necessary information.

e. Equipment Condition lists conditions to be met before starting the procedure.



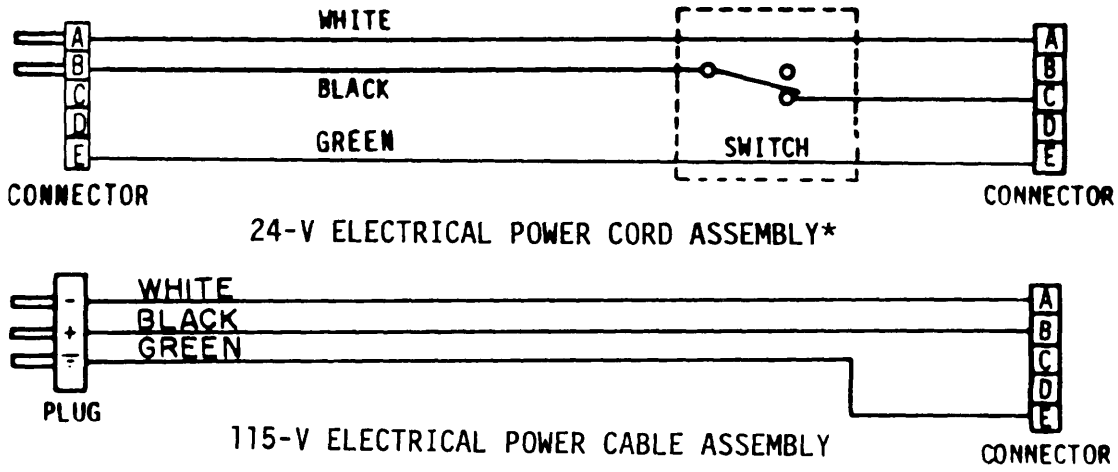
NOTE

Lens configuration for all three borescope extension tubes is the same.

KEY to figure 5-1:

1. Mirror assembly 11584784
2. Lens, optical instrument (front objective) 11584713
3. Lens, optical instrument (middle objective) 11584716
4. Lens, optical instrument (rear objective) 11584716
5. Window, optical instrument 11584717
6. Lens, optical instrument (erector) 11584720
7. Lens, optical instrument (erector) 11584720
8. Lens, optical instrument (erector) 11584720
9. Lens, optical instrument (erector) 11584720
10. Lens, optical instrument (field) 11584766
11. Lens, optical instrument (eyepiece) 11584768

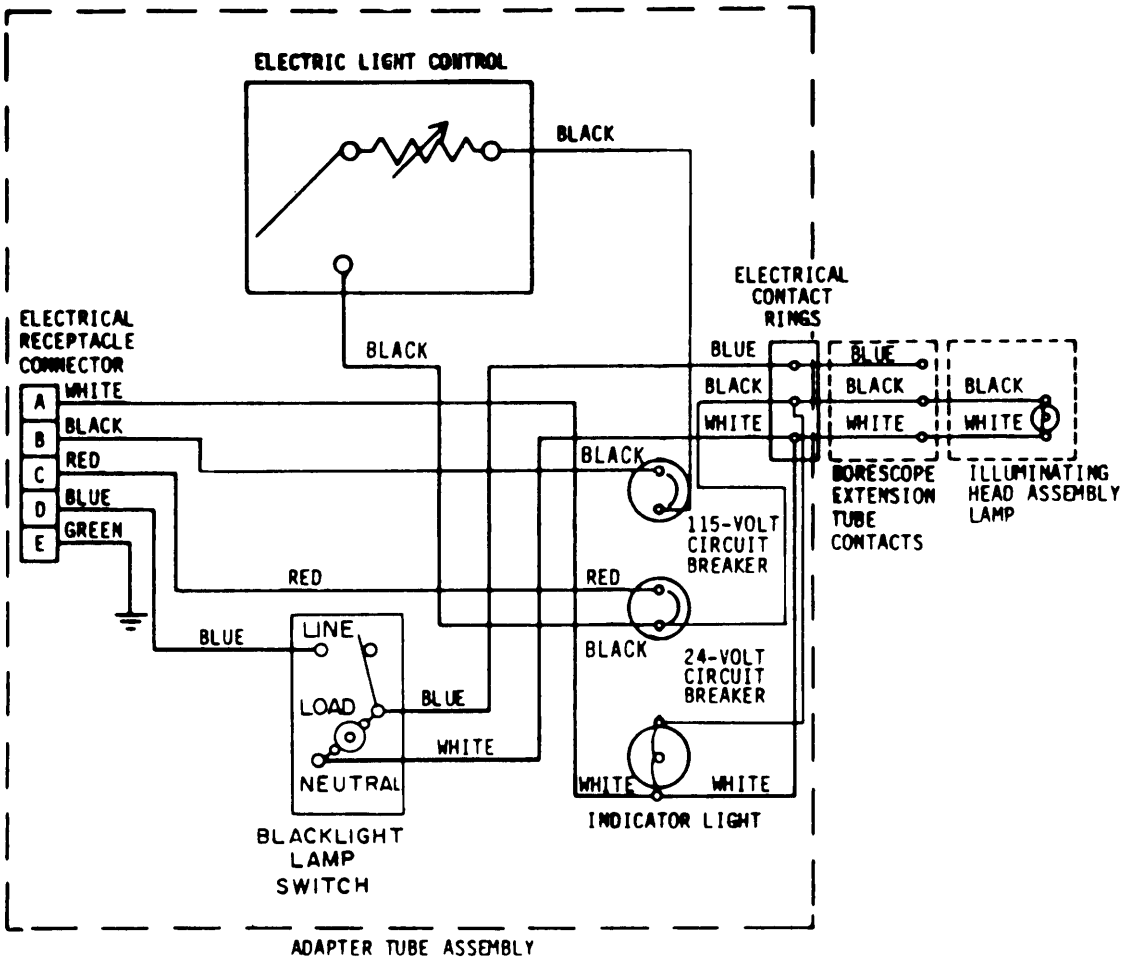
Figure 5-1. M3 Borescope Optical Diagram



NOTE

- **This assembly used on early production models only.**

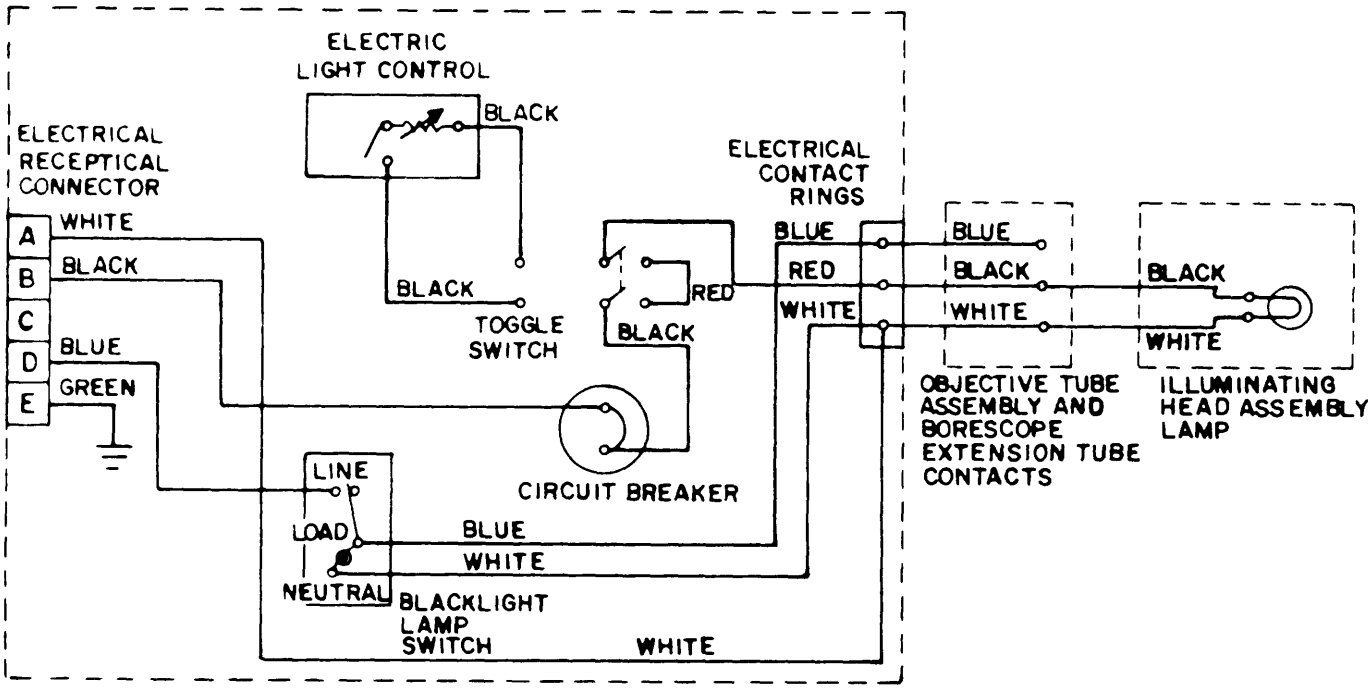
Figure 5-2. 24-V Electrical Power Cord Adapter Assembly and 115-V Electrical Power Cable Assembly



NOTE

Early model M3 Borescopes are easily recognized by looking at the adapter tube assembly. This model has two circuit breakers and an indicator light and is used with the 24-V electrical power cord adapter assembly.

Figure 5-3. Electrical System Schematic Diagram (Early Production)



ADAPTER TUBE ASSEMBLY

NOTE

Late model M3 Borescopes are easily recognized by looking at the adapter tube assembly. This model has one circuit breaker; a double pole, double throw switch; and no indicator light. The 24-V electrical power cord adapter assembly is not supplied with this model.

Figure 5-4. Electrical System Schematic Diagram (Late Production)

5-13. ILLUMINATING HEAD ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS.

This task covers:

a. Disassembly **c. Reassembly**

b. Cleaning/Repair

INITIAL SETUP:

Tools and Special Tools
- Instrument and fire control shop equipment SC 4931-95-CL-A07
- Socket wrench case 11584760
- Helicoil insert and tool kit 4131-04-1

Materials/Parts
- Lens paper (item 10, app D)
- Optical lens cleaning compound (item 2, app D)
- Solder (item 15, app D)

References
- TM 9-254

Troubleshooting References
- 5-7 Lamp in illuminating head assembly or blind illuminating head assembly is too bright or too dim
- 5-5 Lamp will not illuminate in illuminating head assembly or blind illuminating head assembly

DISASSEMBLY.

1

CAUTION

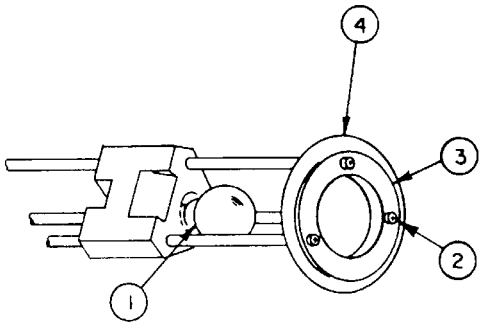
Do not mar finish on conductor tubes during disassembly or reassembly.

a. Twist and pull out lamp (1).

b. Remove three machine screws (2).

c. Remove small reflector (3).

d. Remove preformed rubber packing (4) from small reflector (3).



5-13. ILLUMINATING HEAD ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

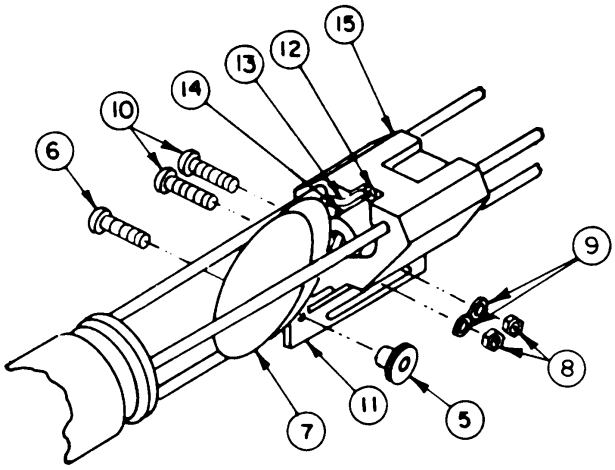
2

a. Remove knurled plain nut (5).

b. Remove machine screw (6) and mirror assembly (7).

c. Remove two hexagon plain nuts (8), two flat washers (9), two machine screws (10) and two angle brackets (11).

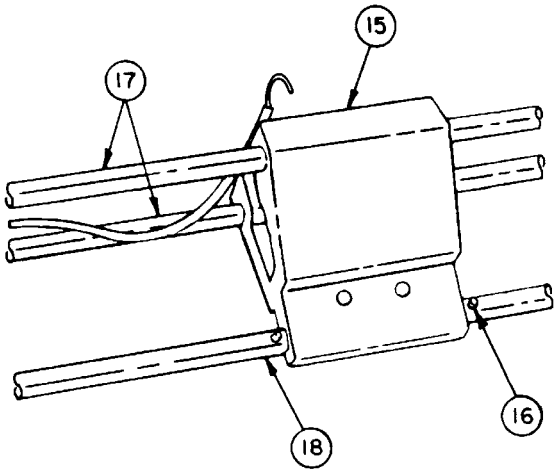
d. Unscrew machine screw (12) and remove white wire (13) and lampholder (14) from body (15).



3

a. Drive out spring pin (16).

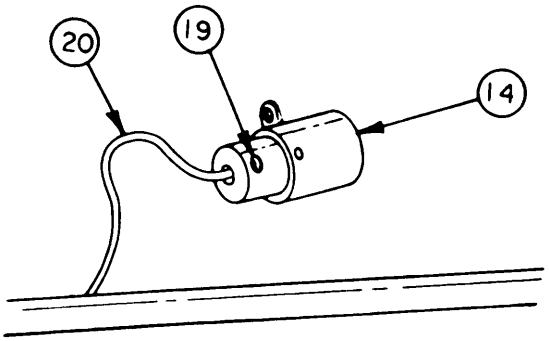
b. Slide body (15) off two conductor tubes (17) and metallic support tube (18).



4

a. Loosen setscrew (19).

b. Remove black wire (20) from lampholder (14).



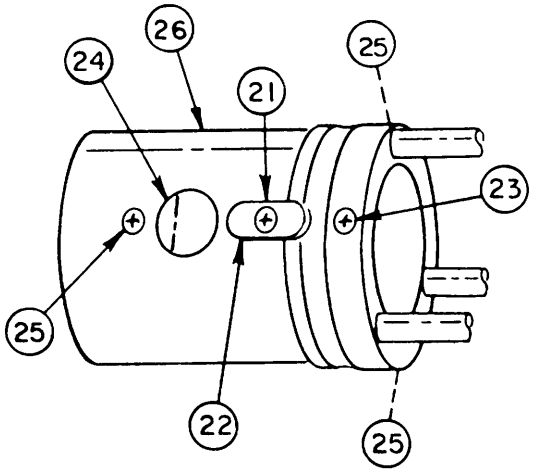
5

a. Remove machine screw (21) and machine key (22).

b. Remove machine screw (23) and lock assembly (24).

c. Remove three machine screws (25).

d. Slide head assembly housing (26) off of sleeve assembly and front sleeve assembly.



5-13. ILLUMINATING HEAD ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

6

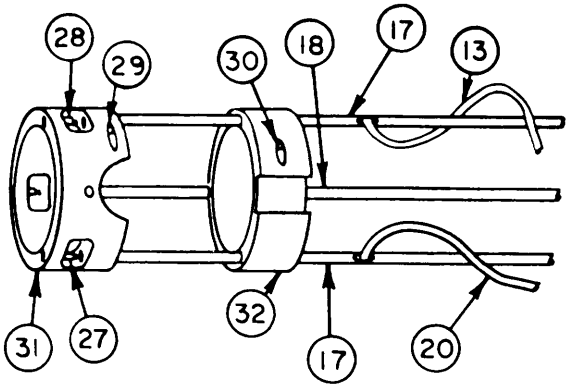
a. Unsolder black wire (20) and white wire (13) from two terminals (27 and 28).

b. Remove three setscrews (29).

c. Remove three setscrews (30).

d. Slide two conductor tubes (17) and metallic support tube (18) from sleeve assembly (31) and front sleeve assembly (32).

e. Remove wires (13 and 20) from conductor tubes (17).



CLEANING/REPAIR.

a. Dust the small reflector and the mirror assembly with the brush contained in the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

d. If conductor tubes, body, or head assembly housing is damaged beyond repair, order late production illuminating head assembly 11586099 for replacement.

REASSEMBLY.

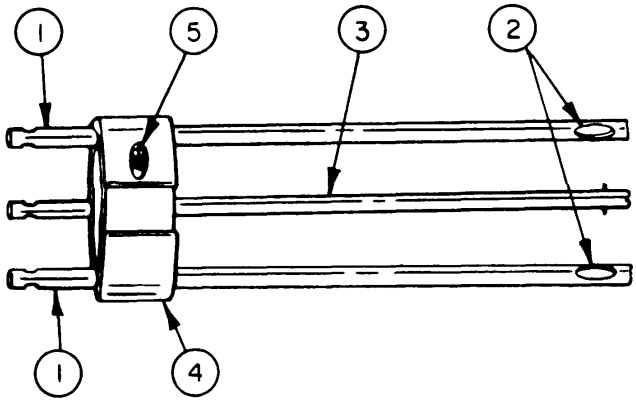
1

NOTE

The conductor tubes (1) each contain a slot (2) for the wires to be installed. These slots (2) must be installed facing each other.

a. Insert the non-threaded ends of two conductor tubes (1) and metallic support tube (3) in front sleeve assembly (4) with about 1 1/4 inch of the metallic support tube and conductor tubes protruding from the rear side of the front sleeve assembly (4).

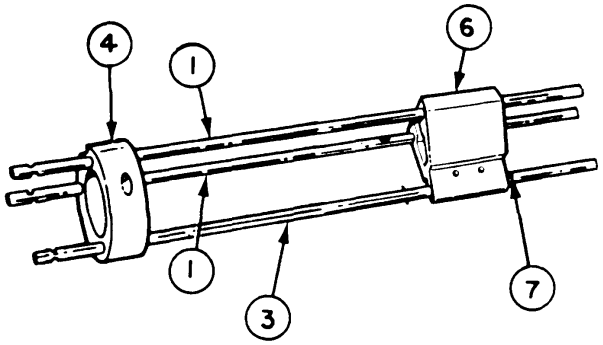
b. Insert three setscrews (5).



2

a. Install body (6) on two conductor tubes (1) and metallic support tube (3) with the hole for mounting the lampholder lined up with the slot in the front sleeve assembly (4) and about 4.0 inches of the tubes protruding from the front side of the body (6).

b. Install spring pin (7) in metallic support tube (3) by pushing in with pliers.



5-13. ILLUMINATING HEAD ASSEMBI,Y--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

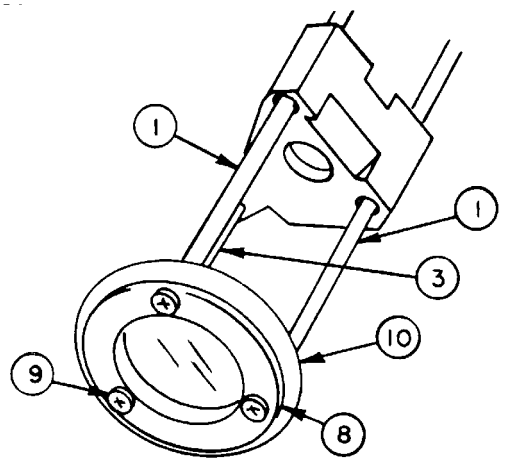
REASSEMBLY (CONT).

3

a. Position small reflector (8) on two conductor tubes (1) and metallic support tube (3).

b. Install and tighten three machine screws (9) to secure small reflector (8).

c. Install preformed rubber packing (10) into groove around small reflector (8).



4

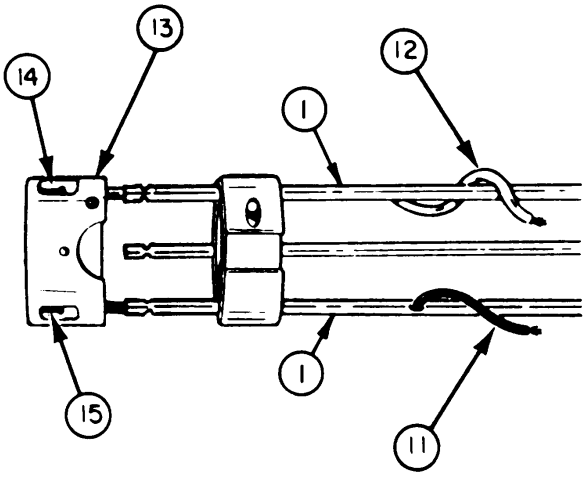
a. If necessary, fabricate new wires. See appendix E (figures E-1 and E-5) for fabrication instructions.

b. Install black wire (11) and white wire (12) in the slots in the conductor tubes and push through until approximately 1 inch protrudes from the end of the two tubes (1).

c. Position sleeve assembly (13) with the notched side between the white and black wires.

d. Push the wires through the holes in the sleeve assembly (13).

e. Solder white wire (12) to terminal (14) and black wire (11) to terminal (15) on sleeve assembly (13). See TM 9-254.

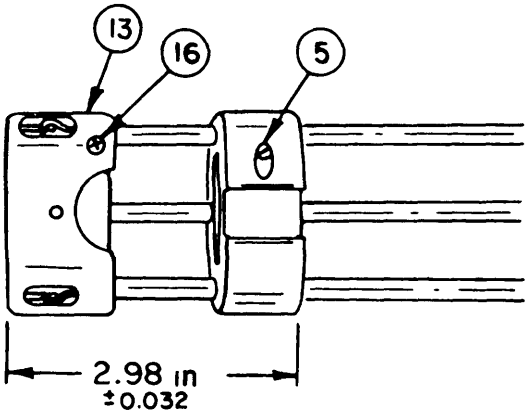


5

a. Position sleeve assembly (13) on the conductor tubes and metallic support tube; at the same time, pull the white and black wires through the slots leaving stress loop.

b. Install and tighten three set screws (16).

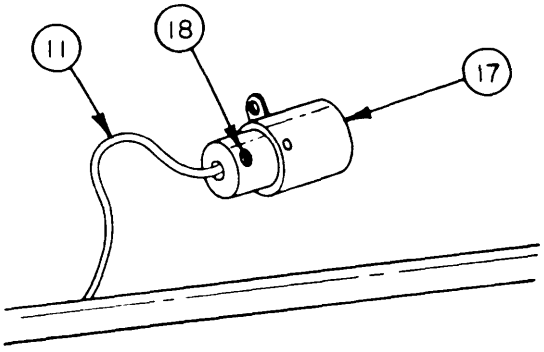
c. Set measurement, as shown in illustration, and tighten three setscrews (5) See appendix G for converting decimal measurements into fractions.



6

a. Push black wire (11) into the end of lampholder (17).

b. Tighten setscrew (18).

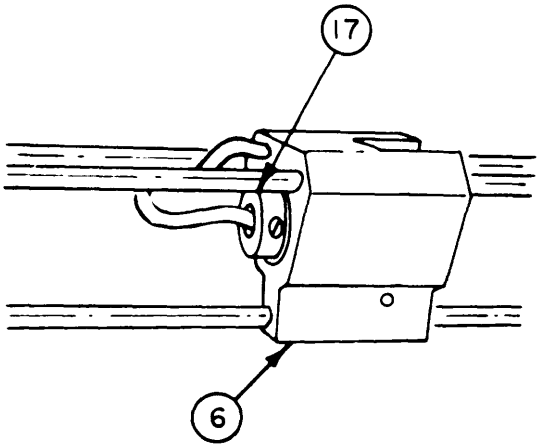


5-13. ILLUMINATING HEAD ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

7

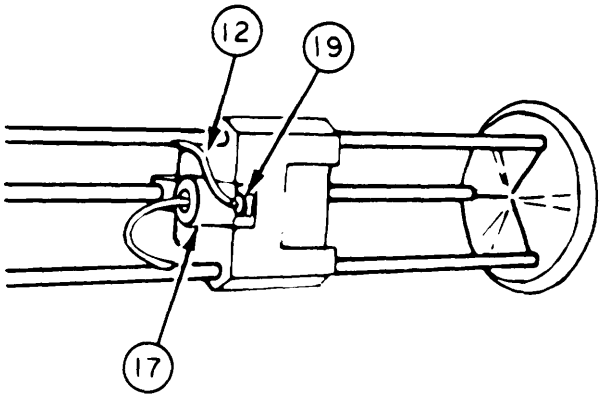
Position lampholder (17) on the body (6).



8

a. Install white wire (12) between machine screw (19) and lampholder (17).

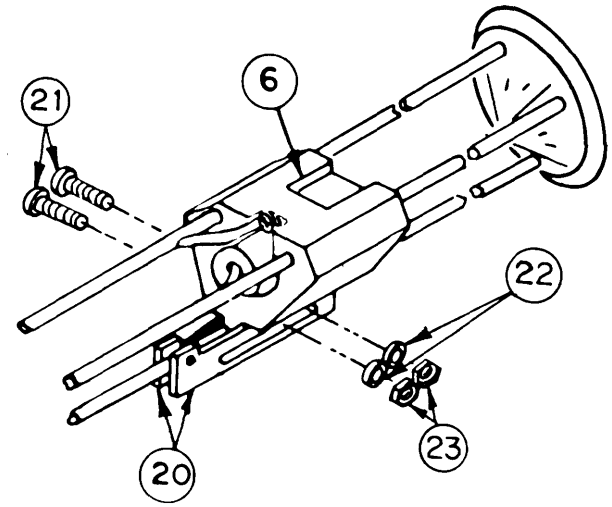
b. Tighten machine screw (19).



9

a. Position two angle brackets (20) on body (6).

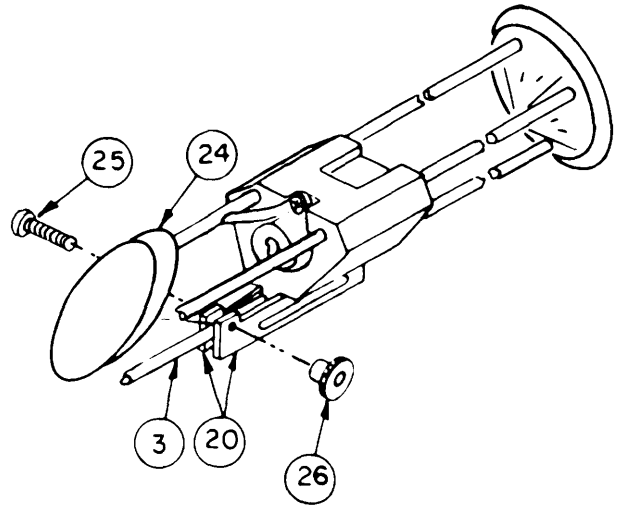
b. Install and tighten two machine screws (21) two flat washers (22) and two hexagon plain nuts (23) in the two angle brackets (20).



10

a. Position mirror assembly (24) between the two angle brackets (20) with beveled surface resting on the metallic support tube (3).

b. Install and tighten machine screw (25) and knurled plain nut (26).



5-13. ILLUMINATING HEAD ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

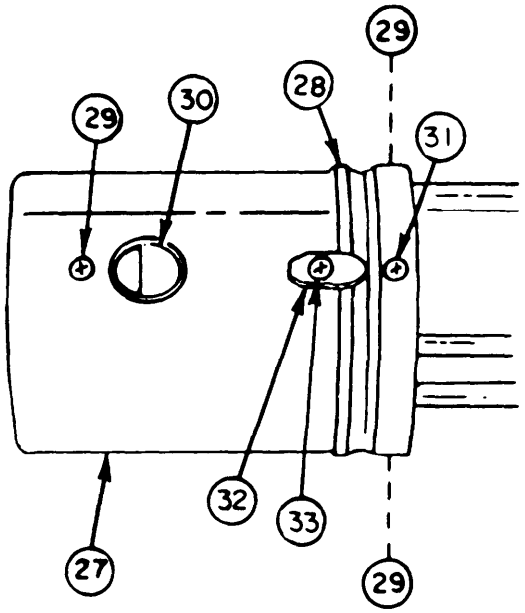
11

a. Slide head assembly housing (27) into position over sleeve assembly and front sleeve assembly with raised portion (28) toward the lampholder.

b. Install and tighten three machine screws (29).

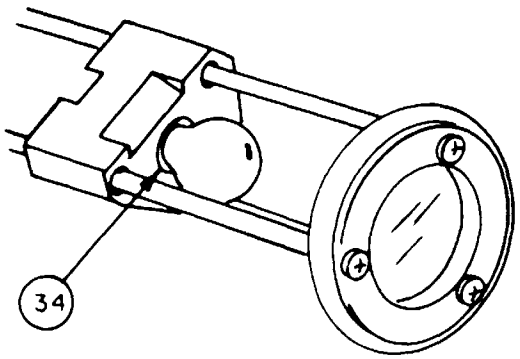
c. Position lock assembly (30) in head assembly housing with raised portion protruding through hole in head assembly housing and install machine screw (31).

d. Install machine key (32), machine screw (33), and tighten machine screws (31 and 33).



12

Push lamp (34) in and turn clockwise.



5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS.

This task covers:
a. Disassembly
b. Cleaning/Repair
c. Reassembly

INITIAL SETUP:

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

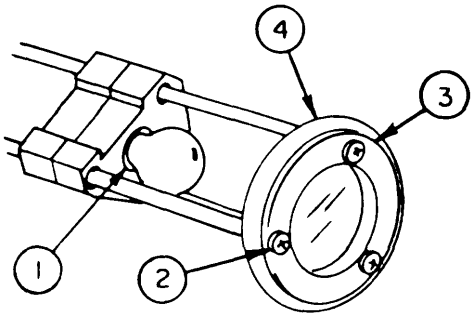
Materials/Parts
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)
Solder (item 15, app D)

References
TM 9-254

Troubleshooting References
5-7 Lamp in illuminating head assembly or blind illuminating head assembly is too bright or too dim
5-5 Lamp will not illuminate in illuminating head assembly or blind illuminating head assembly

DISASSEMBLY.

1



CAUTION

Do not mar finish on conductor tubes during disassembly or reassembly.

a. Twist and pull out lamp (1).

b. Remove three machine screws (2).

c. Remove small reflector (3).

d. Remove preformed rubber packing (4) from small reflector (3).

5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

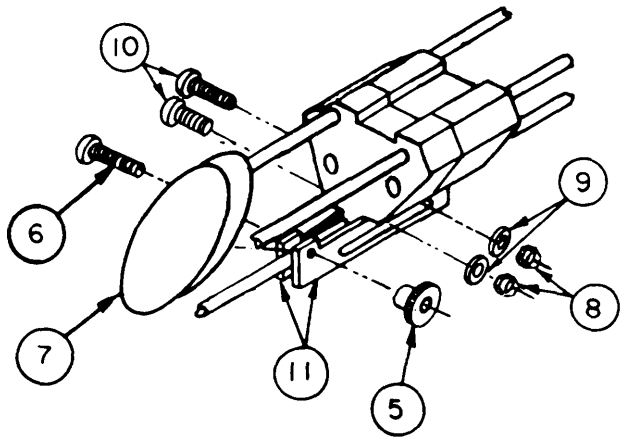
DISASSEMBLY (CONT).

2

a. Remove knurled plain nut (5).

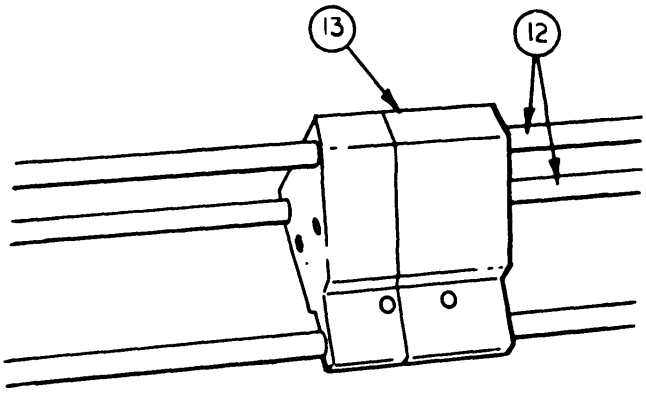
b. Remove machine screw (6) and mirror assembly (7).

c. Remove two hexagon plain nuts (8), two flat washers (9), two machine screws (10), and two angle brackets (11).



3

Unscrew two front support tubes (12) and remove from lampholder assembly body (13).

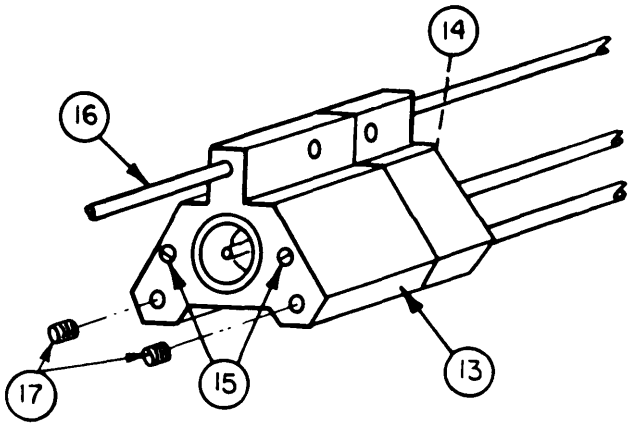


4

a. Holding two internal plain nuts (14) with socket head hex key, unscrew and remove two machine screws (15) from lampholder assembly body (13).

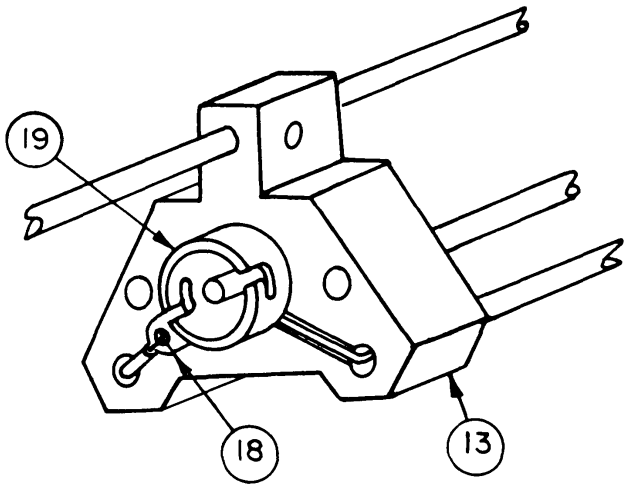
b. Slide front section of lampholder assembly body (13) off metallic support tube (16).

c. If damaged, removed two screw thread inserts (17). See TM 9-254.



5

Remove machine screw (18) and lampholder (19) from rear lampholder assembly body (13).



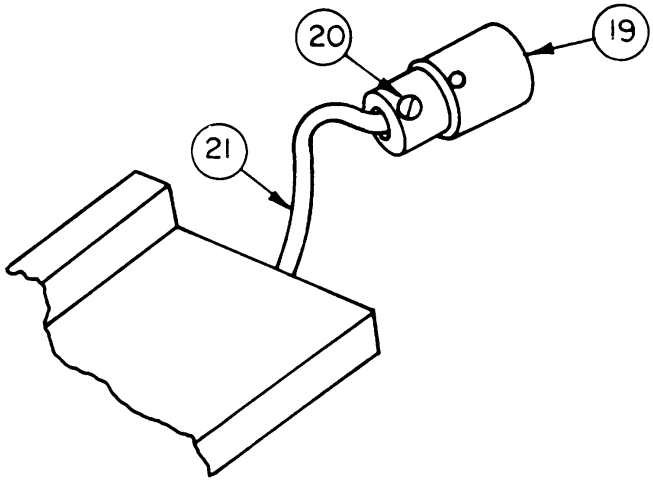
5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

6

a. Loosen setscrew (20).

b. Remove black wire (21) from lampholder (19).



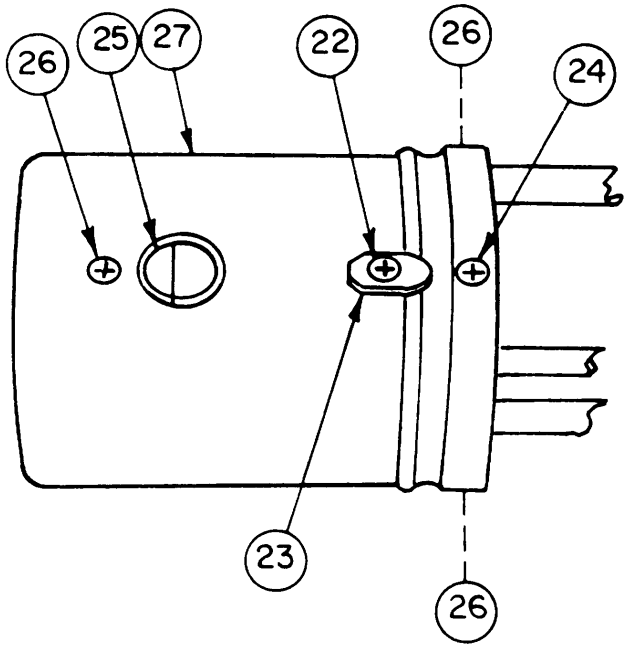
7

a. Remove machine screw (22) and machine key (23).

b. Remove machine screw (24) and lock assembly (25).

c. Remove three machine screws (26).

d. Slide head assembly housing (27) from sleeve assembly and front sleeve assembly.



8

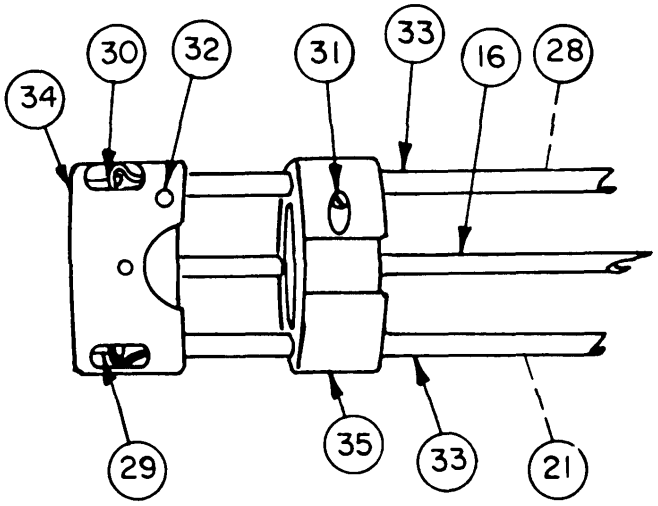
a. Unsolder black wire (21) and white wire (28) from two terminals (29 and 30).

b. Remove three setscrews (31).

c. Remove three setscrews (32).

d. Slide two conductor tubes (33) and metallic support tube (16) from sleeve assembly (34) and front sleeve assembly (35).

e. Remove wires (21 and 28) from two conductor tubes (33).

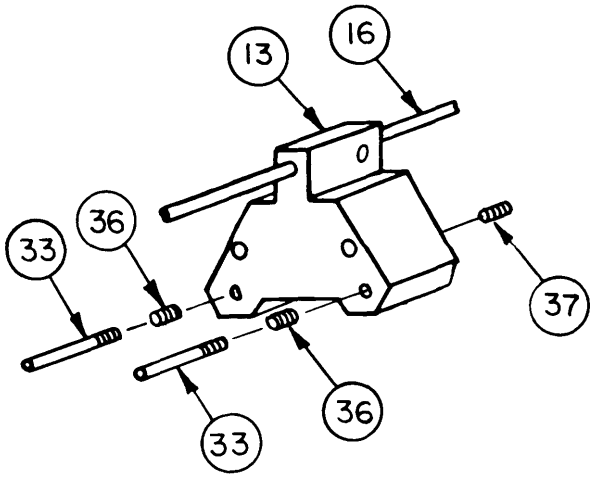


9

a. Slide metallic support tube (16) out of rear lampholder assembly body (13).

b. Unscrew and remove two conductor tubes (33) from rear lampholder assembly body (13).

c. If damaged, remove two screw thread inserts (36) and screw thread insert (37). See TM 9-254.



5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

CLEANING/REPAIR.

a. Dust the small reflector and the mirror assembly with the brush contained in the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

d. If head assembly housing is damaged, order illuminating head assembly 11586099 for replacement.

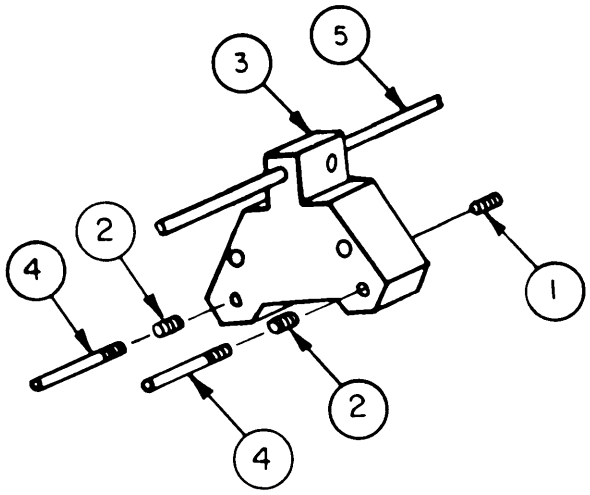
REASSEMBLY.

1

a. If removed, install new screw thread insert (1) and two screw thread inserts (2) flush with rear lampholder assembly body (3). See TM 9-254.

b. Screw two conductor tubes (4) into rear lampholder assembly body (3).

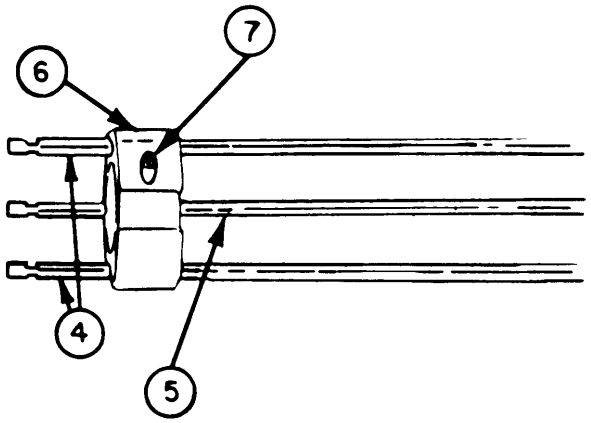
c. Slide metallic support tube (5) through rear lampholder assembly body (3).



2

a. Push two conductor tubes (4) and metallic support tube (5) into front sleeve assembly (6) with about 1 1/4 inch of the metallic support tube and conductor tubes protruding from the rear side of the front sleeve assembly.

b. Insert three setscrews (7).



3

a. If necessary, fabricate new wires.

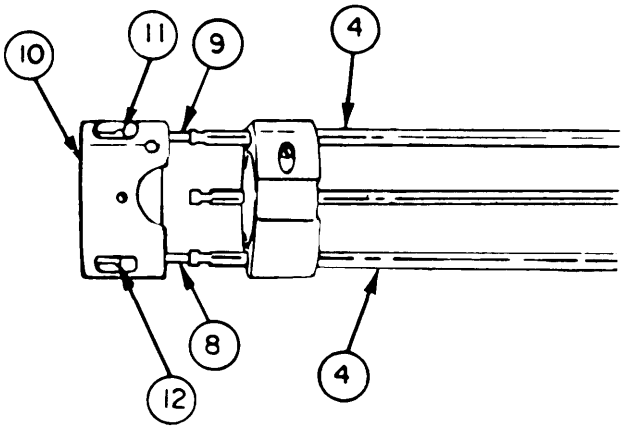
See appendix E (figures E-1 and E-5) for fabrication instructions.

b. Install black wire (8) and white wire (9) in the conductor tubes (4) and push through until approximately 1 inch protrudes from the end of the conductor tubes.

c. Position sleeve assembly (10) with the notched side between the white and black wires.

d. Push the wires through the holes in the sleeve assembly (10).

e. Solder white wire (9) to terminal (11) and black wire (8) to terminal (12) on the sleeve assembly (10). See TM 9-254.



5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

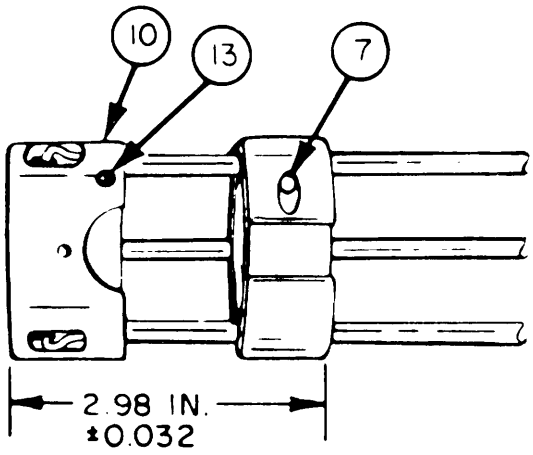
REASSEMBLY (CONT).

4

a. Position sleeve assembly (10) on the conductor tubes and metallic support tube; at the same time, pull the white and black wires through the tubes leaving stress loop.

b. Install and tighten three setscrews (13) into notch on tubes.

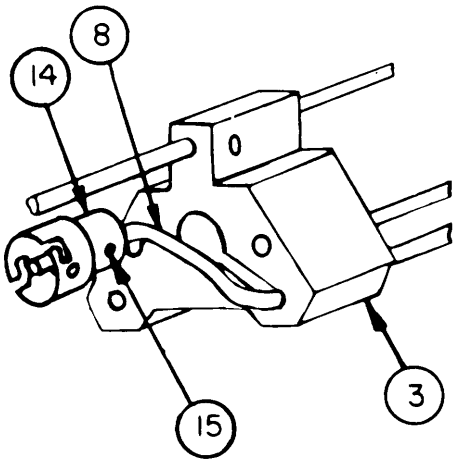
c. Set measurement, as shown in illustration, and tighten three setscrews (7). See appendix G for converting decimal measurements into fractions.



5

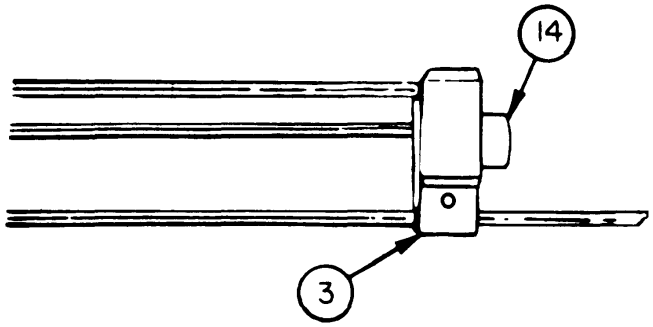
a. Push black wire (8) through rear lampholder assembly body (3) into the end of lampholder (14).

b. Tighten setscrew (15).



6

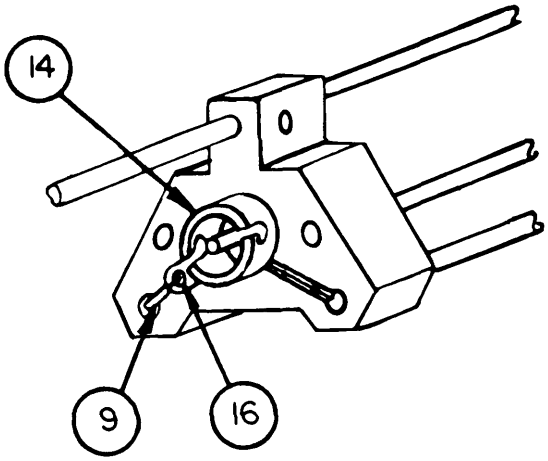
Position lampholder (14) on the rear lampholder assembly body (3).



7

a. Install white wire (9) between machine screw (16) and lampholder (14).

b. Tighten machine screw (16).



5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

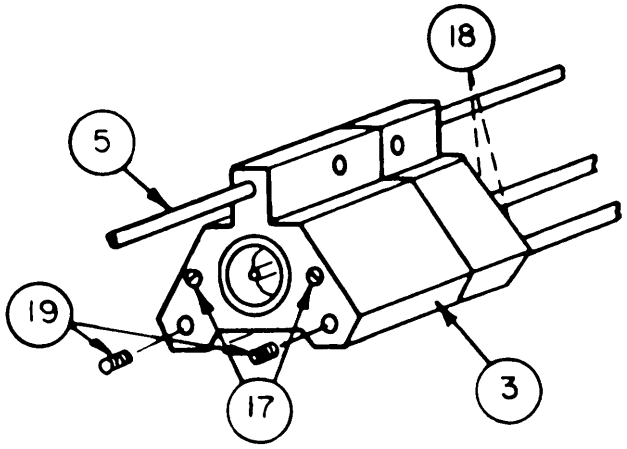
REASSEMBLY (CONT).

8

a. Slide front lampholder assembly body (3) over metallic support tube (5).

b. Insert and tighten two machine screws (17) while holding two internal plain nuts (18) with socket head hex key.

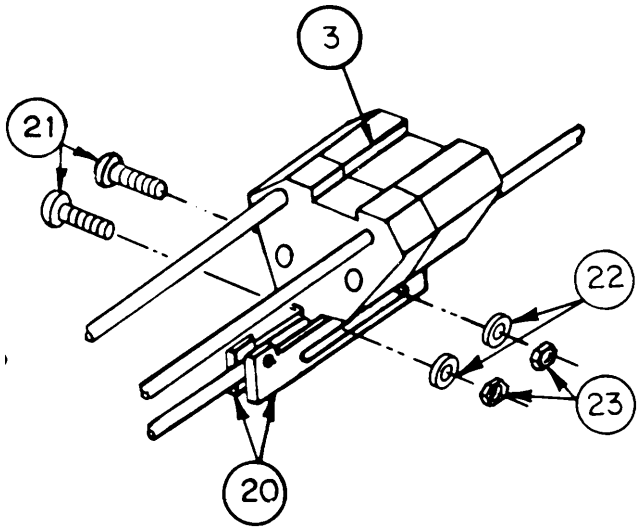
c. If removed, install two new screw thread inserts (19) flush with front lampholder assembly body (3) using insertion tool. See TM 9-254.



9

a. Position two angle brackets (20) on lampholder assembly body (3).

b. Install two machine screws (21), two flat washers (22), and two hexagon plain nuts (23) in the two angle brackets (20).

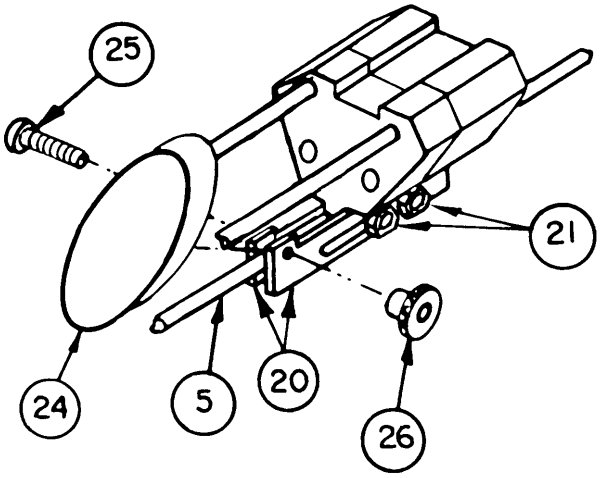


10

a. Position mirror assembly (24) between two angle brackets (20) with beveled surface resting on metallic support tube (5).

b. Install and tighten machine screw (25) and knurled plain nut (26).

c. Tighten machine screws (21).



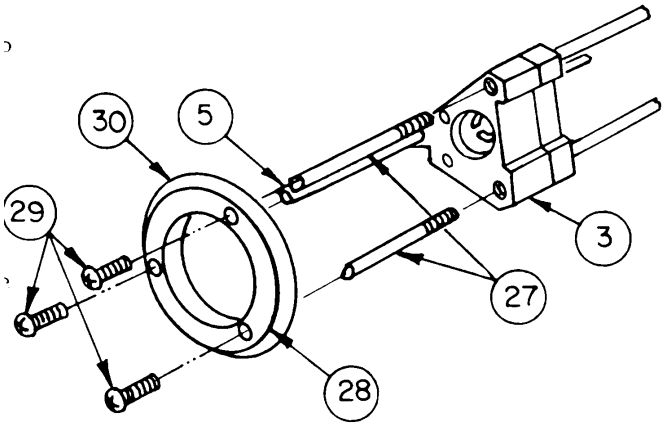
11

a. Screw two support tubes (27) into front lampholder assembly body (3).

b. Position small reflector (28) on support tubes (27) and metallic support tube (5).

c. Install and tighten three machine screws (29) in small reflector (28).

d. Install preformed rubber packing (30) into groove around small reflector (28).



5-14. ILLUMINATING HEAD ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

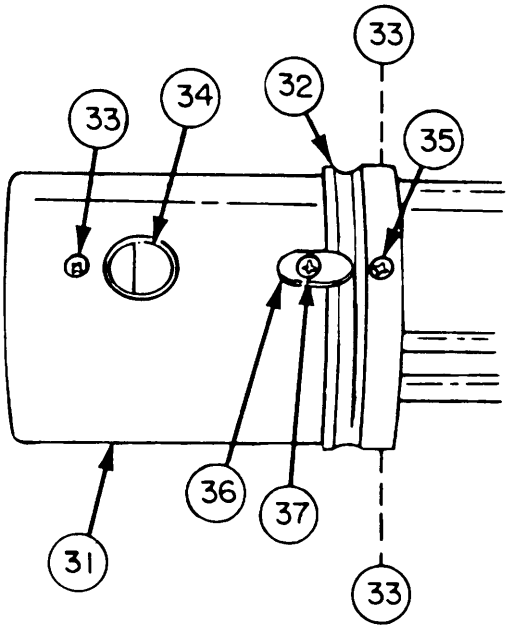
12

a. Slide head assembly housing (31) into position over sleeve assembly and front sleeve assembly with raised portion (32) toward the lampholder.

b. Install and tighten three machine screws (33).

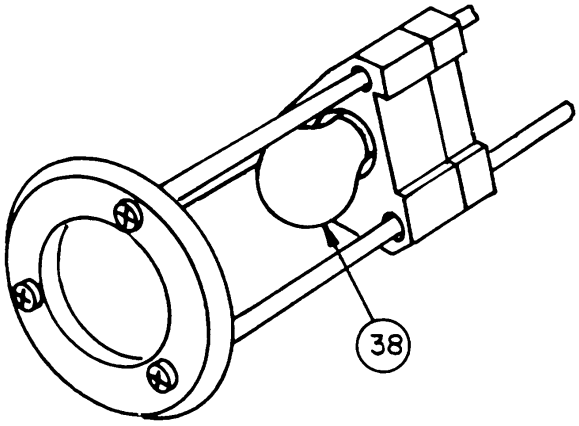
c. Position lock assembly (34) in head assembly housing with raised portion protruding through hole in head assembly housing and install machine screw (35).

d. Install machine key (36), machine screw (37), and tighten machine screws (35 and 37).



13

Push lamp (38) in and turn clockwise.



5-15. SLEEVE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

References
TM 9-254

Equipment Condition
5-15, 5-25 Sleeve assembly removed from illuminating head assembly

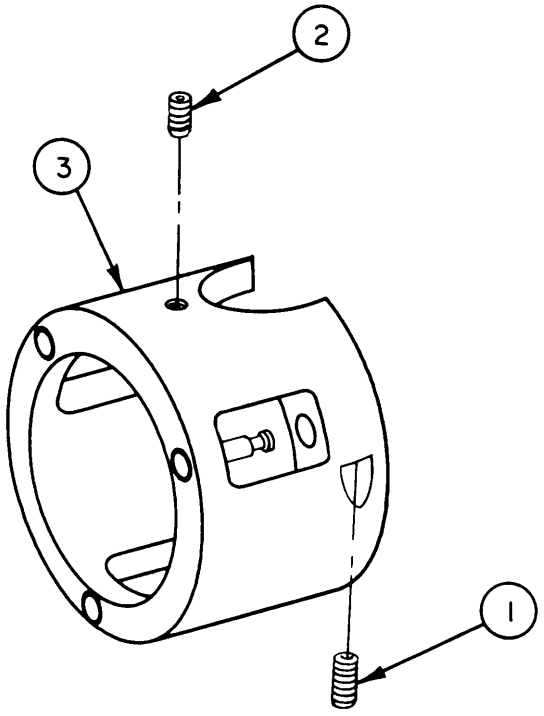
DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove three screw thread inserts (i) and one screw thread insert (2) from sleeve assembly (3). See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

d. If removed, install three new screw thread inserts (1) and one new screw thread insert (2) flush with the sleeve assembly (3) using insertion tool. See TM 9-254.



5-16. FRONT SLEEVE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

References
TM 9-254

Equipment Condition
5-15, 5-25 Front sleeve assembly removed from illuminating head assembly

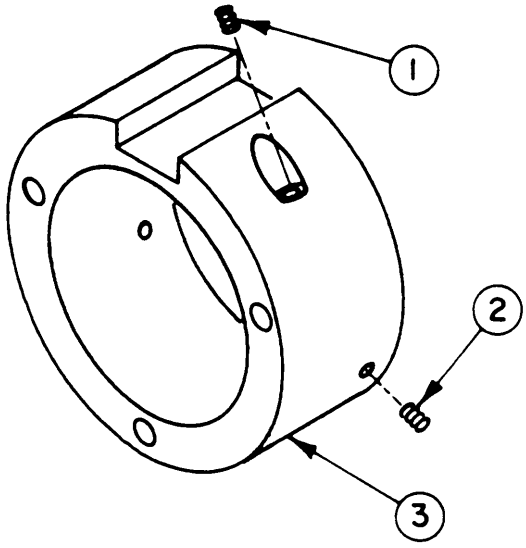
DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove three screw thread inserts (1) and two screw thread inserts (2) from front sleeve assembly (3). See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

d. If removed, install three new screw thread inserts (1) and two new screw thread inserts (2) flush with the front sleeve assembly (3) using insertion tool. See TM 9-254.



5-17. BLIND ILLUMINATING HEAD ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:
a. Disassembly
b. Cleaning/Repair
c. Reassembly

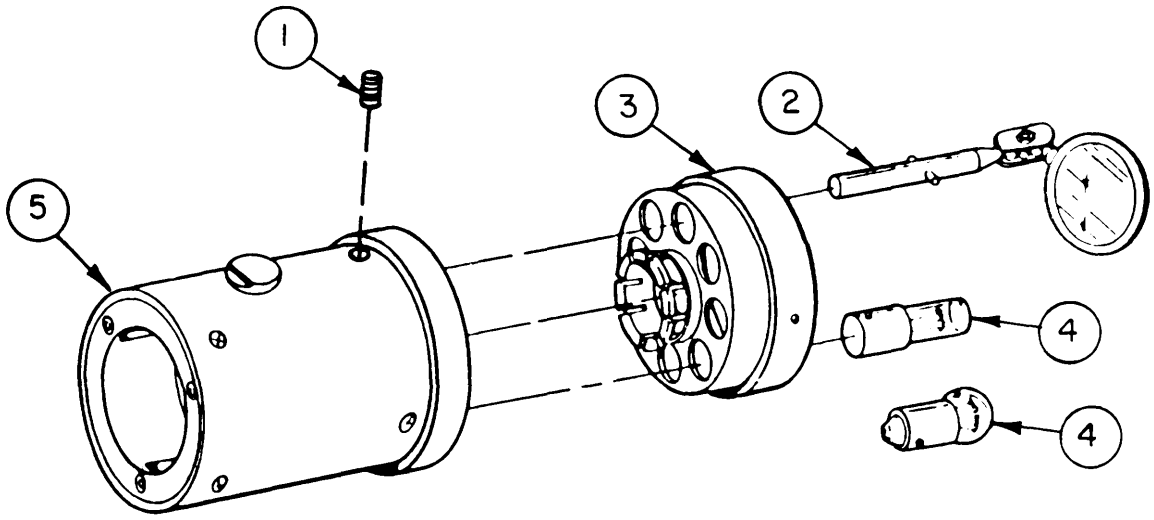
INITIAL SETUP

Tools and Special Tools
Socket wrench case 11584760

References
TM 9-254

Materials/Parts
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)

DISASSEMBLY.



NOTE

Setscrew (1) is actually part of the body assembly.

a. Remove setscrew (1).

b. Slide inspection mirror (2) from light reflector (3).

c. Remove seven incandescent]amps (4).

d. Snap light reflector (3) out of body assembly (5) using a twisting motion.

5-17. BLIND ILLUMINATING HEAD ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

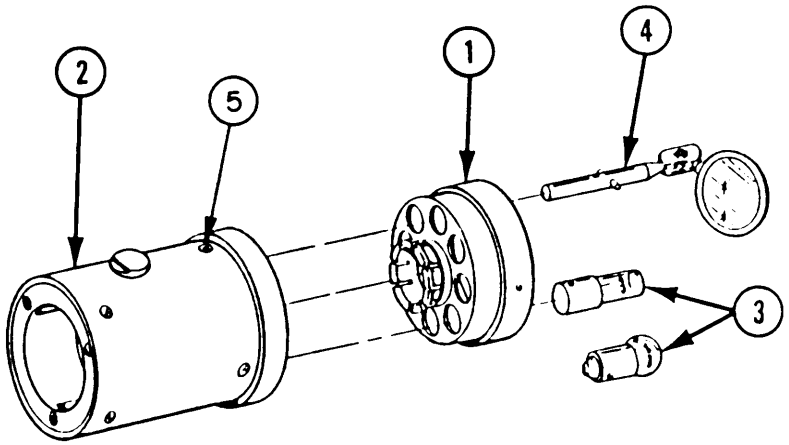
CLEANING/REPAIR.

a. Dust the reflector and inspection mirror with the brush in the socket wrench case. Clean with lens paper and optical lens c. cleaning compound. See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

REASSEMBLY.



a. If removed, install light reflector (1) by snapping into retaining slot in body assembly (2).

NOTE

There are two different sets of lamps for the blind illuminating head assembly. The 120-V lamp is used with the i15-V electrical power cable assembly; the 28-V lamp is used during 24-volt operation. The correct lamps must be installed for proper operation.

b. Install seven lamps (3) as required.

c. Slide inspection mirror (4) into light reflector (1).

d. Install and tighten setscrew (5).

5-18. BODY ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP:

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-66-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

Materials/Parts
Solder (item 15, app D)

References
TM 9-254

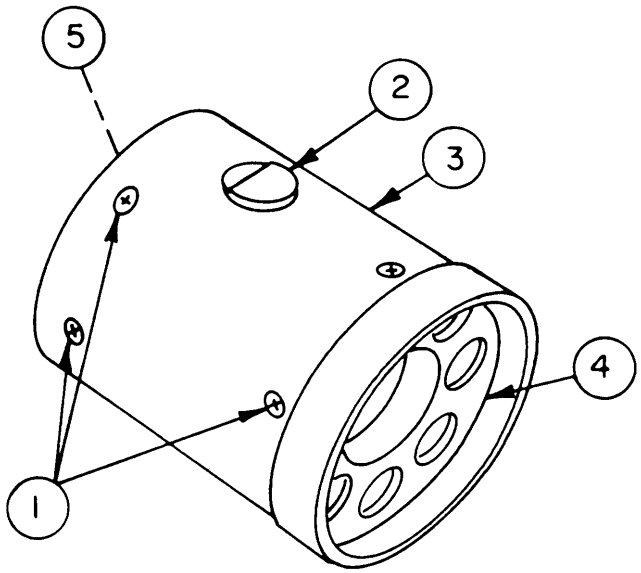
Equipment Condition
5-39 Body assembly removed from blind illuminating head assembly

DISASSEMBLY.

1

a. Remove six machine screws (1).

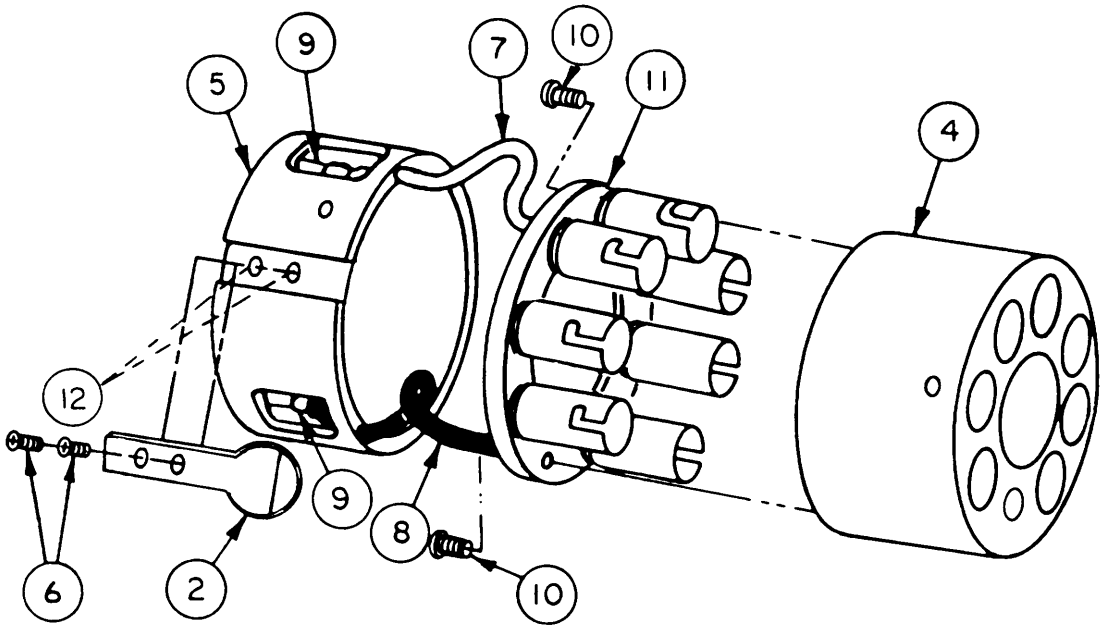
b. Depress button lock assembly (2) while sliding the sleeve bushing (3) off the front sleeve assembly (4) and the rear sleeve assembly (5).



5-18. BODY ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

2



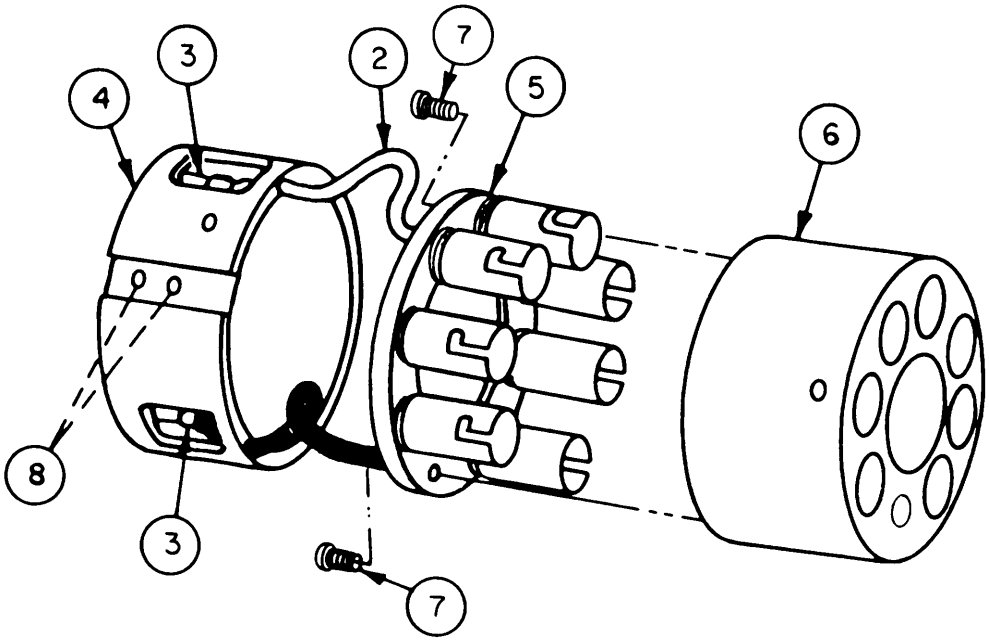
a. Remove two machine screws (6) and button lock assembly (2).
b. Tag the terminals with the connecting wire color before unsoldering wires.
c. Unsolder and remove white wire (7) and black wire (8) from the terminals (9) on the rear sleeve assembly (5).
d. Remove two machine screws (10) and circuit board assembly (11) from front sleeve assembly (4).
e. Unsolder and remove white wire (7) and black wire (8) from the terminals on the circuit board assembly (11).
f. If damaged, remove two screw thread inserts (12). See TM 9-254.

REPAIR.

a. Inspect for cracks, breaks, worn or missing parts.
b. Replace authorized parts. See appendix C.

REASSEMBLY.

1



a. If necessary, fabricate new wires. See appendix E (figures E-1 and E-5) for fabrication instructions.

b. Solder the black wire (1) and white wire (2) to the terminals (3) in rear sleeve assembly (4) tagged with the connecting wire color. See TM 9-254.

c. Position circuit board assembly (5) in the front sleeve assembly (6).

d. Install and tighten two screws (7) through circuit board assembly (5) into front sleeve assembly (b).

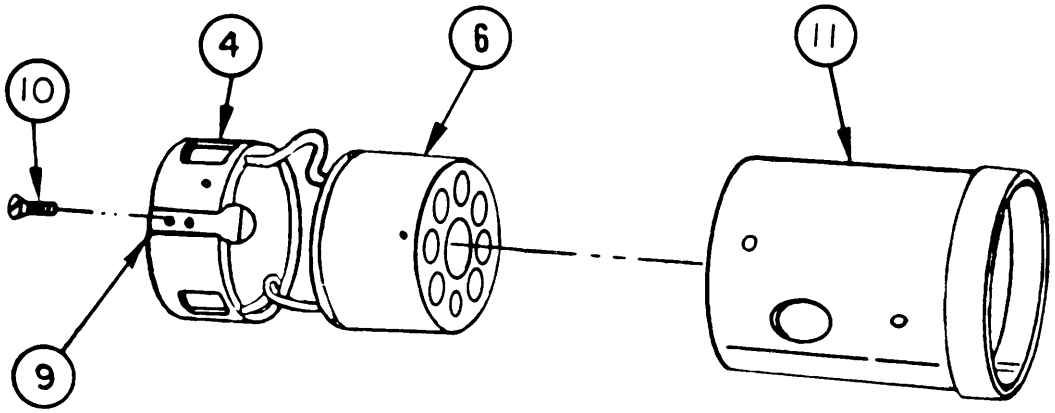
e. Solder the black wire (1) and white wire (2) to the terminal in front sleeve assembly (6) tagged with the connecting wire color. See TM 9-254.

f. If removed, install new screw thread inserts (8) flush with the outer surface of the rear sleeve assembly (4) using insertion tool. See TM 9-254.

5-18. BODY ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

2



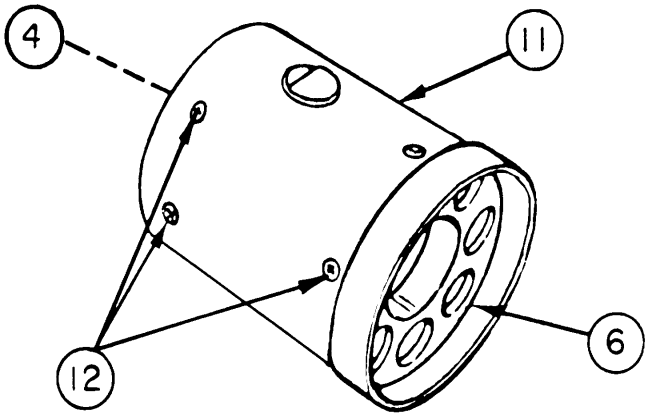
a. Position button lock assembly (9) on the rear sleeve assembly (4) with the raised portion facing toward the front sleeve assembly (6).

b. Install and tighten two machine screws (10).

NOTE
Ensure the lock assembly engages the hole in the body.

c. Install sleeve bushing (11) over the rear sleeve assembly (4) and front sleeve assembly (6) while depressing the button lock assembly (9)

3



After positioning the front sleeve assembly (6) and rear sleeve assembly (4) so the holes in the sleeve bushing (11) are alined with the inserts in the sleeves, install and tighten six machine screws (12).

5-19. FRONT SLEEVE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

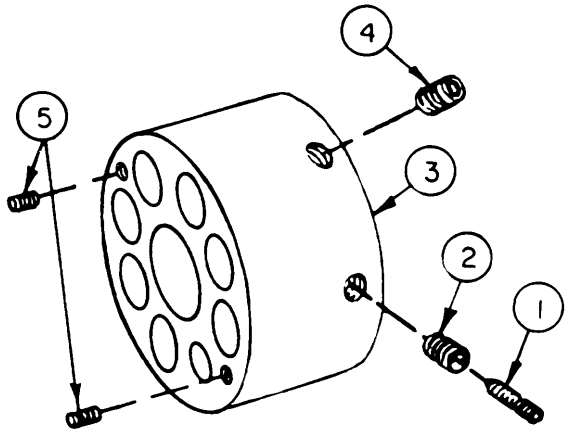
Tools and Special Tools
- Instrument and fire control shop equipment 4931-00-754-0740
- Socket wrench case 5140-01-119-3218
- Helicoil insert and tool kit 4131-04-1

References
- TM 9-254

Equipment Condition
- 5-41 Front sleeve assembly removed from body assembly

DISASSEMBLY/REPAIR/REASSEMBLY.

a. Remove setscrew (1).
b. If damaged, remove screw thread insert (2) from the front sleeve (3). See TM 9-254.
c. If damaged, remove three screw thread inserts (4). See TM 9-254.
d. If damaged, remove two screw thread inserts (5). See TM 9-254.
e. Inspect for cracks, breaks, worn or missing parts.
f. Replace authorized parts. See appendix C.
g. If removed, install two new screw thread inserts (5), three new screw thread inserts (4), and new screw thread insert (2) flush with the outer surface of the front sleeve (3) using insertion tool. See TM 9-254.
h. Install setscrew (1).



5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:

a. Disassembly (forward section)
b. Cleaning/Repair (forward section)
c. Reassembly (forward section)
d. Disassembly (rear section)
e. Cleaning/Repair (rear section)
f. Reassembly (rear section)

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

Materials/Parts
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)
Solder (item 15, app D)

References
TM 9-254

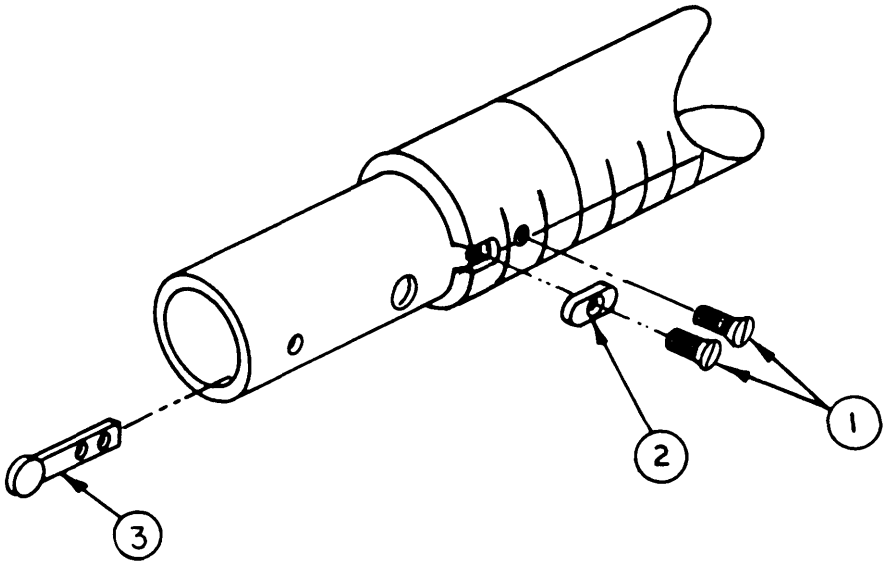
Troubleshooting References
5-4 A distorted image is seen through the M3 Borescope

DISASSEMBLY (FORWARD SECTION).

NOTE

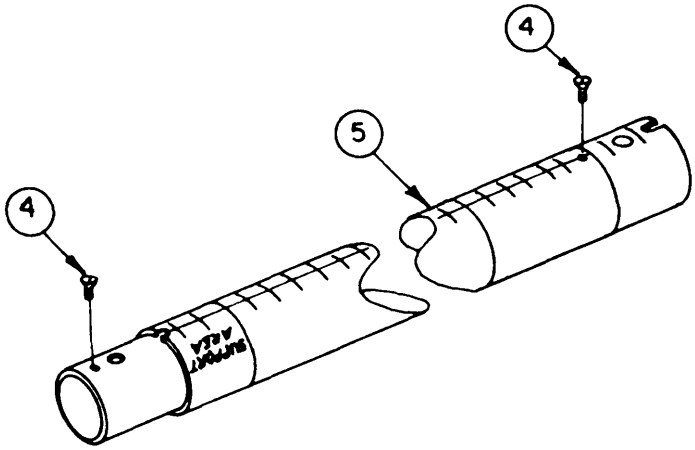
The objective tube assembly consists of two connecting sections and their associated parts. The forward section (the section connecting to the illuminating head assembly) contains an objective lens optical cell assembly and is disassembled and reassembled differently from the rear section. Therefore, disassembly and reassembly of each section will be covered independently in this procedure.

1



Remove two machine screws (1), machine key (2), and lock assembly (3).

2



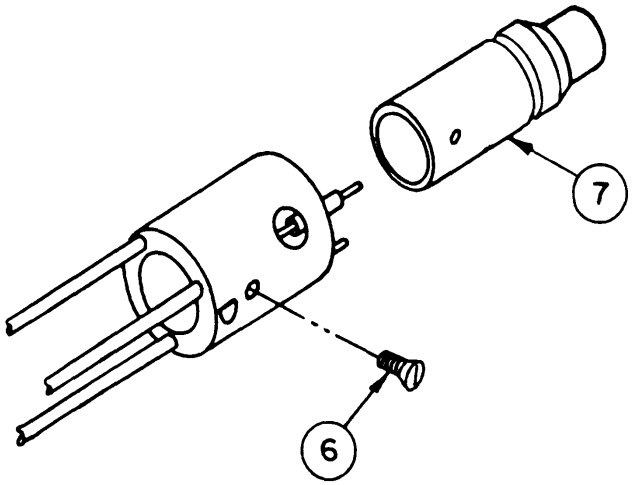
Remove two machine screws (4) and slide objective tube (5) off of remaining parts.

5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

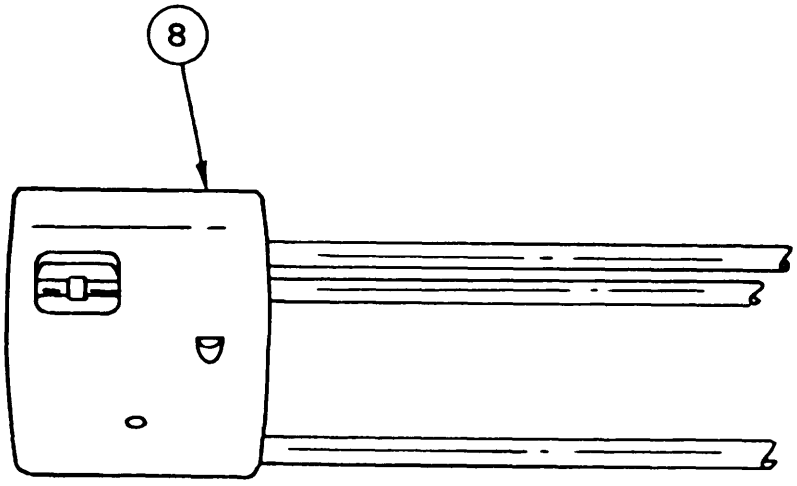
DISASSEMBLY (FORWARD SECTION) (CONT).

3

Remove two machine screws (6) and slide out objective lens optical cell assembly (7).



4

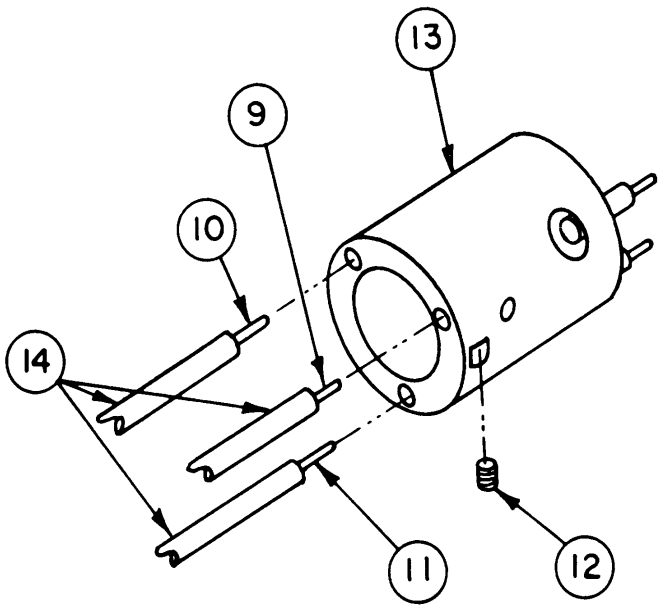


Tag the terminals in the rear sleeve assembly (8) with the wire color code.

5

a. Unsolder each end of black wire (9), white wire (10), and blue wire (11).

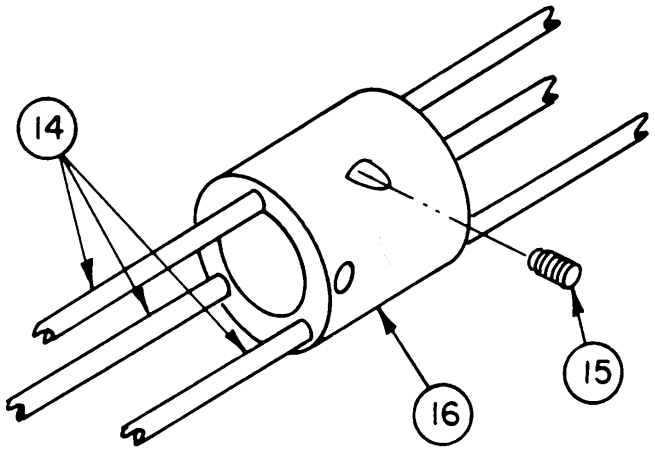
b. Remove three setscrews (12) and slide objective assembly sleeve spacer (13) from metallic tubes (14).



6

a. Remove three setscrews (15).

b. Slide optical element erector lens cell assembly (16) off metallic tubes (14).



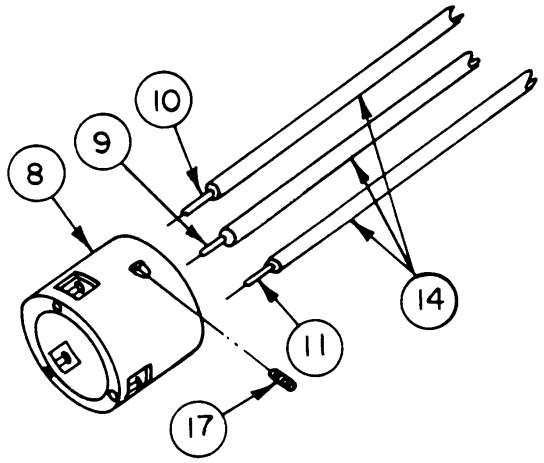
5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (FORWARD SECTION) (CONT).

7

a. Remove three setscrews (17) and three metallic tubes (14) from the rear sleeve assembly (8).

b. Remove black wire (9), white wire (10), and blue wire (11) from three metallic tubes (14).



CLEANING/REPAIR (FORWARD SECTION).

a. Dust the lenses with the brush in the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

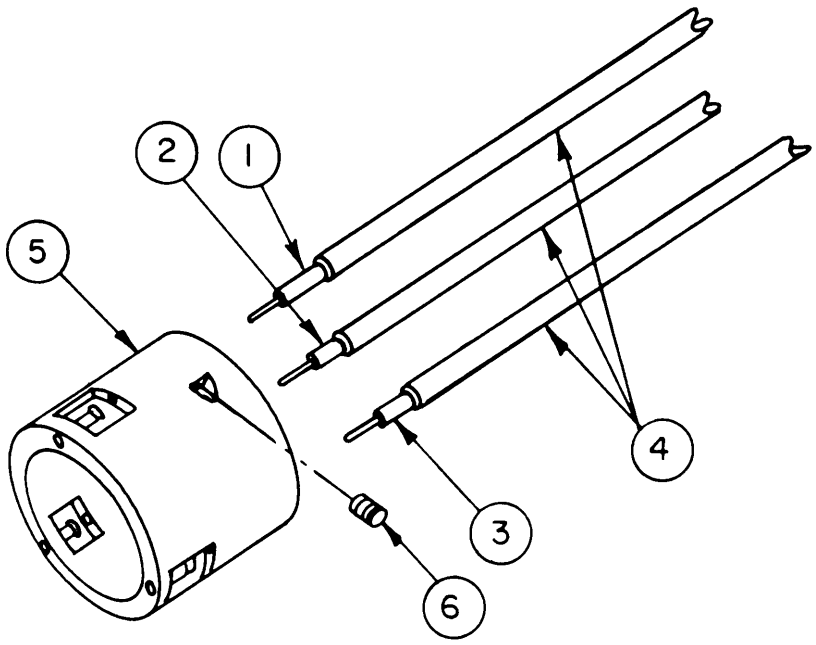
b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

d. If objective tube is damaged, order objective tube assembly 11584702 for replacement.

REASSEMBLY (FORWARD SECTION).

1



a. If necessary, fabricate a piece of each color wire. See appendix E (figures E-1, E-2, and E-5) for fabrication instructions.

b. Insert the white wire (]), black wire (2), and blue wire (3) into the three metallic tubes (4).

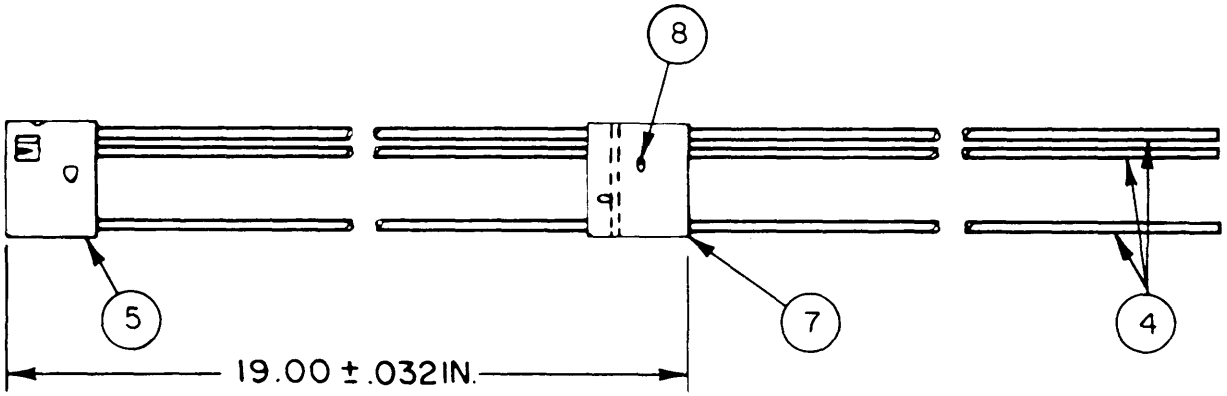
c. Push three metallic tubes (4) into the rear sleeve assembly (5) according to the color code tags attached during disassembly.

d. Install and tighten three setscrew (6).

5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (FORWARD SECTION) (CONT).

2

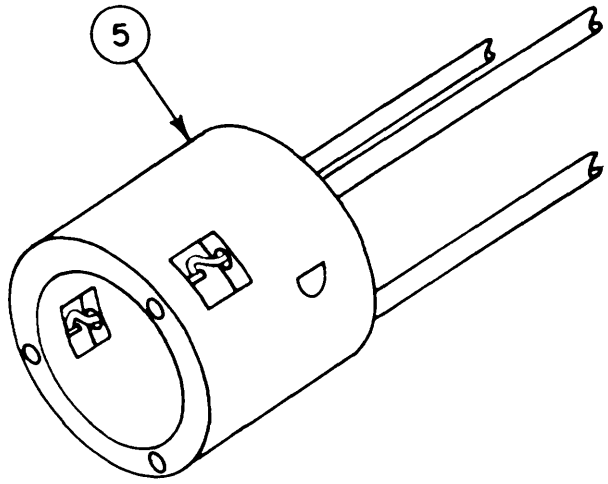


a Slide the optical element erector lens cell assembly (7) on the three metallic tubes (4) with the end containing the lens nearest the rear sleeve assembly (5) and located 19+0.032 inches from the far end of the rear sleeve assembly. See appendix G for converting decimal measurements into fractions.

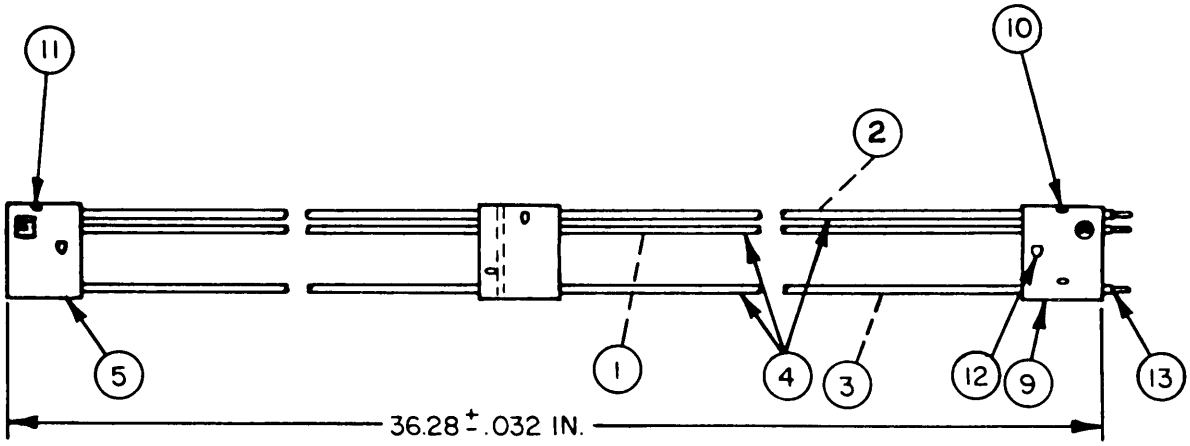
b. Install and tighten three setscrews (8).

3

Remove the color code tags and solder the three wires to the three terminals in the rear sleeve assembly (5). See TM 9-254.



4



NOTE

Ensure the three wires in the metallic tubes are inserted through the holes in the objective assembly sleeve spacer (9) when installing the objective assembly sleeve spacer.

a Position the objective assembly sleeve spacer (9) on the three metallic tubes (4) with screw hole (10) on the same side as screw hole (11) in the rear sleeve assembly (5).

b Position objective assembly sleeve spacer (9) 36.28+0.032 inches from the end of the rear sleeve assembly (5). See appendix G for converting decimal measurements into fractions.

c Install and tighten three setscrews (12).

d Trim any excess from the three wires (1, 2, and 3) and solder the three wires to the three electrical contacts (13). See TM 9-254.

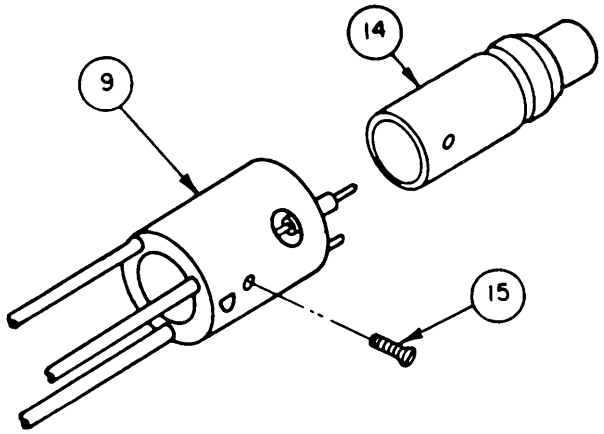
5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (FORWARD SECTION) (CONT).

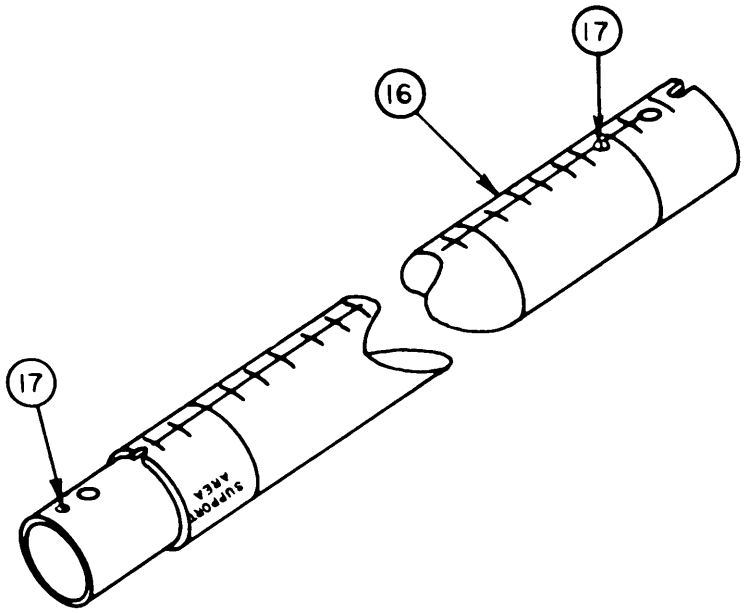
5

a Slide objective lens optical cell assembly (14) into the objective assembly sleeve spacer (9) with the small end of the lens extending from the front and the screw holes alined.

b. .Install and tighten two machine screws (15).



6



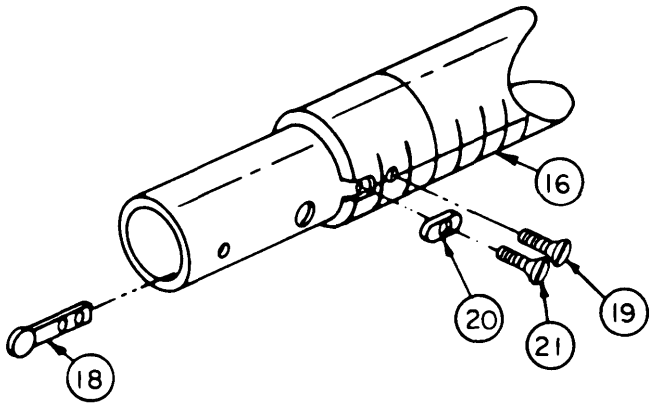
a Slide objective tube (16) over the assembled parts and aline the holes in the objective tube with the inserts in the objective assembly sleeve spacer and rear sleeve assembly.

Install and tighten two machine screws (17).

7

a. Position lock assembly (18) in the objective tube (16) with the tab in the hole and install machine screw (19).

b. Install machine key (20), machine screw (21), and tighten machine screws (19 and 21).

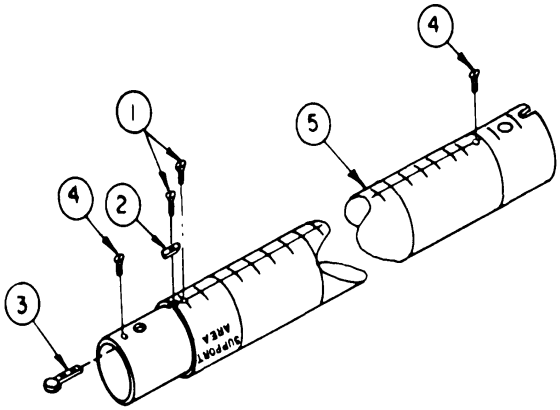


DISASSEMBLY (REAR SECTION).

1

a Remove two machine screws (1), machine key (2), and lock assembly (3).

b Remove two machine screws (4) and slide objective tube (5) off of remaining parts.



5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

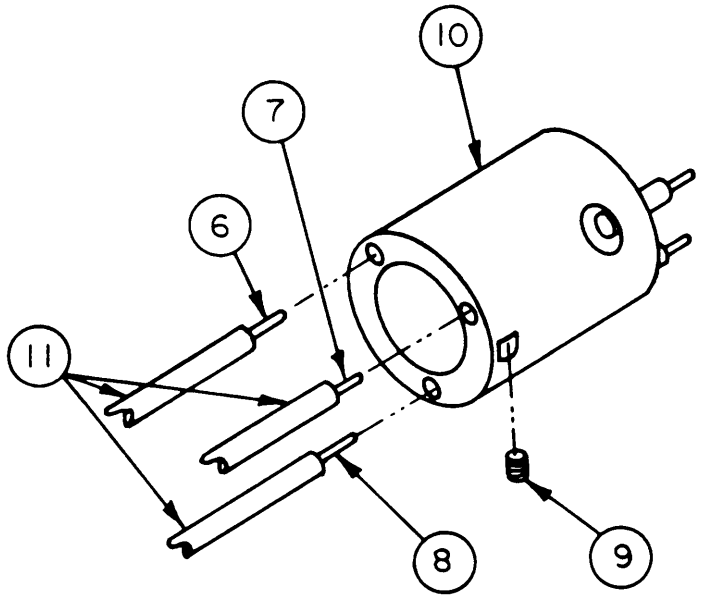
DISASSEMBLY (REAR SECTION) (CONT).

2

a Tag the terminals in the rear sleeve assembly with the wire color code.

b Unsolder each end of wires (6, 7, and 8).

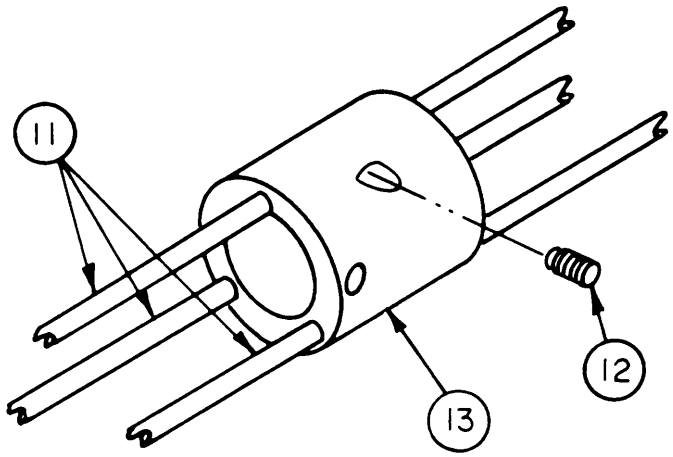
c Remove three setscrews (9) and slide sleeve spacer assembly (10) from metallic tubes (11).



3

a. Remove three setscrews (12).

b. Slide optical element erector lens cell assembly (13) off metallic tubes (11) and remove.

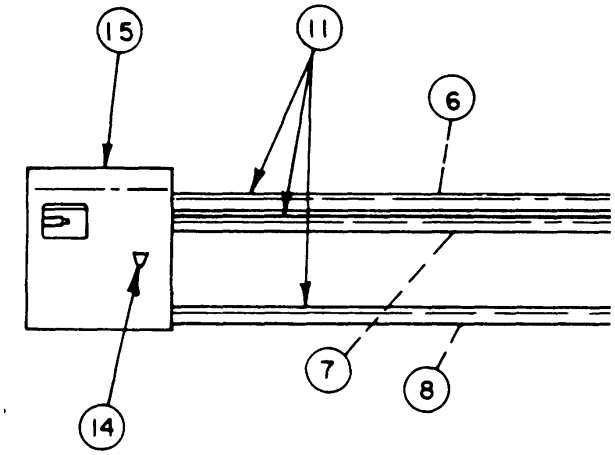


4

a. Remove three setscrews (14).

b. Remove three metallic tubes (11) from the rear sleeve assembly (15).

c. Remove wires (6, 7, and 8) from three metallic tubes (11).



CLEANING/REPAIR (REAR SECTION).

a. Dust the lenses with the brush in the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

d. If objective tube is damaged, order objective tube assembly 11584702 for replacement.

5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (REAR SECTION).

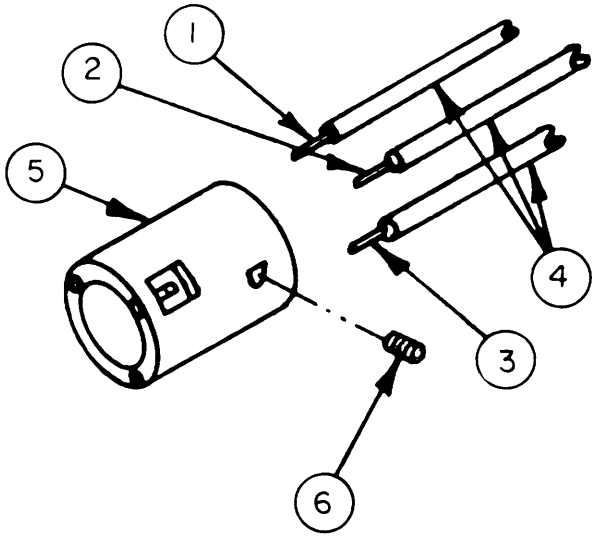
1

a. If necessary, fabricate a piece of each color wire. See appendix E (figures E-1, E-2, and E-5) for fabrication instructions.

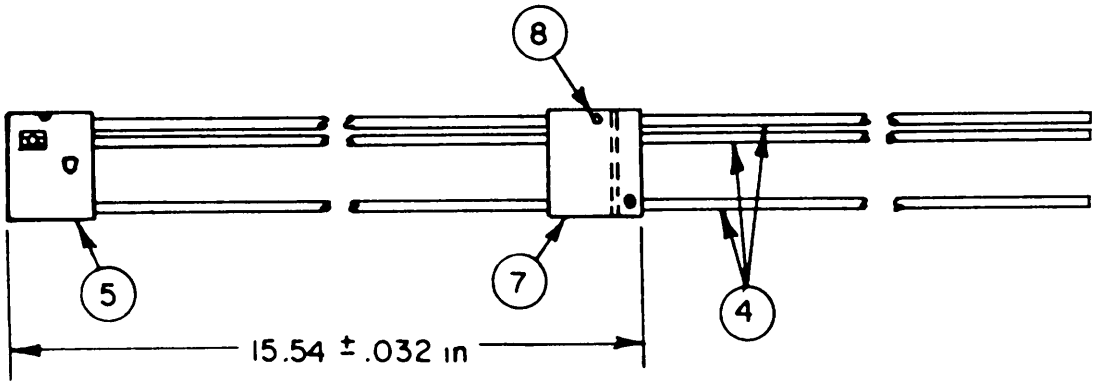
b. Insert the white wire (1), black wire (2), and blue wire (3) into the three metallic tubes (4).

c. Slide three metallic tubes (4) into the rear sleeve assembly (5) according to the color code tags attached during disassembly.

d. Install and tighten three setscrews (6).



2

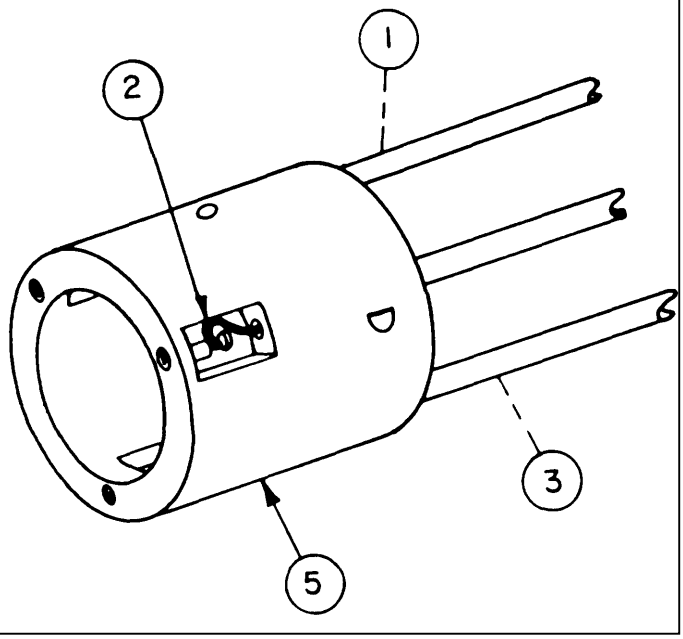


a. Slide optical element erector lens cell assembly (7) on the three metallic tubes (4) with the end containing the lens facing away from the rear sleeve assembly (5) and the optical element erector lens cell assembly (7) located 15.54±0.032 inches from the end of the rear sleeve assembly. See appendix G for converting decimal measurements into fractions.

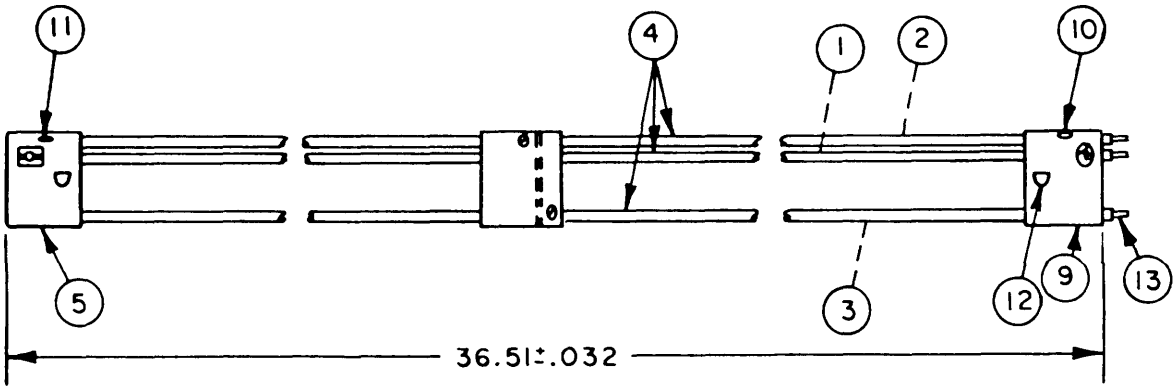
b. Install and tighten three setscrews (8).

3

Remove the color code tags and solder the three wires (1, 2, and 3) to the three terminals in the rear sleeve assembly (5). See TM 9-254.



4



NOTE

Ensure the three wires in the metallic tubes are inserted through the holes in the sleeve spacer assembly (9) when installing the sleeve spacer assembly.

a. Position sleeve spacer assembly (9) on the three metallic tubes (4) with screw hole (10) on the same side as screw hole (11) in the rear sleeve assembly (5).

b. Position sleeve spacer assembly 36.51+0.032 inches from the end of the rear sleeve (5). See appendix G for converting decimal measurements into fractions.

c. Install and tighten three setscrews (12).

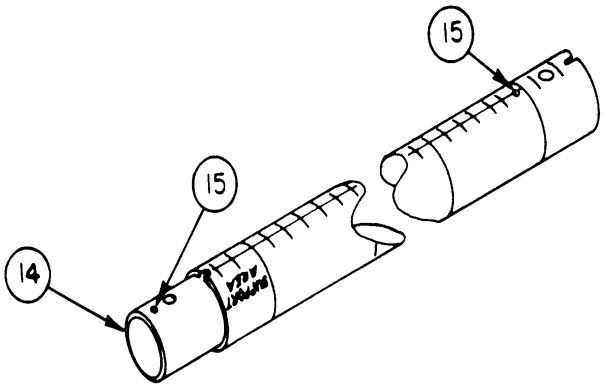
d. Trim any excess from the three wires (1, 2, and 3) and solder the three wires to the three electrical contacts (13). See TM 9-254.

5-20. OBJECTIVE TUBE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (REAR SECTION) (CONT).

5

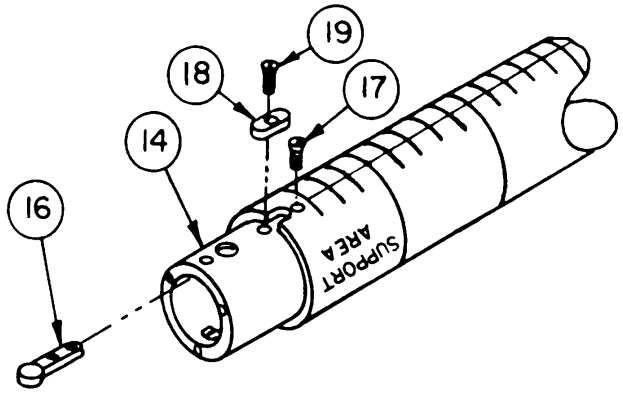
a Slide objective tube (14) over the assembled parts and aline the holes in the objective tube with the inserts in both the sleeve spacer assembly and rear sleeve assembly.
b Install and tighten two machine screws (15).



6

a. Position lock assembly (16) in the objective tube (14) with the tab in the hole and install machine screw (17).

b. Install machine key (18), machine screw (19), and tighten machine screws (17 and 19).



5-21. OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:

a. Disassembly/Cleaning/Repair b. Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

Materials/Parts
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)

References
TM 9-254

Troubleshooting References
5-4 A distorted image is seen through the M3 Borescope

Equipment Condition
5-46 Optical element erector lens cell assembly removed from objective tube assembly

DISASSEMBLY/CLEANING/REPAIR.

a. If setscrews or optical instrument lens is damaged, remove three setscrews (1) from lens mounting sleeve (2).

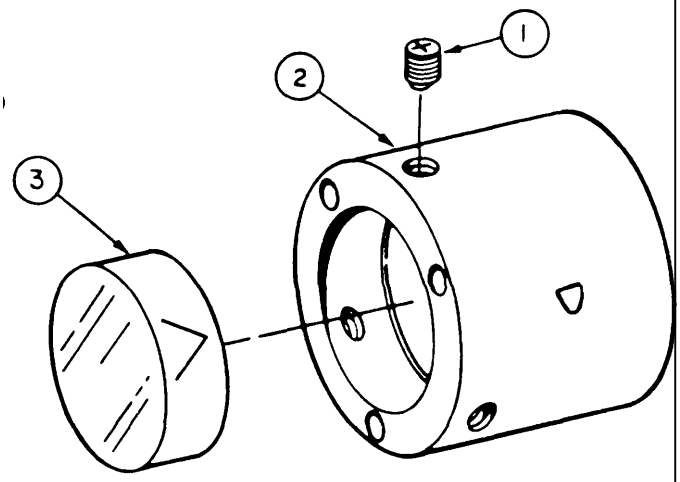
b. Remove optical instrument lens (3) from lens mounting sleeve (2).

c. Dust optical instrument erector lens (3) with the brush in the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

d. Inspect for cracks, breaks, worn or missing parts.

e. .Replace authorized parts. See appendix C.

f If lens mounting sleeve (2) is damaged, order optical element erector lens cell assembly 11584718 for replacement.



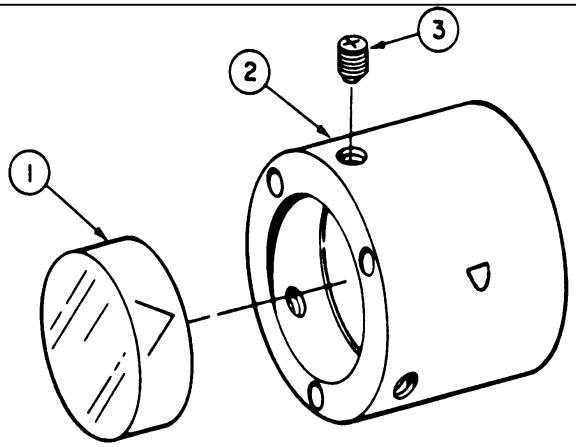
5-21. OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY--MAINTENANCE INSTRUCTIONS CONT).

REASSEMBLY.

a. If removed, install optical instrument lens (1) in lens mounting sleeve (2).

b. Insert three setscrews (3) in lens mounting sleeve (2).

c. Tighten setscrews (3) evenly.



5-22. OBJECTIVE LENS OPTICAL CELL ASSEMBLY—MAINTENANCE INSTRUCTIONS.

This task covers:

a. Disassembly
b. Cleaning Repair
c. Reassembly

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

Materials/Parts
General purpose detergent (item 5, app D)
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)
Technical methyl ethyl ketone (item 7, app D)

References
TM 9-254

Troubleshooting References
5-4 A distorted image is seen through the M3 Borescope

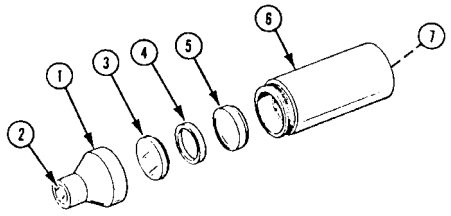
Equipment Condition
5-46 Objective lens optical cell assembly removed from forward section of objective tube assembly

DISASSEMBLY.

NOTE

Care should be taken when disassembling optical components of the M3 Borescope. All lenses should be marked when removed to facilitate installation. Refer to page 5-9 for marking instructions.

a. Unscrew cap (1) with optical instrument lens (2) attached and remove
b. Slide optical instrument lens (3), ring spacer (4), and optical instrument lens (5) out of optical element retainer (6) with attached optical instrument window (7).



5-22. OBJECTIVE LENS OPTICAL CELL ASSEMBLY—MAINTENANCE INSTRUCTIONS.

CLEANING/REPAIR.

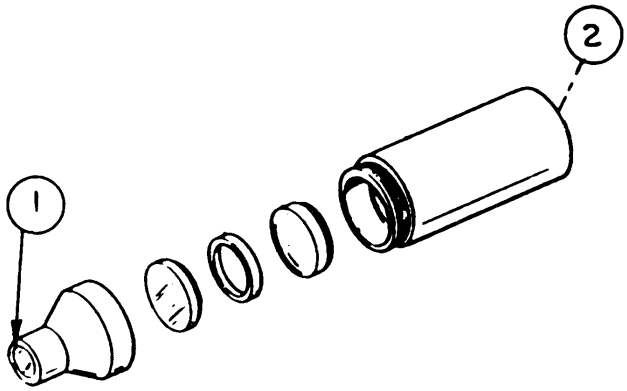
WARNING

Solvent vapors are toxic. Do not use solvent in a confined space. Avoid long periods of breathing solvent vapors and/or contact with skin.

NOTE

Technical methyl ethyl ketone may be used to clean lenses if the optical lens cleaning compound is not available, but water spots must first be removed with a general purpose detergent and lens paper.

a. Dust optical instrument lens (1) and optical instrument window (2) with the brush from socket wrench case. Clean all lenses with lens paper and optical lens cleaning compound. See TM 9-254.



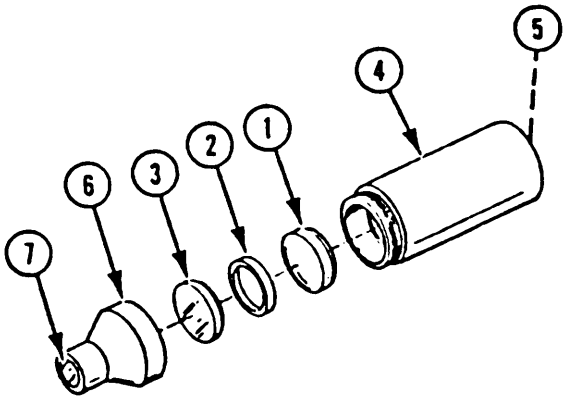
b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

REASSEMBLY.

a. With the convex (rounded) sides of the optical instrument lenses (1 and 3) facing into the optical element retainer and with the ring spacer (2) between them, position optical instrument lens (1), ring spacer (2), and optical instrument lens (3) in the optical element retainer (4) with attached optical instrument window (5).

b. Install cap (6) with optical instrument lens (7) attached and tighten.



5-23. OBJECTIVE ASSEMBLY SLEEVE SPACER--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

References
TM 9-254

Equipment Condition
5-46 Objective assembly sleeve spacer removed from forward section of objective tube assembly

DISASSEMBLY/REPAIR/REASSEMBLY.

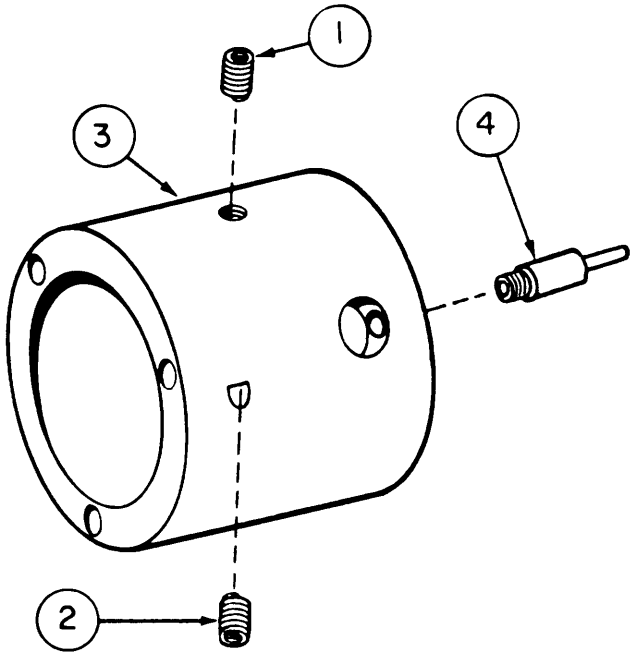
a. If damaged, remove screw thread insert (1) and three screw thread inserts (2) from objective assembly sleeve spacer (3). See TM 9-254.

b. If damaged, remove three electrical contacts (4).

c. Inspect for cracks, breaks, worn, or missing parts.

d. Replace authorized parts. See appendix C. If removed, install new screw thread insert (1) and three new screw thread inserts (2) flush with objective assembly sleeve spacer (3) using insertion tool. See TM 9-254.

f. If removed, install three new electrical contacts (4).



5-24. REAR SLEEVE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

References
TM 9-254

Equipment Condition
5-46 Rear sleeve assembly removed from objective tube assembly

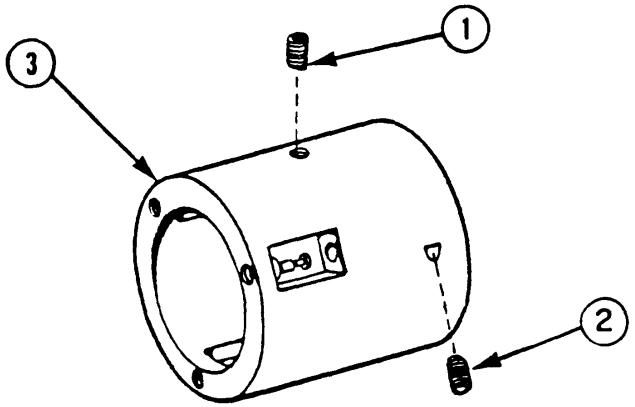
DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove screw thread insert (1) and three screw thread inserts (2) from rear sleeve (3). See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

d. If removed, install new screw thread insert (1) and three new screw thread inserts (2) flush with rear sleeve (3) using insertion tool. See TM 9-254.



5-25. SLEEVE SPACER ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

Equipment Condition
5-46 Sleeve spacer assembly removed from rear section of objective tube assembly

References
TM 9-254

DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove screw thread insert (1) and three screw thread inserts (2) from sleeve spacer (3). See TM 9-254.

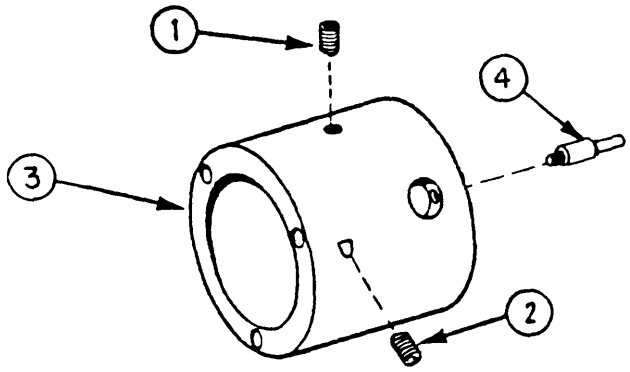
b. If damaged, remove three electrical contacts (4).

c. Inspect for cracks, breaks, worn, or missing parts.

d. Replace authorized parts. See appendix C.

e. If removed, install new screw thread insert (1) and three new screw thread inserts (2) flush with sleeve spacer (3) using insertion tool. See TM 9-254.

f. If removed, install three new electrical contacts (4).



5-26. BORESCOPE EXTENSION TUBE I, II, or III--MAINTENANCE INSTRUCTIONS.

This task covers:

a. Disassembly
b. Cleaning/Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools

Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

References

TM 9-254

Troubleshooting References

5-4 A distorted image is seen through the M3 Borescope

Materials/Parts

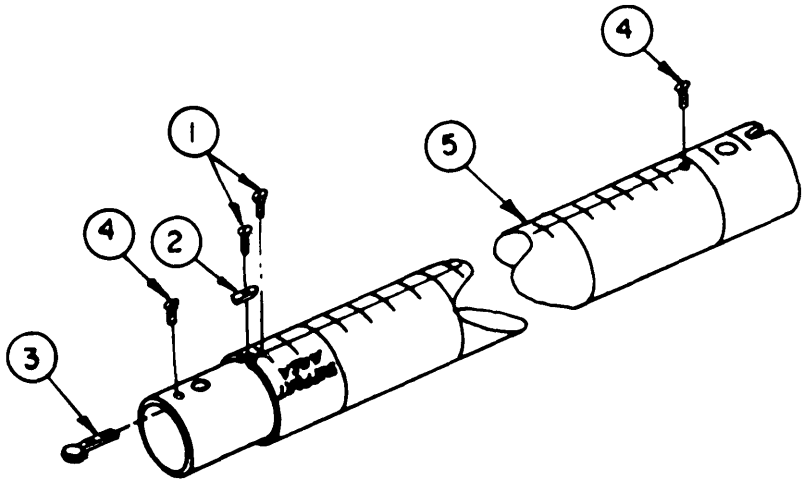
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)
Solder (item 15, app D)

DISASSEMBLY.

NOTE

Each borescope extension tube consists of two interconnecting sections and their associated parts. Disassembly of each section is identical, as well as the maintenance on the associated parts. Reassembly of the two interconnecting sections is identical except for the placement of the optical element erector lens cell assembly. Except for that difference, the maintenance instructions are described only once in this manual and are meant to apply to all sections and subassemblies which make up the three borescope extension tubes.

1

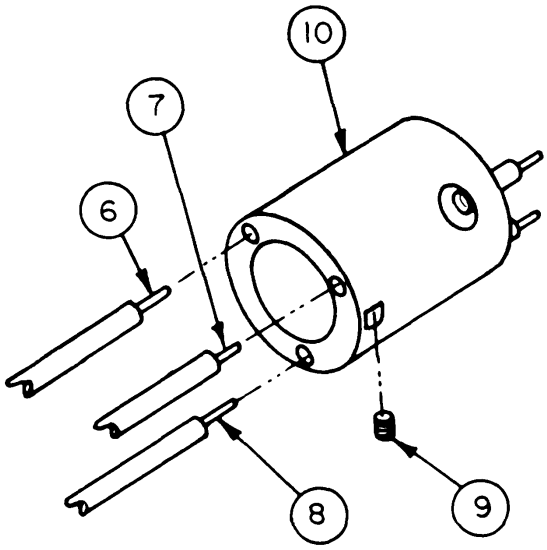


a. Remove two machine screws (1), machine key (2), and lock assembly (3).

b. Remove two machine screws (4).

c. Slide tube (5) off of remaining parts.

2



a. Tag the terminals in the rear sleeve assembly with the wire color code.

b. Unsolder each end of wires (6, 7, and 8).

c. Remove three setscrews (9) and sleeve spacer assembly (10).

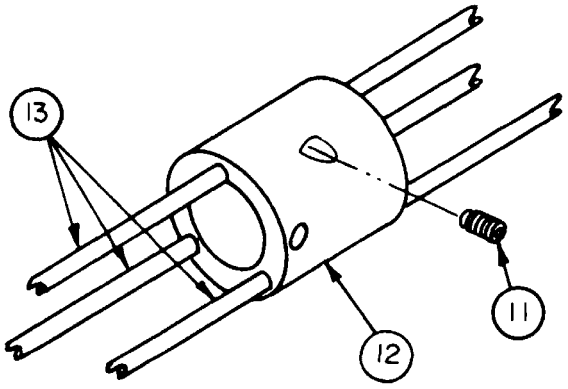
5-26. BORESCOPE EXTENSION TUBE , I, II, or III--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

3

a. Remove three setscrews (11).

b. Slide optical element erector lens cell assembly 12) off metallic tubes (13).



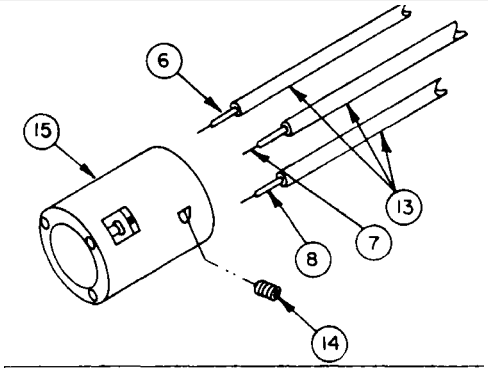
4

a. Remove three setscrews (14).

b. Remove three metallic tubes (13) from the rear sleeve assembly (15).

c. Remove wires (6, 7, and 8) from three metallic tubes (13)

.



CLEANING/REPAIR.

a. Dust the lenses with the brush in the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

d. If tube is damaged, order borescope extension tube 11584733, 11584734, or 11584735 for replacement.

REASSEMBLY.

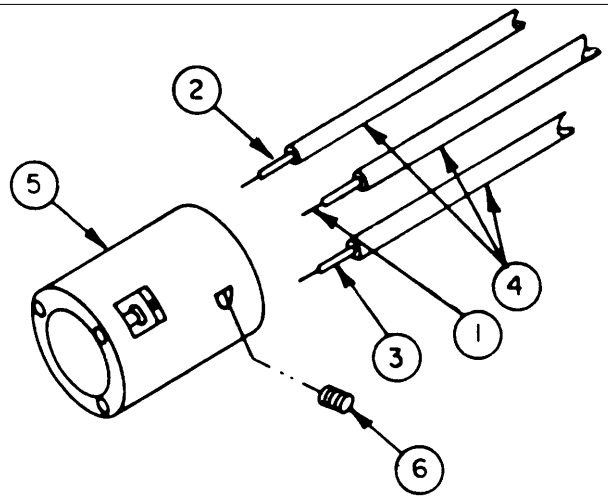
1

a. If necessary, fabricate a new black wire (1), white wire (2), or blue wire (3). See appendix E (figures E-1, E-2, and E-5) for fabrication instructions.

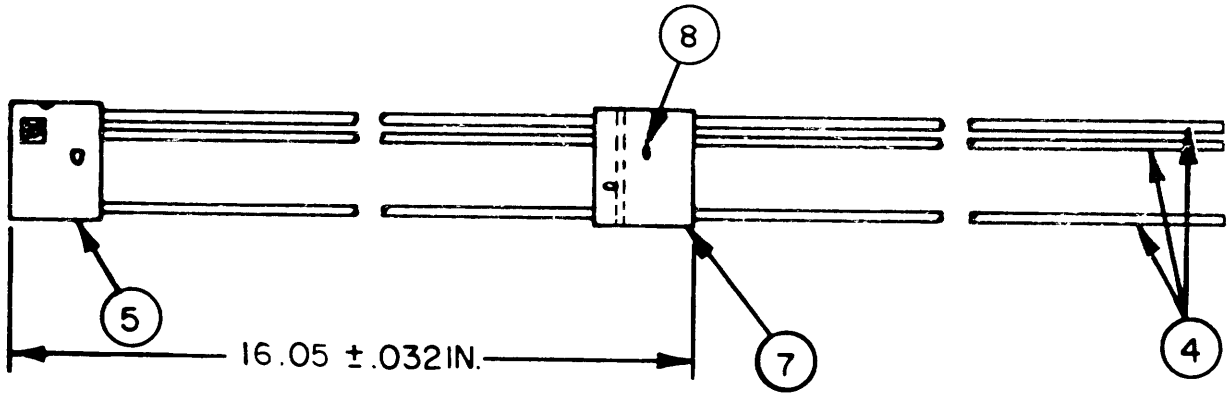
b. Insert the wires into the three metallic tubes (4).

c. Install three metallic tubes (4) in the rear sleeve assembly (5) according to the color code tags attached during disassembly.

d. Install and tighten three setscrews (6).



2



NOTE

This procedure pertains to the front section of the borescope extension tube.

a. Slide the optical element erector lens cell assembly (7) on the three metallic tubes (4) with the end containing the lens facing the rear sleeve assembly (5).

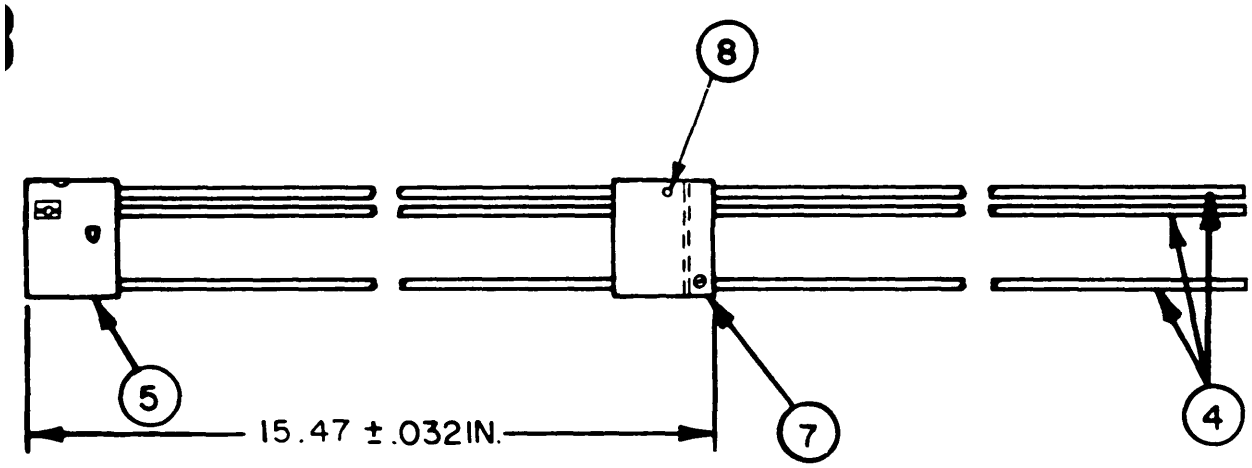
b. Locate the optical element erector lens cell assembly (7) 16.05±0.032 inches from the rear of the rear sleeve assembly (5). See appendix G for converting decimal measurements into fractions.

c. Install and tighten three setscrews (8).

5-26. BORESCOPE EXTENSION TUBE I, II, or III--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

3



NOTE
This procedure pertains to the rear section of the borescope extension tube.

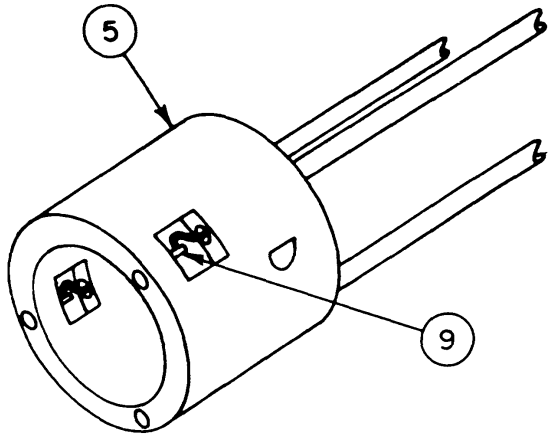
a. Slide the optical element erector lens cell assembly (7) on the three metallic tubes (4) with the end containing the lens facing away from the rear sleeve assembly (5).

b. Locate optical element erector lens cell assembly (7) 15.47+0.032 inches from the rear of the rear sleeve assembly (5). See appendix G for converting decimal measurements into fractions.

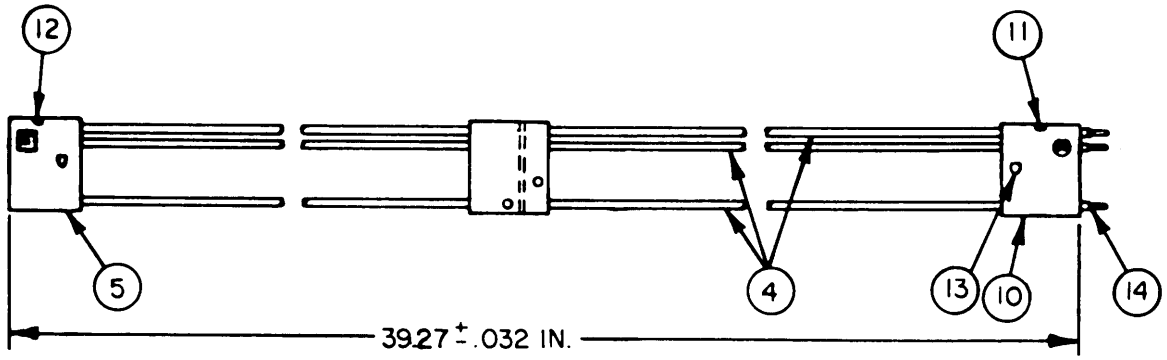
c. Install and tighten three setscrews (8).

4

Remove the color code tags and solder the three wires to the three terminals (9) in the rear sleeve assembly (5). See TM 9-254.



5



NOTE

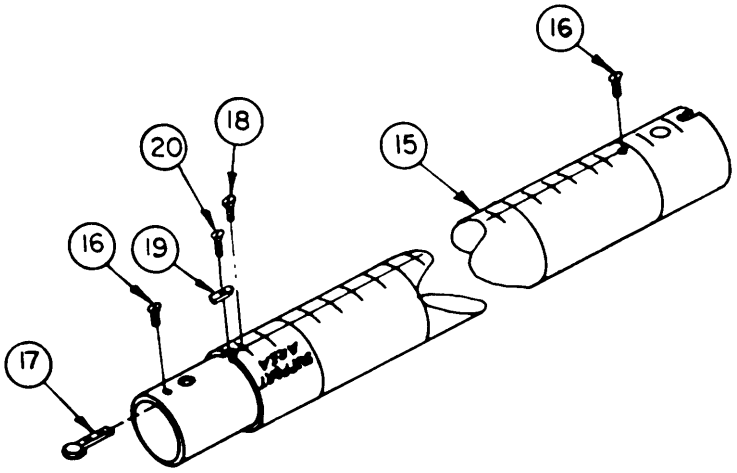
Ensure the three wires in the metallic tubes are inserted through the holes in the sleeve spacer assembly (10) when installing the sleeve spacer assembly.

a. Slide sleeve spacer assembly (10) on the three metallic tubes (4), with screw hole (11) on the same side as screw hole (12) in the rear sleeve assembly (5).

b. Set sleeve spacer assembly (10) 39.27+0.032 inches from the rear of the rear sleeve assembly (5) and tighten three setscrews (13). See appendix G for converting decimal measurements into fractions.

c. Trim any excess from the black, white, and blue wires and solder the three wires to the three electrical contacts (14). See TM 9-254.

6



a. Install tube (15) over assembled parts and aline holes in the tube with holes in sleeve spacer and rear sleeve assemblies.

b. Install and tighten two machine screws (16).

c. Position lock assembly (17) in the tube (15) with tab in hole and install machine screw (18).

d. Install machine key (19), machine screw (20), and tighten machine screws (18 and 20).

5-27. REAR SLEEVE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

References
TM 9-254

Equipment Condition
5-68 Rear sleeve assembly removed from borescope extension tube

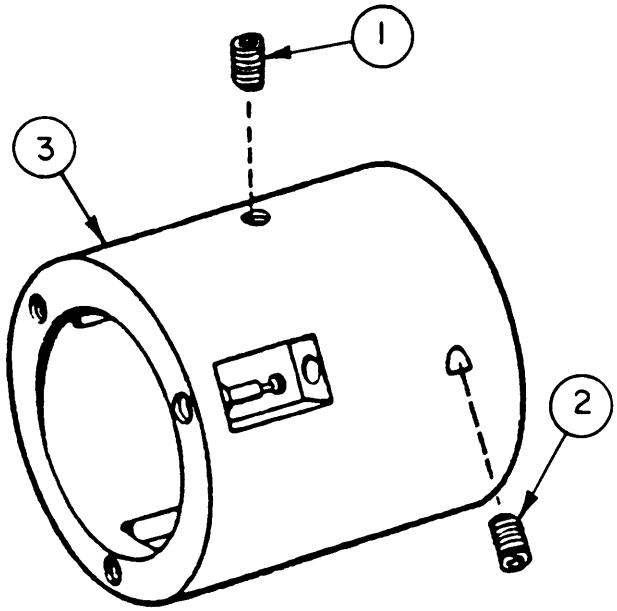
DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove screw thread insert (1) and three screw thread inserts (2) from rear sleeve (3). See TM 9-254.

b. Inspect for cracks, breaks, worn, or missing parts.

c. Replace authorized parts. See appendix C.

d. If removed, install new screw thread insert (1) and three new screw thread inserts (2) flush with rear sleeve (3) using insertion tool. See TM 9-254.



5-28. OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:

a. Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

Materials/Parts
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)

References
TM 9-254

Troubleshooting References
5-4 A distorted image is seen through the M3 Borescope

Equipment Condition
5-68 Optical element erector lens cell assembly removed from borescope extension tube

DISASSEMBLY/CLEANING/REPAIR.

a. If setscrews or optical instrument lens is damaged, remove three setscrews (1) from lens mounting sleeve (2).

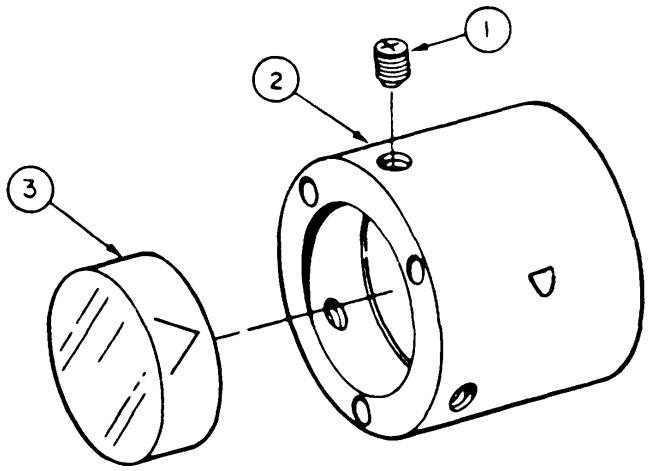
b. Remove optical instrument lens (3) from lens mounting sleeve (2).

c. Dust optical instrument lens (3) with the brush from the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

d. Inspect for cracks, breaks, worn or missing parts.

e. Replace authorized parts. See appendix C.

f. If lens mounting sleeve is damaged, order optical element erector lens cell assembly 11584718 for replacement.



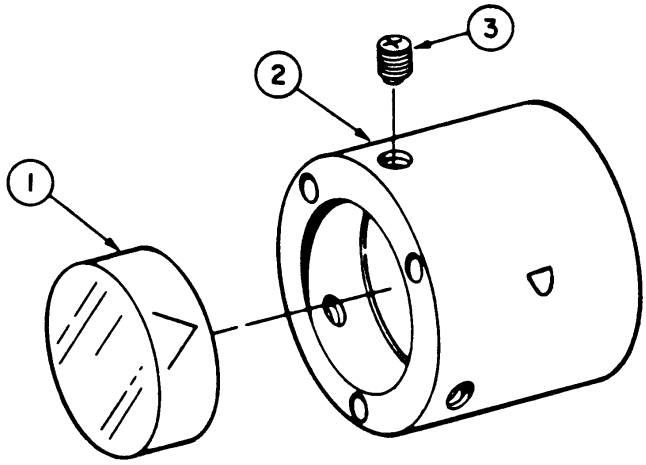
5-28. OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY.

a. If removed, install optical instrument lens (1) in lens mounting sleeve (2).

b. If removed, install three new setscrews (1) in lens mounting sleeve (2).

c. Tighten three setscrews (3) evenly.



5-29. SLEEVE SPACER ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760
Helicoil insert and tool kit 4131-04-1

References
TM 9-254

Equipment Condition
5-68 Sleeve spacer assembly removed from borescope extension tube

DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove screw thread insert (1) and three screw thread inserts (2) from sleeve spacer (3). See TM 9-254.

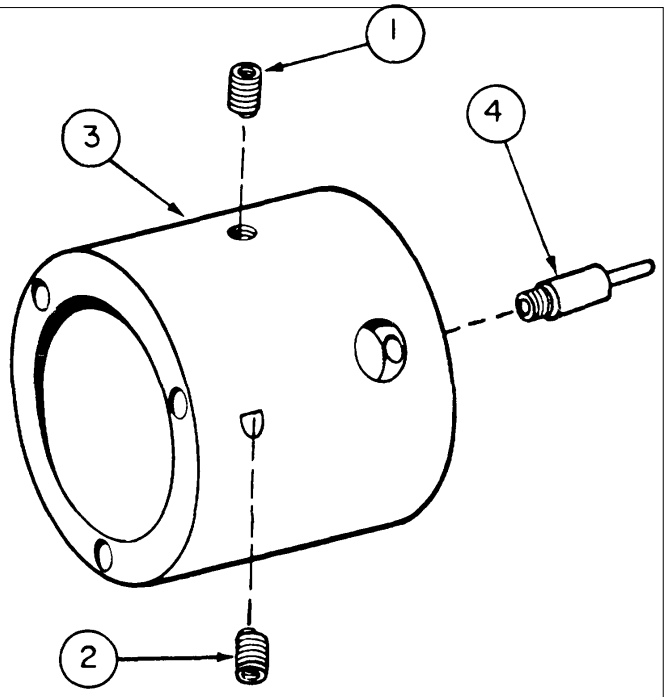
b. If damaged, remove three electrical contacts (4) from sleeve spacer (3).

c. Inspect for cracks, breaks, worn or missing parts.

d. Replace authorized parts. See appendix C.

e. If removed, install new screw thread insert (1) and three new screw thread inserts (2) flush with sleeve spacer (3) using insertion tool. See TM 9-254.

f. If removed, install three new electrical contacts (4) in sleeve spacer (3).



5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

Materials/Parts
Solder (item 15, app D)
Tongue depressor (item 4, app D)
Sealing compound (item 13, app D)

References
TM 9-254

Troubleshooting References
5-7 Lamp in illuminating head assembly or blind illuminating head assembly is too bright or too dim
5-5 Lamp will not illuminate in illuminating head assembly or blind illuminating head assembly

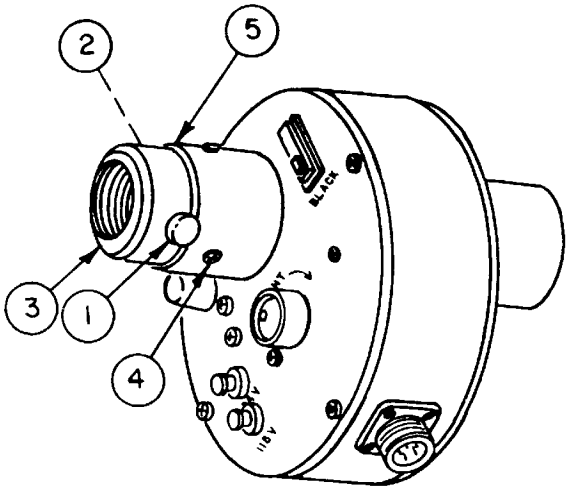
Equipment Condition
5-121 Eyepiece assembly removed from adapter tube assembly

DISASSEMBLY.

1

a. Remove thumbscrew (1) and setscrew (2) from housing (3).

b. Remove three machine screws (4) and slide housing (3) from adapter tube subassembly (5).

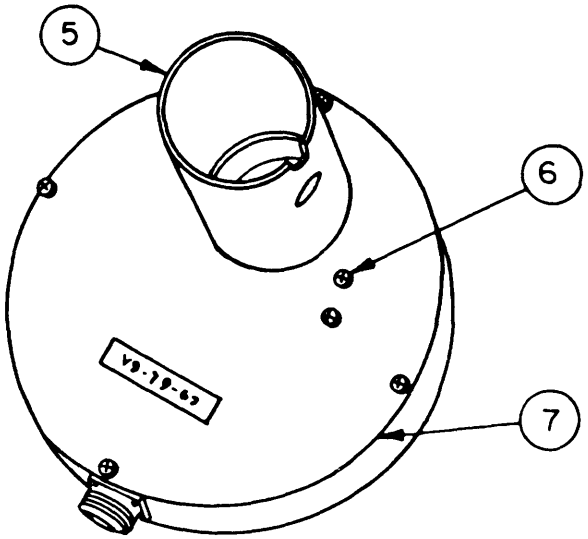


2

CAUTION

Hold adapter tube subassembly (5) stationary to prevent damaging electrical contacts.

Remove six machine screws (6) and rear cover (7).

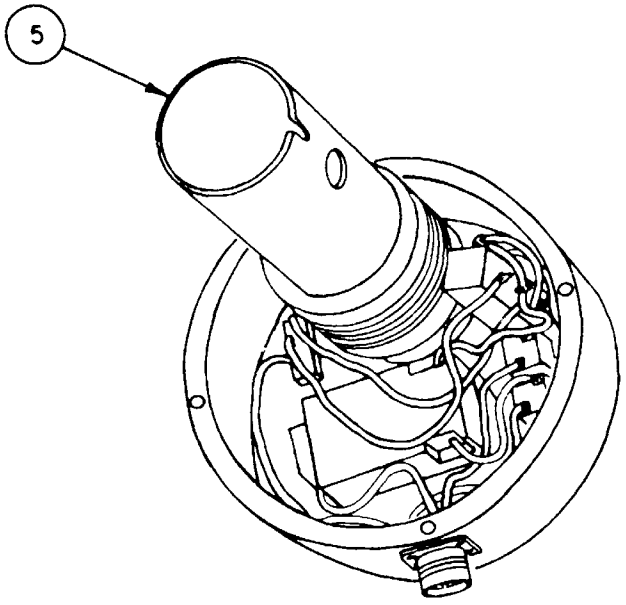


3

CAUTION

Remove adapter tube subassembly (5) carefully to prevent damage to electrical contacts.

Slide out adapter tube subassembly (5).

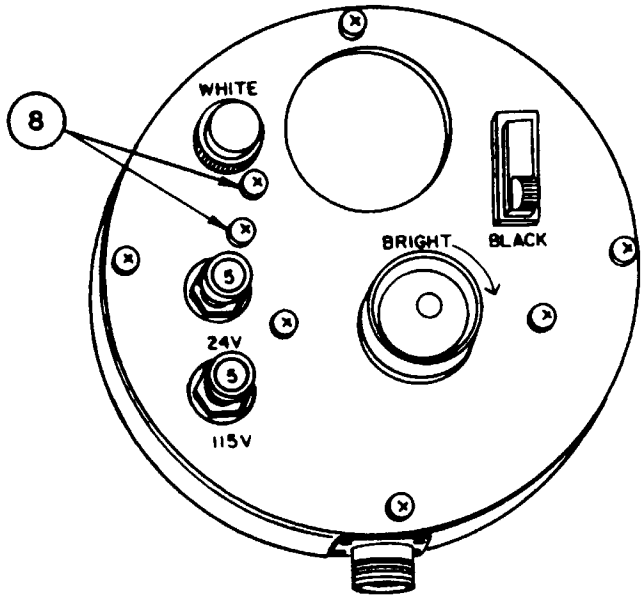


5-30. ADAPTER TUBE ASSEMBLY—(EARLY PRODUCTION)—MAINTENANCE INSTRUCTIONS (CONT).

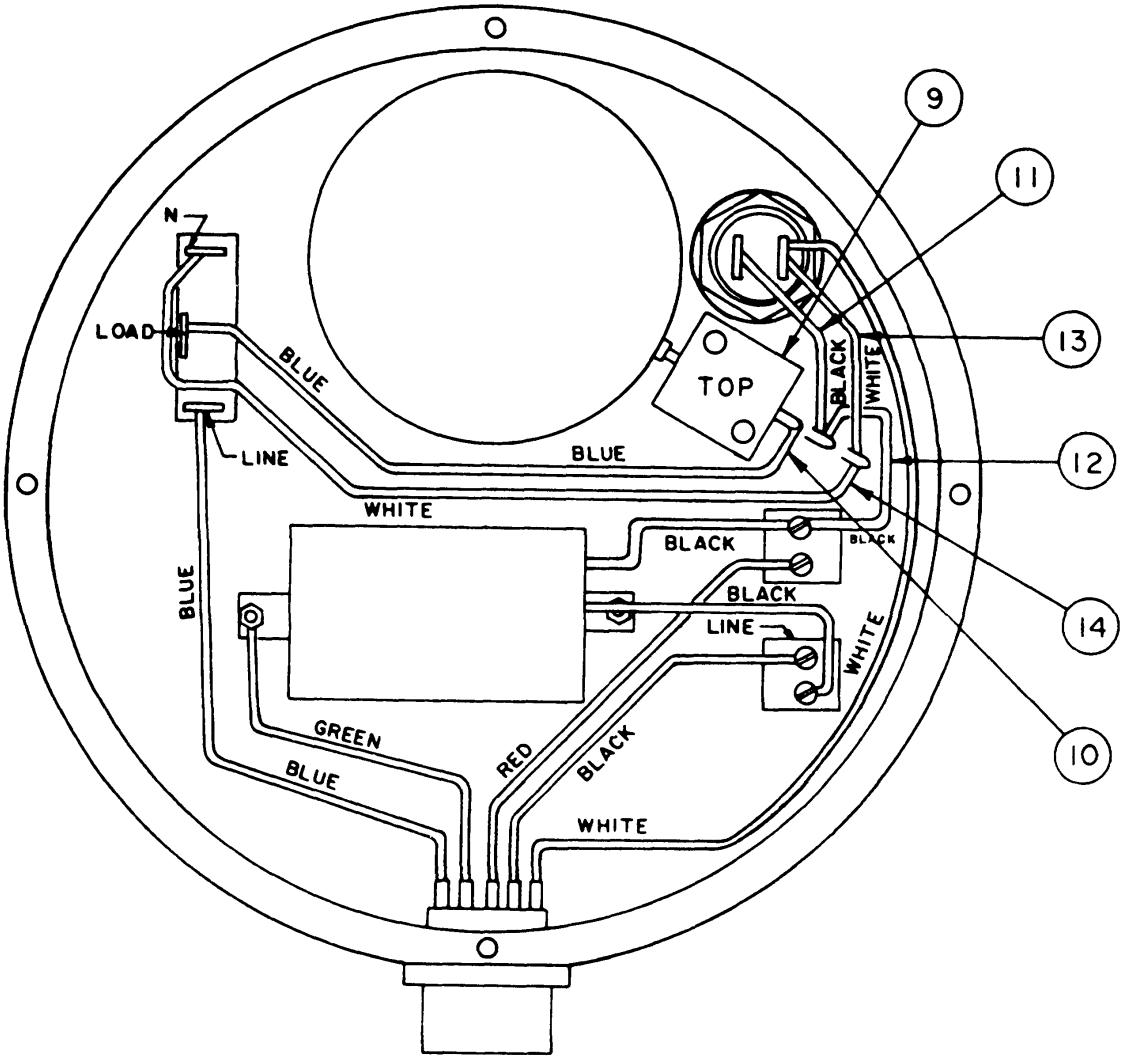
DISASSEMBLY (CONT).

4

Remove two machine screws (8).



5



CAUTION

Do not allow solder to enter the sleeves on the electrical assembly contact.

a. Lift out electrical assembly contact (9) and unsolder blue wire (10), black wires (11 and 12) and two white wires (13 and 14).

b. Remove electrical assembly contact (9).

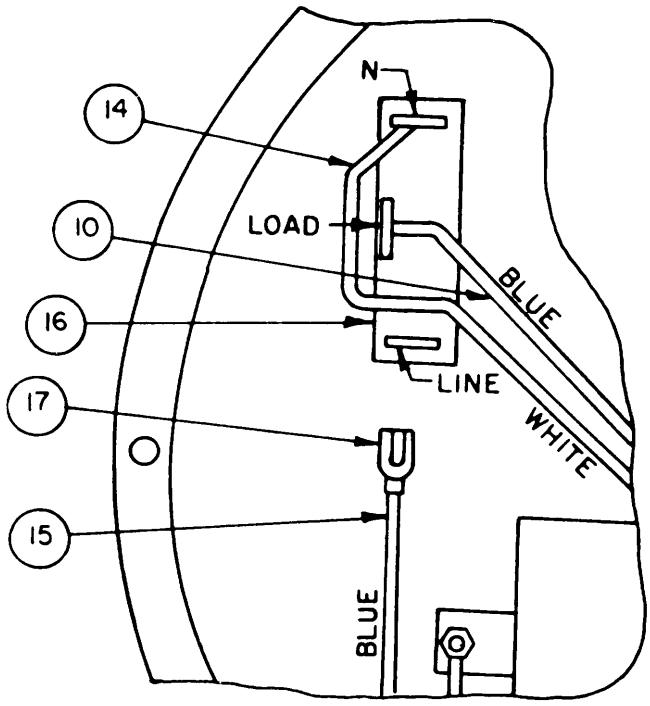
5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

6

a. Disconnect two blue wires (10 and 15) and one white wire (14) from toggle switch (16).

b. If necessary to replace wires or lug terminals, unsolder and remove the lug terminals (17) from the three wires (10, 14, and 15).

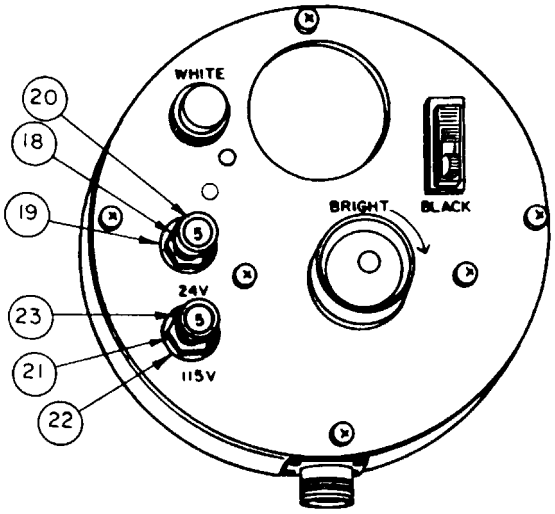


7

a. Remove nut (18), washer (19), and 24-volt circuit breaker (20).

b. Remove nut (21), washer (22), and 115-volt circuit breaker (23)

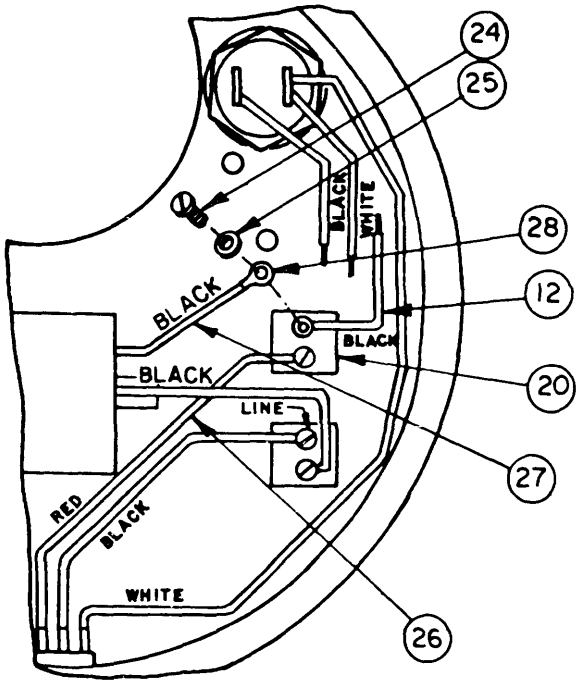
.



8

a. Remove two screws (24), two washers (25), red wire (26) and two black wires (12 and 27) from 24-volt circuit breaker (20).

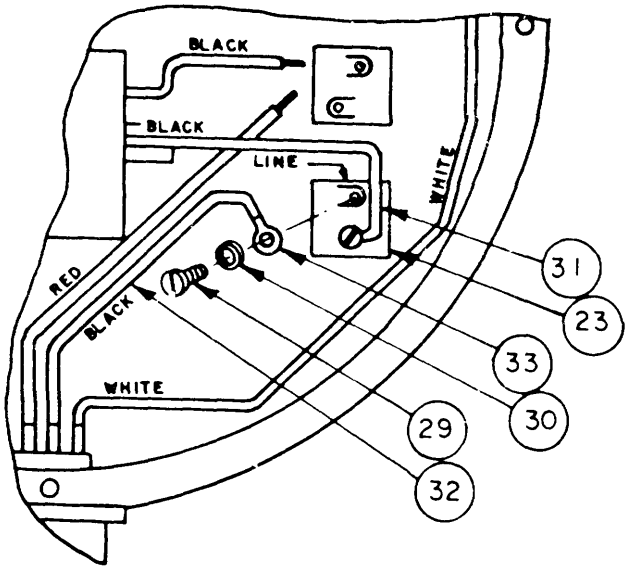
b. If necessary to replace wires or lug terminals, unsolder and remove two lug terminals (28)



9

a. Remove two screws (29), two washers (30), and two black wires (31 and 32) from 115-volt circuit breaker (23).

b. If necessary to replace wires or lug terminals, unsolder and remove two lug terminals (33).



5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

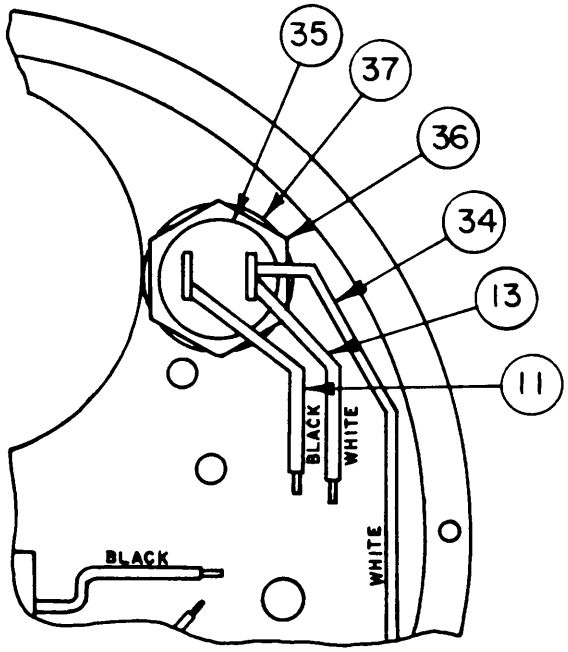
DISASSEMBLY (CONT).

10

a. Unsolder and remove black wire (11) and two white wires (13 and 34) from indicator light (35).

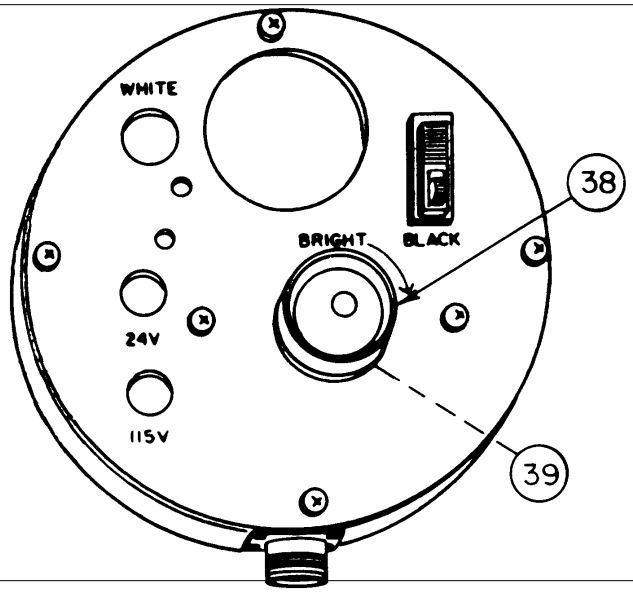
b. Remove nut (36), washer (37), and indicator light (35)

.



11

Pull knob (38) off of electric light control (39).

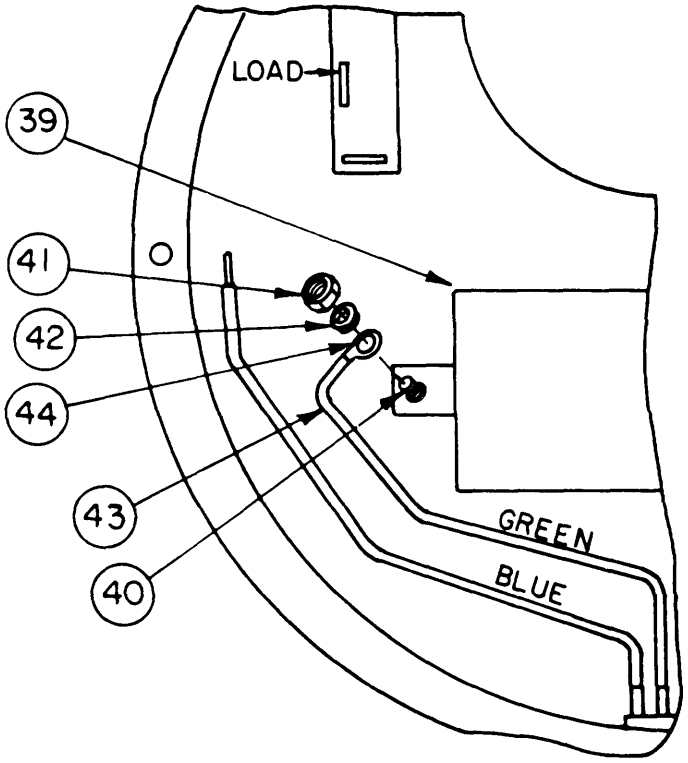


12

a. Remove two screws (40), two nuts (41), and two washers (42) from electric light control (39).

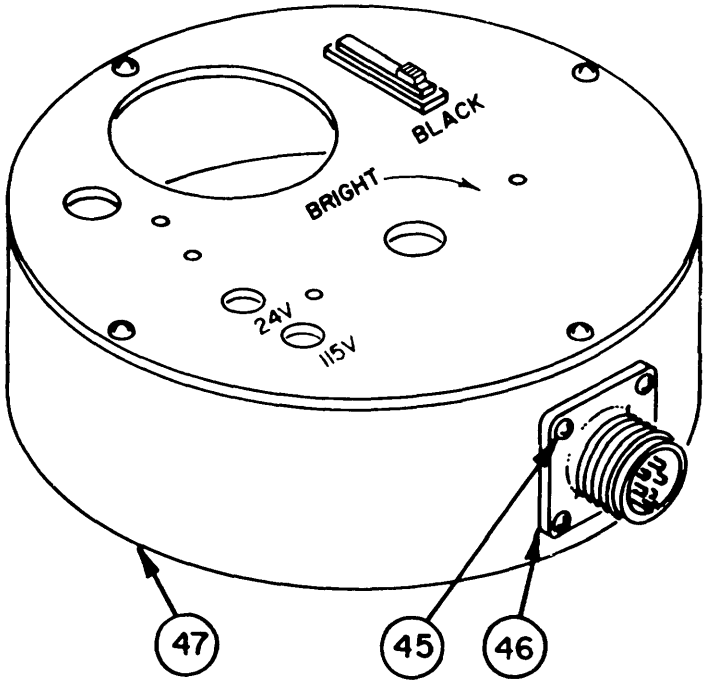
b. Lift out electric light control (39).

c. If necessary to replace green wire (43) or lug terminal, remove lug terminal (44) from green wire (43).



13

Remove four machine screws (45) and electrical receptacle connector (46) from body (47).

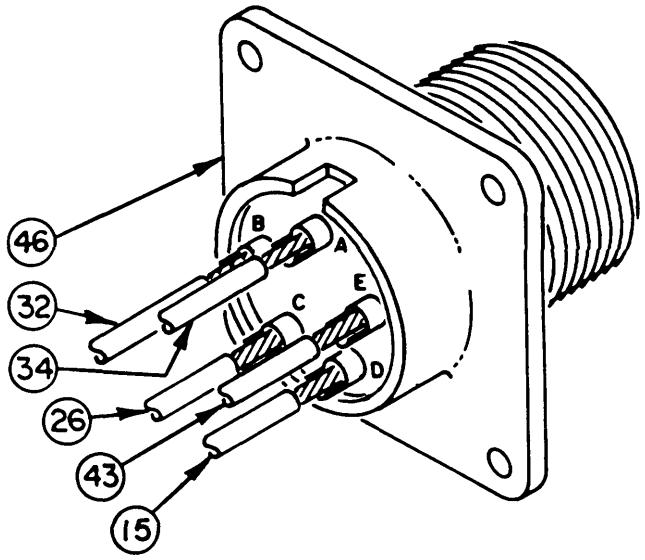


5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

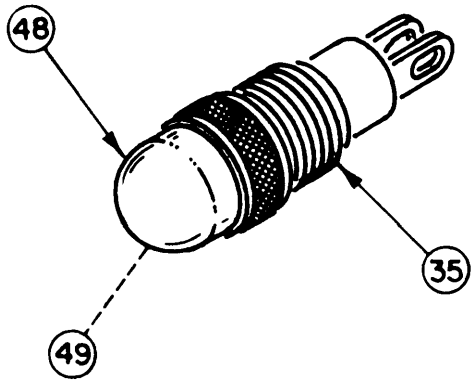
14

If it is necessary to replace the wires or the electrical receptacle connector (46), unsolder white wire (34) from pin A, black wire (32) from pin B, red wire (26) from pin C, blue wire (15) from pin D, and green wire (43) from pin E.



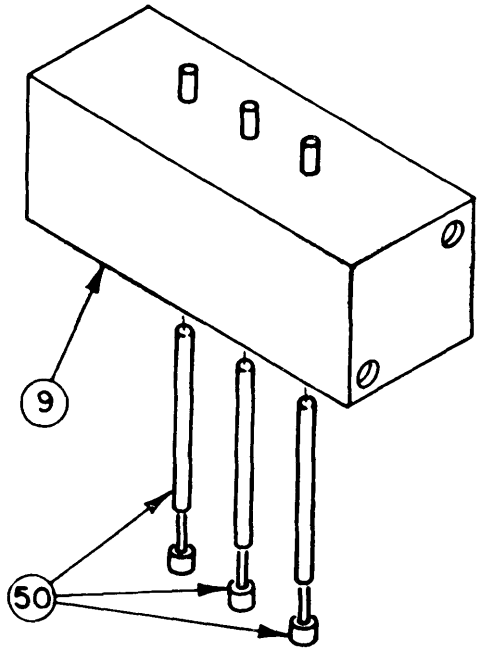
15

Remove the lens cap (48) and incandescent lamp (49) from indicator light (35).



16

If damaged, remove the three electrical contacts (50) by pulling out of the electrical assembly contact (9).



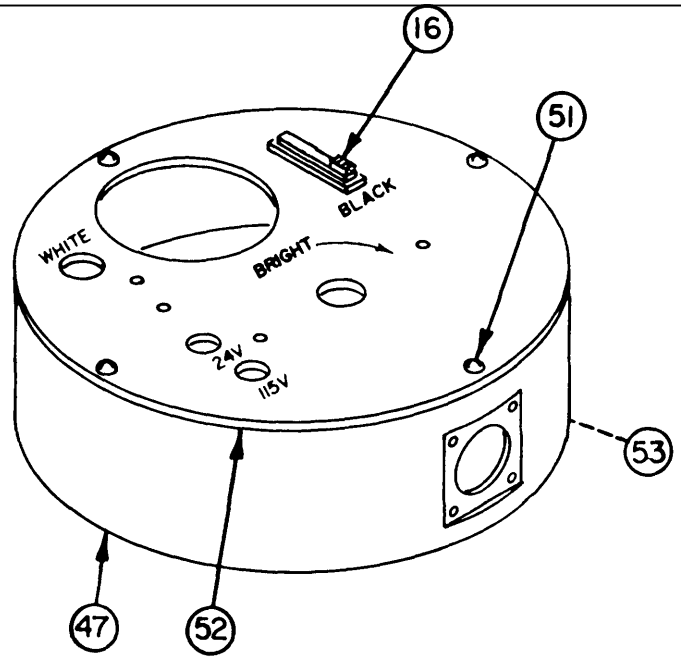
17

a. Remove four machine screws (51) only as necessary for replacement, from front cover (52) and body (47).

b. Separate front cover (52) and body (47).

c. Remove toggle switch (16).

d. Remove decal diagram (53) if damaged.



5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REPAIR.

a. inspect for cracks, breaks, worn or missing parts.

b. Replace authorized parts. See appendix C.

c. If front cover, rear cover, body, or housing is damaged, order M3 Borescope with equipment 11584701 for replacement.

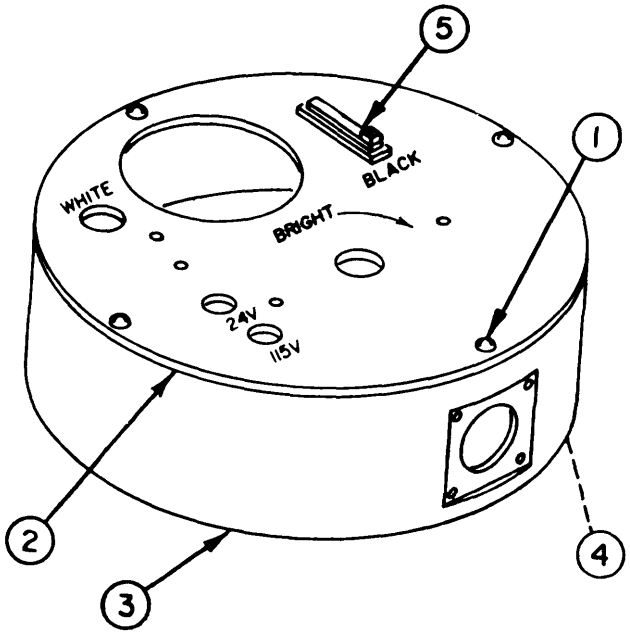
REASSEMBLY.

1

a. If removed, apply sealing compound and install and tighten four machine screws (1) in front cover (2) and body (3).

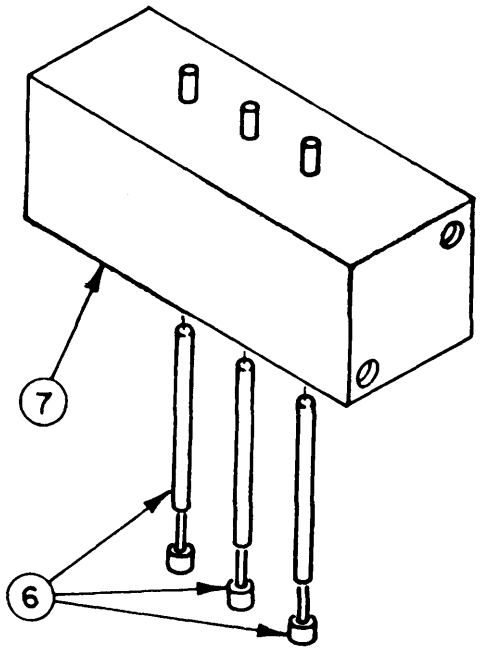
b. Install decal diagram (4) if removed.

c. Install toggle switch (5).



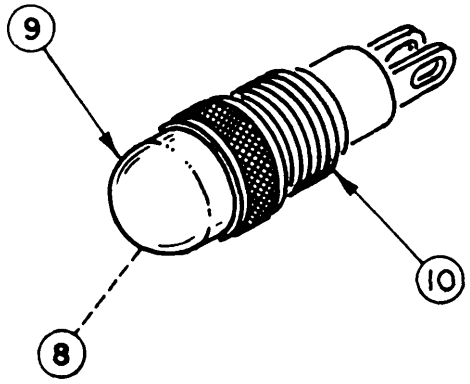
2

If removed, push three new electrical contacts (6) into electrical assembly contact (7).



3

Install incandescent lamp (8) and lens cap (9) in indicator light (10).



5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

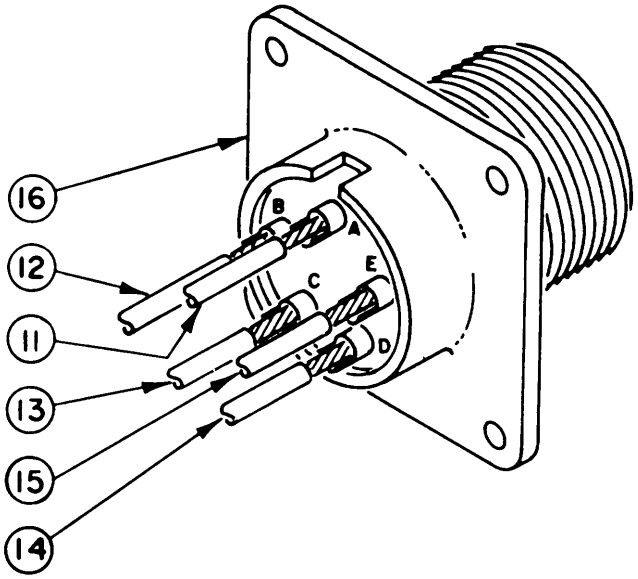
4

NOTE

Refer to the electrical system schematic diagram (page 5-13) when installing electrical wiring.

a. If necessary, fabricate new wires. See appendix E (figures E-1 thru E-5) for fabrication instructions.

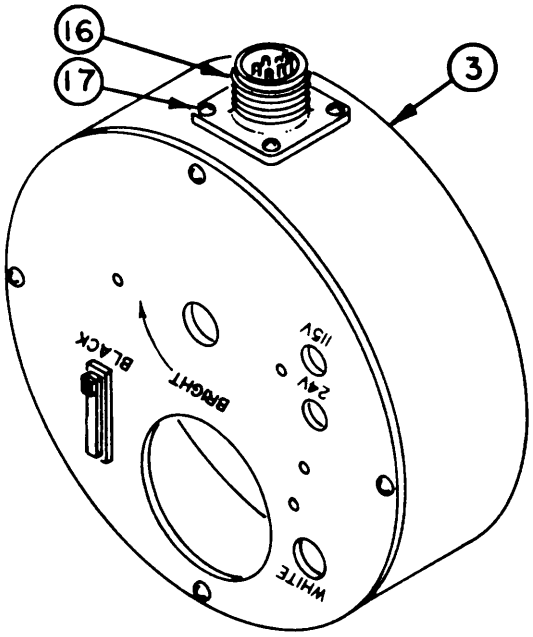
b. If removed, install white wire (11) in pin A, black wire (12) in pin B, red wire (13) in pin C, blue wire (14) in pin D, and green wire (15) in pin E on electrical receptacle connector (16).



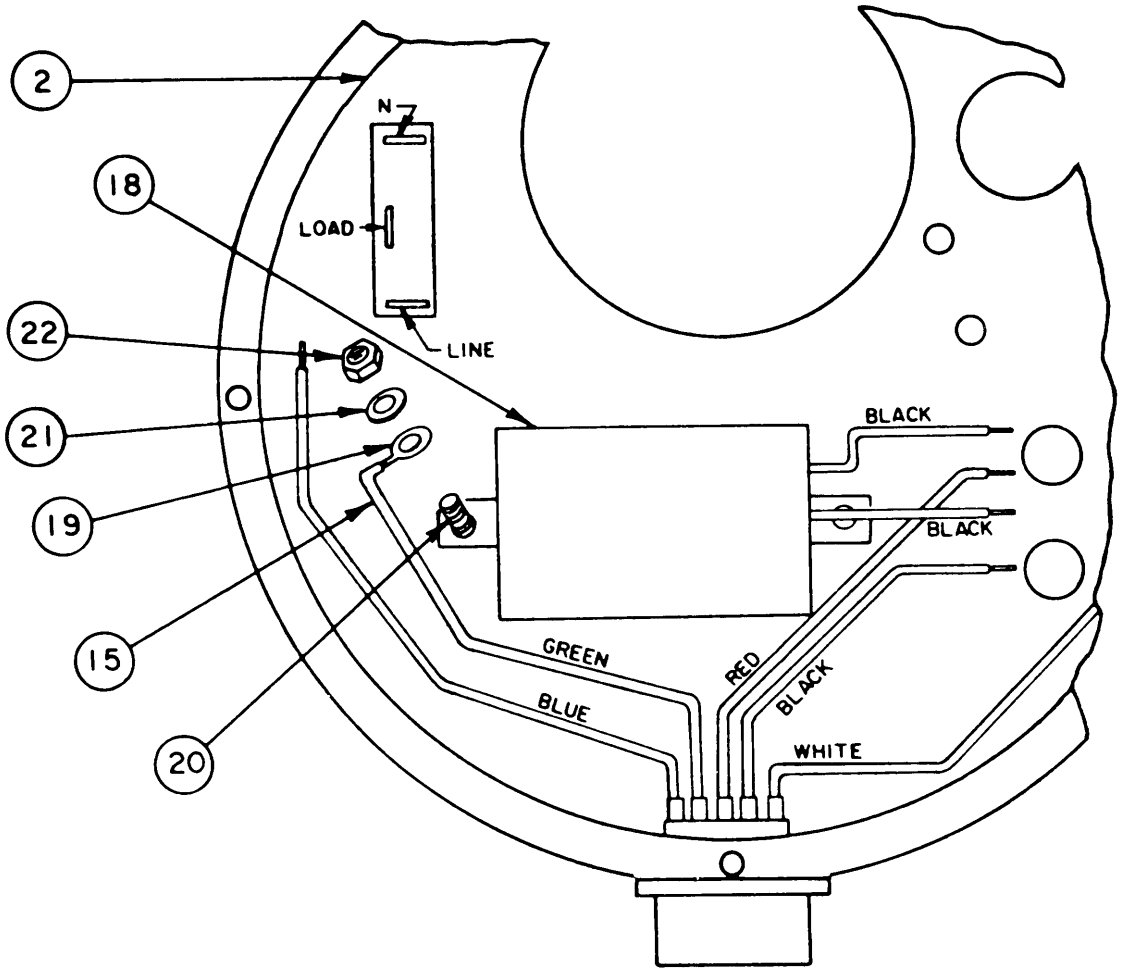
5

a. Position electrical receptacle connector (16) in body (3).

b. Apply sealing compound and install and tighten four machine screws (17).



6



a. Position electric light control (18) in front cover (2) with the stem of the electric light control protruding through the hole toward the front, and the wires toward the two holes where the circuit breakers will be installed.
b. If removed, solder lug terminal (19) to green wire (15). See TM 9-254.
c. Position lug terminal (19) over the mounting hole.
d. Install and tighten two screws (20), two washers (21), and two nuts (22) to secure the lug terminal (19) and the electric light control (18).

5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

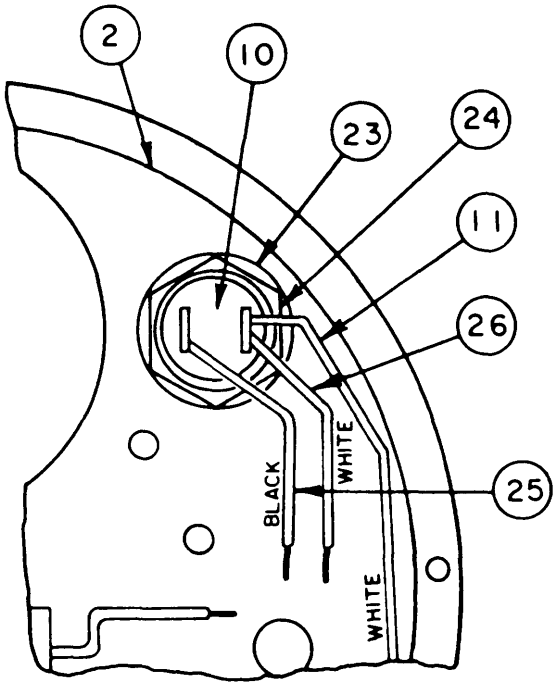
REASSEMBLY (CONT).

7

a. Position indicator light (10) in front cover (2).

b. Install and tighten washer (23) and nut (24).

c. Solder black wire (25) and two white wires (11 and 26) to the indicator light (10) terminals. See TM 9-254.

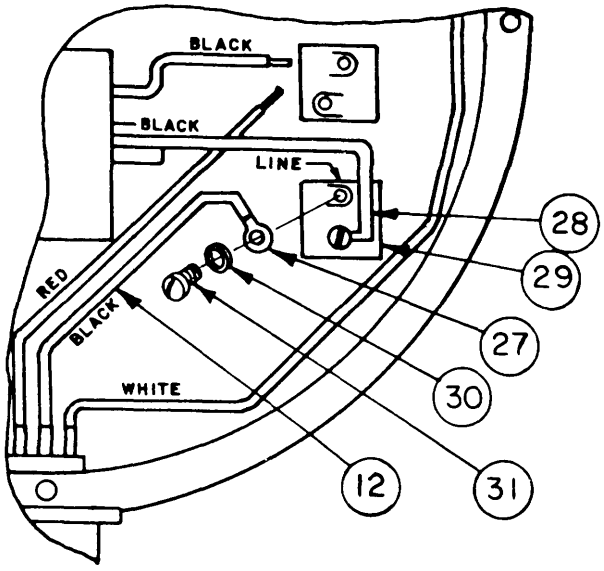


8

a. If removed, solder two lug terminals (27) on the two black wires (12 and 28). See TM 9-254.

b. Position two black wires (12 and 28) on 115-volt circuit breaker (29).

c. Install and tighten two washers (30) and two screws (31).

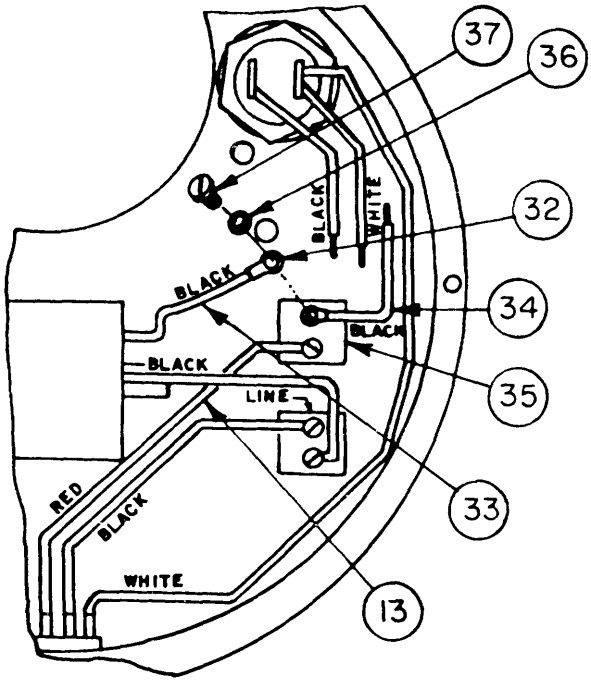


9

a. If removed, solder two lug terminals (32) on red wire (13) and two black wires (33 and 34). See TM 9-254.

b. Position red wire (13) and two black wires (33 and 34) on the 24-volt circuit breaker (35).

c. Install and tighten two washers (36) and two screws (37).



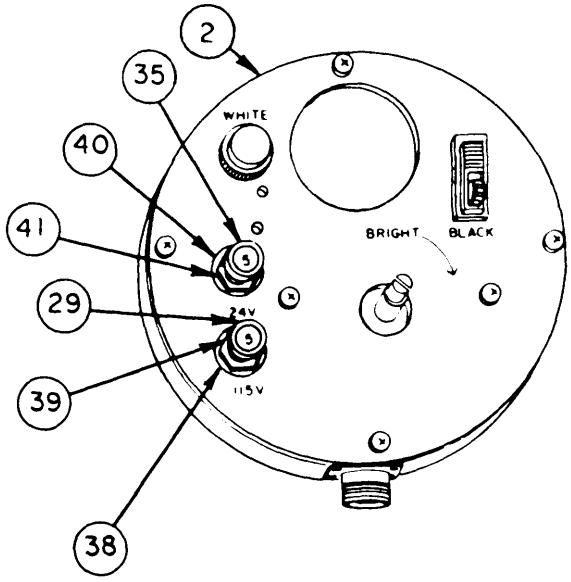
10

a. Position 115-volt circuit breaker (29) in front cover (2).

b. Install and tighten washer (38) and nut (39).

c. Position 24-volt circuit breaker (35) in front cover (2).

d. Install and tighten washer (40) and nut (41).



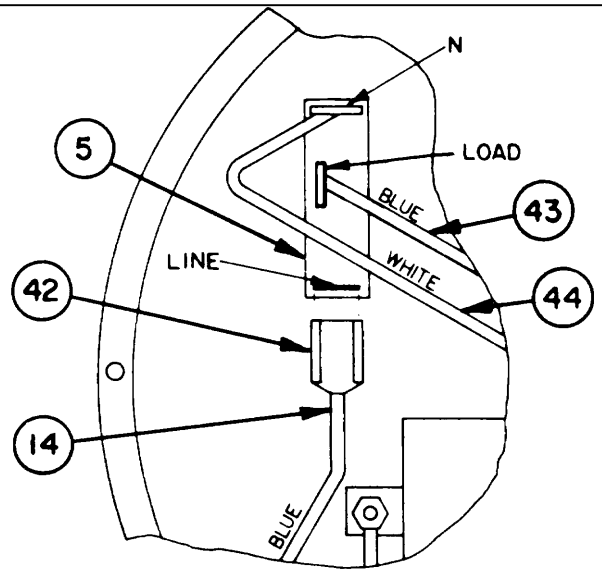
5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

11

a. If removed, solder three lug terminals (42) to the two blue wires (14 and 43) and white wire (44). See TM 9-254.

b. Install two blue wires (14 and 43) and white wire (44) on toggle switch (5).



12

CAUTION

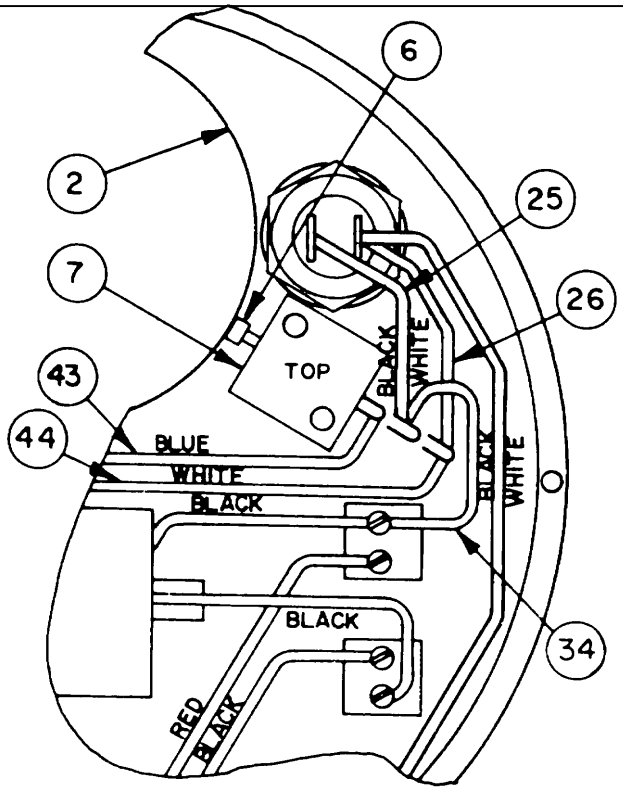
Do not allow solder to enter the sleeves on the electrical assembly contact (7).

NOTE

Ensure the three electrical contacts (6) have the spring loaded portion facing the large hole in the front cover where the adapter tube is installed.

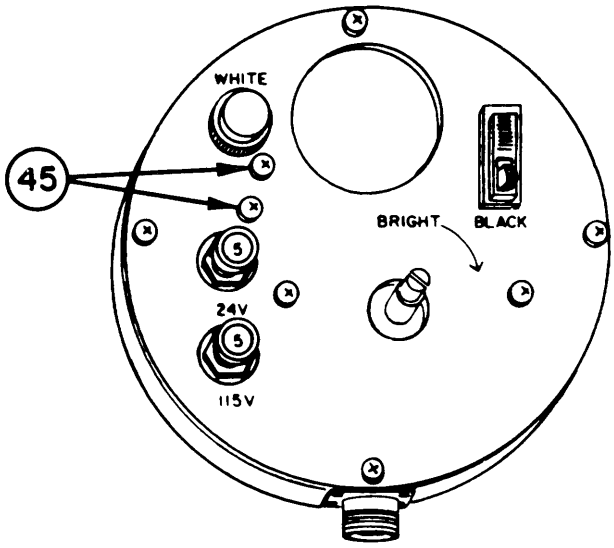
a. Solder blue wire (43) to the top contact, black wires (25 and 34) to the center contact, and two white wires (26 and 44) to the bottom contact of electrical assembly contact (7). See TM 9-254.

b. Position electrical assembly contact (7) on front cover (2).



13

Apply sealing compound and install and tighten two machine screws (45).

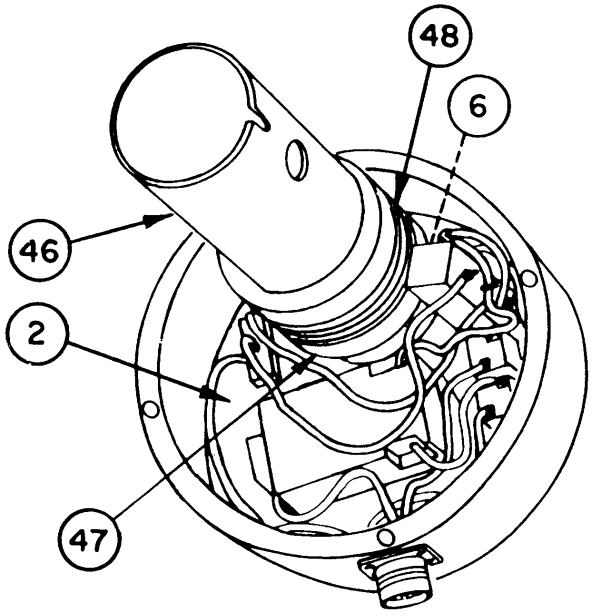


14

CAUTION

Using a wooden tongue depressor, ensure that the contacts are fully depressed before installing the adapter tube subassembly. This will prevent contacts from being bent or broken (which will lead to malfunction of electrical circuit and malfunction of illuminating head assembly).

Position adapter tube subassembly (46) with the stepped spacer (47) next to the front cover (2), and the three electrical contacts (6) against the three electrical contact rings (48).



5-30. ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

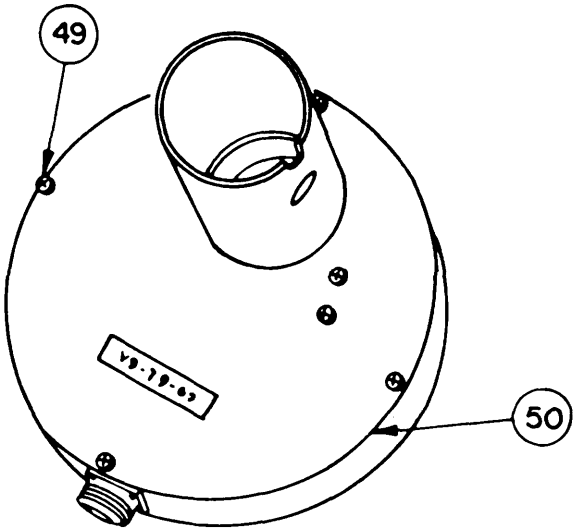
REASSEMBLY (CONT).

15

a. Apply sealing compound to six machine screws (49).

b. Install rear cover (50) and six machine screws (49).

c. Tighten six machine screws (49).



16

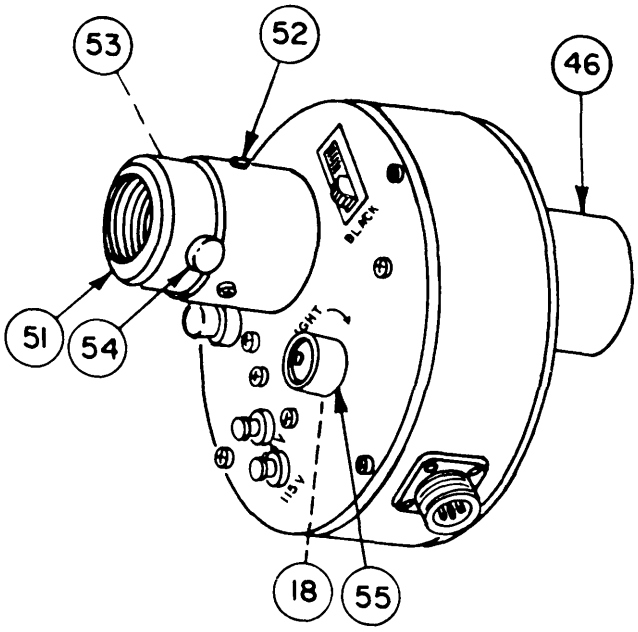
a. Position housing (51) in adapter tube subassembly (46) with holes alined.

b. Apply sealing compound and install and tighten three machine screws (52).

c. Install setscrew (53).

d. Install thumbscrew (54).

e. Install knob (55) onto the the stem of the electric light control (18).



5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

Materials/Parts
Solder (item 15, app D)
Tongue depressor (item 4, app D)
Sealing compound (item 13, app D)

References
TM 9-254

Troubleshooting References
5-7 Lamp in illuminating head assembly or blind illuminating head assembly is too bright or too dim
5-5 Lamp will not illuminate in illuminating head assembly or blind illuminating head assembly

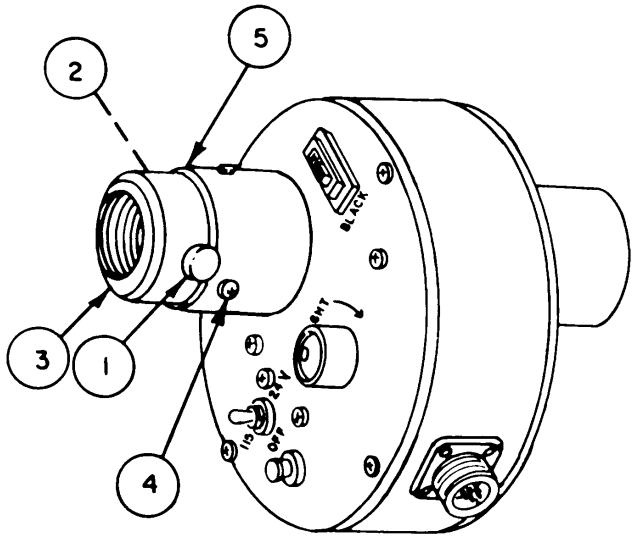
Equipment Condition
5-121 Eyepiece assembly is removed from adapter tube assembly

DISASSEMBLY.

1

a. Remove thumbscrew (1) and setscrew (2) from housing (3).

b. Remove three machine screws (4) and slide housing (3) from adapter tube subassembly (5).



5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS.

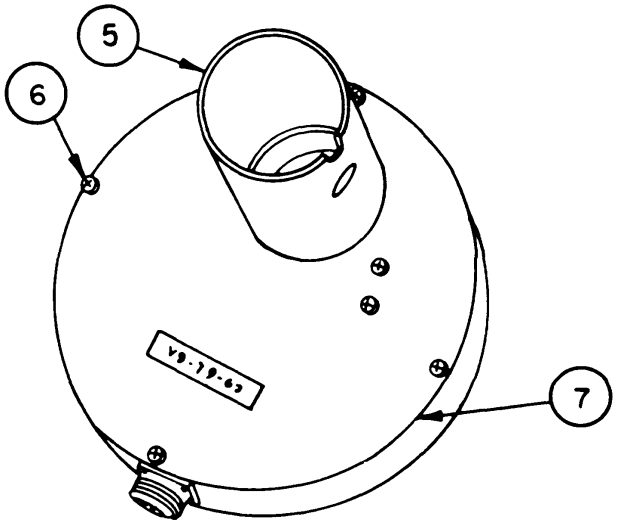
DISASSEMBLY (CONT).

2

CAUTION

Hold adapter tube subassembly (5) stationary to prevent damaging electrical contacts.

Remove six machine screws (6) and rear cover (7).

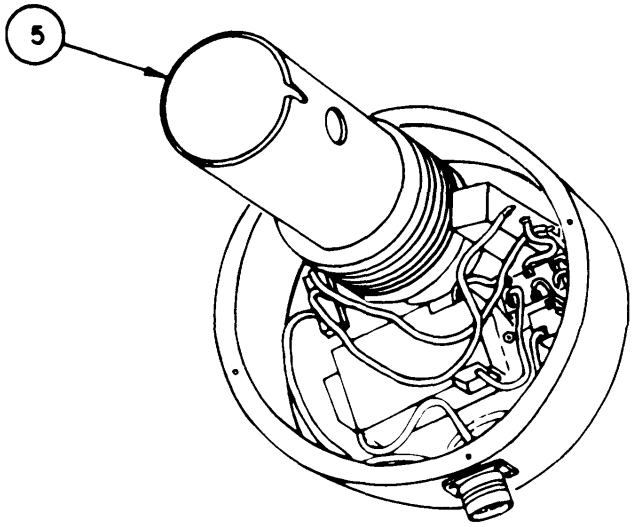


3

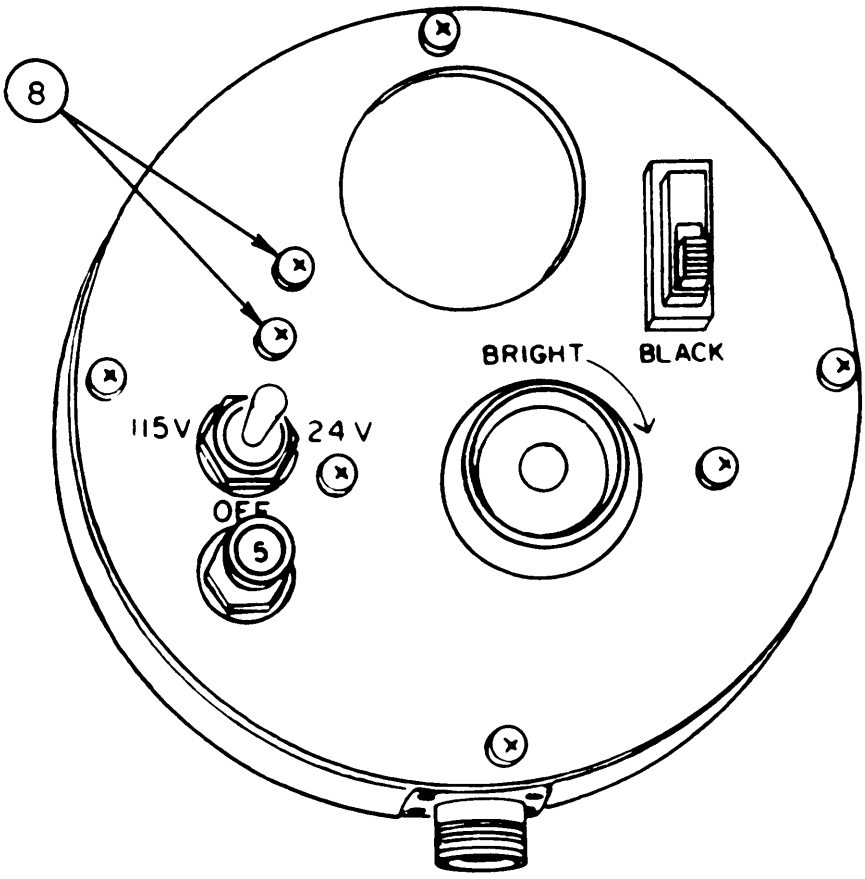
CAUTION

Remove adapter tube subassembly (5) carefully to prevent damage to electrical contacts.

Slide out adapter tube subassembly (5) from adapter tube assembly.



4



NOTE

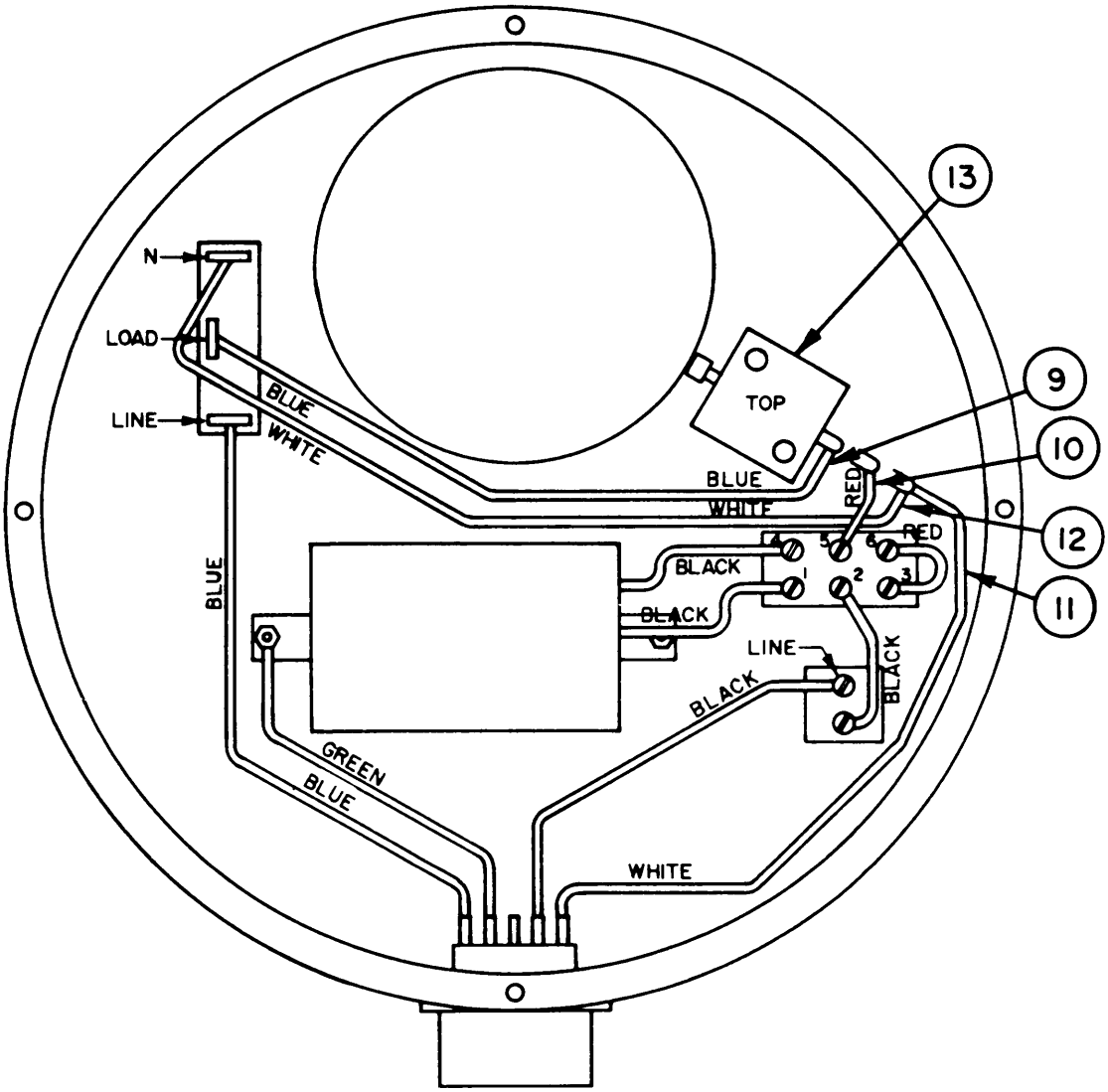
Modified adapter tube assemblies will have a plug where the indicator light was located.

Remove two machine screws (8).

5-31. ADAPTER TUBE ASSEMBILY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

5



CAUTION

Do not allow solder to enter the sleeves on the electrical assembly contact.

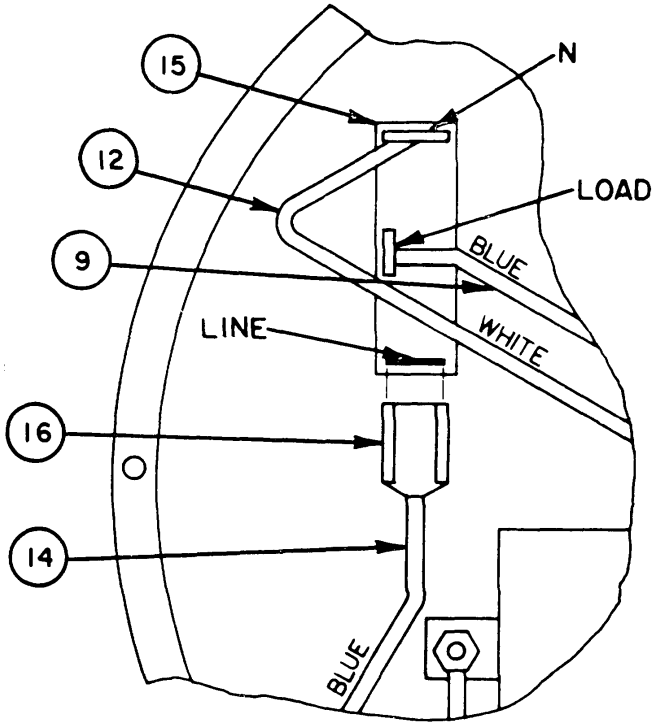
a. Pull out and unsolder blue wire (9), red wire (10), and two white wires (11 and 12) from electrical assembly contact (13).

b. Remove the electrical assembly contact (13).

6

a. Disconnect two blue wires (9 and 14) and one white wire (12) from toggle switch (15).

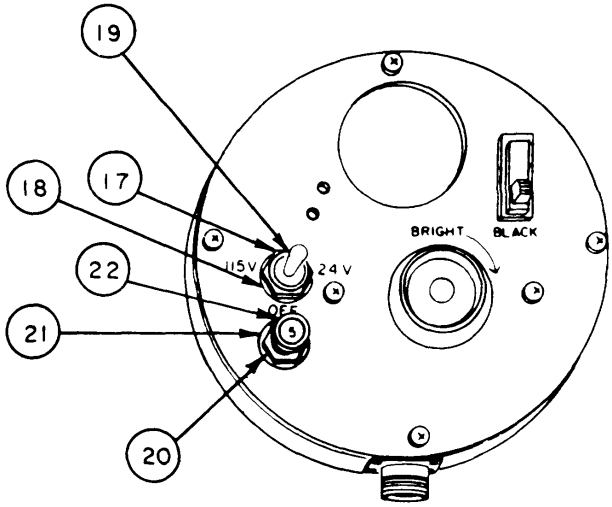
b. If necessary to replace wires or terminals, unsolder and remove the lug terminals (16) from the three wires (9, 12, and 14).



7

a. Remove nut (17), washer (18), and toggle switch (19).

b. Remove nut (20), washer (21), and circuit breaker (22).



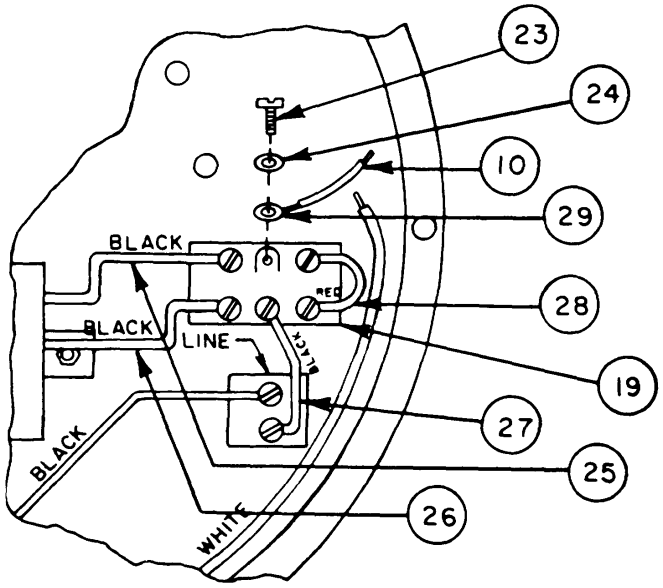
5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

8

a. Remove six screws (23), six washers (24), three black wires (25, 26, and 27) red wire (10), and red jumper wire (28) from toggle switch (19).

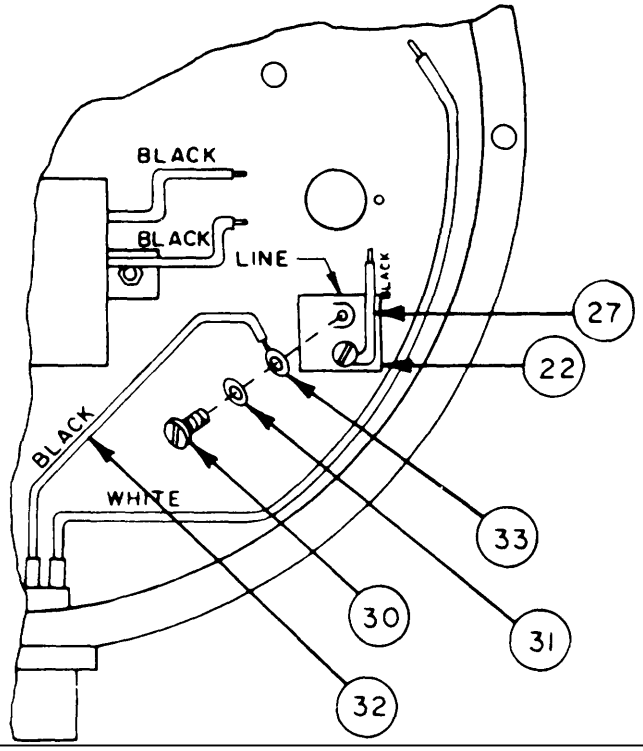
b. If necessary, to replace wires or lug terminals, unsolder and remove six lug terminals (29).



9

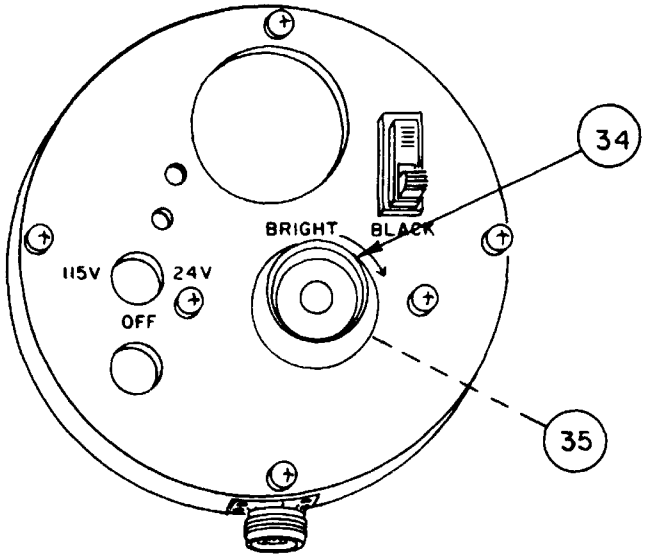
a. Remove two screws (30), two washers (31), and two black wires (27 and 32) from circuit breaker (22).

b. If necessary to replace wires or lug terminals, unsolder and remove two lug terminals (33).



10

Pull knob (34) off of electric light control (35).

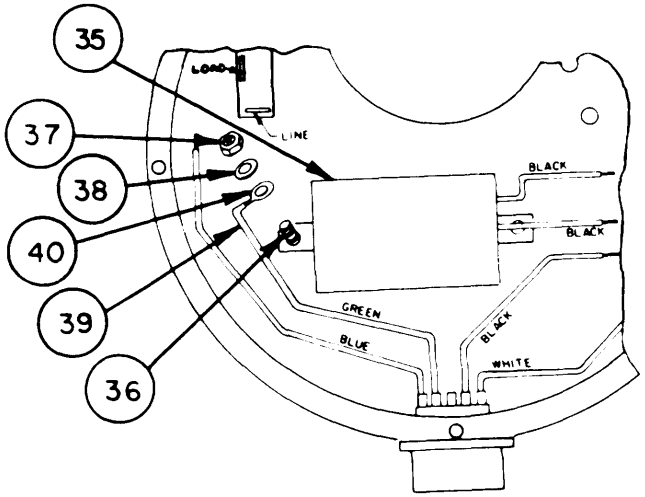


11

a. Remove two screws (36), two nuts (37), and two washers (38) from electric light control (35).

b. Lift out electric light control (35).

c. If necessary, to replace green wire (39) or lug terminal, remove lug terminal (40) from green wire (39).

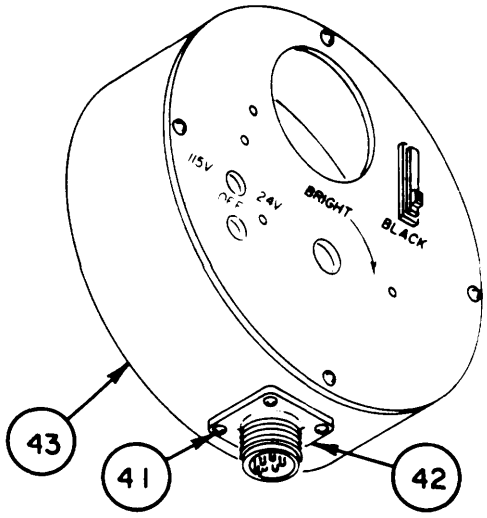


5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRIICTIONS (CONT).

DISASSEMBLY (CONT).

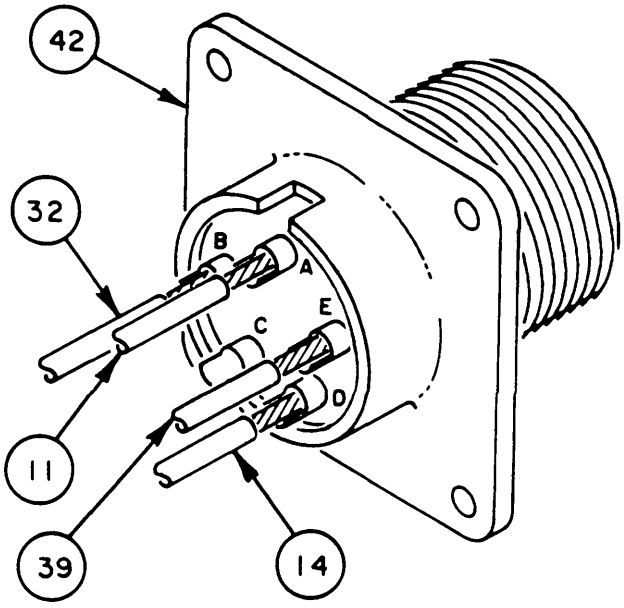
12

Remove four machine screws (41) and electrical receptacle connector (42) from body (43).



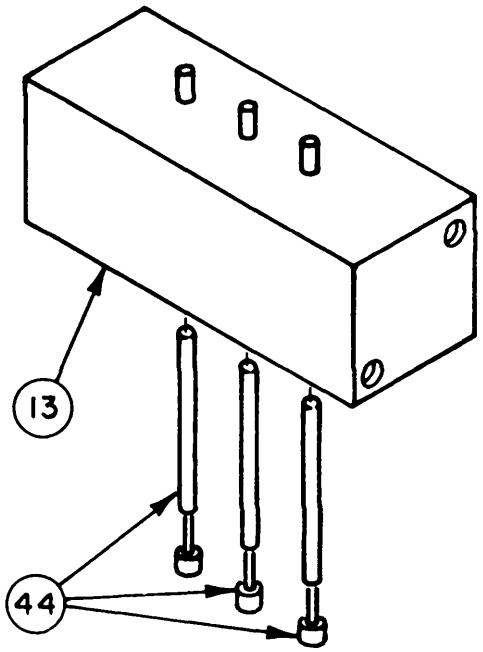
13

If it is necessary to replace the wires or the electrical receptacle connector (42), unsolder white wire (11) from pin A, black wire (32) from pin B, blue wire (14) from pin D, and green wire (39) from pin E.



14

If damaged, remove the three electrical contacts (44) by pulling out of the electrical assembly contact (13).



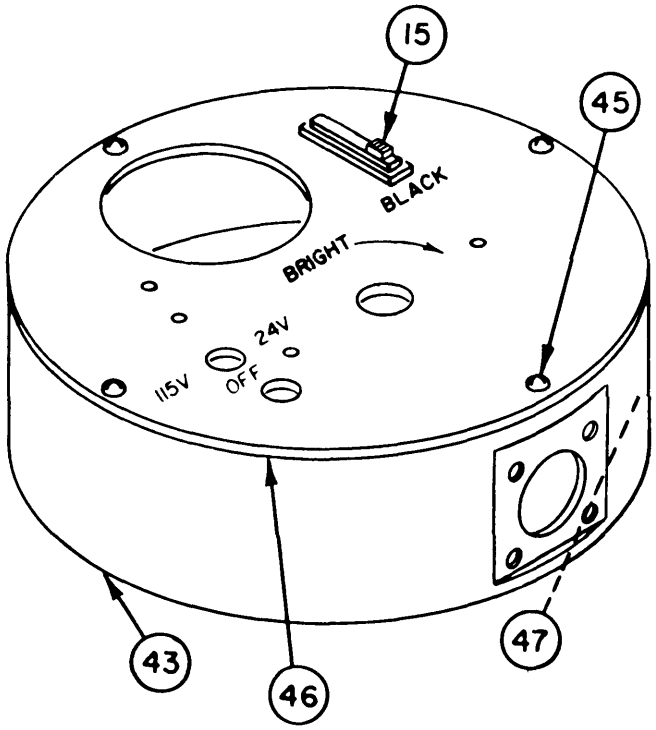
15

a. Remove four machine screws (45), only as necessary for replacement, from front cover (46) and body (43).

b. Separate front cover (46) and body (43).

c. Remove toggle switch (15).

d. Remove decal diagram (47) if damaged.



5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REPAIR.

a. Inspect for cracks, breaks, worn or missing parts.

b. Replace authorized parts. See for replacement. appendix C.

c. If front cover, rear cover, body, or housing is damaged, order M3 Borescope with equipment 11584701

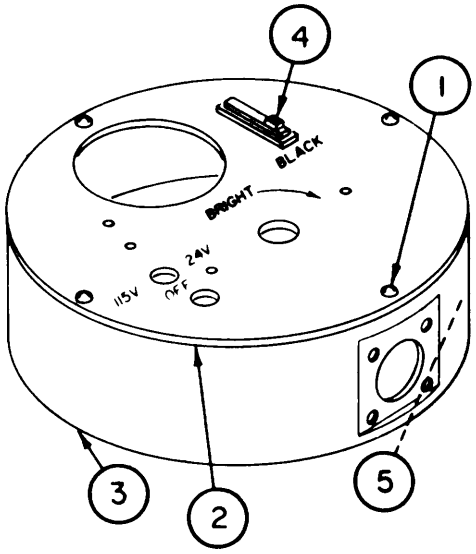
REASSEMBLY

1

a. If removed, apply sealing compound and install and tighten four machine screws (1) in front cover (2) and body (3).

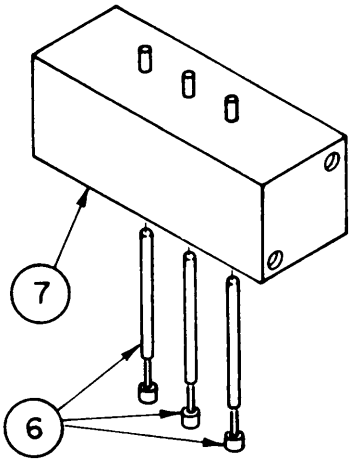
b. Install toggle switch (4).

c. Install decal diagram (5) if removed.



2

If removed, push three new electrical contacts (6) into electrical assembly contact (7).



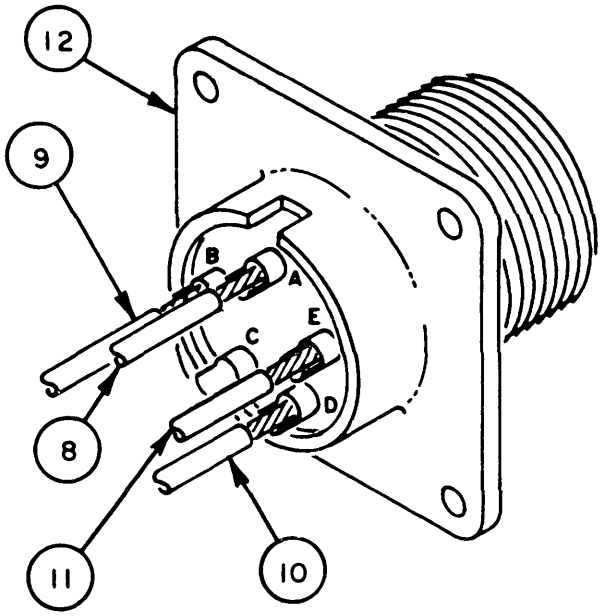
3

NOTE

Refer to the electrical system schematic diagram (page 5-14) when installing electrical wiring.

a. If necessary, fabricate new wires. See appendix E (figures E-1 thru E-5) for fabrication instructions.

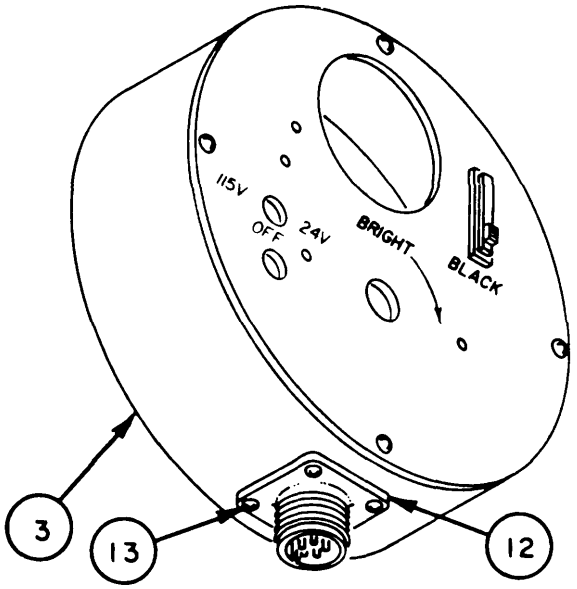
b. If removed, install white wire (8) in pin A, black wire (9) in pin B, blue wire (10) in pin D, and green wire (11) in pin E on electrical receptacle connector (12).



4

a. Position electrical receptacle connector (12) in body (3).

b. Apply sealing compound and install and tighten four machine screws (13).



5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

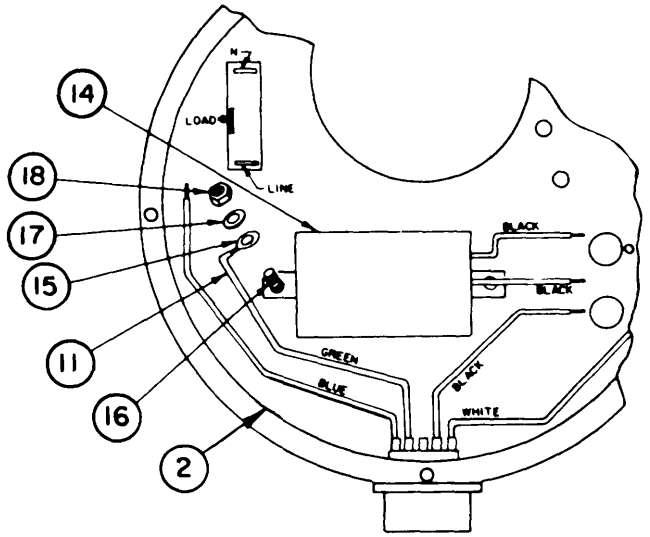
5

a. Position electric light control (14) in front cover (2) with the stem of the electric light control protruding through the hole toward the front, and the wires toward the two holes where the circuit breaker and toggle switch will be installed.

b. If removed, solder lug terminal (15) to green wire (11) using solder. See TM 9-254.

c. Position lug terminal (15) over the mounting hole.

d. Install and tighten two machine screws (16), two washers (17), and two nuts (18) to secure the lug terminal (15) and the electric light control (14).

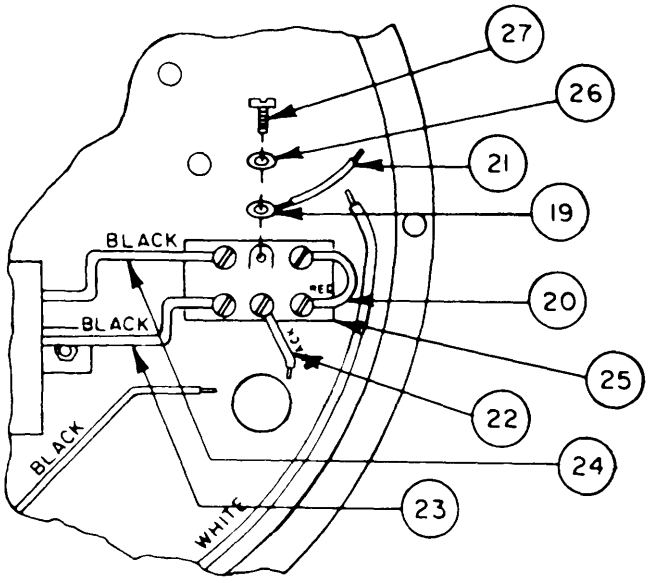


6

a. If removed, solder six terminals (19) on red jumper wire (20), red wire (21), and three black wires (22, 23, and 24). See TM 9-254.

b. Position red jumper wire (20), red wire (21), and three black wires (22, 23, and 24) on the toggle switch (25).

c. Install and tighten six washers(26) and six screws (27).

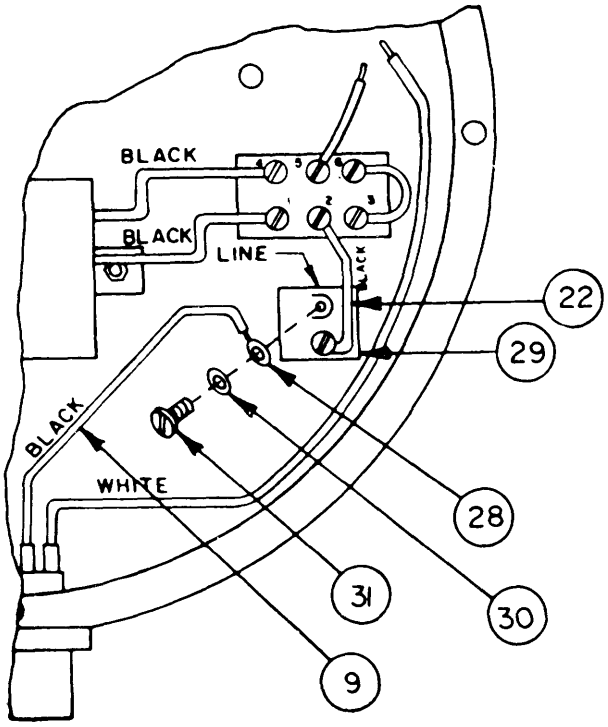


7

a. If removed, solder two lug terminals (28) on the two black wires (9 and 22). See TM 9-254.

b. Position two black wires (9 and 22) on circuit breaker (29).

c. Install and tighten two washers (30) and two screws (31).



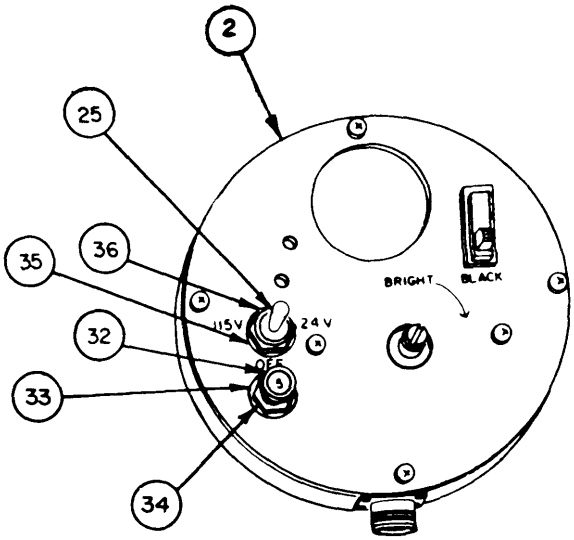
8

a. Position circuit breaker (32) in front cover (2).

b. Install and tighten washer (33) and nut (34).

c. Position toggle switch (25) in front cover (2).

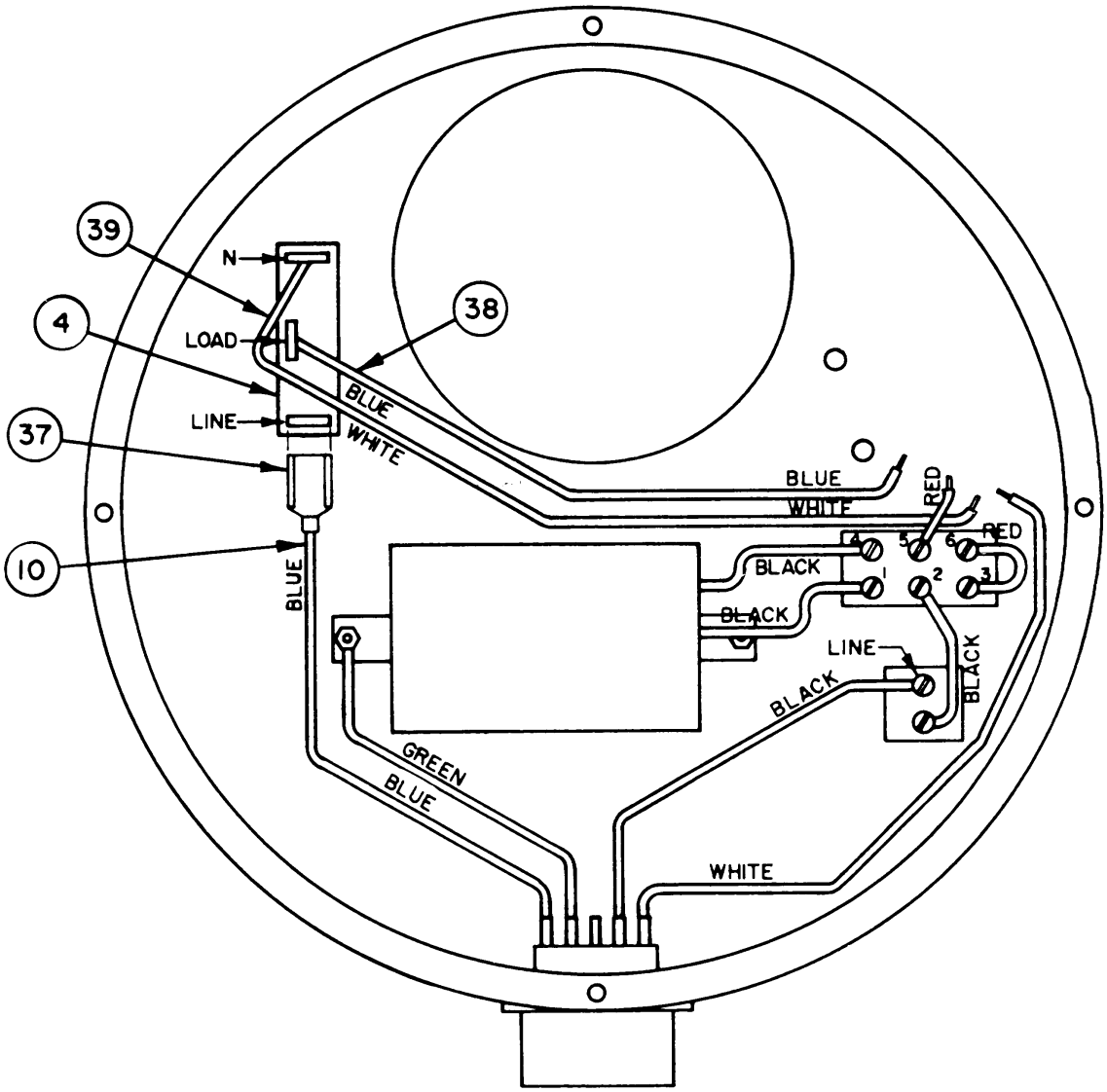
d. Install and tighten washer (35) and nut (36).



5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

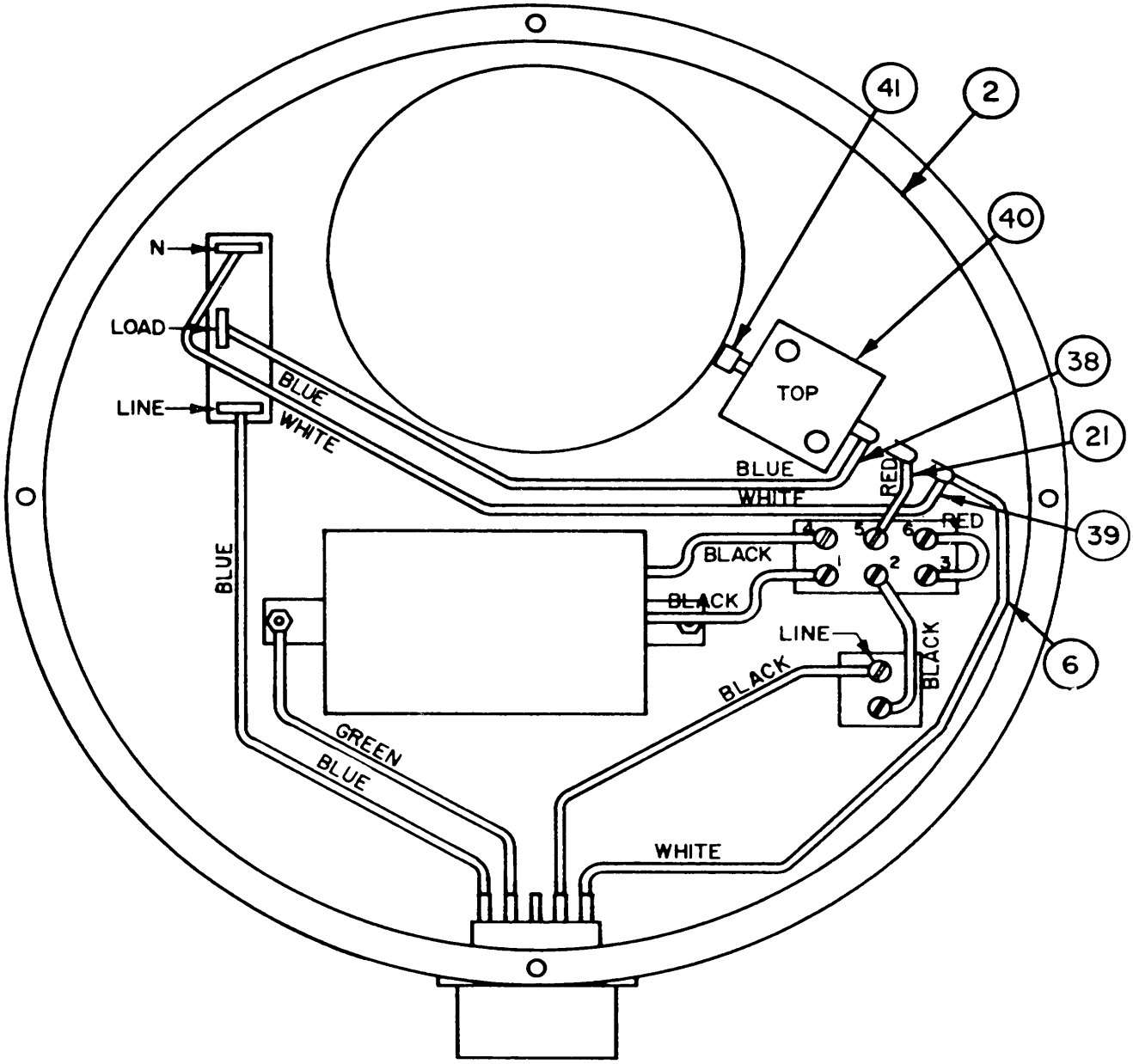
9



a. If removed, solder three lug terminals (37) to the two blue wires (10 and 38) and white wire (39). See TM 9-254.

b. Install two blue wires (10 and 38) and white wire (39) on toggle switch (4).

10



Do not allow solder to enter the sleeves on the electrical assembly contact (40).

NOTE

Ensure the three electrical contacts (41) have the spring loaded portion facing the large hole in the front cover where the adapter tube is installed.

a. Solder blue wire (38) to the top contact, red wire (21) to the center contact, and two white wires (6 and 39) to the bottom contact of electrical assembly contact (40). See TM 2-954.

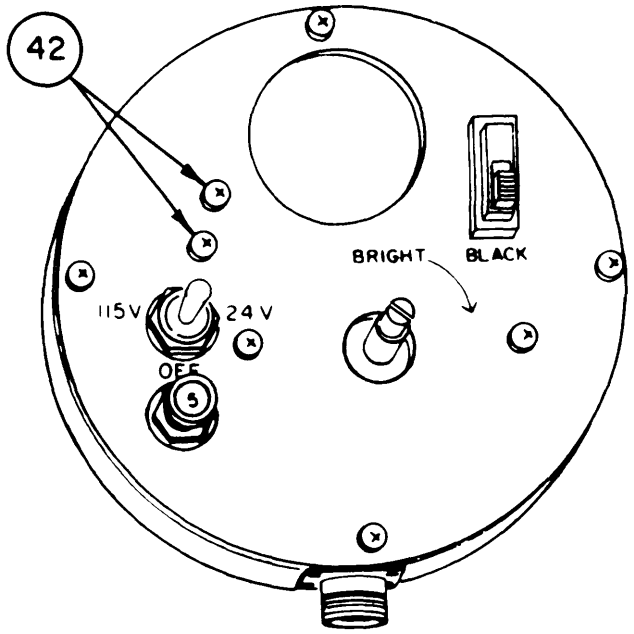
b. Position electrical assembly contact (40) on front cover (2).

5-31. ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

11

Apply sealing compound and install and tighten two machine screws (42).

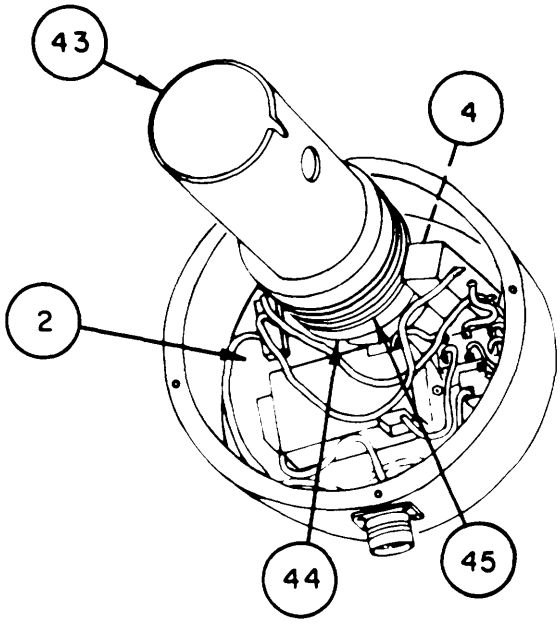


12

CAUTION

Using a wooden tongue depressor insure that the contacts are fully depressed before installing the adapter tube subassembly. This will prevent contacts from being bent or broken which will lead to malfunction of electrical circuit and malfunction of illuminating head assembly.

Position adapter tube subassembly (43) with the stepped spacer (44) next to the front cover (2), and the three electrical contacts (4) against the three electrical contact rings (45).

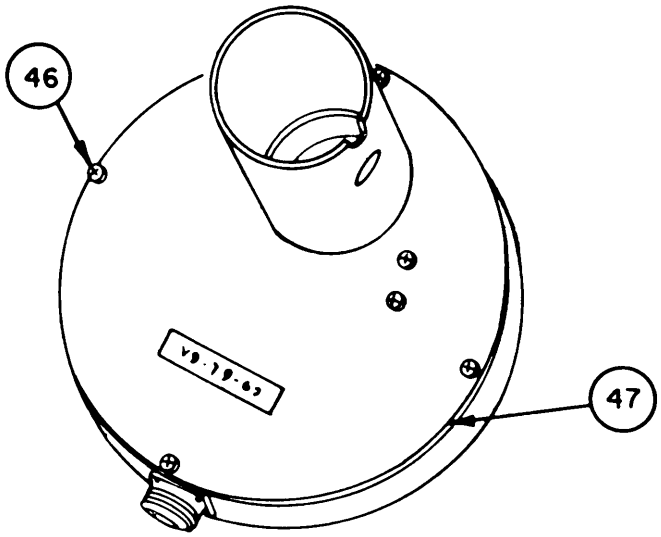


13

a. Apply sealing compound to six machine screws (46).

b. Install rear cover (47) and six screws (46).

c. Tighten six screws (46).



14

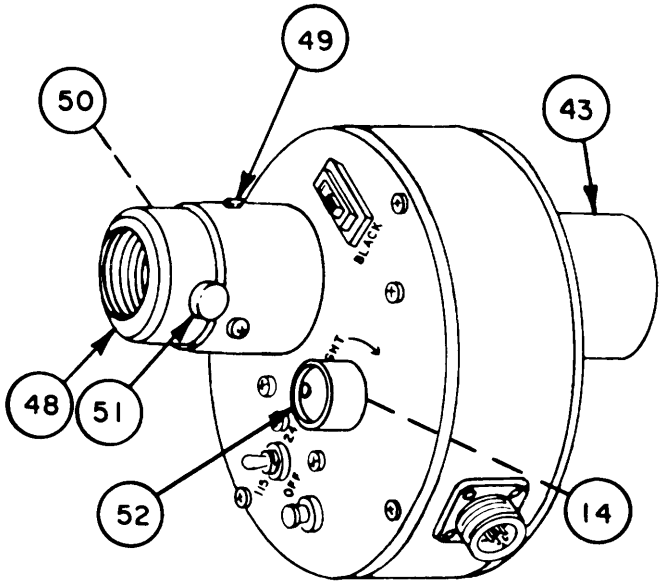
a. Position housing (48) in adapter tube subassembly (43) with holes alined.

b. Apply sealing compound and install and tighten three screws (49).

c. Install setscrew (50).

d. Install thumbscrew (51).

e. Install knob (52) onto the stem of the electric light control (14).



5-32. ADAPTER TUBE SUBASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07
Socket wrench case 11584760

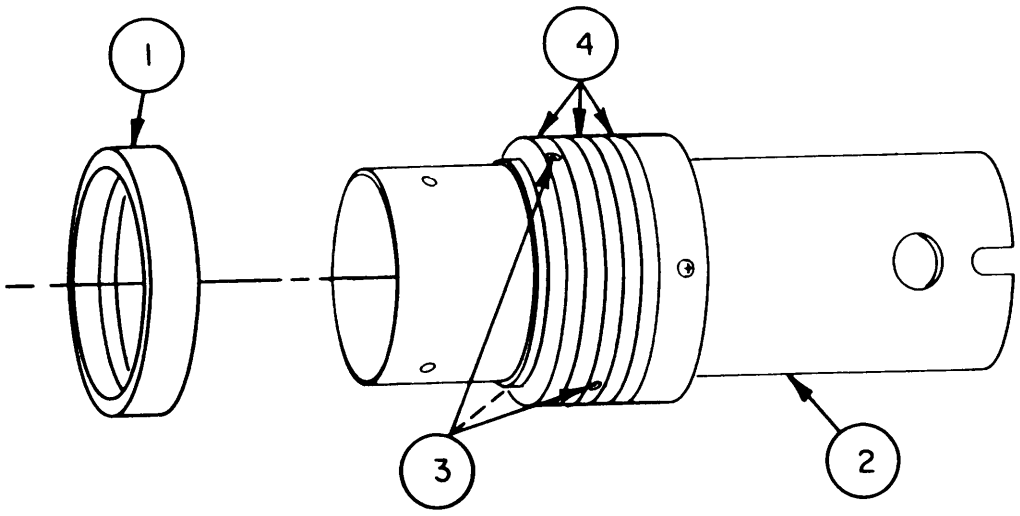
Materials/Parts
Metallic wool (item 17, app D)
Solder (item 15, app D)

References
TM 9-254

Equipment Condition
5-78, 5-97 Adapter tube subassembly removed from adapter tube assembly

DISASSEMBLY.

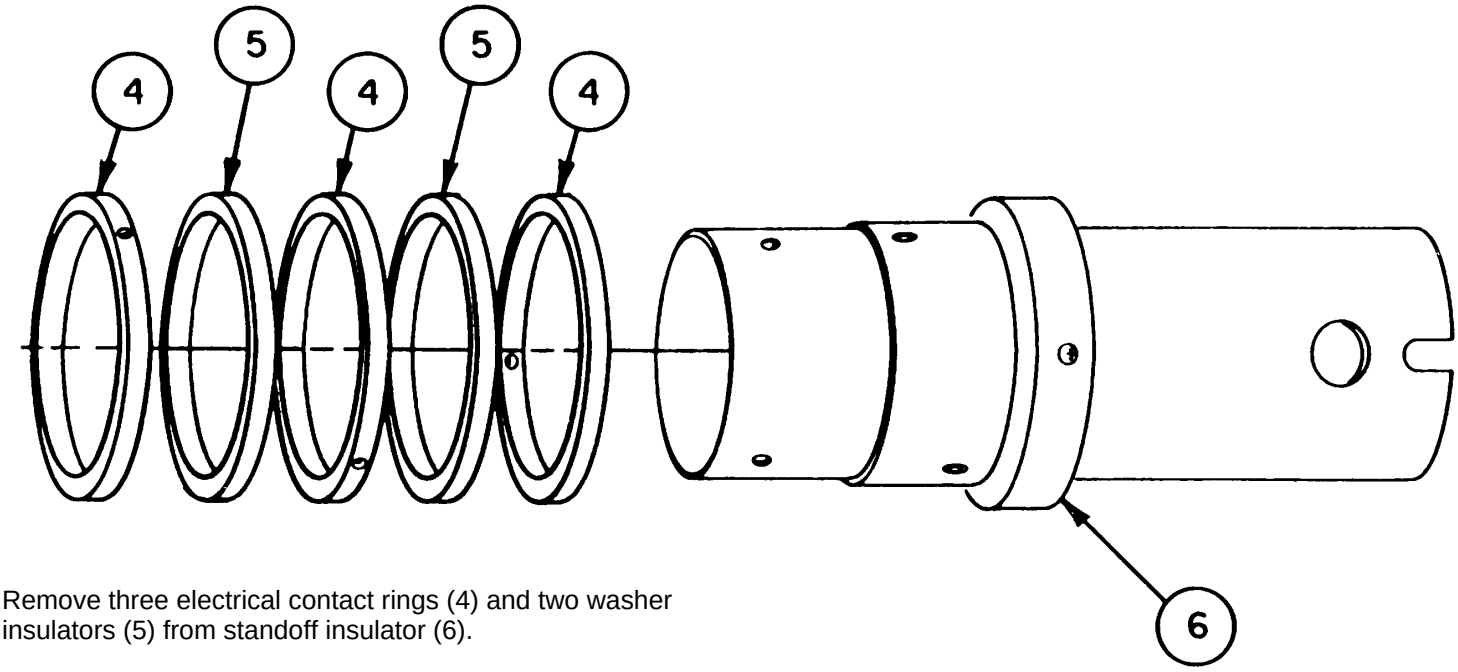
1



a. Slide stepped spacer (1) from adapter tube (2).

b. Unsolder and pull away the ends of the three wires (3) that attach to the three electrical contact rings (4).

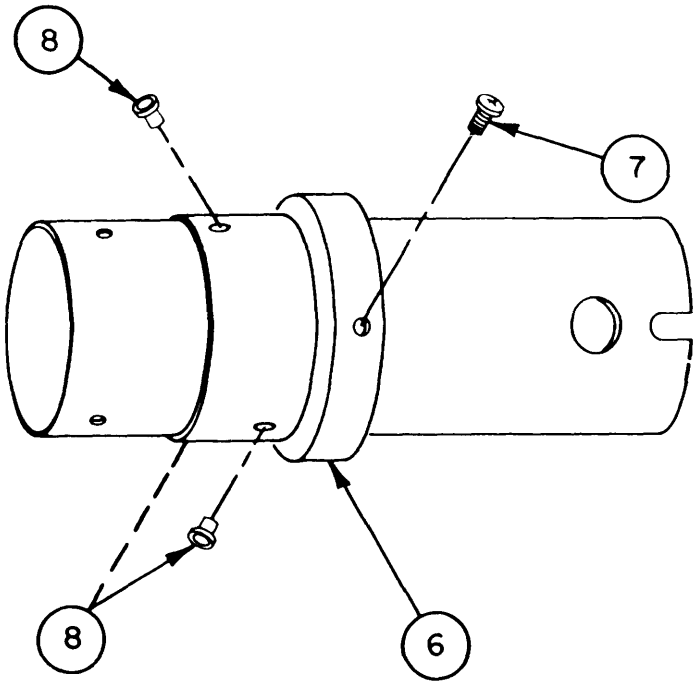
2



Remove three electrical contact rings (4) and two washer insulators (5) from standoff insulator (6).

3

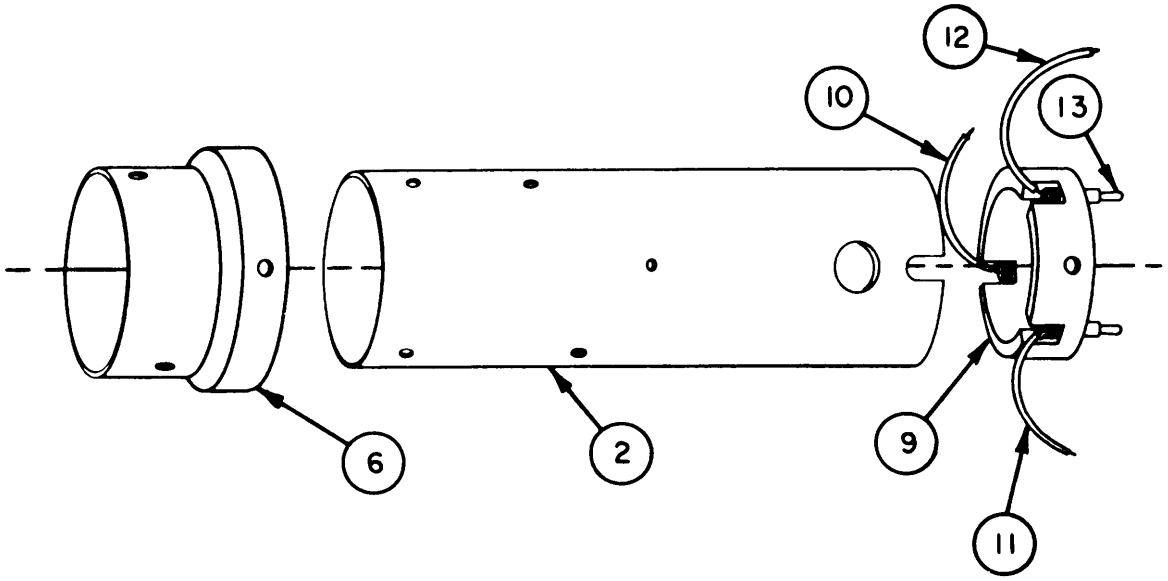
Remove three machine screws (7) and three bushing insulators (8) from standoff insulator (6).



5-32. ADAPTER TUBE SUBASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

4



a. Remove electrical contact assembly (9) and standoff insulator (6) from adapter tube (2).

b. Tag the plugs in the electrical contact assembly with the wire color code.

c. Unsolder and remove three wires (10, 11, and 12) from electrical contact assembly contacts (13).

REPAIR.

a. Inspect for cracks, breaks, worn or missing parts.

b. Replace authorized parts. See appendix C.

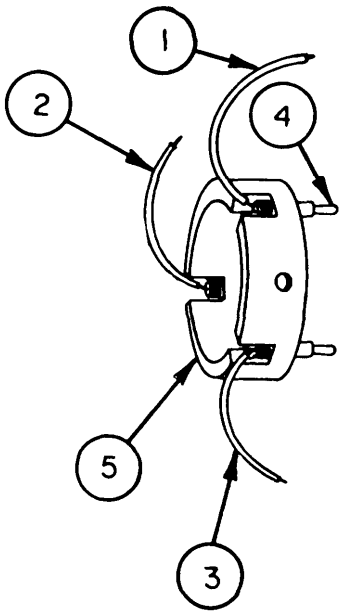
c. If adapter tube is damaged, order adapter tube subassembly 11586089 for replacement.

REASSEMBLY.

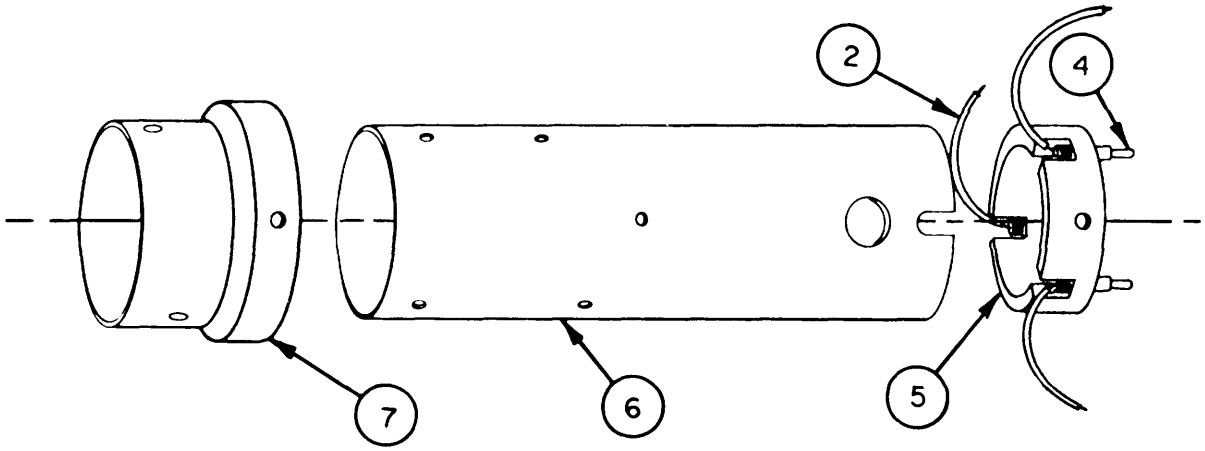
1

a. If necessary, fabricate a new white wire (1), blue wire (2), or black wire (3). See appendix E (figures E-1, E-2, and E-5) for fabrication instructions.

b. Solder white wire (1), blue wire (2), and black wire (3) to three contacts (4) on electrical contact assembly (5) according to the color code tags attached during disassembly. See TM 9-254.



2



a. Position electrical contact assembly (5) in adapter tube (6) with the contacts (4) facing the end with the keyway and with the plug containing the blue wire (2) 180° from the keyway.

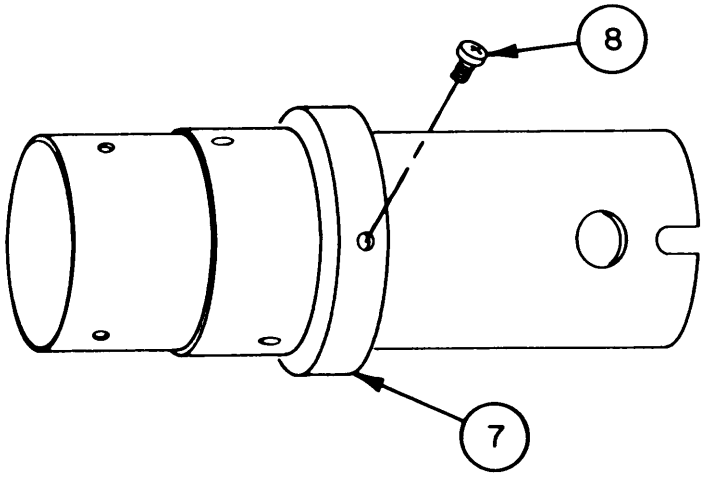
b. Position standoff insulator (7) on the adapter tube (6) with the holes in the standoff insulator (7), electrical contact assembly (5), and the adapter tube (6) alined.

5-32. ADAPTER TUBE SUBASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

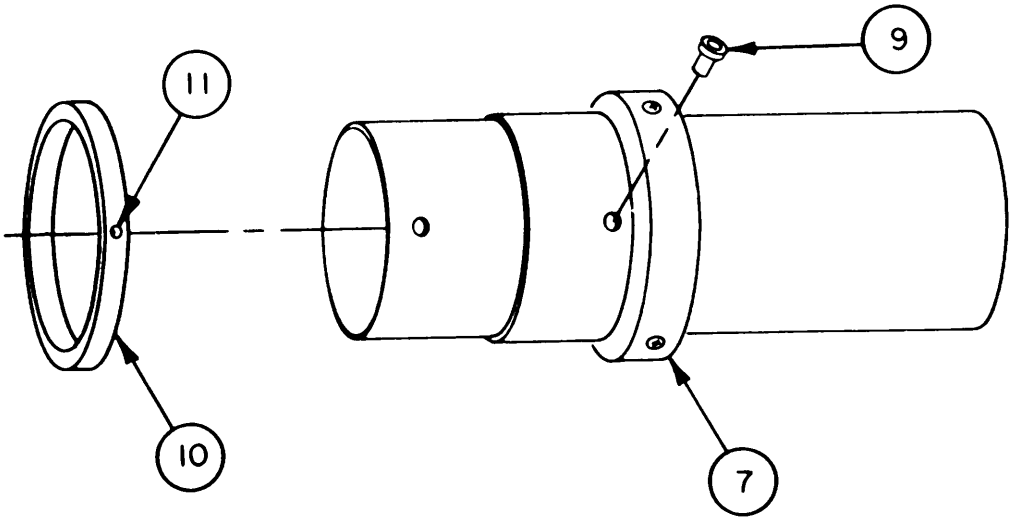
REASSEMBLY (CONT).

3

Install and tighten three screws (8) in standoff insulator (7).



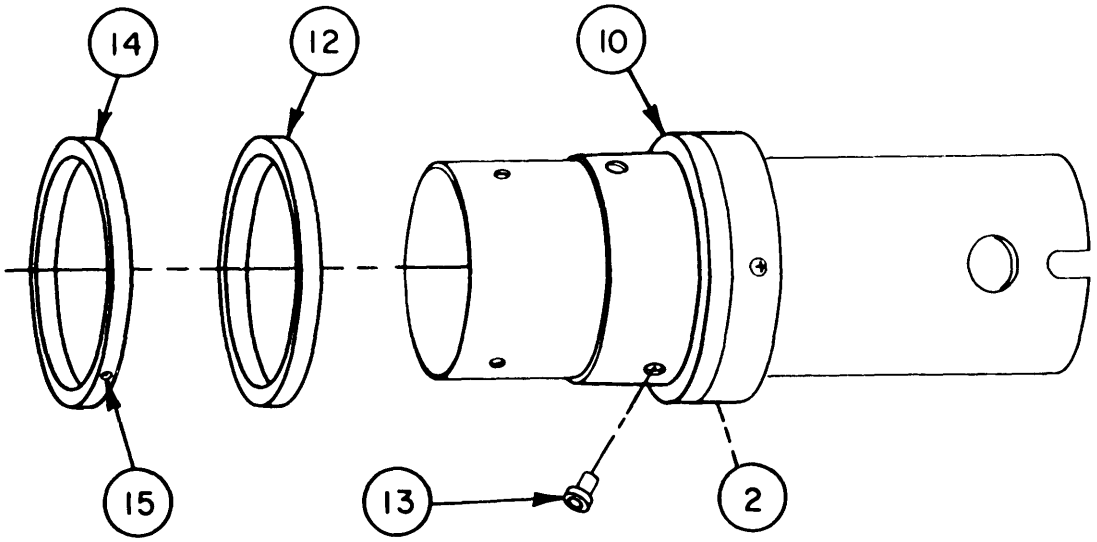
4



a. Install bushing insulator (9) in standoff insulator (7).

b. Position electrical contact ring (10) on staindoff insulator (7) with the hole (11) in the electrical contact ring (1') over the bushing insulator (9).

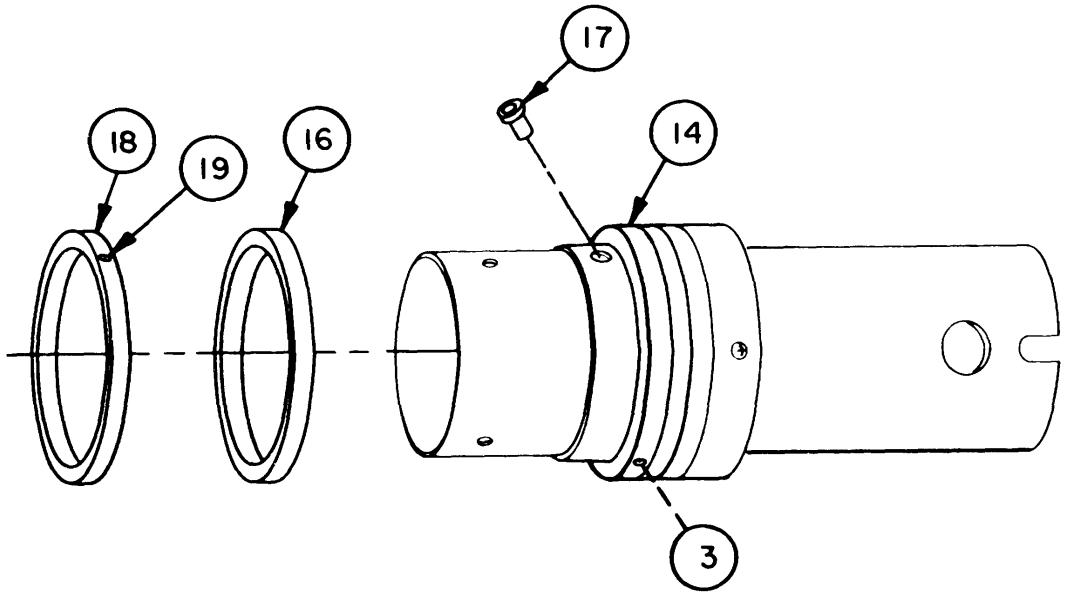
5



a. Solder blue wire (2) to electrical contact ring (10). See TM 9-254.

b. Install washer insulator (12), bushing insulator (13), and electrical contact ring (14) with hole (15) in electrical contact ring (14) over bushing insulator (13).

6



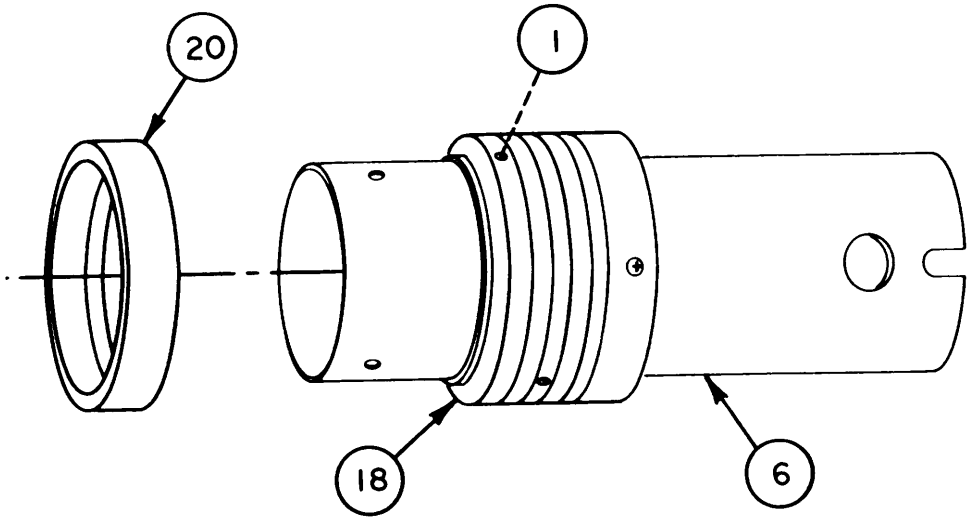
a. Solder black wire (3) to electrical contact ring (14). See TM 9-254.

b. Install washer insulator (16), insulator bushing (17), and electrical contact ring (18) with hole (19) in electrical contact ring (18) over bushing insulator (17).

5-32. ADAPTER TUBE SUBASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

7



a. Solder white wire (1) to electrical contact ring (18). See TM 9-254.

b. Install stepped spacer (20) on adapter tube (6).

5-33. EYEPIECE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers:

a. Removal
b. Disassembly
c. Cleaning/Repair
d. Reassembly
e. Installation

INITIAL SETUP

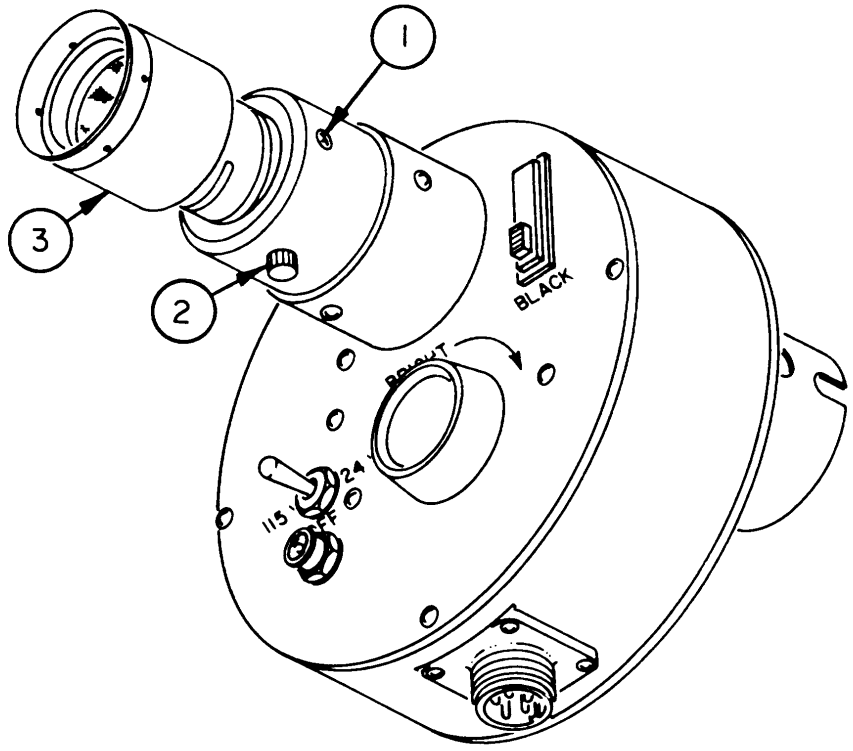
Tools and Special Tools
Socket wrench case 11584760

References
TM 9-254

Materials/Parts
Denatured alcohol (item 1, app D)
Lens paper (item 10, app D)
Optical lens cleaning compound (item 2, app D)
Wiping rag (item 12, app D)
Sealing compound (item 13, app D)

Troubleshooting References
5-4 A distorted image is seen through the M3 Borescope

REMOVAL.

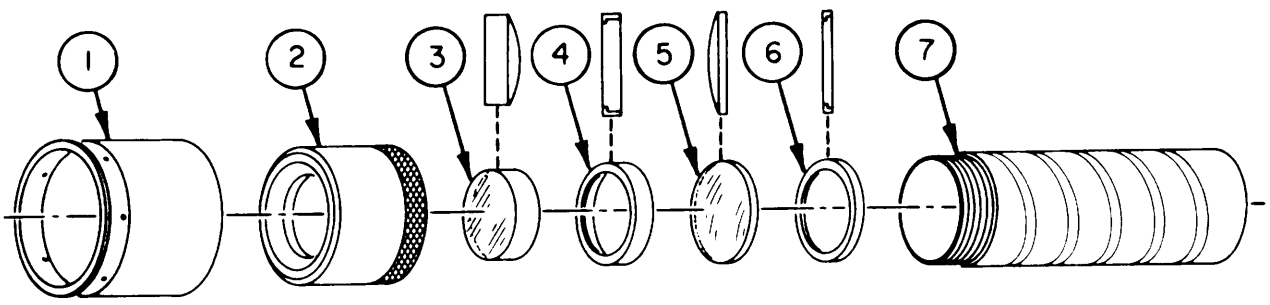


a. Loosen setscrew (1).

b. Loosen thumbscrew (2) and remove assembly (3).

5-33. EYEPIECE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY.



NOTE

Care should be taken when disassembling optical components of the M3 Borescope. All lenses should be marked when removed to facilitate installation. Refer to page 5-9 for marking instructions.

a. Pull off optical instrument eye-shield (1).

b. Unscrew optical element cell (2), optical instrument lens (3), ring spacer (4), optical instrument field lens (5) and optical element retainer (6) from sleeve (7).

CLEANING/REPAIR.

a. Dust the lenses using the brush from the socket wrench case. Clean with lens paper and optical lens cleaning compound. See TM 9-254.

b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

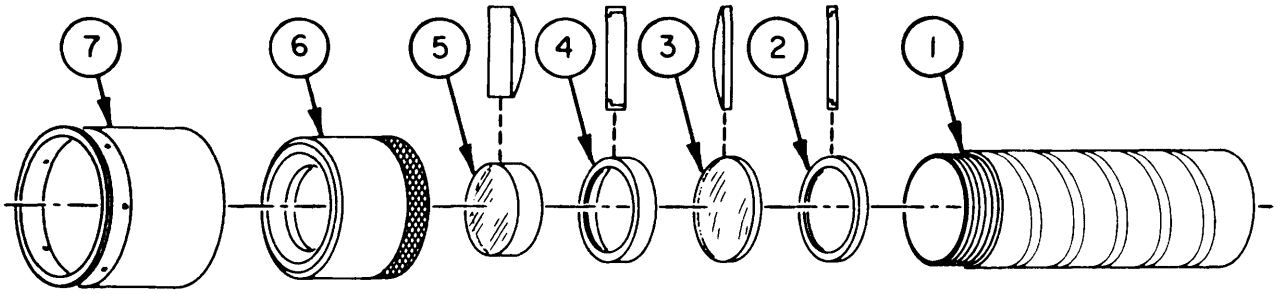
d. If sleeve is damaged, order eyepiece assembly 11584707 for replacement.

e. If not present when disassembled, order optical element retainer and install upon reassembly.

REASSEMBLY.

NOTE

Refer to the optical system drawing (page 5-11) to ensure the lenses are positioned and installed correctly.



a. Stake optical element retainer (2) in three places with sealing compound.

b. Place optical element retainer (2), optical instrument field lens (3), ring spacer (4), and optical instrument lens (5) in optical element cell (6).

c. Screw optical element cell (6) on the sleeve (1).

d. Install optical instrument eyeshield (7) on optical element cell (6).

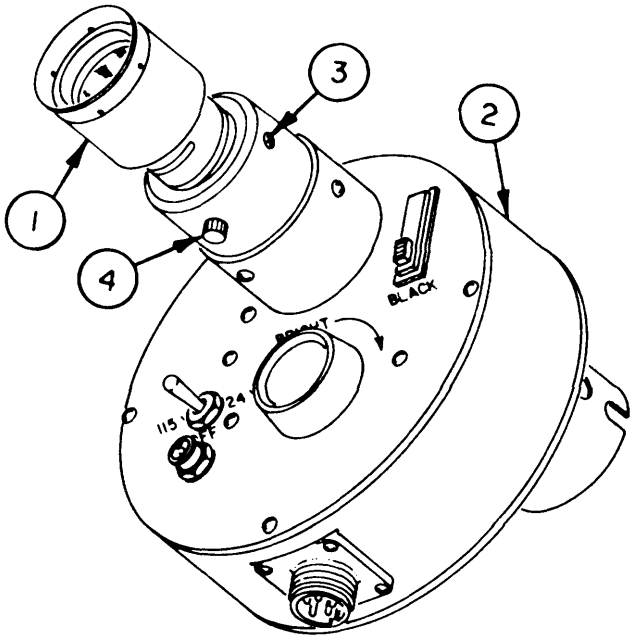
INSTALLATION.

a. Slide eyepiece assembly (1) in the adapter tube assembly (2).

b. Tighten setscrew (3) into the groove on the eyepiece assembly (1) until a slight resistance is felt when rotating the eyepiece assembly.

c. Tighten thumbscrew (4).

d. If necessary, the exterior lens surface may be cleaned using alcohol and lens paper.



5-34. 75-MM SUPPORT ASSEMBLY--MAINTENANCE INSTRUCTIONS.'

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Socket wrench case 11584760
Helicoil insert and tool kit
4131-04-1

References
TM 9-254

DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove three setscrews (1) and three screw thread inserts (2) from support (3). See TM 9-254.

b. Inspect for cracks, breaks, worn or missing parts.

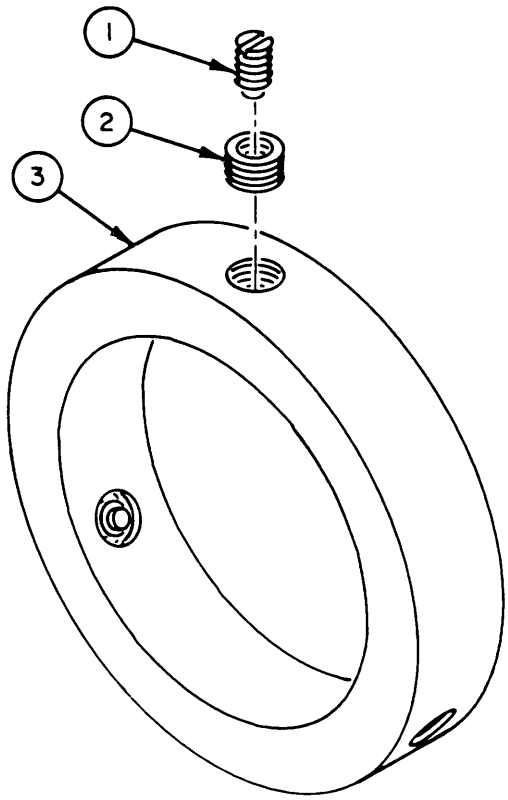
c. Replace authorized parts. See appendix C.

d. If support is damaged, order 75-mm support assembly 11584799 for replacement.

e. If screw thread insert (2) holes are stripped out, three new holes may be drilled and tapped halfway between the existing holes.

f. If removed, install three new screw thread inserts (2) flush with support (3) using insertion tool. See TM 9-254.

g. Install three setscrews (1) in support (3).



5-35. 81-MM SUPPORT ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassemble

INITIAL SETUP

Tools and Special Tools
- Socket wrench case 11584760
- Helicoil insert and tool kit 4131-04-1

References
- TM 9-254

DISASSEMBLY/REPAIR/REASSEMBLY.

a. If damaged, remove three setscrews (1) and three screw thread inserts (2) from support (3). See TM 9-254.

b. Inspect for cracks, breaks, worn or missing parts.

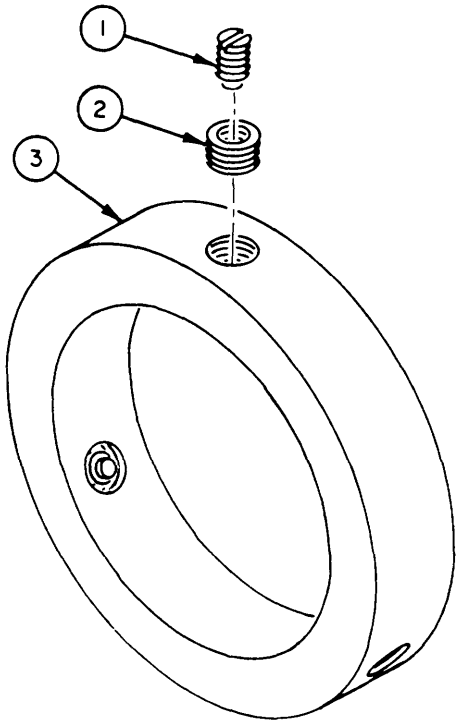
c. Replace authorized parts. See appendix C.

d. If support is damaged, order 8-mm support assembly 11584783 for replacement.

e. If screw thread insert (2) holes are stripped out, three new holes may be drilled and tapped halfway between the existing holes.

f. If removed, install three new screw thread inserts (2) flush with support (3) using insertion tool. See TM 9-254.

g. Install three setscrews (1) in support (3).



5-36. 90-MI THRU 8-INCH SUPPORT ASSE:MBLY--MAINTENANCE INSTRUCTIONS.

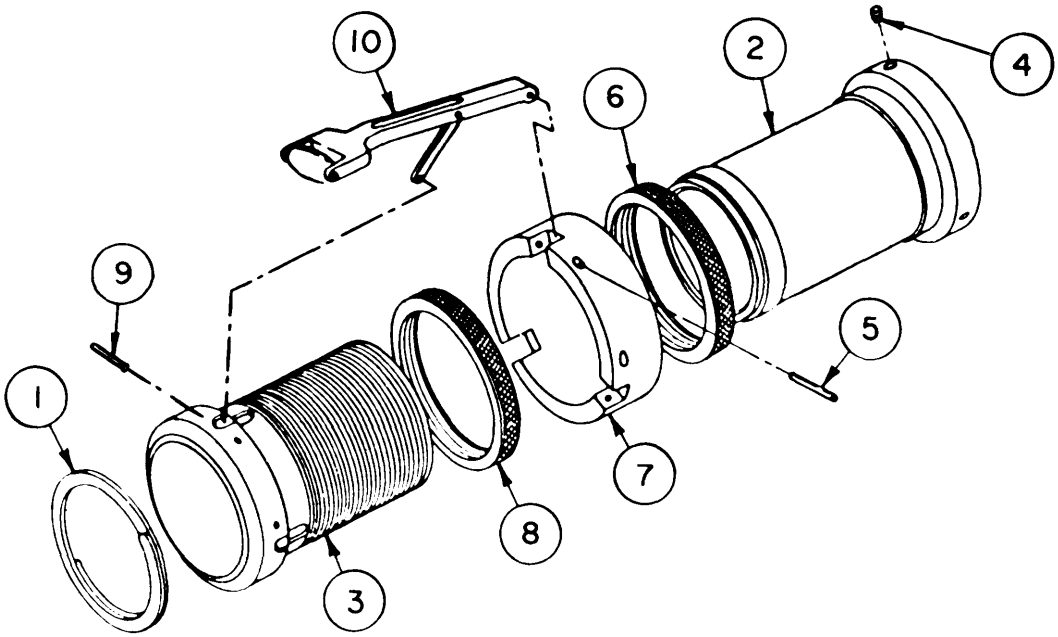
This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL, SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07

DISASSEMBLY.

1



a. Pry and snap out retaining ring (1) from groove of body (2).

b. Slide body (2) from tapped ring spacer (3).

c. Remove three setscrews (4).

d. Drive out three spring pins (5).

e. Unscrew and remove knurled plain nut (6).

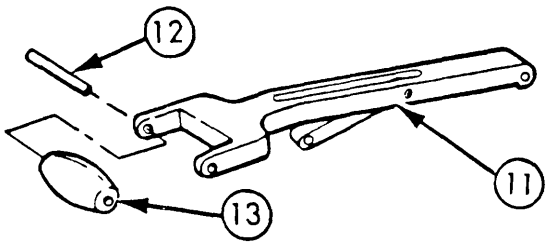
f. Slide rear ring (7) off tapped ring spacer (3).

g. Unscrew and remove knurled plain nut (8).

h. Drive out three spring pins (9).

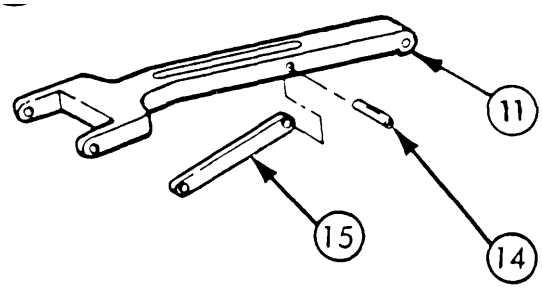
i. Remove three rod end clevises (10) with attached parts from tapped ring spacer (3).

2



Drive out three spring pins (12) and remove three linear-rotar rollers (13) from three rod end clevises (11).

3



Drive out three spring pins (14) and remove three rigid connecting links (15) from three rod end clevises (11).

REPAIR.

a. Inspect for cracks, breaks, worn, or missing parts.

b. Replace authorized parts. See appendix C.

c. If body or rear ring are damaged, order 90-mm thru 8-inch support assembly 11584801 for replacement.

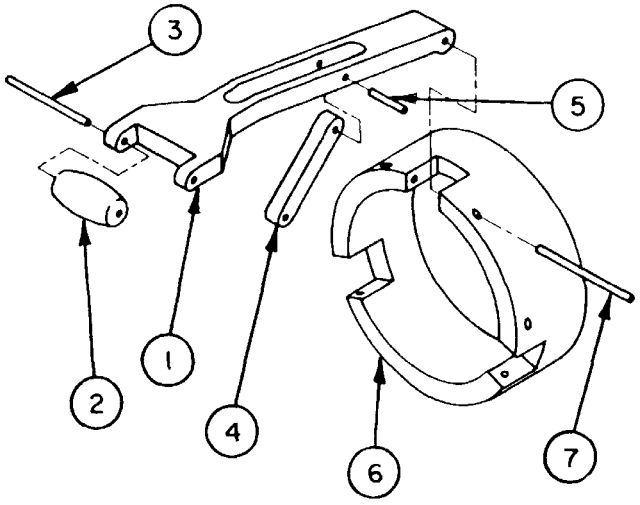
REASSEMBLY.

1

a. Position three linear-rotar rollers (2) in the three rod end clevises (1) and install three spring pins (3) to secure them.

b. Position three rigid connecting links (4) in three rod end clevises (1) and install three spring pins (5).

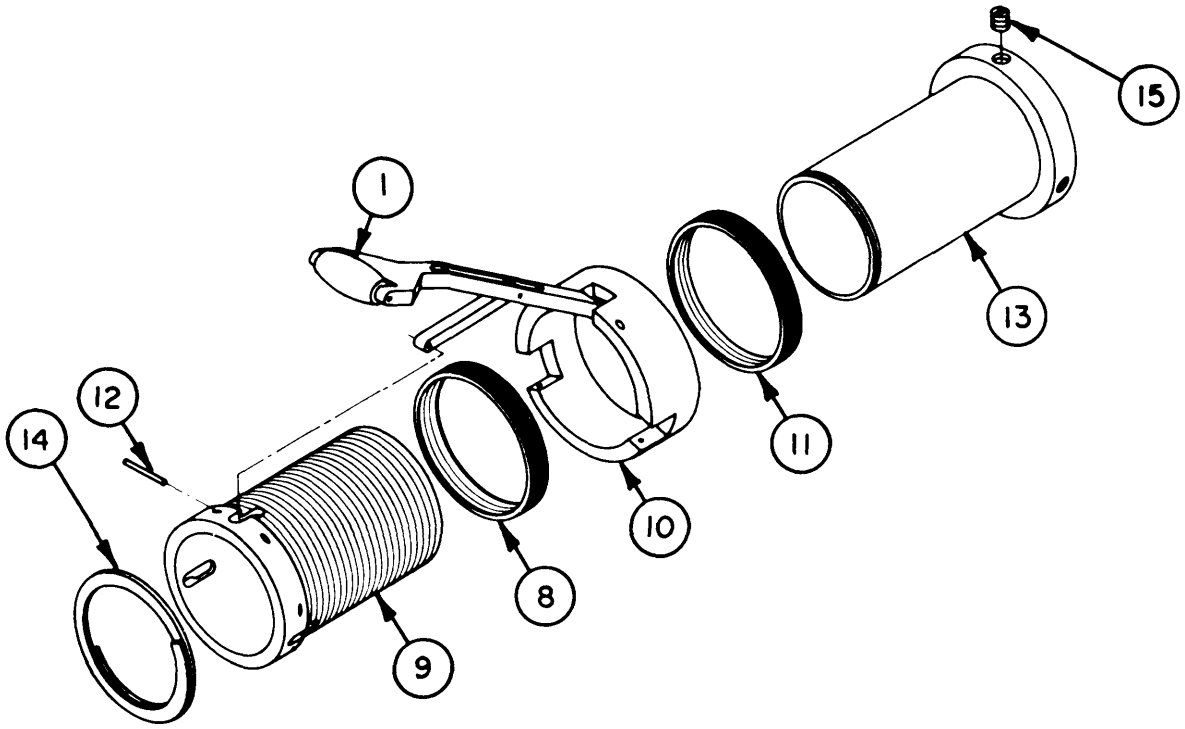
c. Position three rod end clevises (1) in rear ring (6) and install three spring p)ins (7) to secure them in place.



5-36. 90-MM THRU 8-INCH SUPPORT ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

2



a. screw knurled plain nut (t) on tapped ring spacer (9).

b. Slide rear ring (10) on tapped ring spacer (9).

c. Screw knurled plain nut (11) on tapped ring spacer (9).

d. Install three spring pins (12) to secure the three rod end clevises (1) with attached parts to the tapped ring spacer (9).

e. Position body (13) in the tapped ring spacer (9).

f. Snap retaining ring (14) into the groove of the body (13).

g. Install three setscrews (15).

5-37. SHAFT COLLAR--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07

DISASSEMBLY/REPAIR/REASSEMBLY.

a. Remove performed packing (1).

b. Remove three setscrews (2) from reflector collar (3).

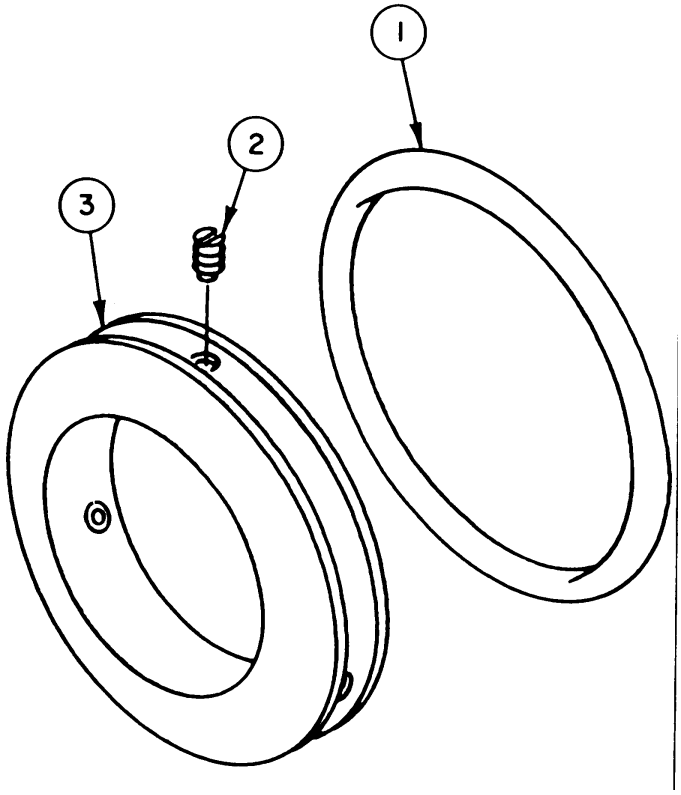
c. Inspect for cracks, breaks, worn or missing parts.

d. Replace authorized parts. See appendix C.

e. If reflector collar is damaged, order shaft collar 11584765 for replacement.

f. Install three setscrews (2) in reflector collar (3).

g. Install preformed packing (1) into groove of reflector collar (3).



5-38. 115-V ELECTRICAL POWER CABLE ASSEMBLY--MAINTENANCE INSTRUCTIONS.

All information pertaining to paragraph 5-38 has been deleted.

All information pertaining to paragraph 5-38 has been deleted.

5-38. 115-V ELECTRICAL POWER CABILE ASSEMBLY--MAINTENANCE INSTRUCTIONS (CONT).

All information pertaining to paragraph 5-38 has been deleted.

All information pertaining to paragraph 5-38 has been deleted.

5-39. LARGE REFELCTOR ASSEMBLY--MAINTENANCE INSTRUCTIONS.

This task covers: Disassembly/Repair/Reassembly

INITIAL SETUP

Tools and Special Tools
Instrument and fire control shop equipment SC 4931-95-CL-A07

DISASSEMBLY/REPAIR/REASSEMBLY.

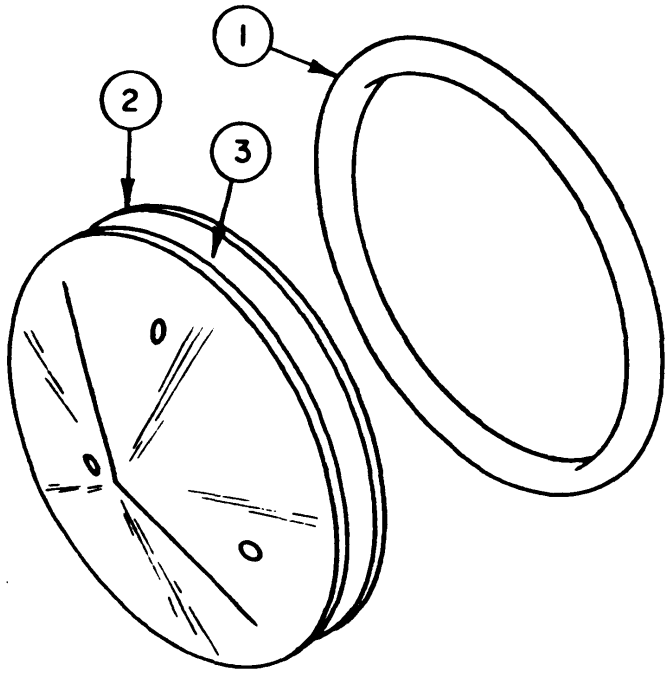
a. Remove preformed packing (1) from large reflector (2).

b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

d. If large reflector is damaged, order large reflector assembly 11584755 for replacement.

e. Install preformed packing (1) into groove (3) of large reflector (2).



5-40. BORESCOPE OPTICAL CASE--MIAINTENANCE INSTRUCTTONS.

This task covers:

a. Disassembly
b. Cleaning/Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools

Instrument and fire control shop equipment SC 4931-95-CL-A07
Hot melt glue gun HYSOL 101

Materials/Parts

Silicone adhesive sealant (item 14, app D)
Solvent, trichloroethane (item 16, app D)
Paper towel, disposable wiper (item 11, app D)
Glue, hot melt (item 6, app D)

DISASSEMBLY.

1

NOTE

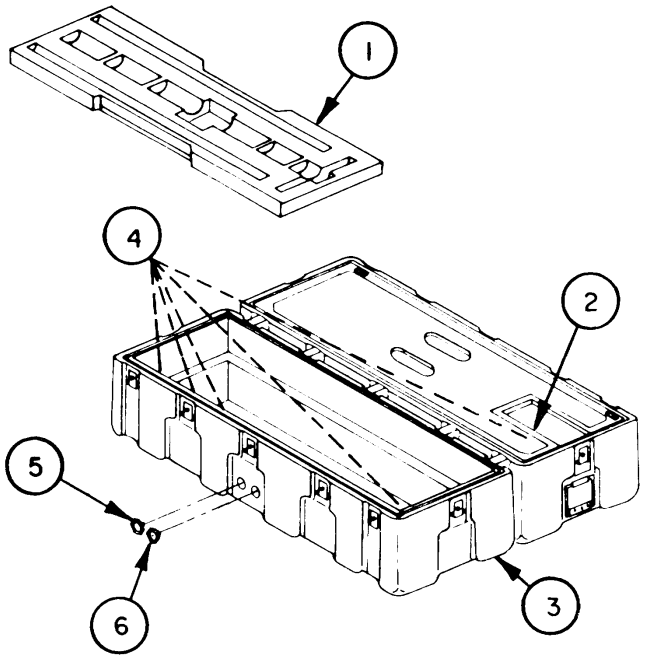
Early configuration fiberglass cases are not repairable. This procedure covers repair of late configuration polyethylene cases only.

a. Remove molded insert (1) and panel cover (2) from molded case (3).

b. Remove five caplugs (4) from molded case (3).

c. Remove humidity indicator (5) from molded case (3).

d. Remove pressure relief valve (6) from molded case (3).

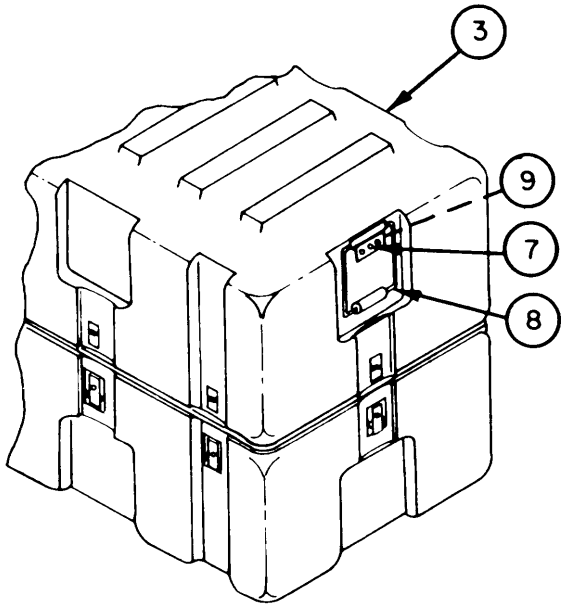


5-40. BORESCOPE OPTICAL CASE--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

2

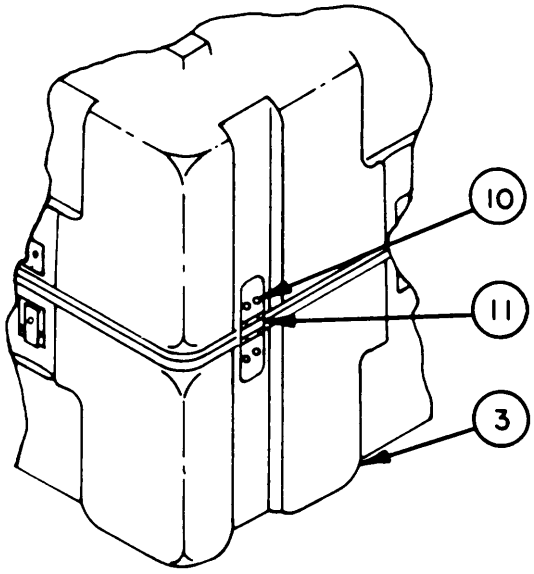
Remove nine machine screws (7), three handles (8), and three rubber spacers (9) from molded case (3).



3

a. Drill out 20 blind rivets (10) with a 0.125 inch drill bit.

b. Remove five butt hinges (11) from molded case (3).

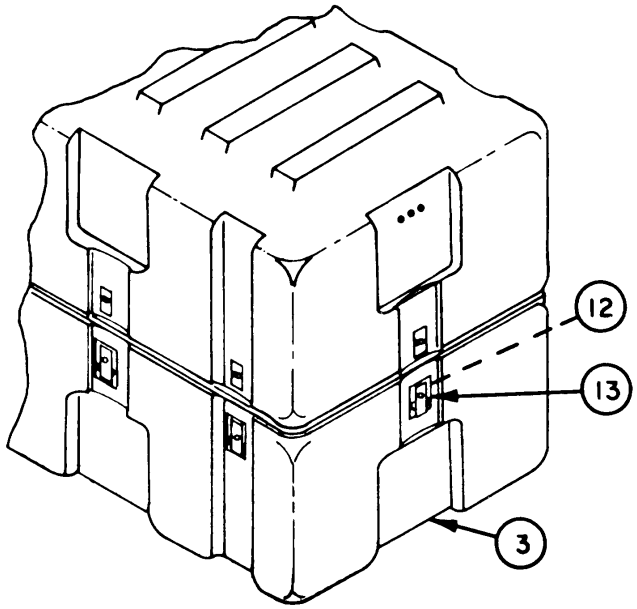


4

a. Drill out 14 blind rivets (12) with a 0.125 inch drill bit.

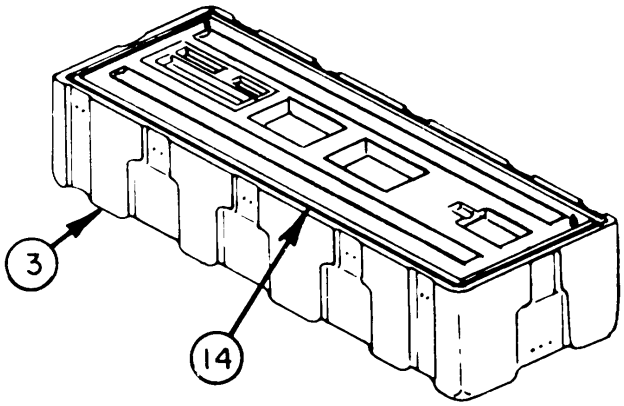
b. Remove seven clamping catches (13) from molded case (3).

c. Remove top half of molded case (3).



5

Remove gasket (14) from molded case (3).

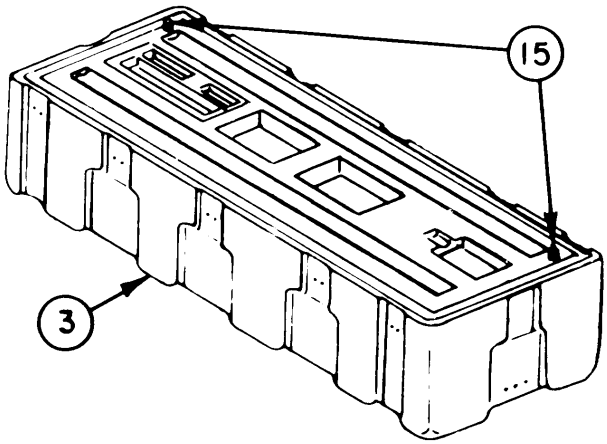


5-40. BORESCOPE OPTICAL CASE--MAINTENANCE INSTRUCTIONS (CONT).

DISASSEMBLY (CONT).

6

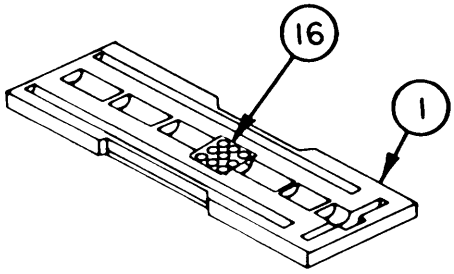
Remove two snapslide fast studs (15) from molded case (3).

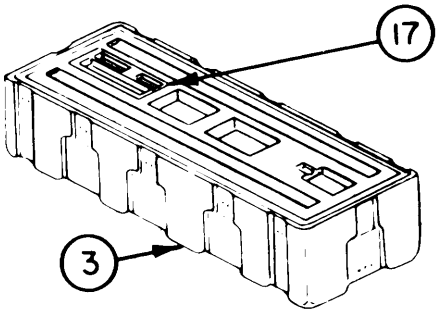


7

a. Remove cushion foam insert (16) from molded insert (1).

b. Remove cushion foam insert (17) from molded case (3).





CLEANING/REPAIR.

WARNING

Solvent vapors are toxic. Do not use solvent in a confined space. Avoid long periods of breathing solvent vapors and/or contact with skin.

a. Remove corrosion, grease, and dirt from all parts. Clean borescope case with shop towels and tricholorethane solvent.

b. Inspect for cracks, breaks, worn or missing parts.

c. Replace authorized parts. See appendix C.

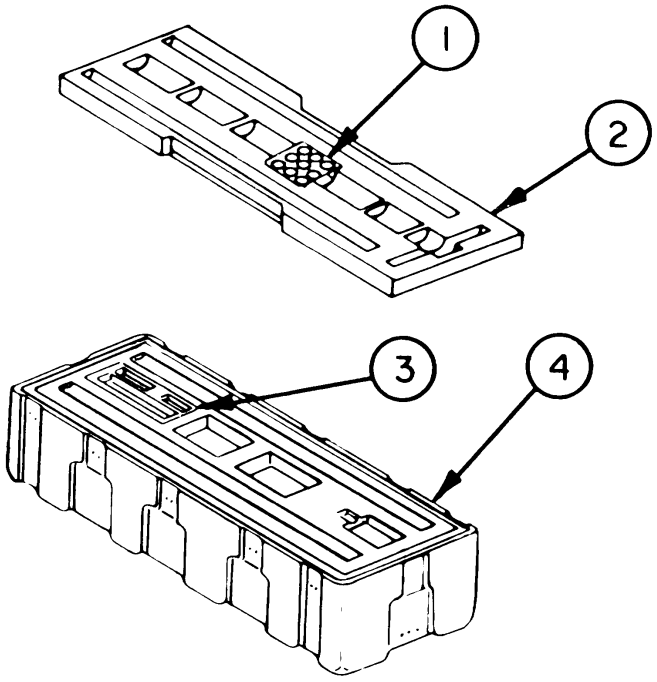
d. If molded case or molded insert is damaged, order borescope optical case 11584705 for replacement.

REASSEMBLY

1

a. Bond cushion foam insert (1) to molded insert (2) with hot melt glue.

b. Bond cushion foam insert (3) to molded case (4) with hot melt glue.

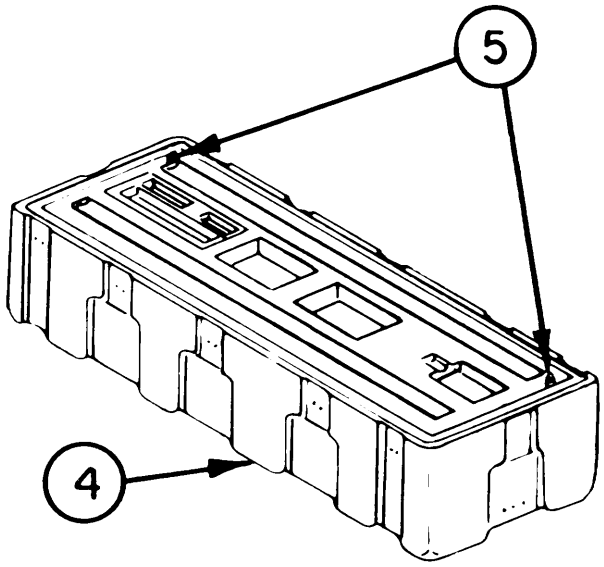


5-40. BORESCOPE OPTICAL CASE--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

2

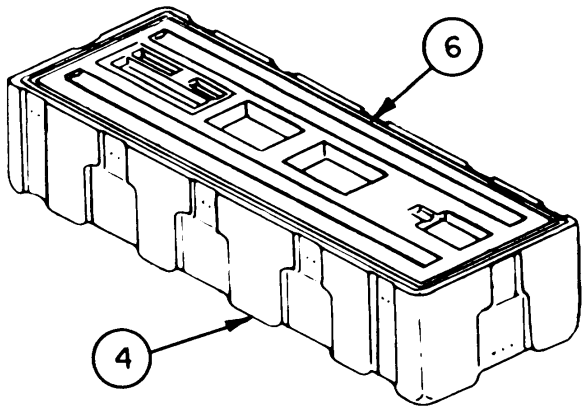
Install two snapslide fast studs (5) in molded case (4).



3

a. Apply 1/16-inch bead of silicone adhesive sealant to bottom of gasket groove.

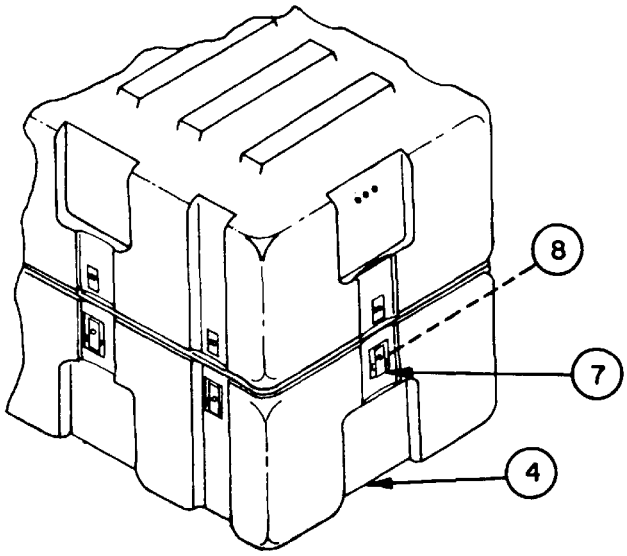
b. Install gasket (6) in molded case (4).



4

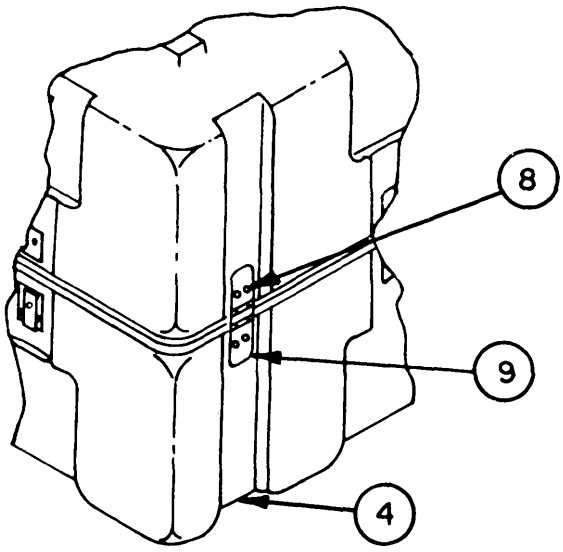
a. Install top half of molded case (4).

b. Install seven clamping catches (7) on molded case (4) using 14 blind rivets (8).



5

Install five butt hinges (9) on molded case (4) using 20 blind rivets (8).



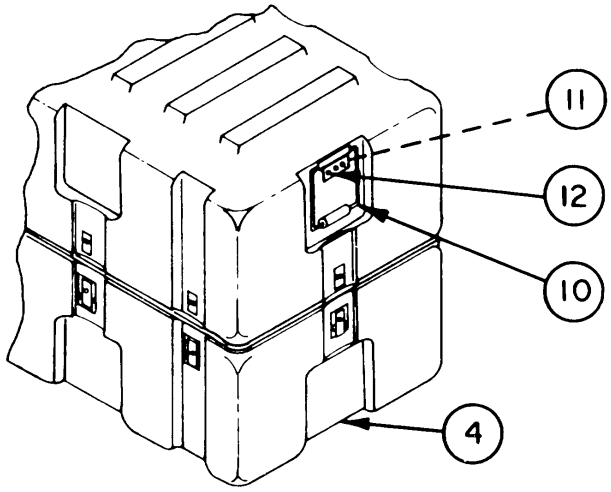
5-40. BORESCOPE OPTICAL CASE--MAINTENANCE INSTRUCTIONS (CONT).

REASSEMBLY (CONT).

6

a. If necessary, fabricate new rubber spacer. See appendix E (figure F-1).

b. Install three handles (10) and three rubber spacers (11) using nine machine screws (12) on molded case (4).



7

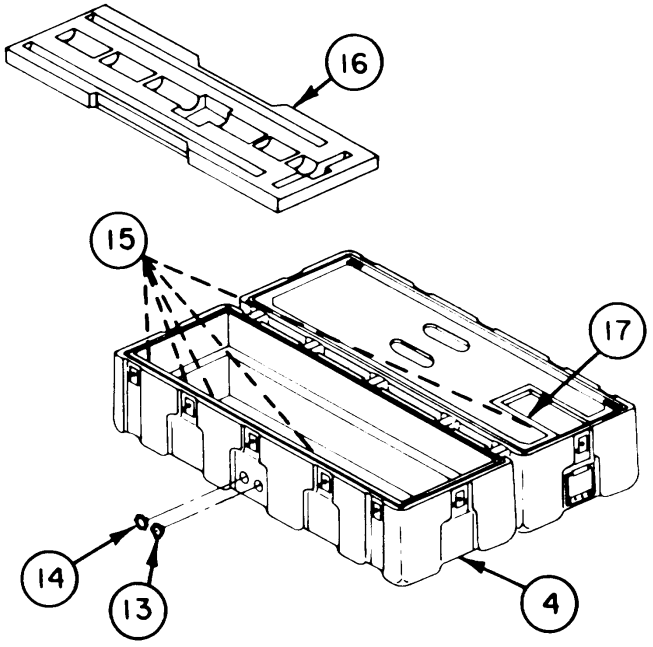
a. Install pressure relief valve (13) on molded case (4).

b. Install humidity indicator (14) on molded case (4).

c. Apply 1/16-inch bead of silicone adhesive sealant to five caplugs (15).

d. Install five caplugs (15) in molded case (4) and hold till sealant is dry.

e. Insert molded insert (16) and panel cover (17) in molded case (4).



Section VI. FINAL INSPECTION PROCEDURES

5-40. GENERAL.

The following inspection shall constitute the criteria for resolution. If the direct support instrument repair shop is unable to repair the M3 Borescope to the extent that it will meet the standard listed below, it must be forwarded to depot for repair.

5-41. RESOLUTION.

NOTE

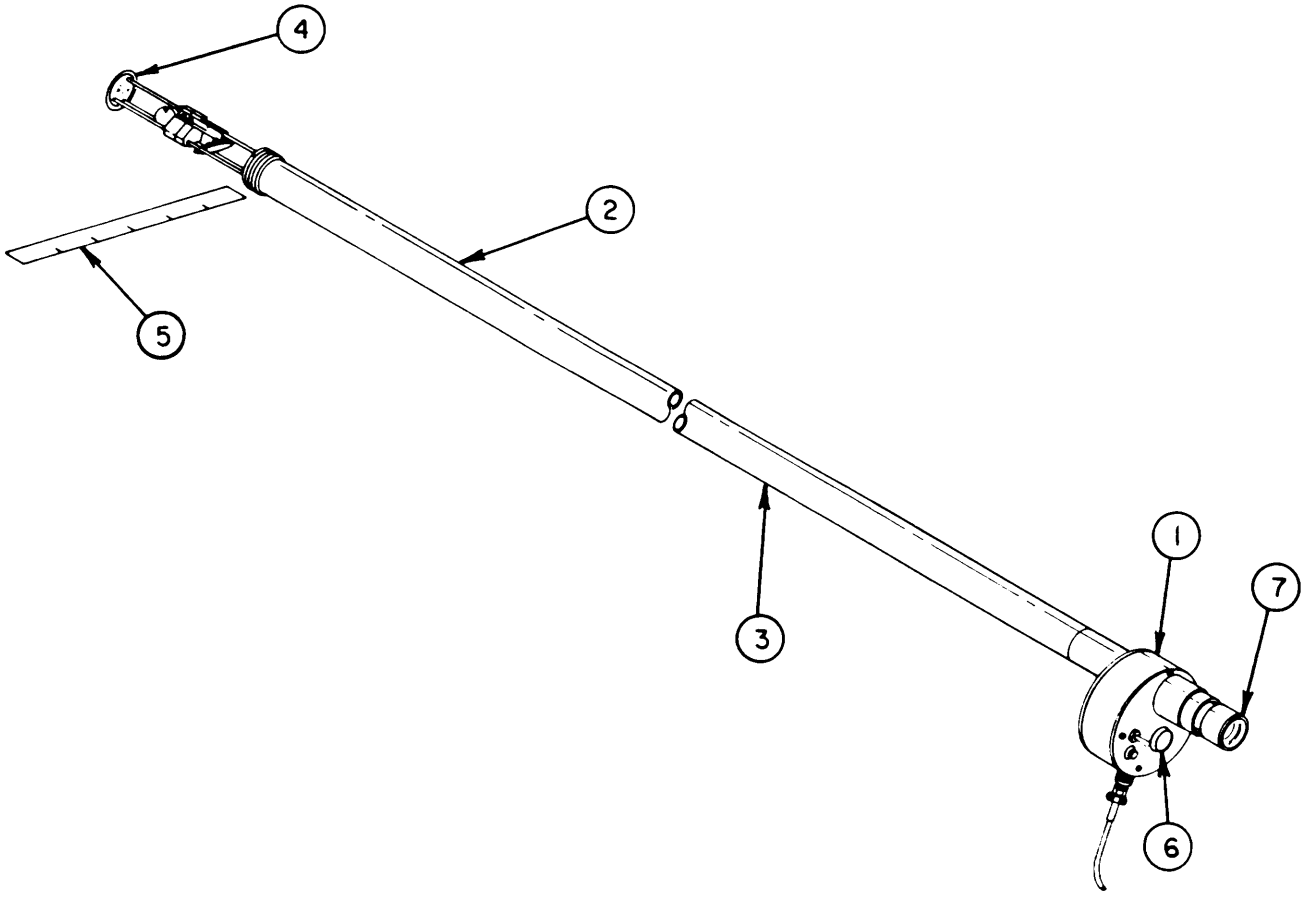
Borescope extension tubes I, II, and III must be attached to the objective tube assembly during resolution.

a. Assemble the adapter tube assembly (1), objective tube assembly (2), borescope extension tubes (3), and illuminating head assembly (4).

b. Position a steel scale (5) approximately 9-10 inches below and within the field of view of the illuminating head assembly.

c. Turn the electric light control knob (6) to maximum light.

d. Focus the eyepiece assembly (7) in order to resolve 0.032 of the steel scale. See appendix G for converting decimal measurements into fractions.



APPENDIX A
REFERENCES

A-1. TECHNICAL MANUALS.

TM 9-254	General Maintenance Procedures for Fire Control Materiel
TM 9-1000-202-14	Evaluation of Cannon Tubes
TM 740-90-1	Preparation for Storage or Shipment
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (US Army Tank-Automotive Command)

A-2. DEPARTMENT OF THE ARMY FORMS (DA FORM).

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Manuals
DA Form 2AO4	Equipment Inspection and Maintenance Worksheet

A-3. FIELD MANUALS.

FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather
FM 21-11	First Aid for Soldiers

A-4. MISCELLANEOUS PUBLICATIONS.

CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 738-750	The Army Maintenance Management System (TAMMS)
SF 364	Report of Discrepancy (ROD)
SF 368	Quality Deficiency Report

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from section II.

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

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows: (except for ammunition MAC [1])

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

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

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

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

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

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

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of equipment or system.

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[1]Exception is authorized for ammunition MAC to permit the redesignation/ redefinition of maintenance function headings to more adequately identify ammunition maintenance functions. The heading designations and definitions will be included in the appropriate technical manual for each category of ammunition.

B-2. MAINTENANCE FUNCTIONS (CONT).

h. Replace**.** The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair**.** The application of maintenance services2 or other maintenance actions3 to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

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

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

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

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

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

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s) the category of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart.

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[2]Services--inspect, test, service, adjust, aline, calibrate, or replace.

[3]Actions--welding, grinding, riveting, straightening, facing, remachining, or resurfacing.

The symbol designations for the various maintenance categories are as follows:

C ..... Operator or crew
O .....Organizational maintenance
F ..... Direct support maintenance
H .....General support maintenance
D ..... Depot maintenance

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in section IV.

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 Category. The lowest category of maintenance authorized to use the tool or test equipment.

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

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

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

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

Section II. MAINTENANCE ALLOCATION CHART FOR M3 BORESCOPE

(1)	(2)	(3)	(4)					(5)	(6)
GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE LEVEL C	O	F	H	D	TOOLS AND EQUIPMENT	REMARKS
00	BORESCOPE, M3, WITH EQUIPMENT	Inspect Service Repair	1.0 3.0		1.0 3.0 12.0				
01	ILLUMINATING HEAD ASSEMBLY	Inspect Service Repair Replace	0.1 0.2 0.1	 0.2	0.5 2.0			 1,2	
0101	SLEEVE ASSEMBLY	Inspect Repair Replace			 0.1 0.1	0.1		 1,2,3 1,2	

Section II. MAINTENANCE ALLOCATION CHART FOR M3 BORESCOPE (CONT)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
0102	LAMPHOLDER ASSEMBI,Y BODY	Inspect			0.2				
		Repair			2.0			1,2	
		Replace			0.2			1,2	
0103	FRONT SLEEVE ASSEMBLY	Inspect			0.1				
		Repair			0.1			1,2	
		Replace			0.1			1,2	
02	BLIND ILLUMI-NATING HEAD ASSEMBLY	Inspect	0.1		0.1				
		Service	0.1						
		Repair	0.1		2.0				
		Replace			0.1				
0201	BODY ASSEMBLY Inspect				0.1				
		Repair			1.0 1			1,2,3	
020101	FRONT SLEEVE ASSEMBLY	Inspect			0.1				
		Repair			0.3			1,2,3	
		Replace			0.3			1,2	
020102	REAR SLEEVE ASSEMBLY Replace	Inspect			0.1				
		Repair			0.3				
					0.3				
03	OBJECTIVE TUBE ASSEMBLY	Inspect	0.1		0.2				
		Service	0.1						
		Repair			1.0			1,2	
		Replace			0.2				
0301	OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY	Inspect			0.5				
		Repair			0.5			1,2	
		Replace			0.5			1,2	

Section II. MAINTENANCE ALLOCATION CHART FOR M3 BORESCOPE (CONT)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
0302	OBJECTIVE LENS OPTICAL CELL ASSEMBLY	Inspect			0.2				
		Repair			0.2			1,2	
		Replace			0.2			1,2	
0303	OBJECTIVE ASSEMBLY SLEEVE SPACER	Inspect			0.2				
		Repair			0.5			1,2,3	
		Replace			0.5			1,2	
0304	REAR SLEEVE ASSEMBLY	Inspect			0.2				
		Repair			0.5			1,2,3	
		Replace			0.3			1,2	
0305	SLEEVE SPACER ASSEMBLY	Inspect			0.2				
		Repair			0.5			2,3	
		Replace			0.5			1,2	
04	BORESCOPE EXTENSION TUBE, I, II, or III	Inspect	0.1		0.5				
		Service	0.5						
		Repair			3.0			1,2	
		Replace			0.1				
0401	REAR SLEEVE ASSEMBLY	Inspect			0.2				
		Repair			0.5			1,2,3	
		Replace			0.5			1,2	
0402	OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY	Inspect			0.2				
		Repair			0.5			1,2	
		Replace			0.5			1,2	
0403	SLEEVE SPACER ASSEMBLY	Inspect			0.2				
		Repair			0.5			1,2,3	
		Replace			0.5			1,2	

Section II. MAINTENANCE ALLOCATION CHART FOR M3 BORESCOPE (CONT)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
05	ADAPTER TUBE ASSEMBLY	inspect	0.1		0.5				
		Repair			3.0			1,2	
0501	ADAPTER TUBE SUBASSEMBLY	Inspect			0.1				
		Replace			0.5			1,2	
		Repair			1.5			1,2	
06	EYEPIECE ASSEMBLY Inspect		0.1		0.1				
		Service	0.1						
		Repair			0.5			1	
		Replace			0.1			1	
07	SUPPORT ASSEMBLY, 75-MM	Inspect			0.1				
		Repair			0.1			1,3	
		Replace			0.1				
08	SUPPORT ASSEMBLY, 81-MM	Inspect			0.1				
		Repair			0.1			1,3	
		Replace			0.1				
09	SUPPORT ASSEMBLY, 90-MM thru 8-INCH	Inspect	0.1		0.1				
		Repair			1.5			2	
		Replace			0.1				
10	SHAFT COLLAR Inspect				0.1				
		Repair			0.1			2	
		Replace			0.1				
11	ELECTRICAL POWER Cable ASSEMBLY, 115-V	Inspect	0.1		0.2				
		Repair			0.5			2	
		Replace			0.1				

Section II. MAINTENANCE ALLOCATION CHART FOR M3 BORESCOPE (CONT)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
12	LARGE REFLECTOR ASSEMBLY	Inspect Repair Replace			0.1 0.1 0.1			2	
13	CASE, OPTICAL, BORESCOPE	Inspect Repair Replace			0.1 1.0 0.1			2,4	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR M3 BORESCOPE

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F	Socket Wrench Case	5140-01-119-3218	11584760
2	F	Instrument & Fire Control Shop Equipment	4931-00-754-0740	SC 4931-95-CL-A07
3	F	Helicoil Insert & Tool Kit for 4-40 Insert	5180-00-054-7506	4131-04-1
4	F	Hot Melt Glue Gun		HYSOL 101

APPENDIX C

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

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 direct support maintenance of the M3 Borescope. 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 Repair Parts and Special Tools List is divided into the following sections:

a. Section II - Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The lists also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups 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.

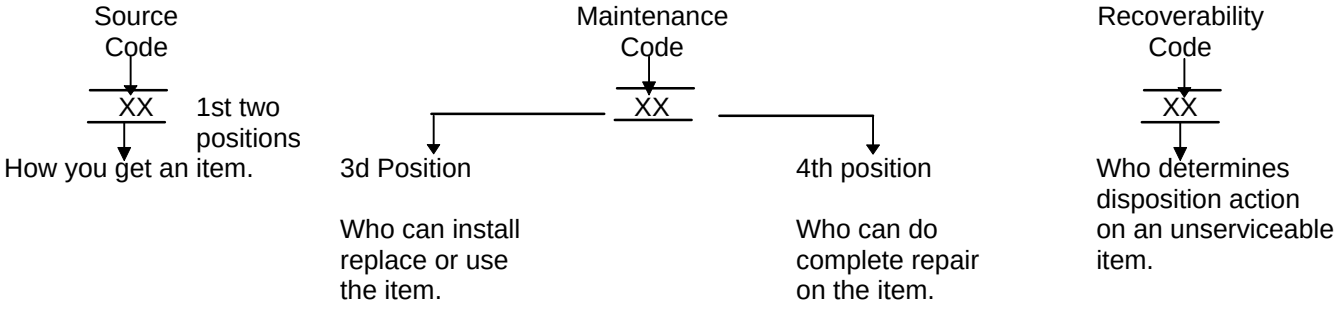
c. Section IV - National Stock Number and Part Number Index. A list, in National item identification number (NIIN) sequence, of all National stock numbered items appearing in the listings, followed by a list in alphanumeric sequence of all part numbers appearing in the listing. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-3. EXPLANATION OF COLUMNS (Sections II and III).

a. ITEM NO. (Column (1)). Indicates the number used to identity items called out in the illustration.

C-3. EXPLANATION OF COLUMNS (Section II and III) (CONT).

b. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instructions, 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 codes follows:

Code	Explanation
PA PB PC** PD PE PF PG	Stocked items; use the applicable NSN to request/ requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code. ** NOTE: Items coded PC are subject to deterioration.
~~KD~~ KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.

Code	Explanation
MO - (Made at org/ AVUM Level) MF - (Made at DS/ ANUM Level) MH - (Made at GS Level) ML - (Made at Specialized Repair Act (SRA) MD - (Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO - (Assembled by org/AVUM Level) AF - (Assembled by DS/AVIM Level) 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 make up the assembled item must be requisitioned or fabricated and assembled at the > level of maintenance indicated by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

XA - Do not requisition an "XA" - 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 FSCM and part number given.

XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

XD - Item is not stocked. Order an "XD" - coded item through normal supply channels using the FSCM 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 coded "XA" or those aircraft support items restricted by requirements of AR 700-42.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth position 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.

C-3. EXPLANATION OF COLUMNS (Section II and III) (CONT).

Code	Application/Explanation
C	- Crew or operator maintenance done within organizational or aviation unit maintenance.
O	- Organizational or aviation unit category can remove, replace, and use the item.
F	- Direct support or aviation intermediate level can remove, replace, and use the item.
H	- General support level 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 the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes.

Code	Application/Explanation
O	- Organizational or (aviation unit) is the lowest level that can do complete repair of the item.
F	- Direct support or aviation intermediate is the lowest level that can do complete repair of the item.
H	- General support 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 Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Recoverability Code	Application/Explanation
Z	- Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.
O	- Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational or aviation unit level.
F	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support or aviation intermediate level.
H	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support 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 reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. FSCM (Column (3)). The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code which 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.

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

C-3. EXPLANATION OF COLUMNS (Section II and III) (CONT).

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) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry or reference is made to the applicable figure.

(3) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

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

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

C-4. EXPLANATION OF COLUMNS (Section IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER column. This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e., 5305-01-674-1467). When using this 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.

NSN

NIIN

(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 III.

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

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (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 numbers 0 through 9 and each following letter or digit in like order).

(1) FSCM column. The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code 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, 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 FSCM 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 III.

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

C-5. SPECIAL INFORMATION.

a. Fabrication Instructions. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source codes to be manufactured or fabricated are found in appendix E.

b. Assembly Instructions. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in the narrative portion of this manual. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

c. Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

C-6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is Not Known.

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

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

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

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

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

C-6. HOW TO LOCATE REPAIR PARTS (CONT).

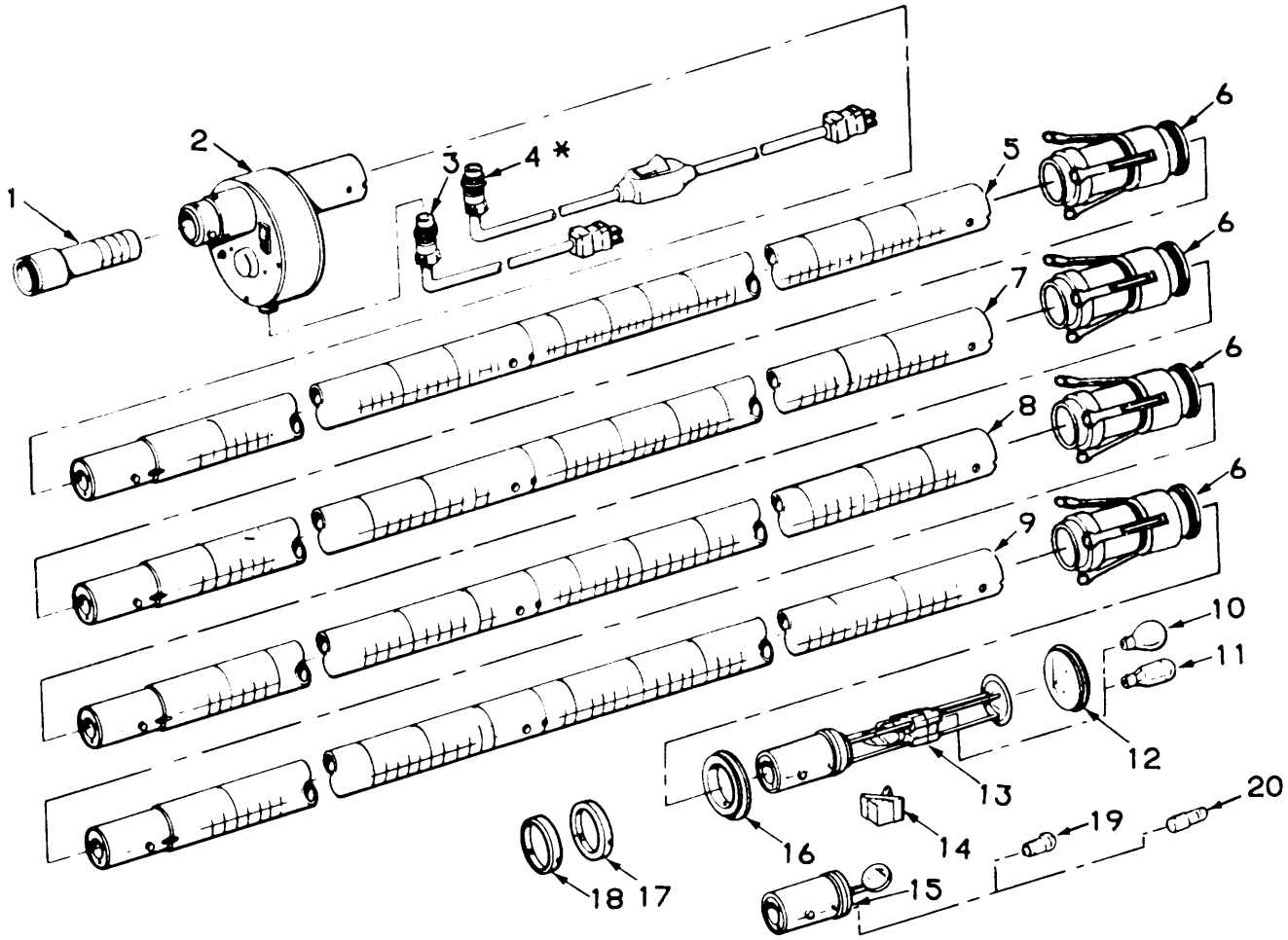
b. When National Stock Number or Part Number is Known:

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

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

C-7. ABBREVIATIONS. Not applicable.

SECTION II. REPAIR PARTS LIST



* If 24-V Electrical Power Cord Adapter Assembly is not available refer to maintenance instructions for modification of adapter tube assembly.

Figure C-1. Borescope, M3, with Equipment

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 00 BORESCOPE, M3, WITH EQUIPMENT 11584701 FIG. C-1 BORESCOPE, M3, WITH EQUIPMENT	
1	PAFFF	19206	11584707	EYEPIECE ASSEMBLY, OPTICAL..... INSTRUMENT (SEE FIG C-18 FOR BREAKDOWN).....	1
2	XAFFF	19206	11584706	ADAPTER TUBE ASSEMBLY (SEE FIG C-..... 16 FOR BREAKD OWN).....	1
t * 3	PAFZZ	19206	11584771	CABLE ASSEMBLY POWER, ELECTRICAL, ... 115V, BLACK, 25 FT LG.....	1
4	PAFZZ	19206	11584889	CORD ASSEMBLY, ELECTRICAL POWER, 24V DC	1
5	PAFFF	19206	11584735	TUBE, EXTENSION, BORESCOPE, NO. III..... (SEE FIG C-12 FOR BREAKDOWN)	1
6	PAFFF	19206	11584801	SUPPORT ASSEMBLY 90-MM THRU 8-IN..... (SEE FIG C-21 FOR BREAKDOWN)	4
7	PAFFF	19206	11584734	TUBE, EXTENSION, BORESCOPE, NO. II..... (SEE FIG C-12 FOR BREAKDOWN)	1
8	PAFFF	19206	11584733	TUBE, EXTENSION, BORESCOPE, NO. I..... (SEE FIG C-12 FOR BREAKDOWN)	1
9	PAFFF	19206	11584702	TUBE ASSEMBLY, OBJECTIVE (SEE FIG 1 C-6 FOR BREAKD OWN).....	
10	PAFZZ	19206	11584748	LAMP, INCANDESCENT 125 VOLTS	7
11	PAFZZ	19206	11584779	LAMP, INCANDESCENT 20 VOLTS	6
12	PAFFF	19206	11584755	REFLECTOR ASSEMBLY, LARGE (SEE FIG..... C-24 FOR BREAKDOWN).....	1
13	PAFFF	19206	11584708	HEAD ASSEMBLY, ILLUMINATIIG (EARLY..... MODEL; SEE FIG C-3 FOR BREAKDOWN)	1
13	PAFFF	19206	11586099	HEAD ASSEMBL, ILLUMINATING (LATE..... MODEL., SEE FIG C-3 FOR BREAKDOWN)	1
14	PAFZZ	19206	11584794	PRISM, OPTICAL INSTRUMENT.....	1
15	PAFFF	19206	11584810	HEAD ASSEMBLY, BLIND ILLUMINATING ..... (SEE FIG C-4 FOR BREAKDOWN)	1
16	PAFFF	19206	11584765	COLLAR, SHAFT (SEE FIG C-22 FOR ..... BREAKDOWN)	1
17	PAFFF	19206	11584783	SUPPORT ASSEMBLY, 81-MM (SEE FIG C-..... 20 FOR BREAKDOWN)	2
18	PAFFF	19206	11584799	SUPPORT ASSEMBLY, 75-MM (SEE FIG C-..... 19 FOR BREAKD OWN)	2
19	PAFZZ	19206	11584813	LAMP, INCANDESCENT G-3 1/2 BULB, 28..... VOLTS.....	10
20	PAFZZ	58854	120MB6	LAMP, INCANDESCENT T2 1/2 OR T3 10 BULB, 120 VOLTS.....	
				END OF FIGURE	

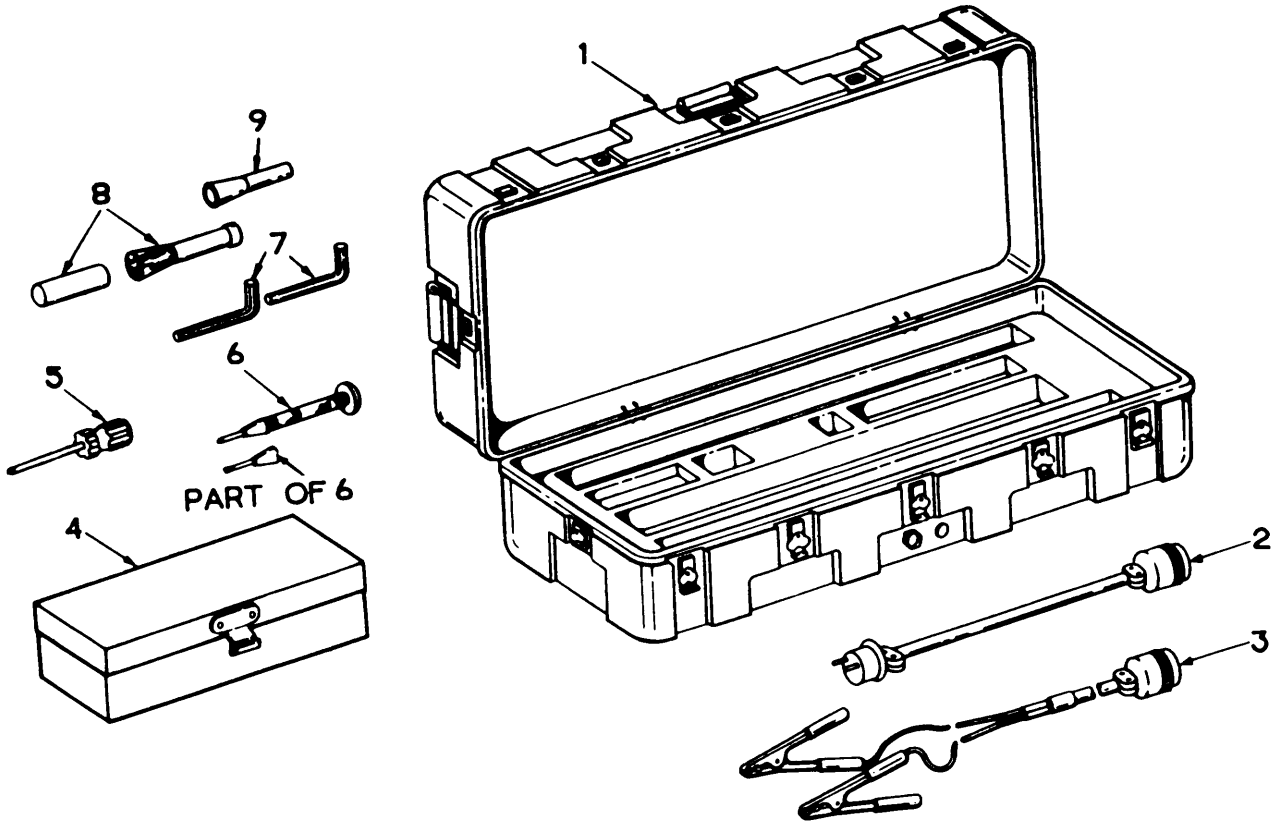
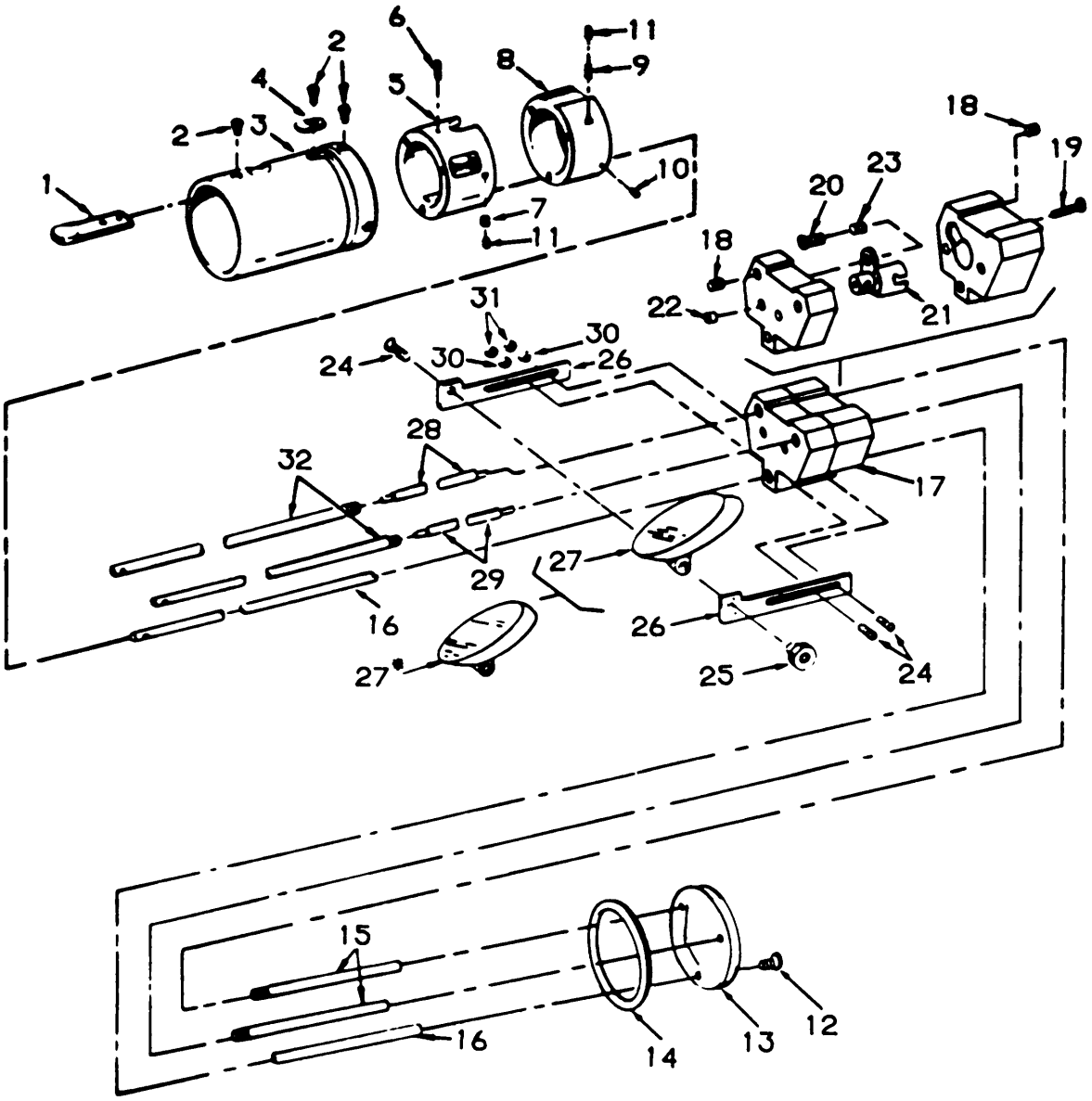


Figure C-2. Borescope, M3, with Equipment and Related Parts

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 00 BORESCOPE, M3. WITH EQUIPMENT AND RELATED PARTS 11 584701 FIG. C-2 BORESCOPE, M3, WITH EQUIPMENT AND RELATED PARTS	
1	PAFFF	19206	11584705	CASE, OPTICAL BORESCUPE (SEE FIG C-25 FOR BREAKDOWN)	1
2	PAFZZ	19206	11584822-1	CORD ASSEMBLY, ELECTRICAL (SLAVE)	1
3	PAFZZ	19206	11584800-1	CORD ASSEMBLY, ELECTRICAL (BATTERY)	1
4	PAFZZ	19206	11584760	CASE, SOCKET WRENCH	1
5	PAFZZ	81348	GGG-S-121	SCREWDRIVER, CROSS IP	1
6	PAFZZ	19206	11584754	SCREWDRIVER, JEWELER	1
7	PAFZZ	81348	GGG-K-275	KEY, SOCKET HEAD SCREW	5
8	PAFZZ	19206	11584772	BRUSH, DUSTING, LENS	1
9	PAFZZ	19206	11586210	REMOVER, PILOT BULB	1
				END OF FIGURE	



* Used on late production:
either configuration permissible.

Figure C-3. Illuminating Head Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 01 ILLUMINATING HEAD ASSEMBLY 11586099	
				FIG. C-3 ILLUMINATING HEAD ASSEMBLY	
1	PAFZZ	19206	11584724	LOCK ASSEMBLY	1
2	PAFZZ	96906	MS51959-3	SCREW, MACHINE	5
3	XAFZZ	19206	11584775	HOUSING, HEAD ASSEMBLY	1
4	PAFZZ	19206	11584725	KEY, MACHINE	1
5	PAFFF	19206	11585922	SLEEVE ASSEMBLY	1
6	PAFZZ	96906	MS51836-301L	. INSERT, SCREW THREAD	1
7	PAFZZ	96906	MS122116	. INSERT, SCREW THREAD	3
8	PAFFF	19206	11584863	SLEEVE ASSEMBLY, FRONT	1
9	PAFZZ	96906	MS122116	. INSERT, SCREW THREAD	3
10	PAFZZ	96906	MS51836-301L	. INSERT, SCREW THREAD	2
11	PAFZZ	96906	MS51021-10	SETSCREW	6
12	PAFZZ	96906	MS51957-30	SCREW, MACHINE	3
13	PAFZZ	19206	11584776	REFLECTOR, SMALL	1
14	PCFZZ	96906	MS28775-330	PACKING, PEFORMED	1
15	PAFZZ	19206	11586097	TUBE, SUPPORT	2
16	PAFZZ	19206	11584778	TUBE, METALLIC SUPPORT	1
17	PAFFF	19206	11586098	BODY, LAMPHOLDER ASSEMBLY	1
18	PAFZZ	96906	MS51836-310	. INSERT, SCREW THREAD	4
19	PAFZZ	96906	MS51957-37	. SCREW, MACHINE	2
20	PAFZZ	96906	MS51957-28	. SCREW, MACHINE	1
21	PAFZZ	19206	1584780	. LAMPHOLDER	1
22	PAFZZ	19206	11586094	. NUT, PLAIN, INTERNAL	2
23	PAFZZ	96906	MS51836-305	. INSERT, SCREW THREAD	
24	PAFZZ	96906	MS51957-19	SCREW, MACHINE	3
25	PAFZZ	19206	11584730	NUT, PLAIN, KNURLED	1
26	PAFZZ	19206	11534786	BRACK, ANGLE	2
27	PAFZZ	19206	115G4784	MIRROR ASSEMBLY	1
28	MFFZZ	81349	M16878/4BHE9	WIRE, ELECTRICAL WHITE, 8.50 LG. (MFR FROM 6145-01--140-9821)	1
29	MFFZZ	81349	M16878/4BHE0	WIRE, ELECTRICAL BLACK, 8.50 LG. (MFR FROM 6145-01-140-9812)	
30	PAFZZ	96906	MS15795-803	WASHER, FLAT	2
31	PAFZZ	96906	MS35649-244	NUT, PLAIN, HEXAGON	2
32	PAFZZ	19206	11586096	TUBE, CONDUCTOR	2
				END OF FIGURE	

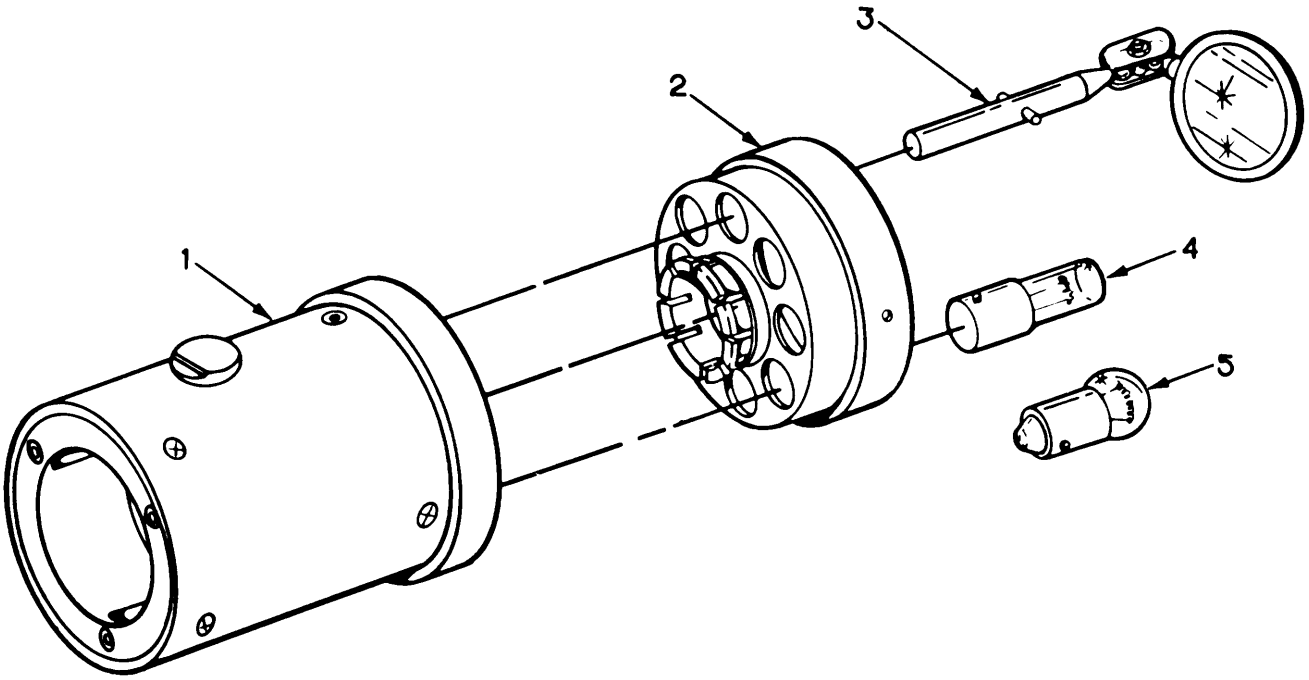


Figure C-4. Blind Illuminating Head Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 02 BLIND ILLUMINATING HEAD ASSEMBLY 11584810 FIG. C-4 BLIND ILLUMINATING HEAD ASSEMBLY	
1	AFFFF	19206	11584815	BODY ASSEMBLY (SEE FIG C-5 FOR BREAKDOWN).	1
2	PAFZZ	19206	11584814	REFLECTOR, LIGHT	1
3	PAFZZ	19206	11584811	MIRROR, INSPECTION	1
4	PAFZZ	58854	120MB6	LAMP, INCANDESCENT T2 1/2 OR T3, 120 VOLTS	10
5	PAFZZ	19206	11584813	LAMP, INCANDESCENT, G-3 1/2 BULB, 28 VOLTS	10
				END OF FIGURE	

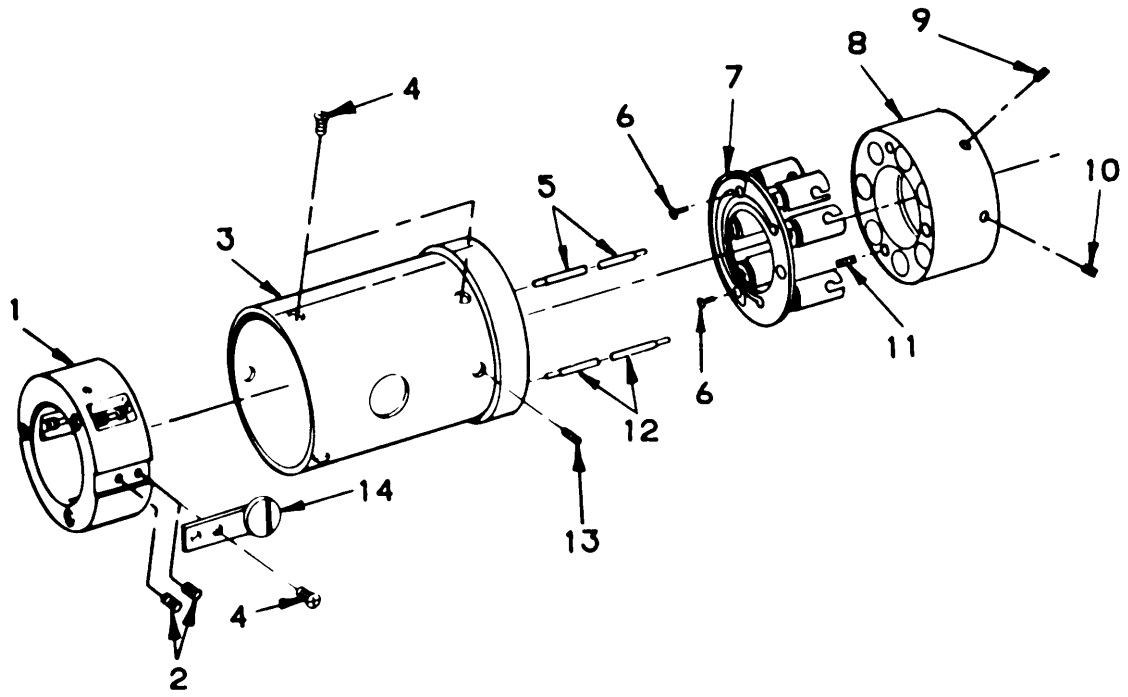


Figure C-5. Body Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0201 BODY ASSEMBLY 11584815	
				FIG. C-5 BODY ASSEMBLY	
1	PAFZZ	19206	11584868	SLEEVE ASSEMBLY, REAR	1
2	PAFZZ	96906	MS51836-201	INSERT, SCREW THREAD	5
3	PAFZZ	19206	11584821	BUSHING, SLEEVE	1
4	PAFZZ	96906	MS51959-3	SCREW, MACHINE	8
5	MFFZZ	81349	M16878/4BHE9	WIRE, ELECTRICAL WHITE (MFR FROM 6145-01-140-9821)	1
6	PAFZZ	96906	MS51957-4	SCREW, MACHINE	2
7	PAFZZ	19206	11584816	CIRCUIT BOARD ASSEMBLY	1
8	PAFFF	19206	11584818	SLEEVE, FRONT ASSEMBLY	1
9	PAFZZ	96906	MS51836-201	INSERT, SCREW THREAD	3
10	PAFZZ	96906	MS122116	INSERT, SCREW THREAD	1
11	PAFZZ	96906	MS122255	INSERT, SCREW THREAD	2
12	NFFZZ	81349	M16878’4BHEO	WIRE, ELECTRICAL BLACK (MFR FROM 6145-01-140-9812)	1
13	PAFZZ	96906	MS51021-10	SETSCREW	1
14	PAFZZ	19206	11584819	LOCK ASSEMBL BUTTON	1
				END OF FIGURE	

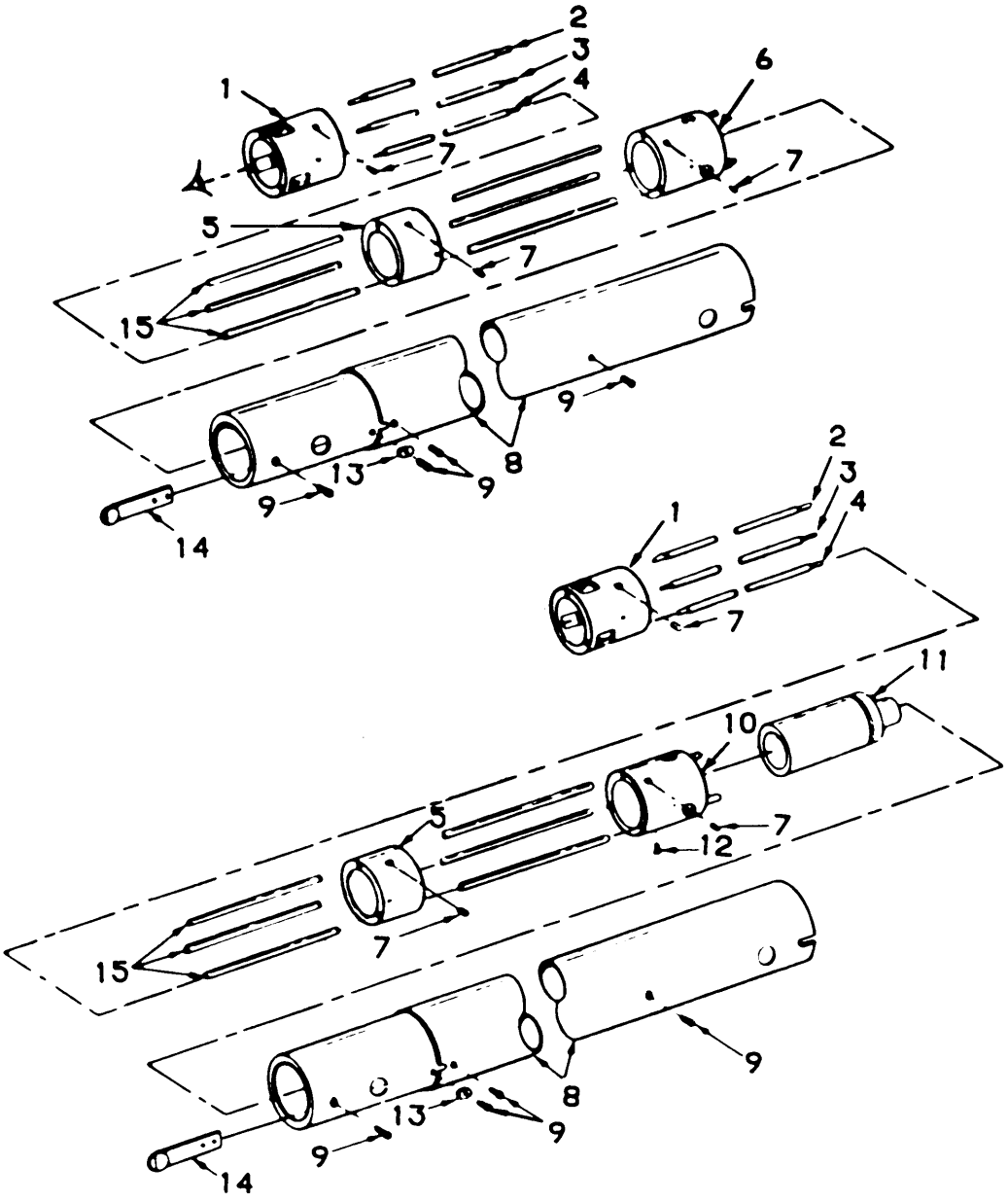


Figure C-6. Objective Tube Assembly

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
					GROUP 03 OBJECTIVE TUBE ASSEMBLY 11584702	
					FIG. C-6 OBJECTIVE TUBE ASSEMBLY	
	1	PAFFF	19206	11585924	SLEEVE ASSEMBLY, REAR (SEE FIG C-13 FOR BREAKDOWN)	2
	2	MFFZZ	81349	M16878/4BHE9	WIRE, ELECTRICAL WHITE, 37.00 LG. (MFR FROM 6145-01-140-9821)	1
	3	MFFZZ	81349	M16878/4BHE0	WIRE, ELECTRICAL BLACK, 37.00 LG. (MFR FROM 6145-01-140-9812)	1
	4	MFFZZ	81349	MIL-W-16878/4	WIRE, ELECTRICAL, BLUE, 37.00 LG (MFR FROM 6145-01-043- 4522)	1
*	5	PAFFF	19206	11584718	CELL ASSEMBLY, OPTICAL ELEMENT ERECTOR LENS (SEE FIG C-14 FOR BREAKDOWN)	2
*	6	PAFFF	19206	11585925	SPACER ASSEMBLY, SLEEVE (SEE FIG C-15 FOR BREAKDOWN)	1
	7	PAFZZ	96906	MS51021-10	SETSCREW	18
	8	XAFZZ	19206	11584721	TUBE, OBJECTIVE	1
	9	PAFZZ	96906	MS51959-3	SCREW, MACHINE	8
	10	PAFFF	19206	11585923	SPACER, SLEEVE, OBJECTIVE ASSEMBLY (SEE FIG C-9 FOR BREAKDOWN)	1
*	11	PAFFF	19206	11584710	CELL ASSEMBLY, OBJECTIVE LENS OPTICAL (SEE FIG C-8 FOR BREAKDOWN).	1
	12	PAFZZ	96906	MS51959-16	SCREW, MACHINE	2
	13	PAFZZ	19206	11584725	KEY, MACHINE	2
	14	PAFZZ	19206	11584724	LOCK ASSEMBLY	2
	15	PAFZZ	19206	11584726	TUBE, METALLIC	6
					END OF FIGURE	

* All information pertaining to Figure C-7 has been deleted.

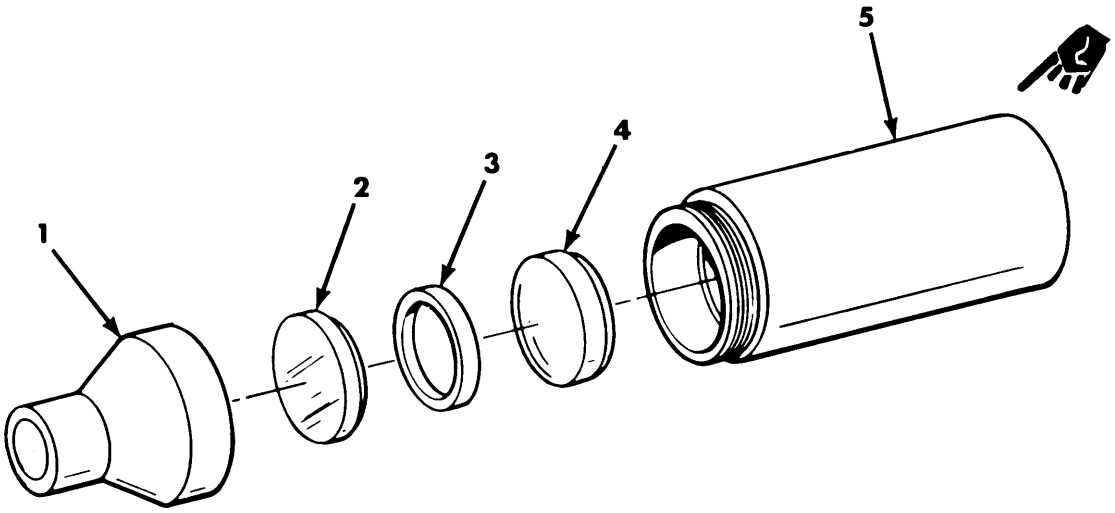


Figure C-8. Objective Lens Optical Cell Assembly

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
					GROUP 0302 OBJECTIVE LENS OPTICAL CELL ASSEMBLY 11584710	
					FIG. C-8 OBJECTIVE LENS OPTICAL CELL ASSEMBLY	
*	1	XAFZZ	19206	11584712	CAP	1
*	2	PAFZZ	19206	11584714	LENS, OPTICAL INSTRUMENT	1
*	3	PAFZZ	19206	11584715	SPACER, RING	1
*	4	PAFZZ	19206	11584716	LENS, OPTICAL INSTRUMENT	1
*	5	XAFZZ	19206	11584711	RETAINER, OPTICAL ELEMENT	1
					END OF FIGURE	

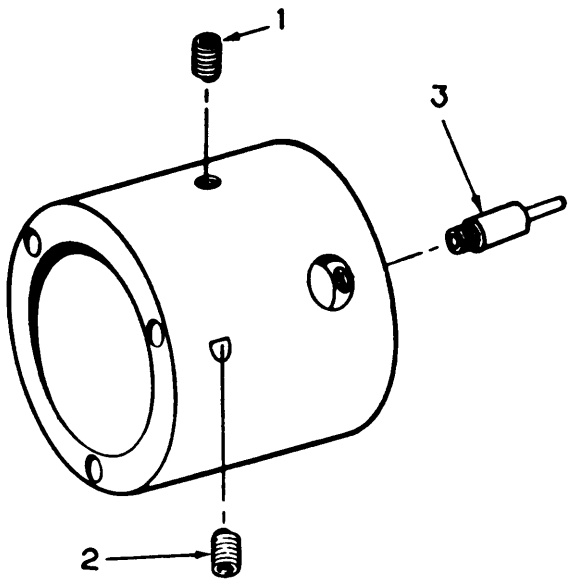


Figure C-9. Objective Assembly Sleeve Spacer

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0303 OBJECTIVE ASSEMBLY SLEEVE SPACER 11585923	
				FIG. C-9 OBJECTIVE ASSEMBLY SLEEVE SPACER	
1	PAFZZ	96906	MS51836-301L	INSERT, SCREW THREAD	1
2	PAFZZ	96906	MS122116	INSERT, SCREW THREAD	3
3	PAFZZ	19206	11584729	CONTACT, ELECTRICAL	3
				END OF FIGURE	

All information pertaining to figure C-10 has been deleted. *

* All information pertaining to figure C-11 has been deleted.

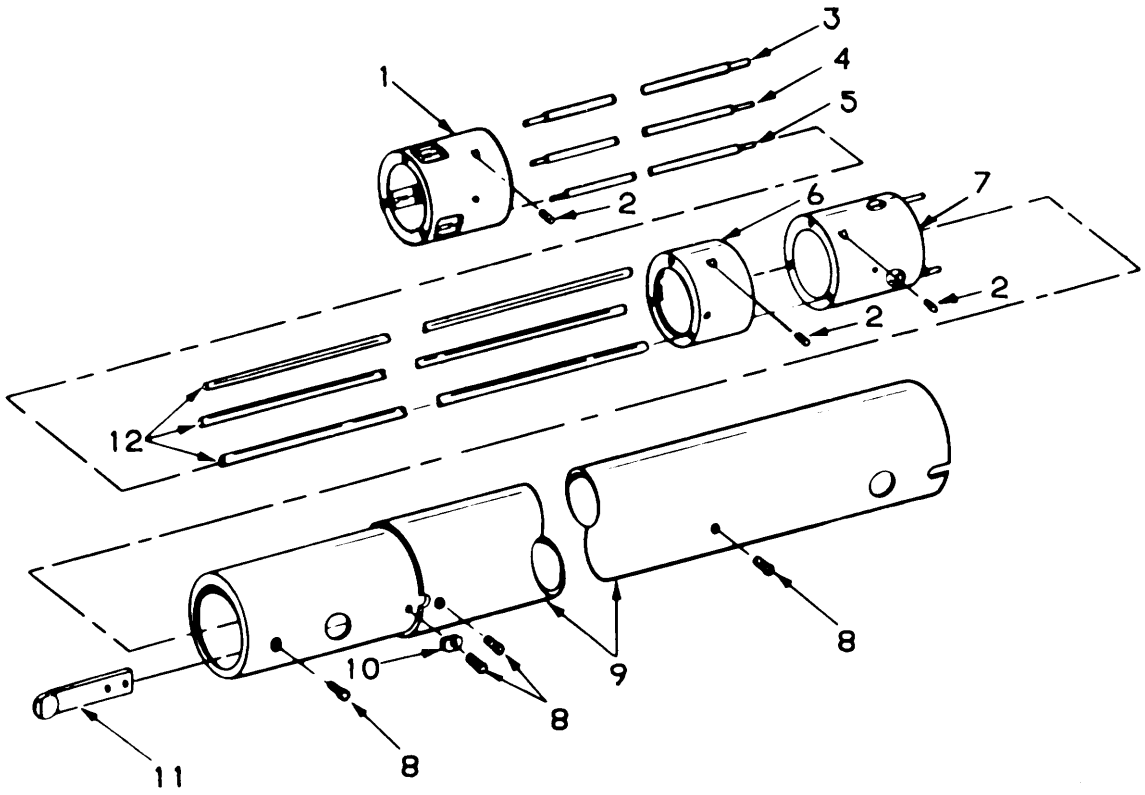


Figure C-12. Borescope Extension Tube NO. I, NO. II, or NO. III

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 04 BORESCOPE EXTENSION TUBE 11584733 NO. I, 11584734 NO. II, OR 11584735 NO. III	
				FIG. C-12 BORESCOPE EXTENSION TUBE NO. I, NO. II, OR NO. III	
1	PAFFF	19206	11585924	SLEEVE ASSEMBLY, REAR (SEE FIG C-13 FOR BREAKD OWN)	2
2	PAFZZ	96906	MS51021-10	SETSCREW	18
3	MFFZZ	81349	M16878/4BHE9	WIRE, ELECTRICAL WHITE, NO 18 (MFR FROM 6145-01-140-9821)	1
4	MFFZZ	81349	M16878/4BHE0	WIRE, ELECTRICAL BLACK, NO 18 (MFR FR, M 6145-01-140-9812)	1
5	MFFZZ	81349	MIL-W-16878/4	WIRE, ELECTRICAL, BLUE, NO 18 (MFR FROM 6145-01-043-4522)	1
6	PAFFF	19206	11584718	CELL ASSEMBLY, OPTICAL ELEMENT ERECTOR LENS (SEE FIG C-14 FOR BREAKDOWN)	2
7	PAFFF	19206	11585925	SPACER ASSEMBLY, SLEEVE (SEE FIG C-15 FOR BREAKD OWN)	2
8	PAFZZ	96906	MS51959-3	SCREW, MACHINE	8
9	XAFZZ	19206	11584704	TUBE	2
10	PAFZZ	19206	11584725	KEY, MACHINE	2
11	PAFZZ	19206	11584724	LOCK ASSEMBLY	2
12	PAFZZ	19206	11584738	TUBE, METALLIC	6
				END OF FIGURE	

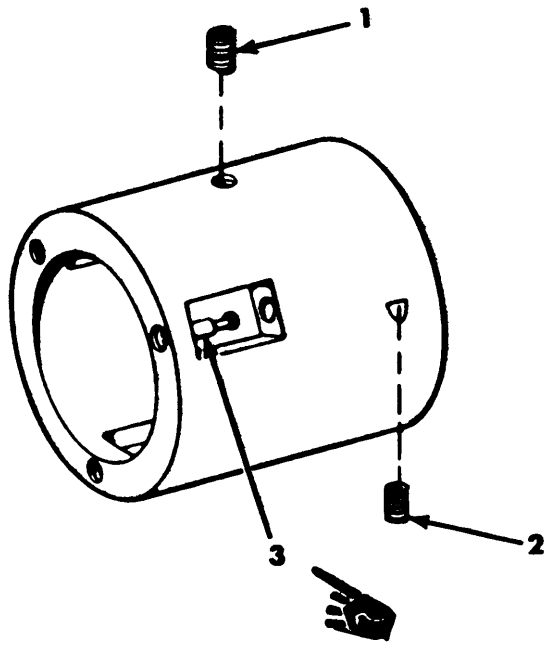


Figure C-13. Rear Sleeve Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0401 REAR SLEEVE ASSEMBLY 11585924	
				FIG. C-13 REAR SLEEVE ASSEMBLY	
1	PAFZZ	96906	MS51836-301L	INSERT, SCREW THREAD	1
2	PAFZZ	96906	MS122116	INSERT, SCREW THREAD	3
* 3	XAFZZ	19206	11584728	FLARE JACK	3

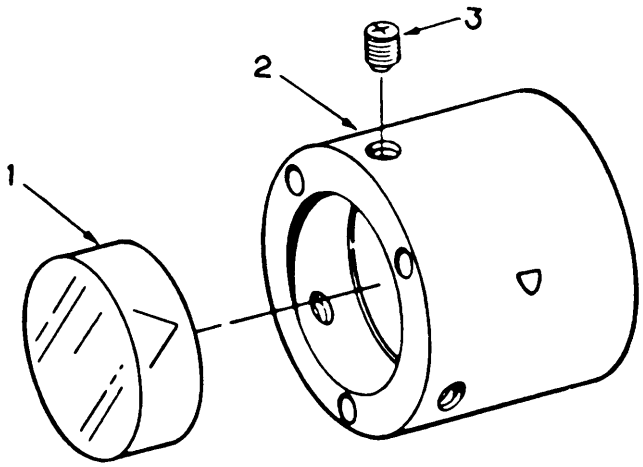


Figure C-14. Optical Element Erector Lens Cell Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0402 OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY 11584718	
				FIG. C-14 OPTICAL ELEMENT ERECTOR LENS CELL ASSEMBLY	
1	PAFZZ	19206	11581720	LENS, OPTICAL INSTRUMENT	1
2	XAFZZ	19206	11584719	SLEEVE, LENS MOUNTING.....	1
3	PAFZZ	19206	11584764	SETSCREW.....	3
				END OF FIGURE	

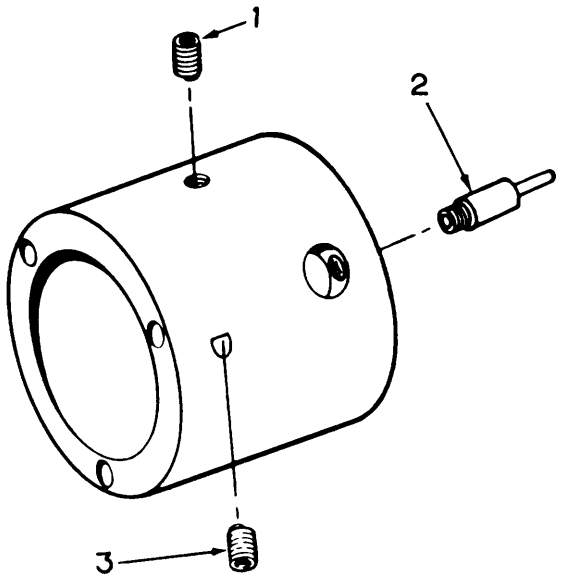
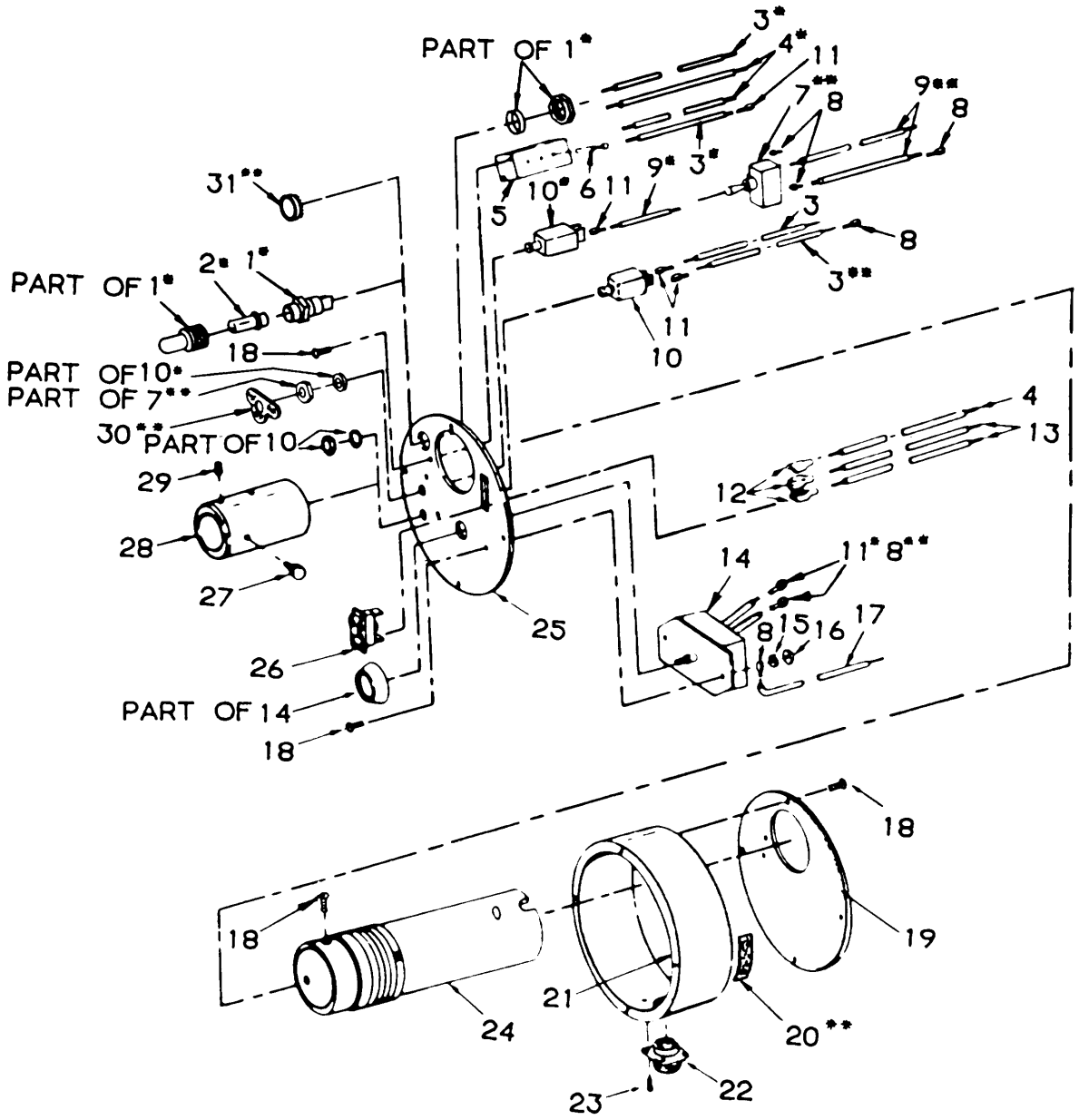


Figure C-15. Sleeve Spacer Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0403 SLEEVE SPACER ASSEMBLY 11585925	
				FIG. C-15 SLEEVE SPACER ASSEMBLY	
1	PAFZZ	96906	MS51836-301L	INSERT, SCREW THREAD	1
2	PAFZZ	19206	11584729	CONTACT, ELECTRICAL	3
3	PAFZZ	96906	MS122116	INSERT, SCREW THREAD	3
				END OF FIGURE	



* Early Production Only

** Late Production Only

Figure C-16. Adapter Tube Assembly

	(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
					GROUP 05 ADAPTER TUBE ASSEMBLY 11584706 FIG. C-16 ADAPTER TUBE ASSEMBLY	
	1	PAFZZ	19206	11584759	LIGHT, INDCATOR	1
*	2	PAFZZ	58854	120MB6	LAMP, INCANDESCENT T2 1/2 OR 13	1
	3	MFFZZ	81349	M16878/4BHE0	WIRE, ELECTRICAL BLACK, 14.00 LG. (MFR FROM 6145-01-140-9812)	
	4	MFFZZ	81349	M16878/IBHE9	WIRE, ELECTRICAL WHITE, 16.00 LG. (MFR FROM 6145-01-140-9821)	1
	5	PAFZZ	19206	11584894	CONTACT, ELECTRICAL ASSEMBLY	
	6	PAFZZ	19206	11584747	CONTACT, ELECTRICAL	3
	7	PAFZZ	96906	MS24524-21	SWITCH, TOGGLE	1
	8	PAFZZ	96906	rlS35430-4	TERMINAL, LUG	1
	9	MFFZZ	81349	M16878/4BHE2	WIRE, ELECTRICAL RED 11.0 LONG (MFR FROM 6145-01-179-9544)	1
	10	PAFZZ	96906	MS3320-5	CIRCUIT BREAKER	2
	11	PAFZZ	96906	MS35430-5	TERMINAL, LUG	4
*	12	PAFZZ	59730	A-250	TERMINAL, QUICIK DISC	3
	13	MFFZZ	81349	MIL-W-16878/4	WIRE, ELECTRICAL, BLUE, 14.00 LG (MFR FROM 6145-0-043-4522)	1
	14	PAFZZ	19206	11584757	CONTROL, ELECTRIC LIGHT	1
	15	PAFZZ	96906	MS35335-58	WASHER, LOCK	2
	16	PAFZZ	96906	MS35649-63	NUT, PLAIN, HEXAGON	2
	17	MFFZZ	81349	M16878/4BHE5	WIRE, ELECTRICAL, GREEN, 5.0 LG (MFR FROM .145-01-187-0756)	1
	18	PAFZZ	96906	MS51957-28	SCREW, MACHINE	17
	19	XAFZZ	19206	11584752	COVER, REAR	1
	20	PAFZZ	19206	11584862	DECAL DIAGRAM	1
	21	XAFZZ	19206	11584745	BODY	1
	22	PAFZZ	96906	MS3102R-14S-5P	CONNECTOR, RECEPTACLE, ELECTRICAL	1
	23	PAFZZ	96906	MS51957-14	SCREW, MACHINE	4
	24	PAFFF	19206	11586089	SUBASSEMBLY, ADAPTER TUBE (SEE FIG C-17 FOR BREAKDOWN)	1
	25	XAFZZ	19206	11584751	COVER, FRONT	1
	26	PAFZZ	19206	11584753	SWITCH, TOGGLE	1
	27	PAFZZ	19206	11584770	THUMBSCREW	1
	28	XAFZZ	19206	11584761	HOUSING	1
	29	PAFZZ	00141	CS14	SETSCREW	1
	30	PAFZZ	19206	12520553	DECAL	1
	31	PAFZZ	19206	12520554	PLUG	1
					END OF FIGURE	

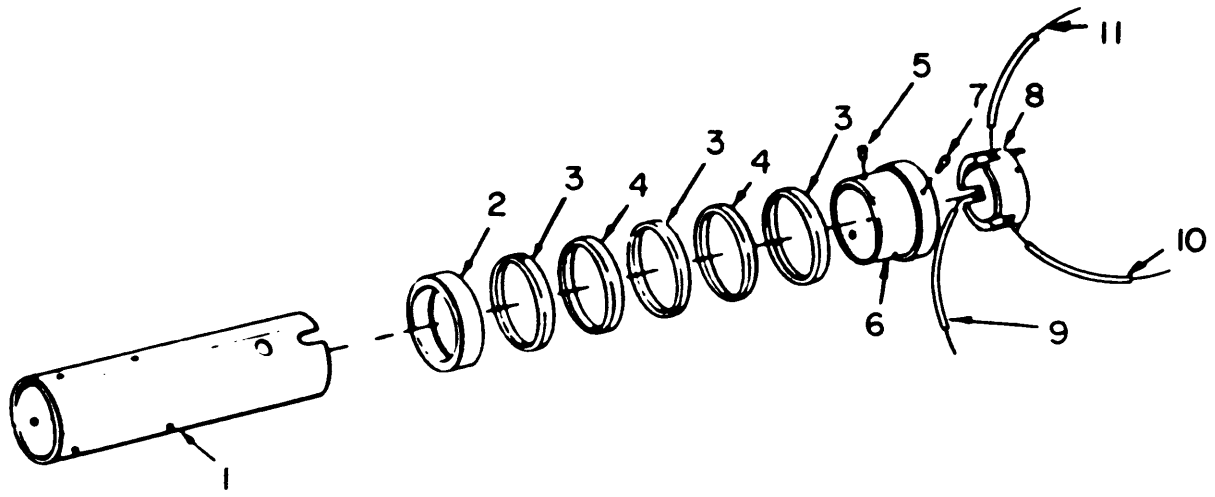


Figure C-17. Adapter Tube Subassembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 0501 ADAPTER TUBE SUBASSEMBLY 11586089 FIG. C-17 ADAPTER TUBE SUBASSEMBLY	
1	XAFZZ	19206	11584739	TUBE, ADAPTER	1
2	PAFZZ	19206	11584746	SPACER, STEPPED	1
3	PAFZZ	19206	11584742	RING, ELECTRICAL CONTACT	3
4	PAFZZ	19206	11584744	INSULATOR, WASHER	2
5	PAFZZ	31223	10SC004025	INSULATOR, BUSHING	3
6	PAFZZ	19206	11584743	INSULATOR, STANDOFF	1
7	PAFZZ	96906	MS51957-17	SCREW, MACHINE	3
8	PAFZZ	19206	11584893	CONTACT, ELECTRICAL ASSEMBLY	1
9	MFFZZ	81349	M16878/4BHE0	WIRE, ELECTRICAL BLACK, 2.00 LG (MFR FROM 6115-01-140-9812)	1
10	MFFZZ	81349	M16878/'4BHE9	WIRE, ELECTRICAL WHITE, 2.00 LG (MFR FROM 6145-01-140-9821)	1
11	MFFZZ	81349	MIL-W-16878/4	WIRE, ELECTRICAL, BLUE, 2.00 LG (MFR FROM 6145-01-043-4522)	1
				END OF FIGURE	

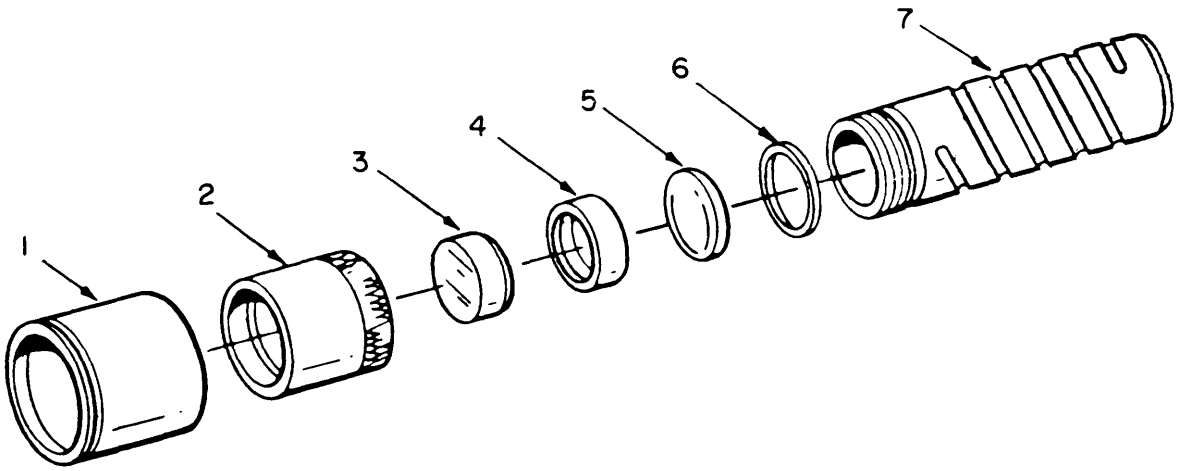


Figure C-18. Eyepiece Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 06 EYEPIECF A.SSEMBLY 11584707	
				FIG. C-1 EYEPIECE ASSEPIBLY	
1	PCFZZ	19206	1158472-7	EYESHIELD, OPTICAL INSTRUMENT	1
2	PAFZZ	19206	11584763	CELL, OPTICAL ELEMENT.....	1
3	PAFZZ	19206	11584758	LENS, OPTICAL INSTRUMENT.....	1
4	PAFZZ	19206	11584767	SPACER, RING	1
5	PAFZZ	19206	11584766	LENS, OPTICAL INSTRUMENT FIELD.....	1
6	PAFZZ	19206	11586088	RETAINER, OPTICAL ELEMENT.....	1
7	XAFZZ	19206	11584762	SLEEVE.....	1
				END OF FIGURE	

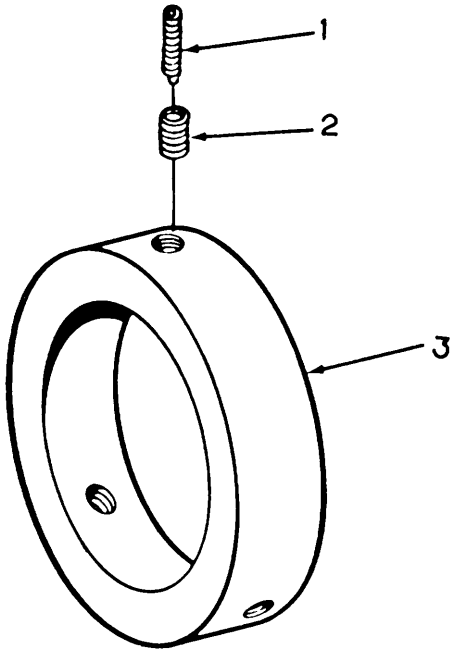


Figure C-19. Support Assembly, 75-MM

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 07 SUPPORT ASSEMBLY. 75-MM 11584799 FIG. C-19 SUPPORT A.SSEMBLY, 75-MM	
1	PAFZZ	19206	11584808	SETSCREW.....	3
2	PAFZZ	96906	MS51836-111	INSERT, SCREW THREAD.....	3
3	XAFZZ	19206	11584798	SUPPORT.....	1
				END OF FIGUIRE	

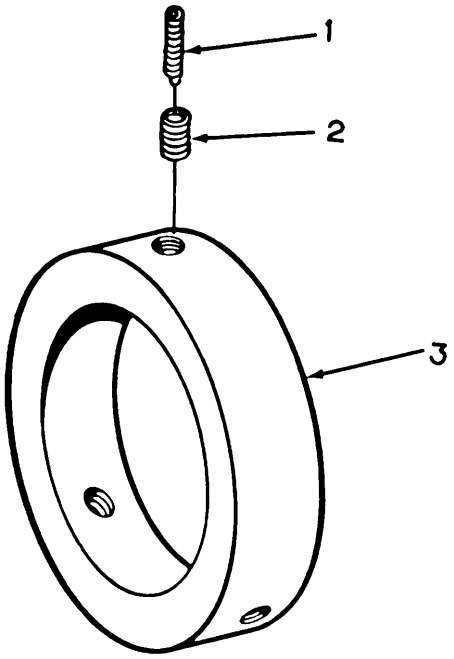


Figure C-20. Support Assembly, 81-MM

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 08 SUPPORT ASSEMBLY, 81-MM 11584783	
				FIG. C-20 SUPPORT ASSEMBL.Y, 81-MM	
1	PAFZZ	19206	11584808	SETSCREW.....	3
2	PAFZZ	96906	MS51836-211	INSERT, SCREW THREAD.....	3
3	XAFZZ	19206	11584782	SUPPORT.....	1
				END OF FIGURE	

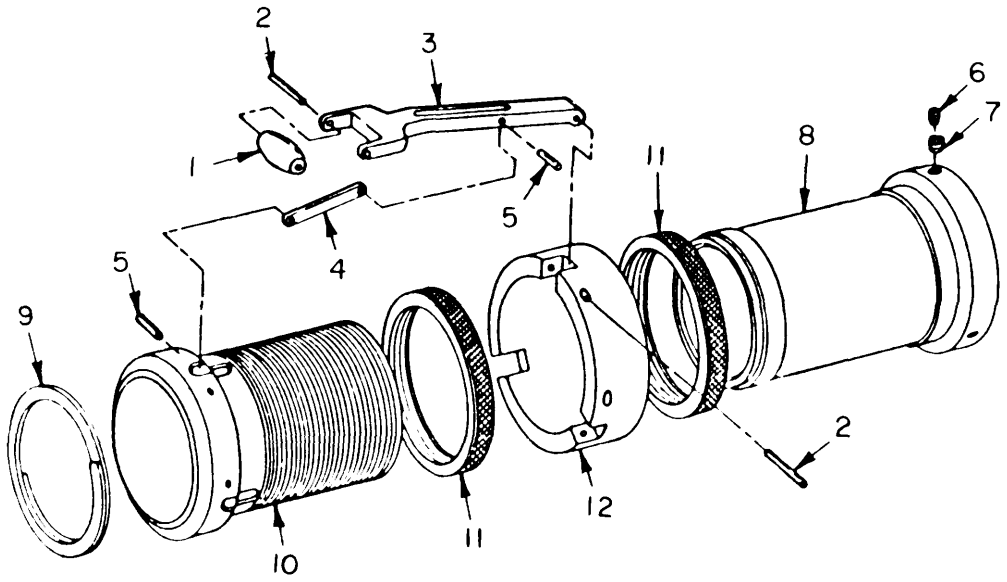


Figure C-21. Support Assembly, 90-MM thru 8-inch

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 09 SUPPORT ASSEMBLY, 90-MM THRU 8-INCH 11584801	
				FIG. C-21 SUPPORT A.SSEMIBLY, 90-MM THRU 8--INCH	
1	PAFZZ	19206	11584802	ROLLER, LINEAR-ROTAR	3
2	PAFZZ	96906	MS16562-227	PIN, SPRING	6
3	PAFZZ	19206	11584803	CLEVISN ROD END	3
4	PAFZZ	19206	11584801	CONNECTING LINK, RIGID	3
5	PAFZZ	96906	MS16562-25	PIN, SPRING	6
6	PAFZZ	19206	11584808	SETSCREW	3
7	PAFZZ	96906	MS122081	INSERT, SCREW THREAD	3
8	XAFZZ	19206	11584809	BODY	1
9	PAFZZ	96906	M27426-2140D	RING, RETAINING	1
10	PAFZZ	19206	11584807	SPACER, RING TAPPED	1
11	PAFZZ	19206	11584896	NUT, PLAIN, KNURLED	2
12	XAFZZ	19206	11584805	RING, REAR	1
				END OF FIGURE	

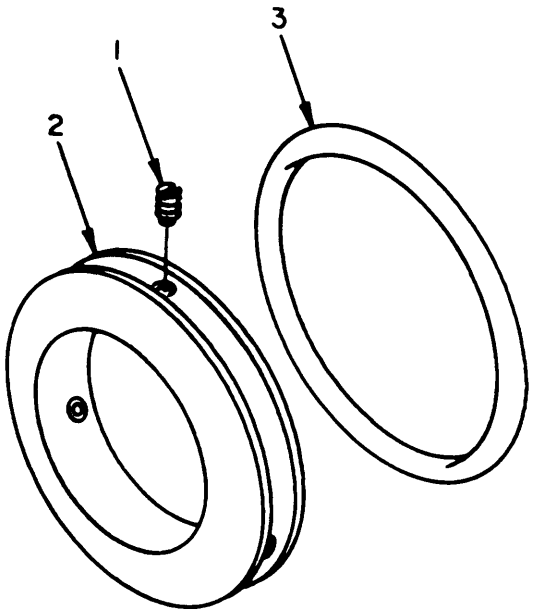


Figure C-22. Shaft Collar

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 10 SHAFT COLLAR 11584765	
				FIG. C-22 SHAFT COLLAR	
1	PAFZZ	19206	11584858	SETSCREW.....	3
2	XAFZZ	19206	11584731	COLLAR, REFLECTOR.....	1
3	PCFZZ	19206	11584737	PACKING, PREFORMED.....	1
				END OF FIGURE	

* All information pertaining to figure C-23 has been deleted.

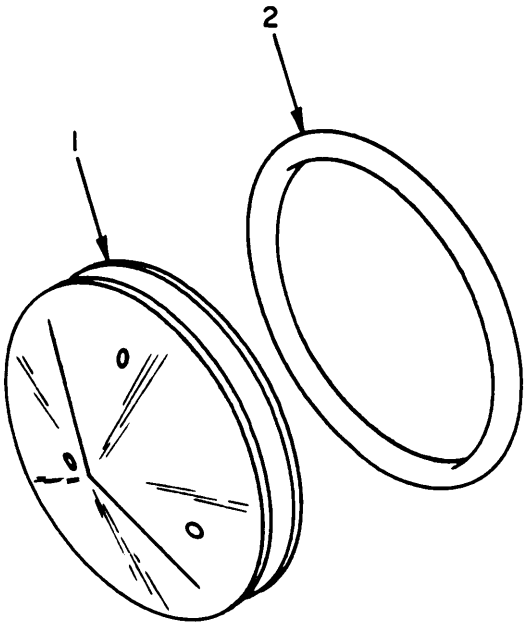


Figure C-24. Large Reflector Assembly

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 12 L.ARGE REFLECTOR ASSEMBL.Y 11584755	
				FIG. C-24 LARGE REFLECTOR ASSEMBLY	
1	XAFZZ	19206	11584732	REFLECTOR, LARGE	1
2	PAFZZ	19206	11584737	PACKING, PREFORMED	1
				END OF FIGURE	

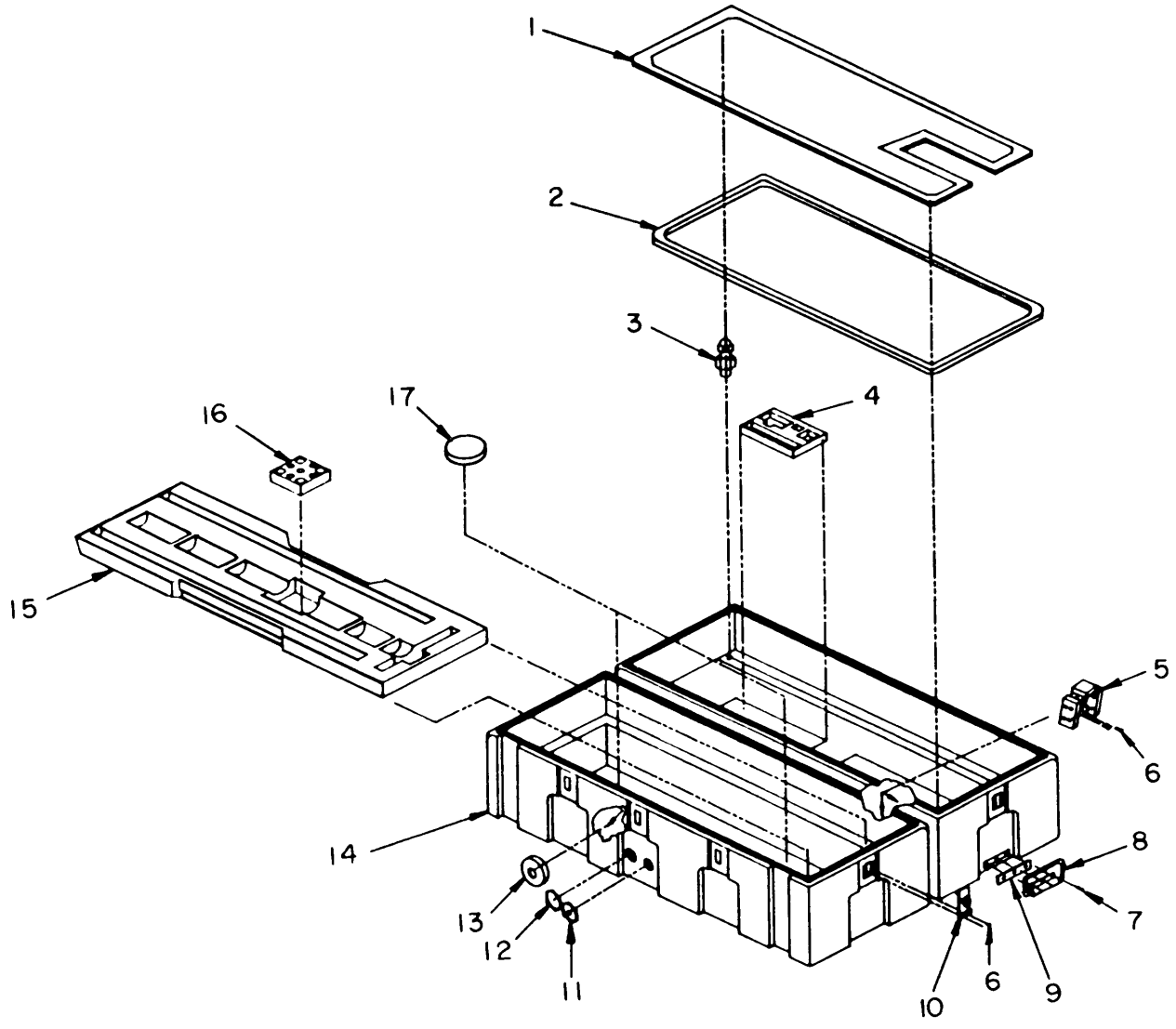


Figure C-25. Borescope Optical Case

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 13 BORESCOPE OPTICAL CASE 11584705	
				FIG. C-25 BORESCOPE OPTICAL. CASE	
1	PAFZZ	19206	12520501	COVER, PANEL	1
2	PAFZZ	19206	12520508	RUBBER ROUND SECTIO	1
3	PDFZZ	19206	12520512	STUD,SNAPSLIDE FAST	2
4	PAFZZ	19206	12520507	INSERT, CUSHION FOAM	1
5	PAFZZ	19206	12520503	HINGE,BUTT	5
6	PAFZZ	81349	M24243/5-D402	RIVET, BLIND	48
7	PAFZZ	96906	125-51958-61	SCREW,MACHINE	9
8	PAFZZ	19206	12520510	HANDLE	3
9	MFFZZ	81349	MIL-R-6855	RUBBER SPACER (MFR FROM 9320-00-241-9742)	3
10	PAFZZ	19206	12520511	CATCH, CLAMPING	7
11	PAFZZ	19206	12520504	PRESSURE RELIEF VALVE	1
12	PAFZZ	96906	MS18013-2	INDICATOR, HUMIDITY	1
* 13	XDFZZ	19206	12520506	CAPLUG	2
14	XAFZZ	19206	12520556	CASE, MOLDED	1
15	XAFZZ	19206	12520557	INSERT, MOLDED	1
16	PAFZZ	19206	12520509	INSERT, CUSHION FOAM	1
17	PAFZZ	19206	12520505	CAPLUG	3
				END OF FIGURE	

(1) ITEM NO	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP 99 BULK MATERIALS	
				FIG. BULK	
1	PAFZZ	81348	J-C-5805J03CK3/ 18SRNJ	CABLE, POWER, ELECTRICAL.....	V
2	PAFZZ	81349	M23053/5-103-9	INSULATION.....	V
3	PCFZZ	81349	MIL-R-6855	RUBBER, SHEET	V
4	PAFZZ	81349	M16878/4BHE9	WIRE, ELECTRICAL WHITE, 18-GAGE, ... 19 STRANDS	V
5	PAFZZ	81349	M16878/4BHEO	WIRE, ELECTRICAL BLACK, 18-GAGE, ... 19 STRANDS	V
6	PAFZZ	81349	M16878/4BHE2	WIRE, ELECTRICAL RED, 18-GAGE, 19 ..... STRANDS	V
7	PAFZZ	81349	M16878/4BHE5	WIRE, ELECTRICAL GREEN, 18-GAGE, ... 19 STRANDS	V
8	PAFZZ	81349	M16878/4BHE6	WIRE, ELECTRICAL BLLIE, 18-GAGE, 19 ..... STRANDS	V
				END OF FIGURE	

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5305-00-054-5638	C-5	6	5340-00-842-5920	C-10	2
5305-00-054-5648	C-16	23		C-11	3
5305-00-054-5651	C-17	7		C-13	2
5305-00-054-5653	C-3	24		C-15	3
5305-00-354-6652	C-3	20	5315-00-844-4790	C-21	5
	C-16	18	6685-00-914-0971	C-25	12
5305-00-054-6654	C-3	12	5340-00-920-0643	C-3	10
5305-00-054-6661	C-3	19		C-4	6
5315-00-058-9756	C-21	2		C-9	1
5305-00-059-3657	C-25	7		C-10	1
5940-00-079-8324	C-16	11		C-11	1
6240-00-092-3186	C-1	20		C-13	1
	C-4	4		C-15	1
	C-16	2	5310-00-934-9748	C-3	31
6240-00-155-7866	C-1	19	5340-00-944-5998	C-3	18
	C-4	5	6240-00-964-1513	C-1	11
5310-00-191-8145	C-3	25	5325-01-006-9157	C-25	3
5120-00-198-5401	C-2	7	6145-01-043-4522	BULK	8
5340-00-200-7224	C-21	7	5340-01-051-0589	C-5	11
5310-00-209-1366	C-16	15	5320-01-053-2932	C-25	6
5120-00-234-8913	C-2	5	5340-01-069-2981	C-5	2
9320-00-241-9742	BULK	3		C-5	9
5935-00-280-2195	C-23	3	5340-01-073-4024	C-3	23
5935-00-280-2381	C-23	1	5970-01-096-0468	C-17	5
6240-00-295-0907	C-1	10	6650-01-096-1807	C-I	13
6210-00-305-4751	C-16	14	6650-01-096-1808	C-4	5
5925-00-452-1270	C-16	10	6650-01-096-1809	C-3	27
5935-00-539-2659	C-23	6	6650-01-096-1810	C-1	9
5330-00-579-1070	C-3	14	5650-01-096-1811	C-6	1
5310-00-595-6211	C-3	30		C-12	1
5930-00-655-4248	C-16	7	6650-01-096-1812	C-1	18
5305-00-655-9246	C-3	11	6650-01-096-1813	C-1	12
	C-5	13	6650-01-096-2051	C-3	13
	C-6	7	6650-01-096-2053	C-	15
	C-12	2	6250-01-036-2054	C-5	7
5940-00-681-8185	C-16	8	6650-01-096-2055	C-5	8
5305-00-727-8833	C-4	2	6650-01-096-2056	C-5	14
	C-5	4	6650-01-096-2057	C-8	2
	C-6	9	6650-01-096-2061	C-1	6
	C-12	8	4710-01-096-5091	C-3	16
5305-00-770-2580	C-6	12	6650-01-096-5154	C-4	1
5310-00-804-3859	C-16	16		C-6	14
5935-00-813-4722	C-16	22		C-12	11
5305-00-814-3358	C-16	29	5970-01-096-9848	C-17	6
5970-00-819-3569	BULK	2	5999-01-096-9943	C-16	6
5365-00-828-8526	C-23	4	4710-01-097-3575	C-12	12
5340-00-842-5920	C-3	9	4710-01-097-3576	C-6	15
	C-4	7	6650-01-097-3838	C-17	3
	C-5	10	4933-01-097-3860	C-1	8
	C-9	2	4933-01-097-3861	C-1	7

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
4933-01-097-3862	C-1	5	5120-01-137-7499	C-2	6
3120-01-097-3938	C-21	1	5310-01-139-3285	C-21	11
6650-01-097-3939	C-18	5	6145-01-140-9812	BULK	5
6650-01-097-3940	C-18	1	6145-01-140-9821	BULK	4
3120-01-097-3952	C-17	2	7690-01-141-4795	C-16	20
1240-01-097-4870	C-2	1	6650-01-141-4805	C-5	1
3040-01-097-6716	C-1	16	6650-01-141-4806	C-4	8
3040-01-097-6807	C-21	4	5999-01-145-7264	C-9	3
6650-01-097-6814	C-8	7		C-11	2
5120-01-097-6815	C-4	3		C-15	2
6650-01-098-2237	C-1	17	6210-01-171-9455	C-16	1
6650-01-098-2365	C-1	1	6650-01-174-5461	C-2	2
6650-01-098-4679	C-6	5	6650-31-174-9257	C-2	3
	C-12	6	6650-01-174-9268	C-3	32
5315-01-099-0214	C-4	4	6650-01-175-3547	C-1	4
	C-6	13	6650-01-176-6078	C-3	15
	C-12	10	6650-01-177-2673	C-3	17
5340-01-099-0238	C-21	3	5120-01-177-2685	C-2	9
5365-01-099-0261	C-8	4	6145-01-179-9544	BULK	6
6650-01-100-0933	C-8	5	6650-01-183-0711	C-1	13
5970-01-100-4771	C-17	4	6145-01-187-0756	BULK	7
6650-01-100-9964	C-8	6	5340-01-194-0908	C-19	2
6650-01-101-2579	C-18	2	5340-01-134-0909	C-20	2
3120-01-101-3941	C-5	3	5310-01-195-5079	C-3	22
6650-01-101-4043	C-8	3	6650-01-200-7099	C-16	24
6650-01-101-4014	C-8	1	5340-01-200-9450	C-25	8
6650-01-101-4045	C-18	3	6650-01-201-6310	C-18	6
6650-01-105-5316	C-1	3	1095-01-202-7921	C-25	1
5365-01-107-2557	C-6	6	5330-01-204-5973	C-25	2
	C-12	7	5340-01-204-5985	C-25	5
5365-01-107-7567	C-21	10	5340-01-204-5991	C-25	10
5340-01-108-2569	C-3	26	8135-01-206-0908	C-25	4
6650-01-108-4983	C-7	1	8135-01-206-0909	C-25	16
	C-14	1	5340-01-212-6693	C-25	17
6650-01-112-3986	C-1	14	5340-01-212-6694	C-25	13
1290-01-114-3217	C-4	2			
5930-01-115-4250	C-16	26			
5365-01-115-9133	C-6	10			
5330-01-115-9723	C-22	3			
	C-24	2			
5305-01-117-9736	C-16	27			
5305-01-118-0894	C-7	3			
	C-14	3			
5140-01-119-3218	C-2	4			
7920-01-121-5042	C-2	8			
5305-01-128-1329	C-22	1			
6250-01-128-1346	C-3	21			
5365-01-128-1396	C-18	4			
6650-01-136-7535	C-16	5			
6650-01-136-7536	C-17	8			

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FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
00141	CS14	5305-00-814-3358	C-16	29
81348	GGG-K-275	5120-00-198-5401	C-2	7
81348	GGG-S-121	5120-00-234-8913	C-2	5
81348	J-C-5805J03CK3/ 18SRNJ		BULK	1
81349	MIL-R-6855	9320-00-241-9742	BULK	3
			C-25	9
81349	MIL-W-16878/4		C-6	4
			C-12	5
			C-16	13
			C-17	11
96906	MS-3420-6A	5365-00-828-8526	C-23	4
96906	MS-51958-61	5305-00-059-3657	C-25	7
96906	MS122081	5340-00-200-7224	C-21	7
96906	MS122116	5340-00-842-5920	C-3	9
			C-4	7
			C-5	10
			C-9	2
			C-10	2
			C-11	3
			C-13	2
			C-15	3
96906	MS122255	5340-01-051-0589	C-5	11
96906	MS15795-803	5310-00-595-6211	C-3	30
96906	MS16562-227	5315-00-058-9756	C-21	2
96906	MS16562-25	5315-00-844-4790	C-21	5
96906	MS18013-2	6685-00-914-0971	C-25	12
96906	MS24524-21	5930-00-655-4248	C-16	7
96906	MS28775-330	5330-00-579-1070	C-3	14
96906	MS3057-6A	5935-00-280-2195	C-23	3
96906	MS3102R-14S-5P	5935-00-813-4722	C-16	22
96906	MS3106A14S5SC	5935-00-539-2659	C-23	6
96906	MS3320-5	5925-00-452-1270	C-16	10
96906	MS35335-58	5310-00-209-1366	C-16	15
96906	MS35430-4	5940-00-681-8185	C-16	8
96906	MS35430-5	5940-00-079-8324	C-16	11
96906	MS35649-244	5310-00-934-9748	C-3	31
96906	MS35649-63	5310-00-804-3859	C-16	16
96906	MS51021-10	5305-00-655-9246	C-3	11
			C-5	13
			C-6	7
			C-12	2
96906	MS51836-111	5340-01-194-0908	C-19	2
96906	MS51836-201	5340-01-069-2981	C-5	2
			C-5	9
96906	MS51836-211	5340-01-194-0909	C-20	2
96906	MS51836-301L	5340-00-920-0643	C-3	10
			C-4	6
			C-9	1
			C-10	1

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	FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
	96906	MSS1836-301L	5340-00-920-0643	C-13	1
				C-15	1
	96906	MS51836-305	5340-01-073-4024	C-3	23
	96906	MS51836-310	5340-00-944-5998	C-3	18
	96906	MS51957-14	5305-00-054-5648	C-16	23
	96906	MS51957-17	5305-00-054-5651	C-17	7
	96906	MS51957-19	5305-00-054-5653	C-3	24
	96906	MS51957-28	5305-00-054-6652	C-3	20
				C-16	18
	96906	MS51957-30	5305-00-054-6654	C-3	12
	96906	MS51957-37	5305-00-054-6661	C-3	19
	96906	MS51957-4	5305-00-054-5638	C-5	6
	96906	MS51959-16	5305-00-770-2580	C-6	12
	96906	MS51959-3	5305-00-727-8833	C-4	2
				C-5	4
				C-6	9
				C-12	8
	81349	M16878/4BHEO		C-3	29
				C-5	12
				C-6	3
*			6145-00-813-1738	BULK	5
				C-12	4
				C-16	3
				C-17	9
*	81349	M16878/4BHE2	6145-01-110-9341	BULK	6
				C-16	9
*	81349	M16878/4BHE5	6145-01-007-4702	BULK	7
				C-16	17
	81349	M16878/4BHE6	6145-00-813-1738	BULK	8
*	81349	M16878/4BHE9	6145-01-006-9162	C-3	28
				C-5	5
				C-6	2
*			6145-00-144-0211	BULK	4
				C-12	3
				C-16	4
				C-17	10
	81349	M23053/5-103-9	5970-03-819-9569	BULK	2
	81349	M24243/5-D402	5320-01-053-2932	C-25	6
	96906	M27426-2140D		C-21	9
	31223	10SC004025	5970-01-096-0468	C-17	5
	19206	11584702	6650-01-096-1810	C-1	9
	19206	11584704		C-12	9
	19206	11584705	1240-01-097-4870	C-2	1
	19206	11584706		C-1	2
	19206	11584707	6650-01-098-2365	C-1	1
	19206	11584708	6650-01-096-1807	C-1	13
	19206	11584710	6650-01-107-7553	C-6	11
*	19206	11584711	6650-01-100-9964	C-8	6
	19206	11584712	6650-01-096-2057	C-8	2
	19206	11584713	6650-01-101-4044	C-8	1
	19206	11584714	6650-01-101-4043	C-8	3

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER INDEX

FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19206	11584715	5365-01-099-0261	C-8	4
19206	11584716	6650-01-100-0933	C-8	5
19206	11584717	6650-01-097-6814	C-8	7
19206	11584718	6650-01-098-4679	C-6	5
			C-12	7
19206	11584719		C-7	2
			C-14	2
19206	11584720	6650-01-108-4983	C-7	1
			C-14	1
19206	11584721		C-6	8
19206	11584724	6650-01-096-5154	C-4	1
			C-6	14
			C-12	11
19206	11584725	5315-01-099-0214	C-3	4
			C-6	13
			C-12	10
19206	11584726	4710-01-097-3576	C-6	15
19206	11584727	6650-01-097-3940	C-18	1
19206	11584729	5999-01-145-7264	C-9	3
			C-11	2
			C-15	2
19206	11584730	5310-00-191-8145	C-3	25
19206	11584731		C-22	2
19206	11584732		C-24	1
19206	11584733	4933-01-097-3860	C-1	8
19206	11584734	4933-01-097-3861	C-1	7
19206	11584735	4933-01-097-3862	C-1	5
19206	11584737	5330-01-115-9723	C-22	3
			C-24	2
19206	11564738	4710-01-097-3575	C-12	12
19206	11584739		C-17	1
19206	11584742	6650-01-097-3838	C-17	3
19206	11584743	5970-01-096-9848	C-17	6
19206	11584744	5970-01-100-4771	C-17	4
19206	11584745		C-16	21
19206	11584746	3120-01-097-3952	C-17	2
19206	11584747	5999-01-096-9943	C-16	6
19206	11584748	6240-00-295-0907	C-1	10
19206	11584749		C-23	5
19206	11584751		C-16	25
19206	11584752		C-16	19
19206	11584753	5930-01-115-4250	C-16	26
19206	11584754	5120-01-137-7499	C-2	6
19206	11584755	6650-01-096-1813	C-1	12
59730	A-250	5940-01-027-4669	C-16	12
19206	11584757	6210-00-305-4751	C-16	14
58854	120MB6	6240-00-092-3186	C-16	2
19206	11584759	6210-01-171-9455	C-16	1
19206	11584760	5140-01-119-3218	C-2	4
19206	11584761		C-16	28
19206	11584762		C-18	7

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19206	11584763	6650-01-101-2579	C-18	2
19206	11584764	5305-01-118-0894	C-7	3
			C-14	3
19206	11584765	3040-01-097-6716	C-1	16
19206	11584766	6650-01-097-3939	C-18	5
19206	11584767	5365-01-128-1398	C-18	4
19206	11584768	6650-01-101-4045	C-18	3
19206	11584770	5305-01-117-9736	C-16	27
19206	11584771	6650-01-105-5316	C-1	3
19206	11584772	7920-01-121-5042	C-2	8
19206	11584773	5935-00-280-2381	C-23	1
19206	11584774		C-23	2
19206	11584775		C-4	3
19206	11584776	6650-01-096-2051	C-3	13
19206	11584778	4710-01-096-5091	C-3	16
19206	11584779	6240-00-964-1513	C-1	11
19206	11584780	6250-01-128-1346	C-3	21
19206	11584782		C-20	3
19206	11584783	6650-01-098-2237	C-1	17
19206	11584784	6650-01-096-1809	C-3	27
19206	11584786	5340-01-108-2569	C-3	26
19206	11584794	6650-01-112-3986	C-1	14
19206	11584798		C-19	3
19206	11584799	6650-01-096-1812	C-1	18
19206	11584800-1	6650-01-174-9257	C-2	3
19206	11584801	6650-01-096-2061	C-1	6
19206	11584802	3120-01-097-3938	C-21	1
19206	11584803	5340-01-099-0238	C-21	3
19206	11584804	3040-01-097-6807	C-21	4
19206	11584805		C-21	12
19206	11584807	5365-01-107-7567	C-21	10
19206	11584808		C-9	1
			C-20	1
			C-21	6
19206	11584809		C-21	8
19206	11584810	6650-01-096-2053	C-1	15
19206	11584811	5120-01-097-6815	C-4	3
19206	11584813	6240-00-155-7866	C-1	19
			C-4	5
19206	11584814	1290-01-114-3217	C-4	2
19206	11584815		C-4	1
19206	11584816	6250-01-096-2054	C-5	7
19206	11584818	6650-01-096-2055	C-5	8
19206	11584819	6650-01-096-2056	C-5	14
19206	11584821	3120-01-101-3941	C-5	3
19206	11584822-1	6650-01-174-5461	C-2	2
19206	11584858	5305-01-128-1329	C-22	1
19206	11584862	7690-01-141-4795	C-16	20
19206	11584863	6650-01-141-4806	C-4	8
19206	11584868	6650-01-141-4805	C-5	1
19206	11584889	6650-01-175-3547	C-1	4

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NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER INDEX

FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
19206	11584893	6650-01-136-7536	C-17	8
19206	11584894	6650-01-136-7535	C-16	5
19206	11584896	5310-01-139-3285	C-21	11
19206	11585922	6650-01-096-1808	C-4	5
19206	11585923	5365-01-115-9133	C-6	10
19206	11585924	6650-01-096-1811	C-6	1
			C-12	1
19206	11585925	5365-01-137-2557	C-6	6
			C-12	7
19206	11586088	6650-01-201-6310	C-18	6
19206	11586089	6650-01-200-7099	C-16	24
19206	11586094	5310-01-195-5079	C-3	22
19206	11586096	6650-01-174-9268	C-3	32
19206	11586097	6650-01-176-6078	C-3	15
19206	11586098	6650-01-177-2673	C-3	17
19206	11586099	6650-01-183-0711	C-1	13
19206	11586210	5120-01-177-2685	C-2	9
58854	120MB6	6240-00-092-3186	C-1	20
			C-4	4
19206	12520501	1095-01-202-7921	C-25	1
19206	12520503	5340-01-204-5985	C-25	5
19206	12520504		C-25	11
19206	12520505	5340-01-212-6693	C-25	17
19206	12520506	5340-01-212-6694	C-25	13
19206	12520507	8135-01-206-0908	C-25	4
19206	12520508	5330-01-204-5973	C-25	2
19206	12520509	8135-01-206-0909	C-25	16
19206	12520510	5340-01-200-9150	C-25	8
19206	12520511	5340-01-204-5991	C-25	10
19206	12520512	5325-01-006-9157	C-25	3
19206	12520553		C-16	30
19206	12520554		C-16	31
19206	12520556		C-25	14
19206	12520557		C-25	15

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the M3 Borescope. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

D-2. EXPLANATION OF COLUMNS.

a. Column 1--Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Apply pneumatic system grease, item 5, app D").

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

C.....Operator/Crew
F.....Direct Support Maintenance

c. Column 3--National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4--Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column 5--Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
1	C	6810-00-201-0906	ALCOHOL, DENATURED: grade III (81348) Q-E-760 1 pt (0.47 1)	BT
2	F	6850-00-227-1887	CLEANING COMPOUND, OPTICAL LENS (81349) MIL-C-43454 1 qt (0.95 1)	QT

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
3	C	5350-00-221-0872	CLOTH, ABRASIVE: Crocus, ferric oxide and quartz, jean cloth back, closed coating (81348) P-C-458 9 x 11 sheet, 50 sheets	PG
4	F	6615-00-324-5500	DEPRESSOR, TONGUE, WOOD (81348) BX	
5	F	7930-00-056-8144	DETERGENT, GENERAL PURPOSE (26142) Formula 409 22 oz (0.65 1)	OZ
6	F	8040-01-214-4075	GLUE, HOT MELT (12405) 1942CAT.505	
7	F	6180-00-183-4400	METHYL ETHYL KETONE, TECHNICAL (81348) TTM261	OZ
8	F	7510-00-558-2118	PAINT STICK (BLACK) (94858) MARKAL PAINT STICK Type B	EA
9	C	5350-00-224-7201	PAPER, ABRASIVE, SILICON CARBIDE, WATERPROOF: 400 grit (81348) P-P-101 9 x 11 sheet, 50 sheets	PG
10	C	6640-00-663-0832	PAPER, LENS: tissue, sheet form, 5 lg, type 1 (81348) NNN-P-40 50 sheets	BK
11	F	7920-00-823-9773	PAPER TOWEL, DISPOSABLE WIPER (95135)	EA
12	C	7920-00-205-1711	RAG, WIPING: Cotton, general purpose, class 2, grade B (58536) A-A-531 50 lb (22.68 kg)	BE
13	F	8030-00-275-8110	SEALING COMPOUND (81349) MIL-S-11031	BT

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONT)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
14	F	8040-00-225-4548	SILICONE ADHESIVE SEALANT DOW CORNING #732	
15	F	3439-00-243-1888	SOLDER, TIN ALLOY, LEAD TIN ALLOY, AND LEAD ALLOY (81348) QQ-S-571 5-lb (2.27-kg) can	CN
16	F	6180-00-476-5612	SOLVENT TRICHOLORETHANE MIL-T-181533, 5 gal can	GL
17	F	5350-00-240-2920	WOOL, METALLIC (81348) FF-W-1825 lb	LB

APPENDIX E

ILLUSTRATED LIST OF MANUFACTURED ITEMS

E-1. INTRODUCTION.

This appendix includes complete instructions for making items authorized to be manufactured or fabricated at direct support maintenance.

a. 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.

b. All bulk materials needed for manufacture of an item are listed by part number or specification number on the illustration.

E-2. MANUFACTURED ITEMS PART NUMBER INDEX.

Part No.	Figure No.
M16878/4BHE0	E-1
M16878/4BHE2	E-4
M16878/4BHE5	E-3
M16878/4BHE6	E-2
M16878/4BHE9	E-5
MIL-R-6855	E-7
11584774	E-6

E-3. MANUFACTURED ITEMS INSTRUCTIONS.

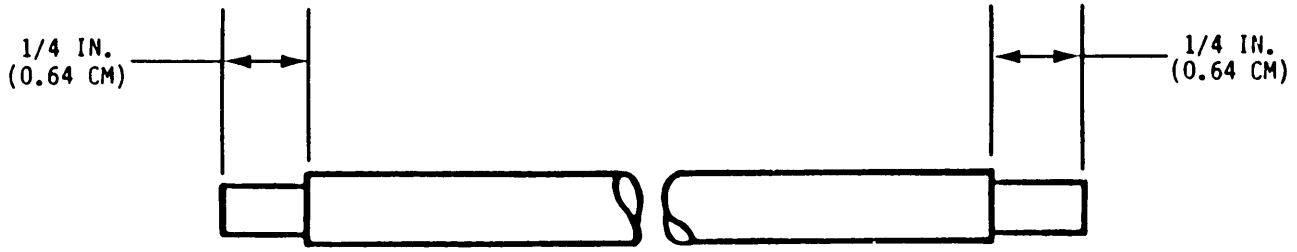

Figure E-1. Black Wire (part no. M16878/4BHEO)

NOTES:

1. **Fabricate from NSN 6145-01-140-9812 stock.**
2. **The 37.00-in. (0.94-m) length is required for the objective tube assembly.**
3. **The 40.00-in. (1.02-m) length is required for the borescope extension tube.**
4. **The 14.00-in. (35.56-cm) length is required for the adapter tube assembly.**
5. **The 8.50-in. (21.59-cm) length is required for the illuminating head assembly.**
6. **The 10.00-in. (25.40-cm) length is required for the body assembly.**
7. **The 1.50-in. (3.81-cm) length is required for the blind illuminating head assembly.**
8. **The 2.00-in. (5.08-cm) length is required for the adapter tube subassembly.**
9. **Strip insulation from both wire ends as illustrated.**
10. **Tin wire ends with solder (item 15, app D).**

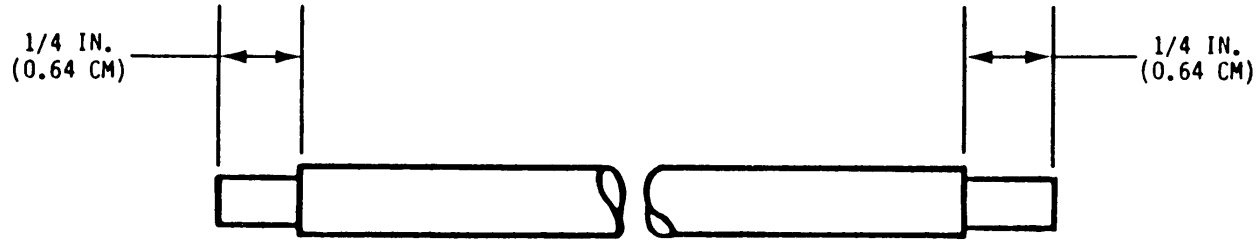

Figure E-2. Blue Wire (part no. M16878/4BHE6)

NOTES:

1. **Fabricate from NSN 6145-01-043-4522 stock.**
2. **The 37.00-in. (0.94-m) length is required for the objective tube assembly.**
3. **The 40.00-in. (1.02-m) length is required for the borescope extension tube.**
4. **The 14.00-in. (35.56-cm) length is required for the adapter tube assembly.**
5. **The 2.00-in. (5.08-cm) length is required for the adapter tube subassembly.**
6. **Strip insulation from both wire ends as illustrated.**
7. **Tin wire ends with solder (item 15, app D).**

E-3. MANUFACTURED ITEMS INSTRUCTIONS (CONT).

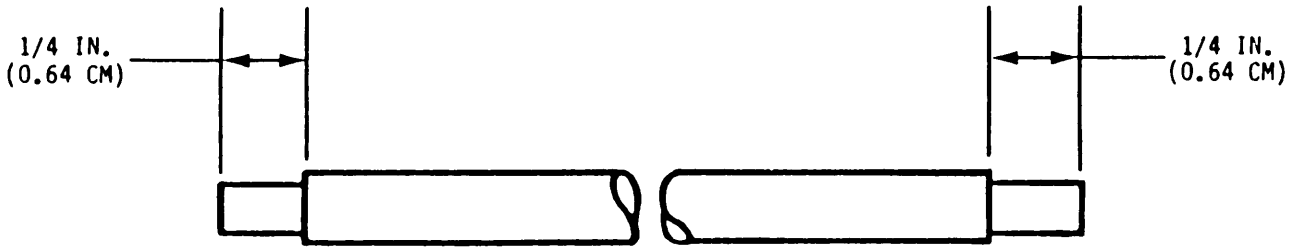

Figure E-3. Green Wire (part no. M16878/4BHE5)

NOTES:

1. Fabricate from NSN 6145-01-187-0756 stock.

2. The 5.00-in. (12.70-cm) length is required for the adapter tube assembly.

3. Strip insulation from both wire ends as illustrated.

4. Tin wire ends with solder (item 15, app D).

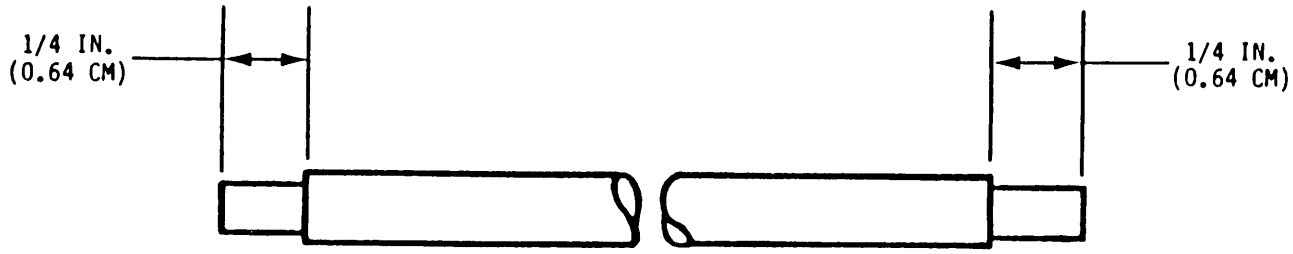

Figure E-4. Red Wire (part no. M16878/4BHE2)

NOTES:

1. Fabricate from NSN 6145-01-179-9544 stock.

2. The 11.00-in. (27.94-cm) length is required for the adapter tube assembly.

3. Strip insulation from both wire ends as illustrated.

4. Tin wire ends with solder (item 15, app D).

E-3. MANUFACTURED ITEMS INSTRUCTIONS (CONT).

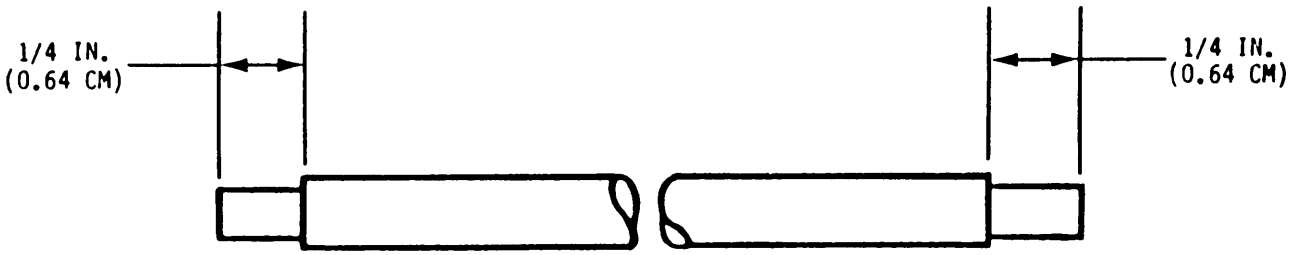

Figure E-5. White Wire (part no. M16878/4BHE9)

NOTES:

1. **Fabricate from NSN 6145-01-140-9821 stock.**
2. **The 37.00-in. (0.94-m) length is required for the objective tube assembly.**
3. **The 40.00-in. (1.02-m) length is required for the borescope extension tube.**
4. **The 16.00-in. (40.64-cm) length is required for the adapter tube assembly.**
5. **The 8.50-in. (21.59-cm) length is required for the illuminating head assembly.**
6. **The 10.00-in. (25.40-cm) length is required for the body assembly.**
7. **The 1.50-in. (3.81-cm) length is required for the blind illuminating head assembly.**
8. **The 2.00-in. (5.08-cm) length is required for the adapter tube subassembly.**
9. **Strip insulation from both wire ends as illustrated.**
10. **Tin wire ends with solder (item 15, app D).**

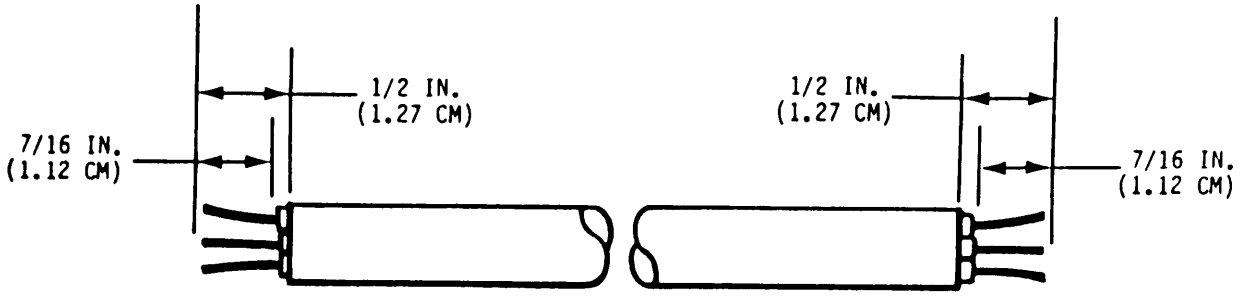

Figure E-6. Cord (part no. 11584774)

NOTES:

1. **Fabricate from J-C-580SJ03CK3/18SRNJ.**
2. **The cord contains one white, one black, and one green insulated wire that is 18 AWG.**
3. **Cut cord to the length desired.**
4. **Strip sheathing from both ends of cord as illustrated.**
5. **Strip insulation from all three wire ends as illustrated.**
6. **Tin each wire end with solder (item 15, app D).**

E-3. MANUFACTURED ITEMS INSTRUCTIONS (CONT).

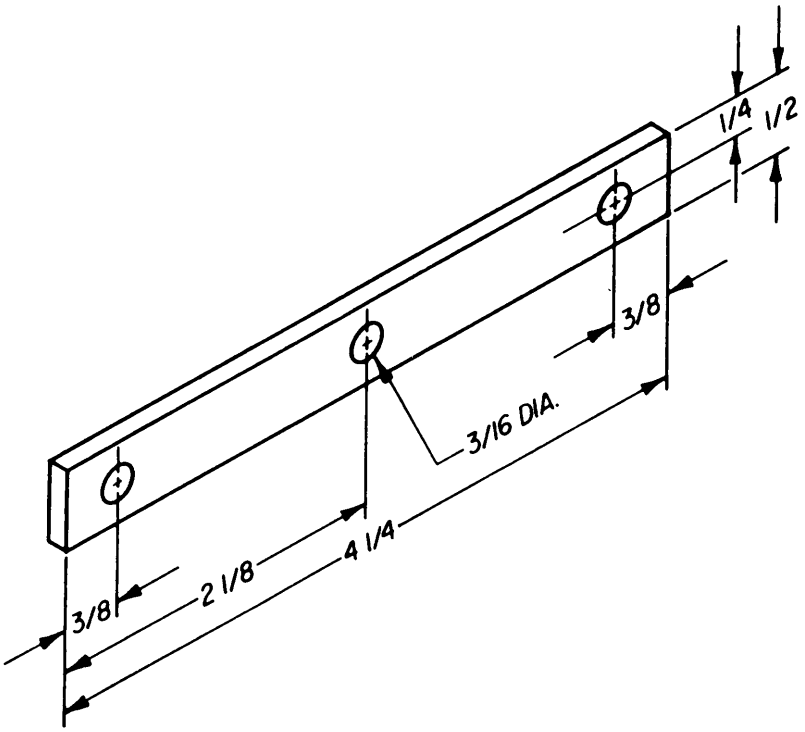

Figure E-7. Rubber Spacer (MIL-R-6855)

NOTES:

1. Fabricate from NSN 9320-00-241-9742, rubber, sheet, solid.

2. Fabricate the rubber spacer with dimensions shown in figure E-7.

APPENDIX F

ADAPTER TUBE ASSEMBLY ALTERATION

F-1. SCOPE.

This appendix gives the procedure and lists the parts needed for updating the adapter tube assembly to the latest configuration.

F-2. GENERAL.

This procedure allows 24-volt operation of the M3 Borescope without use of the 24-V electrical power cord adapter assembly. The adapter tube assembly will be updated if the 24-V electrical power cord adapter assembly is damaged and replacements are no longer available.

F-3. PARTS REQUIRED.

NOMENCLATURE	PART NO.	NSN	QUANTITY
Switch, toggle	MS24524-21	5930-00-655-4248	1
Decal	12520553		1
Decal diagram	11584862-1	7690-01-141-4795	1
Plug	12520554		1
Wire, electrical, black	M16878/4BHEO	6145-01-140-9812	V
Wire, electrical, red	M16878/4BHE2	6145-01-179-9544	V
Wire, electrical, green	M16878/4BHE5	6145-01-187-0756	V
Wire, electrical, blue	M16878/4BHE6	6145-01-043-4522	V
Wire, electrical, white	M16878/4BHE9	6145-01-140-9821	V
Paint stick	MARKAL type B	7510-00-558-2118	V

F-4. DISASSEMBLY.

Disassemble using the procedure for disassembly in paragraph 5-30, ADAPTER TUBE ASSEMBLY--(EARLY PRODUCTION)--MAINTENANCE INSTRUCTIONS.

F-5. ALTERATION PROCEDURE.

a. Drill or ream out circuit breaker hole to 0.469 (15/32) inch (see figure F-1).

b. Drill 0.149 (#25 drill) hole in location shown (see figure F-1).

c. Fill in the following engravings on the front cover per MIL-STD-171 with paint stick, MARKAL type B (black) (item 8, app D): white, 24-V, and 115-V.

d. Apply decal 12520553 to front cover around 0.469 inch hole.

e. Install plug in hole where indicator light was located.

F-6. REASSEMBLY.

Reassemble using the parts listed previously and the procedure for reassembly in paragraph 5-31, ADAPTER TUBE ASSEMBLY--(LATE PRODUCTION)--MAINTENANCE INSTRUCTIONS.

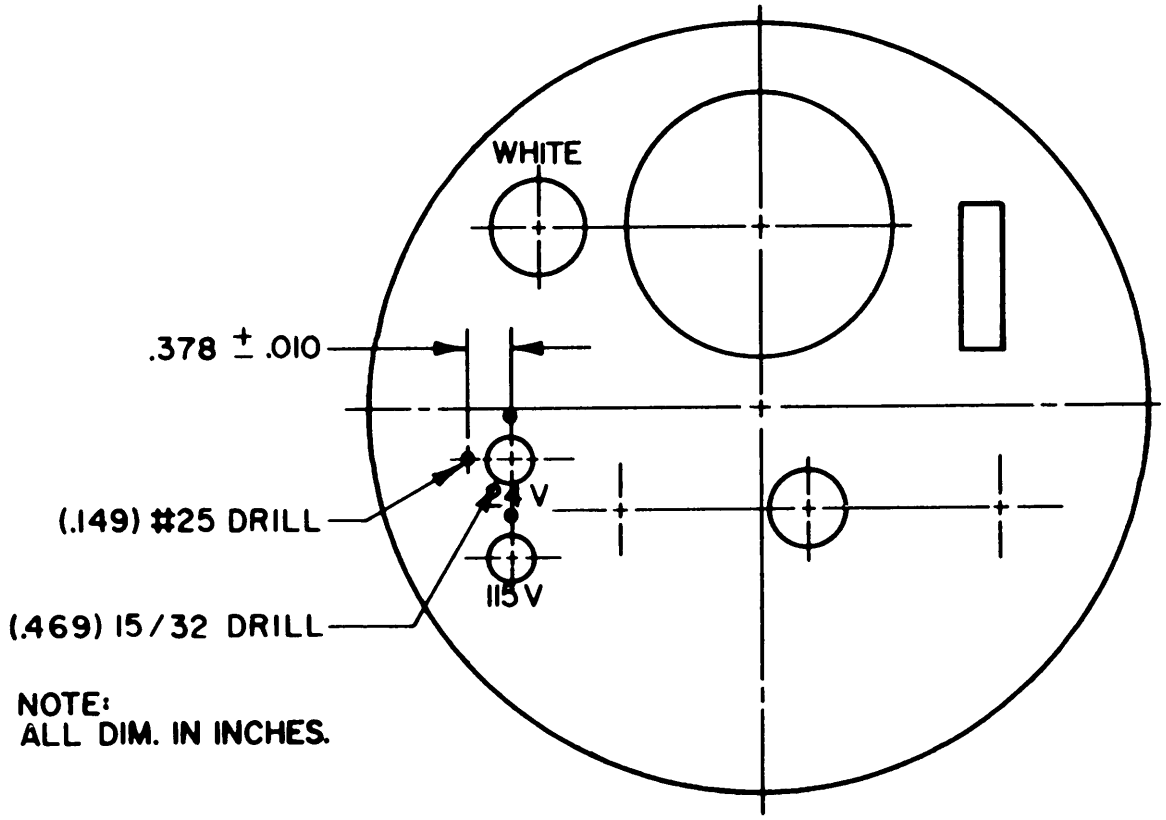

Figure F-1. Front Cover Alteration

APPENDIX G

DECIMAL TO FRACTION CONVERSION

G-1. SCOPE.

This appendix gives the information necessary to convert decimal measurements, used in this manual, to their fractional equivalent.

G-2. DECIMAL TO FRACTION CONVERSION TABLE.

Conversion - Fractions of an Inch to Decimals of an Inch, and Millimeters

Fraction of inch	Decimal of inch	Millimeters	Fraction of inch	Decimal of inch	Millimeters
1/64	0.015625	0.3968	33/64	0.515625	13.0966
1/32	0.03125	0.7937	17/32	0.53125	13.4934
3/64	0.046875	1.1906	35/64	0.546875	13.8903
1/16	0.0625	1.5875	9/16	0.5625	14.2872
5/64	0.078125	1.9843	37/64	0.578125	14.6841
3/32	0.09375	2.3812	19/32	0.59375	15.0809
7/64	0.109375	2.7780	39/64	0.609375	15.4778
1/8	0.125	3.1749	5/8	0.625	15.8747
9/64	0.140625	3.5718	41/64	0.640625	16.2715
5/32	0.15625	3.9686	21/32	0.65625	16.6684
11/64	0.171875	4.3655	43/64	0.671875	17.0653
3/16	0.1875	4.7624	11/16	0.6875	17.4621
13/64	0.203125	5.1592	45/64	0.703125	17.8590
7/32	0.21875	5.5561	23/32	0.71875	18.2559
15/64	0.234375	5.9530	47/64	0.734375	18.6527
1/4	0.25	6.3498	3/4	0.75	19.0496
17/64	0.265625	6.7467	49/64	0.765625	19.4465
9/32	0.28125	7.1436	25/32	0.78125	19.8433
19/64	0.296875	7.5404	51/64	0.796875	20.2402
5/16	0.3125	7.9373	13/16	0.8125	20.6371
21/64	0.328125	8.3342	53/64	0.828125	21.0339
11/32	0.34375	8.7310	27/32	0.843750	21.4308
23/64	0.359375	9.1279	55/64	0.859375	21.8277
3/8	0.375	9.5248	7/8	0.875	22.2245
25/64	0.390625	9.9216	57/64	0.890625	22.6214
13/32	0.40625	10.3185	29/32	0.90625	23.0183
27/64	0.421875	10.7154	59/64	0.921875	23.4151
7/16	0.4375	11.1122	15/16	0.9375	23.8120
29/64	0.453125	11.5091	61/64	0.953125	24.2089
15/32	0.46875	11.9060	31/32	0.96875	24.6057
31/64	0.484375	12.3029	63/64	0.984375	25.0026
1/2	0.5	12.6997	1	1.0	25.3995

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By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

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The Adjutant General

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 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

WEIGHTS

1 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

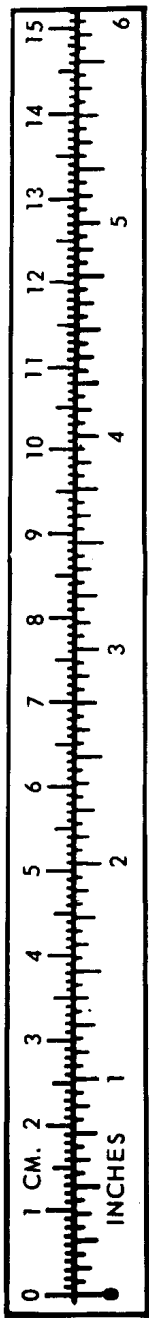
1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

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 equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 (°C + 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
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	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
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

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