

# **TM 9-1240-381-24&P**

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**ORGANIZATIONAL, DIRECT SUPPORT AND  
GENERAL SUPPORT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND  
SPECIAL TOOLS LIST AND DEPOT  
MAINTENANCE REPAIR PARTS AND  
SPECIAL TOOLS)  
BINOCULAR M19 W / E  
(1240-00-930-3833)**

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**31 OCTOBER 1978**

TECHNICAL MANUAL }  
 TM 9-1240-381-24&P }

HEADQUARTERS  
 DEPARTMENT OF THE ARMY  
 WASHINGTON, D.C., 31 October 1978

ORGANIZATIONAL, DIRECT SUPPORT AND  
 GENERAL SUPPORT MAINTENANCE MANUAL  
**(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST  
 AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS)**

**BINOCULAR M19 (W/E)**  
**(1240-00-930-3833)**  
**Current as of 6 July 1978**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

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

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# CHAPTER 1

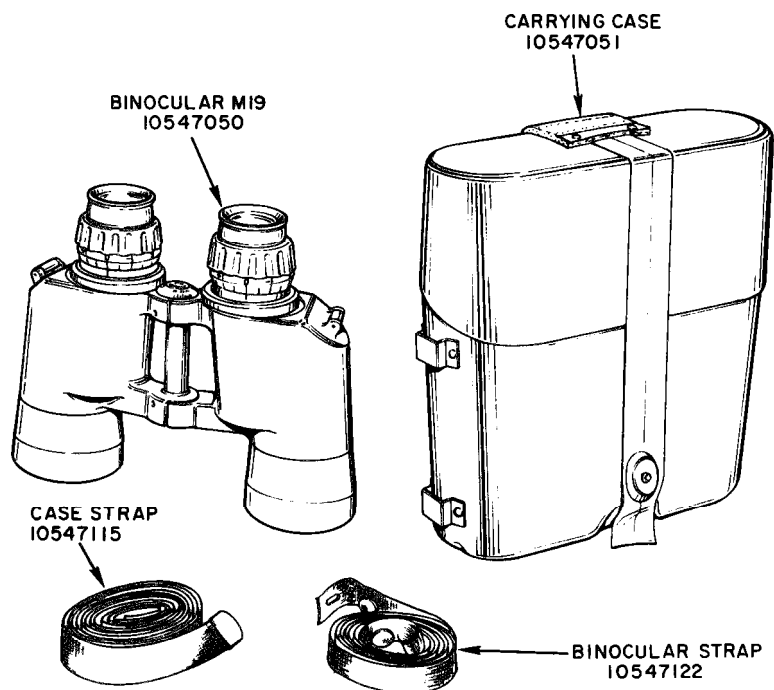
## INTRODUCTION

### Section I. GENERAL

#### 1-1. Scope.

a. This technical manual contains instructions for organizational, direct support and general

support maintenance of Binocular M19 with Equipment (fig. 1-1).



AR916174

Figure 1-1. Binocular M19 with Equipment.

b. Appendix A contains a listing of current references which are applicable to Binocular M19. Appendix B contains the Maintenance Allocation Chart (MAC). Appendix C lists all repair parts, special tools and equipment which are available to organizational, direct support, general support, and depot maintenance personnel.

#### 1-2. Maintenance Forms and Records.

Equipment maintenance forms and procedures for their use are contained in TM 38--750, The Army Maintenance Management System

(TAMMS).

#### 1-3. Reporting of Equipment Improvement Recommendations (EIR).

EIR's will be prepared on SF 368. Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System (TAMMS). EIR's should be mailed directly to Commander, U.S. Army Armament Materiel Readiness Command, ATTN: DRSAR-MAO, Rock Island, IL 61299. A reply will be furnished directly to you.

**1-4. Administrative Storage.** Refer to TM 740-90-1.

**1-5. Destruction of Army Materiel to Prevent Enemy Use.** Refer to FM 5-25.

## Section II. DESCRIPTION AND DATA

### 1-6. Description of Binocular M19.

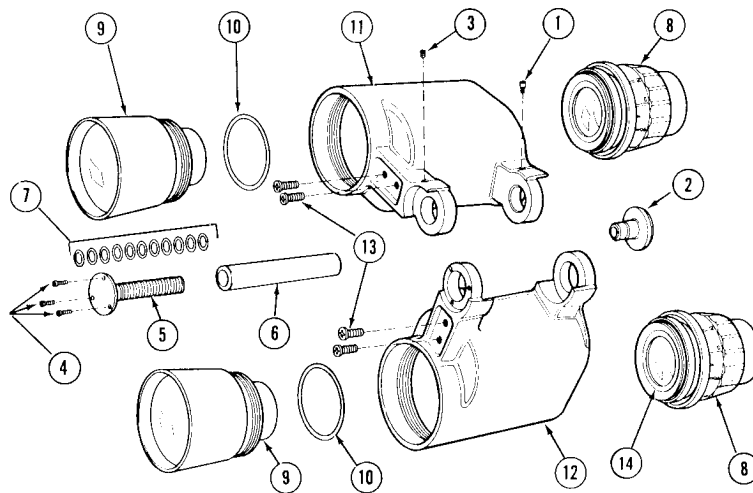
a. *General.* The 7x50 Binocular M19 is a lightweight, compact instrument intended for use in general field observation and fire direction. The left ocular contains a graduated angular mil scale reticle for estimating the range. The modular design features precollimated, fully interchangeable eyepieces, prism housings, and objective assemblies to facilitate easy replacement in the event of damage to any component. All optics are fully antireflection coated.

#### b. Major Components.

(1) Each ocular, or telescope, of Binocular M19 consists of three major assemblies: the objective assembly, the housing assembly, and the eyepiece assembly (fig. 1-2). These modular assemblies are precollimated and prefocused and, therefore, are completely interchangeable with the

equivalent assemblies of any other Binocular M19. After each ocular is assembled, it is purged with nitrogen to remove air and to insure a dry internal atmosphere; then sealed to retain the purged condition. A hinge shaft and sleeve arrangement joins the two ocular assemblies at the front and rear hinge points. Friction for holding the binocular at the proper interpupillary setting is provided by a clutch consisting of eleven O-rings installed in grooves of the hinge shaft. The interpupillary scale is graduated in millimeters. Once the binocular is set for a particular eye spacing, note the reading on the scale for future reference.

(2) A diopter scale is located between each eyepiece and its ocular, or housing assembly (fig. 1-2). Once you have set each eyepiece to obtain the sharpest possible focus for your eyes, note the diopter reading on each scale for future reference.



AR916175

1. Screw 10547104
2. Interpupillary scale 10547103-1
3. Setscrew MS51963-21
4. Screw MS51957-2B
5. Shaft 10547101
6. Hinge sleeve 10547102
7. Preformed packing MS9021-010

8. Eyepiece assembly 10547083
9. Objective assembly 10547054
10. Preformed packing MS9021-031
11. Housing assembly R.H. 10547071
12. Housing assembly L.H. 10547079-1
13. Screw MS3212-21
14. Eyepiece bellows

Figure 1-2. Binocular M19

### 1-7. Description of Carrying Case.

a. The plastic carrying case is designed specifically to hold Binocular M19 and provides ample protection against rough handling. The binocular must be inserted into the carrying case eyepieces down. The objective housings project

slightly above the top of the case. When the lid is closed, it presses down on the objective housings to firmly hold the binocular. The lid is held shut by a nylon strap which is fastened by a snap catch.

b. A shoulder and belt strap are provided for the carrying case.

**1-8. Tabulated Data.**

**a. Optical Characteristics.**

- Objective Lens Diameter . . . . .50 mm
- Magnification . . . . .7x
- Field of View . . . . .130mils
- Exit Pupil Diameter . . . . .7 mm
- Light Transmission . . . . .70%
- l Diopter . . . . .4.8 mm
- Diopter Adjustment . . . . . ±4— ±0.25

**b. Physical Characteristics.**

- Width (open position). . . . . 190.5 mm

- Length . . . . .152.4 mm
- Thickness . . . . .63.5mm
- Weight (binocular). . . . . 0.966 Kg
- Weight (case) . . . . . 0.426 Kg
- Color (binocular and case) . . . . . olive drab

1-9. Identification. The binocular is identified by the engraving “BNCLR M19” on the face of the interpupillary scale (fig. 1 -2). The serial number of each binocular is stamped on the flat head of the hinge shaft. The carrying case is identified by the stamping “CASE CARRYING 10547051” on the front of the case behind the case lid strap.

## CHAPTER 2

# ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

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### Section I. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

**2-1. Repair Parts.** Repair parts issued to organizational maintenance personnel are listed in Appendix C.

kit (containing purging adapter P/N 10552433 Thread Size 8/32 listed in Section III of Appendix B, Maintenance Allocation Chart, will be used to perform the purging operations.

**2-2. Special Tools and Equipment.** The purging

### Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

**2-3. Preventive Maintenance Services.** Perform scheduled maintenance services in accordance with table 2-1.

*Table 2-1. Organizational Preventive Maintenance Checks and Services (Quarterly Schedule)*

Item number	Item to be inspected	Procedure
1	Binocular	Inspect for nicks, cracks, and scratches of glass surfaces. Inspect binocular exterior surfaces for cracks or scratches. If extent of damage is beyond present scope of repair, evacuate to next higher level of maintenance. Check for functioning of hinge pin and diopter scales for ease of movement.
2	Housing Assembly, Left and Right	Inspect for condensation. If present, purge housing assemblies in accordance with paragraph 2-4.

**2-4. Purging the Binocular.**

**NOTE**

A frequent purging requirement or any severe moisture indicates a sealing problem. If correction is beyond the scope of repair by direct support maintenance, forward to depot.

**a. Remove the purging screw** closest to hinge (fig. C-2, item 13) from the housing (fig. C -2, item 11 or 12). Unscrew the other purging screw half way. Inspect both purging screw O -rings for damage and replace screws if necessary.

**b. Screw the adapter** into the open purging

screw hole in the housing and assemble the purging adapter to the outlet hose of the purging kit.

**c. Set the outlet pressure** at 5 psi and purge the ocular for 90 seconds.

**d. Turn pressure off** at the nitrogen source.

**e. Unscrew the purging hose and adapter** from the housing and immediately replace the removed purging screw and tighten the other purging screw.

**f. Inspect binocular** in accordance with paragraph 2-3.

### Section III. TROUBLESHOOTING

**2-5. General.** No troubleshooting is required at organizational maintenance. If malfunctions occur, forward to direct support maintenance.

# CHAPTER 3

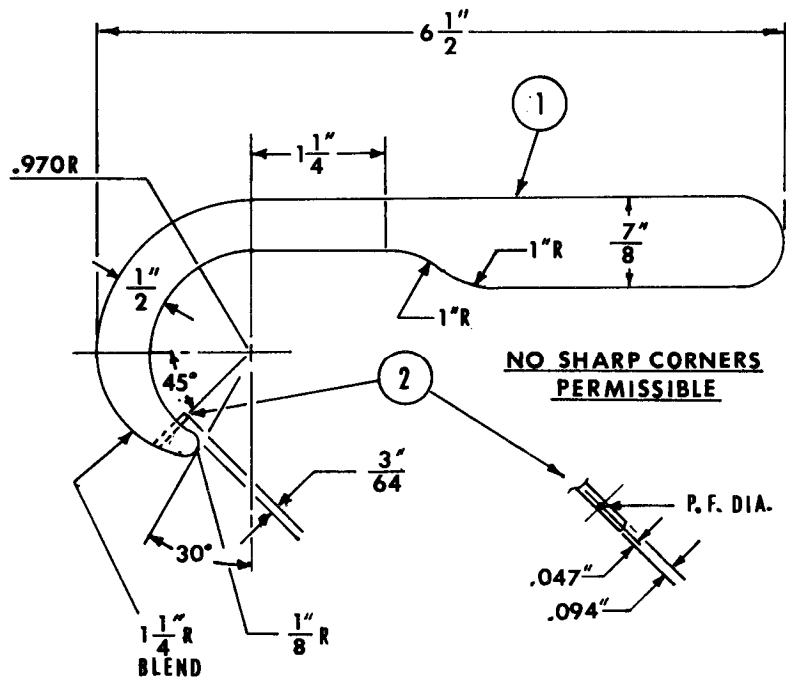
## DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

### Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

3-1. Repair Parts. Repair parts issued to direct support and general support personnel are listed in Appendix C.

and equipment required for direct support and general support maintenance of Binocular M19 are listed in Appendix C. Fabricate spanner wrench as illustrated in fig. 3-1.

3-2. Special Tools and Equipment. Special tools



DET. 1 0.093" x 2 1/2" x 6 1/2"  
DET. 2 0.047" DIA. x 3/16"

9515-00-863-8360 Stl. Plate  
9505-00-596-1667 Wire, Non-Elec.

Figure 3-1 Spanner Wrench

3-3. Common Tools and Equipment. Standard and commonly used tools and equipment having

general application to Binocular M19 are authorized for issue by TA and TOE.

### Section II. TROUBLESHOOTING

3-4. Scope. Troubleshooting is the systematic isolation of inoperable or faulty components by means of symptoms and tests.

shooting procedure described in table 3-1 is one of determining malfunctions, their probable causes and the necessary corrective actions required to remedy the malfunction.

3-5. Troubleshooting Procedure. The trouble-

Table 3-1. Troubleshooting

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MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. BINOCULAR OPENS AND CLOSES WITH DIFFICULTY OR WILL NOT REMAIN IN SET INTERPUPILLARY POSITION.		Hinge pin components worn. Forward to depot for replacement.
2. DIOPTER MOVEMENT TOO TIGHT OR TOO LOOSE.		Eyepiece assembly damaged. Replace eyepiece assembly.
3. VISION IMPAIRED.		Check for condensation. Scratched lens surfaces in eyepieces, disassemble and clean or objectives. Replace eyepiece and/or objective assemblies. Forward to depot for housing replacement.

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### Section III. INSPECTION

3-6. Scope. Inspection performed by the direct and general support shops upon receipt of binoculars turned in for repair will determine the cause, the amount of work required to return the binocular to serviceability, and the amount of supplies, parts of assemblies necessary to ac-

complish the repairs.

3-7. Inspection Procedures. Inspection procedures in direct and general support shops will be the same as those specified for organizational maintenance (para. 2 -3).



## CHAPTER 4 REPAIR INSTRUCTIONS

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### Section I. GENERAL

4-1. **Scope.** This chapter contains specific instructions for the repair, adjustment, purging, and final inspection of Binocular M19 in direct support and general support maintenance shops.

4-2. **Parts Replacement.** These procedures include instructions for the disassembly of Binocular M19 eyepiece and objective assemblies. However, these instructions are not to be construed as the authority to disassemble any part of the binocular

unless the need for disassembly has definitely been established. Authorized repair parts are listed and illustrated in Appendix C of this manual.

4-3. **General Maintenance Procedures.** TM 9-254 presents those general maintenance procedures that are most often encountered in repairing fire control material. These procedures are presented as guides to maintenance personnel in performing their duties.

### Section II. DISASSEMBLY

4-4. **General.** This section provides the disassembly instructions for the authorized repairs of Binocular M19. Disassemble only to the extent required for the replacement of the designated faulty component or components.

4-5. **Disassembly Procedure.**

#### CAUTION

The oculars must not be disassembled unless it has been definitely determined that one of the modular assemblies (eyepiece or objective) is in need of replacement. When removing the eyepiece assembly from the housing, take care not to strip the threads and use the torque adapter plug to avoid possible damage to the objective assembly.

Ocular disassembly is as follows.

*a.* Using the fabricated spanner wrench (fig. C-3, item 1), unscrew the eyepiece assembly (fig. C-2, item 8) from the housing (11) or (12). The retaining ring of the eyepiece assembly has right --hand threads and unscrews in a counterclockwise direction.

*b.* Carefully screw the torque adapter plug (fig. C-3, item 2) into the objective end housing. Engage the strap wrench around the objective housing and gradually apply increasing pressure in a counterclockwise direction until the objective assembly (fig. C-2, item 9) begins to unscrew from the housing. Remove the strap wrench and remove the objective assembly by hand. Inspect the objective assembly packing (fig. C-2, item 10) and, if badly worn or deteriorated, remove the packing from the objective assembly.

### Section III. REPAIR AND REASSEMBLY

4-6. **General.** This section provides inspection, cleaning, repair and assembly instructions for Binocular M19 eyepiece and objective assemblies.

4-7. **Inspection.**

Inspect disassembled parts for the following conditions.

*a.* Cracked or broken eyepiece or objective assemblies.

*b.* Scratched, nicked or cracked lenses.

*c.* Unreadable diopter scale markings.

*d.* Damaged or stripped screw threads.

*e.* Worn or deteriorated packing rings.

4-8. **Cleaning and Repair.**

*a.* **Cleaning.** Refer to TM 9-254 for cleaning procedures.

*b.* **Repair.** Do not attempt to disassemble the eyepiece or objective assemblies for repair. These must be replaced as assemblies. All items which have failed to pass the above inspections must be replaced.

4-9. **Assembly.**

#### CAUTION

When assembling the eyepiece assemblies (fig. C-2, item 8) and objective assemblies (fig. C-2, item 9) to the housing assemblies (fig. C-2, items 11 and 12), care must be taken to avoid stripping the threads.

#### NOTE

Extreme care should be taken when lubricating to avoid any excess grease from contaminating the optics.

a. Lubricate the packing ring (fig. C-2, item 10) with a light coating of grease (Spec. MIL-G-4343, NSN 915000-R69-8255) and assemble the ring into the innermost groove of the objective assembly (fig. C-2, item 9).

b. Apply a light coating of grease (Spec. MIL-G-81322, NSN 9150-00-944-8953) to the threads of the objective assembly (fig. C-2, item 11 or 12). Carefully screw the torque adapter plug into the objective housing until hand tight. Insert the torque wrench into the square holes of the torque adapter plug, and slowly apply pressure until the dial indicates 75 inch-pounds. Remove the torque wrench. While securely holding the objective assembly with the strap wrench, unscrew the torque adapter plug, being careful not to damage the end housing threads.

**CAUTION**

The eyepiece assembly (fig. C-2, item 8) is to be seated by hand as much as possible before engaging retainer threads. The eyepiece assembly is to be rotated as little

as possible when centering the diopter index mark.

c. Hold the eyepiece assembly (fig. C-2, item 8) with the eyecup down. With a brush, apply a light coating of grease (Spec. MIL-G-4343) to the rim of the rubber eyepiece bellows only (fig. C-2, item 14). Apply a light coating of grease (Spec. MIL-G-4343) to the threads of the eyepiece mounting ring. Assemble the eyepiece assembly to the housing (fig. C-2, item 11 or 12) so that the diopter index mark is approximately at the six o'clock position when the binocular is in the normal hand-held position. Carefully engage the threads of the eyepiece retaining ring with those of the housing and screw the ring down until finger tight. Using fabricated spanner wrench (fig. C-3, item 1) tighten the retaining ring to insure that the split ring beneath the retainer is seated.

**NOTE**

If both oculars were disassembled, assemble the second ocular as instructed above. Oculars must be purged with nitrogen (section IV, following) after the modules have been reassembled.

## **Section IV. PURGING THE BINOCULAR**

4-10. Scope. Refer to paragraph 2-4 for purging the binocular.

## APPENDIX A REFERENCES

**A-1. Publication Indexes.** The following publication indexes shall be consulted frequently for latest changes or revisions of references given in this appendix, and for new publications relating to material covered in this technical manual.

- Index of Administrative Publications . . . . . DA PAM 310-1
- Index of Blank Forms. . . . . DAPAM310-2
- Index of Doctrinal, Training, and Organizational Publications. . . . . DA PAM 310-3
- Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders . . . . . DA PAM 310-4
- Military Publications Index of Supply Catalogs and Supply Manuals (Excluding Types 7, 8, and 9) . . . . . DA PAM310-6
- U.S. Army Equipment Index of Modification Work Orders . . . . . DA PAM 310-7
- A-2. Forms. Refer to TM 38-750 for all pertinent forms.
- A-3. Supply Manuals and Supply Catalogs.** The following Department of the Army SUPPLY Manuals and Supply Catalogs pertain to the repair and overhaul of Binocular M19.
- Brushes, Paints, Sealers and Adhesives . . . . . C8000-IL-A
- Purging Kit, Fire Control: Organizational Direct and General Support Maintenance (4931 -00-065-1110). . . . . SC4931-95-CL-J54
- Shop Equipment, Instrument and Fire Control System Repair: Field Maintenance

- (4931-00-947--8243) . . . . . SC4931-95-CL--A09
- A-4. Other Publications.
  - a. Destruction to Prevent Enemy Use.*
  - Explosives and Demolitions. . . . . FM 5-25
  - b. General.*
  - Military Symbols . . . . . FM 21-30
  - Authorized Abbreviations and Brevity Codes . . . . . AR310-50
  - Dictionary of United States Army Terms . . . . . AR310-25
  - The Army Maintenance Management Systems (TAMMS) . . . . . TM 38-750
  - Accident Reporting and Record . . . . . AR 385-40
  - c. Maintenance.*
  - Maintenance Assistance and Instruction Team (MAIT) Program . . . . . AR 750-51
  - General Maintenance Procedures for Fire Control Materiel . . . . . TM 9-254
  - d. Shipping and Storage.*
  - Packaging Improvement Report . . . . . AR 700-58
  - Administrative Storage of Equipment . . . . . TM 740-90-1
  - Packaging of Material . . . . . AR 700-15
  - Methods of Packaging . . . . . MIL-P-116G
  - Military Specifications and Standards, Fire Control Material: General Specification Governing the Manufacture and Inspection of. . . . . MIL-F-13926A
  - Inspection Equipment, Acquisition, Maintenance and Disposition of . . . . . MIL-I-45607B

# APPENDIX B

## MAINTENANCE ALLOCATION CHART (MAC)

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### Section I. INTRODUCTION

#### **B-1. General.**

*a.* This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

*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.**

*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 and detect incipient failure 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 (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

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

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

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

*g. 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 an equipment or system.

*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 services<sup>1</sup> or other maintenance actions<sup>2</sup> 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 (services/actions) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DM-WR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

*k. Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurement (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 group 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 Functions.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see para. B-2.)

*d. Column 4, Maintenance Level.* Column 4 specifies, by the listing of a "work time" figure in the appropriate sub-column(s), the lowest level of

<sup>1</sup> Services—inspect, test, service, adjust, align, calibrate, or replace.

<sup>2</sup> Action—welding, grinding, riveting, straightening, facing, remachining, or resurfacing.

maintenance authorized to perform the function listed in column 3. The figure represents the active item required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time" figures will be shown for each level. The number of man-hours specified by 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. The symbol designations for the various maintenance levels are as follows:

- C. . . . . Operator or crew
- O. . . . . Organization 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.

**B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.**

a. *Column 1, Reference Code.* The tool and TMDE reference code correlates with a code used in the MAC, section II, Column 5.

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

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

d. *Column 4, National Stock Number.* The National stock number of the tool or TMDE.

e. *Column 5, Tool Part Number.* The manufacturer's part number.

**B-5. Explanation of Columns in Remarks, Section IV.**

a. *Reference Code.* The code recorded in column 6, section II.

b. *Remarks.* This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

**Section II. MAINTENANCE ALLOCATION CHART**

(1) Group Number	(2) Component/Assembly	(3) Maintenance function	(4) Maintenance Level					(5) Tools and equipment	(6) Remarks
			C	O	F	H	D		
00	Binocular, 7x50, M19 W/E	Inspect	.1					1	A
		Service	.1		.4				
		Repair	.1		.5				
01	Binocular, 7x50, M19	Inspect	.1				1	A	
		Service	.1		.4				
		Repair	.1		.5				
0101	Eyepiece Assembly, Optical	Inspect			.1		1 2	A	
		Service			.1				
		Replace			.1				
0102	Objective Assembly	Inspect			.1		1 3,4,5	A B	
		Service			.1				
		Replace			.1				
		Repair			.1				
0103	Housing Assembly, Optical	Inspect				.1	1	A	
		Service		.2					
		Replace				.4			
0104	Hinge Pin Assembly	Repair		.1			6.7		
		Inspect			.1				
02	Case, Carrying: Binocular	Inspect	.1						
		Service	.1						
		Replace	.1						
		Repair	.1						

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL STOCK NUMBER	(5) TOOL PART NUMBER
1	O,F,D	PURGING KIT, FIRE CONTROL	4931-00-065-1110	SC 4931-95-CL-J54
2	F,D	WRENCH, SPANNER		7551686
3	F,D	WRENCH, PIPE	5120-00-242-3249	5567217
4	F,D	PLUG, TORQUE ADAPTER	1240-01-061-7080	7551728
5	F,D	WRENCH, TORQUE	5120-00-230-6380	GGW00686
6	D	HINGE ASSEMBLY, HOLDING		7551754
7	D	INSTALLATION TOOL, O-RING		7551754

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	SERVICE BY DIRECT SUPPORT REFERS TO PURGING THE BINOCULAR. PURGING IS REQUIRED AFTER REPLACEMENT OF A BINOCULAR MODULE.
B	EXTENT OF REPAIR TO OBJECTIVE ASSEMBLY IS REPLACEMENT OF PACKING, PREFORMED, P/N MS9021-131.
C	REPLACEMENT OF MACHINE SCREW, P/N MS3212-21, 2 EA, IS EXTENT OF REPAIR TO EITHER OPTICAL HOUSING ASSEMBLY.

# APPENDIX C

## ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS

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### Section I. INTRODUCTION

C-1. Scope. This appendix lists spare repair parts, and special tools required for performance of organizational, direct support, general support, and depot maintenance of the Binocular M19. It authorizes the requisitioning and issue of spares and repair parts as indicated by the source and maintenance codes.

C-2. General. 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 for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in numeric sequence, with the parts in each group listed in figure and item number sequence. Bulk materials are listed in NSN sequence.

*b. Section III. Special Tools List.* A list of special tools, special TMDE, and other special support equipment authorized 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 numbers (NSN) appearing in the listings, followed by a list in alphameric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. This index is followed by a cross reference list of reference designators to figure and item numbers.

#### C-3. Explanation of Columns.

*a. Illustration.* This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item Number.* The number used to identify item called out in the illustration.

*b. Source, Maintenance, and Recoverability (SMR) Codes.*

(1) Source Code. Source codes indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second position of the Uniform SMR Code format as follows:

Code	Definition
PA	Item procured and stocked for anticipated or known usage.
PB	Item procured and stocked for insurance purpose because essentiality dictates that a minimum quantity be available in the supply system.
PC	Item procured and stocked and which otherwise would be coded PA except that it is deteriorative in nature.
PD	Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues or outfitting. Not subject to automatic replenishment.
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF	Support equipment which will not be stocked but which will be centrally procured on demand.
PG	Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which, because of probable discontinuance or shutdown of production facilities, would provide uneconomical to reproduce at a later time.
KD	An item of a depot overhaul/repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
KF	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be related at organizational or intermediate levels of maintenance.

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Code	Definition
KB-	Item included in both a depot overhaul/repair kit and a maintenance kit.
MO-	Item to be manufactured or fabricated at organizational level.
MF-	Item to be manufactured or fabricated at the direct support maintenance level.
MH-	Item to be manufactured or fabricated at the general support maintenance level.
MD-	Item to be manufactured or fabricated at the depot maintenance level.
AO-	Item to be assembled at organizational level.
AF-	Item to be assembled at direct support maintenance level.
AH-	Item to be assembled at general support maintenance level.
AD-	Item to be assembled at depot maintenance level.
XA-	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB-	Item is not procured or stocked. If not available through salvage, requisition.
XC-	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD-	A support item that is not stocked. When required, item will be procured through normal supply channels.

(2) *Maintenance Code.* Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

Code	Application/Explanation
C-	Crew or operator maintenance performed within organizational maintenance.
O-	Support item is removed, replaced, used at the organizational level.
F-	Support item is removed, replaced, used at the direct support level.
H-	Support item is removed, replaced, used at the general support level.
D-	Support items that are removed, replaced, used at depot, mobile depot, or specialized repair activity only.

(b) The maintenance code entered in the fourth position indicates whether the item is to be

repaired and identifies the lowest maintenance level with the capability to perform complete repair (i. e., all authorized maintenance functions). This position will contain one of the following maintenance codes.

Code	Application/Explanation
O-	The lowest maintenance level capable of complete repair of the support item is the organizational level.
F-	The lowest maintenance level capable of complete repair of the support item is the direct support level.
H-	The lowest maintenance level capable of complete repair of the support item is the general support level.
D-	The lowest maintenance level capable of complete repair of the support item is the depot level.
L-	Repair restricted to specialized repair activity.
Z-	Nonreparable. No repair is authorized.
B-	No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. No parts or special tools are procured for the maintenance of this item.

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

Recoverability Code	Definition
Z-	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.
O-	Reparable item. When uneconomically reparable, condemn and dispose at the organizational level.
F-	Reparable item. When uneconomically reparable, condemn and dispose at the direct support level.
H-	Reparable item. When uneconomically reparable, condemn and dispose at the general support level.
D-	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.
L-	Reparable item. Repair, condemnation, and disposal not authorized below depot/specialized repair activity level.
A-	Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, critical material or hazardous material). Refer to appropriate manuals/directives for specific information instructions.



*c. National Stock Number.* Indicates the National stock number assigned to the item and which will be used for requisitioning.

*d. Part Number.* Indicates the primary number used by the manufacturer (individual, company, fire, 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 a stock number item is requisitioned, the item received may have a different part number than the part being replaced.

*e. Federal Supply Code for Manufacturer-(FSCM).* The FSCM is a 5-digit numeric code listed in SB 708-42 which is used to identify the manufacturer, distributor, or Government agency, etc.

*f. Description.* Indicates the Federal item name and, if required, a minimum description to identify the item. Items that are included in kits and sets are listed below the name of the kit or set with the quantity of each item in the kit or set indicated in the quantity incorporated in unit column. In the Special Tools List, the initial basis of issue (BOI) appears as the last line in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased accordingly.

*g. Unit of Measure (U/m).* Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two

character alphabetical abbreviation (e.g., ea, in, pr, etc.]. When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

*h. Quantity Incorporated in Unit.* 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 is in lieu of a quantity and indicates that no specific quantity is applicable, (e.g., shims, spacers, etc.).

#### C-4. How to Locate Repair Parts.

*a. When National Stock Number or Part Number is Unknown.*

(1) *First.* Find the illustration covering the functional group to which the item belongs.

(2) *Second.* Identify the item on the illustration and note the illustration figure and item number of the item.

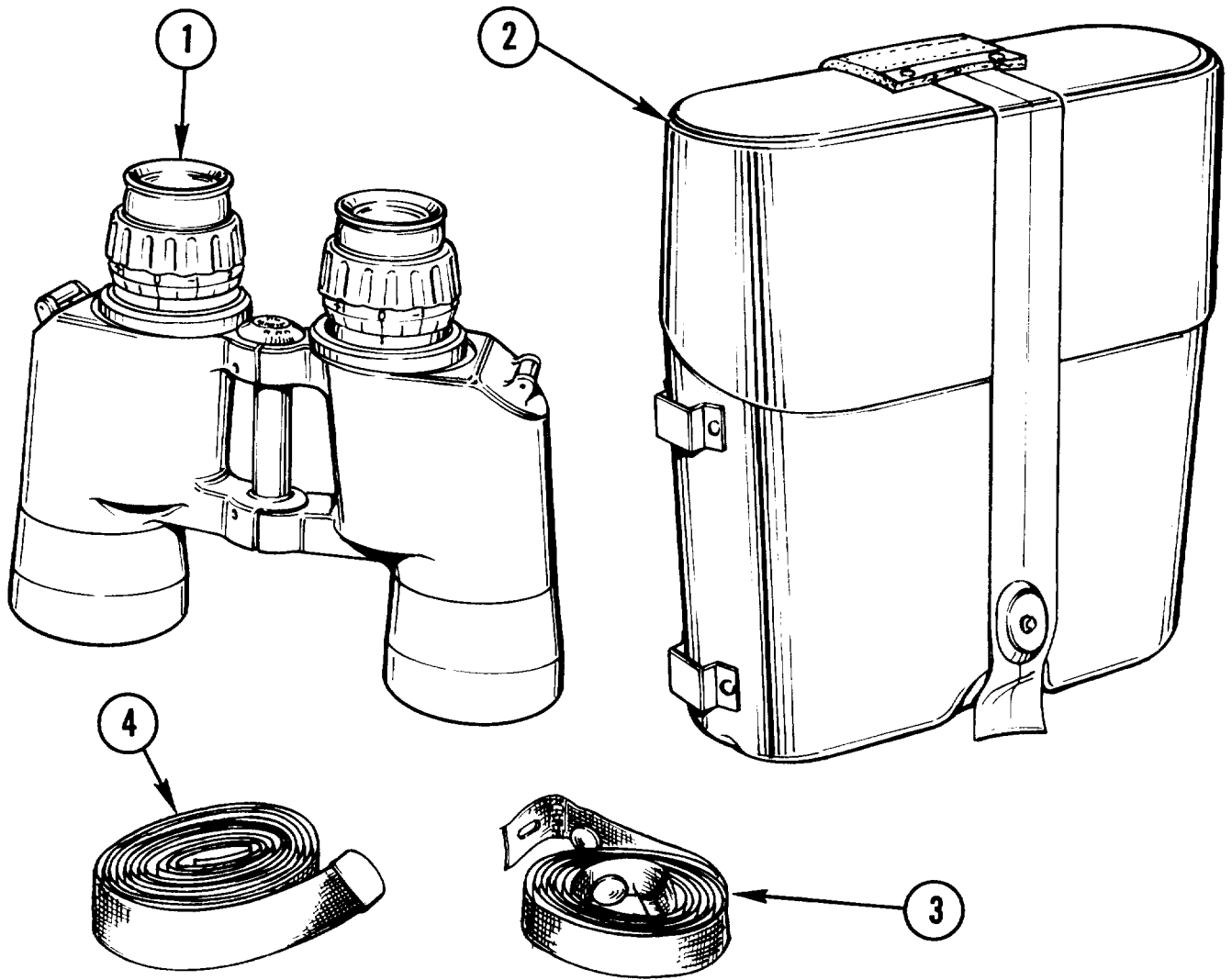
(3) *Third.* Using the Repair Parts Listing, find the figure and item number noted on the illustration.

*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. This index is in NIN sequence followed by a list of part numbers in alphameric sequence, cross-referenced to the illustration figure number and item number.

(2) *Second.* After finding the figure and item number, locate the figure and item number in the repair parts list.

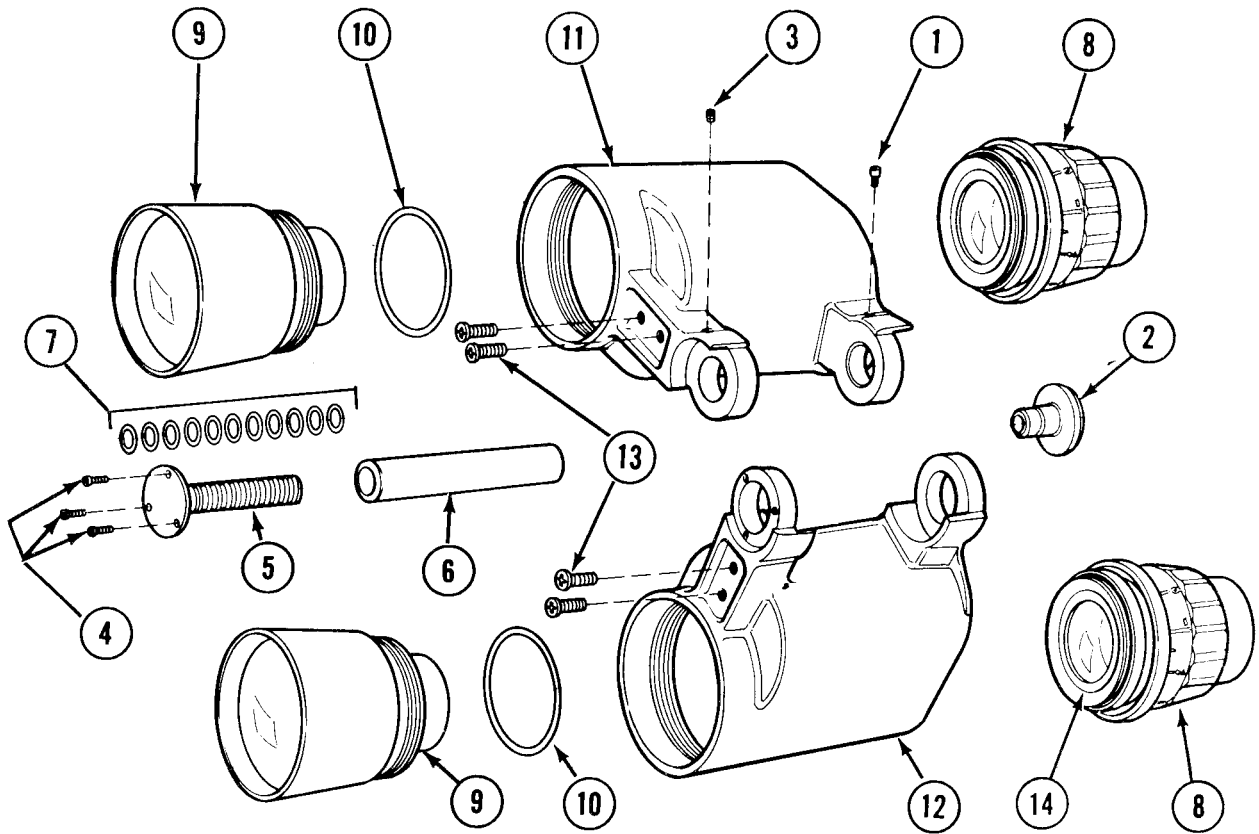
## Section II. REPAIR PARTS LIST



**AR916176**

*Figure C-1. Binocular M19 with equipment (W/E).*

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG. NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
C-1	1	ADDDD		10547050	19200	GROUP 00 BINOCULAR M19 W/E BINOCULAR, 7x50, M19	EA	1
C-1	2	PACZZ	1240-00-930-3837	10547051	19200	CASE, CARRYING, BINOCULAR	EA	1
C-1	3	PACZZ	1240-00-253-5893	10547122	19200	STRAP WEBBING, BINOCULAR NECK STRAP	EA	1
C-1	4	PACZZ	1240-00-253-5892	10547115	19200	STRAP WEBBING, SHOULDER, BINOCULAR CASE	EA	1

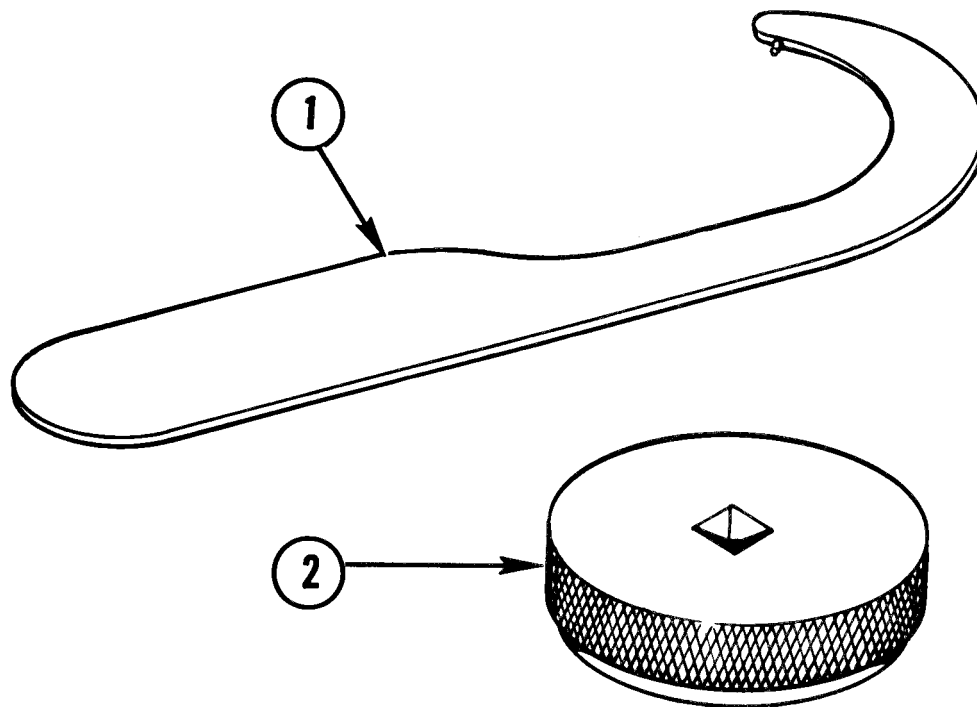


AR 916177

Figure C-2. Binocular M19

(1) ILLUSTRATION (A) FIG NO	(B) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	TM9-1240-381-24&P (6) DESCRIPTION	(7) USABLE ON CODE U/M	(8) QTY INC IN UNIT
C-2	1	KDDZZ		10547104	19200	GROUP 01 BINOCULAR M19 (P/N 10547050)		
						SCREW,PILOT (PART OF KIT P/N 5801091)	EA	1
C-2	2	KDDZZ	1240-00-553-6764	10547103-1	19200	SCALE, INTERPUPILLARY	EA	1
C-2	3	KDDZZ	5305-00-119-5330	MS51963-21	96906	SETSCREW (PART OF KIT P/N 5801091)	EA	1
C-2	4	KDDZZ	5305-00-494-7334	MS51957-2B	96906	SCREW (PART OF KIT P/N 5801091)	EA	3
C-2	5	KDDZZ		10547101	19200	SHAFT (PART OF KIT P/N 5801091)	EA	1
C-2	6	KDDZZ		10547102	19200	SLEEVE, HINGE (PART OF KIT P/N 5801091)	EA	1
C-2	7	KDDZZ	5330-00-580-2278	MS9021-010	96906	PACKING, PREFORMED (PART OF KIT P/N 5801091)	EA	11
C-2	8	PAFZZ	1240-00-044-1901	10547083	19200	EYEPIECE ASSEMBLY, OPTICAL	EA	2
C-2	9	PAFZZ	1240-00-044-1900	10547054	19200	OBJECTIVE ASSEMBLY	EA	2
C-2	10	PAFZZ	5330-00-984-5763	MS9021-031	96906	PACKING, PREFORMED	EA	2
C-2	11	PADZZ	1240-00-102-3706	10547071	19200	HOUSING ASSEMBLY, OPTICAL: RIGHT-HAND	EA	1
C-2	12	PADZZ	1240-00-054-0878	10547079-1	19200	HOUSING ASSEMBLY, OPTICAL: LEFT-HAND	EA	1
C-2	13	PAOZZ	5305-00-433-3707	MS3212-21	96906	SCREW, MACHINE	EA	4
C-2		PADZZ	1240-00-091-9122	5801091	19200	KIT, HINGE PIN	EA	1
C-2	1					SCREW	EA	1
C-2	3					SETSCREW	EA	1
C-2	4					SCREW	EA	3
C-2	5					SHAFT	EA	1
C-2	6					SLEEVE	EA	1
C-2	7					PACKING	EA	11

(1) ILLUSTRATION (A) FIG NO	(B) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	TM9-1240-381-24&P (6) DESCRIPTION	(7) USABLE ON CODE	(8) QTY INC IN UNIT
BULK		PAFZZ	9505-00-596-1667	QQ-W-427	81348	GROUP 03 BULK MATERIALS		EA
BULK		PAFZZ	9515-00-863-8360	MIL-S-16216	81349	WIRE, NONELECTRICAL PLATE, STEEL		EA



AR916178

Figure C-3. Special Tools for Binocular M19 W/E

**Section III. SPECIAL TOOLS LIST**

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG. NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
C-3	1	FFZZ		7551686	19204	<b>GROUP 04 SPECIAL TOOLS</b> WRENCH, SPANNER (MFD FROM 9515-00-863-8360 AND 9505-00-596-1667 PLUG, TORQUE ADAPTER BOI: 1 authorized per Direct Support Unit 1 authorized per General Support Unit	EA	
C-3	2	FFZZ	240-01-061-7080	7551728	19204		EA	

## SECTION IV. NATIONAL STOCK NUMBER AND PART NUMBER INDEX

STOCK NUMBER	FIGURE NUMBER	ITEM NUMBER
1240-00-044-1900	C-2	9
1240-00-044-1901	C-2	8
1240-00-054-0878	C-2	12
1240-00-091-9122	C-2	
1240-00-102-3706	C-2	11
1240-00-253-5892	C-1	4
1240-00-253-5893	C-1	3
1240-00-553-6764	C-2	2
1240-930-3837	C-1	2
5305-00-119-5330	C-2	3
5305-00-433-3707	C-2	13
5305-00-494-7334	C-2	4
5330-00-580-2278	C-2	7
5330-00-984-5763	C-2	10
1240-01-061-7080	C-3	2

## SECTION IV. NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER	FSCM	FIGURE NUMBER	ITEM NUMBER
MIL-S-16216	81349	BULK	
MS3212-21	96906	C-2	13
MS51957-2B	96906	C-2	4
MS51963-21	96906	C-2	3
MS9021-010	96906	C-2	7
MS9021-131	96906	C-2	10
QQ-W-427	81348	C-2	
10547050	19200	C-1	1
10547051	19200	C-1	2
10547054	19200	C-2	9
10547071	19200	C-2	11
10547079-1	19200	C-2	12
10547083	19200	C-2	8
10547101	19200	C-2	5
10547102	19200	C-2	6
10547103	19200	C-2	2
10547104	19200	C-2	1
10547115	19200	C-1	4
10547122	19200	C-1	3
5801091	19200	C-2	
7551686	19204	C-3	1
7551728	19204	C-3	2

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40			

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Step 1 - 'Binocular Closes With Difficulty...' should read: 'Binocular Opens and Closes With Difficulty...'

REASON: Incomplete instructions.

Item 2, P/N 10547103-2 should read: P/N 10547103-1

REASON: Wrong P/N

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US Army Armament Materiel Readiness Command  
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Rock Island, IL 61299

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# The Metric System and Equivalents

## Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

## Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
 1 dekagram = 10 grams = .35 ounce  
 1 hectogram = 10 dekagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

## Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

## Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

## Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

## Temperature (Exact)

°F Fahrenheit temperature      5/9 (after subtracting 32)      Celsius temperature      °C

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