TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

VOLUME I

PREVENTIVE MAINTENANCE

TURRET FOR COMBAT ENGINEER VEHICLE, M728 (2350-00-795-1797)

This copy is a reprint which includes current pages from Changes 1 through 3.

HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 1980

WARNING

BE CAREFUL: CARBON MONOXIDE IS A GAS THAT CAN KILL YOU.

Carhop monoxide always comes when something gets hot or burns - such as heaters, engines, etc. To keep carbon monoxide from making anyone sick or drowsy, there must be plenty of fresh air in the place where the heating or burning takes place. This gas has no color and no smell, but it is deadly poisonous. It can damage your brain, or kill you, if you do not have enough fresh air coming in to push the carbon monoxide out.

Follow these rules to keep from getting poisoned:

1. Do not operate engine or heater inside a building unless there is plenty of fresh air coming in.
2. Do not idle an engine unless you are sure there is plenty of fresh air in personnel compartments.
3. Do not drive a vehicle which has inspection plates, cover plates, or engine compartment doors taken off except for very short maintenance times when necessary.
4. When operating vehicle, always be on the lookout for personnel who seem to be getting sick or drowsy. If you notice this happening, immediately get fresh air into personnel compartments. If this does not help, remove sick or drowsy personnel from vehicle and do following

   a. Put him into fresh air.
   b. Keep him covered warm.
   c. Keep him still. Do not let him exercise. (Exercise will make him worse.)
   d. Give him artificial respiration, if necessary.
   e. Get medical help.

WARNING

Azimuth dial pointers in indicator may be tipped with radioactive material. This becomes dangerous when dial window is broken or removed. When this happens, make repairs as soon as possible.

If dial window is broken or removed, all maintenance must be done at depot level only, except replacement of lamps or replacement of whole indicator unit.

Protecting, handling, storing, and getting rid of radioactive material must be done in accordance with TB MED-232 and TB 750-237.

WARNING

When placing the turret (elev/trav) power switch in the ON position, ensure that the gunner's power control handles are not displaced. If handles are displaced, rapid movements of the turret traverse in azimuth may result in fatal injury.

WARNING

When turret is in the power mode the gun will elevate and depress without depressing the magnetic brake switch on the gunner's control handles.

WARNING

Assure crew are in safe positions and driver has lowered his seat and has head down before operating in power or manual traversing or elevating modes.

WARNING

Do not release magnetic brake switch or override in magnetic brake actuator while traversing until gunner's or commander's power control is returned to neutral position. This will reduce unnecessary wear and/or damage to magnetic brake.

WARNING

Unit commander or senior officer in charge of maintenance personnel, protective clothing and who are assigned to remove and dispose of contaminated gas filters must prescribe necessary safety measures that must be followed including decontamination operation before new gas filters are installed (TM 3-220).

WARNING

To prevent injury to personnel, remove all ammunition from weapons before start of troubleshooting.

WARNING

When working in open breech, do not touch extractors. Tripping extractors will cause breechblock to close, striking anything above it.

WARNING

Before traversing turret or elevating/depressing gun check outside of tank and surrounding area for unwary personnel. Make sure crew members are in safe positions and driver has lowered his seat and has his head down.

WARNING

Manual traversing handle may spin when power is turned on. Stay out of path of manual traversing handle.

CHANGE

No 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D. C., 13 May 1991

ORGANIZATIONAL
MAINTENANCE MANUAL
VOLUME 1
PREVENTIVE MAINTENANCE

TURRET
FOR
COMBAT ENGINEER VEHICLE,
M728
(2350-00-795-1797)

TM 9-2350-222-20-2-1. 15 September 1980. is changed as follows:

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

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

Remove Pages	Insert Pages
i and ii	i and ii
1-3 and 1-4	l-3 and l-4
2-1 thru 2-18	2-1 thru 2-18

3. File this change sheet in back of the publication for reference purposes.

By Order of the Secretary of the Army:

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CHANGE NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 10 June 1986

ORGANIZATIONAL
MAINTENANCE MANUAL
VOLUME 1
PREVENTIVE MAINTENANCE

TURRET
FOR
COMBAT ENGINEER VEHICLE,
M728
(2350-00-795-1797)

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CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *3 February 1984*

VOLUME I
PREVENTATIVE MAINTENANCE
TURRET FOR
COMBAT ENGINEER VEHICLE
M728
(2350-00-795-1797)

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Remove Pages	*Insert Pages*
A/(B blank)	A/(B blank)
iii/(iv blank)	iii/(iv blank)
1-3 and 1-4	1-3 and 1-4
2-11 and 2-12	2-11 and 2-12
3-1 and 3-2	3-1 and 3-2
3-9 and 3-10	3-9 and 3-10
3-27 and 3-28	3-27 and 3-28
NONE	3-28.1 thru *3-28.8*
3-35 thru 3-37/(3-38 blank)	3-35 thru 3-37/(3-38 blank]
B-1 thru B-38	B-1 thru B-38
C-1 thru C-6	C-1 thru C-6
Index 1 and Index 2	Index 1 and Index 2

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LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portions of the text affected by the changes are indicated in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original . . . 0 . . . 15 September 1980
Change . . . .1 . . .

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 135 CONSISTING OF THE FOLLOWING:

Page No.	*Change No.
Cover	0
a-c	0
A	1
B Blank	0
1-1-11	0
III	1
iv Blank	0
1-1	0
1-2 Blank	0
1-3	0
1-4	**1**
1-5	**0**
1-6 Blank	0
2-1 -2-11	0
2-12	1
2-13 -2-22	0
3-1 -3-2	1
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3-9	0
3-10	1
3-11 -3-26	0
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3-28.8	1
3-29 -2-33	0
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B-1	0
B-2	1
B-3	0
B-4-B-38	1
C-1-C-6	1
Index 1-Index 2	1
FO-1	0

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Technical Manual
N0. 9-2350-222-20-2-1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington. D. C., 15 September 1980

Technical Manual

Organizational Preventive Maintenance

TURRET

FOR

COMBAT ENGINEER VEHICLE,

M728

(2350-00-795-1797)

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 directly to:

Commander
U.S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-MAS
Rock Island, IL 61299-6000

A reply will be furnished to you.

*This manual in conjunction with TM 9-2350-222-20-2-2-1, TM 9-2350-222-20-2-2-2, TM 9-2350-222-20-2-3-1, TM 9-2350-222-20-2-3-2, TM 9-2350-222-20-2-3-3 supersedes the turret portion of TM 9-2350-222-20, September 1965, including all changes.

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TABLE OF CONTENTS (CONT)

CHAPTER 1

INTRODUCTION AND SERVICE UPON RECEIPT OF EQUIPMENT

SECTION 1. INTRODUCTION

1-1. SCOPE.

This manual contains preventive maintenance information, checkout procedures, alignments, and adjustments pertaining to organizational maintenance of the turret for the 165 MM Gun Full Tracked Combat Engineer Vehicle M728.

1-2. SERVICE UPON RECEIPT OF EQUIPMENT (Chapter 1 Section 2).

This section contains procedures to be done when receiving a vehicle that has been prepared for shipment. Whenever practicable, the crew will assist in doing the procedures outlined in this section.

1-3. PREVENTIVE MAINTENANCE (Chapter 2).

This chapter describes the periodic preventive maintenance and other preventive maintenance that you should perform at various times.

1-4. CHECKOUT PROCEDURES (Chapter 3 Section 1).

Each paragraph contains a checkout procedure for an equipment area or system. The paragraphs can be performed individually or as a whole, and can be referenced from other parts of this manual as well as other TMs.

1-5. ALIGNMENT AND ADJUSTMENT PROCEDURES (Chapter 3 Section 2).

Each paragraph contains an alignment or adjustment for an equipment area or system. They are usually performed when alignment or adjustment is required after installation of a new part.

1-6. LUBRICATION (Chapter 4).

Lubrication information used during maintenance is given.

1-7. LIST OF SUPPLIES AND MATERIALS (Appendix A).

This appendix supplies a table of expendable supplies and materials you will need to operate and maintain the vehicle. An explanation of how to use this table is also given.

1-8. MAINTENANCE ALLOCATION CHART (Appendix B).

The maintenance allocation chart provides information designating overall responsibility for performance of maintenance functions on all end items or components in the turret. This appendix also gives an explanation on how to use the maintenance allocation than.

1-9. EQUIPMENT NOMENCLATURE LIST (APPENDIX C).

In parts of this manual, component/assembly nomenclature may differ. Refer to Appendix C for the component/assembly name used in the Maintenance Allocation Chart and the associated common name used in the maintenance procedures.

SECTION 2 SERVICE UPON RECEIPT OF EQUIPMENT

1-10. SCOPE

This chapter contains procedures to be done when receiving an engineer vehicle that has been prepared for shipment. Whenever practicable, the crew will assist in doing the procedure outlined in this chapter.

1-11. SERVICE UPON RECEIPT OF EQUIPMENT

SUPPLIES: Waste wiping cloths
Cleaning solvent (PD 126)
Pencil and paper

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Inspect, install, and operate turret fire control/armament equipment
TM 9-2350-222-20-2-3 for equipment installation procedure
LO 9-2360-222-12 for lubrication procedures

FRAME 1

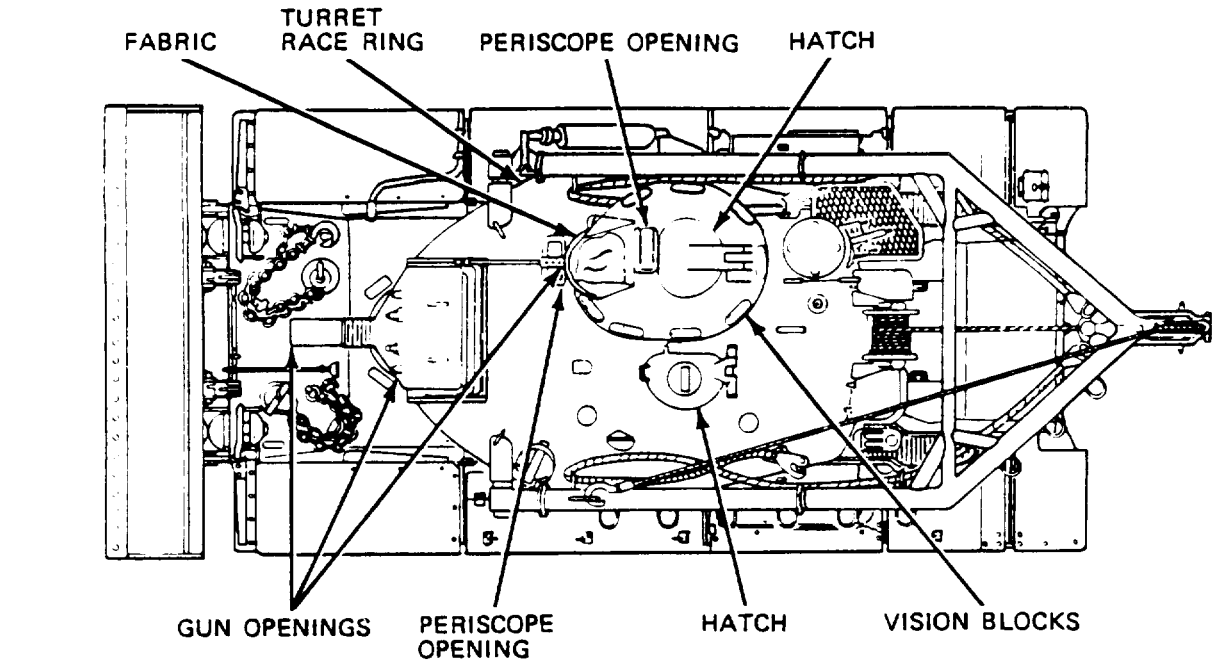
STEP	PROCEDURE	REFERENCE
1.	Open each container. Check items in container against packing list and write down any missing items.	
2.	Check packing list against basic issue items list to make sure all items in list have been received.	TM 9-2350-222-10 for basic issue item list
3.	Open inner packages. Remove preservative material from equipment.	
4.	Visually check equipment for damage.	
5.	Prepare armament equipment for installation: a. Clean pants with cleaning compound PD 126. b. Lubricate parts.	TM 9-2350-222-10 LO 9-2350-222-12
6.	Remove preservative material (wrapping, barrier material, tape) from hatches, periscope openings, cupola vision blocks, and gun openings. GO TO FRAME 2	

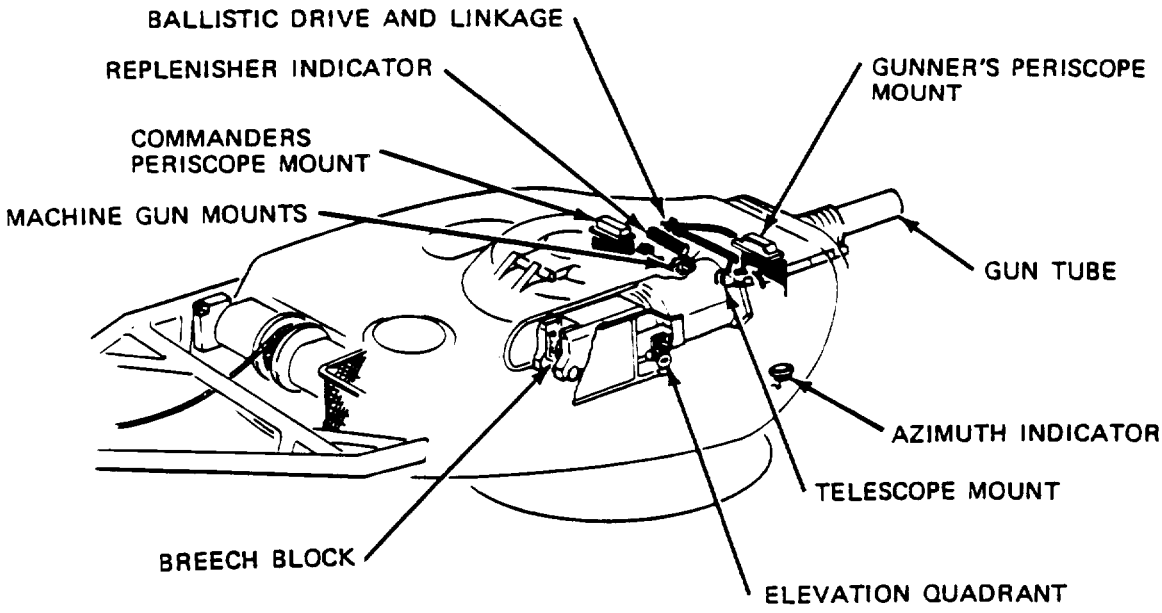
1-11. SERVICE UPON RECEIPT OF EQUIPMENT (CONT)

FRAME 2

STEP	PROCEDURE	REFERENCE
1.	Remove fabric from telescope and machine gun openings.	
2.	Remove excess grease from turret race ring.	
3.	Remove preservative, tape, and wrappings from equipment inside turret as shown.	
4.	Stow basic issue items in their proper place on vehicle.	
5.	Install following fire control items: a. Infinity sight 8635466 b. Gunner's periscope M32C/M32CE1 c. Telescope M105F d. Commander's periscope M36/M36E1	 TM 20-2-3 (para 55-3) TM 9-2350-222-10 TM 20-2-3 (para 57-3) TM 9-2350-222-10
6.	Install and check operation of communication equipment.	TM 9-2350-222-10
7.	Check operation of turret controls.	TM 9-2350-222-10
8.	Do semiannual preventive maintenance procedures (para 2-2 through 2-6). END OF TASK	

1-11. SERVICE UPON RECEIPT OF EQUIPMENT (CONT)





CHAPTER 2

PREVENTIVE MAINTENANCE

2-1. SCOPE

Preventive maintenance procedures for the M728 combat engineer vehicle are arranged by time intervals and hard time replacement. The following list establishes the intervals and gives the appropriate paragraph reference. Maintenance of the armament, turret traversing and elevation, and sighting and fire control equipment under adverse conditions such as bad weather, extreme temperature, desert environment, dust, mud etc, are contained in the TM 9-2350-222-10.

Interval	Procedure (para)
Time	
Semiannually	2-2 thru 2-7
Annually	2-8
Hard Time Replacement	
Condition Monitored	2-9
War Time	2-10

2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE

a. Turret

SUPPLIES: Lubricating oil

PERSONNEL: Two

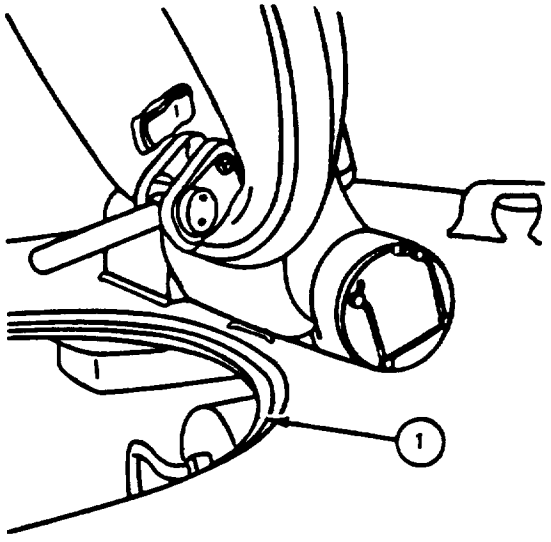
REFERENCES: TM 9-2350-222-10 for procedures to:
Operate gun elevating and turret traversing mechanism
Balance equilibrator
TM 9-2350-222-20-2-3 for procedures to:
Service main accumulator
Service equilibrator accumulator
LO 9-2350-222-12 for lubrication instructions

2 - 2 . SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

a. Turret (Cont)

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Loader's Escape Hatch	Lubricate lock hinges (1), and leaf spring with grease.	LO 9-2350-222-12
2.	Ammunition Rack Retainers	Lubricate retainers with oil.	LO 9-2350-222-12
3.	7.62 mm Ammunition Box Latches	Lubricate latches with oil.	LO 9-2350-222-12
4.	Gunner's Manual Elevation Handle	Lubricate handle.	LO 9-2350-222-12
5.	Gunner's Manual Traversing Handle	Lubricate the handle and universal gear on drive linkage.	LO 9-2350-222-12
6.	Gunner's Periscope Mount	Oil the gunner's periscope mount and ballistic shield handle.	LO 9-2350-222-12
7.	Gunner's Seat	Lubricate moving parts.	LO 9-2350-222-12



2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

a. Turret (Cont)

FRAME 2

Step	Item to be Inspected	Procedure	Reference
1.	Main Accumulator	Check main accumulator for proper nitrogen pressure. Recharge pressure using accumulator charging device or reduce pressure as required. Add oil if necessary.	TM 20-2-3 (para 1-18, 1-19) LO 9-2350-222-12
2.	Manual Elevation Accumulator	Check manual elevation accumulator for proper nitrogen pressure. Recharge pressure using accumulator charging device or reduce pressure as required. Add oil if necessary.	TM 20-2-3 (para 1-20) LO 9-2350-222-12
	GO TO FRAME 3		

2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

a. Turret (Cont)

FRAME 3

Step	Item to be Inspected	Procedure	Reference
		WARNING • Stand clear of area of travel of manual traverse handle during following steps. A faulty no-bak could cause handle to spin during power operation. • Before elevating gun or traversing turret, make sure that adjacent area, both inside and outside tank, is clear of obstacles and operation of equipment will not be hazardous to personnel.	
		CAUTION When traversing or stopping turret, do not release palm switches until turret has stopped traversing.	
1.	Manual Traverse System	Operate traverse mechanism through its range in manual mode. Check for smooth and unrestricted operation. A second man should watch for loose mounting bolts. side bolts, top bolts. and sloppy bearing movement. If looseness is detected. notify support maintenance.	TM 9-2350-222-10
2.	Traversing Gear Box and Support Bearings	a. Check traverse gear box for proper oil level. Fill with lubricating oil if required.	LO 9-2350-222-12
		b. Check operation of gear box oil pump.	LO 9-2350-222-12
		c. Clean gear box breather if required.	LO 9-2350-222-12
		d. Lubricate turret traverse support bearings.	LO 9-2350-222-12
	GO TO FRAME 4		

2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

a. Turret (Cont)

FRAME 4

Step	Item to be Inspected	Procedure	Reference
1.	Power Traverse System	Operate traverse mechanism through its range in power mode. Check for smooth and unrestricted operations. A second man should watch for loose mounting bolts, side bolts. top bolts, and sloppy bearing movement. If looseness is detected notify support rnaintenance.	LO 9-2350-222-12
	WARNING Before elevating gun or traversing turret, make sure that adjacent area, both inside and outside tank. is clear of obstacles and operation of equipment will not be hazardous to personnel.		
2.	Gun Elevating and Hydraulic System	Operate gun elevating mechanism through its elevation and depression ranges in manual and power modes. Check for smooth and unrestricted operation. Second man should watch for loose mounting and sloppy bearing movement on the eye end of elevating mechanism. If looseness is detected, notify support maintenance.	TM 9-2350-222-10 TM 20-2-3 (para 1-26)
	WARNING Be sure gun is at maximum elevation before performing next step.		
3.	Equilibrator Accumulator	a. Check equilibrator for proper nitrogen pressure. Recharge pressure using accumulator charging device or reduce pressure as required.	TM 20-2-3 (para 1-26)
		b. When proper pressure is indicated, balance equilibrator.	TM 9-2350-222-10
	END OF TASK		

2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

b. Winch and Boom

TOOLS: Welding equipment

SUPPLIES: Grease (automotive and artillery)
Dry cleaning solvent
Corrosion preventive compound
Safety gloves

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedure to operate winch and boom
LO 9-2350-222-12 for procedures to:
Check and replenish winch oil level
Lubricate sheave, trunnions, and snatch block
TM 9-2350-222 -20-2-3 for procedures to:
Remove and install winch cable
Remove and install staylines
Remove and install boom sheave
TM 3-1040-266-20 and TM 3-1040-266-20P for welding procedures

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Winch GO TO FRAME 2	Check oil level. Replenish if necessary.	LO 9-2350-222-12

2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

b. Winch and Boom (Cont)

FRAME 2

Step	Item to be Inspected	Procedure	Reference
1.	Winch Cable and Drum	a. Remove and service cable.	TM 20-2-3 (para 62-2, 62-3)
		b. Check entire length of cable for loose strands, kinks, cuts, or broken wire. Replace entire cable if damage is evident.	
2.	Boom Trunnion Fittings	Grease trunnion with GAA.	LO 9-2350-222-1
3.	Stayline Clevis Pins and Cables	a. Check cable for loose strands, kinks, cuts, or broken wire. Replace cable if damage is evident.	TM 20-2-3 (para 62-4, 62-5)
		b. Check clevis pins for missing cotter pins.	
		c. Clean cables with dry cleaning solvent and coat with corrosion cleaning compound.	LO 9-2350-222-12
4.	Sheave	a. Check sheave and shaft for damage. Replace sheave or shaft if damaged.	TM 20-2-3 (para 66-2, 66-3)
		b. Check sheave for any missing cotter pins.	
		c. Turn sheave to check freedom of movement. Clean and lubricate with grease as required.	LO 9-2350-222-12
	GO TO FRAME 3		

2-2. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

b. Winch and Boom (Cont)

FRAME 3

Step	Item to be Inspected	Procedure	Reference
1.	Snatch Block	Grease snatch block with GAA.	LO 9-2350-222-12
2.	Retainer Guides (Upper and Lower)	Check retainer guide chains for damage. Repair chain by welding when necessary.	TM 3-1040-266-20 TM 3-1040-266-20P
3.	Boom Erecting Cylinder	While erecting boom check for hydraulic fluid in cylinder boot. If fluid is visible, expose piston rod by loosening boot. While stowing boom check for hydraulic fluid leakage around piston rod seal. If there is leakage replace cylinder.	Notify Support Maintenance
	END OF TASK		

2-3. 165-MM GUN SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE

PERSONNEL: One

GENERAL INSTRUCTIONS:

WARNING

Clear 165 mm gun before starting inspection.

NOTE

Operation under bad weather conditions, such as extreme temperature, dust, or mud, may require that servicing be done more often. Commanders are authorized to reduce the intervals between preventive maintenance services whenever conditions indicate the need (TM-10)

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Gun Tube	Check Equipment Log Book, Form 2408-4 for date of last borescope and pullover gauge reading. If 250 or more rounds have been fired since last borescope, or if any rounds have been tired since last pullover gauge reading, notify support maintenance.	TM 9-2350-222-10
	END OF TASK		

2-4. M150 COMBINATION GUN MOUNT SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE

PERSONNEL: One

GENERAL INSTRUCTIONS:

NOTE

Operation under bad weather conditions, such as extreme temperature, dust, or mud, may require that servicing be done more often. Commanders are authorized to reduce the intervals between preventive maintenance services whenever conditions indicate the need (TM-10).

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Replenisher Assembly	a. Check Equipment Log Book Form 2408-4, for date of last recoil exercise or for last firing date. If 6 months have elapsed since last exercise or tiring, notify support personnel to exercise gun.	
	END OF TASK		

2-5. M19 CUPOLA SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE

TOOLS: 9/16 in. socket head screw key (Allen wrench)
9/16 in. hex bit
9/16 in. socket (3/4 in. drive)
Torque wrench (3/4 in. drive)

SUPPLIES: Clean lint-free cloth
Drycleaning solvent
Grease (automotive and artillery)
Lubricating oil

PERSONNEL One

REFERENCES TM 9-2350-222-10 for procedure to:
operate hatch
Adjust azimuth lock assembly
Traverse cupola
TM 9-2350-222-20-2-3 for procedures to:
Remove, disassemble, assemble and install azimuth lock assembly
LO 9-2350-222-12 for lubricating instructions

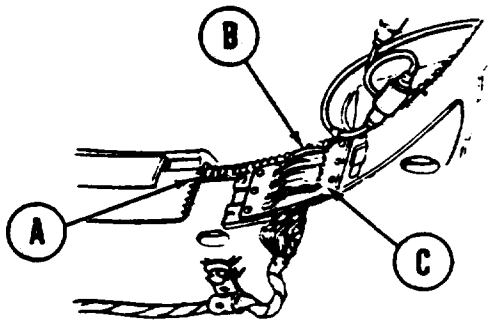
FRAME 1

STEP	ITEM TO BE INSPECTED	PROCEDURE	REFERENCE
		WARNING **Clear weapon before beginning inspection.**	
1.	Hatch Assembly	Lubricate lock with grease	LO 9-2350222-12
	Commander's Seat	Lubricate moving parts.	LO 9-2350-222-12
	GO TO FRAME 2		

2-5. M19 CUPOLA SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

FRAME 2

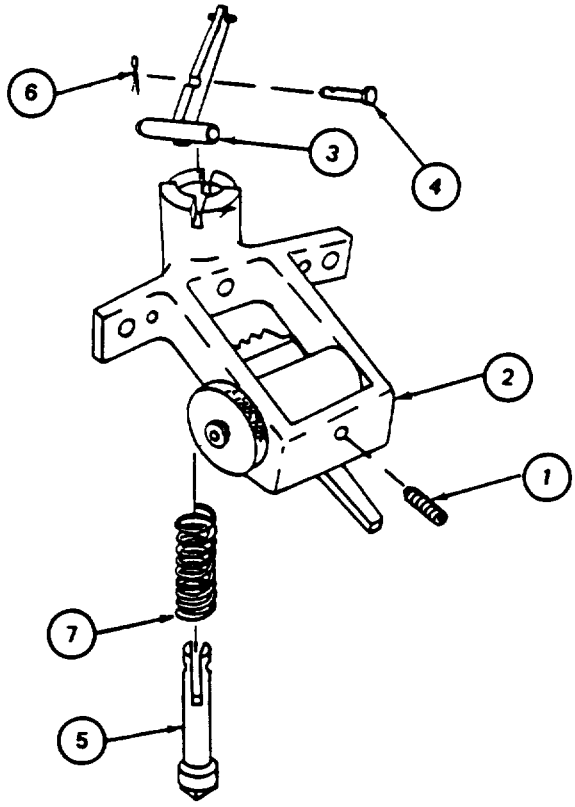
STEP	ITEM TO BE INSPECTED	PROCEDURE	REFERENCE
1.	Cupola Access Door (On Cradle)	Lubricate all hinges and latches.	LO 9-2350-222-12
2	Terminal Board Assembly (Cupola Slip Ring)	a. Remove and disassemble terminal board.	Notify support maintenance
		b. Check terminal board strips (A), contact boards (C) and springs (B) for wear, dirt, grease, foreign matter, corrosion and electrical burn marks. If strips (A) or springs (B) are dirty, clean with cleaning solvent PD-680.	
		slowly traverse cupola until terminal board stripe (A) just begin to engage left and right contact board springs (C).	
3.	Azimuth Lock Assembly	a. Remove and disassemble the azimuth lock assembly.	TM 20-2-3 (para 36-66, 36-68)
		b. Clean all component of the azimuth lock assembly with a cloth or sponge soaked in drycleaning solvent.	
		c. Wipe all parts dry with a clean cloth.	
	GO TO FRAME 3		



2-5. M19 CUPOLA SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

FRAME 3

Step	Item to be Inspected	Procedure	Reference
1.	Azimuth Lock Assembly (cent)	d. Check plunger assembly (1) for crossed or damaged threads. Replace if required. e. Check housing (2) and cam assembly (3) for cracks or breaks. Replace if required. f. Check pins (4) and (5) for damage. Replace if required. g. Replace cotter pin (6). h. Make sure spring (7) is not cracked or damaged. Replace if required.	
	GO TO FRAME 4		



2-5. M19 CUPOLA SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

FRAME 4

Step	Item to be Inspected	Procedure	Reference
		CAUTION The interlock portion of the azimuth lock assembly is located above the opening of the cupola plastic ball bearing race assembly. Do not allow dry cleaning solvent to enter the race assembly opening and contact the plastic ball bearings.	
1.	Azimuth Lock Assembly (cont)	i. Assemble and install azimuth lock assembly.	TM 20-2-3 (para 36-69, 36-67)
		j. Lubricate azimuth lock assembly with lubricating oil.	LO 9-2350-222-12
		k. Adjust azimuth lock assembly.	TM 9-2350-222-10
	GO TO FRAME 5		

2-5. M19 CUPOLA SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

FRAME 5

Step	Item to be Inspected	Procedure	Reference
1.	Cradle Assembly	Lubricate two trunnion bearing fittings with grease.	LO 9-2350-222-12
2.	Commander's Ammunition Box Latches	Lubricate latches with oil.	LO 9-2350-222-12
3.	Commander's Periscope Mount	Oil the commander's periscope mount and ballistic shield handle.	LO 9-2350-222-12
	GO TO FRAME 6		

2-5. M19 CUPOLA SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE (CONT)

FRAME 6

Step	Item to be Inspected	Procedure	Reference
1.	Azimuth Gear Box	Lubricate.	LO 9-2350-222-12
2.	Elevation	Lubricate elevation screw jack with grease.	LO 9-2350-222-12
	END OF TASK		

2-6. SIGHTING AND FIRE CONTROL SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE

SUPPLIES: Clean lint-free cloth
Cleaning solvent

PERSONNEL: One

REFERENCES: TM 750-116 for procedures to purge and charge instruments with dry nitrogen
LO 9-2350-222-12 for lubricating instructions
DA PAM 738-750 for procedure to record preventive maintenance forms

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Commander's Periscope M36	Purge and charge periscpe with dry nitrogen using Fire Control Purging Kit.	TM 750-116
2.	Loader's Periscope M37	Lubricate hinges and hatch mount.	LO 9-2350-222-12
3.	Gunner's Periscope M32C	Purge and charge periscope with dry nitrogen using Fire Control Purging Kit.	TM 750-116
4.	Infinity Sight 8635466	Purge and charge sight with dry nitrogen using Fire Control Purging Kit.	TM 750-116
5.	Telescope M105F and Telescope Mount M114	Purge and charge telescope with dry nitrogen using Fire Control Purging Kit.	TM 750-116
	END OF TASK		

2-7. SEMIANNUAL (180 DAY) PREVENTIVE MAINTENANCE

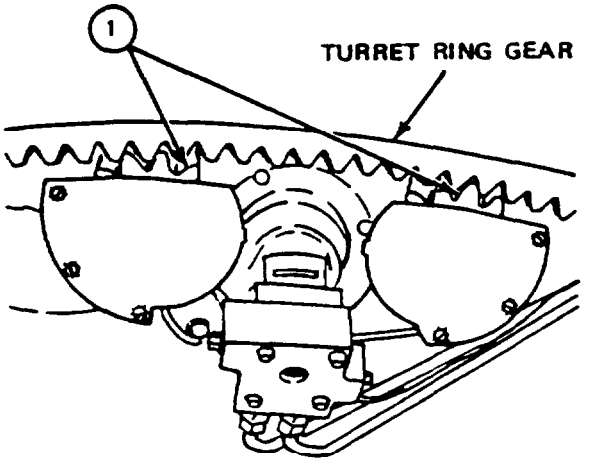
SUPPLIES: Lubricating oil
Pen

PERSONNEL: One

REFERENCES: LO 9-2350-222-12 for lubricating instructions
TM 9-2350-222-20-2-3 for procedure to check backlash of turret traverse pinion geat

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Traversing Gear Box Drain	a. Drain gear box and service oil screen and tee connector.	LO 9-2350-222-12
		b. Change oil.	LO 9-2350-222-12
2.	Turret Traversing Ring and Pinion Gear	a. Clean pinion gears (1).	TM 20-2-3 (para 42-13)
		b. Check backlash.	LO 9-2350-222-12
		c. Lubricate traversing ring and pinion gears.	
	END OF TASK		



2-8. TURRET AND WINCH ANNUAL PREVENTIVE MAINTENANCE

SUPPLIES: Grease
Hydraulic fluid

PERSONNEL: One

REFERENCES: LO 9-2350-222-12 for lubricating instructions
TM 9-2350-222-20-2-3 for procedures to:
Remove and install reservoir oil strainer
Clean and lubricate gun tube
Remove and install gun shield cover

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	Hydraulic Power Pack Drain	Drain hydraulic oil.	LO 9-2350-222-12
2.	Reservoir Oil Strainer	Remove, clean, check for damage. and install reservoir oil strainer.	TM 20-2-3 (para 37-6, 37-7)
3.	Hydraulic Oil	a. Check hydraulic oil for bubbles. If a large amount of bubbles are present, remove main accumulator for servicing by support maintenance.	TM 20-2-3 (para 44-2, 44-3) LO 9-2350-222-12
		b. Refill hydraulic oil.	
4.	Cannon Tube	a. Remove gun shield cover	TM 20-2-3 (para 34-2) LO 9-2350-222-12
		b. Clean and coat machined surfaces with GAA.	TM 20-2-3 (para 34-3)
		c. Wipe off excess grease and reinstall cover.	
5.	Winch Drain GO TO FRAME 2	Drain and change winch oil.	LO 9-2350-222-12

2-8. TURRET AND WINCH ANNUAL PREVENTIVE MAINTENANCE (CONT)

FRAME 2

Step	Item to be Inspected	Procedure	Reference
		WARNING Before relieving pressure in equilibrator make sure that gun is at its maximum elevation.	
1.	Equilibrator Reservoir Drain	a. Reduce equilibrator pressure by opening valve.	
		b. Remove reservoir.	TM 20-2-3 (para 47-4)
		c. Remove hand pump assembly.	TM 20-2-3 (para 47-2)
		d. Drain hydraulic fluid into a container.	TM 20-2-3 (para 1-27)
		e. Check hydraulic oil for bubbles. If a large amount of bubbles are present, remove main accumulator for servicing by support maintenance.	TM 20-2-3 (para 44-2, 44-3) TM 20-2-3 (para 47-6, 47-7) TM 20-2-3 (para 47-3, 47-5) TM 9-2350-22-10
		f. Change filter.	
		g. Install hand pump assembly and reservoir.	
		h. Fill reservoir with hydraulic fluid.	
		i. When proper pressure is indicated balance equilibrator.	
	END OF TASK		

2-8.1. TURRET TWO-YEAR PREVENTIVE MAINTENANCE

FRAME 1

Step	Item to be Inspected	Procedure	Reference
	M135 Cannon and M150/M150A1 Gun Mount END OF TASK	Have support maintenance perform Two-Year Maintenance for Cannon M135 and Gun Mount M150/M150Al.	

2-9. CONDITION MONITORED PREVENTIVE MAINTENANCE

CBR System

PERSONNEL: One

REFERENCE: TM 9-2350-222-20-2-3 for procedure to remove/install GPFU Filters

FRAME 1

Step	Item to be Inspected	Procedure	Reference
1.	GPFU Filters (one M19 particulate filter and two M18 filters) END OF TASK	Replace filter after a. Physical damage to filter b. Water immersion (all filters) c. Difficult air flow through filter	Hull Maintenance

2-10. WAR TIME PREVENTIVE MAINTENANCE

CBR System

PERSONNEL: One

REFERENCE: TM 9-2350-222-20-2-3 for procedure to remove/install GPFU Filters

FRAME 1

Step	Item to be Inspected	Procedure	Reference
		WARNING Unit commander or senior officer in charge of maintenance personnel who are assigned to remove and dispose of contaminated gas filters must prescribe necessary protective clothing to be worn (TM 10-277).	
		WARNING Unit commander or senior officer in charge of maintenance personnel who are assigned to remove and dispose of contaminated gas filters must prescribe necessary safety measures that must be followed including decontamination operation before new gas filters are installed (TM 3-220).	
1.	GPFU Filters (one M19 particulate filter and two M18 filters)	Redate all filters: a. When use of AC (Hydrogen Cyanide) or CK (Cyanogen Chloride) is expected. b. At the beginning of combat conditions. c. After 1,500 hours of operation in wartime conditions with chemical agents used d. After each AC (Hydrogen Cyanide) or CK (Cyanogen Chloride) attack. e. After 10,000 hours of operation in war time conditions with no chemical agents used.	Hull Maintenance
	END OF TASK		

CHAPTER 3

CHECKOUT, ALIGNMENT, AND ADJUSTMENT

SECTION 1: CHECKOUT PROCEDURES

3-1. CHECKOUT PROCEDURES INDEX

3-2. TURRET CHECKOUT

TEST EQUIPMENT Gunner's Quadrant M1A1

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Operate turret lighting
operate instrument lighting
operate armament
Traverse turret and elevate/depress gun in manual and power modes
TM 9-2350222-20-2-3 for procedure to check nitrogen precharge pressure
TM 9-1290-200-14&P for procedure to calibrate Gunner's Quadrant M1A1

EQUIPMENT CONDITION: Tank intact and no condition exists that could cause equipment damage when turret is operated (DA Form 2404 checked). Tank parked on level ground in an area where traversing turret or elevating/depressing gun will not be a possible danger to personnel or cause damage to other equipment.

GENERAL INSTRUCTIONS:

WARNING

Make sure all armament is unloaded before doing turret checkout

Before elevating gun or traversing turret, make sure that adjacent area, both inside and outside tank are clear of obstacles and operation will not be hazardous to personnel.

3-2. TURRET CHECKOUT (CONT)

FRAME 1

STEP	PROCEDURE	TROUBLESHOOTING REFERENCE
1.	Check operation of turret domelights (TM-10) at all stations for following:	
	a. Red and white lights come on and intensity is controlled using rheostat knob.	Para 7-1
	b. Red and white can be turned off.	Para 7-1
2.	Check operation of lighting of following instruments:	
	a Gunner's periscope M32/M32CEl reticles (daylight, passive, and unity power window) light and intensity controlled by rheostat on infinity eight (TM-10).	Para 5-4
	b. Telescope M105F reticle (use light source control 8619165) (TM-l0).	Para 5-2
	c. Telescope M106F reticle (use instrument light M50) TM-10). If telescope reticle does not lights replace instrument light.	
	d. Elevation quadrant M13A3 light and intensity controlled by rheostat on light source control 8620860 (TM-l0).	Para 5-2
	e. Azimuth indicator (M28E2) scale lights (TM-10).	Para 5-1
	GO TO FRAME 2	

3-2. TURRET CHECKOUT (CONT)

FRAME 2

Step	Procedure	Troubleshooting Reference
1.	Check operation of 7.62 mm machine gun electrical firing circuits and note following (TM-10):	
	a. MACHINE GUN indicator light comes on.	Para 3-5
	b. Click of gun solenoid is heard when triggers on gunner's handles, manual elevating handle, or commander's control are pressed.	Para 3-1
	c. No click can be heard while holding commander's palm switch and pressing triggers on gunner's handles or manual elevating handle (commander's override operation).	Para 3-l
	GO TO FRAME 3	

3-2. TURRET CHECKOUT (CONT)

FRAME 3

Step	Procedure	Troubleshooting Reference
1.	Do 165-mm gun electrical check using firing circuit tester (TM- 10) and note following:	
	a. MAIN GUN indicator light comes on.	Para 3-5
	b. Tester buzzes when triggers on gunner's handles, manual elevating handle, or commander's handle are pressed.	Para 3-3
	c. Tester does not buzz while holding commander's palm switch and pressing triggers cm gunner's handles or manual elevating handle (commander's override operation).	Para 3-3
	d. Tester buzzes for short duration using emergency firing device (blasting machine).	Para 3-4
	e. Tester does not buzz when loader's safety switch is set to SAFE and any trigger is pressed or blasting machine handle is turned.	Remove and replace safety switch TM 20-2-3 (para 31-1)
2.	Check operation of turret ventilating blower and gas particulate heater for following:	
	a. Turret ventilating blower operates and pressurizes air inside turret (TM-10).	Para 6-3
	b. Air is heated and indicator light comes on when rheostat is moved from OFF. (Check operation at all station.) (TM-10)	P ara 6-1, 6-2
	GO TO FRAME 4	

3-2. TURRET CHECKOUT (CONT)

FRAME 4

Step	Procedure	Troubleshooting Reference
1.	Set CUPOLA ELECTRICAL POWER CONTROL switch to ON and check for the following:	
	a. Commander's periscope M36 daylight reticle light and intensity controlled by light source control (TM-10).	Para 5-3 (without Commander's Control Panel installed Para 5-5 (with Commander's Control Panel installed)
	b. If a Commander's Control Panel is installed, POWER ON lamp is lit.	Para 5-5
	c. Check operation of caliber .50 machine gun electrical firing circuits and note following:	
	NOTE Do steps (1) and (4) on tanks without a Commander's Control Panel. Do steps (2), (3), and (5) on those tanks equipped with a Commander's Control Panel.	
	(1) Click of gun solenoid is heard when trigger is pressed (safety switch ON).	Para 3-2
	(2) GUN READY lamp is lit and click of gun solenoid is heard when trigger is pressed (safety switch ON, LAST ROUND OVERRIDE switch on).	Para 3-6
	(3) GUN READY lamp lights when the last round sensing switch is pushed down (safety switch ON. LAST ROUND OVERRIDE switch OFF).	Para 3-6
	(4) Click of gun solenoid is not heard when trigger is pressed (safety switch OFF).	Remove and replace safety switch TM 20-2-3 (para 36-27, 36-28)
	(5) Click of gun solenoid is not heard when trigger is pressed (safety switch OFF, LAST ROUND OVERRIDE switch on).	Para 3-6
2.	Check turret traversing and gun elevation in manual mode (TM-10) for following:	
	a. Turret traverses left and right smoothly without interruption.	Para 4-1
	b. Perform calibration of Gunner's Quadrant M1A1 (TM 9-1290-200-14&P).	
	c. Gun elevates and depresses smoothly without interruption. As gun passes zero (while elevating), gun elevates 10 mils or more in one revolution of manual elevating handle.	Para 4-2
	GO TO FRAME 5	

3-2. TURRET CHECKOUT (CONT)

FRAME 5

Step	Procedure	Troubleshooting Reference
1.	Check operation of hydraulic power supply (TM-10) for following:	
	a. ELEV/TRAV POWER light comes on.	Para 4-4
	b. Power pack motor shuts off between 1200 to 1250 psi and comes on at 900 to 950 psi.	Para 4-1
	c. Accumulator nitrogen precharge pressure is between 500 to 550 psi (TM 20-2-3, para 1-19).	Para 4-1
	d. Reservoir oil level shows FULL at zero pressure.	
	WARNING All personnel should be in a position that will allow unexpected turret and gun motion without causing injury. Movement of the gunner's control handles will cause gun movement in elevation, even though the palm switch on the gunner's control handles is not pressed.	
2.	Check turret traverse and gun elevation operation in power mode (TM-10) for following	
	a. Turret cannot be traversed without pressing palm switches (safety check).	Para 4-1
	b. Turret traverses at a low speed that is smooth with a travel rate of at least 30 mils in one minute.	Para 4-1
	c. Gun elevates/depresses at a low speed that is smooth with a travel rate of at least 30 mils in one minute.	Para 4-2
	d. Gun automatically elevates to zero (+17) mils to clear rear deck between 1820 and 1920 mils and again depresses between 4500 and 4600 mils when traversing from 0 mils.	Para 4-5
	GO TO FRAME 6	

3-2. TURRET CHECKOUT (CONT)

FRAME 6

Step	Procedure	Troubleshooting Reference
2. cent	e. Turret traverses at a high speed rate of 400 mils per second (6400 mils in 45 or less seconds).	Para 4-1
	f. Gun elevates/depresses at a high speed rate of 71 mils per second (350 mils in 5 seconds or less).	Para 4-2
	g. Turret and gun are controllable at different speeds from both gunner's and commander's stations.	Para 4-1, 4-2
	h. Turret cannot be traversed and gun cannot be elevated/depressed from gunner's station while pressing commander's palm switch (commander's override).	Para 4-1, 4-2
	END OF TASK	

3-3. WINCH AND BOOM CHECKOUT

SUPPLIES: Safety gloves
Lifting load less than 17,500 pounds

PERSON N EL: Two

REFERENCES: TM 9-2350-222-10 for procedures to operate winch and boom

EQUIPMENT CONDITION: Tank parked in area where:
Tank is level
Erection of boom will not be a hazard to personnel or equipment
Vehicle engine and hydraulic pump are in operating condition
Hydraulic system has no damage or leakage

FRAME 1

Step	Procedure	Troubleshooting Reference
1.	Check the following control levers for smooth movement without binding or looseness (TM-10). a. Selector control valve lever (hull) b. Winch control valve lever c. Boom control valve lever d. Winch gear shift lever **GO TO FRAME 2**	

3-3. WINCH AND BOOM CHECKOUT (CONT)

FRAME 2

STEP	PROCEDURE	TROUBLESHOOTING REFERENCE
1.	Check winch and boom hydraulic oil reservoir for full oil level (TM-10).	
2.	Perform the following operations (TM-10) a. Set reservoir suction shutoff valve open b. Set selector control valve lever to NEUTRAL c. Start engine d. Set HYDRAULIC PUMP switch to ON	
3.	Insure that red hydraulic falter indicators are not showing (TM-10).	
4.	Check that boom moves smoothly and at proper rate with boom control valve lever (TM-10). **CAUTION** Lifting capacity is 17,500 pounds with single part line rigging.	Para 4-3
5.	With a load suspended from cable check that winch drum raises and lowers smoothly and at proper rate with winch control valve lever (TM-10).	Para 4-3
6.	Check that winch brake can hold a load suspended.	
7.	Boom moves steadily and does not drop rapidly after passing top dead center when stowing boom with winch (TM-10).	Para 4-3
8.	Perform the following boom stowing operations (TM-10): a. Secure staylines in J-hooks b. Secure boom in travel locks c. Set HYDRAULIC PUMP switch to OFF d. Stop engine. **END OF TASK**	

3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C6/M32CE1-RAMP METHOD

NOTE

This procedure can be performed using the M32C or M32CE1 periscope. Whenever the M32C is mentioned it will also be in reference to the M32CE1. Only the M32C periscope is shown.

TEST EQUIPMENT: Gunner's Quandrant M1A1

SUPPLIES: Black thread
Paper
Pencil
Tape or strap

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Insert breech boresight into breech chamber
Remove/install gunner's periscope heed
Open and close breech
Manually traverse turret and elevate/depress gun
TM 9-1290-200-14&P for procedures to calibrate and use Gunner's Quadrant M1A1

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Periscope	FO-1	1
Gunner's Control Box	FO-1	2

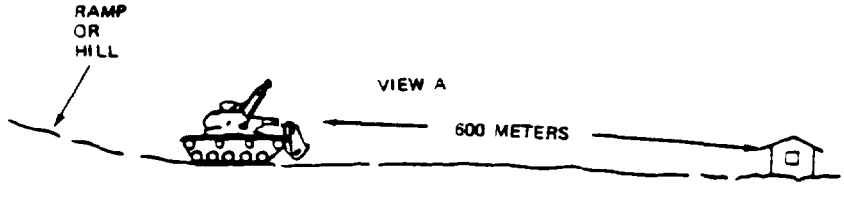
EQUIPMENT CONDITION: Sighting system components installed

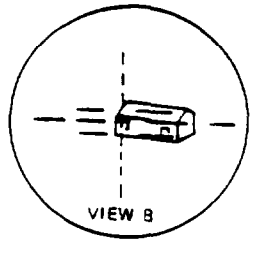
GENERAL INSTRUCTIONS: When placing gun on target, move gun to target from low to high and from right to left to keep backlash out of sighting system. If required gun position is passed (over travel), move gun below or to the right of target and again move gun to target.

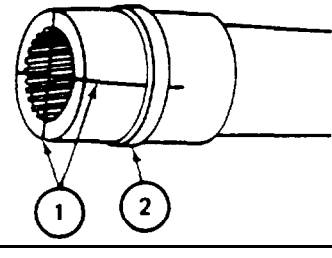
3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 1

Step	Procedure
1.	Have driver position tank on comparatively level ground, with rear of tank toward a ramp or hill (view A).
	NOTE The ramp or hill should have enough grade to allow later positioning of the tank to about 267 mils from horizontal. The ramp or hill should also be located about 600 meters from a suitable target such as a straight line of trees, a building, or a post. An imaginary line from the line-of-sight of the gun to the target should be near horizontal to avoid a large gun elevation angle when the tank is later positioned on the ramp or hill.
2.	Place black thread (1) over witness lines on muzzle of gun tube to form a cross. Attach thread with tape or strap (2).
3.	Using gunner's periscope, select a target with clearly defined right angles as near 600 meters as possible (view B). (Range, if possible, should be surveyed.)
4.	Depress main gun with manual elevation hand pump and continue pumping until it is hard to turn (TM-10).
5.	Perform calibration of Gunner's Qutadrant M1A1 (TM 9-1290-200-14&P).
6.	Check gunner's periscope daylight reticle for parallax (para 3-5).
	GO TO FRAME 2



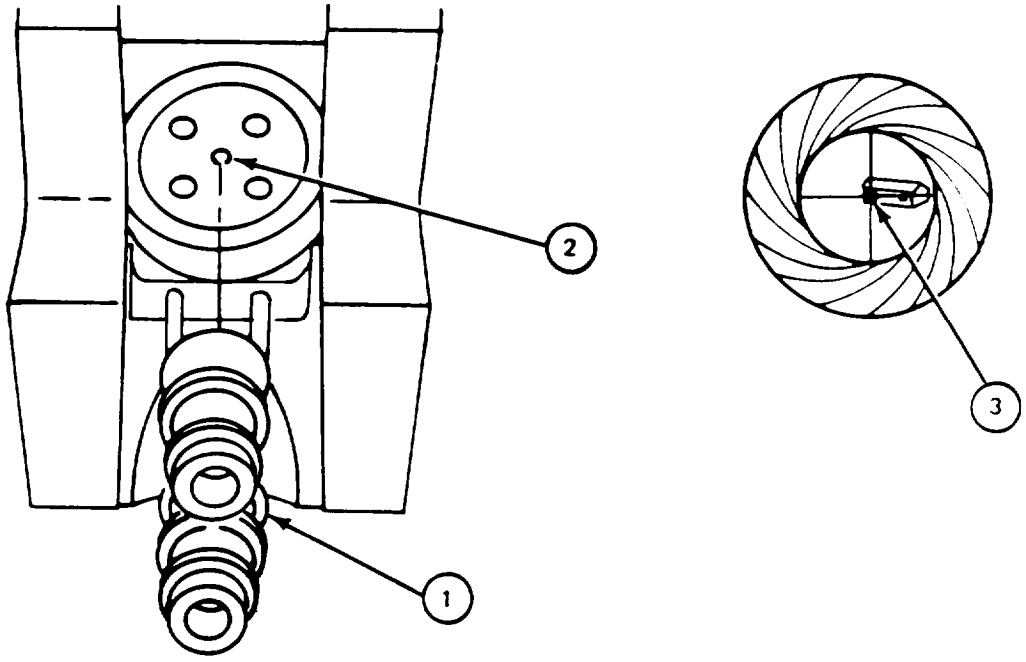




3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 2

Step	Procedure
1.	Insert breech boresight 8769218 into breech chamber (TM-10).
2.	Place right side of M17A1 binoculars (1) in line with breech boresight pin hole (2) to look at target.
3.	While looking through breech boresight hole (2) with binoculars (1), manually position gun without over travel so that cross formed by threads (3) on gun muzzle is lined up with target aiming point (TM-10).
	GO TO FRAME 3



3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

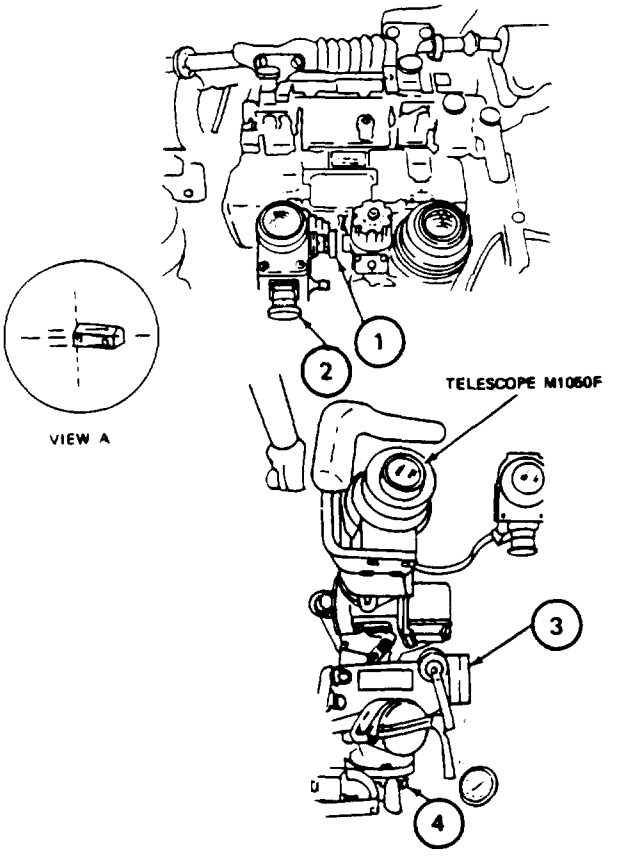
FRAME 3

Step	Procedure
1.	While looking through daylight eyepiece of gunner's periscope, adjust boresight knobs (1) and (2) to line up aiming cross of reticle on same aiming point as gun (view A).
2.	Turn slip scales of boresight knobs (1) and (2) to setting of 4.
3.	While looking through telescope eyepiece, adjust elevation and deflection boresight knobs (3) and (4) until aiming cross of reticle is on same aiming point as gun (view A).
4.	Turn slip scale of boresight knobs (3) and (4) to settings of 3.

NOTE

At this point a boresight reference has been set up between the gun and periscope.

GO TO FRAME 4

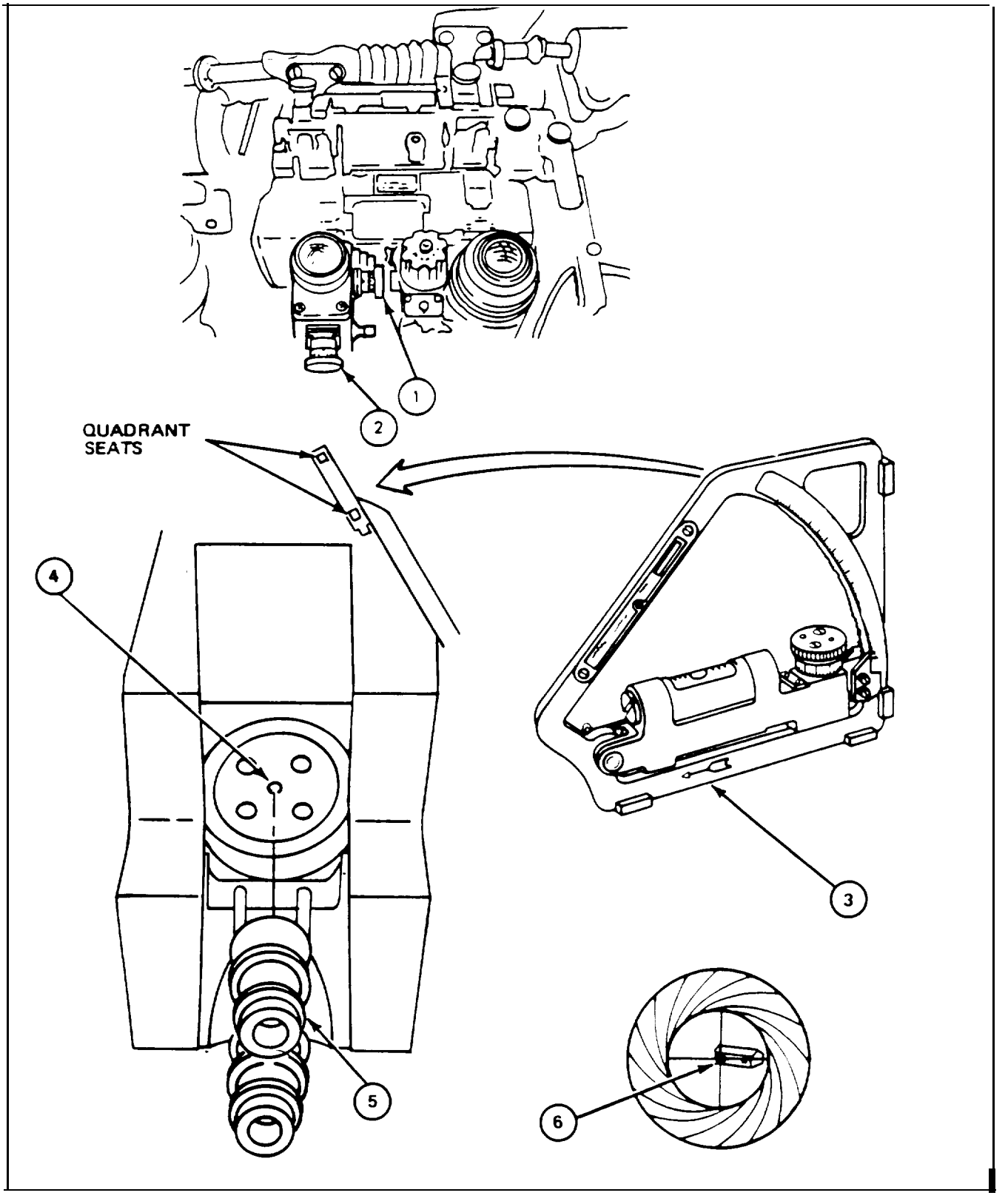


3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 4

Step	Procedure
	NOTE Always lay the gun and reticle, when rotating boresight knobs (1) and (2), from low to high and from right to left without overtravel. Recheck sight retitles to insure that reticle movement did not occur after slipping scales on boresight knobs. If movement occurred after boresight knobs are locked, relay retitles and recheck for movement. If movement of periscope reticle exceeds 0.1 mil, notify support maintenance. (Thickness of reticle lines equal 0.1 mil.)
1.	Index 89 mils on the gunner's quadrant M1A1 (3) and place quadrant on breech ring quadrant seats with Line-of-Fire arrow facing breech end of 165-MM gun.
	NOTE Hold quadrant in place when tank is being moved.
2.	Have driver back tank up ramp or hill until the bubble in gunner's quadrant M1A1 (3) is approximately centered.
3.	Stop tank and shut down power plant.
4.	W bile looking through breech boresight hole (4) with binoculars (5), manually position gun without over travel so that cross formed by threads (6) on gun muzzle is lined up with target aiming point (TM-10).
	GO TO FRAME 5

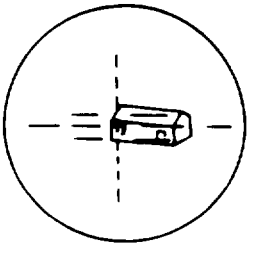
3-4. SYNCHRONIZATION AND BACKLASH- CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)



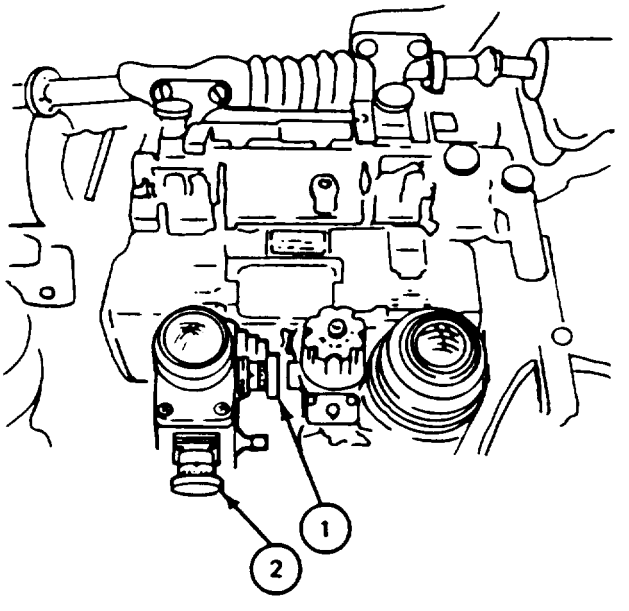
3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 5

Step	Procedure
1.	While looking through daylight eyepiece of gunner's periscope, adjust boresight knobs (1) and (2) until aiming cross of reticle is on same aiming point as gun (view A).
2.	Write down settings of boresight knobs (1) and (2).
3.	Repeat frame 4 and steps 1 and 2 above for gun elevation angles of 178 and 267 mils as tank is on the way up the ramp.
4.	If boresight knob readings exceed 0.3 mil in this boresight check continue with frame 6.
5.	If boresighting, synchronization, and synchronization adjustment are within tolerance, continue with backlash check. GO TO FRAME 11.
	GO TO FRAME 6



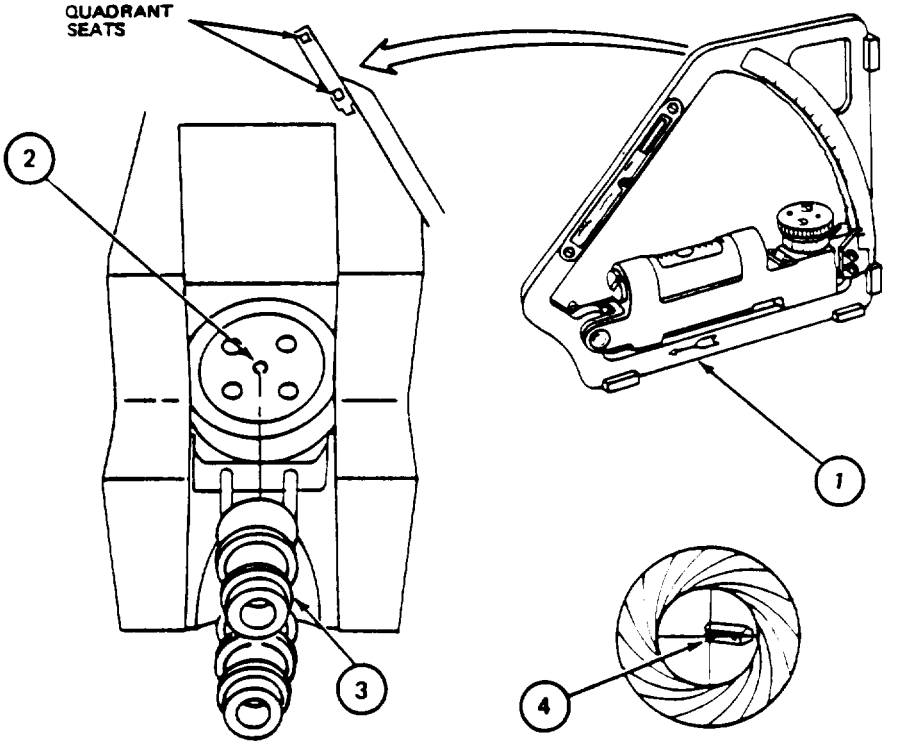
VIEW A



3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 6

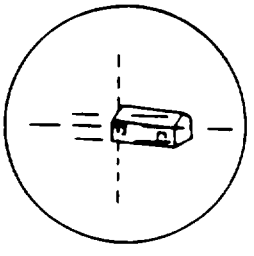
Step	Procedure
1.	Have driver position tank down ramp or hill to approximately original position.
2.	Manually lower gun to about 20-35 mils below zero mils (TM-10)
3.	Set zero mils on gunner's quadrant M1A1 (1).
4.	Place gunner's quadrant M1A1 (1) on gun breech quadrant seats with Line-of-Fire facing muzzle.
5.	Manually elevate gun without over travel until bubble on gunner's quadrant M1A1 (1) is centered (TM-10).
6.	While looking through breech boresight hole (2) with binoculars (3), manually position gun without over travel so that cross formed by threads (4) on gun muzzle is lined up with target aiming point (TM-10).
	GO TO FRAME 7



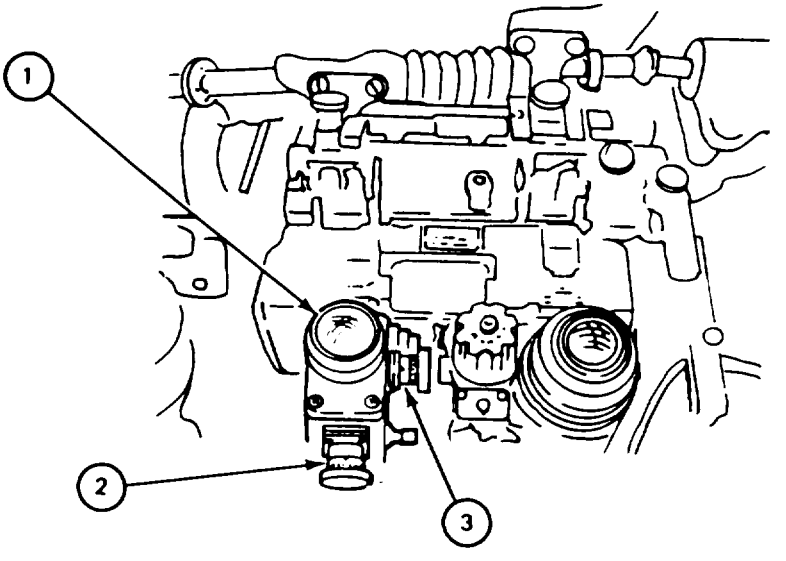
3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 7

Step	Procedure
1.	While looking through daylight eyepiece (1) of gunner's periscope, adjust boresight knobs (2) and (3) to align aiming cross of reticle on same aiming point as gun (view A).
2.	Write down settings of boresight knobs (2) and (3).
	GO TO FRAME 8



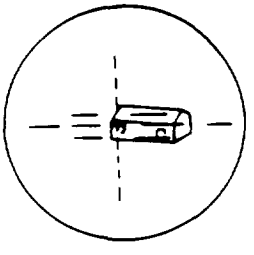
VIEW A



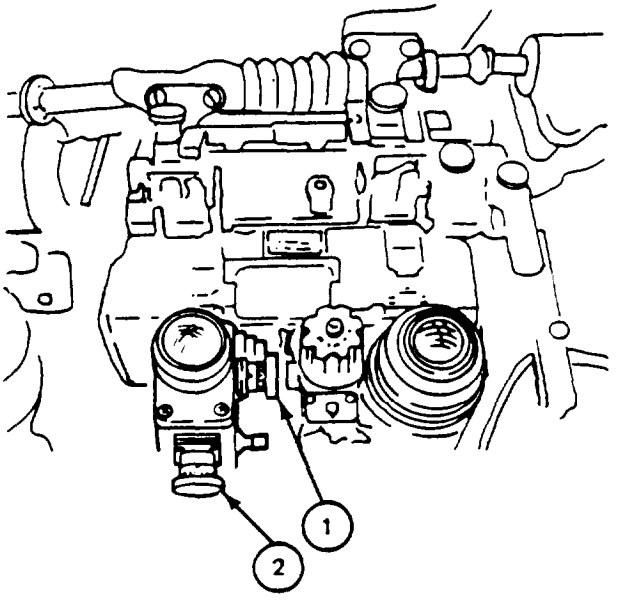
3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 8

Step	Procedure
1.	Check boresight knob readings taken at the different gun positions. If deflection readings exceed 0.3 mil return to level ground and repeat frames 1 through 7 and this step.
2.	If deflection reading on gunner's periscope deflection slip scale (1) still exceeds 0.3 mil replace gunner's periscope head (TM-10) and repeat frames 1 through 7 and step 1 above. If deflection error still exceeds 0.3 mil notify support maintenance. If deflection error was within 0.3 mil continue to step 3.
3.	If elevation reading on gunner's periscope elevation slip scale (2) exceeds 0.3 mil continue to step 4. If elevation error was within 0.3 mil go to frame 9.
4.	Adjust eccentrics on 11 inch arm (para 3-7) until aiming cross of gunner's periscope daylight reticle is on same aiming point as gun (view A).
	GO TO FRAME 9



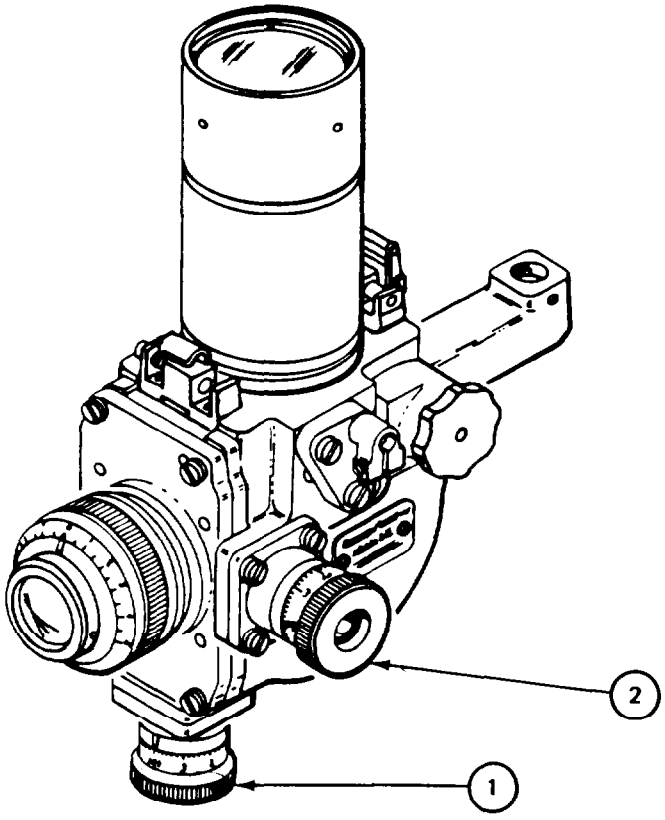
VIEW A



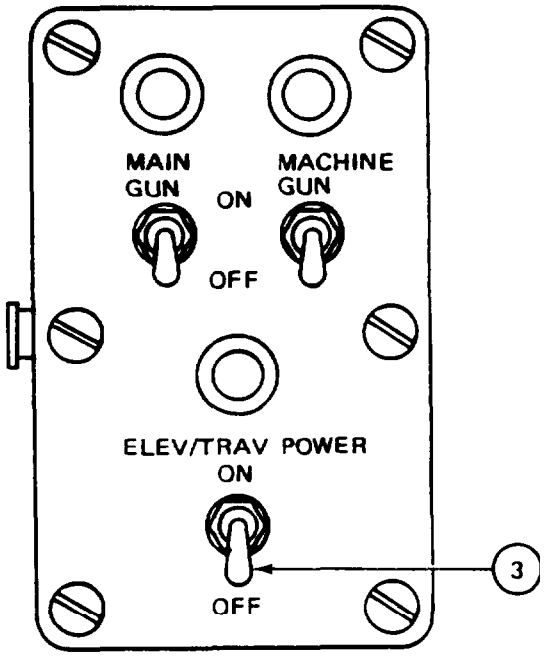
3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 9

Step	Procedure
1.	Repeat frames 1 through 3 to boresight gun to periscope.
2.	While looking through daylight eyepiece of gunner's periscope, rotate boresight knobs (1) and (2). Reticle aiming cross should move a minimum elevation of 2 mils up, 5 mils down, and a minimum deflection of 4 mils left, and 4 mils right. If reticle aiming cross fails to move the minimum amount of deflection, notify support maintenance.
3.	If reticle aiming cross fails to move the minimum amount of elevation adjust eccentrics on 11 inch arm (para 3-7) until aiming cross of gunner's periscope daylight reticle is on same aiming point as gun.
4.	Insure that Gunner's Panel ELEV/TRAV POWER switch (3) is set to OFF.
	GO TO FRAME 10



GUNNER'S PERISCOPE DAYLIGHT RETICLE

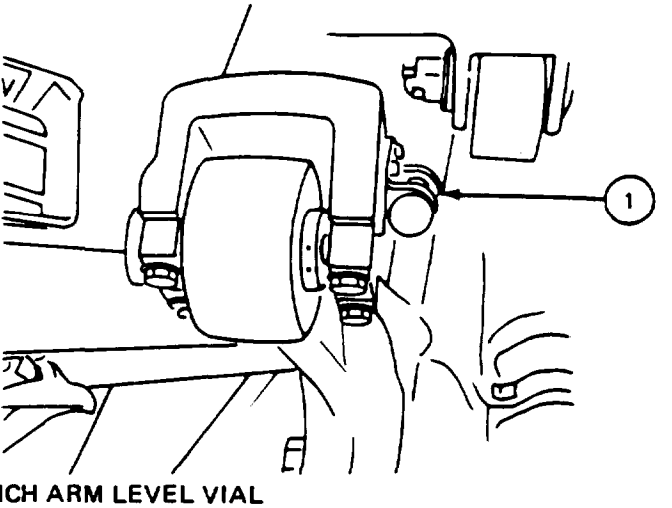


GUNNER'S CONTROL BOX

3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 10

Step	Procedure
1.	Level main gun using gunner's quadrant M1A1.
	NOTE Each level vial division mark is equal to approximately 1.5 mils.
2.	Check level vial on 11-inch arm (1). If bubble in level vial is not within the three division marks on the vial, notify support maintenance.
3.	If boresighting, synchronization, and synchronization adjustment are within tolerance, continue with backlash check (frame 11).
	GO TO FRAME 11

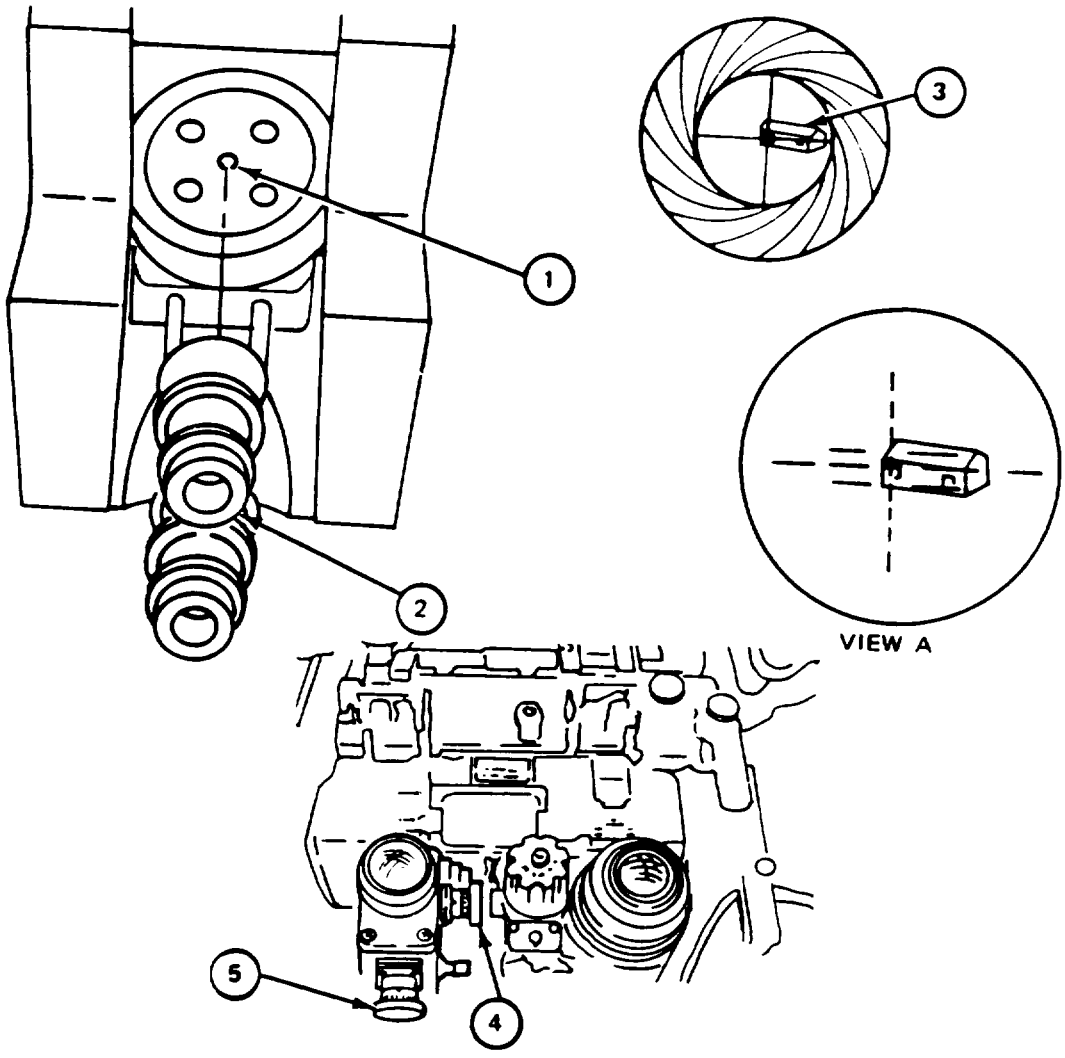


11 INCH ARM LEVEL VIAL

3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 11

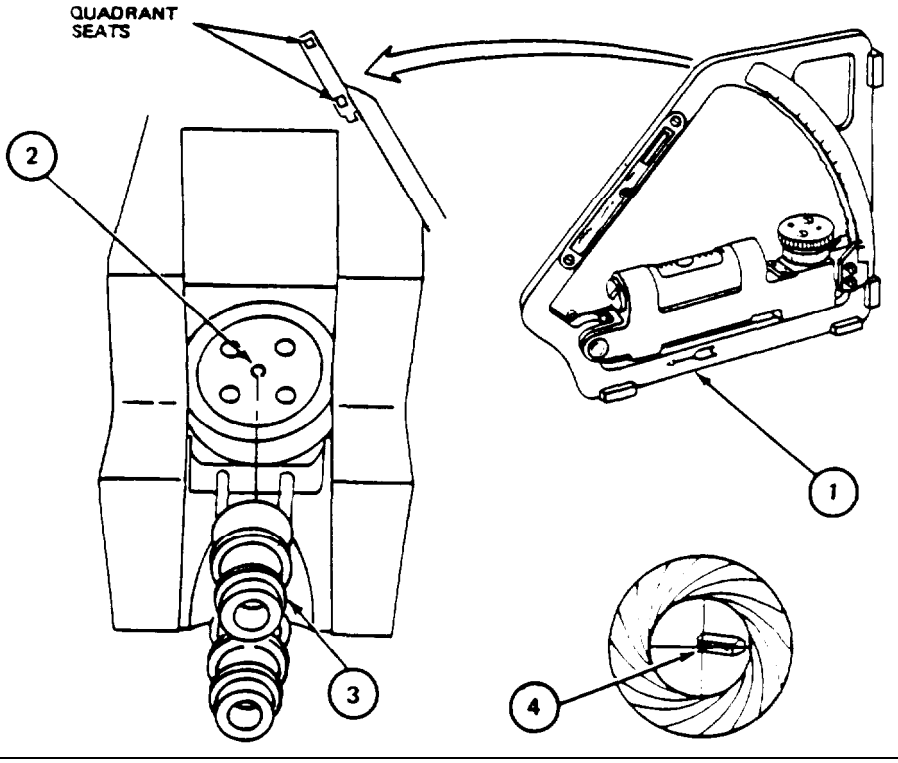
Step	Procedure
1.	Have driver return tank to level ground.
2.	While Looking through breech boresight hole (1) with binoculars (2), lower gun below target then slowly raIse gun (without over travel) until cross formed by threads (3) on gun muzzle is lined up with target aiming point (TM-10).
3.	While looking through daylight eyepiece of gunner's periscope, adjust boresight knobs (4) and (5) to align aiming cross of reticle on same aiming point as gun (view A).
4.	Write down settings of boresight knobs (4) and (5).
	GO TO FRAME 12



3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 12

Step	Procedure
1.	Measure elevation angle of gun using M1A1 gunner's quadrant (1) placed on gun breech quadrant seats.
2.	Add 89 mils to angle measured in step 1 and set this sum on gunner's quadrant M1A1.
3.	Place gunner's quadrant M1A1 (1) on gun breech quadrant seats.
4.	Manually elevate gun without over travel until bubble on gunner's quadrant M1A1 is centered (TM-10).
5.	While looking through daylight eyepiece of gunner's periscope, have driver back tank up ramp or hill until periscope reticle is approximately centered on target aiming point, or slightly below.
6.	W bile looking through breech boresight hole (2) with binoculars (3), manually position gun without over travel so that cross formed by threads (4) on gun muzzle is aligned with target aiming point (TM-10).
	GO TO FRAME 13

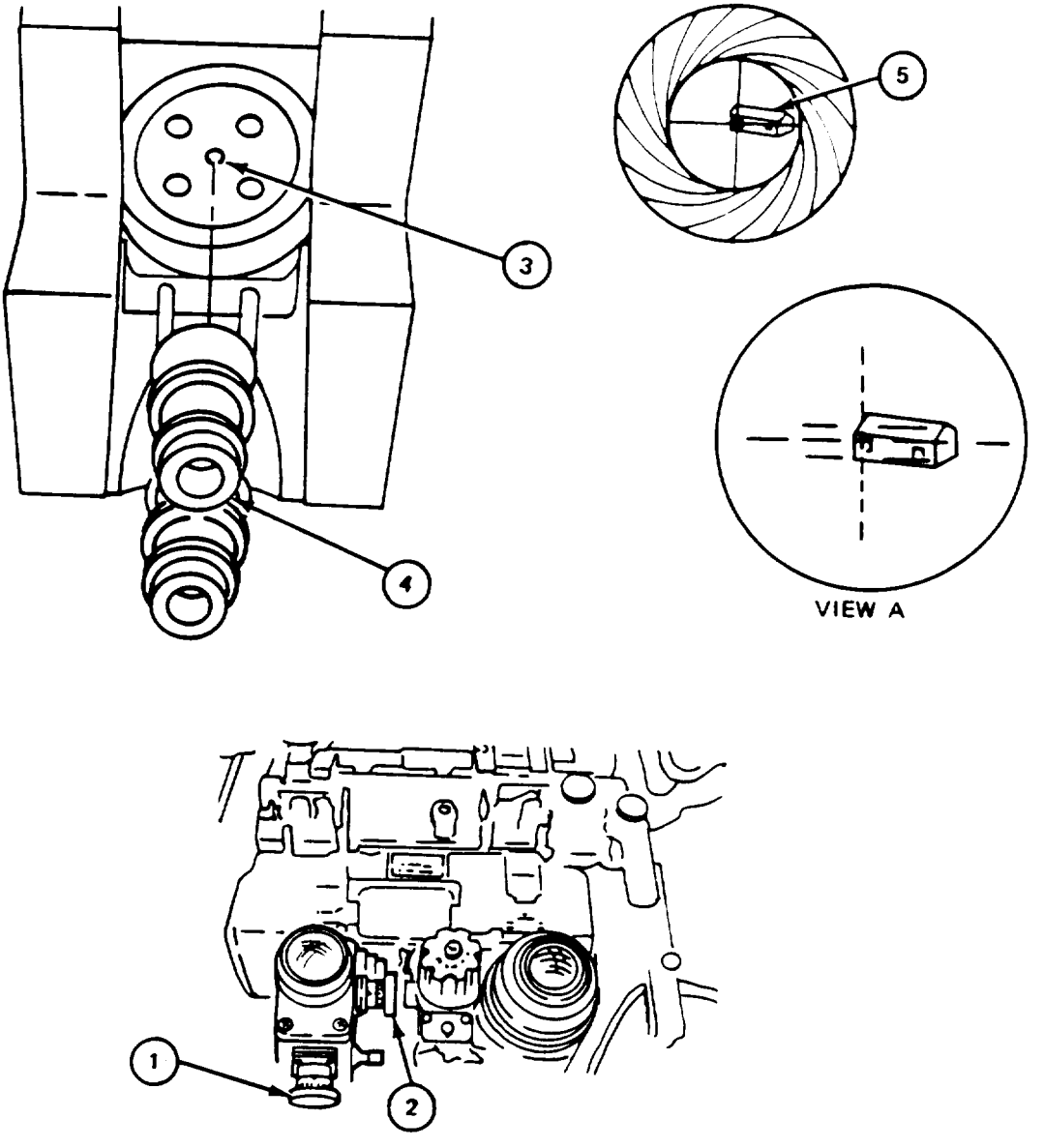


3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 13

Step	Procedure
1.	While looking through daylight eyepiece of gunner's periscope, adjust boresight knobs (1) and (2) to align aiming cross of reticle on same aiming point as gun (view A).
2.	Write down settings of boresight knobs (1) and (2).
3.	Have driver return tank to level ground.
4.	While looking through breech boresight hole (3) with binoculars (4), slowly lower gun (without over travel) until cross formed by threads (5) on gun muzzle is lined up with target aiming point (TM-10).
5.	Repeat steps 3 and 4 in frame 11 to check backlash of gun and sight for gun positioning from high to low.
6.	Subtract boresight knob readings gotten when positioning gun from low to high from those gotten when positioning from high to low. The difference is the backlash error.
7.	Repeat frame 12 and steps 1 through 6 above for gun elevation angles of 178 and 267 mils.
8.	Check boresight readings taken at the different gun positions. If backlash error computed in step 6 exceeds 0.3 mil for periscope at any gun position, notify support personnel. If readings are within tolerance, go to frame 14.
	GO TO FRAME 14

3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)



3-4. SYNCHRONIZATION AND BACKLASH CHECK OF 165 MM GUN WITH GUNNER'S PERISCOPE M32C-RAMP METHOD (CONT)

FRAME 14

Step	Procedure
1.	Return periscope boresight knobs to zero. Return periscope slip scales to normal settings (TM-10).
2.	Remove breech boresight 8769218 from breech chamber (TM-10).
3.	Have driver return tank to level ground.
4.	Remove boresight threads from gun muzzle.
	END OF TASK

3-5. PARALLAX CHECK FOR GUNNER'S PERISCOPE M32C/M32CE1

PERSONNEL: One

REFERENCES: TM 9-2350-222-10 for procedures to:
Manually traverse turret and elevate/depress gun
Operate gunner's periscope M32C/M32CE1

EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Periscope	FO-1	1

EQUIPMENT CONDITION: Sighting system components installed

GENERAL INSTRUCTIONS: When placing gun on target, move gun to target from low to high and from right to left, to keep backlash out of sighting system. If required gun position is passed (over travel), move gun below or to right of target and again move gun to target.

FRAME 1

STEP	PROCEDURE
1.	While looking through daylight eyepiece of gunner's periscope , manually move gun until reticle aiming cross is Layed on some target 600 meters out (TM-10).
2.	Adjust diopter on periscope for sharpest focus (TM-10).
	NOTE Parallax is the presence of apparent movement between reticle and the target aiming point when the observer's head is moved while viewing through eyepiece.
3.	With head against brow pad and looking directly into reticle, move the head approximately 1/4 inch up, down, left, and right.
4.	If there is any apparent movement (parallax) between periscope reticle and target aiming point perform parallax adjustment (para 3-8).
	END OF TASK

3-5.1. GRENADE LAUNCHER CHECKOUT PROCEDURE

TEST EQUIPMENT: Multimeter

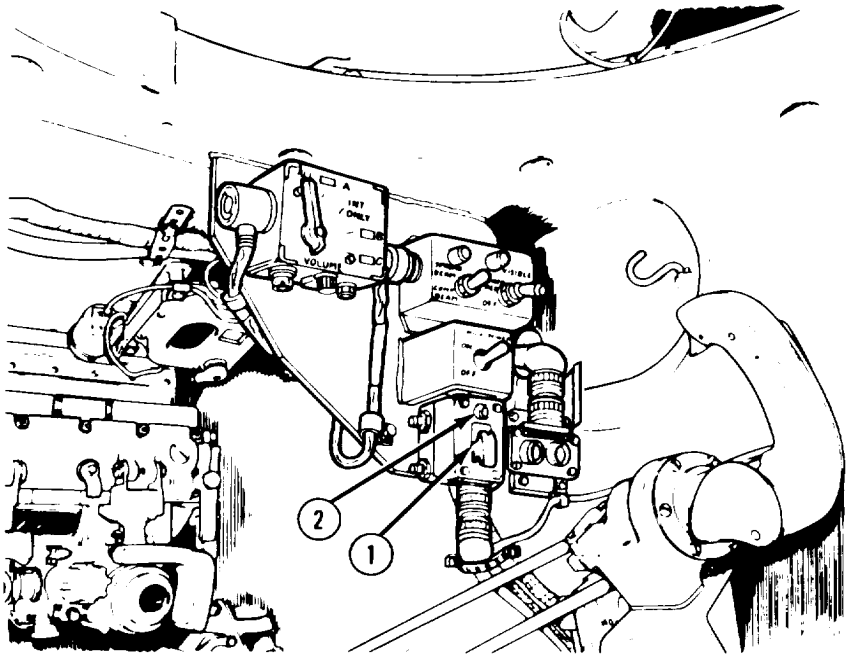
PERSONNEL: Two

REFERENCES: ETM 643-09 -9400R/JPG for procedure to operate multimeter
TM 9-2350-215-20-2-2 for abnormal response

GENERAL INSTRUCTIONS:

WARNING

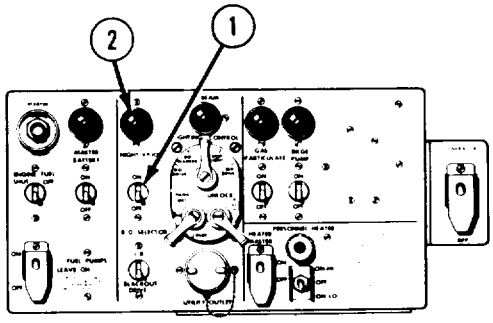
Ensure that M239 Grenade Dischargers are not loaded before performing checkout. Ensure that grenade launcher system power switch (1) is in the OFF position (power light (2) is not on) before unloading grenades from discharger. Never place any part of body in front of discharger when unloading grenades from a discharger.



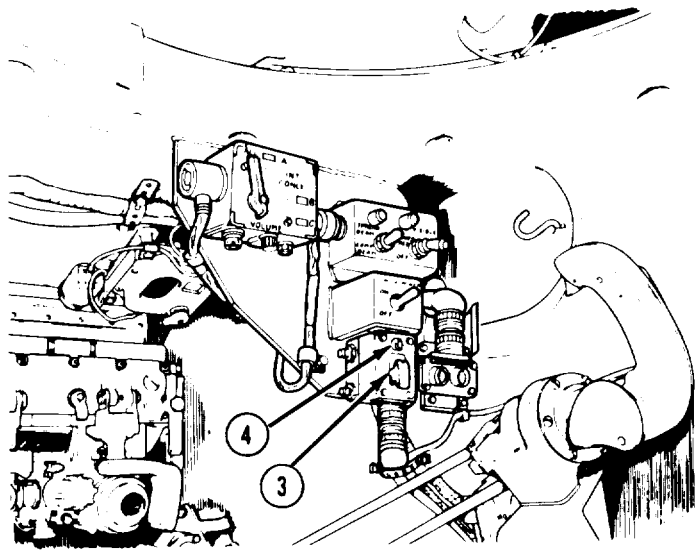
3-5.1 GRENADE LAUNCHER CHECKOUT PROCEDURE (CONT)

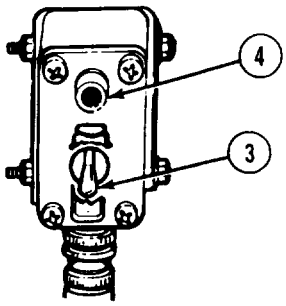
FRAME 1

STEP	PROCEDURE	NORMAL RESPONSE	TROUBLESHOOTING REFERENCE (TM-20-2-2)
1.	Set MASTER BATTERY switch (1) on Master Control Panel to ON.	MASTER BATTERY lamp (2) on Master Control Panel lights.	Para 7-4
2.	Set POWER switch (3) on Power Control Box to OFF.		
3.	Set POWER switch (3) on Power Control Box to ON.	Indicator lamp (4) lights.	Para 7-4
		CAUTION	
		Do not short circuit positive test probe of multimeter to vehicle or discharger during following steps.	
	GO TO FRAME 2		



MASTER CONTROL PANEL



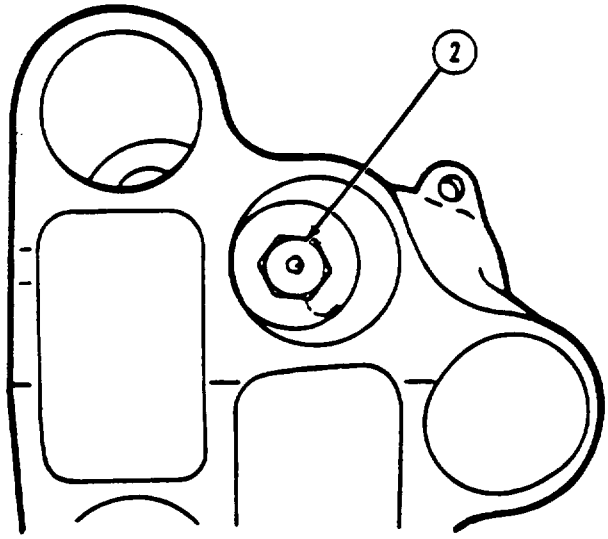


3-5.1 GRENADE LAUNCHER CHECKOUT PROCEDURE (CONT)

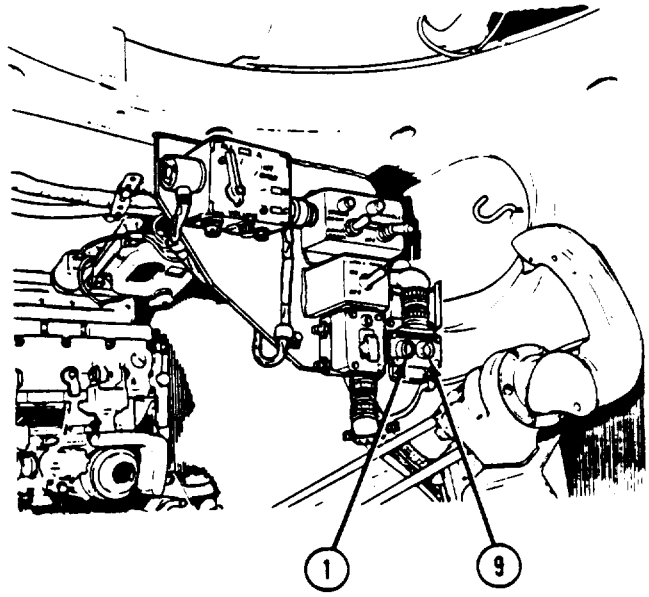
FRAME 2

STEP	PROCEDURE	NORMAL RESPONSE	TROUBLESHOOTING REFERENCE (TM-20-2-2)
1.	Press and hold FIRE SMOKE LEFT switch (1) on Pushbutton Unit while measuring voltage on left discharger firing pin (2) using multimeter.	+18V to +30V is present on grenade firing pin of left discharger barrels (3), (4), and (5). No voltage is present on grenade firing pin of left discharger barrels (6), (7), and (8).	Para 7-4
2.	Press and hold FIRE SMOKE RIGHT switch (9) on Pushbutton Unit while measuring voltage on left discharger firing pin (2) using multimeter.	+18V to +30V is present on grenade tiring pin of left discharger barrels (6), (7), and (8). No voltage is present on grenade firing pin of left discharger barrels (3), (4), and (5).	Para 7-4
	GO TO FRAME 3		

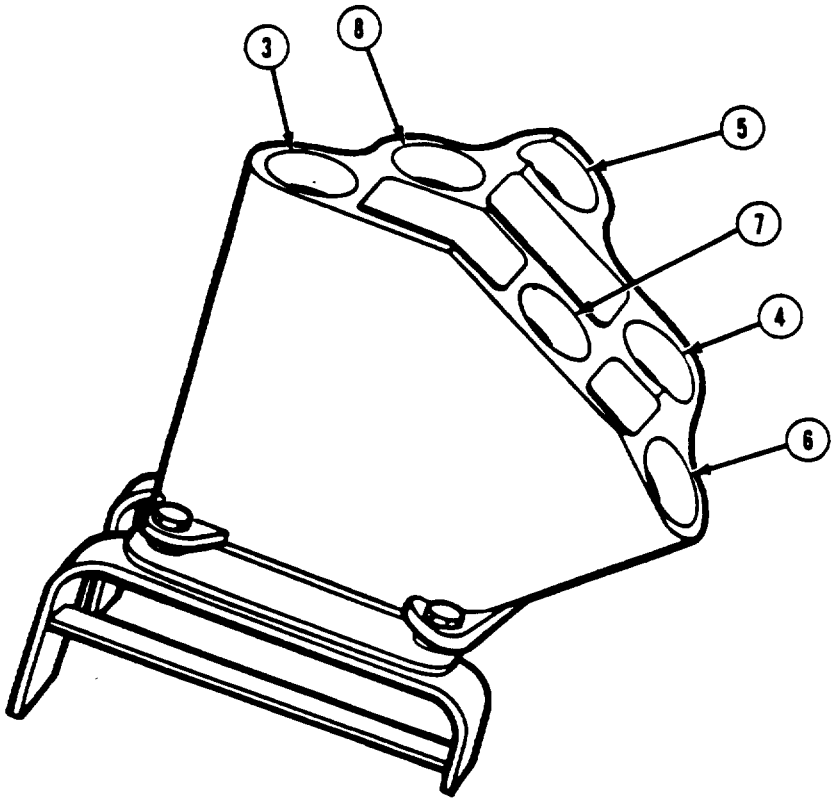
3-5.1 GRENADE LAUNCHER CHECKOUT PROCEDURE (CONT)



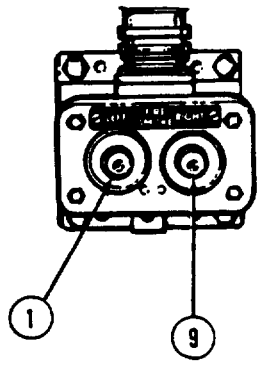
GRENADE FIRING PIN (TYPICAL)



PUSHBUTTON UNIT 6A2



LEFT DISCHARGER 6A4

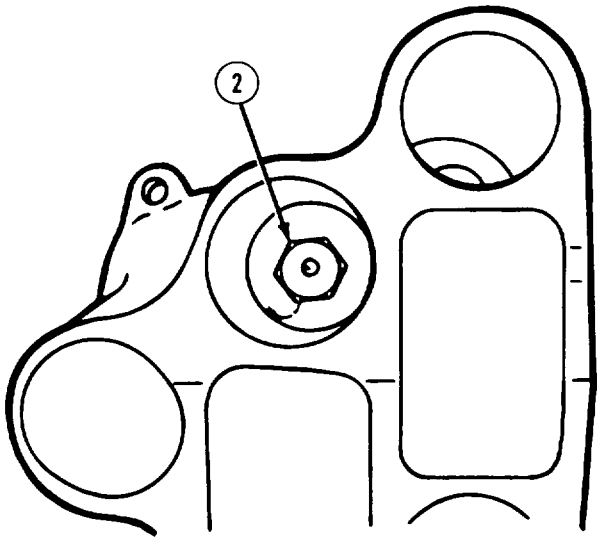


3-5.1 GRENADE LAUNCHER CHECKOUT PROCEDURE (CONT)

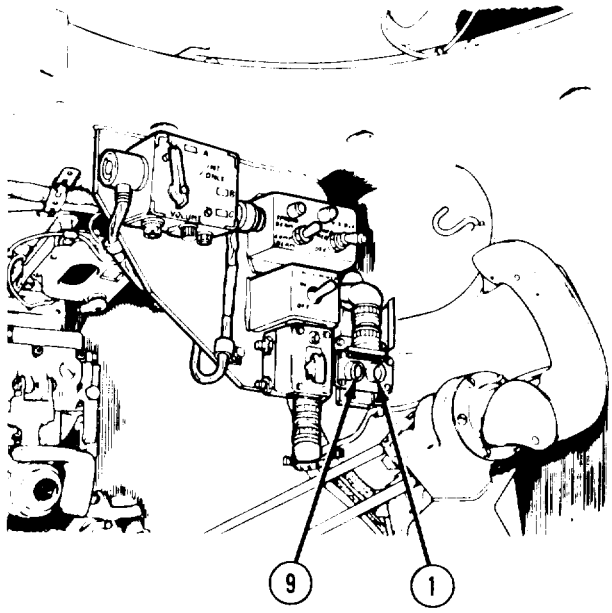
FRAME 3

STEP	PROCEDURE	NORMAL RESPONSE	TROUBLESHOOTING REFERENCE (TM-20-2-2)
1.	Press and hold FIRE SMOKE RIGHT switch (1) on Pushbutton Unit while measuring voltage on right discharger firing pin (2) using multimeter.	+18V to +30V is present on grenade firing pin of right discharger barrels (3), (4), and (5). No voltage is present on grenade firing pin of light discharger barrels (6), (7), and (8).	Para 7-4
2.	Press and hold FIRE SMOKE LEFT switch (9) on Pushbutton Unit while measuring voltage on right discharger tiring pin (2) using multimeter. **GO TO FRAME 4**	+18V to +30V is present on grenade tiring pin of right discharger barrels (6), (7), and (8). No voltage is present on grenade firing pin of right discharger barrels (3), (4), and (5).	Para 7-4

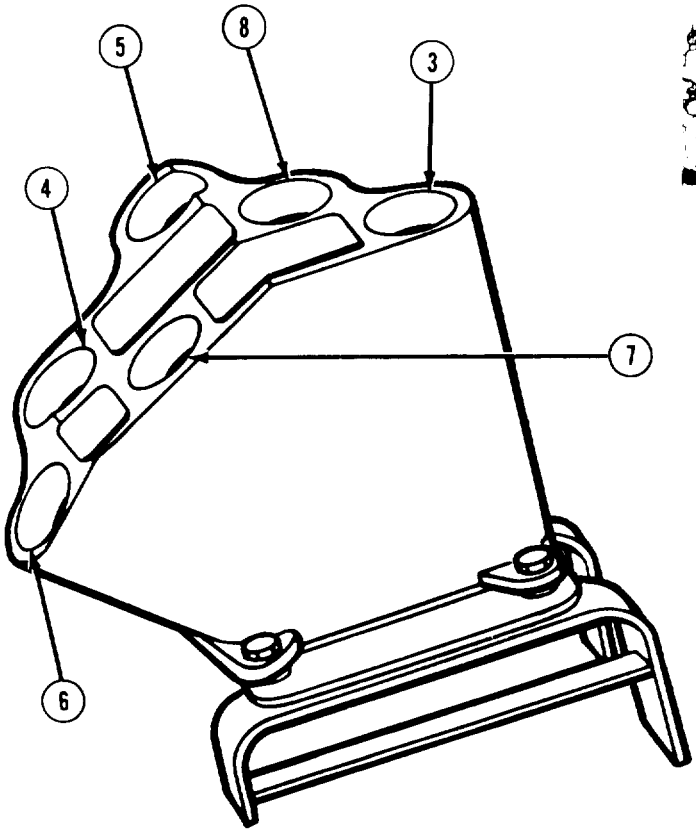
3-5.1 GRENADE LAUNCHER CHECKOUT PROCEDURE (CONT)



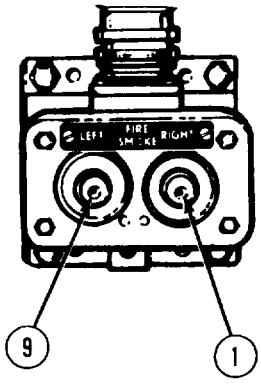
GRENADE FIRING PIN (TYPICAL)



PUSHBUTTON UNIT 6A2



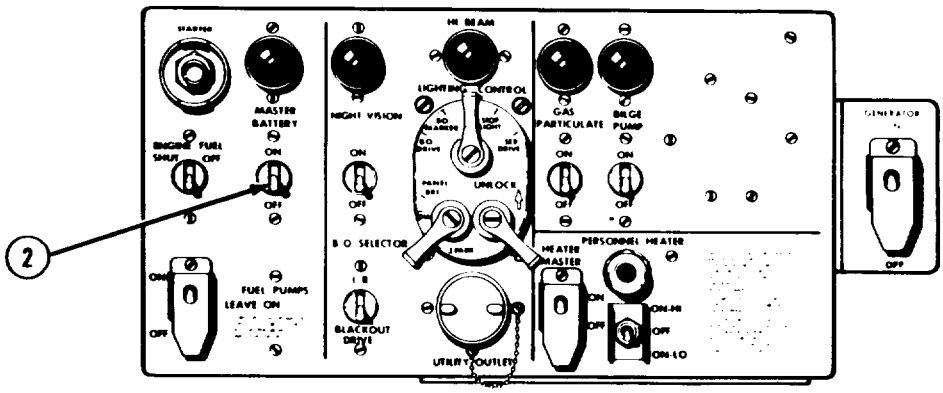
RIGHT DISCHARGER 6A3



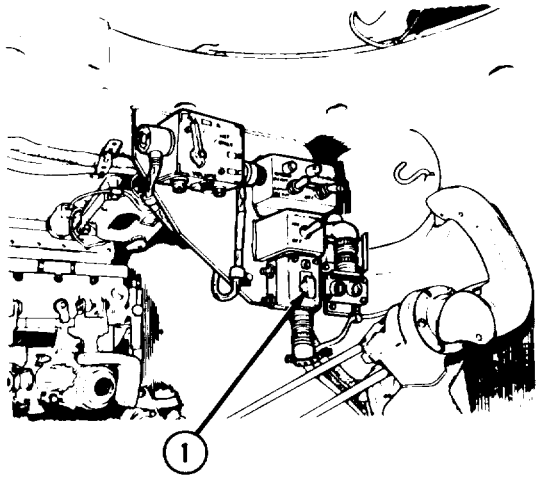
3-5.1 GRENADE LAUNCHER CHECKOUT PROCEDURE (CONT)

FRAME 4

STEP	PROCEDURE	NORMAL RESPONSE	TROUBLESHOOTING REFERENCE (TM-20-2-2)
1.	Set POWER switch (1) on Power Control Box to OFF.		
2.	Set MASTER BATTERY switch (2) on Master Control Panel to OFF.		
	END OF TASK		



MASTER CONTROL PANEL



POWER CONTROL BOX 6A1

SECTION 2: ALIGNMENT AND ADJUSTMENT

3-6. ALIGNMENT AND ADJUSTMENT PROCEDURES INDEX

3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C/M32CE1 (CONT)

NOTE

This procedue can be performed using the M32C or M32CE1 periscope. Whenever the M32C is mentioned it will also be in reference to the M32CE1.

TEST EQUIPMENT: Gunner's Quadrant M1A1

TOOLS: Diagonal cutting pliers
Spanner wrench
15/16 in. combination wrench
7/16 in. combination wrench
0.050 in. socket head screw key (Allen wrench)
1/2 in. socket (3/8 in. drive)
3/8 in. drive ratchet

SUPPLY: Lead seal wire

PERSONNEL: Two

REFERENCES: TM 9-2350-222-10 for procedures to:
Manually traverse turret and elevate/depress 165-mm gun
ETM 643-091-940R/JPG for procedure to replace lead seal wire
TM 9-1290-200-14&P for procedure to calibrate and use Gunner's Quadrant M1A1

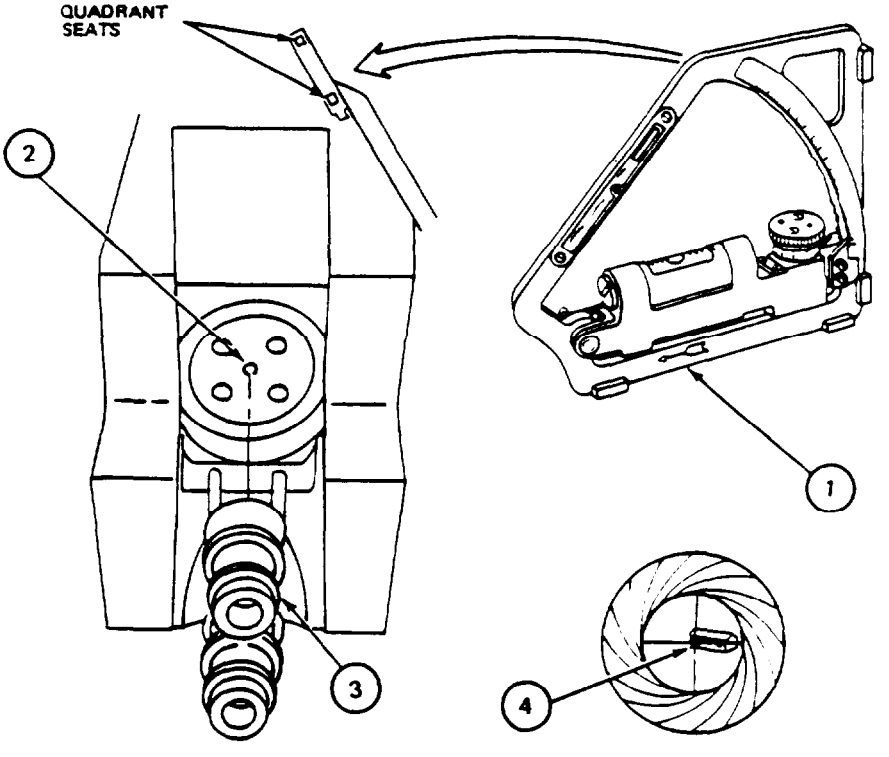
EQUIPMENT CONDITION: Initial setup for synchronization of 165-mm gun with gunner's periscope M32C (para 3-4, frames 1 through 10)

GENERAL INSTRUCTIONS: This procedure is done when the 165-mm gun is out of synchronization with gunner's periscope M32C by the tolerances specified in para 3-4, frames 8 and 9.

3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C (CONT)

FRAME 1

Step	Procedure
1.	Perform calibration of Gunner's Quadrant M1A1 (TM 9-1290-200-14&P).
2.	Measure elevation angle of gun using gunner's quadrant M1A1 (1) placed on gun breech quadrant seats.
3.	Add 120 mils to angle measured in step 1 and set this sum on gunner's quadrant M1A1.
4.	Place gunner's quadrant M1A1 (1) on gun breech quadrant seats.
5.	Manually elevate gun without over travel until bubble on gunner's quadrant is centered (TM-10).
6.	Remove gunner's quadrant M1A1 from gun breech quadrant seats.
7.	While looking through daylight eyepiece of gunner's periscope, have driver back tank up ramp or hill until periscope reticle is approximately centered on target aiming point.
8.	While looking through breech boresight hole (2) with binoculars (3), manually position gun without over travel so that cross formed by threads (4) on gun muzzle is lined up with target aiming point (TM-10).
	GO TO FRAME 2

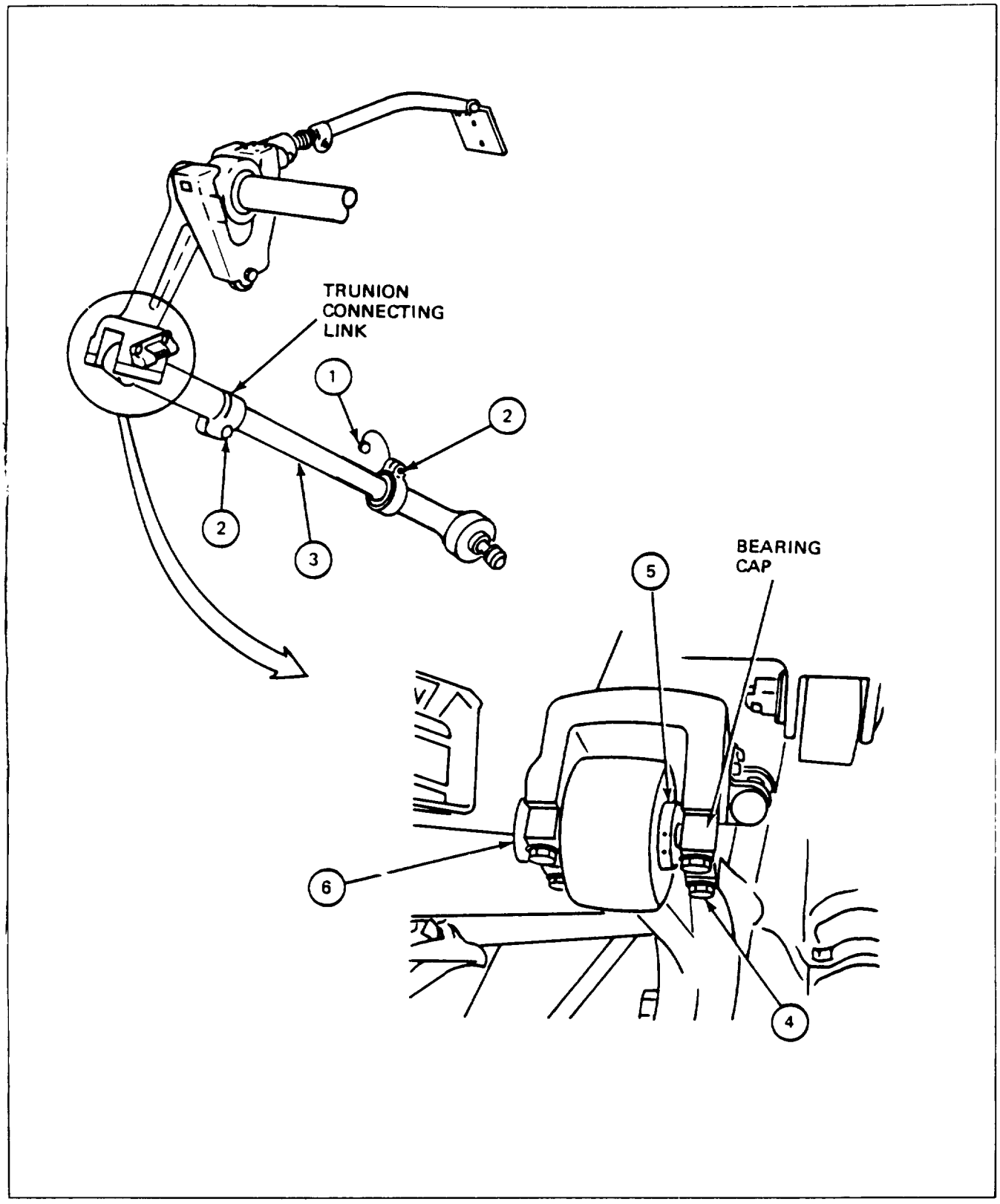


3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C (CONT)

FRAME 2

Step	Procedure
	NOTE If onLy fine adjustment of periscope synchronization is required, omit step 1 and go to step 6.
1.	Using diagonal cutting pliers, cut and remove lead seal wire (1) from trunnion connection link.
2.	Using combination wrench, loosen screw (2) on each end of trunnion connecting link.
3.	Turn adjuster tube (3) until 1/2 of synchronization error is removed.
4.	Using combination wrench, tighten screws (2).
5.	Replace lead seal wire (1) on trunnion connecting link (JPG).
6.	Using socket and drive ratchet, loosen four bearing cap clamping screws (4).
	NOTE If the screws in steps 7 and 8 are inaccessible because of position of arm, remove cap and drop arm. Perform steps 7 and 8, and reconnect arm.
7.	Using Allen wrench, remove two outer locking setscrews from edge of graduated sleeve (5).
8.	Using Allen wrench, loosen two inner setscrews that secure graduated sleeve (5) to graduated spindle (6).
	GO TO FRAME 3

3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C (CONT)

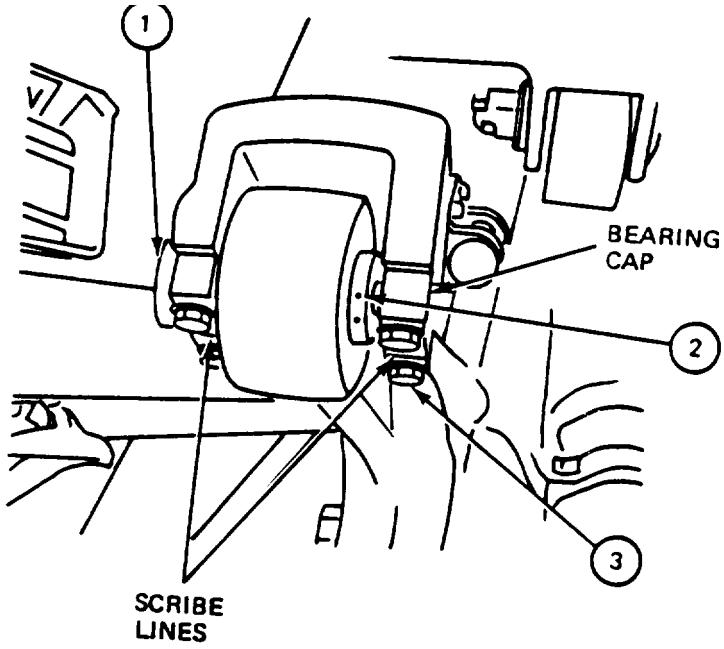


3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C (CONT)

FRAME 3

Step	Procedure
	CAUTION Be sure inner screws are free of spindle before adjusting sleeve. **NOTE** When making fine adjustment, the numbers/divisions (red or black) on spindle (1) and sleeves (2) should be lined up with each other and with scribe lines on bearing cap. Use black numbers/divisions to lower periscope reticle, or red numbers/divisions to raise periscope reticle.
1.	Put spanner wrench in the 3/32"-diameter holes on edge of spindle.
2.	Put spanner wrench in the 3/32"-diameter holes (not tapped holes) on edge of sleeve (2).
3.	Using spanner wrench turn spindle (1) first and then sleeve (2) to equal amount in opposite directions with respect to scribe lines on bearing cap until aiming cross of gunner's periscope daylight reticle is on same aiming point as gun.
	CAUTION Be careful not to strip threads or sockets when installing setscrews.
4.	Using Allen wrench, tighten two inner setscrews on sleeve (2) from between 4.5 and 5.0 pound inches.
5.	Using Allen wrench, put outer locking setscrews in sleeve (2) and tighten setscrews.
6.	Using socket and drive ratchet, tighten four bearing cap clamping screws (3).
	GO TO FRAME 4

3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C (CONT)



3-7. SYNCHRONIZATION SPINDLE ADJUSTMENT OF 165-MM GUN WITH GUNNER'S PERISCOPE M32C/M32CE1 (CONT)

FRAME 4

STEP	PROCEDURE
1.	Have driver position tank to level ground.
	NOTE **Synchronization adjustment may have to be done several times before synchronization error is within tolerance. If synchronization error cannot be adjusted within tolerance, notify support maintenance personnel.**
2.	Recheck gun synchronization with periscope (para 3-4).
3.	After synchronization adjustment and check is done, check movement of periscope boresight knobs. Boresight knobs should move at least 2 mils up, 5 mils down, 4 mils left, and 4 mils right. If knob movement is not as specified, notify support maintenance personnel.
	END OF TASK

3-8. PARALLAX ADJUSTMENT OF GUNNER'S PERISCOPE M32C/M32CE1

TOOLS: 1/4 in. wide flat-tip screwdriver
1/8 in. wide flat-tip screwdriver

PERSONNEL: One

REFERENCE: TM 9-2350-222-10 for procedure to remove/install gunner's periscope body

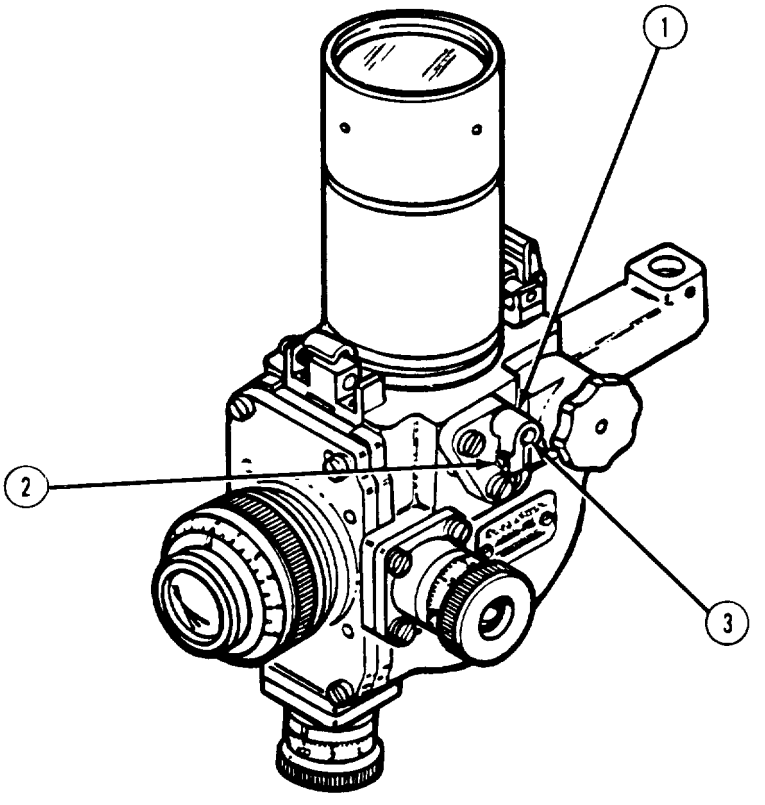
EQUIPMENT LOCATION INFORMATION:

EQUIPMENT	FOLDOUT	CALLOUT
Gunner's Periscope	FO-1	1

FRAME 1

STEP	PROCEDURE
1.	Remove gunner's periscope body (TM-10).
2.	Loosen parallax adjustment screw lock (1) by loosening lock screw (2).
3.	Remove parallax by rotating parallax adjustment screw (3) clockwise or counterclockwise.
	NOTE Thickness of reticle line is 0.1 mil.
4.	If parallax error in periscope daylight reticle exceeds 0.1 mil after adjustment, replace gunner's periscope (TM-10).
5.	Tighten lock screw (2) on parallax adjustment screw lock (l).
6.	Install gunner's periscope body.
	END OF TASK

3-8. PARALLAX ADJUSTMENT OF GUNNER'S PERISCOPE M32C/M32CE1 (CONT)



GUNNER'S PERISCOPE DAYLIGHT RETICLE

CHAPTER 4

LUBRICATION

4-1. SCOPE

All lubrication is accomplished in accordance with LO 9-2350-222-12. Lubrication required during maintenance is included in the maintenance procedure.

APPENDIX A

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section 1. INTRODUCTION

A-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the M728 combat engineer vehicle. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

A-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. Dry cleaning solvent (item 1, App. A).

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

C - Operator/Crew
O - Organization Maintenance
F - Direct Support Maintenance
H - General 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 part number followed by the Federal Supply Code for Manufacturer (FSCM) in parenthesis, if applicable.

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 2. EXPENDABLE SUPPLIES AND MATERIALS

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O	6850-00-281-1985	Dry Cleaning Solvent	CN
2	O	9150-00-111-6256	Hydraulic Fluid	
3	O	8110-00-242-2089	Mineral Spirits Paint Thinner	CN
4	O	6850-00-224-6657	Rifle Bore Cleaner	OZ
5	O	9150-00-231-2361	Lubricating Oil, Preservative	CN
6	O	9150-00-190-0904	Grease, Automotive and Artillery	CN

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section 1. INTRODUCTION

B-1. GENERAL

This appendix provides a summary of the authorized maintenance functions that may be done on the M728 combat engineer vehicle and components at the various maintenance categories. The summary is provided in the form of a maintenance allocation chart (section 2). The maintenance allocation chart designates overall responsibility for the performance of maintenance functions on the identified end item or component. Also included is a list of tools and test equipment required to do each maintenance function (section 3).

B-2. MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined in a. through h. below

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

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

c. Test. To verify serviceability by measuring the mechanical and electrical characteristics of an item and comparing those characteristics with described standards.

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

e. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

f. Repair. The application of maintenance services or other maintenance actions 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.

g. Overhaul. The 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.

h. 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.

B-3. EXPLANATION OF COLUMNS FOR MAINTENANCE ALLOCATION CHART (SECTION 2)

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 lists the noun 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.

d. Column 4- Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level 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 figure will be shown for each category. 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 specified tasks identified for the maintenance functions authorized in the maintenance allocation chart.

Maintenance levels. The subcolumns under column 4 indicate the lowest maintenance levels authorized to perform the function listed in column 3 and are as followw

C - Operator/Crew
O- Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance
D - Depot Maintenance

e. Column 5- Special Tools and Test Equipment. Column 5 specifies by code those special tools and test equipment required to perform the designated maintenance function. The numbers appearing in this column correspond to the numbers used in the reference code column of the tool and test equipment requirements (section 3).

B-4. EXPLANATION OF COLUMNS FOR TOOL AND TEST EQUIPMENT REQUIREMENTS (SECTION 3)

a. Column 1- Reference Code. The numbers in this column correspond to the numbers used in the tools and equipment column of the maintenance allocation chart (section 2).

b. Column 2- Maintenance Level. The codes in this column indicate the maintenance level at which the equipment is used and corresponds to the code used in the maintenance category column of the maintenance allocation chart.

c. Column 3- Nomenclature. This column lists the tools and test equipment required to perform maintenance functions.

d. Column 4- National Stock Number. Self-explanatory.

e. Column 5- Tool Part Number. Self-explanatory.

Section 2. MAINTENANCE ALLOCATION CHART for M728 Vehicle Turret

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
00	Turret Miscellaneous Items	Replace		4.0				
	Turret Platform	Inspect	0.2					
		Replace			4.0			23
	Cable Assemblies Searchlight AN/VSS-1	Inspect		0.2				
		Test	0.2					
		Replace			0.3			
		Repair		0.3	0.5			14
01	Slipring Assy. Turret	Inspect		0.3				
		Test			0.5			
		Adjust		2.0				
		Replace		4.0				
		Repair				8.0		
0101	Ring Assy. Electrical Contact (10941028)	Test			0.5			
		Replace			4.0			
		Repair				4.0		
010101	Bracket Assy. (10940833)	Replace				6.3		
		Repair				0.3		
010103	Harness Assy. (10940847)	Repair				1.5		
		Replace				6.3		
01010301	Receptacle Assy. (7388324)	Replace				1.0		
		Repair				1.5		
010107	Ring Assy. (10940950)	Replace				1.8		
		Repair				2.0		
010108	Receptacle Assy. (10940952)	Replace				1.0		
		Repair				1.5		
01010801	Receptacle Assy. (7388324)	Replace				1.0		
		Repair				1.5		
0102	Switch Assy. Traverse Limit (Interference)	Inspect		0.3				
		Adjust		0.3				
		Replace		0.1				

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
02	Bracket Assy.	Inspect	0.1					
	Grenade Box	Service	0.1					
	Retaining	Replace		0.3				
		Repair		0.4				
03	Box Assy,	Inspect	0.1					
	Spare Lamp	Service	0.1					
		Replace		0.3				
		Repair		0.4				
04	Wiring Harness Assy,	Inspect		0.1				
	Turret Machine Gun	Test		0.3				
	(11676327)	Replace			3.0			
		Repair		1.8	1.0			14
0401	Connector, Receptacle	Replace			0.6			
	(7716785)	Repair			1.0			
05	Lead Assy, Turret *	Inspect		0.1				
	Control Box to	Test		0.2				
	Vent Blower	Replace		0.5				
		Repair		0.8	0.4			14
0501	Connector, Electrical	Replace			0.6			
	(8724235)	Repair			1.0			
0502	Connector, Electrical	Replace			0.6			
	(8724234)	Repair			1.0			
06	Control Box Assy,	Inspect		0.2				
	Vent Blower	Replace		0.5				
		Repair		2.0				
0601	Utility Outlet	Inspect	0.1					
	(10905682)	Replace		0.5				
		Repair		1.0				
060101	Lampholder Assy	Replace		0.4				
	(8376359)	Repair		0.6				
0602	Lead, Electrical	Replace		0.3				
	(10905682)	Repair		0.5				

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
060201	Connector (7722347)	Replace Repair		0.3 0.5				
0603	Lead, Electrical (1090566O)	Test Replace Repair		0.1 0.3 0.5				
060301	Connector (7722348)	Replace Repair		1.0 1.5				
07	DomeLight Assy.	Inspect Replace Repair Test	0.1 0.2	 0.7 1.5 0.2				
08	Relay Box Assy. Turret Power and Searchlight (11655385) Late Vehicles (11654980) Early Vehicles	Inspect Test Replace Repair		0.2 0.5	 0.3 2.0			
0801	Lead Assy, Blower * Motor (10924262)	Replace Repair			0.4 0.6			
0802	Lead Assy, Turret Power Relay (10924263)	Replace Repair			0.4 0.6			
0803	Lead (Receptacle) Assy, * Searchlight (7972770)	Replace Repair			0.4 0.6			
080301	Receptacle (7722225)	Replace Repair			0.5 1.0			
0804	Lead Assy, Ground (10924264)	Replace Repair			0.4 0.6			
0805	Wiring Harness Assy, Accessory (11655382) Early Vehicles (11655362) Late Vehicles	Replace Repair			0.4 0.6			

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
0806	Lead Assy. (10924201)	Replace Repair			0.5 1.5			
080601	Connector Assy. (7973920)	Replace Repair			0.4 0.6			
0807	Receptacle Assy. (11655615-1) Early Vehicles (11655263-2) Late Vehicles	Replace Repair			1.0 1.5			
080701	Connector (7388320) Late Vehicles Only	Replace Repair			1.5 2.0			
0808	Receptacle Assy. (11655615-2)	Replace Repair			1.5 2.0			
09	Control Box Assy. Gunner's (Panel)	Inspect Replace Repair	0.1	0.5 0.1		0.1		14
0901	Wiring Harness Assy. Control Box	Replace Repair		0.4 0.6				14
090101	Connector Assy. Harness	Replace Repair		0.4 0.6				
10	Blower Assy, Turret Ventilator	Inspect Test Replace Repair	0.1	0.1 1.0	0.2 2.5			14
1001	Motor Assy, Turret Blower	Replace Repair			1.0 2.0			
11	Deleted							

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
12	Switch Assy, Loader's Safety (11599714) Early Vehicles (12270145) Late Vehicles	Inspect Replace Repair	0.1	0.1 1.5 1.0				7
1201	Switch Asy. (11591005)	Inspect Replace Repair	0.1	0.1 1.5 1.0				
13	Blasting Machine Assy.	Inspect Replace Repair	0.1	 0.3 0.4				
1301	Handle Assy. Blasting Machine	Replace Repair		0.2 0.3				
14	Terminal Board Assy. Cupola	Inspect Replace Repair			0.5 6.0 5.0			
1401	Wiring Harness (11673938)	Inspect Replace Repair		0.5 1.5 2.5				
15	Cupola Guards	Inspect Replace Repair		0.2 0.4 0.8				
16	Panel Assy, * Commander's Control	Inspect Replace Repair	0.2	0.2 0.2	0.7			
17	Bracket Assy, Portable * Fire Extinguisher	Inspect Replace Repair	0.1	 0.3 1.0				
1701	Arm Assy, Bracket - Portable Fire Extinguisher	Replace Repair		0.5 1.0				

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
18	Seat Assy, Gunner's	Inspect	0.1					
	(10911223) Early Vehicles	Service		0.2				
	(11675938) Late Vehicles	Replace		0.3				
		Repair		0.5				
1801	Seat Assy, Gunner's	Service		0.2				
		Replace		0.3				
		Repair		0.5				
1802	Backrest	Service		0.2				
		Replace		0.3				
		Repair		0.5				
19	Box Assy, IR Spare * Head Assy. Stowage	Inspect	0.2					
		Service	0.2					
		Replace		1.0				
		Repair		4.0				
20	Box Assy, Driver's Night Viewer, DNV Stowage	Inspect	0.5					
		Service	0.6					
		Replace		0.8				
		Repair		1.0				
2001	Box Sub-Assy, DNV Stowage	Replace		0.8				
		Repair		1.0				
200101	Bracket Assy.	Replace		1.0				
		Repair		1.0				
21	Box Assy, Rations	Inspect	0.1					
	(12251992) Late Vehicles	Service	0.2					
	(12290675) Early Vehicles	Replace		0.5				
		Repair		2.4				
22	Box Assy, Main * Periscope Stowage (M24, M36, and M32C) or (AN/VVS-2, M36E1, and M36CE1)	Inspect	0.2					
		Service	0.2					
		Replace		1.0				
		Repair		2.0	2.0			

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
2201	Box Sub-Assy, Periscope	Replace Repair			0.5 1.0			
2202	Plate Assy, Hinged	Replace Repair		0.2 0.5				
24	Seat Assy, Loader's	Inspect Service Replace Repair	0.1	 0.2 1.0 0.5				
2401	Seat Back Assy, * Loader's Seat	Replace Repair		0.4 0.8				
2402	Cushion Assy, Loader's Seat	Replace Repair		0.4 0.8				
25	Seat Assy, Commander's Swing	Inspect Service Replace Repair	0.1	 0.2 0.3 0.8				
26	Seat Assy, Commander's	Inspect Service Install Replace Repair	0.1	 0.2 1.0 1.0 0.5				
2601	Backrest Assy, (Cushion or Pad) Commander's	Replace Repair		0.4 0.8				
2602	Seat Assy, Cmdr's Commander's Seat	Replace Repair		0.4 0.8				
27	Bracket Assy, 5-Gal Container	Inspect Service Replace Repair	0.1 0.1	 0.2 0.3				

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
28	(Deleted)							
29	Box Assy, Binocular Stowage (or Bracket)	Inspect Service Repair	0.1 0.2	 1.0				
30	Box Assy, Loader's Periscope	Inspect Service Replace Repair	0.1 0.2	 0.4 0.6				
31	Cover Assy, 7.62-mm Ammo Box (See FGC 32) (12257544) M240 (11673750) M73, M219	Inspect Service Replace Repair	0.1	 0.1 0.3 0.4				
32	Box Assy, 7.62-mm (5.56-mm USMC) Ready Round Ammunition	Inspect Service Replace Repair	0.1 0.1	 0.5 0.8				
33	Retainer Assy, 165-mm Ammo Rack (10940694) 6 Round	Inspect Service Install Repair	0.1 0.2	 0.2 0.2				
34	Retainer and Clamp Assy (10940693) 3 Round	Inspect Service Repair	0.1 0.2	 0.2				
35	Machine Gun Interrupter Assy. (11655732) Late Vehicles (10930451) Early Vehicles	Inspect Service Replace Repair	0.1 0.1	 0.2 0.2				
36	Hatch Assy, Leader's Escape	Inspect Service Install Repair Adjust	0.1	 0.3 0.5 1.0 0.3				

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	0	F	H	D	(5) Special Tools and Test Equipment
3601	Door Assy, Loader's Hatch *	Replace		0.4				
		Repair		1.0				
3602	Lid Assy, Loader's Hatch *	Replace		0.4				
		Repair		1.0				
37	Switch Assy, Interference, Gun Elevation	Inspect		0.1				
		Adjust		0.3				
		Replace		0.1				
38	Mount Assy, 165-mm* Demolition Gun or Comb. Gun	Inspect	0.5		**			
		Service		0.8				
		Replace			**			
		Repair		1.5	**			
		Overhaul					24.0	
3801	Recoil Mech. 165-mm Mount	Inspect	0.1		0.5			
		Test			0.7			12
		Repair					12.0	9,13,16,22
		Overhaul					6.0	
		Replace						31
380101	Piston Assy. (8449037)	Replace			16.0			
		Repair			16.0		**	
3802	Sleeve Tube	Replace			68.o			
		Repair					**	
3803	Cradle, Recoil Mech. (10905789) M150 Gun Mount (8449307) M150A1 Gun Mount	Replace			16.0			
		Repair					**	
3804	Wiring Harness Assy. (Firing Circuit Components - Incl Safety Relay Switch)	Inspect	0.1					
		Test	0.3					
		Replace		0.5				
		Repair		1.0				
3805	Replenisher Assy.	Inspect	0.1					
		Service	0.2					
		Replace		0.7				
		Repair		6.5				

*Refer to Appendix C for common name.
**Time not determined.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			C	O	F	H	D	
380501	Indicator Assy.	Repair			2.0			
	Replenisher	Replace			0.7			
39	Shield Assy.	Inspect		0.2				
	Combination Gun	Service		0.3				
	Mount	Replace				70.0		
		Repair		0.2	2.0	70.0		
3901	Mantlet Cover Assy, *	Inspect	0.1					
	Main Gun Shield	Service		0.1				
	(Canvas)	Replace		0.8				
		Repair			5.0			
40	Bracket Assy, 7.62-mm *	Inspect	0.1					
	Coax Machine Gun	Service	0.1					
	Mount (M219) (M73)	Install		0.3				
	(10886891)	Repair		0.5				
		Adjust		0.2				
40	Bracket Assy, Coax	Inspect	0.1					
	Machine Gun (M240)	Service	0.3					
	(12006400)	Adjust		0.3				
		Replace		1.0				
		Repair		0.4				
4001	Bracket Assy,	Adjust		0.1				
	Machine Gun Mounting	Replace		0.3				
	(M219)	Repair		0.5				
4002	Mount Assy.	Replace		0.5				
	(12006410) M240	Repair		0.5				
4003	Linkage Assy.	Replace		0.2				
	(12006440) M240	Repair		0.5				
41	Cupola Assy,	Inspect	0.3					
	Commander's	Service		0.5				
	(11673774) Early Vehi-cles	Replace			8.0			20
	(12258076) Late Vehicles	Repair			8.0			

"Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
4101	Lock Assy, Cupola Azimuth	Inspect	0.1					
		Service		0.4				
		Adjust		0.4				
		Replace		0.2				
		Repair		2.0				
4102	Hatch Assy, Cupola	Inspect	0.1					
		Service		0.1				
		Repair		1.0				
410201	Hatch Sub Assy, Cupola	Replace		1.0				
		Repair		1.0				
4103	Hinge Assy, Left Cupola Machine Gun Access Door	Inspect	0.1					
		Replace		0.2				
		Repair		0.2				
4104	Hinge Assy, Right Cupola Machine Gun Access Door	Inspect	0.1					
		Replace		0.2				
		Repair		0.2				
4105	Cradle Assy, Cupola Machine Gun	Inspect	0.1					
		Service		0.2				
		Adjust		0.4				
		Replace		2.7				
		Repair		4.0	1.5			
4106	Gearbox Assy, Cupola Azimuth	Inspect		0.1				
		Service		1.0				
		Adjust		0.5				
		Replace		0.5				
		Repair		0.5	7.5			
410601	Shaft Assy, Cupola Azimuth Gearbox	Repair			7.5			
		Replace			7.5			
410602	Crank Assy, Cupola Azimuth Gearbox	Repair		0.5	7.5			
		Replace			1.0			

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
4107	Screwjack Assy, * Cupola Gun Elevation	Inspect	0.1					
		Service	0.1	0.2				
		Replace			0.8			
		Repair		0.5	4.6			
4108	Race Ring Assy, * Cupola (11590961)	Inspect			0.17			
		Service		0.17				
		Repair					**	20
		Replace			16.0			
42	Powerpack Control * Assy. (Hydraulic Power Supply)	Inspect		0.1				
		Service	0.1	0.5				
		Repair			13.2			
		Overhaul					24.0	10.11
4201	Motor Assy, Electric, * Powerpack	Inspect			0.2			
		Replace			4.0			
		Repair					8.0	
4202	Filter Assembly, * Fluid Pressure, Powerpack	Replace			8.0			
		Repair			8.0			
4203	Housing and Valve * (RISER) Assy.	Inspect			0.3			
		Replace			13.2			
		Repair			13.2			
4204	Accumulator Assy, * Powerpack, Manual Elevation	Inspect		0.1				
		Test			1.0			
		Service		0.5				
		Replace		1.0				
		Repair		0.2	2.0			
4205	Valve Assembly * Shuttle Powerpack	Inspect			0.1			
		Test			0.5			
		Replace			0.3			
		Repair			0.3			
4206	Pump Assy, * Manual Elevating	Inspect	0.1					32
		Test			0.7			
		Replace			1.0			
		Repair		0.3	4.0			32

* Refer to Appendix C for common name.
**Time not determined.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			C	O	F	H	D	
420601	Handle Assy, Manual Elevation Pump	Replace			1.0			
		Repair			1.0			
42060101	Yoke Assy, Handle	Replace			1.0			
		Repair			1.0			
420602	Pump Assy. (11654401)	Inspect		0.5				
		Replace			4.0			
		Repair			4.0			
420603	Housing Assy. (8674351)	Test		0.2				
		Replace		0.5				
		Repair		0.5				
4207	Gunner's Control Assy.	Inspect	0.1					
		Test			2.0			
		Adjust		0.1	0.5	0.5		
		Replace		2.0				
		Repair		1.0	8.0			
		Overhaul					16.0	
420701	Cover Assy, Gunner's Control •	Replace			0.5			
		Repair			0.8			
420702	Shaft Assy, Override Elevating •	Replace			2.0			
		Repair			2.0			
420703	Shaft Assy, Override Traversing •	Replace			2.0			
		Repair			2.0			
420704	Lever Arm Control Assy, Elevating *	Replace			4.0			
		Repair			4.0			
420705	Lever Arm Control Assy, Traversing *	Replace			4.0			
		Repair			4.0			
420706	Box Assy, Gunner's Control Handles *	Replace			2.0			
		Repair			2.0			
420707	Valve Assembly, HYD Gunner's Control *	Replace			2.0			
		Repair			2.0			

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			C	O	F	H	D	
420708	Harness Assembly, * Gunner's Control Electrical	Replace Repair			8.0 2.0			
	Housing Assy, Gunner's Control	Replace Repair			8.0 8.0			
43	Control Assembly * Commander's Power (Hydraulic)	Inspect Adjust Replace Repair Overhaul	0.1	0.3 2.0 0.5	0.5 8.0		16.0	
4301	Grip Assembly, Commander's Control Handle	Replace Repair		0.5	4.0			
4302	Housing Assembly, Commander's Control	Replace Repair			1.0 4.0			
4303	Harness Assembly, Commander's Control	Replace Repair			4.0 2.0			
44	Elevating Mech. * Assembly, Main Gun	Inspect Replace Repair Overhaul		5.0	0.3 6.0		16.0	
4401	Guide Assembly, Elevating Mech.	Replace Repair			2.0 2.0			
4402	Eye Assembly, Elevating Mech. (11591025)	Replace Repair			1.0 1.0			
4403	Valve Assembly, * Elevation Lock	Replace Repair			1.0 1.0			
4404	Valve Assembly, * Elevation Safety Relief	Replace Repair			1.0 1.5			

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	0	F	H	D	(5) Special Tools and Test Equipment
4405	Eye Assembly, Elevation Mech. 10941054)	Replace Repair			1.0 1.0			
45	Accumulator, Main Hydraulic [1]	Inspect Service Replace Repair		0.1 0.3 4.0 0.5	 2.0			2,6,18,145 18,34
4501	Valve Assy, Pneumatic Accumulator (MS28889-2)	Repair Repair		0.4 0.5				
46	Valve Assy, Deck * Clearance and Elevation Shutoff	Test Replace Repair		0.3 1.0 0.7				
47	Valve Assy, Relief * Powerpack See FGC 42)	Inspect Replace Repair		0.1 1.0	 2.0			
48	Race Assembly, * Turret Traversing	Inspect Service Replace Repair Overhaul		 2.0	0.5 51.8 16.0		 24.0	 5,23 5
4801	Race Assembly, Inner Bearing	Repair			52.0			
49	Gearbox Mechanism Assembly, Turret Traverse [1]	Inspect Service Replace Repair	0.1	 0.5	 9.6	 22.5		 8,19,22 1,24,25,28
4901	Motor Assembly, Hyd. Traverse Mech. [1]	Test Replace Repair Overhaul			0.1 1.0	 8.0	 24.0	
490101	Pistons and Shaft Assembly, Hydraulic Motor	Replace Repair				8.0	 12.0	

[1] Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			C	O	F	H	D	
49010101	Link Assy, Shaft Hydraulic Motor	Repair Replace					2.0 1.4	
490102	Valve Assy, Relief * Hydraulic Motor	Replace Repair				8.0 8.0		
490103	Housing Assy, Hydraulic Motor	Replace Repair				8.0 8.0		
4902	Adapter Assy, * Gearbox Mech.	Replace Repair			9.6 9.6			
490201	Upper Adapter Assy. (10905257)	Replace Repair			2.0 2.0			
4903	Pin Lock Assembly, * Traverse Mech.	Inspect Replace Repair		0.1 0.5 0.5				3,4,26,41,151
4904	Gearbox Assembly, * Traverse Mechanism	Adjust Test Replace Repair		0.2	9.6	0.3 22.5		
490401	Pump Assembly, Gearbox	Replace Repair				22.5 22.5		
490402	Housing Assy, Lower	Replace Repair				22.5 22.5		
490403	Housing Assembly, * Upper-Gearbox	Replace Repair				22.5 22.5		
490404	Differential Assy, Gearbox	Replace Repair				22.5 22.5		
4905	Clutch Assy, Friction * Traverse Mech.	Inspect Replace Repair			0.1 0.8 2.5			

● Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Speial Tools and Test Equipment
490501	Body Assy, Clutch	Replace			2.5			
		Repair			0.3			
4906	Locking Unit Assy, *	Inspect		0.1				
	Traverse	Replace		0.5				
	Gearbox Mechanism	Repair		2.0	2.0			25
490601	No-Bak Assembly,	Replace		2.0				
	Locking Unit	Repair		2.0				
4907	Brake Adapter	Replace			1.5			
	Assy.	Repair				3.0		
	(12290860)							
50	Drive Assy,	Inspect		0.1				
	Hand Traversing	Service		0.2				
		Replace		0.5				
		Repair		1.0	2.0			24,28
51	Lock Assembly,	Inspect	0.1					
	Turret Traverse	Replace		0.2				
		Repair		0.5	2.0			
5101	Lever Assembly,	Replace			0.5			
	Turret Lock	Repair			0.5			
5102	Cam Assembly,	Replace			1.0			
	Turret Leek	Repair			1.0			
5103	Handle Assembly,	Replace			0.5			
	Turret Lock	Repair			0.5			
5104	Housing Assembly,	Replace			2.0			
	Turret Lock	Repair			2.0			
52	Azimuth Indicator	Inspect	0.5					
	Assy.	Replace		0.5				
	(7970854-1) M28A1	Repair			2.0			
	(10933520-1) M28E2	Adjust		0.5				
		Overhaul					3.0	
		Service		0.5				

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
53	Accumulator Assy, * (Elevation Equilibrator)	Inspect			0.1			
		Repair			1.3			237
		Test			0.3			
54	ManifoId Assy, Equilibrator Charging	Service		0.2				18,127,145
		Replace		2.0				
		Repair			2.5			
5401	Handle Assy. (10940923)	Replace		1.0				
		Repair		1.0				
55	Control Assy, Light Source (Quadrant)	Inspect	0.1					
		Replace		0.5				
		Repair	0.2		0.2			
56	Drive Assy, Ballistic M15	Inspect		0.1				
		Replace			4.0			128
		Repair			1.0			
		Overhaul					4.0	81,102,116,124
		Adjust	0.1					125,128,129 134,274
5601	Link Assy.	Inspect		0.2				
		Repair			1.0			
5602	Shaft Assy. (10516381)	Inspect			3.0			
		Repair				1.0		93,198
560201	Level Vial Assy. (8585560)	Inspect	0.1					
		Repair				1.0		93,198
		Replace			0.5			93,198
560202	Coupling Assy. (8620124)	Inspect	0.1					
		Repair			1.0			93,124,128,198
		Replace			3.0			93,198
57	Link Assy, Commander's Periscope	Inspect		0.1				
		Install		0.1				
		Replace		0.5				
		Repair		1.0				
		Overhaul					4.0	

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			C	O	F	H	D	
5701	Clamp Assy. Link	Install		0.1				
		Replace		0.3				
		Repair		0.2				
58	Mount Assy, Periscope M119	Inspect		0.2				
		Service	0.3					
		Replace			1.0			
		Repair			2.0			229
		Overhaul					10.0	86,146,211
5801	Handle Assy.	Replace			0.5			
		Repair			1.0			
5802	Cover Assy.	Repair			0.5			
		Replace			1.0			
59	Mount Assy, Periscope M118/M118E1	Inspect		0.3				
		Service	0.2					
		Replace			1.0			
		Repair		0.6	2.0	10.0		
		Overhaul					16.0	
60	Periscope Assy, (10516600) M32C (11747440) M32CE1	Inspect	0.2					
		Service		0.2				40,58,62,63,65 68,7476,78,84 86,89,95,101, 111,118-120,126, 132,149,202,206, 211,212,215,220, 228-230,239-243, 245,249,253-256, 275
		Replace					1.0	
		Repair	0.4		1.0			
		Overhaul				15.0	60.0	
		Install	0.1					
6001	Head Assy. (10541990) M32C (11747439) M32CE1	Inspect	0.2					
		Service	0.2	1.0				
		Replace	0.2					
		Repair	0.6			4.0		
		Overhaul					I 20.0	

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			C	O	F	H	D	
6002	Body Assy.	Inspect	0.2					
		Service	0.5	0.2				
		Adjust		0.2				
		Replace	0.2					
		Repair	0.5		4.0			
		Overhaul					20.0	
600201	Cell Assy.	Replace					0.5	
		Repair					0.5	
600202	Cell Assy.	Inspect	0.2					
		Repair					2.0	
600203	Reticle Assy.	Inspect	0.2					
		Replace					3.0	
		Repair					3.0	
6003	Body Assy. (Infrared)	Inspect	0.2					
		Service	0.5					
		Replace		0.2				
		Repair		0.1	4.0			
		Overhaul					20.0	
600301	Cell Assy.	Inspect		0.2				
		Repair			1.0			
		Overhaul					0.5	
600302	Eyepiece Assy.	Inspect	0.2					
		Repair					3.0	
		Overhaul					3.0	
60030201	Cell	Repair					2.0	
600303	Sleeve Assy.	Inspect					0.5	
		Repair					1.0	
600304	Reticle Assy.	Inspect		0.3				
		Repair					6.0	
		Replace					6.0	

* Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
6004	Elbow Assy. (Passive)	Inspect	0.2					
		Service		0.5				
		Replace		0.2				
		Repair		0.5	4.0			
		Overhaul					20.0	
600401	cell Assy.	Inspect	0.2					
		Repair					4.0	
		Overhaul					6.0	
600402	Eyepiece Assy.	Inspect	0.2					
		Repair					4.0	
		Replace					4.0	
600403	Reticle Assy.	Inspect	0.2					
		Replace					3.0	
		Repair					3.0	
61	Control Assy, Light Source Periscopes	Inspect	0.1					
		Replace		0.2				
		Repair		2.0				
62	Mount Assy, Telescope, M114	Inspect	0.2					
		Replace		0.5				198
		Repair				3.0		198
		Overhaul					5.0	198
6201	Housing	Repair				1.0		198
6202	Holder Assy.	Replace			1.0			198
		Repair			1.5			198
63	Quadrant Asy, Elevation M13A3	Inspect	0.2					
		Replace		0.3				
		Repair		0.3			2.0	
		Overhaul				6.0		97

* Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
64	Infinity Sight Assy, * Gunner's Periscope	Inspect		0.2				
		Replace		0.3				
		Repair	0.5			3.5		42-45,126,130
		Overhaul					6.0	47,51,71,89,
		Test		0.1				119,140,147,
		Service		0.1				212,227,228,275
65	Periscope Assy, M36/ M36E1	Inspect	0.5					
		Service		0.5				
		Replace		1.5				
		Repair		0.6	1.0	15.0		
		Overhaul					60.0	
		Install	0.1					
6501	Head Assy, M36/ M36E1	Replace		0.5				198,199
		Repair			1.0	5.0		198,199
		Overhaul					4.0	42,43,44,45,86,
		Inspect	0.2					89,93,95,126,
		Service		0.2				148,198,199, 217,218
6502	Body Assy, M36/M36El	Replace		0.5				198,199
		Repair	0.1		3.0			93,198,199
		Overhaul					16.0	42,43,44,45,86,
		Inspect	0.2					89,93,95,126,
		Service		0.2				148,198,199, 217,218
65201	Eyepiece Assy, M36/ M36E1	Repair				1.5	4.0	93,198,199
65020101	Cell Assy, M36/M36El	Repair					3.0	93,198,199
650202	Reticle Assy, M36/ M36E1	Repair					4.0	93,198,199
6503	Infrared Body Assy, M36	Replace		0.5				93,198,199
		Repair		0.7			20.0	44,45,47,49,80, 91,95,97,128, 150,200,201, 219,220
		Overhaul					6.0	

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
650301	Cell Assy, M36/M36El	Repair					4.0	42,43,44,45,86, 89,93,95,126, 148,198,199, 217,218
		Replace			1.5			
650302	Sleeve Assy, M36/ M36E1	Replace					1.0	
		Repair					3.0	
650303	Eyepiece Assy, M36/ M36E1	Repair				1.5		93,198,199
		Replace					1.0	42,43,44,45, 86,89,93,95, 126,148,198, 199,217,218
65030301	Cell Assy, M36/M36El	Repair					3.0	93,198,199
		Replace					1.0	42,43,44,45,86, 89,93,95,126, 148,198,199, 217,218
65030466	Reticle Assy, M36/M36El	Repair					4.0	93,198,199
		Replace					1.0	
66	Telescope Assy, Articulated M105F	Inspect	0.1	0.5	0.7			
		Replace		0.2				
		Repair	0.2				3.0	42-45,89,126, 130,227
		Overhaul					8.0	63,64,70,83, 86,111,120,140, 275
		Service		0.1				
6601	Eyepiece Assembly	Inspect					0.3	219
		Repair					5.0	219
		Replace					0.3	
6602	Joint Assembly	Inspect					3.0	
		Repair					16.0	
		Overhaul					25.0	
6603	Cell Assembly	Inspect					0.5	
		Repair					2.0	

* Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
6604	Cell Assembly	Inspect Repair					0.5 2.0	
67	Hose Assy, * Commander's and Gunner's CBR	Inspect Replace Repair	0.1	0.1 0.4 0.5				29
68	Hose Assy, * Loader's CBR	Inspect Replace Repair	0.1	0.1 0.4 0.5				29
69	Connector Orifice Assy, Commander's, Gunner's, and Loader's CBR	Inspect Replace Repair	0.1	0.1 0.5 1.0				
6901	Valve Assy, Connector Orifice	Inspect Replace Repair		0.1 0.4 1.0				
70	Heater Assy, * Commander's, Gunner's, and Loader's CBR	Inspect Replace Repair Overhaul	0.1 0.1	 0.3 0.1			 4.0	
71	Deleted							
72	Wire Rope (Cable) Assy. and Ferrule	Inspect Service Replace Repair	0.2	 0.3 1.0	 2.0			
73	Winch Assy, Hydraulic	Inspect Replace Repair		0.2	 2.0	 7.0		152
7301	Cylinder Assy, Control Hydraulic Winch	Replace Repair				7.0 7.0		
7302	Carrier Assy, Hydraulic Winch (10908540)	Replace Repair				7.0 7.0		

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
7303	Carrier Assy, Hydraulic Winch (1090858O)	Replace Repair				7.0 7.0		
7304	Carrier Assy, Hydraulic Winch (10908630)	Replace Repair				7.0 7.0		
74	Motor Assy, Hydraulic Winch	Inspect Replace Repair		0.1 2.0	 4.0			
75	Manifold Assy, (For Counterbalance and Shuttle Valves)	Inspect Replace		0.1 1.0				
76	Valve Assy, Directional Control	Inspect Service Replace		0.1 0.5 1.0				
77	Trunnion Assy, A-Frame Right	Inspect Replace Repair		0.1	 1.5 2.5			
78	Trunnion Assy, A-Frame Left	Inspect Replace Repair		0.1	 1.0 2.0			
79	Pulley Assy, A-Frame (Sheave)	Inspect Replace Repair		0.2 0.7 1.2				
80	Travel Lock Assy, Boom	Inspect Replace Repair		0.1 0.5 1.0				
8001	Locking Lever Assy, (5602611)	Repair Replace		0.4 0.3				
81	Cylinder Assy, Linear Actuating Boom	Inspect Replace Repair		0.1	 0.4 2.5			

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
8101	Eye Assy. (10941037)	Replace			1.0			
		Repair			1.0			
8102	Eye Assy. (10941038)	Replace			1.0			
		Repair			1.0			
8103	Piston and Rod Assy. (10941039)	Replace			3.0			
		Repair			7.5			
84	Periscope Assy, Driver's M27	Inspect	0.1					
		Service	0.2					
		Install	0.1					
		Replace		0.2				
		Repair		0.5				
85	Viewer, Driver's Night Vision (AN/VVS-2)	Inspect	0.1					
		Service	0.1					
		Replace		0.2				
		Install	0.2					
		Repair					4.0	
86	Periscope Assy. Driver's I.R. M24	Test	0.1					
		Install	0.1					
		Repair			2.0			
		Inspect	0.2					
		Replace	0.2	0.3				
		Overhaul					4.0	
		Service	0.2					
8601	Headrest Assy.	Inspect		0.2				
		Replace			0.5			235
		Repair			1.0			
8602	Lock	Inspect			0.3			
		Replace			1.0			
		Repair			1.0			
8603	Eye Cell Assy.	Inspect					0.2	39,67,75,89,
		Replace					1.0	126,130,149,
		Repair					2.0	212,213,220, 224,225,229

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
8604	Objective Assy.	Inspect Replace Repair					0.2 1.0 2.0	
8605	Body Assy.	Inspect Repair Replace					0.5 2.0 1.0	
87	Light Source Control, M105F Telescope	Replace Repair		0.3 0.5				
88	Hanger, M105F Telescope	Inspect Replace Repair		0.1 0.3 1.0				
8801	Link Assy. (10516099)	Replace Repair		0.1 0.2				
89	Filter Box, M105F Telescope	Replace Repair		0.2 0.1				
90	Rack Assy. (10940767)	Replace Repair			2.0 3.0			
9001	Handle Assy. (10940735)	Replace Repair			0.5 0.5			
91	Shield Protector Assy. * Nylon Ballistic Coax Machine Gun (10905893) M219, M73 (12257532) M240	Inspect Replace Repair	0.2	2.5 3.0				
92	Switch Assy. (10940852)	Replace Repair		1.0 1.0				
9201	Arm Switch (10940831)	Replace Repair		1.0 1.5				

*Refer to Appendix C for common name.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
9202	Switch Assy. (10940837)	Replace Repair		1.0 1.5				
93	Clamp Assy. (10951567)	Replace Repair		0.3 0.4				
94	Turret Control Wiring Harness (10951615) (12270149)	Inspect Test Replace Repair		0.5 0.5 0.5	 16.0 3.0			
9401	Connector (8724257)	Replace Repair		 0.5	1.0 1.0			
9402	Connector (8724245)	Replace Repair			1.0 1.5			
9403	Connector (8724233)	Replace Repair			1.0 1.5			
9404	Connector (8724244)	Replace Repair			1.0 1.5			
9405	Connector (8724199)	Replace Repair			1.0 1.5			
9406	Shell Assy. (8724231)	Replace Repair			1.0 1.5			
9407	Ferrule Assy. (8724266)	Replace Repair			1.0 1.5			
95	Gun Tube 165-mm (8769105)	Inspect Service Replace Adjust	**	** 	** ** **			27,30
9501	Breechblock Mech., * Breech Mech.	Inspect Service Repair	0.1 0.3 0.1	 0.1				

*Refer to Appendix C for common name.
"*Time not determined.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
950101	operating Crank Assy. * Breech Mech.	Inspect Test service Replace Repair	0.1 0.1 0.2	 2.0	 3.0			
950102	Operating Handle * Assy, Breech Mech.	Inspect Service Replace Repair	0.1 0.1	 0.3 3.0				226
950103	Operating Spring Assy, * Breech Mech.	Inspect Replace	0.1	 0.3				226
950104	Breechblock Assy. (8769233)	Inspect service Adjust Replace Repair	0.1 0.1 0.2	 1.5			 **	
950106	Release Lever and * Crank Stop Assy. Breech Mech.	Inspect Service Replace	0.1 0.1	 0.3				
96	Cable Assy. (11599178)	Replace Repair			1.5 2.5			
97	Resistor Assy. (10873348)	Replace Repair			2.5 3.5			
98	Wiring Harness Assy, Interconnecting Box (10911236-1)	Replace Repair			0.5 1.0			
9801	Connector (8724244)	Replace Repair			1.0 1.5			
9999	Bulk Materials							
AA	Wiring Harness Assy, Turret Power Feed (10951557)	Test Replace Repair			0.5 2.5 3.0			

Refer to Appendix C for common name.
*Time not determined.

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category					(5) Special Tools and Test Equipment
			c	o	F	H	D	
AAO1	Connector Assy. (8724242)	Replace Repair			3.0 3,,5			
AA02	Connector Assy. (7722352)	Replace Repair			3.0 3.5			
AA03	Connctor Assy. (8724406)	Replace Repair			3.0 3.5			
AB	Lead, Electrical, Vent. Blower Switch Box (10924271)	Replace Repair			0.5 1.0			
ABO1	Connector Assy. (8724235)	Replace Repair			1.0 2.0			
AB02	Connector (8724234)	Replace Repair			1.0 1.5			
AC	Switch Assy, Gun Elevation (10864133)	Replace Repair			1.0 1.5			
AD	Lead Assy, Hyd. Pump Motor (10864133)	Replace Repair			1.0 1.5			
ADO1	Connector (8724241)	Replace Repair			1.5 2.0			
AD02	Connector (8724242)	Replace Repair			1.5 2.0			
AE	Wiring Harness, Power Relay (10951614)	Replace Repair			1.0 2.0			
AEO1	Shell Assy. (8724231)	Replace Repair			2.0 2.5			
AE02	Connector Assy. (8724233)	Replace Repair			2.0 2.5			

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
AF	Lead, Electrical, Searchlight (10911297)	Replace Repair			0.5 1.5			
AF01	Connector (8724242)	Replace Repair			1.5 2.0			
AG	Lead Assy. (11599179)	Replace Repair			1.5 2.0			
AH	Cable Assy. (10911298)	Replace Repair			1.5 2.5			
AH01	Connector (8724248)	Replace Repair			2.5 3.0			
AH02	Connector (8724943)	Replace Repair			2.5 3.0			
AI	Hanger Assy, Turret Platform (10941099)	Replace Repair			4.0 5.0			
AJ	Hanger Assy, Turret Platform (10940649)	Replace Repair			4.0 5.0			
AK	Ammunition Box Assy. (10940550)	Replace Repair		0.5 1.5				
AL	Wire Rope Assy. (10940528)	Replace Repair	0.3	0.3 1.0				
AM	Smoke Grenade Discharger Power Box Components (12257465)	Inspect Test Replace Repair	 0.5	0.1 0.1 0.2 	 0.5			
AN	Lead and Diode Assy. (11654868)	Replace Repair		0.5 1.0				

(1) Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Special Tools and Test Equipment
AO	Harness Wiring, Searchlight (11655377)	Inspect Test Replace Repair		0.1 0.2 0.5	 1.0			
AP	Bracket, Binocular	Replace Repair		0.5 0.5				
AQ	Turret Structure (10940423)	Inspect Replace Repair					** ** **	
AR	Hanger, Turret Platform (10905346)	Inspect Replace Repair	0.1		 1.0 1.5			
AS	Ammunition Box Assy. (10940551)	Replace Repair		1.0 1.0				
AT	Ammunition Box Assy. (10940552) Early Vehicles (12251864) Late Vehicles	Replace Repair		1.0 1.0				
AU	Ammunition Box Assy. (10905354)	Replace Repair		1.0 1.0				
AV	Lock Assy, Wire Rope Stowage (8716089)	Replace Repair		0.5 0.5				

** Time not determined.

Section 3. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
		TURRET AND ARMAMENT TOOLS		
1	H, F, D	Adapter, Installing Traversing Mechanism Lower Housing Over Output Shaft	5120-00-588-1986	8708442
2	0, F, H, D	Adapter, Assy, Compressed Gas Cylinder Valve Connection	4933-00-903-2802	11658921
2.1	F, H, D	Adapter, Torque Wrench (for Magnetic Brake)		12290863
3	0	Adapter Pin Lock Teat	4730-00557-7466	MS51819-5
4	0	Adapter: Pin Lock Test		MS51816-3
5	F, H, D	Bolt, Eye, Lifting: Turret Race Assy.	5306-00-699-99-1282	8708807
6	0, F, H, D	Box Assy, Accumulator Charging Device	2540-00-213-6749	10924313
7	0, F, H, D	Crowfoot, Adapter: To Torque Nut that Locks Adjustable Stop to Loader's Safety Switch		1655447
8	0, F, H, D	Clamp, V-Blocks: Adjusting Traversing Mechanism Output Pinions Backlash (used w/4190-00-875-7934 shim)	5120-00-672-2609	8762133
9	F, H, D	Clamp, Puller and Lifting	4933-0039-5025	8390439
10	D	Directional Valve Assy.		11654482
11	D	Directional Valve Assy.		11654524
12	F, H, D	Fixture, Test, Recoil Mechanism	4933-00-830-5637	10893684

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
13	F, H, D	Fixture Assy, Recoil Spring Compresser (for Assembly & Disassembly of Concentric Recoil Mechanism)	4933-00-393-0240	8390072
14	F, H, D	Heat Gun: Electrical Harness Repair	4940-00-561-1002	8031088
15	F, H, D	Pliers, Retaining Ring, External	5120-00-595-9552	7083704
16	F, H, D	Protector Assembly, Concentric (To Protect Threaded End of Recoil Mechanism Piston When Disassembled)	4933-00-039-5028	8708628
17	F, H, D	Reamer	4933-00-078-3957	8769487
18	0, F, H, D	Regulator Assy, Charging, Accumulator	4933-01-046-7109	12252157
19	0, F, H, D	Shim, Adjusting, Traversing Mechanism Output Pinions Backlash (used w/5120-00-672-2609 clamp)	4910-00-875-7934	10893984
20	F, H, D	Sling, Cupola Lifting	4933-00-480-5662	11658914
21	F, H, D	Sling, Handling Breech Mechanism Assembly		10952111
22	F, H, D	Sling, Lifting; Traversing Mechanism	4910-00-708-3778	7083778
23	F, H, D	Sling, Turret Lifting	4933-00-938-3008	11615469
24	H, D	Socket, Socket Wrench: Torque Traversing Mechanism Clutch Assy, Output Shaft	5120-00-627-8019	7383535

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
25	CF, O, F, H, D	Socket, Socket Wrench: Torque Traversing Mechanism No- Bak Assy, Input Shaft (used w/5120-00-684-0404 wrench, torque)	5120-00-627-8018	7383534
26	0	Tee	4730-00-801-6663	MS51841-3
27	F, H, D	Tool Assembly, Breech Lifting	4933-00-775-3742	
28	F, H, D	Tool Assy, Gear Lock Clutch Torque Setting		12990848
29	0, F, H, D	Tester, Air Flow Filter Unit	6680-00-436-4212	E5-77-2120
30	F, H, D	Wrench, Spanner: Evacuator Nut	4933-00-866-5850	
31	F, H, D	Wrench, Spanner: Adapter Nut	5120-00-986-3129	10924472
32	H, D	Wrench, Spanner: Hand Elevating Pump	5120-00-555-9031	7010376
33	D	Wrench, Spanner, Pin Type Removing and Replacing Bulkhead Bushing for Suction Line		MS 16153 MS 16153-9
34	F, H, D	Wrench, Spanner: Removing and Replacing End Ring	5120-00-902-5536	10952096
35	F, H, D	Wrench, Spanner: Removing and Replacing Top Cover and Locking Nut		10952097
36	H, D	Wrench, Torque, 3/8 Sq. Drive	5120-00-540-6603	GGG-W-686 Type I, Class I, Style A, Size 2
37	F, H, D	Wrench, Tube Removing		8769153
38	0, F, H, D	Wrench, Tubular, Collar, Firing Plunger Insert	5120-00-740-0447	11576361

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
		FIRE CONTROL INSTRUMENT TOOLS		
39	D	Adapter: Used w/Fixture 4931-00-508-5441	4931-00-561-0789	7297922
40	H, D	Adapter, Body, Daylight: Used w/Fixture 4931-00-508-5434	4931-00-065-2010	8289189
41	0	Adapter		MS51856-2
42	F, H, D	Adapter, Gun, Sealing (No, 5-44 NF)	4930-00-764-8128	7648128
43	F, H, D	Adapter, Gun, Sealing (No. 8-36 NF)	4930-00-764-8129	7648129
44	F, H, D	Adapter, Gun, Sealing (No. 10-32 NF)	4930-00-764-8130	7648130
45	F, H, D	Adapter, Gun, Sealing (1/4-20 NC)	4930-00-764-8131	7648131
46	D	Adapter: Mounting M114 Telescope Mount during Final Inspection	4931-00-065-2011	8293310
47	H, D	Adapter, Mounting: Used w/Fixture 4931-00-508-5434.	1240-00-015-6692	8566569
48	F, H, D	Adapter, Nitrogen, Filling (Regulater to Tank when Purging and Charging)	4931-00-508-5453	7680682
49	D	Adapter, Spring Scale (Ammo)	4931-00-614-6252	8585206
50	D	Adapter, Spring Scale (Correction)	4931-00-614-6251	8585205
51	H, D	Adapter, Torque	1240-00-015-6693	8570134

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
52	D	Adapter, Torque (Ammo)	493140-614-6249	8585203
53	D	Adapter, Torque (Crank)	4931-0614-6248	8585202
54	D	Adapter, Torque (Crank)	4931-00-997-2448	7659613
55	D	Adapter, Torque (Correction)	4931-00-614-6250	8585204
56	D	Adapter, Torque (Input)	5120-00-916-5909	7659615
57	D	Adapter, Torque (Servo)	4931-00-074-9510	8245885
58	D	Adapter, Torque, for Coupling	4931-00-045-4360	10549918
59	D	Adapter, Torque, Elevation Input Shaft: Used w/Wrench, Torque 5120-00-529-2552	4931-00-916-8140	8591108
60	D	Adapter, Torque: Used with Wrench to Check Torque of Diop ter Scale on Visible Light Body Assy of Periscopes M32C, M32CE1, M34, M36, M36E1		8591107
61	D	Adapter, Torque: Used with Wrench to Torque IPD Knob on Periscope M34		8591109
62	D	Adapter, Torque, for Daylight Diopter: Used w/Wrench, Torque, 5120-00-529-2552	4931-00-916-7864	8591101
63	D	Adapter, Torque, for IR Body Diopter: Used w/Wrench, Torque, 5120-00-529-2552	49314-00-916-8099	8591106
64	D	Adapter, Test Assy. Fixture: 4931-00-601-2241	493-00-863-5656	8213889

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
65	D	Adapter, Tube Tester: Used w/Tube Tester 4931-00-053-3644	4931-00-909-3144	8566741
66	D	Adapter, Vibration: Supporting Periscope M32C/M32CEl on Tester During Vibration Test		8575736
67	D	Adapter, Vibration: Used w/Vibrator Tester 4931-00-536-5555	4931-00-346-9098	7560099
68	D	Adapter, Vibration: Used w/Fixture Vibration Machine (lg) 4931-00-929-8387	4931-00-930-9030	8575746
69	D	Adapter, Vibration: Used w/Fixture Vibration Machine (lg) 4931-00-929-8387	4931-00-998-0034	8575658
70	D	Adapter, Vibration: Used to Secure Telescope M105F During Shock Test	4931-00-948-1556	8246094
71	D	Adapter, Vibration: Used w/Tester Vibration (SM) 4931-00-536-5555	1240-00-015-6695	8570135
72	D	Adapter, Vibration	4931-00-561-0737	8296191
73	D	Adapter, Spring	4931-00-065-2007	6559616
74		Adapter Periscope (No FSN)		8247391
75	D	Adapter, Tube, Tester (Tester, Tube) w/IR Tubes	4931-00-053-3644	8566309
76		Adapter, Torque w/Push-Pull Gage	4931-00-017-8260	
77	D	Adapter, Torque		8213889-5
78		Adapter, Torque		8591100

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
79	D	Angle Det Right Master Opt Assy	4931-00-561-0730	7688088
80		Bar Parallelogram	4931-00-561-0741	8298201
81	D	Clamp, Load Lead Nut		16545
82	D	Collar Rotation	4931-00-561-0732	7688090
83	D	Collimator, Auxiliary	4931-00-554-9108	5549108
84	D	Collimator Light Assembly	4931-00-010-4506	10540493
85	D	Cdlimator, Parabolic Projector During Final Inspection as a Target Collimator for Periscopes M32C, M32CE1, M34, M36, and M36E1	4931-00-053-3641	8298789
86	D	Collimator, projector Used w/Fixture 4931-00-066-8879 and/or 4931-00-947-3045	4931-00-757-3291	7573291
87	D	Comparator End Box Angle	4931-00-561-0711	8207718
88	D	Dial Scale Brs (Scale, Selector, cam)	5355-00-604-4024	8568049
89	F, H, D	Dioptometer Assy	4931-00-536-5557	7880831
90	D	Dynamometer	4931-00-536-5563	7681700
91	F, H, D	Extension, Socket Wrench	5120-00-508-5456	7880885
92	F, H, D	Extension, Socket Wrench	5120-00-508-5457	7880886
93	F	FU Maint & Repair Shop Spec. Equip.	4931-00-508-0012	SC4931-95-CL-J52

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
94		FC Maintenance and Repair Shop Special Equipment	4931-00-580-0010	SC4931- 95-CL-J5
95	F	Fire Control Purging Kit	4931-00-065-1110	
96	D	Fixture, Auto-Collimating Used Prior to Final Inspection on Body and Head Assembly (M36/M36El)	4931-00-087-5105	10541492
97	H, D	Fixture, Cross Leveling, Elevation: Used for Final Inspection of Elevation Quadrant M13A3	4931-00-652-3553	6523553
98	D	Fixture, Final Inspection		8565537
99	D	Fixture, Final Inspection (M24)	4931-00-508-5441	7560189
100	D	Fixture, Final Inspection (M36/M36E1)	4931-00-066-8879	8565964
101	D	Fixture, Final Inspection: Used	4931-00-947-3045	10527438
102	D	Fixture, Holding: For Lead Screw Assy on Ballistic Drive	1220-00-839-6670	10549897
103	D	Fixture, Housing Assembly: To Test and Inspect Housing Assembly		8575858
104	0	Fixture, Synchronization: M34, M36, or M36E1 Periscope to Cal .50 Machine Gun	1240-00-197-4462	8636698
105	D	Fixture Align (LH Tel Cover Assy Alignment)	4931-00-535-7864	8227961
106	D	Fixture, Alignment (Plumb)	4931-00-346-8269	8296194

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4] National Stock Number	(5) Tool Part Number
107	D	Fixture Boresight Reticle	493-00-535-7861	8226398
108	D	Fixture Inspection Final Check w/Access	4931-00-5357867	8296144
109	D	Fixture Inspection Stero Reticle	4931-00-535-7865	8228786
110	D	Fixture IPD Test Assy.	4931-00-574-0227	7661400
111	D	Fixture, Pressure Test	4931-00-065-2018	8565556
112	D	Fixture Ranging Mechanism	4931-00-535-7866	8293051
113	D	Fixture Telescope Align Left (Left Hand)	4931-00-535-7860	8226397
114	D	Fixture Telescope Align Right (Right Hand)	4931-00-535-7862	8226403
115	D	Fixture, Vibration (Instru, Text Vib)	4931-00-535-7843	7661921
116	D	Fixture, Inspection	4931-00-948-1555	8565637

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
117	D	Fixture, IR Body Assembly: Used w/Fixture 4931-00-601-2241	4931-00-914-5164	10540492
118		Fixture, Special (IR Body Assy)	4931-00-930-9031	8270621
119	D	Fixture, Telescope Test	4931-00-508-5434	7573980
120	D	Fixture, Test Used to Support Fixture 4931-00-914-5164	4931-00-601-2241	7660243
121	D	Fixture, Test Adjustment W/E	4931-00-570-6597	8237444
122	D	Fixture, Telescope Cover Assembly (MOD)	4931-00-536-7864	8227961
123		Fixture, Text w/e	4931-00-065-0535	8565409
124	D	Fork Coupling: Used as Spring Depressor for Coupling Assembly on Ballistic Drive	4931-00-065-0536	8566245
125	D	Gage, Height, Vernier Used During Final Inspection w/Fixture 4931-00-948-1555	5210-00-222-4566	GGG-C- 111 Type 4. Class 4
126	H. D	Gun. Hydraulic, Sealing	4931-00-764-8134	7649134
127	F, H	Gage		MS 28063-2
128	F, H, D	Gage, Spacer (.719)	4931-00-065-0538	8566947
129	F, H. D	Gage, Spacer Assembly	4931-00-947-3059	8566948
130	D	Grease Gun, Hand (Gun, Injection, Hand)	4931 -00-764-8117	7648117
131	D	Holder, Telescope (Collimating)	4931-00-612-1110	6121110
132		Hose Assy	4931-00-508-5546	8572413

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
133	F, H, D	Hose Assembly, Rubber Regulator to Sighting Equipment	4931-00-561-0713	8572414
134	D	Indicator Dial	5210-00-277-8840	8039138
135	D	Instrument Circuit Test	4931-00-561-0738	8296192
136	D	Instrument. Test End Box	4931-00-561-0712	8207719
137	D	Jig Drill (Cam Follower)	4931-00-074-9519	8569728
138	O, F, H, D	Key, Socket Head Screw	5120-00-606-9455	8616720
139			5120-00-606-9456	8616714
140	H. D	Level, Precision, 5-Seeond: Used to Set Up a Horizontal Plane for Test Fixtures and Surface Plate	5120-00-546-6362	7686087
141	F	Level, Bench, Calibrated	5210-00-241-3623	
142	D	Level, Zeiss Automatic	4931-00-561-0739	8296195
143	D	Light Source	4931 -00-561-0724	7661529
144	D	Machine, Vibrator	4931-00-929-8387	10547947
145	O, F	Nitrogen Tank	6830-00-264-9086	
146	D	Platform, Leveling (Level, 10-second)	4931-00-535-7859	7686086
147	H. D	Pliers, Retaining Ring	5120-00-640-6357	GGG-P-480 Type 1. Class B. Style C, Size 21A
148	D	Power Supply, 0-36 VDC	6130-00-853-3127	
149	D	Power Supply, High Voltage	4931-00-536-5556	7561204
150	F	0-36 VDC Power Supply	1240-00-970-8656	
151	o	Pressure Gage	668540-7544111	10946819
152	0	Pressure Gage		7950330

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
153	D	Protractor Br (Scale	4931-00-065-2019	8568032
154		Selector Cam)	4931-00-065-2020	8568033
155			4931-00-065-2021	8568034
156	D	Protractor Br (Scale Selector Cam)	4931-00-065-2022	8568035
157	O, F, H, D	Puller, Mechanical (Assy)	5120-00-592-3368	8585347
158	O, F, H, D	Puller, Housing	4931-00-574-8101	7659821
159	O, F, H, D	Puller Hsg Assy	4931-00-574-8107	7659821
160	D	Reflector Assy Penta-Mirror	4931-00-561-0721	7661150
161	F, H, D	Regulator, Nitrogen Pressure	4931-00-508-5795	3565000
162	D	Reticle Opt Align Assy	4931-00-561-0740	8296198
163	D	Scale Cam Selector	4931-00-906-3255	10513652
164			4931-00-906-3274	10513651
165			4931-00-906-3279	10513653
166			4931-00-908-8595	10513656
167			4931-00-908-8596	10513657
168			4931-00-908-8597	10513658
169	D	Scale Input	4931-00-756-2733	10513659
170			4931-00-906-3280	10513654
171	D	Scale Master (Selector Cam)	4931-00-065-2015	8565386
172	D	Scale, Master Cam Selector	4931-00-906-3307	10513655
173	D	Scale, Master Cam Selector	4931-00-910-9425	10513660
174	D	Scale Output	4931-00-091-9110	10555988
175			4931-00-091-9111	10555991
176			4931-00-091-9112	10555989
177			4931-00-091-9113	10555990
178			4931-00-091-9114	10555992
179			4931-00-091-9115	10555995
180			4931-00-091-9116	10555996
181			4931-00-091-9117	10555994
182			4931-00-091-9118	10555993

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
183	D	Scale Range Comptr	4931-00-604-4020	8568045
184		(Scale, Selector Cam)	4931-00-604-4021	8568046
185			4931-00-604-4022	8568047
186			4931-00-604-4023	8568048
187	D	Scale, Range Master	4931-00-998-0033	8565121
188	D	Scale, Selector Cam	4931-00-979-7113	8568038
189			4931-00-979-7114	8568039
190	D	Scale Selector	4931-00-065-2012	8565122
191	D	Scale Selector	4931-00-927-3395	8568036
192			4931-00-927-3396	8568037
193	D	Scale (Selector Cam)	4931-00-065-2016	8565387
194	D	Seamer, Boresight Reticle Parallax	4931-00-561-0734	8268479
195	D	Screwdriver and Wrench Assy	5120-00-535-7832	7660242
196	D	Sealing Compound Gun, Hand	4931-00-508-5424	6721500
197	D	Sealing Compound Gun, Hydraulic	4931-00-508-5428	6721501
198	F	Shop Equipment, Instrument and Fire Control Field Maintenance	4931-00-754-0740	SC493 1-95-CL-AO
199	F	Shop Equipment	4931-00-947-8243	SC4931-95-CL-A09
200	D	Stand, Auxiliary, Telescope	4931-00-561-0735	8296145
201	O, F, H, D	Strap Support	4931-00-561-0714	7652702
202		support		8565657
203	O, F, H, D	Support, Right Front	1240-00-507-9271	8200528
204	O, F, H, D	Support, Right Front	1240-00-507-9272	8200529
205	O, F, H, D	Support, Right Rear	1240-00-507-9270	8200527
206		Support, Test Fixture		8565929

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
207	D	Support, Test Fixture	4931-00-053-3642	8298786
208	F, H, D	Tank, Nitrogen	8120-00-247-9615	
209	D	Telescope, Auxiliary	4931-00-513-2207	7658931
210	D	Telescope, Auxiliary		7660243-58
211	D	Tensiometer, Dial	6635-00-647-3371	8491699
212	D	Tester Adapter (Tester, Vibration Univ)	4931-00-536-5555	7560085
213	D	Tester, Tube		7560125
214	D	Test Fixture: Used w/Adapter for Telescope Mount M114 During Final Inspection	4931-00-605-3820	8288795
215	F	Test Gage Assembly	4931-00-546-9773	SC4931-95-CL-A11
216	D	Tester, Insulation Resistance	6625-00-536-5565	8296190
217	H	Tool, Image Tube Removal	1240-00-054-5789	
218	F	Tool Set, FC: Field Maint M107, M108, M109, M110	4931-00-078-4087	SC4931-95-CL-A11
219	F	Tool Kit Instrument and Fire Control System Repair, T15584	4931-00-947-8243	
220	D	Transformer, Power Voltage: To Regulate Voltage for Light Source of Tester, Tube 4931-00-053-3644	5950-00-647-8517	7284975
221	F	Valve Core Tool		SC4931-95-CL
222	F	Valve Core Wrench		
223	F, H, D	Wrench, Clip: To Remove Retaining Clips on Head Assembly	5120-00-763-1861	7631861
224	D	Wrench, Collimating Assy	5120-00-508-5476	7680834

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
225	D	Wrench, Insulated Adjusting	5120-00-508-5475	7680822
226	0			MS 16146-3
227	F , H , D	Wrench Set, Spanner, Field and Depot Maint	4931-00-580-0012	
228		Wrench, Spanner Face	5120-00-561-0855	8284045
229	D	Wrench, Spanner Adjustable	5120-00-561-0856	8284040
230		Face Type	5120-00-595-8996	7597708
231	D	Wrench, Spanner, Pin Type: To Remove, Install, or Adjust Link Connector Assembly Retainer with Fixture on Ballistic Drive		8565537-100
232	D	Wrench, Spanner, Pin Type: To Remove, Install, or Adjust Bearing Caps in Link Arm with Fixture on Ballistic Drive		8565537-106
233	D	Wrench, Spanner, Pin Type: Adjust Level Assembly Retaining Plug with Fixture on Ballistic Drive		8565537-112
234	D	Wrench, Spanner, Pin Type: To Remove, Install, or Adjust Link Connector Seal Retainer Assembly with Fixture on Ballistic Drive		8565537-115
235	F, H. D	Wrench. Spanner (Retaining Clip)	5120-00-338-3742	7631861
236	D	Wrench. Spanner "T" Handle	5120-00-841-9356	10549932
237	F, H	Wrench. Spanner	5120-00-264-3777	

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
238	D	Wrench, Spanner (Tubular)	5120-00-345-1381	7597632
239			5120-00-345-1383	7597634
240			5120-00-345-1390	7597642
241			5120-00-345-1391	7597643
242			5120-00-345-1392	7597644
243			5120-00-345-1400	7597652
244			5120-00-345-1402	7597654
245			5120-00-345-1404	7597656
246			5120-00-345-1405	7597657
247			5120-00-345-1408	7597661
248			5120-00-345-1409	7597662
249			5120-00-345-1410	7597663
250			5120-00-345-1411	7597664
251			5120-00-345-1412	7597665
252			5120-00-345-1413	7597666
253			5120-00-345-1415	7597668
254			5120-00-345-1416	7597669
255			5120-00-345-1417	7597670
256			5120-00-345-1418	7597671
257			5120-00-345-1421	7597674
258			5120-00-345-1422	7597675
259			5120-00-345-1423	7597676
260			5120-00-345-1426	7597679
261			5120-00-345-1431	7597684
262			5120-00-345-1432	7597685
263			5120-00-345-1435	7597688
264			5120-00-345-1436	7597689
265			5120-00-345-1437	7597690
266			5120-00-345-1441	7597694
267	D	Wrench, Spanner, Tubular: To Adjust Right Support Inner Bearing Retainer with Fixture on Ballistic Drive		8565537-123
268	D	Wrench, Torque	5120-00-535-7833	7660767
269	D	Wrench Torque, Rigid Frame	5120-00-230-6380	
270	D	Wrench, Torque	4931-00-065-2005.	6559613
271			4931-00-065-2006	6559614
272	D	Wrench, Torque	5120-00-729-6427	
273	D	Wrench, Torque	5120-00-839-8139	

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Part Number
274	D	Wrench, Torque, 1/4-Inch Sq. Drive, 0-25 lb-in.: To Check Torque of Output Shaft of Ballistic Drive	5120-00-580-2949	GGG-W-686b Table II Type 1, Class 2, Style A, Size 1
275	H, D	Wrench, Torque, 1/4-inch Sq. Drive, 0-60 lb-in.	5120-00-529-2552	GGG-W-686b Table II Type 1, Class 1, Style A, Size 3
276	0, F, H, D	Wrench, Torque, 3/8-Inch Sq. Drive, 0-150 lb-in.	5120-00-230-6380	GGG-W-686 Table V Type 2, Stye A, size 1
277	D	Wrench, Torque: To Measure Torque of Eyepiece Assembly of Telescope with Adapter	4931-00-614-6245	8237441
278	D	Wrench (Wrench Correction Knob)	4931-00-065-2023	8586721

APPENDIX C

EQUIPMENT NOMENCLATURE LIST

Group Number	Component/Assembly (MAC Name)	Common Name
01	Slipring Assy. Turret	Turret Electrical Slipring
0101	Ring Assy. Electrical Contact (10941028)	Slipring
05	Lead Assy, Turret Control Box to Vent Blower	Turret Control Box to Ventilating Motor Lead
06	Control Box Assy, Vent Blower	Turret Ventilating Blower Control Box
0801	Lead Assy, Blower Motor (10924262)	Blower Circuit Breaker Lead and Connector
0802	Lead Assy, Turret Power Relay (10924263)	Cover Circuit Breaker's Power Cable
0803	Lead (Receptacle) Assy, Searchlight (7972770)	Searchlight Relays Connector
0805	Wiring Harness Assy, Accessory (11654979) Early Vehicles (11655382) Late Vehicles	Harness and Connector
10	Blower Assy, Turret Ventilator	Blower, Turret Ventilating Turret Vent Blower
16	Panel Assy, Commander's Control	Commander's Panel
17	Bracket Assy, Portable Fire Extinguisher	Fire Extinguisher Mounting Bracket
19	Box Assy, IR Spare Head Assy. Stowage	IR Periscope Spare Head Stowage Box

Group Number	Component/Assembly (MAC Name)	Common Name
22	Box Assy, Main Periscope Stowage (M24, M36, and M32C) or (AN/VVS-2, M36E1, and M32CE1	Periscope Stowage Box
2401	Seat Back Assy, Loader's Seat	Backrest
3601	Door Assy, Loader's Hatch	Loader's Escape Hatch
3602	Lid Assy, Loader's Hatch	Mount
38	Mount Assy, 165-mm Demolition Gun or Comb. Gun	165-mm Combination Gun Mount
3901	Mantlet Cover Assy, Main Gun Shield (Canvas)	Gun Shield (Mantlet) Cover
40	Bracket Assy, 7.62-mm Coax Machine Gun Mount (M219) (M73) (10886891)	M219 or M73 Machine Gun Mount
4105	Cradle Assy, Cupola Machine Gun	Cradle
410501	Mantlet Cover Assy, Cupola Machine Gun Cradle	Cupola Cover
4107	Screwjack Assy, Cupola Gun Elevation	Elevating Screwjack

Group Number	Component/Assembly (MAC Name)	Common Name
4108	Race Ring Assy, Cupola (11590961)	Cupola Bearing Components
42	Powerpack Control Assy (Hydraulic Power Supply)	Powerpack
4201	Motor Assy, Electric, Powerpack	Electric Drive Motor
4202	Filter Assembly, Fluid Pressure, Powerpack	Oil Filter
4203	Housing and Valve (RISER) Assy	Hydraulic Riser
4204	Accumulator Assy, Powerpack, Manual Elevation	Manual Elevation Pump
4205	Valve Assembly Shuttle Power-pack	Shuttle Valve
4206	Pump Assy, Manual Elevation	Manual Elevation Pump
420701	Cover Assy, Gunner's Control	Control Box Cover
420702	Shaft Assy, Override Elevating	Elevation Shaft
420703	Shaft Assy, Override Traversing	Traverse Shaft
420704	Lever Arm Control Assy, Ele-vating	Elevating Arm
420705	Lever Arm Control Assy, Tra-versing	Traversing Arm

Group Number	Component/Assembly (MAC Name)	Common Name
420706	Box Assy, Gunner's Control Handles	Control Box
420707	Valve Assembly, HYD Gunner's Control	Hydraulic Valve
420708	Harness Assembly, Gunner's Control Electrical	Harness and Bracket
43	Control Assembly Commander's Power (Hydraulic)	Commander's Power Control
44	Elevating Mech. Assembly, Main Gun	Elevating Mechanism
4403	Valve Assembly, Elevation Lock	Lock Valve
4404	Valve Assembly, Elevation Safety Relief	Relief Valve
45	Accumulator, Main Hydraulic	Main Accumulator
46	Valve Assy, Deck Clearance and Elevation Shut–Off	Deck Clearance Valve
47	Valve Assy, Relief Powerpack (See FGC 42)	Relief Valve
48	Race Assembly, Turret Traversing	Turret Race Ring
49	Gearbox Mechanism Assembly, Turret Traverse	Turret Traversing Mechanism
4901	Motor Assembly, Hyd. Traverse Mech.	Hydraulic Motor
490102	Valve Assy, Relief Hydraulic Motor	Valve Plate

Group Number	Component/Assembly (MAC Name)	Common Name
4902	Adapter Assy, Gearbox Mech.	Hydraulic Motor Adapter
4903	Pin Lock Assembly, Traverse Mech.	Pin Lock
4904	Gearbox Assembly, Traverse Mechanism	Traversing Gearbox
490403	Housing Assembly, Upper-Gear-box	Upper Housing
4905	Clutch Assy, Friction Traverse Mech.	Clutch
4906	No-Bak Assy, Gearbox Mecha-nism	No-Bak
53	Accumulator Assy. (Elevation Equilibrator)	Equilibrator Accumulator
61	Control Assy, Light Source Periscopes	M36/M36E1 Periscope Light Source Control
64	Infinity Sight Assy, Gunner's Periscope	Infinity Sight with Light Source Control
67	Hose Assy, Commander's and Gunner's CBR	Commander's Filter Hose Gunner's Filter Hose
66	Hose Assy, Loader's CBR	Loader's Filter Hose
70	Heater Assy, Commander's, Gunner's, and Loader's CBR	Commander's Electric Air Filter Heater Gunner's Electric Air Filter Heater Loader's Electric Air Filter Heater
7201	Hook Swivel Assy, Wire Rope	Swivel Hook

Group Number	Component/Assembly (MAC Name)	Common Name
91	Shield Protector Assy. Nylon Ballistic Coax Machine Gun (10905893) M219, M73 (12257532) M240	Nylon Ballistic Shield
9501	Breechblock Mech. Breech Mech.	Breech Breech Ring
950101	Operating Crank Assy, Breech Mech.	Breech Operating Mechanism
950102	Operating Handle Assy, Breech Mech.	Handle and Spring Assembly
950103	Operating Spring Assy, Breech Mech.	Handle and Spring Assembly
950105	Operating Shaft Assy, Breech Mech.	Handle and Spring Assembly
950106	Release Lever and Crank Stop Assy, Breech Mech.	Detents

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By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

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BE EXACT. . .PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.	
3		2		Item 10. Change illustration. Reason: Tube end shown assembled on wrong side of lever cam.
109		51		Item 3. The NSN and P/N are not listed on the AMDF nor the MCRL. Request correct NSN and P/N be furnished.
2-8			2-1	Preventive Maintenance Checks and Services. Item 7 under "Items to be inspected" should be changed to read as follows: Firing linkage and firing mechanism pawl.
12	1-6a			Since there are both 20- and 30- round magazines for this rifle, data on both should be listed.

SAMPLE

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PLACEHOLDER

FIGURE # Fo-1

TABLE # _____

ILLUSTRATION # _____

DRAWING # _____

PAGE # _____

PLACEHOLDER

Figure 4-4. Placeholder Page

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

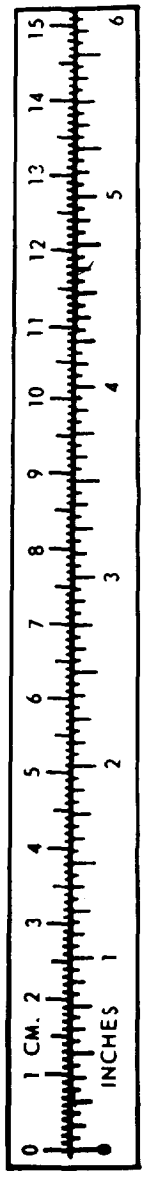
TEMPERATURE

$5/9\ (^0F - 32) = {}^0C$
212^0 Fahrenheit is equivalent to 100^0 Celsius
90^0 Fahrenheit is equivalent to 32.2^0 Celsius
32^0 Fahrenheit is equivalent to 0^0 Celsius
$9/5\ C^0 + 32 = F^0$

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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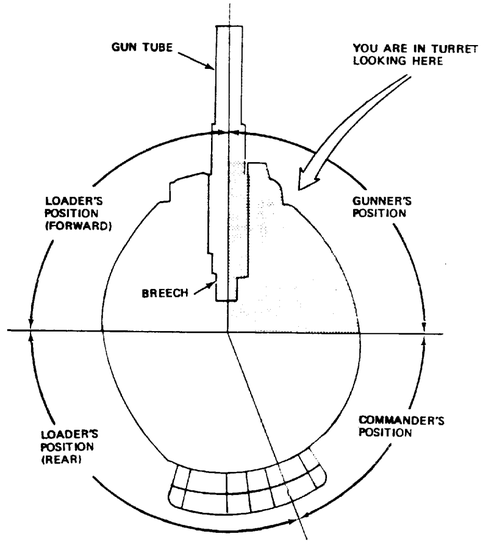

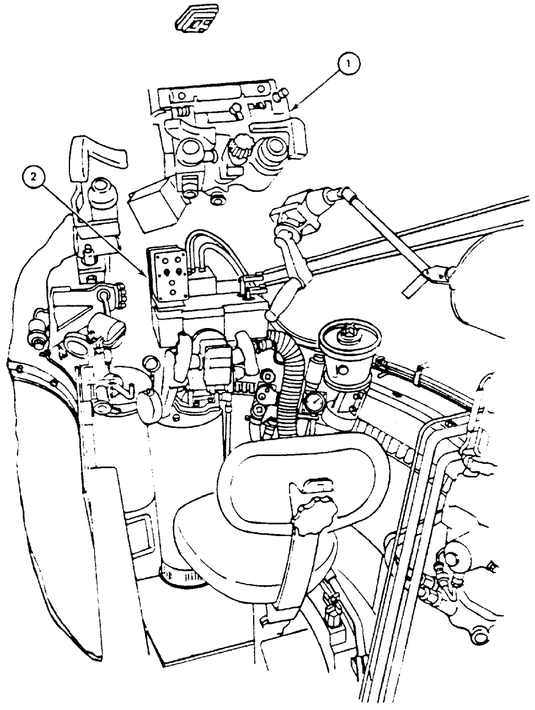

LEGEND

1. GUNNER'S PERISCOPE
2. GUNNER'S CONTROL BOX

FO-1. EQUIPMENT LOCATION INFORMATION (GUNNER'S POSITION)